

COMMITTEE:	East Lothian Council
MEETING DATE:	30 September 2025
BY:	Executive Director for Place
REPORT TITLE:	Musselburgh Flood Protection Scheme – Preliminary Decision on Proposed Scheme
REPORT STATUS:	Public

1 PURPOSE OF REPORT

- 1.1 In accordance with the Flood Risk Management (Scotland) Act 2009 ('the Act') and the Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Regulations 2010 (as amended) "the Regulations", full Council is required to consider all valid objections, late objections that have been accepted, and Environmental Impact Assessment (the "EIA") representations received in relation to the notification of Musselburgh Flood Protection Scheme ('the Scheme') on 21 March 2024.
- 1.2 The report also seeks a preliminary decision by full Council.

2 RECOMMENDATIONS

It is recommended that full Council:

- 2.1 Notes the progress to date following approval of the outline design by full Council on 23 January 2024, and notification of the Musselburgh Flood Protection Scheme on 21 March 2024;
- 2.2 Confirms that it has considered all valid objections (unless withdrawn), late objections (unless withdrawn), and representations in respect of the EIA received, together with any other matters it considers relevant, and which includes the minutes of record of the meetings and all as detailed in paragraph 3.19 of this report;
- 2.3 Makes a preliminary decision to confirm the proposed Scheme without modifications, as detailed in paragraph 3.25 of this report;

- 2.4 Notes that, having made a preliminary decision to confirm the Scheme without modifications, the Council must notify the Scottish Ministers of that decision, as detailed in paragraph 3.26 of this report;
- 2.5 Notes the options available to the Scottish Ministers and next steps for the Council set out in paragraph 3.27 of this report once a preliminary decision is notified to the Scottish Ministers; and
- 2.6 Confirms that the project team, working in consultation with the planning authority, should seek to deliver the fifty-four proposed changes to the proposed Scheme as detailed in paragraph 3.32 of this report.

3 BACKGROUND

- 3.1 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.
- 3.2 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, with areas of flooding limited to the mouth of the River Esk by Loretto Newfield / Mountjoy Terrace, the Eskside up the River Esk as far as the Rennie Bridge, and areas around Shorthope Street and the High Street. Flood risk from both the River Esk and the coast are projected to increase during the lifetime of the Scheme due to the effects of climate change.
- 3.3 In May 2016 a meeting of the 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.
- 3.4 From 2016 until September 2025 the Scheme has developed, noting the COVID-19 pandemic did have an impact on programme. The key activities and milestones of the Scheme to date are shown in Appendix A of this report.
- 3.5 The Scheme is being advanced in accordance with the Act, the Regulations, and non-statutory guidance.
- 3.6 The design philosophy outlining the standard of protection and allowance for climate change, as well as the extent of property protection, has been set out in detail in previous reports approved by full Council. It is highlighted that on the journey to determine the appropriate standard of protection for the Scheme that the allowance for climate change associated with fluvial risk was lowered to take into account feedback received through the public consultations. The standard of protection for this proposed Scheme is against the 0.5% AEP (Annual Exceedance Probability) Flood Event which is also known as the '1 in

200 Year Flood Event'. It also has a strategy for a 'Managed Adaptive Approach' throughout its lifetime that includes: (i) an approach to future flexibility within the physical defences; (ii) working with the parallel East Lothian Coastal Change Adaptation Plan (CCAP); and (iii) the new Lothian Esk Catchment Partnership (LECP) advancing Natural Flood Management options within the Esk Catchment.

- 3.7 In the order of 3,200 properties will benefit from the reduced flood risk afforded by the proposed Scheme in response to the design flood event and all smaller flood events from the same sources of flooding. The report provided to the meeting of full Council on 23 January 2024 provided details on these properties.
- 3.8 At a special meeting of full Council on 23 January 2024 Councillors approved the notification of the proposed Scheme. The proposed Scheme was then notified on 21 March 2024 with the closing date for submission of objections and EIA representations being 24 April 2024.
- 3.9 The proposed Scheme was designed to include multiple benefits as directed by Members through the Cabinet meeting held on 21 January 2020 and the full Council meeting in August 2022. Ultimately the outline design that was approved by the full Council meeting on 23 January 2024 was developed to include aspects of these multiple benefits. This approach is in line with a 'One Council' approach and recognises that different Council projects that are advancing in the same spatial area at the same time should work to achieve overall efficiencies, minimise overall disruption, and ultimately blend together to deliver one new future landscape.
- 3.10 It is highlighted that one of the more significant multiple benefits considered was the Musselburgh Active Toun (MAT) proposals. In particular, the routes of this overall active travel investment in Musselburgh that sit on the same spatial areas as the proposed Scheme – i.e. Route 5 on the River Esk from Monktonhall Terrace to the mouth of the River Esk, and Route 3 on the coast from Fisherrow Harbour to Prestonpans. Further to the authority deriving from Cabinet in January 2020 to explore the concept, and the authority deriving from full Council in August 2022, the project team developed one holistic design for both the proposed Scheme and the relevant sections of the proposed MAT. These projects are, however, separate and require separate consenting processes. The approach to this was confirmed by the Council's legal and planning services in February 2024. The MAT project is now advancing in the order of six separate planning applications to achieve authority to deliver the sections of the MAT that have been developed as concepts in the holistic design but are only adjacent to and not integral to the proposed Scheme's operations. This separation of proposed Scheme and MAT is clearly detailed on the Scheme Drawings that were part of the Scheme Notification Process in March 2024. The proposed

Scheme itself continues to include some design logics of the MAT in the parts of the holistic design where the two projects share not just a spatial area but one future new structure/asset: e.g. the proposed Scheme's replacement Shorthope Street Footbridge is being provided with a new 5m-wide deck to comply with the required specification of the MAT project, thereby futureproofing the delivery of the Scheme and ensuring that the footbridge does not require to be replaced twice.

- 3.11 Since the closure of the notification period, the Council's legal team have been responsible for managing the formal process under the Act. Supported by the project team, the Council's legal services processed 757 items of correspondence that were received. 18% of the correspondence were duplicates (email/letter of the same content from the same individuals). 7% of the correspondence were deemed invalid (received late and without valid reason, did not contain an address, or not provided in writing). Seventeen pieces of correspondence were EIA representations, of which seven were also objections.
- 3.12 In total the correspondence includes 485 valid and/or late objections that have been accepted, from 485 objectors. Four valid objections have been withdrawn, therefore there remain 481 valid objections for consideration by Members as part of the process for making a preliminary decision.
- 3.13 As part of the assessment of the objection correspondence a report was prepared, and seventy-one distinct themes were identified. In respect of each objection theme raised, Council officers detailed the position of the Council in relation to each theme.
- 3.14 All correspondence received, together with a response to all of the themes drawn from the objections, were published and made available to the Members through Member's Library Report dated 18 October 2024:
https://www.eastlothian.gov.uk/meetings/meeting/17380/members_library_service
- 3.15 The guidance which supports the Act encourages local authorities to engage with objectors. The aim of this is to resolve issues where possible and with an aim of obtaining a withdrawal of the objection. This may be achieved through a modification to the Scheme ("a modification"), where such a modification is not major in scope and does not compromise the Scheme's objectives. Where a withdrawal cannot be achieved, the engagement can still allow the parties to establish what points they do agree on, and in so doing, enable a subsequent inquiry or hearing to focus on the remaining issues in dispute. All 485 objectors were written to by the Council, offering a meeting with the intention of understanding the objections and to identify whether a modification could be made to the proposed Scheme which would result in a withdrawal of that objection.

- 3.16 Meetings with objectors were held between October 2024 and May 2025. This involved fifty-three initial meetings, with fifty-eight objectors attending. Further meetings were held with some of these objectors. From these meetings officers achieved four withdrawals. The minutes of these meetings together with any comments on those meetings from the objectors have been made available to the Members, noting that those in which full withdrawal occurred have not been included for consideration. These minutes have been provided to Members as detailed in paragraph 3.19 of this report.
- 3.17 Meetings also took place with those who provided a representation on the EIA. These meetings took place from early summer 2024 and are ongoing. Most of the representations on the EIA have been received from organisations who are working in partnership with the Council to advance the Scheme such as: NatureScot; Historic Environment Scotland; SEPA; Forth District Salmon Fishery Board; RSPB and the British Horse Society. The Project Team consider it essential to continue to work with these organisations both in general and specifically in relation to the EIA and its proposed approach to mitigating impacts through any Detailed Design Stage and Construction Stages that will be required if the proposed Scheme is confirmed.

The Need to Make a Preliminary Decision Following Objections

- 3.18 It is noted that following the objector meetings it was determined that it would not be possible for all valid objections and/or late objections to be withdrawn. Accordingly, the Act sets out the process that the Council must follow, insofar as it must make a preliminary decision to: (a) confirm the proposed Scheme without modification; (b) confirm the proposed Scheme with modifications; or (c) reject the proposed Scheme.
- 3.19 Before making the decision required above, full Council (a) must consider (i) all valid objections (unless withdrawn); and (ii) any late objections if the Council's legal services are satisfied that it was reasonable for the objector to make the objection after the deadline for doing so (unless withdrawn); and (b) may also consider any other matters it considers appropriate. Once a valid or late objection has been considered through the requirements of making a preliminary decision, the person who made that objection is then referred to as a "relevant objector". All information required to be considered by Members has been provided to Members in advance of the meeting of full Council via a folder that the Members have access to within the Council's digital file management system.
- 3.20 Should full Council approve a preliminary decision to confirm the Scheme (with or without modifications) and a relevant objector to whom Paragraph 5(6) of Schedule 2 of the Act applies, then the Scottish Ministers must be informed of the decision. The Scottish Ministers will

then decide whether they wish to consider the Scheme or refer it back to the Council.

- 3.21 If the Scottish Ministers decide to consider the Scheme, they will arrange for a Public Local Inquiry to be held. Following the inquiry the Scottish Ministers must then make a final decision to: (a) confirm the Scheme without modification; (b) confirm the Scheme with modifications; or (c) reject the Scheme
- 3.22 Should the Scottish Ministers decide not to consider the Scheme, then the matter will be referred back to Council, who must hold a Local Hearing. Following the Local Hearing, the full Council must then make a final decision to: (a) confirm the Scheme without modification; or (b) confirm the Scheme with modifications; or (c) reject the Scheme.

Recommendation to Make a Preliminary Decision to Confirm the Scheme without Modifications

- 3.23 Following an analysis of the objection correspondence received and the outcome of the objector meetings, an exercise was undertaken to identify and evaluate potential modifications. In total 40 possible modifications were identified. Of these, 9 were removed through a high-level screening process that determined these were either not modifications that were technically competent or aligned with the Scheme's project objectives. Thereafter, 31 potential modifications were reviewed through a Red-Amber-Green (RAG) Analysis to evaluate the merits of the potential modification. A report on the identification and evaluation of potential modifications is included in Appendix B of this report.
- 3.24 It is recommended that no modifications should be made to the proposed Scheme. The Act provides modification as a means to achieve confirmation of a scheme without recourse to a Local Hearing or Public Local Inquiry. It is understood that this is based on the assumption that the objections are few in number and/or straightforward in nature. Given the number of objections to the Scheme that have been received, and the complexity of points raised therein, it has been determined that there are no modifications, or combination of modifications, which would realistically result in the withdrawal of all objections. As such, it is considered that a Local Hearing or Public Local Inquiry is the most appropriate step to reach a democratic resolution.
- 3.25 It is on this basis that it is recommended that Members make the preliminary decision, in accordance with paragraph 5(1) of schedule 2 of the Act, to confirm the proposed Scheme without modifications.
- 3.26 On the basis that Members make this decision, the following will be undertaken: (i) In accordance with paragraph 5(3) of schedule 2 of the Act, the Council will give notice to all objectors of this decision; and (ii) in accordance with paragraph 5(5) of schedule 2 of the Act, the Council will

provide the Scottish Ministers with notice of this decision along with the information required and which is defined in that paragraph.

- 3.27 On provision of notice of the preliminary decision by the Council to the Scottish Ministers, the Scottish Ministers must within 28 days of receipt, or if Scottish Ministers notify they require further time this may be extended by a further 28 days (providing a potential 56 days in total), advise the Council either that: (a) they will not consider the proposed Scheme; or (b) they will consider the proposed Scheme. In the event that the Scottish Ministers choose not to consider the Scheme, the Council must hold a hearing to consider the Scheme. If the Scottish Ministers choose to consider the Scheme, then as detailed in paragraph 7(2) of schedule 2 of the Act the Scottish Ministers must cause a Public Local Inquiry to be held unless all objections made by relevant objectors have been withdrawn. It is highlighted that as detailed through the logic of paragraph 3.18 of this report that it has been determined as being highly unlikely that all relevant objectors will withdraw their objections. A summary of the next steps is included in Appendix C of this report.
- 3.28 Since April 2024 when 757 pieces of correspondence were received by Council, the Council's legal services and the project team have been working to categorise the correspondence and understand the messages that are contained within. As detailed in paragraph 3.13 of this report seventy-one themes were identified. Not all of those themes can be dealt with through the modification process as they relate to matters of governance and process rather than to the proposed Scheme that was defined in the Scheme Documents that were published when the proposed Scheme was notified. It is considered that one major theme within the concept of governance is the concern that full Council is not independent and is therefore unable to make an objective final decision in the proposed Scheme. The Council should consider asking the Scottish Ministers to consider the proposed Scheme through the Public Local Inquiry process in accordance with paragraph 7(2) of schedule 2 of the Act. This means that the final decision on the Scheme will be taken by the Scottish Ministers, rather than full Council, in accordance with paragraph 7(4) of schedule 2 of the Act.

Recommendation for the Project Team to Seek to Deliver the Proposed Changes to the Scheme

- 3.29 As detailed in paragraph 3.23 of this report a process was undertaken to identify and evaluate possible modifications, and the outcome was to recommend that no modification was advanced. It is important to understand that a modification is a formal and significant change to a flood protection scheme in accordance with the Act.
- 3.30 It is possible to make smaller changes to a flood protection scheme that are not formal modifications. This is essential as a flood protection scheme is approved based on an outline design and the detail design is

yet to be developed. The detailed design and construction preparation will involve the detailing of the concepts defined by the outline design and the outcome of the approval process under the Act: i.e. any planning conditions under the Deemed Planning Permission and/or changes imposed through a modification by either the preliminary decision or the final decision (after the Public Local Inquiry). A robust change management process will be implemented, under the direction of the Project Board and in consultation with the planning authority, to ensure that such changes are managed properly and within the constraints of its approvals and all other relevant boundaries. There is precedent deriving from other flood protection schemes previously delivered.

- 3.31 The process of identification of potential modifications, as detailed in paragraph 3.23 of this report, also identified possible changes. Such possible changes are lesser in scale than a formal modification or change to a process through which the Council are advancing the proposed Scheme.
- 3.32 It is recommended that the project team seek to advance the delivery of the fifty-four proposed changes that have been identified and reviewed by the Scheme's Project Board. A report on the identification and evaluation of change is included in Appendix D of this report.
- 3.33 The fifty-four proposed changes all derive from the consultation undertaken with the public through the Act's formal consultative process. Subject to a determination of their deliverability at the appropriate stage, these proposed changes are all considered capable of bringing bespoke local benefits, and/or process improvements, and/or environmental benefits to the design and delivery of the proposed Scheme.
- 3.34 The fifty-four proposed changes have been categorised as follows: (i) twenty-eight potential changes that could be made to the Scheme's processes; (ii) twenty-two potential changes that could be achieved through the Scheme's detailed design; (iii) twenty-six potential changes that could become a condition to the proposed Scheme's Deemed Planning Permission; and (iv) eleven potential changes that could be applied to a completed Scheme's approach to operation and maintenance (O&M). It is highlighted that the sum of the numbers in these categories is eighty-seven and thereby greater than the fifty-four proposed changes: this is because many of the proposed changes can sit in more than one category. For example: a proposed change to reduce the risk of graffiti on the proposed Scheme's new structures could be made through a revised approach in the detailed design to include more natural stone or better street lighting surrounding area. Equally the proposed change may be achieved through future O&M via the continual use of anti-graffiti paint, or community art projects, etc.

- 3.35 It is highlighted that most of these proposed changes can only be advanced if the proposed Scheme commences its future stages: i.e. the detailed design stage; and/or the construction works procurement stage; and/or the construction works stage. Furthermore, that the approach to advancing these proposed changes cannot be fully understood at this time as the proposed Scheme is not confirmed and does not have its Deemed Planning Permission, as detailed in paragraph 3.30 of this report. The recommendation is therefore that the project team, under authority of its project board and under the oversight of the Council's planning and legal services, and strategic guidance of the corporate management team, should seek to advance the delivery of these proposed changes in due course.

4 POLICY IMPLICATIONS

- 4.1 The Scheme is an important element of the Council's approach to resilience and a means of adapting Musselburgh to the effects of climate change. The Scheme represents one of the largest flood protection schemes in Scotland and would be a major contributor to adapting to the effects of climate change including communities potentially affected in the event of a flood and the local and national economies including key strategic infrastructure: e.g. Scottish Water Assets; other public utility assets; the A1 Trunk Road; the Scottish Power Ash Lagoons, etc.
- 4.2 The Scheme supports the East Lothian Council Plan 2022-2027 and the Council's Climate Change Strategy 2025-2030.
- 4.3 Aligning with the principle of Safeguarding our Future and Strategic Outcomes, under the Travel, Connectivity and Infrastructure section, the Scheme clearly delivers on the need to ensure that communities are protected from the impact of floods.

5 RESOURCE AND OTHER IMPLICATIONS

5.1 Financial:

- 5.1.1 The financial implications of the Scheme will be finalised pending approval of Scheme design and tender exercise for its Main Works Contract in accordance with the processes associated with flood protection schemes advanced under the Scottish Government's Cycle 1 Flood Protection Scheme Programme and its Funding Eligibility Criteria.
- 5.1.2 Officers have been progressing with the design of the Scheme aligned to national legislation and national funding criteria. Previous cost estimates remain within the Council's approved capital budget, and the overall affordability of this will be subject to detailed procurement and confirmation of available resources. It is anticipated that the cost of this Scheme, if approved, will be met from a combination of:

- a) The Scheme remains a project identified within Cycle 1 of the National Flood Protection Scheme Programme, and as such aligned to the national funding criteria, the Scottish Government will provide 80% of the eligible cost of the Scheme.
- b) The balance of funding will be met from a combination of Capital funding provided by the Council and maximising external funding streams to support the delivery of multiple benefits identified within the Scheme.
- c) 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.

5.1.3 If full Council makes a preliminary decision to confirm the Scheme without modifications, there will be additional costs associated with either a Public Local Inquiry or a Local Hearing. There will also be additional costs associated with the extension to the Scheme's Project Programme due to the assumed twenty-four additional months to complete the Public Local Inquiry: in particular, this references the cost of inflation to the overall Scheme costs over those twenty-four months.

5.2 Human Resources:

5.2.1 If full Council makes a preliminary decision to confirm the Scheme without modifications, it is estimated that the resulting Public Local Inquiry or Local Hearing could last in the order of twenty-four months. This is likely to have implications for the number of Council personnel and its consultants required to engage with the process, and the duration over which this activity would take place. The personnel requirement will not be known until around the end of 2025.

5.3 Other (e.g. Legal/IT):

5.3.1 If full Council makes a preliminary decision to confirm the Scheme without modifications, it is estimated that the resulting Public Local Inquiry or a Local Hearing could last in the order of twenty-four months. These processes extend the duration of the Scheme's approval under the Act, which are processes both legal in nature and being led by the Council's legal services. Until these processes are concluded it is considered that the Scheme will continue to require significant commitment from legal services and also remain exposed to significant legal risks.

5.4 Risks:

- 5.4.1 A funding review of Cycle 1 of the National Flood Protection Scheme Programme has been undertaken jointly by COSLA and the Scottish Government. Following this review, additional criteria for funding eligibility have been imposed. The next deadline is that a flood protection scheme must have its construction works contract in place by 31 March 2026.
- 5.4.2 In the event of a Local Hearing or Public Local Inquiry, the eligibility criteria indicates that a flood protection scheme could still progress in such limited circumstances, and officers have been working with COSLA and the Scottish Government to provide clarity on this position should this situation arise.
- 5.4.3 Should full Council agree to progress with the proposed Scheme, through the preliminary decision, Members will be kept fully informed of the position from Scottish Ministers.
- 5.4.4 National discussions remain ongoing given the challenging fiscal landscape, and in particular the level of national funding to support the growing costs of progressing wider flood protection schemes within national legislation. These discussions include the available funding, and established criteria to support the Cycle 1 of the National Flood Protection Scheme Programme. Officers have been proactively engaged in these national discussions through both COSLA and the Scottish Government, but clearly any change to national funding criteria may have a significant impact on the affordability of the overall proposed Scheme.
- 5.4.5 More widely, the current complex legislative process to progress flood protection schemes, alongside any further potential delays should a Local Hearing or Public Local Inquiry be undertaken, may place further costs and delays on the proposed Scheme, and will impact on availability of both national and Council funding, including funding to support the delivery of multiple benefits. Should Members agree to progress with the proposed Scheme, the overall affordability of this project will remain critical. Subject to Council determination on the proposed next steps, as discussions progress it will be important that Members receive a more detailed report on the associated funding and affordability of the proposed Scheme.
- 5.4.6 Musselburgh has a significant flood risk. If full Council makes a preliminary decision to reject the Scheme, then in the order of 3,200 properties (which includes 2,600 residential properties, 350 businesses, and significant key infrastructure) will remain at significant risk of the effects of flooding.

6 INTEGRATED IMPACT ASSESSMENT

6.1 **Select the statement that is appropriate to your report by placing an 'X' in the relevant box.**

An Integrated Impact Assessment screening process has been undertaken, and the subject of this report does not affect the wellbeing of the community or have a significant impact on: equality and human rights; tackling socio-economic disadvantages and poverty; climate change, the environment and sustainability; the Council's role as a corporate parent; or the storage/collection of personal data.

☐

or

The subject of this report has been through the Integrated Impact Assessment process and impacts have been identified as follows:

☒

Subject	Impacts identified (Yes, No or N/A)
Equality and human rights	Yes
Socio-economic disadvantage/poverty	Yes
Climate change, the environment and sustainability	Yes
Corporate parenting and care-experienced young people	No
Storage/collection of personal data	Yes
Other	N/A

The Integrated Impact Assessment relating to this report has been published and can be accessed via the Council's website:

https://www.eastlothian.gov.uk/info/210602/equality_and_diversity/12014/integrated_impact_assessments

7 APPENDICES

- 7.1 Appendix A – Key Activities & Milestones Summary
- 7.2 Appendix B – Identification and Evaluation of Modifications report
- 7.3 Appendix C – Next Steps Summary
- 7.4 Appendix D – Identification and Evaluation of Changes report

8 BACKGROUND PAPERS

- 8.1 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.
<https://www.eastlothian.gov.uk/meetings/meeting/5376/cabinet>
- 8.2 Report to Cabinet in January 2020 – approval of the ‘Preferred Scheme’ concept to be advanced to an Outline Design.
<https://www.eastlothian.gov.uk/meetings/meeting/16442/cabinet>
- 8.3 Report to full Council in August 2022 – approval of inclusion of the Ash Lagoons Seawall within the Scheme, and update to hydraulic model C.
https://www.eastlothian.gov.uk/meetings/meeting/16947/east_lothian_council
- 8.4 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.
https://www.eastlothian.gov.uk/meetings/meeting/16948/east_lothian_council
- 8.5 Motion to full Council in August 2023 – Note of Progress and Request for Information.
https://www.eastlothian.gov.uk/meetings/meeting/17111/east_lothian_council
- 8.6 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).
https://www.eastlothian.gov.uk/meetings/meeting/17112/east_lothian_council
- 8.7 Appendices A-F, available in the Members’ Library, January 2024 Bulletin, Ref: 08/24 - Agendas, reports and minutes | East Lothian Council.
https://www.eastlothian.gov.uk/meetings/meeting/17177/members_library_service
- 8.8 Report to full Council January 2024 – approval of Musselburgh Flood Protection Scheme – Presentation of the Outline Design.
https://www.eastlothian.gov.uk/meetings/meeting/17221/east_lothian_council
- 8.9 Members’ Library Report in September 2025 – Update on the Coastal Change Adaptation Process (CCAP).
https://www.eastlothian.gov.uk/meetings/meeting/17542/members_library_service
- 8.10 Members’ Library Report in September 2025 – Update on the Esk Lothian Catchment Partnership (LECP).
https://www.eastlothian.gov.uk/meetings/meeting/17542/members_library_service

9 AUTHOR AND APPROVAL DETAILS

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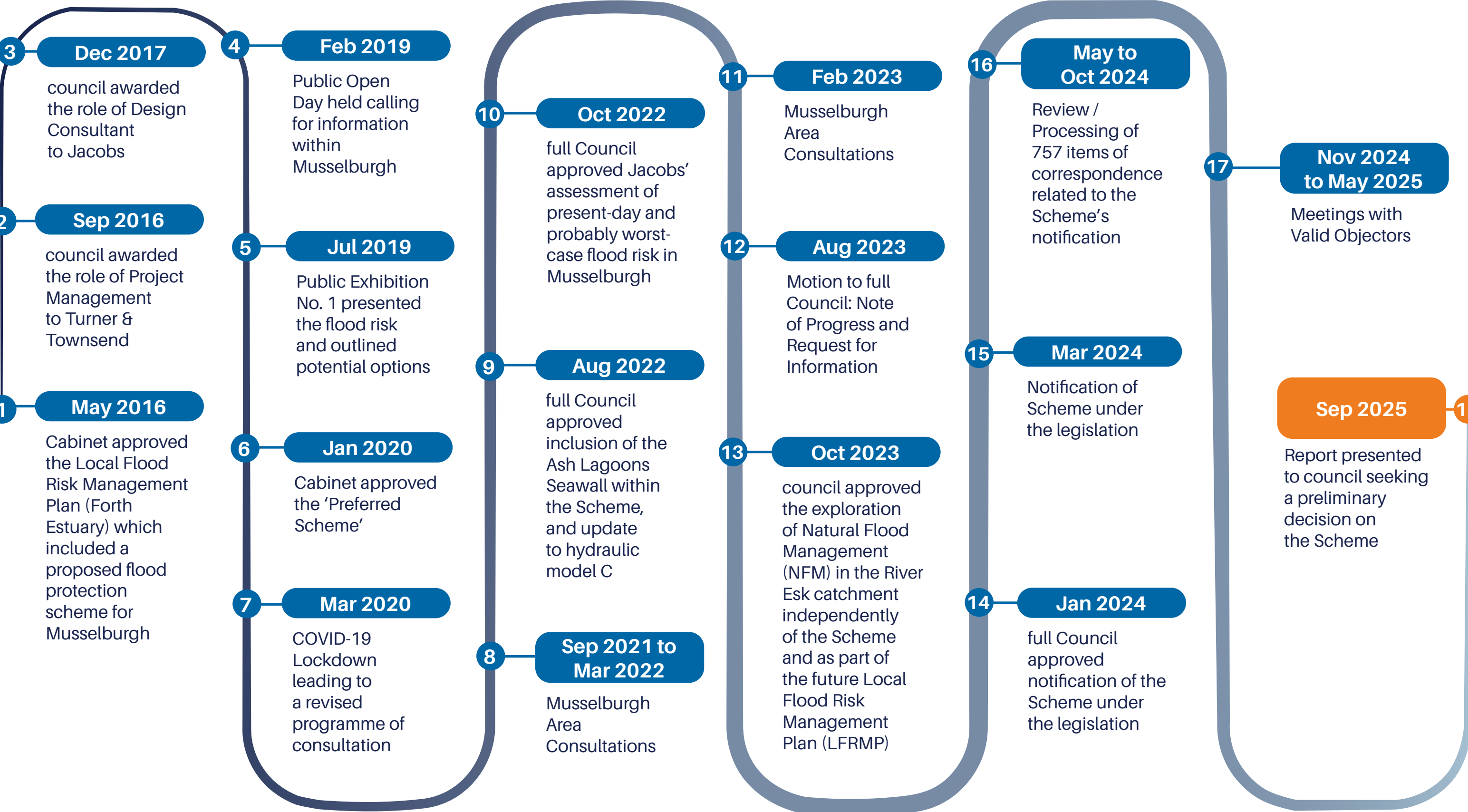
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Confirmation that IIA and other relevant checks (e.g. finance/legal) have been completed	Yes
Approval Date	23 September 2025

Appendix A

Key Milestones & Activities



Identification and Evaluation of Potential Modifications to Musselburgh Flood Protection Scheme

Date:	16 September 2025	CH2M HILL United Kingdom
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Background

Musselburgh Flood Protection Scheme (the Scheme) was notified by East Lothian Council (the Council) on 22 March 2024 in accordance with the Flood Risk Management (Scotland) Act 2009 (the Act) and the Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Regulations 2010 (as amended) (the Regulations). The closing date for submission of objections and representations in respect of the Environmental Impact Assessment (EIA) Report was 24 April 2024.

The Council received 485 valid objections and 16 representations¹ in respect of the EIA Report. Jacobs assessed all correspondence provided to them by the Council and identified 71 distinct themes of objection. The Council offered to meet all Relevant Objectors on a one-to-one basis to determine whether any aspect of the design could be changed to their mutual satisfaction such that the objector would be willing to withdraw their objection. Over fifty objectors accepted the offer of a meeting. These were led by the Council's Legal Services team and almost all were attended by Jacobs.

Purpose

Where there are valid objections to a scheme, paragraph 5(1)(b) of Schedule 2 to the Act provides a mechanism whereby a scheme can be modified to resolve the objections. Appendix H of Guidance on Local Authority functions under part 4 of the Act (Scottish Government, 2015) indicates that the modification must be in accordance with the scheme's objectives. Modifying a scheme thus provides a route to achieving its confirmation without recourse to either a hearing or public local inquiry.

The purpose of this technical note is therefore to set out the process which was used by Jacobs to identify and evaluate potential modifications to the Scheme. It should be read in conjunction with Jacobs' assessment of objection themes (Jacobs, 2024) and the Council's subsequent paper (East Lothian Council, 2024).

Terminology

The following terminology is used in this document, and is defined in the legislation as follows:

Term	Definition	Reference
Valid Objection	An objection which is made in writing, sets out the name and address of the objector, and is made before the expiry of the period of 28 days beginning with the date notice of the scheme is first published.	Paragraph 3(2) of schedule 2 to the Act
Late Objection	An objection that would be a valid objection but for the fact that it was made after the end of the 28 days following the notification of the scheme	Paragraph 3(4) of schedule 2 to the Act
Relevant Objector	A person who submitted a valid objection or a late objection which the local authority considered. In the case of this Scheme, the Council has chosen to refer to objectors as Relevant Objectors where it is anticipated that their objection will be considered in due course. Elected members will undertake this consideration in a meeting of Full Council. At the time of writing, such a meeting has yet to occur, and therefore consideration of objections has not yet taken place.	Paragraph 5(4) of Schedule 2 to the Act
Proposed Scheme	A flood protection scheme proposed by a local authority pursuant to section 60(2) of the Act	Section 60(2) of the Act
Modified Scheme	In a case where the local authority proposes to make a preliminary decision to confirm the proposed scheme with modifications under paragraph 5(1)(b) of Schedule 2 of the Act, the scheme with those modifications	Regulation 2(2)(c) of the Regulations

¹ The number of valid objections and EIA representations has been subject to change as a result of an audit of the correspondence received, which was carried out by the Council's Legal Services team.

Table 1: List of key defined terminology

Methodology

Figure 1 sets out the process through which potential modifications were identified and evaluated. The first step was determining whether an objection was valid. This was carried out by the Council’s Legal Services team, independently of Jacobs and the project team. Legal Services then passed the valid objections and any late objections to Jacobs and the project team.

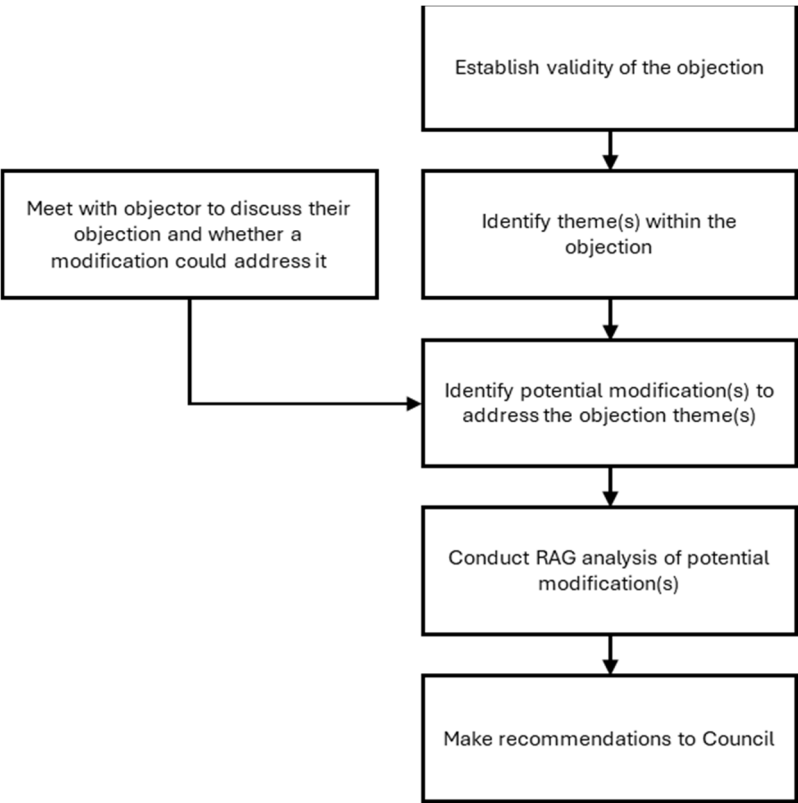


Figure 1: Flowchart showing the process for identifying Scheme modifications

All valid objections were then reviewed by Jacobs to identify the issues, or themes, contained therein. Some objections were short and contained only one theme. Others were lengthy and contained multiple themes about different aspects of the Scheme. Across all valid objections received, Jacobs identified 71 distinct themes and, where appropriate, recommended a position that the Council might wish to consider taking on each one (Jacobs, 2024). The Council subsequently published a paper setting out its position in respect of each theme (East Lothian Council, 2024).

Jacobs then reviewed each theme. Some themes, such as ‘Project Governance’ and ‘Approach to Scheme Notification’ related to the management of the project. Whilst objectors may have legitimate concerns about these subjects, it was concluded that there was no modification to the design which would directly address such concerns. In other instances, however, themes such as ‘height of flood defences’ and ‘impact on trees’ clearly had a corresponding potential modification, such as reducing the height of the flood defences or reducing the number of trees affected, which could address the issue.

As well as reviewing the objection themes, the Council offered to meet each objector on a one-to-one basis. The intention of these meetings was to determine whether any aspect of the design could be changed to their mutual satisfaction such that the objector would be willing to withdraw their objection.

Finally, Jacobs conducted a Red-Amber-Green (RAG) analysis of all the potential modifications that had been identified. Using the same approach as the option appraisal in stage 3 of the project, each modification was assessed on its own merits in terms of economic, technical, environmental, social and health & safety factors.

Results

Appendix A sets out potential modifications that were derived from the seventy-one objection themes. Appendix B is the council's actions and opportunities register from the meetings with objectors. Appendix C is the RAG analysis of the potential modifications identified in appendices A and B.

One potential modification was rated 'Green – consider'. This was:

1. Remove proposed replacement Goosegreen Footbridge from the Scheme

Whilst this modification would undoubtedly be supported by some objectors, it is also possible that others support its inclusion and might object to its removal.

Six potential modifications were rated 'Amber - undecided'. These were:

1. Change hybrid flood defence at Fisherrow to a flood wall with a wave return in order to reduce the total height of the structure
2. Incorporate more glass panels in flood defence walls to address concerns relating to visual impact and connectivity with the River Esk
3. Alter the embankment at Eskside West to address concerns about privacy of adjacent properties
4. Additional flood gate at 49B Edinburgh Road
5. Relocate the new Shorthope Street Footbridge further downstream
6. Remove the proposed ramp on the upstream eastern side of the new Shorthope Street Footbridge

It is considered that the introduction of more glass panels and alterations to the embankment footpath at Eskside West can be achieved as part of the detailed design, without the need for a modification to the Scheme. Meanwhile, there were only two objections relating to access on Edinburgh Road, one of which has now been withdrawn. The benefits associated with the modifications to Shorthope Street Footbridge are limited to three properties on Eskside East.

Twenty-four potential modifications were rated 'Red – reject'.

Conclusion and Recommendations

Where there are valid objections to a scheme, 'modification' provides a legal mechanism whereby a scheme's design can be changed to resolve the objections. Modifying a scheme thus provides a route to achieving its confirmation without recourse to either a hearing or public local inquiry. For this to be practical, it implies that the objections are few in number and small in scope. Guidance on Local Authority functions under part 4 of the Act (Scottish Government, 2015) states that modifying a scheme,

"will only be acceptable if the changes are not major in scope, are in accordance with the objectives of the scheme and all persons that are affected by the changes and interested statutory authorities are consulted and agree that the changes can be incorporated into the scheme as a modification."

Jacobs identified several potential modifications to the Scheme (one green and six amber) which might have merit. Notwithstanding this, the number and variety of objections to the Scheme are such that it is unrealistic that any modification would result in the withdrawal of all objections. Modification of the scheme could potentially save time and expense by reducing the scope of a hearing or public local inquiry. On the other hand, Regulation 8 of the 2017 Regulations requires a Modified Scheme to be notified in the same manner as a Proposed Scheme, in accordance with paragraphs 1 to 3 of Schedule 2 of the Act and Regulation 7 of the 2017 Regulations. This means that any modification creates a risk that it could lead to more new objections being submitted than it was able to resolve. **Jacobs therefore recommends that the Council makes a preliminary decision to confirm the Scheme without modification.**

Following a preliminary decision to confirm the Scheme without modification, the Act would require the Council to refer the Scheme to the Scottish Ministers. The Ministers would then either direct the Council to hold a hearing or the Ministers would cause a public local inquiry to be held. Consideration of the Proposed

Scheme (i.e. without modification) at either a hearing or public local inquiry would enable both the Council and the objectors to put forward their respective cases to a Reporter. Notwithstanding the recommendations of the reporter, the final decision on the Scheme would rest with the Council in the case of a hearing, or with the Scottish Ministers in the case of a public local inquiry.

For this reason, the Council may wish to ask the Scottish Ministers to hold a public local inquiry rather than instruct the Council to hold a hearing. It is Jacobs' understanding that other councils have chosen to do this under similar circumstances in the past. By having the final decision on the Scheme taken by the Scottish Ministers, this would provide a degree of independent scrutiny and oversight which might be welcomed by some objectors.

References

East Lothian Council (2024). '*Position of East Lothian Council on the themes identified within the Scheme Notification Correspondence*'. Available at www.musselburghfloodprotection.com (accessed on 05/03/2025).

Jacobs (2024). '*7019090JEC-S5-XXX-XXX-RE-Z-0001 Assessment of Objection Themes*'. Version P01.1

Scottish Government (2015). '*Flood Risk Management (Scotland) Act 2009 – Local Authority Functions Under Part 4 Guidance*'. First Edition. Available at <https://www.gov.scot/publications/flood-risk-management-scotland-act-2009-local-authority-functions-under/documents/> (accessed on 19/06/2025).

Appendix A – Identification of Potential Scheme Modifications

No.	Objection Theme	Could the objection theme result in a material change to the design Y/N?	What would the material change to the design be?	Is the material change specific in its nature Y/N?	Potential modification	Carry forward to RAG analysis Y/N?	Comments
1	Project Governance	N	Not applicable	N	Not applicable	N	No comment
2	Scottish Government Policy & Funding	N	Not applicable	N	Not applicable	N	No comment
3	Independent review of Scheme	N	Unknown. The objection theme implies that independent review of the scheme would result in a different design	N	Not applicable	N	No comment
4	Evolution of scope	N	Unknown. The objection theme implies that a reduced scope would result in a different design	N	Not applicable	N	No comment
5	Option appraisal	N	Unknown. The objection theme implies that using a different methodology would result in a different design	N	Not applicable	N	No comment
6	Flood risk assessment	N	Unknown. The objection theme implies that a different FRA would result in a different design	N	Not applicable	N	No comment
7	Standard of protection	Y	Lower Standard of Protection would reduce the required height of flood defences	Y	Reduce the Scheme's standard of protection	Y	This scale of change may be beyond the scope of a modification
8	Allowance for climate change	Y	Lower climate change allowance would reduce the required height of flood defences	Y	Reduce the Scheme's allowance for climate change	Y	This scale of change may be beyond the scope of a modification
9	Estimated cost	N	Unknown. The objection theme implies that a different FRA would result in a different design	N	Not applicable	N	No comment
10	Cost-benefit analysis	N	Not applicable	N	Not applicable	N	No comment
11	Height of flood defences	Y	Reduce the height of the flood defence walls and embankments	Y	Reduce height of structure from Mouth of Esk to Links View by changing from hybrid structure to flood wall.	Y	Reduced height elsewhere would require a reduction in the standard of protection, the climate change allowance or the residual uncertainty allowance.
12	Replacement of bridges	Y	Avoid or reduce the number of bridge replacements	Y	Remove new Goosegreen Bridge from scheme	Y	No comment
13	Repairs to Ash Lagoons Seawall	Y	Leave seawall repairs to be carried out by Scottish Power	Y	Alternative approach to seawall repairs	Y	No comment
14	Consideration of Nature-based Solutions (NbS)	Y	More use of NbS in the catchment to avoid or reduce the need for flood defence walls and embankments in the town	Y	Incorporate greater use of catchment NFM	Y	This scale of change may be beyond the scope of a modification
15	Consideration of dredging	Y	Dredge the River Esk to avoid or reduce the need for flood defence walls and embankments	Y	Incorporate greater use of dredging	Y	No comment
16	Consideration of demountable defences	Y	Use demountable defences to avoid or reduce the need for static flood defence walls and embankments	Y	Incorporate greater use of demountable defences	Y	No comment
17	Consideration of Property Level Protection (PLP)	Y	Use PLP to avoid or reduce the need for flood defence walls and embankments	Y	Incorporate greater use of PLP	Y	This scale of change may be beyond the scope of a modification
18	Consideration of other reservoirs	Y	Use other reservoirs in the catchment to avoid or reduce the need for flood defence walls and embankments	Y	Incorporate use of other reservoirs	Y	This scale of change may be beyond the scope of a modification
19	Impact on amenity, health and wellbeing	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
20	Impact on tourism	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
21	Impact on biodiversity	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
22	Impact on sites designated for nature conservation	Y	Avoid or reduce the extent of construction works on the coast adjacent to the SPA	N	Not applicable	N	No comment
23	Impact on trees	Y	Reduce the number of trees to be removed	Y	Reposition defences to further reduce number of trees to be removed	Y	No comment
24	Impact of noise, vibration and dust during construction	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
25	Visual Impact	Y	Include more glass panels in flood walls	Y	Incorporate more glass panels in flood walls	Y	This change may not constitute a modification, subject to determination by Planning Working Group
26	Impact on climate change	Y	Reduce whole-life carbon within the scheme (materials, transportation, demolition)	N	Not applicable	N	No comment
27	Impact on cultural heritage	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
28	Impact on Scheduled Monuments	Y	Avoid or reduce the extent of work within the Eastfield designated schedule monument area	Y	Provide alternative access to debris trap	Y	No comment
29	Impact on traffic and transportation	Y	Avoid or reduce the number of construction vehicles and the need for traffic diversions	N	Not applicable	N	No comment
30	Impact on Common Good Land	Y	Avoid or reduce the extent of construction works on Common Good land	N	Not applicable	N	No comment
31	Impact on adjacent property	Y	Avoid or reduce the extent of construction works near residential areas	N	Not applicable	N	No comment
32	Impact on accessibility	Y	Avoid or reduce the extent of flood defence walls and embankments which would change how people access the river and the beach	N	Not applicable	N	No comment
33	Impact on Public Rights of Way	Y	Avoid or reduce the extent of construction works which would impact rights of way	N	Not applicable	N	No comment
34	Impact on public safety	Y	Avoid or reduce the extent of flood defence walls and embankments which would impact people's ability to access and egress the water	N	Not applicable	N	No comment
35	Impact on vandalism and graffiti	Y	Avoid or reduce the extent of flood defence walls which could attract graffiti	N	Not applicable	N	No comment
36	Impact on surface water flood risk	Y	Improve the existing road drainage to avoid or reduce surface water ponding	Y	Incorporate improvement works to existing road drainage	Y	No comment
37	Impact of narrowing the River Esk	Y	Position the flood defences so that they do not narrow the River Esk	Y	Set back flood defences to avoid narrowing the River Esk downstream of Rennie Bridge	Y	No comment
38	Impact on coastal squeeze	Y	Allow the landward transgression of natural habitats in response to sea level rise by avoiding or repositioning coastal defences	Y	Set back flood defences at Fisherrow Links to reduce coastal squeeze	Y	No comment
39	Impact on coastal erosion	Y	Avoid or reposition coastal defences so they do not contribute to erosion of the beach in response to sea level rise	Y	Set back flood defences at Fisherrow Links reduce beach erosion	Y	No comment
40	Impact on flood risk and coastal erosion elsewhere	Y	Avoid or reduce the scale of coastal defences if they will increase flood risk or coastal erosion elsewhere along the coast	N	Not applicable	N	No comment
41	Impact on fish passage	Y	Reduce barriers to fish passage within the Scheme	Y	Remove debris trap from scheme to avoid impact on fish passage	Y	No comment
42	Impact on spread of Invasive Non-Native Species (INNS)	Y	Avoid working in areas containing INNS (River Esk riverbanks)	N	Not applicable	N	No comment
43	Impact on interests in land	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
44	Impact on Property Market	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
45	Impact on local business	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
46	Impact on investment elsewhere	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
47	Impact on areas of social deprivation	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
48	Impact on Dalkeith Country Park	Y	Avoid the need for Whitcraigjs debris trap within Dalkeith Country Park	Y	Remove debris trap from scheme to avoid disruption in Dalkeith Country Park	Y	No comment
49	Impact on Roman and Rennie bridges	Y	Avoid or reduce the extent of construction works near Roman Bridge and Rennie Bridge	N	Not applicable	N	No comment
50	Impact of embankments on Eskside West	Y	Alter the embankment at Eskside West to avoid or reduce overlooking adjacent homes	Y	Alter the embankment at Eskside West to avoid or reduce overlooking adjacent homes	Y	No comment
51	Impact on Fisherrow Harbour	Y	Avoid flood defence walls and embankments near Fisherrow Harbour	N	Not applicable	N	No comment
52	Impact on 9-27 Edinburgh Road	Y	Alternative design of coastal defence to addresses concerns about security, privacy, and antisocial behaviour on the beach	Y	Alternative defence alignment to address concerns about privacy, security and maintenance at 9-27 Edinburgh Road	Y	No comment
53	Impact on Inveresk Estate and wider area	Y	Avoid or reduce the extent of construction works at Inveresk to address concerns about privacy, security, and accessibility of the riverside walk known as the Grove	Y	Alternative defence alignment to address concerns about privacy, security and maintenance at Inveresk Estate	Y	No comment
54	Impact on Pinkie St Peter's Primary School	Y	Avoid or reduce the extent of construction works within Pinkie St Peters Primary School and playing fields	N	Not applicable	N	No comment
55	Impact of reducing water level at Edgelaw Reservoir	Y	Avoid or reduce the need to reduce the water level in Edgelaw Reservoir in order to address concerns about safety of anglers and other recreational user of the reservoir	Y	Lessen the reduction in water level at Edgelaw reservoir to address safety concerns of anglers	Y	This change may not constitute a modification, subject to determination by Planning Working Group
56	Impact on advertising consent for information panel	Y	Relocate or replace historical information panel	Y	Relocate or replace historical information panel	N	This would not be a modification, and can be achieved through a planning condition or legal agreement with the licensee of the board
57	Influence of Dynamic Coast	Y	Unknown. The objection implies that greater consideration of Dynamic Coast would result in a different design.	N	Not applicable	N	No comment
58	Influence of MAT	Y	Do not futureproof scheme to accommodate MAT design	Y	Remove MAT deck width requirements from replacement footbridges	Y	This change may not constitute a modification, subject to determination by Planning Working Group
59	Influence of coastal change adaptation planning	N	Not applicable	N	Not applicable	N	No comment
60	Approach to public consultation	N	Not applicable	N	Not applicable	N	No comment
61	Approach to Scheme notification	N	Not applicable	N	Not applicable	N	No comment
62	Approach to FOI requests	N	Not applicable	N	Not applicable	N	No comment
63	Approach to Compensation	N	Not applicable	N	Not applicable	N	No comment
64	Approach to operation and maintenance	N	Unknown. The objection theme implies a different design with a lower operational & maintenance burden	N	Not applicable	N	No comment
65	Approach to seeking multiple benefits	N	Not applicable	N	Not applicable	N	No comment
66	Approach to EIA	N	Not applicable	N	Not applicable	N	No comment
67	Approach to delivering EIA mitigation measures	N	Not applicable	N	Not applicable	N	No comment
68	Approach to HRA	N	Not applicable	N	Not applicable	N	No comment
69	Approach to NPF4	N	Not applicable	N	Not applicable	N	No comment
70	Approach to EqIA	N	Unknown. The objection theme implies that a different approach to EqIA would result in a different design	N	Not applicable	N	No comment
71	Approach to location of site compounds	N	Not applicable	N	Different location of site compounds within scheme footprint to reduce disturbance during construction	N	This would not be a modification

Appendix B – Actions and Opportunities Register

Appendix C – RAG Analysis of Potential Scheme Modifications

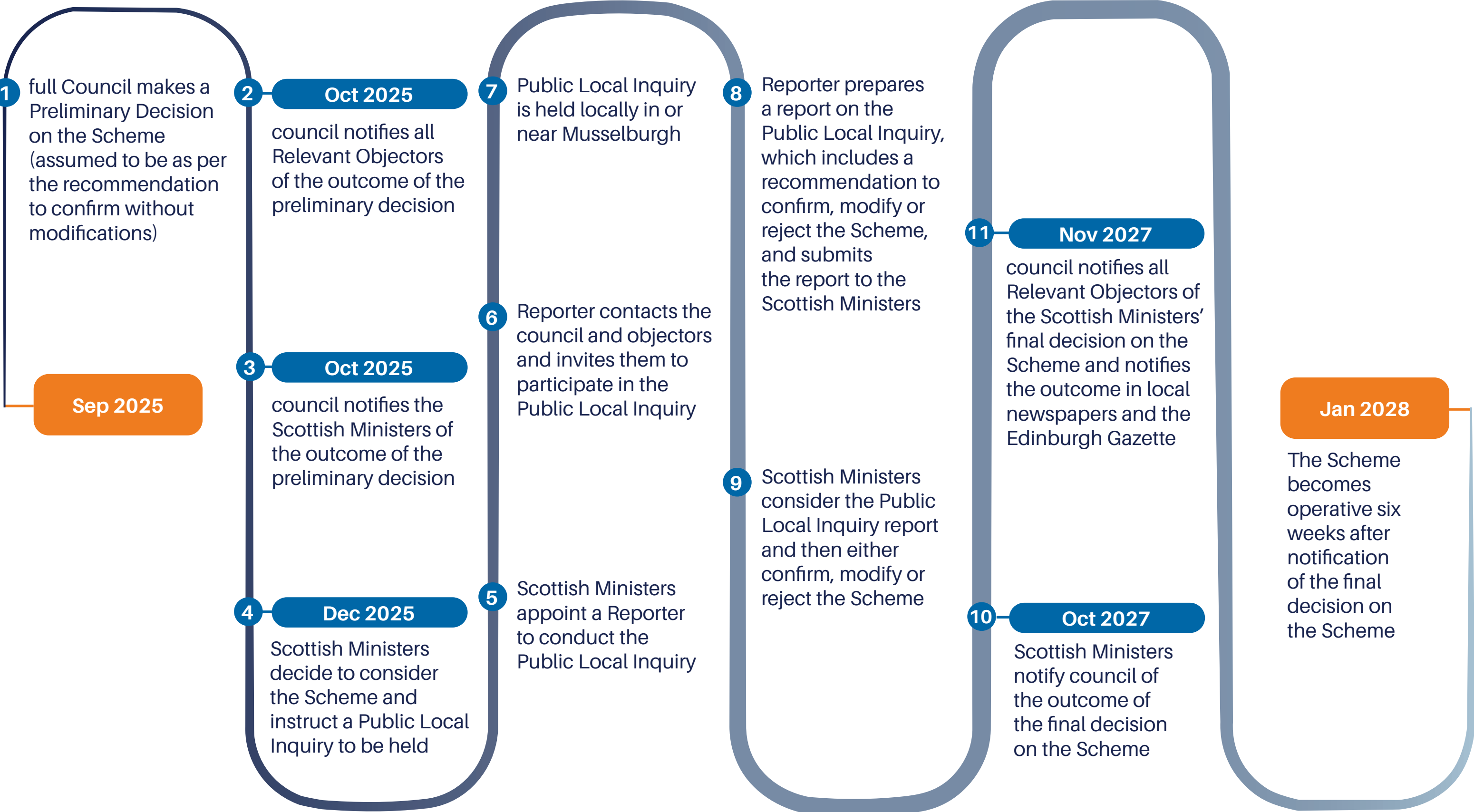
Modification Reference	Objection Theme	WS	Option	Economic	Economic comments	Technical	Technical comments	Environmental	Environmental comments	Social / stakeholder	Social / stakeholder comments	Health & safety	Health & safety comments	Proposal	Comments
1	7	N/A	Reduce the Scheme's standard of protection (SOP)	R	Reducing the Scheme's SOP would reduce the damages avoided (scheme benefits). Whilst it would also reduce the capital cost of the defences, the cost reduction would be disproportionately smaller than the loss of benefits since the majority of the cost of defences is in the foundations and associated works. As a result, reducing the Scheme's standard of protection would reduce its benefit-cost ratio.	A	There are no technical challenges associated with building smaller defences than have been proposed. This change, however, would significantly affect all aspects of the Proposed Scheme and would not be small in scope as recommended by the guidance.	R	The reduction in environmental impacts resulting from a lower SOP would be marginal. This is because construction duration, construction methodology, extent of enabling works, and footprint of structures would not change substantially due to slightly lower defence heights.	R	Some objectors have indicated that they believe the standard of protection is unnecessarily high and that the risk does not merit the response. However, the number of objections on this theme is small relative to the population and the number who would stand to benefit from the scheme. It could therefore be argued that those who have not objected are either supportive or neutral with respect to the Scheme's SOP. One of the Scheme's objectives was to deliver a 0.5% AEP SOP. This modification would be incompatible with that objective.	A	Whilst any level of flood risk reduction would deliver health & safety benefits when compared to the baseline, a reduced SOP would leave more properties at risk of flooding compared to the current SOP.	Reject	This modification would be incompatible with the Scheme's objectives, would significantly alter all aspects of the Proposed Scheme, and would fail to deliver substantial environmental or social benefits. It would also compromise the business case for the Scheme.
2	8	N/A	Reduce the Scheme's allowance for climate change (either a reduction for the whole Scheme or for part of the Scheme, such as the coastal section between the River Esk and the Brunstane Burn).	R	Reducing the Scheme's allowance for climate change would reduce the damages avoided (scheme benefits). Whilst it would also reduce the capital cost of the defences, the cost reduction would be disproportionately smaller than the loss of benefits. This is because the proposal is to futureproof the design by constructing the foundations for the worst case climate change scenario, and the majority of the cost of defences is in the foundations and associated works. As a result, reducing the Scheme's allowance for climate change would reduce its benefit-cost ratio.	A	There are no technical challenges associated with building smaller defences than have been proposed. This change, however, could significantly affect all aspects of the Proposed Scheme and would not be small in scope as recommended by the stage 4 guidance for local authorities.	R	The reduction in environmental impacts resulting from a lower allowance for climate change would be marginal. This is because construction duration, construction methodology, extent of enabling works, and footprint of structures would not change substantially due to futureproofing the foundations.	R	Some objectors have indicated that they believe the allowance for climate change is unnecessarily high and that the risk does not merit the response. However, the number of objections on this theme is small relative to the population and the number who would stand to benefit from the scheme. It is therefore assumed that those who have not objected are either supportive or neutral with respect to the Scheme's allowance for climate change.	A	Whilst any level of flood risk reduction would deliver health & safety benefits when compared to the baseline, a reduced allowance for climate change would leave more properties at risk of flooding over the design life of the Scheme.	Reject	This modification would be incompatible with the Scheme's objectives, would significantly alter all aspects of the Proposed Scheme, and would fail to deliver substantial environmental or social benefits. It would also compromise the business case for the Scheme.
3	11	WS6 & 7	Change hybrid flood defence at Fisherrow to a flood wall with a wave return in order to reduce the total height of the structure	R	Capital cost associated with change in form of construction (approximately £1 million). Further increase to ELC since hybrid structure could be eligible for partial funding from Sustrans but flood wall would presumably not be. However, a net reduction could be achieved if combined with removal of Goosegreen bridge from scheme.	G	No negative impact on standard of protection provided by the scheme. Reduce flood defence level from 6.30m AOD to 5.40m AOD (900mm reduction in total height)	G	Reduction in footprint of flood defence structure, leaving more usable amenity space behind the defence Either neutral or net positive impact with respect to AESI on SPA, since there would be no activities associated with earthworks placement and compaction.	A	Public opinion on this structure is divided. Visual impact is subjective and depends upon where the viewer is and where they are looking. The embankment is more aesthetically pleasing than a wall but more intrusive due to its height. A wall would be less intrusive due to lower height but would also be less aesthetically pleasing.	G	No negative H&S implications if the form of structure is changed	Undecided	There is a demonstrable link between this modification and the objections. This modification demonstrates that ELC has listened to the objectors and has acted where it is possible to do so without compromising the performance of the scheme in terms of flood risk reduction. There would however be a capital cost of doing so if this modification is taken forward on its own.
4	12	WS36	Remove proposed replacement Goosegreen Footbridge from Scheme	A	Significant capital cost saving due to reduction in scope (approximately £3.8 million) Due to potential multiple funding streams, this would not necessarily result in a cost saving to ELC. Ranked as Amber but would be Green if there was confirmation that the change in scope did not jeopardise Sustrans funding for other components of the scheme.	G	No negative impact on standard of protection provided by the scheme. The bridge could be constructed at a later date if deemed necessary, and would not compromise the performance of the scheme's defences.	A	Reduced potential for an Adverse Effect on Site Integrity (AESI) of SPA. This would contribute to the conclusion of the HRA and potential withdrawal of statutory objection from NatureScot, albeit there are other aspects to their objection.	A	EIA adopted a precautionary approach. It could therefore be argued that removal of existing Goosegreen bridge would result in a loss of amenity provision. Objectors to the scheme argue that the proposed replacement Electric bridge would provide the equivalent amenity to that of the existing Goosegreen and Electric bridges. Therefore debatable whether there is a loss of amenity if the proposed replacement Goosegreen bridge is taken out of the scheme.	G	Reduced H&S considerations due to reduction in scope. No negative H&S implications if new bridge is not delivered.	Consider	There is a demonstrable link between this modification and the objections. This modification would demonstrate that ELC has listened to the objectors and has acted where it is possible to do so without compromising the performance of the scheme in terms of flood risk reduction.
5	13	WS45	Alternative approach to seawall repairs	R	The 2022 options study determined that alternative options which achieved the necessary objectives would have a greater capital cost.	A	The 2022 options study considered: - 9 options to whole structure; - 13 options for the headwall; - 9 options for the facing blocks; - 7 options for the stepped beams; - 7 options for the toe beams; and - 8 options for the rock armour The preferred option of a rock revetment with a new headwall scored highest of all the options considered and assessed.	R	The 2022 options study determined that alternative options would have a greater negative impact on the SPA, as well as other environmental impacts in terms of carbon cost associated with demolition and removal of more parts of the existing structure.	A	The HRA is likely to impose significant seasonal working restrictions and limitations on the size of working areas, which in turn will determine the duration of the works and therefore disruption to the public. These constraints would likely be common to the other options considered therefore the social impact due to construction duration would not be mitigated by alternative options without also sacrificing design life or other aspects of the design's performance.	R	The 2022 options study determined that alternative options which achieved the necessary objectives would have greater H&S implications.	Reject	The analysis undertaken in the 2022 options study remains valid. No new information is available to suggest that an alternative solution would achieve equivalent performance outcomes with lesser economic, environmental, social, and H&S impacts.
6	14	N/A	Incorporate greater use of catchment NFM to avoid or reduce the need for flood defence walls and embankments along the River Esk	R	Based on current scientific understanding it is not possible to quantify, with sufficient confidence, the degree of flood risk reduction which would be attributed to individual NFM measures. It is therefore not possible to undertake a cost benefit analysis of NFM measures using industry-accepted methodologies.	R	The council does not own land on which to deliver NFM within the catchment. Since NFM has not been successfully delivered on this scale before in a similar environment, there is low confidence that NFM is capable of delivering a meaningful reduction in flood risk to Mussetburgh.	A	The potential environmental impact of NFM works in the catchment would be unknown until such time as candidate sites are established and specific measures are selected. So far on NFM pilot schemes, the effectiveness of individual measures has been variable.	R	Delivery of catchment NFM, if beyond the limit of land affected, would be subject to compulsory purchase of land or protracted negotiation with a large number of land owners / tenants who do not stand to benefit from the works. The current legislation is substantially incompatible with voluntary arrangements with landowners.	A	The potential H&S impact of NFM works in the catchment would be unknown until such time as candidate sites are established and specific measures are selected. Depending upon the nature of the specific measures, it may be necessary to change or restrict accessibility to the sites in question.	Reject	The risks and uncertainty associated with NFM have been well documented on the project, and no new information as been presented to indicate that the use of NFM here would achieve the necessary performance requirements.
7	15	N/A	Incorporate greater use of dredging to avoid or reduce the need for flood defence walls and embankments along the River Esk	R	Dredging would have to be done repeatedly during the life of the Scheme since natural processes would tend to replenish the river gravels that are removed. This would be expensive, and subsequent dredging works (which would not form part of the Scheme) would not be eligible for Scottish Government funding.	R	Dredging the river would provide less flood risk reduction compared to the equivalent height of defences on the riverbank. This is because the riverbed is narrower than the top of bank and therefore there is less capacity for flow at the riverbed.	R	Dredging would have a significant negative impact on the environment. It would impact fish habitats, and reduction in fish numbers could have knock-on effects for birds. It could also lead to destabilisation of riverbed and riverbank geomorphology upstream. It is unlikely that the necessary licences would be obtainable given that alternative measures of flood risk reduction are viable.	A	Dredging is perceived by some as having less social impact than fixed defences on the river banks, however the dredging process would have to be regularly repeated, which would cause repeated disturbance over the lifetime of the scheme.	A	Dredging would impose an ongoing operational burden on the council to dredge the river repeatedly throughout the life of the scheme. This would require operative to work in a water environment, and the associated risks could be designed out by use of alternative measures that do not require successive intervention during the life of the Scheme.	Reject	Dredging would have multiple negative impacts while delivering relatively little reduction in flood risk compared to alternative measures which are already proposed within the Scheme.
8	16	N/A	Incorporate greater use of demountable defences instead of static walls	R	Replacement of significant lengths of static defences with demountable defences would introduce higher operation & maintenance costs, for which there is no external funding. A significant number of trained personnel would be required, and the council does not have funding to employ them.	R	Demountable defences need regularly inspected, tested, and maintained by trained personnel. Movable defences inherently have more potential points of failure compared to static defences. Demountable defences rely on sufficient warning of an impending flood in order to deploy them in time. The scheme has several kilometres of defences, and the greater the extent of demountables, the more advance warning that would be required. There is a risk that the effectiveness of the scheme would be compromised unless all demountables are fully operational and properly deployed.	A	Use of demountables would reduce the visual impact of the scheme. However, if demountables are to be used widely across the scheme they would have to be stored in close proximity to the point of deployment. It is not clear that the council has sufficient space or transportation for storage off site. This would mean storage cabinets would be required at regular intervals along the defences, and these would have a visual impact associated with them.	G	There is some consensus among the objectors that sought greater use of demountables, that more widespread use would have positive social impacts. These are generally considered to relate to maintaining access to the riverbanks and coastline, as well as reduced visual impact.	A	Demountable defences would have greater operational H&S impacts compared to static defences. Personnel would have to be trained to deploy them safely and would require regular refresher training. Due to the nature of flood risk management, it is potential, if not likely, that such defences would have to be deployed during adverse weather conditions. This risk could be designed out with the use of static defences.	Reject	The advantages and disadvantages of demountables were carefully considered during the scheme's option appraisal. The considerations have not changed in this respect. The council does not have sufficient trained personnel to deploy these on the scale required.
9	17	N/A	Incorporate greater use of Property Level Protection to avoid or reduce the need for flood defence walls and embankments along the River Esk and the coast	R	Compared to the proposed scheme, PLP would be less expensive but would not protect the surrounding infrastructure and would not be capable of delivering the same standard of protection. Consequently, it would not deliver the same economic benefit through cost of damages avoided.	A	The feasibility of PLP installation would depend upon the form of construction of each property, and the maximum water depths associated with PLP performance would limit the standard of protection that such a scheme could provide. PLP would also have to be deployed by the individual residents rather than the council, meaning some property could be left at risk if residents were not at home when the flood warning was received.	G	PLP would have less environmental impact than the proposed scheme	A	Some objectors would prefer the use of PLP so that there was less change to the landscape of the town, however PLP would deliver a lower standard of protection. The residual flood risk to residents would therefore be greater.	G	Residents would have to be capable of safely deploying their own PLP. Since the scale of work associated with installing PLP would be less than the proposed scheme, there would not be adverse H&S impacts.	Reject	PLP would not be capable of providing a 0.5% AEP standard of protection. Surrounding infrastructure (roads, utilities, car etc.) would not be protected by PLP. The effectiveness of PLP would be reliant on it being deployed by residents rather than the council.
10	18	N/A	Incorporate use of other reservoirs to avoid or reduce the need for flood defences in Mussetburgh	R	Use of Gladhouse Reservoir discounted on technical grounds. Other existing reservoirs are smaller and would not meaningfully reduce flood risk to Mussetburgh. The alternative is construction of new reservoirs. One viable location was identified during option appraisal. This was discounted at the preferred scheme stage because of the significant cost and environmental impact of a new reservoir, and the recognition that it would still not avoid the need for physical defences in the town.	R	Scottish Water requires the use of Gladhouse reservoir for potable water supply and has therefore ruled out its use for flood risk management as part of the scheme.	R	Use of Gladhouse Reservoir discounted on technical grounds. Other existing reservoirs are smaller and would not meaningfully reduce flood risk to Mussetburgh. The alternative is construction of new reservoirs. One viable location was identified during option appraisal. This was discounted at the significant cost and environmental impact of a new reservoir, and the recognition that it would still not avoid the need for physical defences in the town.	A	Construction of a new reservoir in the catchment would be out of sight and out of mind of residents in Mussetburgh, but could have challenging implications for existing landowners.	A	Construction of a new reservoir in the catchment would introduce new operation and maintenance burden on the council. Access to the reservoir by the public and wildlife would have to be carefully managed.	Reject	The use of other reservoirs was carefully considered during the scheme's option appraisal. The relevant factors have not changed in this respect. A new reservoir would have significant cost and environmental implications and would not avoid the need for physical defences in Mussetburgh, which is thought to be the driver behind this suggested modification.

Modification Reference	Objection Theme	WS	Option	Economic	Economic comments	Technical	Technical comments	Environmental	Environmental comments	Social / stakeholder	Social / stakeholder comments	Health & safety	Health & safety comments	Proposal	Comments
11	23	N/A	Reposition flood defences to further reduce the number of trees to be removed	A	Whilst reducing the number of trees affected would reduce the cost of tree felling, it would likely increase the total as a result of making the flood defences more complicated to construct.	R	Repositioning the defences to further reduce the impact on trees would be impractical. Trees have been identified for felling where it is necessary to provide safe working access to working areas, and where there is no practicable alternative. An example of this is the position of bridge ramps.	G	Further reducing the number of trees affected by the works would reduce the environmental impact of the scheme.	G	Further reducing the number of trees affected by the works would likely be supported by the community	A	Further reducing the number of trees affected by the work by repositioning the defences could increase the complexity of the construction method and increase the extent of works within the water environment.	Reject	Where practicable, the defences have already been positioned to minimise impact on trees. Some loss of trees is considered unavoidable where safe access is required and where there is no viable alternative position for the defences at that location to other competing factors.
12	25	N/A	Incorporate more glass panels in flood defence walls to address concerns relating to visual impact and connectivity with the River Esk	A	Glass panels are more expensive per linear metre than the equivalent length of reinforced concrete flood wall. Any further use of glass panels would increase the total scheme cost somewhat but whether this is significant would depend upon the scale of glass panels used.	A	Glass panels are technically more complex to ensure a watertight seal with the surrounding structure than if a solid wall was used. Glass panels can be subject to vandalism, which may compromise their performance. They have a somewhat greater risk of failure than a solid wall. The overall risk to the scheme would depend upon the extent of glass panels used.	A	Glass panels could reduce visual impact of the scheme if used in the appropriate context. It is not clear however whether more widespread use of glass panels would address these concerns, or whether these objectors are instead seeking lower height of defences.	A	Some objectors have raised concerns about visual impact of the scheme, visual assessability to the river, and discrimination of those who are shorter or seated. It is not certain however whether more widespread use of glass panels would address these concerns, or whether these objectors are instead seeking lower height of defences.	G	Assuming that the glass panels perform as intended and are not vandalised in such a way that compromises their effectiveness, there are no negative H&S impact associated with their more widespread use.	Undecided	It is not clear whether more widespread use of glass panels would truly address concerns related to visual impact of the scheme.
13	28	WS32	Provide alternative access route to Whitecraigs debris trap to avoid impact on Eastfield Scheduled Monument	A	Change in capital cost unknown, subject to design development of a preferred alternative route, but would likely result in a cost increase due to the technical challenges associated.	R	Alternatives routes which avoid the scheduled monument: a) via Cowpits Road, through Estate boundary wall and down steep wooded terrain on east of River Esk b) via perimeter of scheduled monument site to south east through heavily wooded terrain on west of of River Esk c) via downstream of A1 bridge, passing under bridge either east or west of River Esk. Option a) considered unsafe and impractical to maintain due to steepness of terrain. Option b) considered impractical due to length of route, prohibitively negative impact on ancient woodland. Option c) considered undeliverable due to height restriction below A1 bridge.	A	Engagement with HES indicates that they would be willing to withdraw their objection, subject to ELC/Jacobs expanding upon the technical justification for ruling out the alternative routes. May require additional mitigation measures to be established through application for scheduled monument consent in due course.	A	Objections from public who keep horses in adjacent fields and are concerned about disruption. Construction phase disruption will be relatively short term. Most vehicle movements associated with mobilisation and demobilisation. Operational disruption considered to be negligible. Asset expected to be remotely monitored through CCTV. Access to site would only be required following significant flood events, which the public consider to be a rare occurrence anyway. Riverside access track to be designed with consideration for equestrian users on hacking route.	A	H&S implications of alternative routes are covered by the comments under 'technical'.	Reject	Not considered necessary to achieve withdrawal of statutory objection
14	36	N/A	Incorporate improvement works to existing road drainage	R	The scale of potential improvements to the existing road drainage is unknown and could add significant additional cost to the project. This would not alleviate the need for other components within the proposed scheme as it would not address fluvial or coastal flooding.	R	Known issues with road drainage are likely linked to the performance of the associated sewer network. Whilst maintenance of the road gullies is the responsibility of ELC, the sewers are the responsibility of Scottish Water. Scottish Government is clear that funding for an FPS should not be used to subsidise the O&M obligations of Scottish Water, which has its only budget for such works.	G	Improvements to road drainage would have a positive impact if it reduced sewage spills to watercourses during storm events.	G	Improvements to road drainage would be supported by the community	G	Improvements to riad drainage could be safely designed and delivered	Reject	Increasing the capacity of the sewer network to alleviate road drainage issues is the responsibility of Scottish Water and is beyond the remit of the scheme.
15	37	N/A	Set back flood defences to avoid narrowing the River Esk downstream of Rennie Bridge	R	Setting back the defences would increase cost due to additional activities associated with utility diversions and demolition of existing retaining structures.	R	The rationale for setting back the defences is that narrowing the river would increase flood risk and required defence heights. This is incorrect, since in these locations the defence height is determined by the coastal flood risk i.e. sea level rather than the fluvial risk i.e. flow in the river. The width of the river therefore has no impact on defence heights on the lower reach of the River Esk.	R	The defences were positioned into the river downstream of Rennie bridge in order to reduce impact on trees. Setting back the defences on the riverbank at Eskside East would increase the number of trees to be felled.	A	While some objectors are opposed to the river being narrowed and would prefer set-back defences, other objectors are opposed to the loss of trees that would be exacerbated by setting back the defences.	A	Setting back defences downstream of Electric Bridge would introduce new demolition activities associated with the existing retaining walls on both riverbanks. This can be designed out if the new defences are constructed in the water in front of the existing structures and the void backfilled.	Reject	Setting back the defences to avoid narrowing the river would not, contrary to popular believe, reduce flood risk and defence heights. It would however increase cost and loss of trees.
16	38	WS7	Set back coastal defences at Fisherrow Links to avoid or reduce coastal squeeze	A	Setting back the defences around the east, south and west sides of Fisherrow Links would increase the length of defences by approximately 450m, at a cost of £3-5 million depending upon the form of structure.	A	Whilst setting back the defences would be technically achievable, it would introduce two points where the line of defence crosses the coastal pumped sewer. This would leave the sewer, which is a critical regional asset, unprotected and at risk of coastal erosion.	A	Whilst setting back the defences would reduce coastal squeeze, Fisherrow Links would be eroded, the coastal sewer would fail, and the amenity value of the area would be reduced. It is also questionable whether the Links area would provide an equivalent functional habitat for the SPA qualifying interests.	R	It is unlikely that the public would support the intentional sacrifice of Fisherrow Links to become a replacement for the intertidal area.	A	There would be a negative H&S impact on amenity users of the area, since the Links would become part of the intertidal area.	Reject	This modification would be expensive, would compromise critical infrastructure, and it is uncertain that it would effectively mitigate the effects of coastal squeeze on qualifying interests
17	39	WS7	Set back coastal defences at Fisherrow Links to reduce beach erosion	A	Setting back the defences around the east, south and west sides of Fisherrow Links would increase the length of defences by approximately 450m, at a cost of £3-5 million depending upon the form of structure.	R	Whilst setting back the defences would be technically achievable, the Dynamic Coast assessment indicates that erosion of the beach will occur with or without the scheme in place, as a result of sea level rise.	R	Setting back the defences will not prevent the beach from eroding, and will in fact leave Fisherrow Links at risk of erosion too.	R	It is unlikely that the public would support set back defences if it was understood that the beach erosion would occur anyway in response to rising sea levels.	A	There would be a negative H&S impact on amenity users of the area, since the Links would become part of the intertidal area.	Reject	This modification would be expensive and would not address the issue, which is the erosion of the beach. This erosion would be caused by sea level rise rather than the Scheme, and is supported by Dynamic Coast's assessment.
18	41	WS32	Remove debris trap from the scheme to avoid impact on fish passage	A	Removal of the debris trap would remove costs associated with the trap. However, it would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. These additional costs would possibly mean the modification is cost neutral.	G	Removal of the debris trap would be technical straightforward.	A	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. This would have a greater impact on the heritage setting of these structures. The debris trap could be designed to manage fish passage, and would therefore not necessitate its removal.	R	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. It is unlikely that the public would support this.	R	Removal of the debris trap would place the Roman Bridge and Rennie Bridge at greater risk of debris strike and possible failure.	Reject	Debris trap can be designed to manage fish passage. It is therefore unnecessary to remove it from the scheme.
19	48	WS32	Remove debris trap from the scheme to avoid disruption to users of Dalkeith Country Park during the construction phase	A	Removal of the debris trap would remove costs associated with the trap. However, it would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. These additional costs would possibly mean the modification is cost neutral.	G	Removal of the debris trap would be technical straightforward.	A	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. This would have a greater impact on the heritage setting of these structures.	R	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. It is unlikely that the public would support this. Once constructed, the debris trap will have negligible impact on Dalkeith Country Park. The construction phase would cause a modest increase in traffic associated with material deliveries and personnel, but this would be relatively short and in the order of 4-6 months.	R	Removal of the debris trap would place the Roman Bridge and Rennie Bridge at greater risk of debris strike and possible failure.	Reject	The long term benefits of the debris trap in terms of deducing risk to Roman and Rennie bridges, combined with the reduction in defence heights there, are considered to outweigh the temporary disruption during the construction phase of the trap. This disruption would be limited in duration and would affect relatively few people.
20	50	WS3, 4	Alter the embankment at Eskside West to reduce overlooking adjacent homes	G	Changes to path on embankment would be unlikely to incur significant additional cost.	A	Height of embankment cannot be reduced without sacrificing standard of protection. Position of embankment occupies most of riverbank and cannot be moved without increasing impact on trees or river. Crest path could be removed or moved from crest to part way down the dryside slope.	A	Position of embankment occupies most of riverbank and cannot be moved without increasing impact on trees or river.	G	Reducing overlooking of adjacent home would likely be supported by the public	G	No H&S issues with this change	Undecided	This is unlikely to constitute a modification, and can be addressed during detailed design.
21	52	WS12	Alternative defence alignment at 9-27 Edinburgh Road to address residents' concerns about security and privacy	A	The proposed solution is likely the lowest cost. Moving the defence closer to the properties would incur costs associated with garden reinstatement and outbuilding replacement. Moving further away from the properties would require larger foundations and more mitigation for impact on the SPA.	R	The expected size of the defence foundations mean that the defence cannot be closer to the properties without undermining the existing brick walls, fences and outbuildings.	A	Moving the flood defence further away from the properties would increase impact on the SPA intertidal area and its qualifying interests.	A	Some residents would prefer the defence to be closer to their property in order to dissuade the public using the area between their property and the defence. This is not technically viable. Residents would not support replacing their boundary with the flood defence because this would involve significant disruption to their gardens, outbuildings etc.	R	Moving the flood defence closer to the properties would significantly increase the risk of existing walls/fences/outbuildings collapse	Reject	The alternative alignment that the residents would prefer is not technically achievable without significant disruption to their properties and existing boundaries. Furthermore, moving the defences further away from their homes would not address their concern.
22	53	WS29	Alternative defence alignment at Inveresk Estate to reduce impacts on access to the Grove during construction	A	Maintaining access to the riverside path during contruction would equire the defence to be set back into the gardens of the Inveresk Estate properties. This would require demolition of the existing stone wall and removal of mature trees. This would increase cost and increase the likelihood of compensation claims from residents.	A	Maintaining access to the riverside path during construction would require the defence to be set back into the gardens of the Inveresk Estate properties. This would require demolition of the existing stone wall which is part of a category B listed building.	R	Alternative alignment to maintain access during construction would require additional tree removal. This was previously considered during the outline design and identified as a potentially significant effect in the EIA. It was therefore designed out.	R	Maintaining access to the riverside path during construction would require demolition of the existing stone wall of the properties and annexation of parts of the gardens. The residents would almost certainly oppose this due to impact on their security and loss of garden.	R	It would be impracticable to maintain safe public access to the riverside during construction unless the defences were substantially repositioned into the adjacent gardens, which would lead to a significant loss of garden for the residents.	Reject	Impact to access along the Grove will be temporary during the construction phase. There is no viable modification that would avoid this temporary impact with out significant permanent impact to the existing stone wall and properties.

Modification Reference	Objection Theme	WS	Option	Economic	Economic comments	Technical	Technical comments	Environmental	Environmental comments	Social / stakeholder	Social / stakeholder comments	Health & safety	Health & safety comments	Proposal	Comments
23	55	WS30	Lessen reduction in water level at Edgelaw Reservoir to address concerns about safety of anglers	A	Lessening the reduction in water level at Edgelaw would require the defence heights and bridge heights in the town to increase in order to maintain the same standard of protection. This would result in an increase in cost.	A	Lessening the reduction in water level at Edgelaw would be technically achievable. It would however require the defence heights and bridge heights in the town to increase in order to maintain the same standard of protection. Further work would be required to determined whether the corresponding increased ramp lengths would be technically achievable, particularly at Ivanhoe Footbridge.	A	Due to the steepness of the reservoirs sides, there would be no significant environmental benefits to lessening the reduction in water level.	R	The lessening of the reduction in water level would address a primarily H&S concern within the objection, however the increased defence heights and ramp lengths described in the technical section would likely be opposed by stakeholders / other objectors.	G	The lessening of the reduction in water level would address the H&S concern within the objection.	Reject	The concerns regarding safety can be addressed without lessening the proposed reduction in water level. Such changes can be incorporated within the detailed design. These changes could include extensions to existing jetties, fencing around relevant parts of the new perimeter, and marginal planting of newly exposed areas.
24	58	WS33, 34, 35	Remove MAT deck width requirements from proposed footbridges	R	Significant capital cost increase in the long term assuming that the bridges are replaced by the scheme and then replaced a second time by the MAT during the design life of the scheme.	G	There are no technical difficulties associated with narrowing the width of the bridge decks (assuming that they would then be replaced at a later date by the MAT. This aspect would change to amber if the abutment widths had to be future-proofed for the MAT).	R	Increased environmental impact assuming that the MAT proceeds and needs to replace the bridges a second time. The increased impact would be due to the disturbance occurring twice.	A	Public opinion regarding the impact of the MAT on replacement bridges is divided. Opposition is predominantly with regard to the width and length of the ramps. The length is a function of the design flood level and is independent of the MAT. The width could be reduced if MAT requirements are excluded.	A	Increased H&S implications assuming that the MAT proceeds and needs to replace the bridges a second time. The increase would be due to the construction works occurring twice.	Reject	It is assumed that the MAT project will likely proceed at some point during the lifetime of the scheme. This modification is therefore not consistent with the scheme's objective to seek to achieve multiple benefits.
25	-	WS15	Additional flood gate at 49B Edinburgh Road	A	Capital cost increase associated with providing an additional flood gate (approximately £50,000). Additional operation & maintenance cost associated with one additional flood gate.	A	There may be technical challenges associated with the operation and maintenance of a flood gate in a coastal environment. Specifically the risk of windblown sand inhibiting the closure or sealing of the gate, since it is assumed it would normally be in the open position.	A	Potential increase in pedestrian access to the beach at this location if the access is formalised.	A	This modification was only raised by one objector. There may be opposition to this modification from neighbours who have not objected so far but who might object to the modification.	A	Existing access is informal and comprises a sandy slope from the road down to the beach. Formal access would have to include ramped access unless a a departure from standard is obtained.	Undecided	The benefit of this modification would be negligible. While it would likely enable one objection to be withdrawn, this was not an issue raised by the rest of the community. It may introduce an additional O&M burden which as been design out elsewhere.
26	12	WS34	Relocate the new Shortshoppes Street Footbridge further downstream	A	There may be a cost increase associated with relocating the new bridge if this resulted in a longer clear span. This could occur if the river width is wider or the bridge is more skewed at the new location.	G	There are no technical difficulties associated with relocating the new bridge downstream.	G	There are no environmental difficulties with relocating the bridge downstream	A	Relocating the bridge downstream would reduce visual impacts to 14-16 Eskside East. Relocating downstream would impact the ability to construct the new bridge offline while the existing bridge remained open to the public, and would mean more pedestrian disruption during the construction phase. Relocating the bridge downstream would negatively impact the desire line from the bottom of the eastern downstream ramp when heading towards the High Street.	A	Due to the social impacts stated, there are increased health and safety risks during the construction phase as a result of not constructing the new bridge offline, and having to potentially send pedestrians over Rennie bridge, which has a narrower footpath next to a busy road.	Undecided	The benefits associated with relocating the bridge are limited to three properties on Eskside East, whilst the disbenefits associated with cost, offline construction and desire lines would impact the wider community.
27	12	WS34	Remove the proposed ramp on the upstream eastern side of the new Shorthope Street Footbridge	A	Omitting the ramp would result in a small cost reduction to the Scheme, but may result in a net greater cost once the impact on the MAT design is factored in.	A	Omitting the ramp would have a future impact on the MAT as it is assumed the route would go up and over the upstream and downstream ramps. Without the upstream ramp, the MAT route would have to be adjacent to the structure. This would occupy more space and could clash with the existing road, which is already narrow.	A	Omitting the ramp would have a negligible environmental impact with respect to the scheme, but there would be a negative impact if the MAT route then had to go around the outside of the remaining downstream ramp. Doing so would occupy more space.	A	Omitting the ramp would reduce visual impact on 14-16 Eskside East, but would make the approach to the bridge more awkward for users.	A	Omitting the ramp could have a negative health and safety impact if it led the subsequent MAT design to have to narrow the road in order to pass the remaining downstream ramp.	Undecided	The benefits associated with relocating the bridge are limited to three properties on Eskside East, whilst the disbenefits would impact the wider community.
28	25	WS6-16	Remove coastal defences from the Scheme between The River Esk and the Brunstance Burn	R	Removing the coastal defences would reduce cost but could also impact the economic appraisal in terms of cost of damages avoided by the scheme. It is likely that such a change would reduce the scheme's benefit to cost ratio. Further analysis would be required to determine how significant this reduction would be.	A	Removing the coastal defences would be technically achievable. However, if a coastal flood did then occur and the defences on the River Esk had been built, flood water could potentially become trapped behind defences in areas such as New Street and Eskside West during higher return period events. Further flood modelling would be required to ascertain the extent of this risk.	A	Whilst removing the coastal defences from the Scheme would eliminate the environmental impact from their construction, their omission would leave Fisherrow Links susceptible to erosion as a result of rising sea levels, as well as at flood risk from higher return period events.	R	Removing the coastal defences from the scheme would leave properties across the west of the town at increasingly greater flood risk during the lifetime of the rest of the Scheme. This approach would discriminate against some properties and would be inconsistent with the Scheme's objectives.	R	Without coastal defences there would be increased risk to life from coastal flooding during the lifetime of the rest of the Scheme.	Reject	This modification would be incompatible with the Scheme's objectives, would significantly alter all aspects of the Proposed Scheme, and would compromise the business case for the Scheme.
29	25	WS6-16	Change the coastal defences from a wall on land to a tidal barrier	R	A tidal barrier, either across the Firth of Forth or around the Mussetburgh coastline, would be significantly more expensive to construct than fixed defences on land. Even if technically possible, a tidal barrier would introduce significant O&M costs. It is very likely that both the capital and operational costs would be unaffordable to the council.	R	A tidal barrier across the Firth of Forth , downstream of Mussetburgh would be technically unachievable due to the width and depth of the estuary. Even a smaller tidal barrier around Mussetburgh's coastline would be technically very challenging. Tidal barriers are technically complex structures. It is very likely that the O&M burden on the council would be prohibitive. A tidal barrier would also likely have significant technical challenges associated with marine traffic and siltation.	R	A tidal barrier would impact the outer Firth of Forth SPA. Since there are viable less damage alternative solutions to reduce flood risk, such a barrier would fail an HRA assessment.	A	Whilst removing the coastal defences on land might be desirable by some residents, a tidal barrier around Mussetburgh's coastline would require agreement from the Crown Estate, Marine Directorate, NatureScot and other stakeholders.	R	The O&M burden of a tidal barrier would introduce unnecessary health and safety risks which would not exist for a static defence on land.	Reject	This modification would be economically, technically and environmentally unviable.
30	25	WS6-16	Change the coastal defences from the proposed flood wall to a beach nourishment programme	R	Replacing the coastal defences with a beach nourishment programme would have significant economic impacts. Beach nourishment could mitigate wave overtopping in the short term but would be ineffective against inundation as a result of climate change induced sea level rise. As a result, this would significantly impact the economic appraisal in terms of cost of damages avoided by the scheme. Beach nourishment would likely have to be repeated during the lifetime of the scheme, thus introducing a significant O&M cost to the council which is not eligible for Scottish Government funding. It is highly likely that such a change would reduce the scheme's benefit to cost ratio and compromise its business case.	R	Beach nourishment could mitigate wave overtopping in the short term but would be ineffective against inundation as a result of climate change induced sea level rise. Therefore it does not provide an equivalent level of protection to the proposed coastal defences.	A	The environmental impact of beach nourishment would depend upon how much sand was required, how closely this could be sourced, and the whole life carbon cost associated with this. There would also be an impact on the SPA. It is noted that beach nourishment would likely need to be repeated during the lifetime of the scheme, thus introducing potentially cumulative effects.	A	Whilst removing the coastal defences on land might be desirable by some residents, beach nourishment by itself would not provide an equivalent level of flood risk reduction.	A	Further design development would be required to establish potential health and safety risks associated with this form of construction, taking account of the likely need to repeat the process during the lifetime of the scheme.	Reject	This modification is economically prohibitive and not compatible with the scheme's objectives in terms of standard of protection and allowance for climate chance. Subject to further investigation however, it could form part of an adaptive strategy in addition to the proposed coastal defences.
31	25	WS23	At Mall Avenue, relocate proposed flood wall to the edge of the road at Mall Avenue	G	Changing the position of the wall here would have negligible impact on cost.	G	Changing the position of the wall here would be technically achievable, subject to removal of the trees next to Mall Avenue.	R	All the mature trees on the west side of Mall Avenue would have to be removed to facilitate this modification. As well as the environmental impact, this would affect the historic setting of both the Roman Bridge and the Rennie Bridge, which could prevent listed building consent being obtained. This alternative defence alignment was considered and discounted during the outline design as a result of consultation with the public and statutory stakeholders.	R	Public consultation indicated that impact on trees was among the most contentious issues relating to the scheme design. There would likely be significant opposition to the removal of mature trees on Mall Avenue in proximity to the Roman Bridge and The Rennie Bridge.	G	There are no health and safety concerns associated with this modification.	Reject	This modification is rejected on the basis of increased impact on trees, and the likely opposition of the public associated with this. The design was altered at this location specifically to reduce impact on trees.

Appendix C

Next Steps After Preliminary Decision



REPORT: APPENDIX D – REPORT TO MEETING OF FULL COUNCIL IN SEPTEMBER 2025

SUBJECT: Identification & evaluation of potential change from the correspondence received in response to notification of the proposed Scheme

1 SUMMARY

- 1.1 Musselburgh Flood Protection Scheme (“the Scheme”) is being promoted by East Lothian Council (“the council”) under the Flood Risk Management (Scotland) Act 2009 (“the Act”). Jacobs were appointed by the council in December 2017 to develop a flood protection scheme for Musselburgh to reduce flood risk from the River Esk and the Coast. The project is being delivered in stages under PRINCE2 Project Management principles and is currently in Stage 5 which is known as “Statutory Approvals”.
- 1.2 The proposed Scheme was notified on 21 March 2024 by the council in accordance with the Act and the Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Regulations 2010 (as amended) (“the Regulations”). The closing date for submission of objections, and representations in respect of the Environmental Impact Assessment (“the EIA”) report, was 24 April 2024.
- 1.3 In accordance with paragraph 3 of schedule 2 of the Act any person may object to a proposed flood protection scheme. In parallel, any person may submit a representation on the EIA. Such submissions have been termed “correspondence” by council. The council’s legal services undertook a process of “categorisation” of that correspondence and coordinated a process that determined seventy-one themes of objection within this correspondence and the council’s position in relation to each of those themes. A report was provided to the Members of council in October 2024 that summarised this workload and provided the Members with redacted copies of all correspondence received. This was achieved through the Members Library. These documents were also published on the Scheme’s website as part of the ongoing efforts of the project team to achieve openness and transparency with the public.
- 1.4 In October 2024 the council’s legal services issued a written invitation to all persons who submitted a valid objection or a late objection that was accepted to a meeting where they could discuss their objection. These meetings took place between October 2024 and May 2025.

-
- 1.5 In parallel with the objector meetings the council's legal services also coordinated a series of meetings with both the Consultative Bodies who submitted correspondence, and those who submitted a representation to the EIA. These meetings commenced in early summer 2024 and are ongoing.
 - 1.6 By June 2025 all first meetings with objector were concluded, the minutes of record of the meetings issued, and the discussions of those meetings had been assessed. At this point, the Scheme's Project Board took a decision that it was no longer reasonable to work to obtain the withdrawal of all valid objections, and preparation for full Council to take a preliminary decision commenced. It was also determined that it was now highly likely that this proposed Scheme would end up being considered by the Scottish Ministers and that a Public Local Inquiry would take place.

2 PURPOSE

- 2.1 It is recognised that the process of notifying a flood protection scheme under the Act is a complex and legal process. This report is intended to provide clarity on the approach that council's legal services, supported by the project team, took to identification and evaluation of potential changes to the proposed Scheme because of the correspondence received during the formal consultation process that commenced when the proposed Scheme was notified on 21 March 2024.

3 REVIEW OF THE CORRESPONDENCE

- 3.1 It is highlighted that the numbers detailed in this report in relation to the correspondence are correct at this point in time, however as this is a live and dynamic legal process the numbers are subject to change up to the moment that a preliminary decision is taken by Council. It is further highlighted that the numbers presented in this report are slightly different from the numbers presented in previous reports and/or updates for this reason: however the variations in the numbers are relatively small and justifiable in every instance. The key numbers are:
 - a) 757 items of correspondence were received;
 - b) c.18% of the correspondence were duplicates (a letter/email of the same content from the same person);
 - c) c.7% of the correspondence were deemed invalid as they did not comply with the requirements of paragraph 3 of schedule 2 of the

Act such as: (i) they did not contain an address; and/or (ii) they were not provided in writing; and/or (iii) they were received late and without as acceptable reason etc.;

- d) 485 items of correspondence that were deemed to be a valid objection or an acceptable late objection, from 485 objectors;
- e) Seventeen items of correspondence that were a representation on the EIA; and
- f) Within these numbers it is highlighted that some items of correspondence were both an objection to the proposed Scheme and a representation on the EIA.

CORRESPONDENCE FROM CONSULTATIVE BODIES

- 3.2 The Act defines the organisations that are “Consultative Bodies” in regulation 2 of the 2010 Regulations. These are: (i) SEPA; (ii) Scottish Natural Heritage which is now NatureScot; (iii) Scottish Water; (iv) East Lothian Council (“ELC”) Planning Authority; and (v) Midlothian Council (“MLC”) Planning Authority. This regulation also allows for other organisations to be allocated this status, and the council chose to define the following other organisations as such prior to the proposed Scheme being notified in March 2024: (vi) Forth District Salmon Fishery Board (“FDSFB”); (vii) the Marine Directorate; (viii) RSPB; and (ix) Historic Environment Scotland (“HES”). The following table provides a summary of the correspondence received from these Consultative Bodies:

Ref. No.	Name of Consultative Body	Objection	EIA Rep.	Current Status
1	SEPA	No	YES	Comfort achieved about nature of concerns regarding the EIA, and new actions confirmed.
2	Scottish Water	No	No	N/A
3	NatureScot	YES	YES	ONGOING – detail provided in paragraph 3.3 of this report.

4	ELC Planning Authority	No	No	N/A
5	MLC Planning Authority	No	YES	Comfort achieved about nature of concerns, and new actions confirmed.
6	FDSFB	No	YES	Comfort achieved about nature of concerns regarding the EIA, and new actions confirmed.
7	The Marine Directorate	No	No	N/A
8	RSPB	YES	YES	ONGOING – detail provided in paragraph 3.4 of this report.
9	HES	YES	YES	ONGOING – detail provided in paragraph 3.5 of this report.
TOTALS		3	6	

Table 3.2 – Summary of correspondence received from Consultative Bodies.

- 3.3 NatureScot submitted written correspondence that was deemed to be: (i) an objection to the proposed Scheme; (ii) a representation on the EIA; and (iii) comments on the draft report on the approach to the Appropriate Assessment (“the AA”) under the Habitat Regulations Appraisal (“the HRA”). It is highlighted that the AA does not require to be completed at this time and did not when the proposed Scheme was notified in March 2024. The essence of the NatureScot objection is that they consider that the AA under the HRA should be completed, and they are objecting to the proposed Scheme as it is not completed and/or not available within the Scheme Documents. The council’s legal services have led the engagement with NatureScot to understand the nature of the specific concerns stated in their correspondence and it is considered that substantial progress has been made. This process is ongoing and will continue unless the decision made by full Council is to reject the proposed Scheme. NatureScot are a Consultative Body under the Act, and more importantly NatureScot have been working in partnership with council on the development of a flood protection scheme for Musselburgh since late

2016. They have been involved in the early-stage review of potential show-stopping risks; the Options Appraisal Process; and the Outline Design. They were consulted on the draft HRA report and will continue to be partners as the AA under the HRA is developed. They provided council with formal correspondence under the Act in April 2024. This was right and proper, and council are grateful to NatureScot for their clear correspondence and the open way that they have worked with us to understand the nature of their submitted correspondence since then. On 11 September 2025 they provide updated correspondence, which is provided in Appendix A to this report, and stated that:

“We recognise and support the need for river and coastal flood protection at Musselburgh and provide our advice here to help progress this very complex scheme as it moves from outline design to the detailed design stage. Our official position reflects the fact that while much work has been done in this regard, the HRA is as yet incomplete, and therefore we cannot advise with the required degree of certainty that there will be no adverse effect on the site integrity of European sites”

They go on to say:

*“The proposal could affect internationally important natural heritage interests and we therefore **object to this proposal until further information is obtained**. This is set out in our summary below and in further detail in Annexes 1-5. We will be able to give further consideration to this proposal once you have carried out your appraisal of this / these effects”.*

The council, as “Competent Authority” under the Habitat Regulations are ongoing in the development of the AA under the HRA and will take all these comments on board as this happens.

It is considered that this objection to the Scheme by NatureScot does not provides a reason for this proposed Scheme to be rejected. Equally it is considered that there is no modification that can resolve the concerns of NatureScot. It is considered that the normal process of concluding the AA under the HRA will resolve these matters in time: it is recognised that this could have been avoided if the AA was completed before the proposed Scheme was notified, however it is highlighted that this was not possible due to the time constraints imposed by COSLA through their Recommendation 2 that defined that all flood protection schemes must be notified by March 2024.

- 3.4 RSPB submitted written correspondence that was deemed to be: (i) an objection to the proposed Scheme; and (ii) a representation on the EIA. Meetings have taken place with RSPB, and it is considered that full

understanding of their concerns has been achieved and that the pathway to mitigating their issues lies in the completion of the AA under the HRA in partnership with Nature Scots, which is detailed in paragraph 3.3 of this report.

- 3.5 HES submitted written correspondence that was deemed to be: (i) an objection to the proposed Scheme; and (ii) a representation on the EIA. Meetings have taken place with HES, and it is considered that full understanding of their concerns has been achieved and that the pathway to mitigating their issues lies in: (i) the Addendum to the EIA that has been produced; and (ii) the completion of the Scheduled Monument Consent that will have to be applied for and obtained in advance of any construction works taking place on the Debris Trap by Whitecraig.

On behalf of the council Jacobs have produced an Addendum to the EIA which addresses aspects of the HES objection. This is now part of the EIA, and it must be considered by Members when they make a preliminary decision on the proposed Scheme.

On 3 September 2025, HES provided updated correspondence, which is provided as Appendix B to this report, and stated that:

“We can confirm that we consider these documents adequately address the issues raise in our objection response.”

It is considered that this objection to the Scheme by HES does not provides a reason for this proposed Scheme to be rejected. Equally it is considered that there is no modification that can resolve the concerns of HES.

- 3.6 Representations on the EIA were also received from MLC and FDSFB, who are Consultative Bodies. Both these organisations have been met with, and it is considered that full understanding of their concerns has been achieved and that the pathway to mitigating their issues lies in the completion the EIA and its associated mitigation measures, alongside the processes of obtaining the other appropriate consents that are required before construction works is undertaken, such as: a CAR Licence; a Marine Licence; Listed Building Consent; a BAT licence; an Otter Licence etc.

CORRESPONDENCE THAT IS A REPRESENTATION ON THE EIA

- 3.7 Seventeen items of correspondence have been received that are a representation on the EIA. Six of these items of correspondence are from a Consultative Body and these have been detailed in paragraphs 3.2 to 3.6 of this report. The remaining eleven items are from other organisations or individual persons.

-
- 3.8 Of the seventeen EIA representations eight are also objections to the proposed Scheme, however for the purposes of the Act such objections are considered separately, as an EIA representation cannot be withdrawn whereas an objection can be. It is highlighted for the attention of Members that where an item of correspondence is both a valid objection and a representation on the EIA that Members must exercise their own individual judgement to determine the parts of that correspondence that apply to each.
- 3.9 All EIA representations have been provided to the Members as part of the package of information that they need to consider when they make a preliminary decision. Furthermore, any relevant documents associated with the meetings that were held to better understand the nature of the EIA representations has also been provided to Members.
- 3.10 As detailed in paragraph 3.5 of this report, an Addendum to the EIA has been produced to address matters raised by HES through their EIA representation. This is now part of the EIA and will be considered by Members when they make the preliminary decision.
- 3.11 As detailed in Table 3.2 of this report meetings have been held with SEPA to understand their representation on the EIA. On 16 September 2025, SEPA provided updated correspondence, which is provided as Appendix C to this report, and stated that:

“It remains our position that we have no objection to the FPS. However, we request, should the scheme be confirmed under the provisions of the Flood Risk Management (Scotland) Act 2009, that conditions be attached to the deemed planning permission ...”

They then go on to list the proposed condition, which the council’s planning service will fully consider through the Shadow Planning Process that it will undertake in due course.

- 3.12 If the proposed Scheme is approved in the future, then the EIA will continue to exist and the delivery of the Scheme’s Detailed Design and Construction Works will require to advance with the mitigation measures proposed by the EIA, and its evolutions further to the EIA representations, having to be delivered.

CORRESPONDANCE THAT IS A VALID OBJECTION

- 3.13 The 485 items of correspondence that were deemed to be a valid objection or an acceptable late objection, were submitted by 485 objectors.
- 3.14 It is highlighted that in the October 2024 report, on the themes of objection, that a number of 470 items of correspondence was stated. The primary

reason for the change in number is that it has since been determined that where two people signed one item of correspondence, say a husband and wife, that these persons require to both be considered to be individual objectors. In October, such items of correspondence were deemed to be one objection from one objector. This additional step in the categorisation exercise was undertaken by the council's legal services and is primarily for administration purposes as each person has a right to withdraw individually: ultimately there is no change in the total level of information presented to the Members.

3.15 As detailed in paragraph 1.4 of this report the council's legal services issued an invitation to invite all 485 objectors to a meeting with them to discuss the content of their valid objection. Between October 2024 and early February 2025 a total of fifty-three meetings took place to meet with a total of fifty-eight objector. Each meeting was one hour long and led by a representative of the council's legal services, who were supported by representatives from the project team and Jacobs. A minute of record of the meeting was generated by the council, and the objectors were invited to provide their own record and/or comment on the council's minute of record. Together these documents form the record of the meeting and are being provided to Members and must be considered by Members when they make the preliminary decision. A summary of the meetings, the key details associated with them, and most importantly the actions and opportunities deriving from them is captured in the Objector Meetings Actions & Opportunity Register, which is included in Appendix C of this report. It is highlighted that the project team worked to close out all actions and report back to the objectors for their understanding, and that all opportunities were transferred to the Change Register which is discussed elsewhere in this report.

3.16 The main points to note from the Action & Opportunity Register are:

- a) Each meeting was with an individual objector, unless persons from the same household wished to attend a meeting;
- b) In total fifty-three meetings took place with fifty-eight objectors;
- c) Objectors were allowed to have a supporting person attend with them if they desired. In total nineteen meetings had a supporting person with sixteen different people performing this role. Eight of those people had a separate valid objection of their own;
- d) Thirty-two of the meetings resulted in actions. The project team worked to conclude as many of those actions ASAP, however it is noted that some actions cannot be closed until a later stage of the project development;

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- e) Thirty-four of the meetings resulted in potential opportunities for change being logged. These were then advanced through the Change Process, for identification and evaluation, which is discussed elsewhere in this report;
 - f) Seven of the meetings resulted in a joint desire for a second/follow-on meeting to be held; and
 - g) Twenty-four objectors responded to the minute of record that was issued to them in one form or another: twenty-nine did not respond at all. Seven accepted the minute in full; seventeen provided a response which challenged parts of the minute or provide a record of their own or clarified some aspect of the minute or their correspondence further. It is considered that there is an open conflict of opinions between four objectors and the minute of record produced by the council relating to four meetings.
- 3.17 This process of meeting with objector led to the withdrawal of four valid objections. These are now no longer part of the Scheme Documents and will not be considered by Members when they make a preliminary decision.
- 3.18 There are 481 valid objections as of the date that this report is published, however as detailed in paragraph 3.21 of this report the number will be confirmed at the start of the full Council meeting that will make a preliminary decision.
- 3.19 This process of meeting with objectors has increased the council's understanding of the correspondence it received in response to the proposed Scheme being notified.
- 3.20 It is recommended that all information required to be considered by Members will be provided to Members in advance of the meeting of full Council via a folder that the Members have access to within the council's digital file management system. The 481 valid objections and the documents associated with the objector meetings will make-up the majority of the information to be considered. The Members are required to consider all correspondence and other information in a format that is not redacted. It is therefore recommended that this approach is undertaken to protect the privacy of the individuals that have objected.
- 3.21 As detailed in paragraph 3.1 of this report, this is a live and dynamic legal process the numbers are subject to change up to the moment that a preliminary decision is taken by Council. The council's legal services will make an update, at the start of the full Council meeting which will make a preliminary decision, on any update on the status of the correspondence (including any additional valid objections that have been withdrawn) as

changes may happen between the date that the report to full Council is published and the time of the meeting.

4 IDENTIFICATION AND EVALUATION OF POTENTIAL CHANGES

4.1 Following an analysis of the objection correspondence received and the outcome of the objector meetings, an exercise was undertaken to identify and evaluate potential changes and potential modifications. Further detail is provided on potential modifications in section five of this report.

4.2 A modification is a formal and significant change to a flood protection scheme in accordance with the Act.

4.3 It is possible to make smaller changes to a flood protection scheme that are not formal modifications. This is essential as a flood protection scheme is approved based on an outline design and the detail design is yet to be developed. The detailed design and construction preparation will involve the detailing of the concepts defined by the outline design and the outcome of the approval process under the Act: i.e. any planning conditions under the Deemed Planning Permission and/or changes imposed through a modification by either the preliminary decision or the final decision (after the Public Local Inquiry).

4.4 A robust change management process will be implemented, under the direction of the Project Board and in consultation with the planning authority, to ensure that such changes are managed properly and within the constraints of its approvals and all other relevant boundaries. There is precedent deriving from other flood protection schemes previously delivered.

4.5 A Change Register was developed to manage the process of identification and evaluation of potential changes, and this is provided as Appendix E of this report. The main points to note from the Change Register are:

- a) In total 104 potential changes were identified;
- b) The potential changes derived from a number of different origins including: the thematic assessment; the objector meetings; the EIA representation meetings; the meetings with Consultative Bodies about their correspondence; and/or expert judgement by members of the project team or design team or legal services etc.;
- c) Further to an analysis of the 104 potential changes it was determined that eleven were duplicates: i.e. the potential changes were sufficiently close to another potential change to deem that it

was covered by the other change. It is highlighted that other potential changes were also very similar but were deemed to be separate potential change within the process to allow for different logics to be fully explored; and

- d) As detailed in paragraph 4.2 of this report a modification is deemed to be a formal and large change. The interface between change and modification is open to interpretation as there is no definitions in the Act to make these terms: as such the council's legal services, supported by external legal advice, where required, took the final decision on all such matters.

4.6 In total fifty-four potential changes were identified and evaluated. Some of these potential changes are small and some large: some are very specific and local and some a conceptual and/or process related. The main categorisation of those potential changes is as follows:

- a) Twenty-eight potential changes that could be made to the Scheme's processes;
- b) Twenty-two potential changes that could be achieved through the Scheme's detailed design;
- c) Twenty-six potential changes that could become a condition to the proposed Scheme's Deemed Planning Permission; and
- d) Eleven potential changes that could be applied to a completed Scheme's approach to operation and maintenance (O&M).

4.7 Further to paragraph 4.6 of this report, it is highlighted that the sum of the numbers in these categories is eighty-seven and thereby greater than the fifty-four proposed changes: this is because many of the proposed changes can sit in more than one category. For example: a proposed change to reduce the risk of graffiti on the proposed Scheme's new structures could be made through a revised approach in the detailed design to include more natural stone or better street lighting surrounding area. Equally the proposed change may be achieved through future O&M via the continual use of anti-graffiti paint, or community art projects etc.

4.8 It is recommended that the project team seek to advance the delivery of the fifty-four proposed changes that have been identified and reviewed by the Scheme's Project Board.

4.9 The fifty-four proposed changes all derive from the consultation undertaken with the public through the Act's formal consultative process. Subject to a determination of their deliverability at the appropriate stage,

these proposed changes are all considered capable of bringing bespoke local benefits, and/or process improvements, and/or environmental benefits to the design and delivery of the proposed Scheme.

- 4.10 It is highlighted that most of these proposed changes can only be advanced if the proposed Scheme commences its future stages: i.e. the detailed design stage; and/or the construction works procurement stage; and/or the construction works stage. Furthermore, that that the approach to advancing these proposed changes cannot be fully understood at this time as the proposed Scheme is not confirmed and does not have its Deemed Planning Permission as these formal processes under the Act are not concluded. It is recommended that the project team, under authority of its project board and under the oversight of the council's planning and legal services, and strategic guidance of the corporate management team, should seek to advance the delivery of these proposed changes in due course.

5 IDENTIFICATION & EVALUATION OF POTENTIAL MODIFICATIONS

- 5.1 As detailed in paragraph 4.1 of this report, the council identified potential modifications from the objector meetings, and these were passed to Jacobs for assessment. In parallel, Jacobs identified other potential modifications that derived from their work on assessing the themes of the correspondence received, which are referred to in paragraph 1.3 of this report. Together they formed a list of forty potential modifications that could be made to the proposed Scheme.
- 5.2 A first activity by Jacobs, supported by the council's legal services and project team, was to review this long-list of forty potential modifications and to determine whether they were technically competent from a council perspective and/or complied with the Scheme's Project Objectives. The result of this exercise was to remove nine potential modifications from the list that would advance to the more comprehensive appraisal.
- 5.3 The 31 potential modifications that advanced to appraisal were considered through Red-Amber-Green Appraisal Process by Jacobs, who produced a Technical Memorandum, or report, that summarises their work. This is provided in Appendix F to this report.
- 5.4 The outcome of the evaluation of the potential modifications a recommendation that stated:

“that Members make the preliminary decision, in accordance with paragraph 5(1) of schedule 2 of the Act, to confirm the proposed Scheme without modifications.”

6 CONCLUSION AND RECOMMENDATIONS

- 6.1 Each of the 757 items of correspondence that was received was reviewed and categorised by the council's legal services. There are currently 481 valid objections to the proposed Scheme, from 481 objectors. These must be considered by Members before making a preliminary decision on the proposed Scheme.
- 6.2 The correspondence was reviewed, and seventy-one themes of objection were identified. This process was reported on in October 2024 and must be considered in parallel to this report by Members when they make a preliminary decision.
- 6.3 Every one of the objectors were invited to a meeting. The resultant meetings yielded further understanding of the objections and four valid objections were withdrawn. They did not result in the determination of a modification, or a combination of modifications, that were considered capable of satisfying the objections. Further to a full review of the potential modifications it is recommended that no modification is made to the proposed Scheme when full council consider it and make a preliminary decision.
- 6.4 Each of the representations on the EIA were reviewed and those who submitted them invited to a meeting, or series of meetings such that a full understanding of their content could be achieved. These representations cannot be withdrawn and must become part of the information considered by Members before they make a preliminary decision.
- 6.5 Through the processes of: (i) categorisation and review of the correspondence received; (ii) the meetings with objectors and those who submitted a representation on the EIA; and (iii) identification and evaluation of potential modifications, it was possible to determine fifty-four potential changes to the proposed Scheme. These potential changes relate to both the proposed Scheme and its EIA report.
- 6.6 This report, the change process that sits behind it, and the list of fifty-four potential changes are to be reviewed by the Scheme's Project Board. It is recommended to the board that council should seek to deliver all fifty-four of these potential changes, under authority of its project board and under the oversight of the council's planning and legal services, and strategic guidance of the corporate management team, in due course.

7 REPORT INFORMATION

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DATE	September 2025

Appendix A - NatureScot Letter

Conor Price
Project Manager
Musselburgh Flood Protection Scheme
Structures, Flooding & Street Lighting
East Lothian Council
John Muir House
Haddington
EH41 3HA

11 September 2025

Our ref: CDM173553

Dear Mr Price

EAST LOTHIAN COUNCIL, MUSSELBURGH FLOOD PROTECTION SCHEME 2024. FLOOD RISK MANAGEMENT (SCOTLAND) ACT 2009 AND THE FLOOD RISK MANAGEMENT (FLOOD PROTECTION SCHEMES, POTENTIALLY VULNERABLE AREAS AND LOCAL PLAN DISTRICTS) (SCOTLAND) REGULATIONS 2010 (AS AMENDED) MUSSELBURGH FLOOD PROTECTION SCHEME 2024, ASSOCIATED DRAFT HABITATS REGULATIONS APPRAISAL REPORT – APRIL 2025 VERSION

Introduction

Thank you for the opportunity to provide further advice and comments on the Musselburgh Flood Prevention Scheme (MFPS), and the April 2025 iteration of the Habitats Regulation Appraisal (HRA).

We recognise and support the need for river and coastal flood protection at Musselburgh and provide our advice here to help progress this very complex scheme as it moves from outline design to the detailed design stage. Our official position reflects the fact that while much work has been done in this regard, the HRA is as yet incomplete, and therefore we cannot advise with the required degree of certainty that there will be no adverse effect on the site integrity of European sites.

SNH position – European Sites – Holding Objection

NatureScot, Meadowbank House, 6th Floor South, 153 London Road, Edinburgh, EH8 7AU
Correspondence address: NatureScot, Battleby House, Redgorton, Perth PH1 3EW
NàdarAlba, Taigh Bruach an Àilein, 6mh Làr a Deas, 153 Rathad Lunnainn, Dùn Èideann, EH8 7AU
Seòladh puist: NàdarAlba, Taigh Battleby, Ràth a' Ghoirtein, Peairt, PH1 3EW

0131 316 2600 [nature.scot](https://www.nature.scot)

The proposal could affect internationally important natural heritage interests and we therefore **object to this proposal until further information is obtained**. This is set out in our summary below and in further detail in Annexes 1-5. We will be able to give further consideration to this proposal once you have carried out your appraisal of this / these effects.

Our advice is that this proposal is likely to have a significant effect on the qualifying features of the Firth of Forth Special Protection Area (SPA) and the Outer Firth of Forth and St Andrews Bay Complex SPA. Consequently, East Lothian Council, as competent authority, is required to finalise their appropriate assessment in view of the sites' conservation objectives for the qualifying feature.

Summary

In order for this to be determined, we recommend that the following additional information is obtained and provided:

- Further work on the assessment of the proposed construction methodology and how this will avoid significant disturbance and therefore AESI. This includes the associated Construction Environmental Management Plan (CEMP).
- The HRA should screen in 'changes in water quality' and 'changes in coastal processes' for appropriate assessment for both SPAs. In order to inform sufficient assessment of this impact, we advise that there is a need to assess impacts to intertidal and benthic habitats upon which certain qualifying features depend.
- We recommend that further data is provided for any gull roosts.
- The potential for habitat loss due to intertidal narrowing should be further considered as part of the HRA for the Firth of Forth SPA. Our advice is that this amounts to LSE. Coastal geomorphology (intertidal narrowing) impacts are only covered in the 'Stage 1 Introduction & HRA Screening' report. They are not carried over into the 'Stage 2 - Appropriate Assessment' reports.
- Clarity is required on the in-combination assessment. The text around in-combination effects should be reviewed and updated to ensure consistency and clarity. Also, further consideration should be given to the interaction of potential effects between the Musselburgh Scheme and the Grangemouth Flood Protection Scheme.
- Further assessment of impacts on blue mussel beds found within the intertidal area of Musselburgh (including within Fisherrow and beyond the protected lagoons). They are likely to play an important role as a food source for common eider, other protected birds (and potentially other important fish species.)

Yours sincerely



Head of National Operations, South

cc Keith Dingwall, Chief Planner, East Lothian Council

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Annex 1 – Ornithology advice

The key issue for ornithology impact assessment of the Musselburgh Flood Protection Scheme (MFPS) is the potential impacts on multiple qualifying features of the Firth of Forth SPA and Outer Firth of Forth and St Andrews Bay Complex (OFFSABC) SPA. Previously marine and terrestrial species were covered by separate advice – this advice now covers all qualifying features of both SPAs.

Working methodology and timings

We do not agree with the current assessment that the proposed construction methodology would avoid significant disturbance and therefore AESI.

We advise that further consideration is given to other options and methodologies. Given the difficulties with screening the sensitive VP3 section of the seawall we suggest a limited working period of April-June may provide effective mitigation for disturbance. Details on screening, timing and working section lengths still need to be confirmed for all seafront works.

Coastal processes

As in our previous advice, we advise that the HRA should screen in ‘changes in water quality’ and ‘changes in coastal processes’ for appropriate assessment for both SPAs. We disagree with the conclusion of no LSE from the risks of long-term impacts of changes in coastal processes considering the advice provided by the NatureScot coastal geomorphologist in May 2024 and May 2025. There is still a need to assess impacts to intertidal and benthic habitats upon which certain qualifying features depend to inform proper assessment of this impact.

Survey data

Previous concerns about the insufficiency of baseline survey data for the summer months have now been addressed. A second summer season of through the tide counts (TTTC) was completed in 2024 with full spatial coverage. Although previous marine ornithology advice asked for two further summer seasons with the inclusion of VP4, we are now satisfied that the two complete seasons, 2019 and 2024, are sufficient to complete a full assessment. We are also content with the VP viewsheds, and the revised Zone of Influence approach. In our previous advice, we had highlighted some inconsistencies in the data presented; we have not checked whether these have been resolved in this iteration of the HRA, as we have been provided with the full dataset on which to base our advice.

As advised in our previous response, there is currently a lack of gull roost data. This data should form part of further information. This is required to ensure mitigation from disturbance is adequate.

HRA advice

Two SPAs were screened in (Firth of Forth SPA and OFFSABC SPA) and these constitute the focus of our advice.

1. Stage one (screening)

The screening stage of the HRA (Vol 1 Part 1) identified the following project-alone impacts:

- **Firth of Forth SPA**

- LSE concluded from habitat loss for construction and operation
- LSE concluded from disturbance from noise, vibration, and light for construction
- LSE concluded from changes in water quality (sediment run-off) for construction
- No LSE concluded from changes in coastal processes

- **OFFSABC SPA**

- LSE concluded from habitat loss for construction and operation
- LSE concluded from disturbance from noise, vibration, and light for construction
- No LSE concluded from changes in water quality (sediment run-off)
- No LSE concluded from changes in coastal processes

There are inconsistencies within the updated version of the HRA. As above, it states that no LSE is concluded for 'changes in water quality' for OFFSABC SPA (Table 4-1, Vol 1, Part 3) but is LSE in Table 3-3 in Vol 1 Part 1, and LSE is concluded for the Firth of Forth SPA (Table 4-1, Vol 1, Part 2). A sentence above these Tables 4-1 in both documents (Section 4) states *'It was concluded that regardless of the requirement to include good construction practices and pollution prevention controls within the Scheme, irrespective of any European site designations, changes in water quality should be concluded to result in LSEs.'* We consider that LSE should be concluded for both SPAs. Our previous comments regarding the 10m buffer between construction works and the water line are relevant to this potential impact, and a clear assessment of the potential for release of sediments from the current proposed construction methodology should be presented.

As per NatureScot's previous advice, we disagree with the conclusion of no LSE for 'changes to coastal processes.' This is because of the potential failure to meet the Conservation Objectives relating to distribution and extent of supporting habitat, structure and function of supporting habitat, as well as potentially significant increases in disturbance (as the intertidal narrowing would bring low water closer to activities such as dog-walking).

In-combination effects

The in-combination assessment is inconsistent across the parts of the HRA; Appendix C details three developments with the potential for cumulative impacts, whilst Vol 1 Part 2 lists four, and Vol 1 Part 3 lists one. The text around in combination effects should be reviewed across all documents and updated to ensure consistency and clarity.

2. Stage two (appropriate assessment)

1. Construction phase

The proposed construction methodology is assessed in the HRA for the potential for disturbance and temporary displacement from acoustic and visual disturbance.

Timing of works – NatureScot had queried in our previous comments whether the avoidance of construction works during the winter months applied only to the seawall or to all seafront work. The current HRA is still not clear on this; section 3.4.2. of both Vol 1 Parts 2 and 3 state *'Seasonal working constraints are now likely to apply to construction of the seawall and works at this location are now likely to extend over a four-year period (likely only in the*

spring/summer months [i.e. April to August/September] and referred to elsewhere as 'summer'), while the rest of the Scheme could be constructed in a shorter period', but Table 5-9 states 'Adherence to no winter (October to March inclusive) working for all works in all seafront/coastal locations' and section 6 more generally states 'Avoidance of construction works during the winter (i.e. October to March) period' is to be included as a mitigation measure. We advise that all seafront construction work should avoid the winter months.

The winter months are defined in section 3.4.2 of Vol 1 Parts 2 & 3 as 'April to August/September', and in sections 5.6.3 as 'April to September inclusive' but sections 5.7.3 state that *'The avoidance of winter (here meaning September to March inclusive) working is anticipated to reduce the risk of disturbance for several qualifying species which are typically present at Musselburgh in greatest numbers during this period.'* and *'Individuals of these species may be present outwith this period, but survey data indicate that this relates to a relatively small number of individuals and for limited time periods. These individuals may be deterred from the vicinity of the Scheme but given the extent of suitable habitat available across the Forth Estuary, this is not considered to result in major disturbance to these species.'*

We agree that summer is the time when disturbance impacts should be least because fewer individuals of qualifying species are onsite. However, we would like clarity on the potential inclusion of September as a summer month (including whether the figures from Fig 6a to 11g include September data in winter or summer). Whilst for many qualifying species, numbers are still low at this time, for bar-tailed godwit and oystercatcher in particular, but also curlew, redshank and lapwing, numbers have increased considerably by September (e.g. Table 5-7 Vol 1 Part 2 gives a peak count for bar-tailed godwit of 480 (24.3% of the Firth of Forth SPA population), and Diagram 5-15 shows a peak of approximately 35% for curlew in September). The potential impacts of working in September for such species need to be properly assessed.

Given the difficulties of fully screening work on the seawall, we do not consider that restricting work to the full summer period on this section may mitigate disturbance enough to allow a conclusion of AESI, because of the large numbers of waders and common eider in flightless moult that tend to build up later into the summer. We advise consideration is given to restricting works on the seawall section in VP3 in the period of 1st of April to 30th of June, as this will reduce disturbance to a level which we are comfortable will avoid AESI. We advise extending this restriction to include the work at Goosegreen Bridge, as this has been identified as an activity likely to disturb SPA qualifying features during flightless moult, namely common eider.

- a) **Working sections** - There was some discussion about restricting working sections to 100-300m of seawall at a time (this is mentioned in the current version of the HRA e.g. Table 5-9 Vol 1 Part 2), but with an implication that this would mean working in multiple sections at a time over a longer period. We consider that multiple pockets of disturbance might overall have a greater impact, as well as potentially being more challenging logistically and extending the work temporally. Therefore, we advise that working on one larger section of seawall,

starting from the west at the Esk mouth in April would constitute a lower disturbance impact and advise this approach should be considered. On the other parts of seafront construction works, a similar principle is likely to apply – that NatureScot consider it best to work in one larger section at a time.

- b) Screening** – Sections 5.7 of Vol 1 Parts 2 & 3 detail proposed screening. We consider screening west of the Esk mouth to be a vital mitigation measure to reduce disturbance; high numbers of waders have been recorded year-round, particularly between Fisherrow Harbour and the Esk mouth. We welcome the acoustic and visual screening proposed and advise that this should be installed in full for all seafront works, except for the seawall for which we accept full implementation will be practically difficult (and why we consequently suggest the shorter working window as mitigation). If full screening is not possible in locations other than the seawall, the impacts of that should be clearly assessed. We note that the acoustic barrier efficacy seems quite low (up to 18dB), which is acknowledged in the HRA; however, the acoustic screening also provides visual screening which we agree is the more major disturbance impact. Acknowledgement that the screening cannot be entirely effective is the reason for our position that no seafront works should be conducted in the winter months.

Lagoon 2 is critically important as a high tide roost for multiple SPA qualifiers. We mentioned in our previous advice the need to be very clear about mitigation for this lagoon, but also to assess the then outstanding summer 2024 data for use of Lagoons 3 and 4 in terms of both potential for disturbance and increased habitat availability. This assessment doesn't appear to have been carried out. From our understanding of the data as presented, several key species of wader including bar-tailed godwit, curlew and oystercatcher use Lagoon 2 in large numbers as a key feeding area and roost during high tide. As of 2024, there appears to be little evidence of these roosts spreading out to include Lagoon 3.

- c) Other measures** – We support the other mitigation measures suggested including the Construction Lighting Plan, soft-start techniques, suggested fencing of Lagoon 2, and the suggested deployment of signage along the shore front and around the lagoons to discourage dog walking at low tide and reduce overall disturbance.

2. Operation Phase

As detailed in our previous advice, we are concerned that *'the proposed new defences in combination with anticipated sea-level rise would cause significant narrowing of the intertidal flats from approximately mid-century onwards'*, with losses of intertidal habitat roughly estimated as ~35-40% west of the River Esk by 2100. This has significant implications for several terrestrial and marine species that rely on this habitat for foraging. Wader species are reliant on the intertidal habitat for a large portion of their diet. Gull species may rely on the intertidal habitats for at least part of their diet. Marine bird species, especially sea ducks, are reliant on intertidal benthic habitats for a large portion of their diet, which includes blue mussel beds that are likely to dominate the benthic environment in the area.

Of particular relevance to this predicted loss is:

Qualifying wader species for the Firth of Forth SPA that rely on intertidal habitats include bar-tailed godwit, curlew, dunlin, grey plover, knot, oystercatcher, redshank, ringed plover and turnstone.

Qualifying marine bird species that rely on benthic habitats for both the Firth of Forth SPA and the OFFSABC SPA include common eider, common scoter, long-tailed duck and velvet scoter.

In some cases, the peak count from surveys for the areas affected (VP1, 2 and 3) exceeds 20% of the SPA population. For example, 539 bar-tailed godwit were recorded feeding at low tide on 13/01/2020, representing 27.3% of the SPA population (1,950). It is clear from the distribution of sea ducks west of the Esk mouth that this is an important feeding area, with several species reliant on blue mussels as part of their diet. Common eider in particular are reliant on a healthy population of blue mussels for a large majority of their diet (Bustnes 1998). Common eider were recorded to peak at 1028 individuals west of the Esk mouth (09/09/2019) representing 11% of the Firth of Forth SPA population.

Insufficient data have been provided for our benthic advisors to make a complete assessment of intertidal benthic habitats, but the presence of these birds showing feeding behaviour is evidence that this assessment is necessary to understanding the long-term impacts of the MFPS proposal, as noted in our previous advice. Therefore, a full assessment of the impact of this habitat loss should be carried out for these qualifying species of the two SPAs, to allow determination of AESI to be made.

Bustnes, J.O. (1998) Selection of blue mussels, *Mytilus edulis*, by Common eiders, *Somateria mollissima*: size selection to minimise shell content. *Canadian Journal of Zoology*, 76(9), 1787-179

Annex 2 – Coastal processes and geomorphology

The current HRA (p42 (PDF p44), last para) argues that it's not possible to determine whether the Scheme will have LSE on the SPA, because "it is not currently possible to determine" the following three points:

1. "A future baseline [i.e. scenario] for the functional habitats of the SPA"

Our advice on this point is that with accelerating sea-level rise, and without the Scheme, the intertidal-beach profile is likely to 'translate' inland due to a combination of erosional retreat of the beach (HW) and 'submergence' of the lowest intertidal (LW).

The HRA states that the sewer is an "existing barrier" to the erosional retreat "which Scottish Water are obliged to maintain". We strongly recommend that ELC obtains written evidence and details of that obligation, or of the sewer installation having sufficient structure to resist erosional retreat. And whether the necessary assessment of any potential intertidal narrowing due to the continued presence of sewer in its current location has been carried out.

The HRA notes that in the ELC 'without the Scheme' scenario, the capacity of the 'translated' tidal flats to support birds may be reduced due to greater proximity to the urban environment. However, there seems to be no analysis of this outcome, and indeed, we believe that such analysis wouldn't be appropriate to the 'coarse filter' of the LSE test.

2. "How the operation of the Scheme may impact upon functional SPA habitat in the future"

The Scheme includes a commitment to maintain the new flood defences, which could only be achieved by resisting erosional retreat of the beach. Our advice is that the Scheme would cause intertidal narrowing that would not occur in a 'without the Scheme' scenario (see above comments about the sewer). We advise that there is likely connection between the Scheme and reduced extent of SPA supporting habitat.

3. "What [future] adaptation options the Council may adopt as part of the CCAP process"

Preparation of the Coastal Change Adaptation Plan has only recently begun, and coastal management options will not be determined for many months, or even years. We believe that the HRA's argument that this strategic planning might in future supersede the Scheme's commitment to maintain the new flood defences is not currently relevant. The current coastal management policy of 'Selectively Hold the Line' (East Lothian Shoreline Management Plan) is basically in accordance with the Scheme's commitment to maintain the new flood defences.

Therefore, the potential for habitat loss due to intertidal narrowing should be considered in Table 3-4, for the Firth of Forth SPA. We advise that the conclusion should be that this amounts to LSE. Therefore, this effect should be carried over to Stage 2 for appropriate assessment. (Please also see Annex 3 – HRA process, for our detailed comments on the associated case law.)

We recommend that further consideration is given to the DEFRA guidance on coastal squeeze assessment as the basis for this part of the appropriate assessment. It might be helpful to deviate from some aspects of the DEFRA method; if so, this should be highlighted and explained. We are happy to provide further support on determining the methodology, if required.

Separate from the potential effect of intertidal narrowing, we are content with the screening with regard to temporary effects of the Scheme, under "Changes in Coastal Processes" in Table 3.4.

Annex 3 – HRA process

We have concerns regarding the conclusions that have been drawn as part of the HRA process as described in section 3.3.2. of the document. It is stated that, *“it is not possible to determine how the operation of the Scheme may influence or impact upon functional SPA habitat in the future, or what actions the Council may take to address coastal erosion, which will be established as part of the CCAP process”*. And the inference that ELC through its CCAP, may make decisions in the future with respect to coastal management.

Our advice is that this is not in line with the Waddenzee case which states (paragraph 45) that, *“...any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site’s conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects”*.

Section 3.3.2 seems to accept that it cannot be determined how the MFPS might impact upon the SPA, and that this will be dealt with by the CCAP process. This approach seems to contradict the legal ruling from Waddenzee which requires a competent authority to conclude there is likely significant effect (LSE) if they cannot exclude it (i.e. where there is doubt). Therefore, we advise that impacts to coastal processes should be concluded to have LSE and therefore move on to a Stage 2 assessment - an appropriate assessment (AA).

In-combination effects

We note that in Section 3.4 of the same document other projects are identified where no adverse effect on site integrity (AESI) was concluded, including the Grangemouth Flood Protection Scheme. We believe that due to overlapping construction phases extending over multiple years, there is the potential for in-combination effects with MFPS. Our advice is that fuller consideration is given to this interaction of potential effects between the two Schemes to ensure no AESI on the Firth of Forth SPA.

CEMP and mitigation

In section 5.7 HRA Stage 2 (‘Mitigation’) we note that the reliance on the Construction Environmental Management Plan (CEMP) to set in place mitigation to reduce or otherwise avoid impacts to the SPAs.

Section 5.7.1 outlines a series of mitigation measures that the CEMP will include, but as we do not know the details of the proposed mitigation measures, we are unable to advise whether their implementation will ensure no AESI.

Sections 5.7.2 to 5.7.9 expand upon many of the intended mitigation measures but several of the measures do not provide the certainty required in an AA to allow for a conclusion of no AESI. For example, Section 5.7.6 states that *“any acoustic barriers... should aim to break line of sight”*, and section 5.7.7 *“Screening... would aim to screen the movements of site personnel, vehicles, plant and compounds”*.

A competent authority requires certainty regarding no AESI before giving permission or other authorisation to a plan or project. Given the caveats in the mitigation and lack of certainty

demonstrated in the HRA, we cannot be certain there will be no AESI from these mitigation methods at this stage.

Annex 4 – Benthic impacts

Protected habitats that could be impacted by the proposed activity

The conservation objectives (COs) of the associated designated sites have links to benthic habitats relevant to this development. Therefore, we advise that the HRA for this proposal will need to consider if the conservation objectives are met. Meaning, whether the proposed activity maintains access, and availability of, supporting habitats and prey within the site.

Our advice is that there are several supporting benthic habitats and prey which must be considered given the permanent nature of the change to intertidal habitats (Table 1) which SPA bird species will be dependent upon. In our opinion the Intertidal mudflat and sandflat areas may be occupied by intertidal blue mussels.

Further Detail on Protected habitats that could be impacted by the proposed activity

Table 1 Habitats associated with the designated sites

Habitat and/or feature	FeAST sensitivity information for protected features ^{1,2}	Known benthic habitats and protected feature distance from harbour
Intertidal mudflats and sandflats (including intertidal blue mussel beds)	Intertidal mudflats and sandflats are sensitive to physical change, such as coastal squeeze. However, overall has a high resistance and ability to adapt to pressures³. Blue mussels: - Physical change (to another seabed type) (high) - Physical removal (extraction of substratum) (high) - Sub-surface abrasion/penetration (high)	LS.LMu.Mest – ‘<i>Nephtys hombergii</i>, <i>Macoma balthica</i> and <i>Streblospio shrubsolii</i> in littoral sandy mud’ LS.LBR.LMus.Myt – ‘Mussel beds on littoral sediments’ (<1 km from proposed dredge and seawall construction) In Scotland these mussel beds support an assemblage of suspension feeders including barnacles, polychaetes and ascidians⁴ (Wilding <i>et al.</i>, in prep). Barnacles (<i>Semibalanus balanoides</i>, <i>Elminius modestus</i> or <i>Balanus crenatus</i>) often encrust mussels. Where boulders are present in the habitat, they can support limpets (e.g. <i>Patella vulgata</i>) and dog whelks (<i>Nucella lapillus</i>). Winkles, <i>Littorina littorea</i>, and small individuals of the shore

¹ FeAST online sensitivity tool is available on the Scottish Government website at: <http://www.scotland.gov.uk/Topics/marine/marine-environment/FEAST-Intro> and a public user guide is available at: www.marine.scotland.gov.uk/FEAST/Help.aspx.

² Tyler-Walters, H. (2008). *Mytilus edulis* Common mussel. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 24-07-2025]. Available from: <https://www.marlin.ac.uk/species/detail/1421>

³ Tillin, H.M. & Rayment, W., 2016. [Hediste diversicolor] and [Limecola balthica] in littoral sandy mud. In Tyler-Walters H. and Hiscock K. (eds) Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. DOI <https://dx.doi.org/10.17031/marlinhab.209>.

⁴ Wilding TA, Nickell TD (2013) Changes in Benthos Associated with Mussel (*Mytilus edulis* L.) Farms on the West-Coast of Scotland. PLoS ONE 8(7): e68313. <https://doi.org/10.1371/journal.pone.0068313>

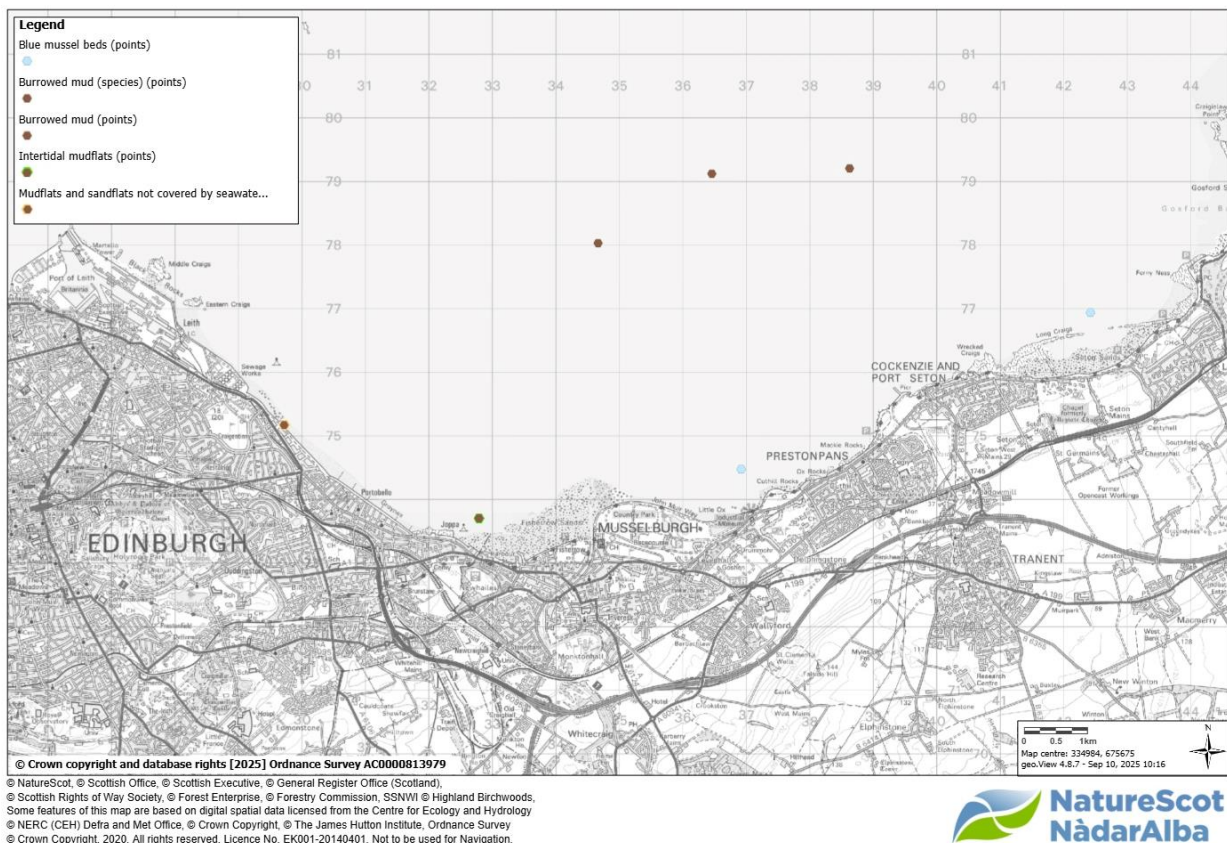
	• Siltation rate changes (heavy) (high) • Siltation rate changes (light) (medium) • Surface abrasion (high) • Water clarity changes (low) • Wave exposure changes – local (medium) • Water flow changes (tidal current) changes – local (medium)	crab <i>Carcinus maenas</i> are common amongst mussel beds, whilst areas of sediment may contain the lugworm <i>Arenicola marina</i>, the sand mason <i>Lanice conchilega</i>, the cockle <i>Cerastoderma edule</i>, and other infaunal species. The wrack <i>F. vesiculosus</i> is often found attached to either the mussels or cobbles and it can be abundant. Other macroalgae (e.g. <i>Chondrus crispus</i>, <i>Laminaria saccharina</i> and <i>Ulva</i> spp.) are also known to colonise mussel beds in Scotland.
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Blue mussels are often found near the harbour within Fisherrow⁵ (though not mapped by NatureScot) in addition to a known bed 0.65 km north from the right edge of the last lagoon (

Figure 1). The current HRA (and EIA) does not adequately assess the potential links with, or impacts to, benthic habitats. However, we recognise that the key impacts relate to disturbance and loss of intertidal feeding/roosting habitat for SPA qualifying features (as previously advised under our marine and terrestrial ornithology advice - 17 May 2024).

Figure 1 Benthic habitats mapped by NatureScot

⁵ Edinburgh shoreline (n.d) Citizen science data. Available at: <https://edinburghshoreline.org.uk/show-us-your-mussels-project/>



Based on the information available, and in line with our draft HRA ornithology comments, we advise that there is Likely Significant Effect (LSE) for the conservation objectives relating to distribution and extent of supporting habitat, and potentially structure and function of supporting habitat.

The additional information requested as part of our ornithology advice includes further details about survey techniques and the assessment of impacts on the SPA supporting habitats. We would also recommend assessment is extended to include related impacts on intertidal and benthic habitats and species. This should include consideration of the links with relevant benthic habitats to inform the Appropriate Assessment.

As noted in our ornithology advice, insufficient data have been provided to make a complete assessment of intertidal benthic habitats, but the presence of SPA birds showing feeding behaviour is evidence that this assessment is necessary to understanding the long-term impacts of the MFPS proposal, as noted in our previous advice. Therefore, a full assessment of the impact of this habitat loss should be carried out for these qualifying species of the two SPAs, to allow determination of AESI to be made.

Blue Mussels

The blue mussel, *Mytilus edulis*, is an important ecosystem engineer which can significantly affect the physical characteristics of an area as well as species compositions and abundances⁶. In

⁶ Commiato, J. A., Como, S., Grupe, B. M. & Dow, W. E. 2008. Species diversity in the soft-bottom intertidal zone: Biogenic structure, sediment and macrofauna across mussel bed spatial scales. *Journal of Experimental Marine Biology and Ecology*, 366, 70-81.

addition to this, blue mussels can play a critical component in sediment dynamics of coastal systems as they trap and stabilise sediments.

Blue mussels are found within the intertidal area of Musselburgh (including within Fisherrow and beyond the protected lagoons), this habitat may be impacted by the proposed activity. As this habitat is protected within the conservation objectives of several designations, the mussel bed is likely to play an important role as a food source for the common eider, other protected birds and potentially other important fish species.

Blue Mussel Beds are sensitive to physical loss of habitat and habitat extraction, physical disturbance (i.e. surface abrasion and penetration of sediment), changes in water flow, smothering (siltation)^{7, 8}. The proposed dredging, depending on method and potential sediment plume, could have effects on intertidal blue mussel beds for unknown periods of time.

NatureScot's HRA response dated 17th May 2024 states '*There is a need to assess impacts to benthic habitats upon which certain qualifying features, such as velvet scoter, depend on*'. Whilst the updated HRA does include analysis of bird visits to the coastal and marine environment that are within and around the project footprint, no intertidal or subtidal surveys have been completed. Please see below for our advice on assessing impacts on benthic habitats.

⁷ Mainwaring, K., Tillin, H. & Tyler-Walters, H. 2014. Assessing the sensitivity of blue mussel beds to pressures associated with human activities. Peterborough, Joint Nature Conservation Committee, JNCC Report No. 506.

⁸ Tillin, H.M., Mainwaring, K., Tyler-Walters, H., Williams, E. & Watson, A., 2024. *Mytilus edulis* beds on sublittoral sediment. In Tyler-Walters H. and Hiscock K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 08-09-2025]. Available from: <https://www.marlin.ac.uk/habitat/detail/36>

Appendix 5 – Detailed information to support assessment of impacts on benthic habitats

We strongly recommend that the Construction Environmental Management Plan for this proposal includes impacts on benthic habitats.

1. Benthic habitat baseline survey and assessment – whilst there are no known designated sites for the protection of specific benthic features, the conservation objectives with the SPA encompass the benthic habitat, specifically conservation objective 2c) The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, for the Firth of Forth SPA and the Outer Firth of Forth and St Andrews Bay Complex SPA. Therefore, we recommend that following approach:
 - An Intertidal Phase I walkover/unmanned Aerial Vehicle (UAV) survey.
 - The benthic surveys should also identify Non-Native Species (NNS).
 - The assessment should clearly include extent/area where protected benthic habitat/species and priority marine features will be impacted due to the activity footprint and anticipated intertidal narrowing.
2. Mitigation measures, if applicable:
 - What measures will be used to avoid or minimise the impact to sensitive benthic areas.
 - Sediment control measures for material extraction and sea defence construction.
3. Monitoring of sensitive habitats. We note that the current CEMP specifically mentions in section 4.9 (page 16) considerations for ‘sensitive habitats such as those adjacent to the ash lagoons and intertidal areas.’ Therefore, we advise that the CEMP should include detailed baseline, construction and post construction monitoring.

Rock armour

If the proposed rock armour installation is carried out during or approaching high tide, we recommend sediment dispersion modelling, this would provide further information of the potential impacts to blue mussel beds, we would suggest that the sediment dispersion modelling includes the outputs of deposition in “cm” to permit assessment against the FeAST benchmark. We are happy to provide further details on this, if required.

Appendix B – Historic Environment Scotland (HES) Letter



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ENVIRONMENT
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EACHDRAIDHEIL
ALBA

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Our case ID: 300028602

03 September 2025

Dear Ian Chalmers

Musselburgh Flood Protection Scheme Outstanding objection by HES and provision of further information

Thank you for your consultation of 16 July 2025 enclosing an Addendum to Chapter 13 of the EIA Report for the flood protection scheme and a Supplementary Report relating to proposed works for the debris trap element of the scheme. These documents have been produced in response to Historic Environment Scotland's objection to the application for the Musselburgh Flood Protection Scheme and our representation on the Environmental Impact Assessment Report produced in support of that application.

We discussed these documents at a meeting between the Flood Protection Scheme Team and HES on Thursday 14 August 2025. Subsequent to that meeting, your colleague Mr Grilli provided us with an updated version of the EIA Addendum containing a minor amendment requested by HES.

We can confirm that we consider these documents adequately address the issues raised in our objection response. If these documents were submitted in support of the proposed Musselburgh Flood Protection Scheme, we consider we could withdraw our objection and representation.

The attached annex provides our detailed comments on this matter.

We hope this is helpful. If you would like to submit more information about this or any other proposed development to us for comment, please send it to our consultations mailbox, hmconsultations@hes.scot. If you have questions about this response, please contact

[REDACTED] at [REDACTED]

Yours sincerely

Historic Environment Scotland

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH
Scottish Charity No. **SC045925**
VAT No. **GB 221 8680 15**

ANNEX: Our Detailed Comments

Background

On 21 March 2024, we were served a statutory notice under the terms of the Flood Risk Management (Scotland) Act 2009 for the proposed Musselburgh Flood Protection Scheme. We considered the information provided in the Environmental Impact Assessment Report (EIAR) and supporting documents and issued our response on 24 April 2024. We objected to the proposed scheme and made representations on the EIAR for the following reasons –

- The proposals would result in works to a scheduled monument which would be contrary to policies laid out in National Planning Framework 4 and the Historic Environment Policy for Scotland.
- We considered that the EIAR did not identify, describe and assess the impacts on cultural heritage in an appropriate manner. As a result it would not be possible for the competent authority deciding the application to reach a reasoned conclusion on the proposed scheme.

You have now provided two documents containing additional information to address these issues –

- EIA Report Addendum to Chapter 13 (the Addendum)
- Supplementary Report to EIA Report Chapter 13 (the Supplementary Report)

Legislative and Policy context

The following policies are the most relevant to the issues considered in this letter.

National Planning Policy Framework 4: Policy 7

- a) Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place. The assessment should identify the likely visual or physical impact of any proposals for change, including cumulative effects and provide a sound basis for managing the impacts of change.

Proposals should also be informed by national policy and guidance on managing change in the historic environment, and information held within Historic Environment Records.

- h) Development proposals affecting scheduled monuments will only be supported where:
 - i direct impacts on the scheduled monument are avoided;
 - ii significant adverse impacts on the integrity of a scheduled monument are avoided; or

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH

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- iii exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.

The Historic Environment Policy for Scotland (HEPS)

- HEP1: Decisions affecting any part of the historic environment should be informed by an inclusive understanding of its breadth and cultural significance.
- HEP2: Decisions affecting the historic environment should ensure that its understanding and enjoyment as well as its benefits are secured for present and
- HEP4: Changes to specific assets and their context should be managed in a way that protects the historic environment. Opportunities for enhancement should be identified where appropriate.

Scheduled Monument Consents Policy

- SMCP1: Works to scheduled monuments will normally only be permitted if they have minimal impact upon a monument's cultural significance.
- SMCP2: Extensive intervention at scheduled monuments will not normally be permitted.
- SMCP3: Extensive intervention to a scheduled monument will only be allowed where:
 - it has minimal effect on the cultural significance of the monument; or
 - it is clearly necessary to secure the long-term preservation of the monument; or
 - it will clearly generate public benefits of national importance which outweigh the impact on the nationally important cultural significance of the monument. Such public benefits could come from, for example, interventions which improve public access to a scheduled monument (where appropriate), or assist public understanding once the works are completed, or provide economic benefits of national importance once completed.

Current consultation

Our response to the statutory notice and EIAR listed a number of issues of concern. These are considered below with regard to the additional information provided in the Addendum and the Supplementary Report.

Methodology

The methodology in the Cultural Heritage chapter of the EIAR did not include a definition of the Magnitude of Impact values used in the assessment process. There was also confusion between the descriptions of the significance/value ascribed to cultural heritage assets in different parts of the report. As a result it was not possible to understand how the conclusions presented in the Report were reached.



Section 2, Table 1 of the Addendum provides a description of the Magnitude of Impact Criteria used in the EIA process. Used in conjunction with the information in the original EIA Report, these descriptions allow the user to understand the basis of the assessments made and decisions reached in the original assessment. We therefore consider this issue has been addressed.

Lack of information on physical and setting impacts

The EIAR contained little detail relating to the physical and setting impacts that would be experienced by designated cultural heritage assets. This information is necessary to allow the determining authority to understand and assess the implications of the works proposed. It is also particularly important for assets where additional consents such as listed building consent or scheduled monument consent are required but have not yet been granted (see the asset specific information below).

Section 3, Table 2 of the Addendum provides setting assessments and a description of the impacts that assets would experience as a result of the proposals. We are content that the information provided in Table 2 is sufficient to understand the effect the works would have on designated cultural heritage assets.

Mitigation

Section 3, Table 2 also provides a summary description of the mitigation measures proposed for each of the designated assets discussed. We note that some elements of mitigation cannot be fully described at this stage as they are dependent on factors that have not been finalised, but we are content that the information provided is sufficient to understand the principles that will be applied in mitigating the impacts on the specific assets affected. Mitigation on the two designated assets we considered most likely to experience a significant adverse impact from the works is discussed below.

Impacts on Old Bridge ([LB38378](#))

In our original objection letter, we expressed concern that the EIAR did not describe the physical impacts of the proposed scheme on the Old Bridge in Musselburgh, nor the measures proposed to mitigate those impacts.

The entry for the Old Bridge in Section 3, Table 2 of the Addendum describes the proposed works along with the mitigation built into the design to minimise the physical and setting impacts on the bridge. We note that the exact detail of the construction joint between the flood walls and the bridge is “subject to detailed design” but sufficient detail is provided to show that works could be conducted in a manner that complies with relevant policy. We are therefore content that this information addresses our technical concerns about lack of information in the report, and outlines design and working principles that are compliant with NPF4 and appropriate for a scheme that would require listed building consent.

Impacts on Eastfield, enclosures and pit alignments, Old Craighall ([SM6020](#))

The proposed flood protection scheme requires the construction of an access track across this monument to facilitate the construction and use of a debris trap across the River Esk. The EIAR did not contain sufficient information to allow an understanding of the impact of



the proposed track on the monument nor of the decision-making process that might justify the selection of the proposed location for the trap and access road. As a result, the application did not meet the policy requirements laid out in NPF4 and HEPS, leading to our objection to the scheme and representation to the EIAR.

While not a planning matter, it is important to note that the proposals would also require scheduled monument consent from Historic Environment Scotland; again, the information provided in the EIAR indicated that the proposals would not meet the policy requirements for consent.

In order to address this issue, we requested the following information

- A full review/options appraisal of the route selection process prioritising options for avoidance should be undertaken and documented.
- If avoidance is not possible, a detailed description of the impacts and their effect on the cultural significance of the monument should be provided. Where the exact nature of the works is not yet known (e.g. details are subject to the advice of individual contractors) a “design envelope” approach should be applied outlining the maximum impacts and resultant effects expected.

The Supplementary Report addresses these issues, providing options appraisals for the selection processes for the debris trap location and the proposed access route. We are content that the information provided demonstrates that the proposed location for the debris trap is justified and that routing an access trackway to the trap through the monument is the only viable option.

The Supplementary Report and Addendum also outline the proposed scheme for the access track including the initial upgrading of an existing farm track and the creation of approximately 200m of new trackway within the monument. A smaller scale track across the monument would be retained during the operational phase to allow access to the debris trap. The Report and Addendum lay out the principles, parameters and mitigation measures that would be applied to the final design for the access track. We are content that this information addresses our technical concerns about lack of information in the report, and outlines design and construction principles for the access track that would comply with NPF4 and HEPS.

As noted above, scheduled monument consent would also be required for those elements of the development that would have a physical impact on the monument. Although details regarding the exact design, routing, and construction of the access track would need to be agreed so as to ensure any impact on the monument was mitigated or minimised, we are content that these details could be finalised and controlled via the scheduled monument consent (SMC) process. We can confirm that pre-application discussions for SMC have already taken place and we are content that it should be possible to design and enact a scheme that will meet the requirements of the Scheduled Monument Consent Policy.

Our position

We are content that when considered in conjunction with the original EIA Report, the information provided in the Addendum and Supplementary Report is sufficient to understand the impacts and effects of the proposed flood protection scheme on designated cultural heritage assets.

For the Old Bridge and Eastfield enclosures and pit alignments, we are content that although the exact nature of the proposed works cannot be confirmed at this stage, the information provided and provisional schemes outlined are sufficient to show that the relevant policy requirements of NPF4 and HEPS can be met.

We therefore consider that if we were to receive a formal consultation on these documents from the competent authority, we would be able to withdraw our objection to the scheme and advise that the issues raised in our representation had been addressed.

Finally, please note that our comments only relate to issues within our national historic environment interests. It is essential that you also consult East Lothian Council's own archaeological and heritage advisers to ensure that all aspects of cultural heritage have been addressed appropriately.

Historic Environment Scotland
03 September 2025

Appendix C – Scottish Environment Protection Agency (SEPA) Letter

Services Manager – Governance
Legal Services
East Lothian Council

Our Ref: PCS-20005829

Your Ref: CG/11481

By email only to:

musselburghfps@eastlothian.gov.uk

SEPA Email Contact:

planning.south@sepa.org.uk

16 September 2025

To whom it may concern

Flood Risk Management (Scotland) Act 2009

Musselburgh Flood Protection Scheme 2024, Musselburgh, East Lothian

On 19 August 2025, representatives from SEPA attended an online meeting with staff from East Lothian Council and Jacobs who are involved with the Musselburgh FPS. This was one of series of meeting that you are running with either those who had objected to the FPS or, in the case of SEPA, submitted Environmental Impact Assessment (EIA) representations.

On the basis that our formal response to the Design Statement and EIA Report was issued on 24 April 2024 (ref: PCS-20000874) this is a timely opportunity to summarise or position as well as the key points that were covered in the meeting.

It remains our position that we have **no objection** to the FPS. However, we request, should the scheme be confirmed under the provisions of the Flood Risk Management



Chair
Lisa Tennant

CEO
Nicole Paterson

SEPA
Unit 6
4 Parklands Avenue
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(Scotland) Act 2009, that conditions be attached to the deemed planning permission requiring the:

- i. Implementation of the Schedule of Environmental Commitments described in EIAR Table 17-1.
- ii. Update of the fluvial hydraulic model to include the flood wall at Inveresk Estate to assess and determine any changes to the risk of flooding in this area.
- iii. iii. Implementation of mitigation to address impacts on fluvial geomorphology on the River Esk (Mitigation W23 and 24) and consideration of additional measures to reduce the impacts further as discussed in Appendix 2 below.
- iv. iv. Preparation and implementation of a Construction Environmental Management Plan (Mitigation W1) agreed with the Planning Authority in consultation with SEPA.
- v. v. Implementation of water quality monitoring (Mitigation W28), developed in consultation with SEPA, which includes suitable monitoring proposals to protect the Fisherrow Sands Bathing Water during construction

Several aspects of the FPS will require separate authorisation from SEPA under the new Environmental Authorisation (Scotland) Regulations (ESAR) These will supersede the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) from 01 November 2025. We recommend that you engage with waterpermitting@sepa.org.uk to ensure that you are fully aware of the procedures and requirements that are applicable to ESAR.

Our Hydromorphological Team undertook a field survey (04 September 2025) of water body River Esk (ID 3800) to identify existing significant pressures, river type and riparian vegetation. This has enabled us to get more accurate morphological classification. Once design and mitigation measures have been progressed these will need to be shared (in GIS format) with us so it can be determined if the proposed works will result in any downgrade in waterbody status.

We recommend that Jacobs continue to engage with our Hydromorological Team. This will ensure that there is clarity with regards to: (i) mitigations and design measures and (ii) the modelling approach and flow scenarios that should be adopted as well as what model outputs / submissions will be required in due course.

I have ascertained who the best points of contact are within our Flood Risk and Hydrometry Teams with regards to the potential impacts to the existing gauging station on the River Esk and the provision of a flood warning service during the construction phase. I will send details on separately.

If you have queries relating to this letter, please contact us at planning.south@sepa.org.uk including our reference number in the email subject.

Yours sincerely,



Senior Planning Officer

Planning Service

Disclaimer: This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our [website planning pages - www.sepa.org.uk/environment/land/planning/](http://www.sepa.org.uk/environment/land/planning/)

Appendix D – Action Log

[illegible]

Appendix E – Change Register

MUSSELBURGH FLOOD PROTECTION SCHEME	
SCHEME OBJECTION PROCESS CHANGE REGISTER	
Revision No.	2.0
Revision Date	19/09/2025
Completed By	Conor Price



					104						ANALYSIS OF POSSIBLE MODIFICATIONS											ANALYSIS OF POSSIBLE CHANGES													
Count	Unique Number	Description	Detailed Description of Possible Change	Primary Origin of Change	CONSIDERATION OF WHETHER IT IS A DUPLICATE POSSIBLE CHANGE			Remove from rest of assessment due to being a Duplicate	Possible Modification	Issued to Jacobs	Included in TN RAG	Jacobs TN Reference	Initial outcome of RAG Analysis			OVERALL REJECT	Notes	Proposed Changes	Detailed Description of Proposed Change	FPS / FRM Process	Detailed Design	DPP Condition	O&M Process	Notes	Project Board Review	OUTCOME									
					No	TBC	Details						Consider	Undecided	Reject												54	28	22	26	11	93	52		
1	MFPS-CH-001	Possible Change to Proposed Scheme	Possible Modification to remove defences from Brunstane Burn to Esk.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-028	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-002	Possible Change to Proposed Scheme	Develop an approach to address potential risk of graffiti.	Objector Meeting	0	1	Graffiti Risk - This Possible Change is being used to address MFPS-CH-031 & MFPS-CH-036 and aspects of MFPS-CH-063.	N	1	1	N	N/A	N/A	N/A	N/A	1	This was not considered in the RAG Analysis as it was removed at a Pre-RAG Review --> This is considered as being deliverable outside of a formal Modification and within the parameters of Process and / Or Detailed Design and / or Future approach to O&M.	1	Develop an approach to address potential risk of graffiti within the Detailed Design or via an O&M Process post-Scheme.	0	1	0	1	It is understood that there are a number of approaches that could be used to achieve this outcome: through the use of some stone cladding; through the use of anti-graffiti paint; through the approach to localised illumination and public spaces to minimise the potential for anti-social behaviour etc.	18/09/2025	Recommend to Council									
1	MFPS-CH-003	Possible Change to Proposed Scheme	Consider how to form better access between this part of Edinburgh Road and the beach.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-025	0	1	0	1	This has been Rejected as a Modification --> It is not considered that this should be reassessed during the Detailed Design as it is understood that some amongst the local community are strongly opposed and the key objection on this theme was withdrawn.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-004	Possible Change to Proposed Scheme	Consider the proposed possible Modification to change the form of coastal defences from a wall to a Tidal Barrier to protect against sea flooding.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-029	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-005	Possible Change to Proposed Scheme	Possibility of addressing their concerns regarding construction management via DPP Condition.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider how to address concerns regarding the approach to Construction Management via a DPP Condition.	0	0	1	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-006	Possible Change to Proposed Scheme	Possibility of addressing their concerns re ensuring future O&M is undertaken via DPP Condition.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider how to address the concerns regarding ensuring that future O&M of a delivered Scheme is undertaken via DPP Condition.	0	0	1	1	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-007	Possible Change to Proposed Scheme	Consider possible change to the design detail to lower the path off the embankment crest on the dry side - to reduce potential fall risk and create outside edge to path and reduce visibility to adjacent properties.	Objector Meeting	1	0	Eskside West Embankment - This is not considered to be a Duplicate of MFPS-CH-056 as it relates to lowering the footpath rather than possible removal of the footpath off the top of the embankment.	N	1	1	1	JUK-020	0	1	0	1	This has been Rejected as a Modification --> It is considered that this should be reassessed during the Detailed Design --> It is considered that this could yield multiple benefits re visible sight lines / privacy / safety on the top of the embankment / local and different form of embankment.	1	Consider how to reshape the design the proposed embankment at Eskside West so the pathway is lowered off the crest on the dry side - to reduce potential fall risk and create outside edge to path and reduce visibility to adjacent properties.	0	1	0	0	This is considered a relatively straightforward input into the Detailed Design and any outcome will have to be reviewed by the normal process of liaison with Key Stakeholders and through the Internal Working Groups.	18/09/2025	Recommend to Council									
1	MFPS-CH-008	Possible Change to Proposed Scheme	Consider the proposed possible modification to replace the proposed flood wall along the coast with a Beach Nourishment Programme - assumed to only be between the Harbour and the Esk.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-030	0	0	1	1	This has been Rejected as a Modification --> It is considered that any further actions / requirements on this matter will be advanced by ELC through the Coastal Change Adaptation Plan (CCAP).	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-009	Possible Change to Proposed Scheme	Consider undertaking more consultation with the public during the Detailed Design Stage of the project.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider undertaking more consultation with the public during the Detailed Design Stage of the project.	1	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. It is understood that there will always be a degree of consultation required during the Detailed Design Stage the key question is therefore how much consultation, with whom, and what type?	18/09/2025	Recommend to Council									
1	MFPS-CH-010	Possible Change to Proposed Scheme	Consider how the Scheme can take responsibility for impact on the Musselburgh Heritage Signs identified by AG and incorporate into the Scheme or it DPP and / or its Specification, as appropriate.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider how the Scheme can take responsibility for impact on the Musselburgh Heritage Signs and incorporate the outcome into the Detailed Design or propose appropriate management via a DPP Condition.	0	0	1	0	It is understood that an agreement is required between those responsible for the signs, and that thereafter this can be incorporated into either the Construction Works Specification or via a Council Defined Obligation through the projects Land & Legal Activities.	18/09/2025	Recommend to Council									
1	MFPS-CH-011	Possible Change to Proposed Scheme	Consider proposed possible Modification to move the Flood Wall back up to the road edge at Mall Avenue.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-031	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-012	Possible Change to Proposed Scheme	Consider transferring new land outside properties at Edinburgh Road to adjacent Landowners.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	It is required to finalise the approach to land outside the properties between 7 to 27 Edinburgh Road as detailed in the Thematic Report. This process can include the possibility of land transfer alongside all other reasonable possible approaches to the Detailed Design and the long-term management of this location.	1	1	1	1	The approach to the land behind properties at Edinburgh Road need to be confirmed, as was detailed in the Thematic Report published in October 2024. This will be advanced / confirmed during the Detailed Design Stage.	18/09/2025	Recommend to Council									
1	MFPS-CH-013	Possible Change to Proposed Scheme	Consider approach to 'harvest' the Marram Grasses in the Site Boundary to a temporary location for future re-use.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider how the Construction Works could 'harvest' the Marram Grasses in the Site Boundary to a temporary location for future re-use during the Detailed Design.	0	0	1	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-014	Possible Change to Proposed Scheme	Consider an approach to undertake further NFM Investigation of Possibilities within the Scheme / Project.	Objector Meeting	1	0	More NFM - This is not considered a Duplicate with MFPS-CH-039 as it primarily relates to investigation not NFM Delivery.	N	1	1	1	JUK-039	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-015	Possible Change to Proposed Scheme	Consider the possibility of strengthening the commitment to carbon management within the Scheme Documents.	Objector Meeting	0	1	Carbon Management - This Possible Change is being used to address MFPS-CH-035.	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of strengthening the commitment to Carbon Management within the Scheme Documents.	0	0	1	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-016	Possible Change to Proposed Scheme	Consider the possibility of referencing PAS 2080.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of referencing PAS 2080 for its use by the Scheme through the remaining stages, where appropriate.	0	0	1	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-017	Possible Change to Proposed Scheme	Consider the possibility of being more explicit that the Scheme will plant trees in the 'River Esk Catchment'.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of being more explicit that the Scheme will plant trees in the 'River Esk Catchment'.	0	0	1	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-018	Possible Change to Proposed Scheme	Consider the possibility of additional commitments to biodiversity through a modification.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of additional commitments to Biodiversity, including the possibility of considering the new Scottish Advice on interpretation of NFF4.	0	0	1	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council									
1	MFPS-CH-019	Possible Change to Proposed Scheme	Possibility of including formal designed measures to ensure cars do not park on the grass verges along Goosegreen - to be reviewed during the Detailed Design.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility within the Detailed Design of designed the local landscape to exclude car from parking on the grass verges along Goosegreen.	0	1	0	1	This is considered a relatively straightforward input into the Detailed Design and any outcome will have to be reviewed by the normal process of liaison with Key Stakeholders and through the Internal Working Groups.	18/09/2025	Recommend to Council									
1	MFPS-CH-020	Possible Change to Proposed Scheme	Formalise the requirement to consult with local communities during the development of the Construction Plans - Traffic Management / Site Compounds etc.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of formalising the requirement to consult with local communities during the development of the Construction Plans - e.g. the Traffic Management / Site Compounds etc.	1	0	1	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. It is understood that there will always be a degree of consultation required in the development of the Construction Stage Plans, however it needs to be reflected on that some of these may be the responsibility of the Contractor through their Legal Contract the key question is therefore how much consultation, with whom, and what type, and whether it is imposed on the Contractor through the Procurement Process.	18/09/2025	Recommend to Council									
1	MFPS-CH-021	Possible Change to Proposed Scheme	Consider the possible Modification to remove the Goosegreen Footbridge from the Proposed Scheme.	Objector Meeting	0	1	Goosegreen Footbridge Removal - This Possible Change is being used to address MFPS-CH-021 & MFPS-CH-026 & MFPS-CH-032 & MFPS-CH-41 & MFPS-CH-58 & MFPS-CH-61 & MFPS-CH-63 & MFPS-CH-065.	N	1	1	1	JUK-004	1	0	0	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-022	Possible Change to Proposed Scheme	Potential to deliver a Schedule of Works to minimise any risk around the reservoir edge due to lowering the water level.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of delivering a Schedule of Works to minimise any risk around the reservoir edge due to lowering the water level - to be developed in partnership with the Edgelaw Reservoir Angling Club.	0	1	1	0	It is understood that Accommodation Works will be required around the perimeter of Edgelaw Reservoir to ensure that it is Safe and Fishable after the new water level comes into function. Meetings are ongoing with the Reservoir Manager to agree an approach to this issue.	18/09/2025	Recommend to Council									
1	MFPS-CH-023	Possible Change to Proposed Scheme	Consider the possibility of an enhanced landscape design at Murdoch's Green during the Detailed Design of the Scheme.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of an enhanced landscape design at Murdoch's Green during the Detailed Design of the Scheme.	0	1	0	0	The approach to reinstatement of the Murdoch's Green public park space can be evolved during the Detailed Design. The question is whether this is like-for-like or a new landscape design and / or whether this is via a formal public consultation process.	18/09/2025	Recommend to Council									
1	MFPS-CH-024	Possible Change to Proposed Scheme	Consider an approach to consultation with the public in relation to the approach to new benches - to possible include a bench dedication / naming plaque in this approach.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider an approach to consultation with the public in relation to the approach to new benches - to possible include a bench dedication / naming plaque in this approach.	1	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. Thereafter the approach can be delivered through the Detailed Design Process.	18/09/2025	Recommend to Council									
1	MFPS-CH-025	Possible Change to Proposed Scheme	Consider the possible Modification that the standard of protection on the coast is reduced from Climate Change Scenario 4 to Scenario 3.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-002	0	1	0	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-026	Possible Change to Proposed Scheme	Consider the possible Modification to remove the Goosegreen Footbridge from the Proposed Scheme.	Objector Meeting	0	1	Goosegreen Footbridge Removal - This is considered a Duplicate and is addressed through both MFPS-CH-021.	1																											
1	MFPS-CH-027	Possible Change to Proposed Scheme	Possibility of undertaking more visualisations for the benefit of the public during the Detailed Design Stage.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Possibility of undertaking more visualisations for the benefit of the public during the Detailed Design Stage.	0	1	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. Thereafter the approach can be delivered through the Detailed Design Process.	18/09/2025	Recommend to Council									
1	MFPS-CH-028	Possible Change to Proposed Scheme	Consider the possible Modification to relocate the Shorthope Street Footbridge downstream of its proposed location.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-026	0	1	0	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-029	Possible Change to Proposed Scheme	Consider the possibility of removing the footbridge access ramp on the upstream Right Hand Bank side of the river.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-027	0	1	0	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-030	Possible Change to Proposed Scheme	Log to the Lessons Learned Register that Visualisations might benefit from the inclusion of the water level during a flood event.	Objector Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									
1	MFPS-CH-031	Possible Change to Proposed Scheme	Consider what could be done through the detailed design to de-risk the graffiti issue?	Objector Meeting	0	1	Graffiti Risk - This is considered a Duplicate and is addressed through both MFPS-CH-002.	1																											
1	MFPS-CH-032	Possible Change to Proposed Scheme	Consider the possible Modification to remove the Goosegreen Footbridge from the Proposed Scheme.	Objector Meeting	0	1	Goosegreen Footbridge Removal - This is considered a Duplicate and is addressed through both MFPS-CH-021.	1																											
1	MFPS-CH-033	Possible Change to Proposed Scheme	Consider the possible Modification to provide a new green bank from Electric Bridge to the mouth of the Esk.	Objector Meeting	1	0	N/A	N	1	1	N	N/A	N/A	N/A	N/A	1	This was not considered in the RAG Analysis as it was removed at a Pre-RAG Review --> This concept is considered as being deliverable outside of a formal Modification and within the Detailed Design.	1	Consider and approach to provide new green bank on the riverside of the flood walls from the Electric Bridge to the mouth of the River Esk.	0	1	1	0	It is understood that the approach taken to provide a new green bank to the riverside of the flood wall from Rennie Bridge to the Electric Footbridge could be replicated from the Electric Bridge to the mouth of the Esk, however it is recognised that this reach of the river is more influenced by the tide and thereby saline waters.	18/09/2025	Recommend to Council									
1	MFPS-CH-034	Possible Change to Proposed Scheme	Consider the possible Modification to move the flood wall back 1m from the Rennie Bridge to the Electric Footbridge along Eskside East.	Objector Meeting	1	0	N/A	N	1	1	1	JUK-015	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A		18/09/2025	No further action									

1	MFPS-CH-071	Possible Change to Proposed Scheme	Provision of additional Scheme Information via the Communications Plan further to logic of FAQ's emerging from Objections from Edinburgh Road and also concerns relating to potential Construction Vibration Impact.	Team Judgement	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider a way of providing additional Scheme Information via the Communications Plan further to logic of FAQ's emerging from Objections from Edinburgh Road and also concerns relating to potential Construction Vibration Impact.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-072	Possible Change to Proposed Scheme	Request that the Scottish Ministers consider the Proposed Scheme and instruct that a Public Local Inquiry (PLI), rather than a Local Hearing, is undertaken after the Proposed Scheme is Called-in.	Jacobs Technical Note (TN)	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Request that the Scottish Ministers consider the Proposed Scheme and instruct that a Public Local Inquiry (PLI), rather than a Local Hearing, is undertaken after the Proposed Scheme is Called-in.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. This should be reviewed by ELC Legal in the first instance to determine any legislative implications, however it is understood there is precedent from other Flood Protection Schemes Called-IN for Ministerial Consideration.	18/09/2025	Recommend to Council
1	MFPS-CH-073	Possible Change to EIA	Work with SEPA to conduct a MIMAS Assessment of the River Esk though Musselburgh under the Water Framework Directive (WFD) Processes to establish any potential change in the WFD Status.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Work with SEPA to conduct a MIMAS Assessment of the River Esk though Musselburgh under the Water Framework Directive (WFD) Processes to establish any potential change in the WFD Status.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-074	Possible Change to EIA	Work with SEPA to establish potential hydraulic model shear stresses to increase understanding of potential morphological impacts of the Proposed Scheme.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Work with SEPA to establish potential hydraulic model shear stresses to increase understanding of potential morphological impacts of the Proposed Scheme.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-075	Possible Change to EIA	Potential to improve Fish Passage to the Eskmills Weir as an approach to achieving Biodiversity Enhancement within the Scheme and its EIA.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of improving Fish Passage to the Eskmills Weir as an approach to achieving Biodiversity Enhancement within the Scheme and its EIA.	1	0	1	0	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council
1	MFPS-CH-076	Possible Change to EIA	Potential to improve Eel Passage to the Goosegreen Weir as an approach to achieving Biodiversity Enhancement within the Scheme and its EIA.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of improving Eel Passage to the Goosegreen Weir as an approach to achieving Biodiversity Enhancement within the Scheme and its EIA.	1	0	1	0	0	Review through the Shadow Planning Process being advanced by ELC Planning.	18/09/2025	Recommend to Council
1	MFPS-CH-077	Possible Change to Proposed Scheme	Potential to involve the British Horse Society (BHS) through the Detailed Design Stage to ensure appropriate design metrics are achieved for equestrian users on the pathways provided by the Scheme.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of involving the British Horse Society (BHS) through the Detailed Design Stage to ensure appropriate design metrics are achieved for equestrian users on the pathways provided by the Scheme.	1	1	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-078	Possible Change to Proposed Scheme	Potential to Involve the appropriate equestrian societies through the Detailed Design Stage in relation to fully understanding the needs of the Musselburgh Common Riding.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of involving the appropriate equestrian societies through the Detailed Design Stage in relation to fully understanding the needs of the Musselburgh Common Riding.	1	1	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-079	Possible Change to Proposed Scheme	Consider the potential for a new physical scale model of the Scheme as a means of communicating the design vision to key stakeholders and the people of Musselburgh.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of producing a new physical scale model of the Scheme as a means of communicating the design vision to key stakeholders and the people of Musselburgh.	1	1	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-080	Possible Change to EIA	Consider opportunities for key stakeholders and the public to be involved in the development of the environmental mitigation measures within the Detailed Design Stage.	EIA Representation Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider an approach to involving key stakeholders and the public in the development of the environmental mitigation measures within the Detailed Design Stage.	1	1	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-081	Possible Change to EIA	Consider an opportunity for RSPB to be involved in the development of the environmental mitigation measures within the Detailed Design Stage.	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider an to involving RSPB in the development of the environmental mitigation measures within the Detailed Design Stage.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. It is understood that the process of evolving the Appropriate Assessment under the HRA is being advanced by ELC Countryside in partnership with NatureScot. The matter should therefore be raised in those working meetings and then at a Project Board level.	18/09/2025	Recommend to Council
1	MFPS-CH-082	Possible Change to EIA	Consider providing RSPB with the Appropriate Assessment under the Habitat Regulations Appraisal (HRA) Process and the associated survey data.	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of providing RSPB with the Appropriate Assessment under the Habitat Regulations Appraisal (HRA) Process and the associated survey data.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. It is understood that the process of evolving the Appropriate Assessment under the HRA is being advanced by ELC Countryside in partnership with NatureScot. The matter should therefore be raised in those working meetings and then at a Project Board level.	18/09/2025	Recommend to Council
1	MFPS-CH-083	Possible Change to EIA	Consider undertaking a Geophysical Survey of Eastfield (within Dalkeith Country Park) to support the application for a Scheduled Monument Consent associated with the Proposed Debris Trap access track.	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of undertaking a Geophysical Survey of Eastfield (within Dalkeith Country Park) to support the application for a Scheduled Monument Consent associated with the Proposed Debris Trap access track.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-084	Possible Change to EIA	Consider producing a additional information through an Addendum to the EIA that will summarise the Option Appraisal which determined the preferred access proposal to the Debris Trap by Whitecraig.	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the possibility of producing a additional information through an Addendum to the EIA that will summarise the Option Appraisal which determined the preferred access proposal to the Debris Trap by Whitecraig.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board. It is understood that the process of evolving the Scheduled Ancient Monument Consent is being advanced by the Project Team in partnership with Historic Environment Scotland (HES). The matter should therefore be raised in those working meetings and then at a Project Board level.	18/09/2025	Recommend to Council
1	MFPS-CH-085	Possible Change to Proposed Scheme	Continue to evolve the development of the Appropriate Assessment Habitat Regulations Appraisal (HRA) in partnership with NatureScot.	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Continue to evolve the development of the Appropriate Assessment Habitat Regulations Appraisal (HRA) in partnership with NatureScot.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-086	Possible Change to Proposed Scheme	Consider the need for the further surveys recommended by NatureScot to support the Appropriate Assessment under the Habitat Regulations Appraisal (HRA).	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the need for the further surveys recommended by NatureScot to support the Appropriate Assessment under the Habitat Regulations Appraisal (HRA).	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-087	Possible Change to Proposed Scheme	Consider the needs for potential mitigation measures to support the Habitat Regulations Appraisal (HRA) Process, working in partnership with NatureScot.	Consultative Body Meeting	1	0	N/A	N	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	Consider the needs for potential mitigation measures to support the Habitat Regulations Appraisal (HRA) Process, working in partnership with NatureScot.	1	0	0	0	0	It is understood that this is a process that can be undertaken by the Project Team subject to receiving authority from the Scheme's Project Board.	18/09/2025	Recommend to Council
1	MFPS-CH-088	Possible Change to Proposed Scheme	Consider the potential for a Modification to to change the hybrid flood defences at Fisharrow Promenade to a flood wall with a wave return to lower the overall height of the structure.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-003	0	1	0	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-089	Possible Change to Proposed Scheme	Consider the potential for a Modification to delivering the repairs to the Ash Lagoons Sewall through a different option.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-005	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-090	Possible Change to Proposed Scheme	Consider the potential for a Modification to incorporate greater use of dredging to avoid or reduce the need for flood defence walls and embankments along the River Esk.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-007	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-091	Possible Change to Proposed Scheme	Consider the potential for a Modification to incorporate greater use of demountable defences instead of static walls.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-008	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-092	Possible Change to Proposed Scheme	Consider the potential for a Modification to incorporate greater use of Property Level Protection (PLP) to avoid or reduce the need for flood defence walls and embankments along the River Esk and the coast.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-009	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-093	Possible Change to Proposed Scheme	Consider the potential for a Modification to incorporate the use of other reservoirs in the Esk Catchment to avoid or reduce the need for flood defences in Musselburgh.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-010	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-094	Possible Change to Proposed Scheme	Consider the potential for a Modification to repositing the flood defences along the River Esk consider to further reduce the number of trees to be removed.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-011	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-095	Possible Change to Proposed Scheme	Consider the potential for a Modification to provide an alternative access route to Debris Trap by Whitecraig to avoid impact on Eastfield Scheduled Monument.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-013	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-096	Possible Change to Proposed Scheme	Consider the potential for a Modification to incorporate improvement works to the existing road drainage network.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-014	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-097	Possible Change to Proposed Scheme	Consider the potential for a Modification to use set-back coastal defences at Fisharrow Links to avoid or reduce coastal squeeze.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-016	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-098	Possible Change to Proposed Scheme	Consider the potential for a Modification to use set-back coastal defences at Fisharrow Links to reduce beach erosion.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-017	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-099	Possible Change to Proposed Scheme	Consider the potential for a Modification to remove the debris trap from the scheme to avoid impact on fish passage	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-018	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-100	Possible Change to Proposed Scheme	Consider the potential for a Modification to remove the Debris Trap by Whitecraig from the Scheme to avoid disruption to users of Dalkeith Country Park during the Construction Stage.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-019	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-101	Possible Change to Proposed Scheme	Consider the potential for a Modification to provide an alternative defence alignment at 9-27 Edinburgh Road to address residents' concerns about security and privacy.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-021	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-102	Possible Change to Proposed Scheme	Consider the potential for a Modification to to provide an alternative defence alignment at Inveresk Estate to reduce impacts on access to the Grove during the Construction Stage.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-022	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-103	Possible Change to Proposed Scheme	Consider the potential for a Modification to lessen the reduction in water level at Edgellaw Reservoir to address concerns about safety of anglers.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-023	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	
1	MFPS-CH-104	Possible Change to Proposed Scheme	Consider the potential for a Modification to remove MAT deck width requirements from proposed footbridges.	Thematic Assessment	1	0	N/A	N	1	0	1	JUK-024	0	0	1	1	This is not considered to be deliverable outside of a formal Modification due to the scale of the required change.	0	N/A	N/A	N/A	N/A	N/A	N/A	18/09/2025	No further action	

Appendix F – Jacobs Technical Memorandum

Identification and Evaluation of Potential Modifications to Musselburgh Flood Protection Scheme

Date:	16 September 2025	CH2M HILL United Kingdom
Project name:	Musselburgh Flood Protection Scheme	95 Bothwell Street
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Document no:	701909-JEC-S5-XXX-XXX-TN-Z-0001 P02.1	

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Background

Musselburgh Flood Protection Scheme (the Scheme) was notified by East Lothian Council (the Council) on 22 March 2024 in accordance with the Flood Risk Management (Scotland) Act 2009 (the Act) and the Flood Risk Management (Flood Protection Schemes, Potentially Vulnerable Areas and Local Plan Districts) (Scotland) Regulations 2010 (as amended) (the Regulations). The closing date for submission of objections and representations in respect of the Environmental Impact Assessment (EIA) Report was 24 April 2024.

The Council received 485 valid objections and 16 representations¹ in respect of the EIA Report. Jacobs assessed all correspondence provided to them by the Council and identified 71 distinct themes of objection. The Council offered to meet all Relevant Objectors on a one-to-one basis to determine whether any aspect of the design could be changed to their mutual satisfaction such that the objector would be willing to withdraw their objection. Over fifty objectors accepted the offer of a meeting. These were led by the Council's Legal Services team and almost all were attended by Jacobs.

Purpose

Where there are valid objections to a scheme, paragraph 5(1)(b) of Schedule 2 to the Act provides a mechanism whereby a scheme can be modified to resolve the objections. Appendix H of Guidance on Local Authority functions under part 4 of the Act (Scottish Government, 2015) indicates that the modification must be in accordance with the scheme's objectives. Modifying a scheme thus provides a route to achieving its confirmation without recourse to either a hearing or public local inquiry.

The purpose of this technical note is therefore to set out the process which was used by Jacobs to identify and evaluate potential modifications to the Scheme. It should be read in conjunction with Jacobs' assessment of objection themes (Jacobs, 2024) and the Council's subsequent paper (East Lothian Council, 2024).

Terminology

The following terminology is used in this document, and is defined in the legislation as follows:

Term	Definition	Reference
Valid Objection	An objection which is made in writing, sets out the name and address of the objector, and is made before the expiry of the period of 28 days beginning with the date notice of the scheme is first published.	Paragraph 3(2) of schedule 2 to the Act
Late Objection	An objection that would be a valid objection but for the fact that it was made after the end of the 28 days following the notification of the scheme	Paragraph 3(4) of schedule 2 to the Act
Relevant Objector	A person who submitted a valid objection or a late objection which the local authority considered. In the case of this Scheme, the Council has chosen to refer to objectors as Relevant Objectors where it is anticipated that their objection will be considered in due course. Elected members will undertake this consideration in a meeting of Full Council. At the time of writing, such a meeting has yet to occur, and therefore consideration of objections has not yet taken place.	Paragraph 5(4) of Schedule 2 to the Act
Proposed Scheme	A flood protection scheme proposed by a local authority pursuant to section 60(2) of the Act	Section 60(2) of the Act
Modified Scheme	In a case where the local authority proposes to make a preliminary decision to confirm the proposed scheme with modifications under paragraph 5(1)(b) of Schedule 2 of the Act, the scheme with those modifications	Regulation 2(2)(c) of the Regulations

¹ The number of valid objections and EIA representations has been subject to change as a result of an audit of the correspondence received, which was carried out by the Council's Legal Services team.

Table 1: List of key defined terminology

Methodology

Figure 1 sets out the process through which potential modifications were identified and evaluated. The first step was determining whether an objection was valid. This was carried out by the Council's Legal Services team, independently of Jacobs and the project team. Legal Services then passed the valid objections and any late objections to Jacobs and the project team.

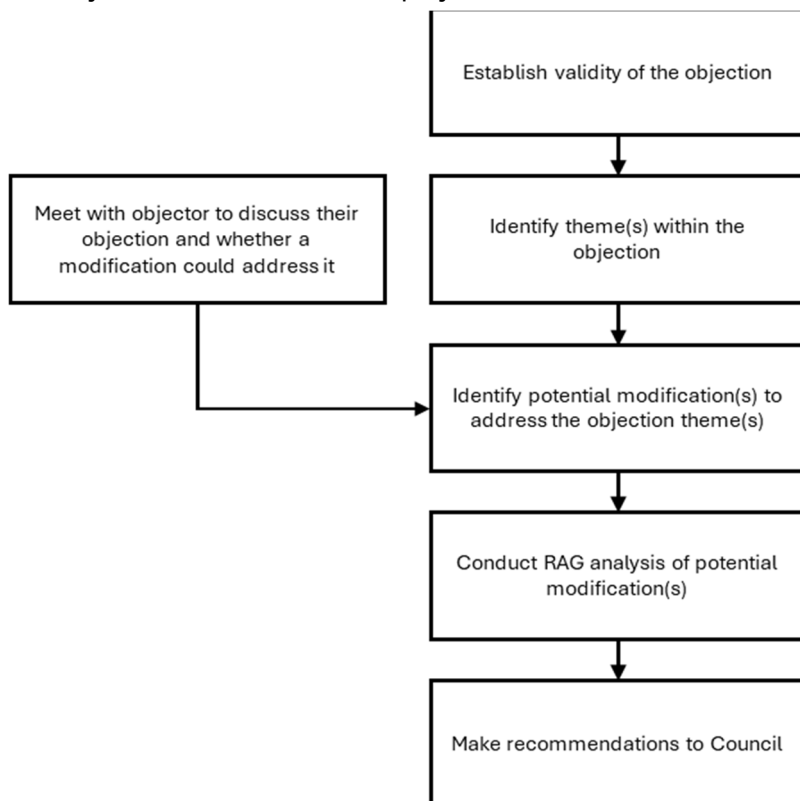


Figure 1: Flowchart showing the process for identifying Scheme modifications

All valid objections were then reviewed by Jacobs to identify the issues, or themes, contained therein. Some objections were short and contained only one theme. Others were lengthy and contained multiple themes about different aspects of the Scheme. Across all valid objections received, Jacobs identified 71 distinct themes and, where appropriate, recommended a position that the Council might wish to consider taking on each one (Jacobs, 2024). The Council subsequently published a paper setting out its position in respect of each theme (East Lothian Council, 2024).

Jacobs then reviewed each theme. Some themes, such as 'Project Governance' and 'Approach to Scheme Notification' related to the management of the project. Whilst objectors may have legitimate concerns about these subjects, it was concluded that there was no modification to the design which would directly address such concerns. In other instances, however, themes such as 'height of flood defences' and 'impact on trees' clearly had a corresponding potential modification, such as reducing the height of the flood defences or reducing the number of trees affected, which could address the issue.

As well as reviewing the objection themes, the Council offered to meet each objector on a one-to-one basis. The intention of these meetings was to determine whether any aspect of the design could be changed to their mutual satisfaction such that the objector would be willing to withdraw their objection.

Finally, Jacobs conducted a Red-Amber-Green (RAG) analysis of all the potential modifications that had been identified. Using the same approach as the option appraisal in stage 3 of the project, each modification was assessed on its own merits in terms of economic, technical, environmental, social and health & safety factors.

Results

Appendix A sets out potential modifications that were derived from the seventy-one objection themes. Appendix B is the council's actions and opportunities register from the meetings with objectors. Appendix C is the RAG analysis of the potential modifications identified in appendices A and B.

One potential modification was rated 'Green – consider'. This was:

1. Remove proposed replacement Goosegreen Footbridge from the Scheme

Whilst this modification would undoubtedly be supported by some objectors, it is also possible that others support its inclusion and might object to its removal.

Six potential modifications were rated 'Amber - undecided'. These were:

1. Change hybrid flood defence at Fisherrow to a flood wall with a wave return in order to reduce the total height of the structure
2. Incorporate more glass panels in flood defence walls to address concerns relating to visual impact and connectivity with the River Esk
3. Alter the embankment at Eskside West to address concerns about privacy of adjacent properties
4. Additional flood gate at 49B Edinburgh Road
5. Relocate the new Shorthope Street Footbridge further downstream
6. Remove the proposed ramp on the upstream eastern side of the new Shorthope Street Footbridge

It is considered that the introduction of more glass panels and alterations to the embankment footpath at Eskside West can be achieved as part of the detailed design, without the need for a modification to the Scheme. Meanwhile, there were only two objections relating to access on Edinburgh Road, one of which has now been withdrawn. The benefits associated with the modifications to Shorthope Street Footbridge are limited to three properties on Eskside East.

Twenty-four potential modifications were rated 'Red – reject'.

Conclusion and Recommendations

Where there are valid objections to a scheme, 'modification' provides a legal mechanism whereby a scheme's design can be changed to resolve the objections. Modifying a scheme thus provides a route to achieving its confirmation without recourse to either a hearing or public local inquiry. For this to be practical, it implies that the objections are few in number and small in scope. Guidance on Local Authority functions under part 4 of the Act (Scottish Government, 2015) states that modifying a scheme,

"will only be acceptable if the changes are not major in scope, are in accordance with the objectives of the scheme and all persons that are affected by the changes and interested statutory authorities are consulted and agree that the changes can be incorporated into the scheme as a modification."

Jacobs identified several potential modifications to the Scheme (one green and six amber) which might have merit. Notwithstanding this, the number and variety of objections to the Scheme are such that it is unrealistic that any modification would result in the withdrawal of all objections. Modification of the scheme could potentially save time and expense by reducing the scope of a hearing or public local inquiry. On the other hand, Regulation 8 of the 2017 Regulations requires a Modified Scheme to be notified in the same manner as a Proposed Scheme, in accordance with paragraphs 1 to 3 of Schedule 2 of the Act and Regulation 7 of the 2017 Regulations. This means that any modification creates a risk that it could lead to more new objections being submitted than it was able to resolve. **Jacobs therefore recommends that the Council makes a preliminary decision to confirm the Scheme without modification.**

Following a preliminary decision to confirm the Scheme without modification, the Act would require the Council to refer the Scheme to the Scottish Ministers. The Ministers would then either direct the Council to hold a hearing or the Ministers would cause a public local inquiry to be held. Consideration of the Proposed

Scheme (i.e. without modification) at either a hearing or public local inquiry would enable both the Council and the objectors to put forward their respective cases to a Reporter. Notwithstanding the recommendations of the reporter, the final decision on the Scheme would rest with the Council in the case of a hearing, or with the Scottish Ministers in the case of a public local inquiry.

For this reason, the Council may wish to ask the Scottish Ministers to hold a public local inquiry rather than instruct the Council to hold a hearing. It is Jacobs' understanding that other councils have chosen to do this under similar circumstances in the past. By having the final decision on the Scheme taken by the Scottish Ministers, this would provide a degree of independent scrutiny and oversight which might be welcomed by some objectors.

References

East Lothian Council (2024). '*Position of East Lothian Council on the themes identified within the Scheme Notification Correspondence*'. Available at www.musselburghfloodprotection.com (accessed on 05/03/2025).

Jacobs (2024). '*7019090JEC-S5-XXX-XXX-RE-Z-0001 Assessment of Objection Themes*'. Version P01.1

Scottish Government (2015). '*Flood Risk Management (Scotland) Act 2009 – Local Authority Functions Under Part 4 Guidance*'. First Edition. Available at <https://www.gov.scot/publications/flood-risk-management-scotland-act-2009-local-authority-functions-under/documents/> (accessed on 19/06/2025).

Appendix A – Identification of Potential Scheme Modifications

No.	Objection Theme	Could the objection theme result in a material change to the design Y/N?	What would the material change to the design be?	Is the material change specific in its nature Y/N?	Potential modification	Carry forward to RAG analysis Y/N?	Comments
1	Project Governance	N	Not applicable	N	Not applicable	N	No comment
2	Scottish Government Policy & Funding	N	Not applicable	N	Not applicable	N	No comment
3	Independent review of Scheme	N	Unknown. The objection theme implies that independent review of the scheme would result in a different design	N	Not applicable	N	No comment
4	Evolution of scope	N	Unknown. The objection theme implies that a reduced scope would result in a different design	N	Not applicable	N	No comment
5	Option appraisal	N	Unknown. The objection theme implies that using a different methodology would result in a different design	N	Not applicable	N	No comment
6	Flood risk assessment	N	Unknown. The objection theme implies that a different FRA would result in a different design	N	Not applicable	N	No comment
7	Standard of protection	Y	Lower Standard of Protection would reduce the required height of flood defences	Y	Reduce the Scheme's standard of protection	Y	This scale of change may be beyond the scope of a modification
8	Allowance for climate change	Y	Lower climate change allowance would reduce the required height of flood defences	Y	Reduce the Scheme's allowance for climate change	Y	This scale of change may be beyond the scope of a modification
9	Estimated cost	N	Unknown. The objection theme implies that a different FRA would result in a different design	N	Not applicable	N	No comment
10	Cost-benefit analysis	N	Not applicable	N	Not applicable	N	No comment
11	Height of flood defences	Y	Reduce the height of the flood defence walls and embankments	Y	Reduce height of structure from Mouth of Esk to Links View by changing from hybrid structure to flood wall.	Y	Reduced height elsewhere would require a reduction in the standard of protection, the climate change allowance or the residual uncertainty allowance.
12	Replacement of bridges	Y	Avoid or reduce the number of bridge replacements	Y	Remove new Goosegreen Bridge from scheme	Y	No comment
13	Repairs to Ash Lagoons Seawall	Y	Leave seawall repairs to be carried out by Scottish Power	Y	Alternative approach to seawall repairs	Y	No comment
14	Consideration of Nature-based Solutions (NbS)	Y	More use of NbS in the catchment to avoid or reduce the need for flood defence walls and embankments in the town	Y	Incorporate greater use of catchment NFM	Y	This scale of change may be beyond the scope of a modification
15	Consideration of dredging	Y	Dredge the River Esk to avoid or reduce the need for flood defence walls and embankments	Y	Incorporate greater use of dredging	Y	No comment
16	Consideration of demountable defences	Y	Use demountable defences to avoid or reduce the need for static flood defence walls and embankments	Y	Incorporate greater use of demountable defences	Y	No comment
17	Consideration of Property Level Protection (PLP)	Y	Use PLP to avoid or reduce the need for flood defence walls and embankments	Y	Incorporate greater use of PLP	Y	This scale of change may be beyond the scope of a modification
18	Consideration of other reservoirs	Y	Use other reservoirs in the catchment to avoid or reduce the need for flood defence walls and embankments	Y	Incorporate use of other reservoirs	Y	This scale of change may be beyond the scope of a modification
19	Impact on amenity, health and wellbeing	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
20	Impact on tourism	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
21	Impact on biodiversity	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
22	Impact on sites designated for nature conservation	Y	Avoid or reduce the extent of construction works on the coast adjacent to the SPA	N	Not applicable	N	No comment
23	Impact on trees	Y	Reduce the number of trees to be removed	Y	Reposition defences to further reduce number of trees to be removed	Y	No comment
24	Impact of noise, vibration and dust during construction	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
25	Visual Impact	Y	Include more glass panels in flood walls	Y	Incorporate more glass panels in flood walls	Y	This change may not constitute a modification, subject to determination by Planning Working Group
26	Impact on climate change	Y	Reduce whole-life carbon within the scheme (materials, transportation, demolition)	N	Not applicable	N	No comment
27	Impact on cultural heritage	Y	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
28	Impact on Scheduled Monuments	Y	Avoid or reduce the extent of work within the Eastfield designated schedule monument area	Y	Provide alternative access to debris trap	Y	No comment
29	Impact on traffic and transportation	Y	Avoid or reduce the number of construction vehicles and the need for traffic diversions	N	Not applicable	N	No comment
30	Impact on Common Good Land	Y	Avoid or reduce the extent of construction works on Common Good land	N	Not applicable	N	No comment
31	Impact on adjacent property	Y	Avoid or reduce the extent of construction works near residential areas	N	Not applicable	N	No comment
32	Impact on accessibility	Y	Avoid or reduce the extent of flood defence walls and embankments which would change how people access the river and the beach	N	Not applicable	N	No comment
33	Impact on Public Rights of Way	Y	Avoid or reduce the extent of construction works which would impact rights of way	N	Not applicable	N	No comment
34	Impact on public safety	Y	Avoid or reduce the extent of flood defence walls and embankments which would impact people's ability to access and egress the water	N	Not applicable	N	No comment
35	Impact on vandalism and graffiti	Y	Avoid or reduce the extent of flood defence walls which could attract graffiti	N	Not applicable	N	No comment
36	Impact on surface water flood risk	Y	Improve the existing road drainage to avoid or reduce surface water ponding	Y	Incorporate improvement works to existing road drainage	Y	No comment
37	Impact of narrowing the River Esk	Y	Position the flood defences so that they do not narrow the River Esk	Y	Set back flood defences to avoid narrowing the River Esk downstream of Rennie Bridge	Y	No comment
38	Impact on coastal squeeze	Y	Allow the landward transgression of natural habitats in response to sea level rise by avoiding or repositioning coastal defences	Y	Set back flood defences at Fisherrow Links to reduce coastal squeeze	Y	No comment
39	Impact on coastal erosion	Y	Avoid or reposition coastal defences so they do not contribute to erosion of the beach in response to sea level rise	Y	Set back flood defences at Fisherrow Links reduce beach erosion	Y	No comment
40	Impact on flood risk and coastal erosion elsewhere	Y	Avoid or reduce the scale of coastal defences if they will increase flood risk or coastal erosion elsewhere along the coast	N	Not applicable	N	No comment
41	Impact on fish passage	Y	Reduce barriers to fish passage within the Scheme	Y	Remove debris trap from scheme to avoid impact on fish passage	Y	No comment
42	Impact on spread of Invasive Non-Native Species (INNS)	Y	Avoid working in areas containing INNS (River Esk riverbanks)	N	Not applicable	N	No comment
43	Impact on interests in land	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
44	Impact on Property Market	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
45	Impact on local business	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
46	Impact on investment elsewhere	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
47	Impact on areas of social deprivation	N	Avoid or reduce the extent of construction works within the town	N	Not applicable	N	No comment
48	Impact on Dalkeith Country Park	Y	Avoid the need for Whitcraigjs debris trap within Dalkeith Country Park	Y	Remove debris trap from scheme to avoid disruption in Dalkeith Country Park	Y	No comment
49	Impact on Roman and Rennie bridges	Y	Avoid or reduce the extent of construction works near Roman Bridge and Rennie Bridge	N	Not applicable	N	No comment
50	Impact of embankments on Eskside West	Y	Alter the embankment at Eskside West to avoid or reduce overlooking adjacent homes	Y	Alter the embankment at Eskside West to avoid or reduce overlooking adjacent homes	Y	No comment
51	Impact on Fisherrow Harbour	Y	Avoid flood defence walls and embankments near Fisherrow Harbour	N	Not applicable	N	No comment
52	Impact on 9-27 Edinburgh Road	Y	Alternative design of coastal defence to addresses concerns about security, privacy, and antisocial behaviour on the beach	Y	Alternative defence alignment to address concerns about privacy, security and maintenance at 9-27 Edinburgh Road	Y	No comment
53	Impact on Inveresk Estate and wider area	Y	Avoid or reduce the extent of construction works at Inveresk to address concerns about privacy, security, and accessibility of the riverside walk known as the Grove	Y	Alternative defence alignment to address concerns about privacy, security and maintenance at Inveresk Estate	Y	No comment
54	Impact on Pinkie St Peter's Primary School	Y	Avoid or reduce the extent of construction works within Pinkie St Peters Primary School and playing fields	N	Not applicable	N	No comment
55	Impact of reducing water level at Edgelaw Reservoir	Y	Avoid or reduce the need to reduce the water level in Edgelaw Reservoir in order to address concerns about safety of anglers and other recreational user of the reservoir	Y	Lessen the reduction in water level at Edgelaw reservoir to address safety concerns of anglers	Y	This change may not constitute a modification, subject to determination by Planning Working Group
56	Impact on advertising consent for information panel	Y	Relocate or replace historical information panel	Y	Relocate or replace historical information panel	N	This would not be a modification, and can be achieved through a planning condition or legal agreement with the licensee of the board
57	Influence of Dynamic Coast	Y	Unknown. The objection implies that greater consideration of Dynamic Coast would result in a different design.	N	Not applicable	N	No comment
58	Influence of MAT	Y	Do not futureproof scheme to accommodate MAT design	Y	Remove MAT deck width requirements from replacement footbridges	Y	This change may not constitute a modification, subject to determination by Planning Working Group
59	Influence of coastal change adaptation planning	N	Not applicable	N	Not applicable	N	No comment
60	Approach to public consultation	N	Not applicable	N	Not applicable	N	No comment
61	Approach to Scheme notification	N	Not applicable	N	Not applicable	N	No comment
62	Approach to FOI requests	N	Not applicable	N	Not applicable	N	No comment
63	Approach to Compensation	N	Not applicable	N	Not applicable	N	No comment
64	Approach to operation and maintenance	N	Unknown. The objection theme implies a different design with a lower operational & maintenance burden	N	Not applicable	N	No comment
65	Approach to seeking multiple benefits	N	Not applicable	N	Not applicable	N	No comment
66	Approach to EIA	N	Not applicable	N	Not applicable	N	No comment
67	Approach to delivering EIA mitigation measures	N	Not applicable	N	Not applicable	N	No comment
68	Approach to HRA	N	Not applicable	N	Not applicable	N	No comment
69	Approach to NPF4	N	Not applicable	N	Not applicable	N	No comment
70	Approach to EqIA	N	Unknown. The objection theme implies that a different approach to EqIA would result in a different design	N	Not applicable	N	No comment
71	Approach to location of site compounds	N	Not applicable	N	Different location of site compounds within scheme footprint to reduce disturbance during construction	N	This would not be a modification

Appendix B – Actions and Opportunities Register

Appendix C – RAG Analysis of Potential Scheme Modifications

Modification Reference	Objection Theme	WS	Option	Economic	Economic comments	Technical	Technical comments	Environmental	Environmental comments	Social / stakeholder	Social / stakeholder comments	Health & safety	Health & safety comments	Proposal	Comments
1	7	N/A	Reduce the Scheme's standard of protection (SOP)	R	Reducing the Scheme's SOP would reduce the damages avoided (scheme benefits). Whilst it would also reduce the capital cost of the defences, the cost reduction would be disproportionately smaller than the loss of benefits since the majority of the cost of defences is in the foundations and associated works. As a result, reducing the Scheme's standard of protection would reduce its benefit-cost ratio.	A	There are no technical challenges associated with building smaller defences than have been proposed. This change, however, would significantly affect all aspects of the Proposed Scheme and would not be small in scope as recommended by the guidance.	R	The reduction in environmental impacts resulting from a lower SOP would be marginal. This is because construction duration, construction methodology, extent of enabling works, and footprint of structures would not change substantially due to slightly lower defence heights.	R	Some objectors have indicated that they believe the standard of protection is unnecessarily high and that the risk does not merit the response. However, the number of objections on this theme is small relative to the population and the number who would stand to benefit from the scheme. It could therefore be argued that those who have not objected are either supportive or neutral with respect to the Scheme's SOP. One of the Scheme's objectives was to deliver a 0.5% AEP SOP. This modification would be incompatible with that objective.	A	Whilst any level of flood risk reduction would deliver health & safety benefits when compared to the baseline, a reduced SOP would leave more properties at risk of flooding compared to the current SOP.	Reject	This modification would be incompatible with the Scheme's objectives, would significantly alter all aspects of the Proposed Scheme, and would fail to deliver substantial environmental or social benefits. It would also compromise the business case for the Scheme.
2	8	N/A	Reduce the Scheme's allowance for climate change (either a reduction for the whole Scheme or for part of the Scheme, such as the coastal section between the River Esk and the Brunstane Burn).	R	Reducing the Scheme's allowance for climate change would reduce the damages avoided (scheme benefits). Whilst it would also reduce the capital cost of the defences, the cost reduction would be disproportionately smaller than the loss of benefits. This is because the proposal is to futureproof the design by constructing the foundations for the worst case climate change scenario, and the majority of the cost of defences is in the foundations and associated works. As a result, reducing the Scheme's allowance for climate change would reduce its benefit-cost ratio.	A	There are no technical challenges associated with building smaller defences than have been proposed. This change, however, could significantly affect all aspects of the Proposed Scheme and would not be small in scope as recommended by the stage 4 guidance for local authorities.	R	The reduction in environmental impacts resulting from a lower allowance for climate change would be marginal. This is because construction duration, construction methodology, extent of enabling works, and footprint of structures would not change substantially due to futureproofing the foundations.	R	Some objectors have indicated that they believe the allowance for climate change is unnecessarily high and that the risk does not merit the response. However, the number of objections on this theme is small relative to the population and the number who would stand to benefit from the scheme. It is therefore assumed that those who have not objected are either supportive or neutral with respect to the Scheme's allowance for climate change.	A	Whilst any level of flood risk reduction would deliver health & safety benefits when compared to the baseline, a reduced allowance for climate change would leave more properties at risk of flooding over the design life of the Scheme.	Reject	This modification would be incompatible with the Scheme's objectives, would significantly alter all aspects of the Proposed Scheme, and would fail to deliver substantial environmental or social benefits. It would also compromise the business case for the Scheme.
3	11	WS6 & 7	Change hybrid flood defence at Fisherrow to a flood wall with a wave return in order to reduce the total height of the structure	R	Capital cost associated with change in form of construction (approximately £1 million). Further increase to ELC since hybrid structure could be eligible for partial funding from Sustrans but flood wall would presumably not be. However, a net reduction could be achieved if combined with removal of Goosegreen bridge from scheme.	G	No negative impact on standard of protection provided by the scheme. Reduce flood defence level from 6.30m AOD to 5.40m AOD (900mm reduction in total height)	G	Reduction in footprint of flood defence structure, leaving more usable amenity space behind the defence Either neutral or net positive impact with respect to AESI on SPA, since there would be no activities associated with earthworks placement and compaction.	A	Public opinion on this structure is divided. Visual impact is subjective and depends upon where the viewer is and where they are looking. The embankment is more aesthetically pleasing than a wall but more intrusive due to its height. A wall would be less intrusive due to lower height but would also be less aesthetically pleasing.	G	No negative H&S implications if the form of structure is changed	Undecided	There is a demonstrable link between this modification and the objections. This modification demonstrates that ELC has listened to the objectors and has acted where it is possible to do so without compromising the performance of the scheme in terms of flood risk reduction. There would however be a capital cost of doing so if this modification is taken forward on its own.
4	12	WS36	Remove proposed replacement Goosegreen Footbridge from Scheme	A	Significant capital cost saving due to reduction in scope (approximately £3.8 million) Due to potential multiple funding streams, this would not necessarily result in a cost saving to ELC. Ranked as Amber but would be Green if there was confirmation that the change in scope did not jeopardise Sustrans funding for other components of the scheme.	G	No negative impact on standard of protection provided by the scheme. The bridge could be constructed at a later date if deemed necessary, and would not compromise the performance of the scheme's defences.	A	Reduced potential for an Adverse Effect on Site Integrity (AESI) of SPA. This would contribute to the conclusion of the HRA and potential withdrawal of statutory objection from NatureScot, albeit there are other aspects to their objection.	A	EIA adopted a precautionary approach. It could therefore be argued that removal of existing Goosegreen bridge would result in a loss of amenity provision. Objectors to the scheme argue that the proposed replacement Electric bridge would provide the equivalent amenity to that of the existing Goosegreen and Electric bridges. Therefore debatable whether there is a loss of amenity if the proposed replacement Goosegreen bridge is taken out of the scheme.	G	Reduced H&S considerations due to reduction in scope. No negative H&S implications if new bridge is not delivered.	Consider	There is a demonstrable link between this modification and the objections. This modification would demonstrate that ELC has listened to the objectors and has acted where it is possible to do so without compromising the performance of the scheme in terms of flood risk reduction.
5	13	WS45	Alternative approach to seawall repairs	R	The 2022 options study determined that alternative options which achieved the necessary objectives would have a greater capital cost.	A	The 2022 options study considered: - 9 options to whole structure; - 13 options for the headwall; - 9 options for the facing blocks; - 7 options for the stepped beams; - 7 options for the toe beams; and - 8 options for the rock armour The preferred option of a rock revetment with a new headwall scored highest of all the options considered and assessed.	R	The 2022 options study determined that alternative options would have a greater negative impact on the SPA, as well as other environmental impacts in terms of carbon cost associated with demolition and removal of more parts of the existing structure.	A	The HRA is likely to impose significant seasonal working restrictions and limitations on the size of working areas, which in turn will determine the duration of the works and therefore disruption to the public. These constraints would likely be common to the other options considered therefore the social impact due to construction duration would not be mitigated by alternative options without also sacrificing design life or other aspects of the design's performance.	R	The 2022 options study determined that alternative options which achieved the necessary objectives would have greater H&S implications.	Reject	The analysis undertaken in the 2022 options study remains valid. No new information is available to suggest that an alternative solution would achieve equivalent performance outcomes with lesser economic, environmental, social, and H&S impacts.
6	14	N/A	Incorporate greater use of catchment NFM to avoid or reduce the need for flood defence walls and embankments along the River Esk	R	Based on current scientific understanding it is not possible to quantify, with sufficient confidence, the degree of flood risk reduction which would be attributed to individual NFM measures. It is therefore not possible to undertake a cost benefit analysis of NFM measures using industry-accepted methodologies.	R	The council does not own land on which to deliver NFM within the catchment. Since NFM has not been successfully delivered on this scale before in a similar environment, there is low confidence that NFM is capable of delivering a meaningful reduction in flood risk to Musselburgh.	A	The potential environmental impact of NFM works in the catchment would be unknown until such time as candidate sites are established and specific measures are selected. So far on NFM pilot schemes, the effectiveness of individual measures has been variable.	R	Delivery of catchment NFM, if beyond the limit of land affected, would be subject to compulsory purchase of land or protracted negotiation with a large number of land owners / tenants who do not stand to benefit from the works. The current legislation is substantially incompatible with voluntary arrangements with landowners.	A	The potential H&S impact of NFM works in the catchment would be unknown until such time as candidate sites are established and specific measures are selected. Depending upon the nature of the specific measures, it may be necessary to change or restrict accessibility to the sites in question.	Reject	The risks and uncertainty associated with NFM have been well documented on the project, and no new information as been presented to indicate that the use of NFM here would achieve the necessary performance requirements.
7	15	N/A	Incorporate greater use of dredging to avoid or reduce the need for flood defence walls and embankments along the River Esk	R	Dredging would have to be done repeatedly during the life of the Scheme since natural processes would tend to replenish the river gravels that are removed. This would be expensive, and subsequent dredging works (which would not form part of the Scheme) would not be eligible for Scottish Government funding.	R	Dredging the river would provide less flood risk reduction compared to the equivalent height of defences on the riverbank. This is because the riverbed is narrower than the top of bank and therefore there is less capacity for flow at the riverbed.	R	Dredging would have a significant negative impact on the environment. It would impact fish habitats, and reduction in fish numbers could have knock-on effects for birds. It could also lead to destabilisation of riverbed and riverbank geomorphology upstream. It is unlikely that the necessary licences would be obtainable given that alternative measures of flood risk reduction are viable.	A	Dredging is perceived by some as having less social impact than fixed defences on the river banks, however the dredging process would have to be regularly repeated, which would cause repeated disturbance over the lifetime of the scheme.	A	Dredging would impose an ongoing operational burden on the council to dredge the river repeatedly throughout the life of the scheme. This would require operative to work in a water environment, and the associated risks could be designed out by use of alternative measures that do not require successive intervention during the life of the Scheme.	Reject	Dredging would have multiple negative impacts while delivering relatively little reduction in flood risk compared to alternative measures which are already proposed within the Scheme.
8	16	N/A	Incorporate greater use of demountable defences instead of static walls	R	Replacement of significant lengths of static defences with demountable defences would introduce higher operation & maintenance costs, for which there is no external funding. A significant number of trained personnel would be required, and the council does not have funding to employ them.	R	Demountable defences need regularly inspected, tested, and maintained by trained personnel. Movable defences inherently have more potential points of failure compared to static defences. Demountable defences rely on sufficient warning of an impending flood in order to deploy them in time. The scheme has several kilometres of defences, and the greater the extent of demountables, the more advance warning that would be required. There is a risk that the effectiveness of the scheme would be compromised unless all demountables are fully operational and properly deployed.	A	Use of demountables would reduce the visual impact of the scheme. However, if demountables are to be used widely across the scheme they would have to be stored in close proximity to the point of deployment. It is not clear that the council has sufficient space or transportation for storage off site. This would mean storage cabinets would be required at regular intervals along the defences, and these would have a visual impact associated with them.	G	There is some consensus among the objectors that sought greater use of demountables, that more widespread use would have positive social impacts. These are generally considered to relate to maintaining access to the riverbanks and coastline, as well as reduced visual impact.	A	Demountable defences would have greater operational H&S impacts compared to static defences. Personnel would have to be trained to deploy them safely and would require regular refresher training. Due to the nature of flood risk management, it is potential, if not likely, that such defences would have to be deployed during adverse weather conditions. This risk could be designed out with the use of static defences.	Reject	The advantages and disadvantages of demountables were carefully considered during the scheme's option appraisal. The considerations have not changed in this respect. The council does not have sufficient trained personnel to deploy these on the scale required.
9	17	N/A	Incorporate greater use of Property Level Protection to avoid or reduce the need for flood defence walls and embankments along the River Esk and the coast	R	Compared to the proposed scheme, PLP would be less expensive but would not protect the surrounding infrastructure and would not be capable of delivering the same standard of protection. Consequently, it would not deliver the same economic benefit through cost of damages avoided.	A	The feasibility of PLP installation would depend upon the form of construction of each property, and the maximum water depths associated with PLP performance would limit the standard of protection that such a scheme could provide. PLP would also have to be deployed by the individual residents rather than the council, meaning some property could be left at risk if residents were not at home when the flood warning was received.	G	PLP would have less environmental impact than the proposed scheme	A	Some objectors would prefer the use of PLP so that there was less change to the landscape of the town, however PLP would deliver a lower standard of protection. The residual flood risk to residents would therefore be greater.	G	Residents would have to be capable of safely deploying their own PLP. Since the scale of work associated with installing PLP would be less than the proposed scheme, there would not be adverse H&S impacts.	Reject	PLP would not be capable of providing a 0.5% AEP standard of protection. Surrounding infrastructure (roads, utilities, car etc.) would not be protected by PLP. The effectiveness of PLP would be reliant on it being deployed by residents rather than the council.
10	18	N/A	Incorporate use of other reservoirs to avoid or reduce the need for flood defences in Musselburgh	R	Use of Gladhouse Reservoir discounted on technical grounds. Other existing reservoirs are smaller and would not meaningfully reduce flood risk to Musselburgh. The alternative is construction of new reservoirs. One viable location was identified during option appraisal. This was discounted at the preferred scheme stage because of the significant cost and environmental impact of a new reservoir, and the recognition that it would still not avoid the need for physical defences in the town.	R	Scottish Water requires the use of Gladhouse reservoir for potable water supply and has therefore ruled out its use for flood risk management as part of the scheme.	R	Use of Gladhouse Reservoir discounted on technical grounds. Other existing reservoirs are smaller and would not meaningfully reduce flood risk to Musselburgh. The alternative is construction of new reservoirs. One viable location was identified during option appraisal. This was discounted at the significant cost and environmental impact of a new reservoir, and the recognition that it would still not avoid the need for physical defences in the town.	A	Construction of a new reservoir in the catchment would be out of sight and out of mind of residents in Musselburgh, but could have challenging implications for existing landowners.	A	Construction of a new reservoir in the catchment would introduce new operation and maintenance burden on the council. Access to the reservoir by the public and wildlife would have to be carefully managed.	Reject	The use of other reservoirs was carefully considered during the scheme's option appraisal. The relevant factors have not changed in this respect. A new reservoir would have significant cost and environmental implications and would not avoid the need for physical defences in Musselburgh, which is thought to be the driver behind this suggested modification.

Modification Reference	Objection Theme	WS	Option	Economic	Economic comments	Technical	Technical comments	Environmental	Environmental comments	Social / stakeholder	Social / stakeholder comments	Health & safety	Health & safety comments	Proposal	Comments
11	23	N/A	Reposition flood defences to further reduce the number of trees to be removed	A	Whilst reducing the number of trees affected would reduce the cost of tree felling, it would likely increase the total as a result of making the flood defences more complicated to construct.	R	Repositioning the defences to further reduce the impact on trees would be impractical. Trees have been identified for felling where it is necessary to provide safe working access to working areas, and where there is no practicable alternative. An example of this is the position of bridge ramps.	G	Further reducing the number of trees affected by the works would reduce the environmental impact of the scheme.	G	Further reducing the number of trees affected by the works would likely be supported by the community	A	Further reducing the number of trees affected by the work by repositioning the defences could increase the complexity of the construction method and increase the extent of works within the water environment.	Reject	Where practicable, the defences have already been positioned to minimise impact on trees. Some loss of trees is considered unavoidable where safe access is required and where there is no viable alternative position for the defences at that location to other competing factors.
12	25	N/A	Incorporate more glass panels in flood defence walls to address concerns relating to visual impact and connectivity with the River Esk	A	Glass panels are more expensive per linear metre than the equivalent length of reinforced concrete flood wall. Any further use of glass panels would increase the total scheme cost somewhat but whether this is significant would depend upon the scale of glass panels used.	A	Glass panels are technically more complex to ensure a watertight seal with the surrounding structure than if a solid wall was used. Glass panels can be subject to vandalism, which may compromise their performance. They have a somewhat greater risk of failure than a solid wall. The overall risk to the scheme would depend upon the extent of glass panels used.	A	Glass panels could reduce visual impact of the scheme if used in the appropriate context. It is not clear however whether more widespread use of glass panels would address these concerns, or whether these objectors are instead seeking lower height of defences.	A	Some objectors have raised concerns about visual impact of the scheme, visual assessability to the river, and discrimination of those who are shorter or seated. It is not certain however whether more widespread use of glass panels would address these concerns, or whether these objectors are instead seeking lower height of defences.	G	Assuming that the glass panels perform as intended and are not vandalised in such a way that compromises their effectiveness, there are no negative H&S impact associated with their more widespread use.	Undecided	It is not clear whether more widespread use of glass panels would truly address concerns related to visual impact of the scheme.
13	28	WS32	Provide alternative access route to Whitecraigs debris trap to avoid impact on Eastfield Scheduled Monument	A	Change in capital cost unknown, subject to design development of a preferred alternative route, but would likely result in a cost increase due to the technical challenges associated.	R	Alternatives routes which avoid the scheduled monument: a) via Cowpits Road, through Estate boundary wall and down steep wooded terrain on east of River Esk b) via perimeter of scheduled monument site to south east through heavily wooded terrain on west of of River Esk c) via downstream of A1 bridge, passing under bridge either east or west of River Esk. Option a) considered unsafe and impractical to maintain due to steepness of terrain. Option b) considered impractical due to length of route, prohibitively negative impact on ancient woodland. Option c) considered undeliverable due to height restriction below A1 bridge.	A	Engagement with HES indicates that they would be willing to withdraw their objection, subject to ELC/Jacobs expanding upon the technical justification for ruling out the alternative routes. May require additional mitigation measures to be established through application for scheduled monument consent in due course.	A	Objections from public who keep horses in adjacent fields and are concerned about disruption. Construction phase disruption will be relatively short term. Most vehicle movements associated with mobilisation and demobilisation. Operational disruption considered to be negligible. Asset expected to be remotely monitored through CCTV. Access to site would only be required following significant flood events, which the public consider to be a rare occurrence anyway. Riverside access track to be designed with consideration for equestrian users on hacking route.	A	H&S implications of alternative routes are covered by the comments under 'technical'.	Reject	Not considered necessary to achieve withdrawal of statutory objection
14	36	N/A	Incorporate improvement works to existing road drainage	R	The scale of potential improvements to the existing road drainage is unknown and could add significant additional cost to the project. This would not alleviate the need for other components within the proposed scheme as it would not address fluvial or coastal flooding.	R	Known issues with road drainage are likely linked to the performance of the associated sewer network. Whilst maintenance of the road gullies is the responsibility of ELC, the sewers are the responsibility of Scottish Water. Scottish Government is clear that funding for an FPS should not be used to subsidise the O&M obligations of Scottish Water, which has its only budget for such works.	G	Improvements to road drainage would have a positive impact if it reduced sewage spills to watercourses during storm events.	G	Improvements to road drainage would be supported by the community	G	Improvements to road drainage could be safely designed and delivered	Reject	Increasing the capacity of the sewer network to alleviate road drainage issues is the responsibility of Scottish Water and is beyond the remit of the scheme.
15	37	N/A	Set back flood defences to avoid narrowing the River Esk downstream of Rennie Bridge	R	Setting back the defences would increase cost due to additional activities associated with utility diversions and demolition of existing retaining structures.	R	The rationale for setting back the defences is that narrowing the river would increase flood risk and required defence heights. This is incorrect, since in these locations the defence height is determined by the coastal flood risk i.e. sea level rather than the fluvial risk i.e. flow in the river. The width of the river therefore has no impact on defence heights on the lower reach of the River Esk.	R	The defences were positioned into the river downstream of Rennie bridge in order to reduce impact on trees. Setting back the defences on the riverbank at Eskside East would increase the number of trees to be felled.	A	While some objectors are opposed to the river being narrowed and would prefer set-back defences, other objectors are opposed to the loss of trees that would be exacerbated by setting back the defences.	A	Setting back defences downstream of Electric Bridge would introduce new demolition activities associated with the existing retaining walls on both riverbanks. This can be designed out if the new defences are constructed in the water in front of the existing structures and the void backfilled.	Reject	Setting back the defences to avoid narrowing the river would not, contrary to popular believe, reduce flood risk and defence heights. It would however increase cost and loss of trees.
16	38	WS7	Set back coastal defences at Fisherrow Links to avoid or reduce coastal squeeze	A	Setting back the defences around the east, south and west sides of Fisherrow Links would increase the length of defences by approximately 450m, at a cost of £3-5 million depending upon the form of structure.	A	Whilst setting back the defences would be technically achievable, it would introduce two points where the line of defence crosses the coastal pumped sewer. This would leave the sewer, which is a critical regional asset, unprotected and at risk of coastal erosion.	A	Whilst setting back the defences would reduce coastal squeeze, Fisherrow Links would be eroded, the coastal sewer would fail, and the amenity value of the area would be reduced. It is also questionable whether the Links area would provide an equivalent functional habitat for the SPA qualifying interests.	R	It is unlikely that the public would support the intentional sacrifice of Fisherrow Links to become a replacement for the intertidal area.	A	There would be a negative H&S impact on amenity users of the area, since the Links would become part of the intertidal area.	Reject	This modification would be expensive, would compromise critical infrastructure, and it is uncertain that it would effectively mitigate the effects of coastal squeeze on qualifying interests
17	39	WS7	Set back coastal defences at Fisherrow Links to reduce beach erosion	A	Setting back the defences around the east, south and west sides of Fisherrow Links would increase the length of defences by approximately 450m, at a cost of £3-5 million depending upon the form of structure.	R	Whilst setting back the defences would be technically achievable, the Dynamic Coast assessment indicates that erosion of the beach will occur with or without the scheme in place, as a result of sea level rise.	R	Setting back the defences will not prevent the beach from eroding, and will in fact leave Fisherrow Links at risk of erosion too.	R	It is unlikely that the public would support set back defences if it was understood that the beach erosion would occur anyway in response to rising sea levels.	A	There would be a negative H&S impact on amenity users of the area, since the Links would become part of the intertidal area.	Reject	This modification would be expensive and would not address the issue, which is the erosion of the beach. This erosion would be caused by sea level rise rather than the Scheme, and is supported by Dynamic Coast's assessment.
18	41	WS32	Remove debris trap from the scheme to avoid impact on fish passage	A	Removal of the debris trap would remove costs associated with the trap. However, it would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. These additional costs would possibly mean the modification is cost neutral.	G	Removal of the debris trap would be technical straightforward.	A	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. This would have a greater impact on the heritage setting of these structures. The debris trap could be designed to manage fish passage, and would therefore not necessitate its removal.	R	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. It is unlikely that the public would support this.	R	Removal of the debris trap would place the Roman Bridge and Rennie Bridge at greater risk of debris strike and possible failure.	Reject	Debris trap can be designed to manage fish passage. It is therefore unnecessary to remove it from the scheme.
19	48	WS32	Remove debris trap from the scheme to avoid disruption to users of Dalkeith Country Park during the construction phase	A	Removal of the debris trap would remove costs associated with the trap. However, it would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. These additional costs would possibly mean the modification is cost neutral.	G	Removal of the debris trap would be technical straightforward.	A	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. This would have a greater impact on the heritage setting of these structures.	R	Removal of the debris trap would increase the risk of bridge blockage and would require an increase in defence heights upstream of Roman Bridge and Rennie Bridge. It is unlikely that the public would support this. Once constructed, the debris trap will have negligible impact on Dalkeith Country Park. The construction phase would cause a modest increase in traffic associated with material deliveries and personnel, but this would be relatively short and in the order of 4-6 months.	R	Removal of the debris trap would place the Roman Bridge and Rennie Bridge at greater risk of debris strike and possible failure.	Reject	The long term benefits of the debris trap in terms of deducing risk to Roman and Rennie bridges, combined with the reduction in defence heights there, are considered to outweigh the temporary disruption during the construction phase of the trap. This disruption would be limited in duration and would affect relatively few people.
20	50	WS3, 4	Alter the embankment at Eskside West to reduce overlooking adjacent homes	G	Changes to path on embankment would be unlikely to incur significant additional cost.	A	Height of embankment cannot be reduced without sacrificing standard of protection. Position of embankment occupies most of riverbank and cannot be moved without increasing impact on trees or river. Crest path could be removed or moved from crest to part way down the dryside slope.	A	Position of embankment occupies most of riverbank and cannot be moved without increasing impact on trees or river.	G	Reducing overlooking of adjacent home would likely be supported by the public	G	No H&S issues with this change	Undecided	This is unlikely to constitute a modification, and can be addressed during detailed design.
21	52	WS12	Alternative defence alignment at 9-27 Edinburgh Road to address residents' concerns about security and privacy	A	The proposed solution is likely the lowest cost. Moving the defence closer to the properties would incur costs associated with garden reinstatement and outbuilding replacement. Moving further away from the properties would require larger foundations and more mitigation for impact on the SPA.	R	The expected size of the defence foundations mean that the defence cannot be closer to the properties without undermining the existing brick walls, fences and outbuildings.	A	Moving the flood defence further away from the properties would increase impact on the SPA intertidal area and its qualifying interests.	A	Some residents would prefer the defence to be closer to their property in order to dissuade the public using the area between their property and the defence. This is not technically viable. Residents would not support replacing their boundary with the flood defence because this would involve significant disruption to their gardens, outbuildings etc.	R	Moving the flood defence closer to the properties would significantly increase the risk of existing walls/fences/outbuildings collapse	Reject	The alternative alignment that the residents would prefer is not technically achievable without significant disruption to their properties and existing boundaries. Furthermore, moving the defences further away from their homes would not address their concern.
22	53	WS29	Alternative defence alignment at Inveresk Estate to reduce impacts on access to the Grove during construction	A	Maintaining access to the riverside path during construction would require the defence to be set back into the gardens of the Inveresk Estate properties. This would require demolition of the existing stone wall and removal of mature trees. This would increase cost and increase the likelihood of compensation claims from residents.	A	Maintaining access to the riverside path during construction would require the defence to be set back into the gardens of the Inveresk Estate properties. This would require demolition of the existing stone wall which is part of a category B listed building.	R	Alternative alignment to maintain access during construction would require additional tree removal. This was previously considered during the outline design and identified as a potentially significant effect in the EIA. It was therefore designed out.	R	Maintaining access to the riverside path during construction would require demolition of the existing stone wall of the properties and annexation of parts of the gardens. The residents would almost certainly oppose this due to impact on their security and loss of garden.	R	It would be impracticable to maintain safe public access to the riverside during construction unless the defences were substantially repositioned into the adjacent gardens, which would lead to a significant loss of garden for the residents.	Reject	Impact to access along the Grove will be temporary during the construction phase. There is no viable modification that would avoid this temporary impact with out significant permanent impact to the existing stone wall and properties.

Modification Reference	Objection Theme	WS	Option	Economic	Economic comments	Technical	Technical comments	Environmental	Environmental comments	Social / stakeholder	Social / stakeholder comments	Health & safety	Health & safety comments	Proposal	Comments
23	55	WS30	Lessen reduction in water level at Edgelaw Reservoir to address concerns about safety of anglers	A	Lessening the reduction in water level at Edgelaw would require the defence heights and bridge heights in the town to increase in order to maintain the same standard of protection. This would result in an increase in cost.	A	Lessening the reduction in water level at Edgelaw would be technically achievable. It would however require the defence heights and bridge heights in the town to increase in order to maintain the same standard of protection. Further work would be required to determined whether the corresponding increased ramp lengths would be technically achievable, particularly at Ivanhoe Footbridge.	A	Due to the steepness of the reservoirs sides, there would be no significant environmental benefits to lessening the reduction in water level.	R	The lessening of the reduction in water level would address a primarily H&S concern within the objection, however the increased defence heights and ramp lengths described in the technical section would likely be opposed by stakeholders / other objectors.	G	The lessening of the reduction in water level would address the H&S concern within the objection.	Reject	The concerns regarding safety can be addressed without lessening the proposed reduction in water level. Such changes can be incorporated within the detailed design. These changes could include extensions to existing jetties, fencing around relevant parts of the new perimeter, and marginal planting of newly exposed areas.
24	58	WS33, 34, 35	Remove MAT deck width requirements from proposed footbridges	R	Significant capital cost increase in the long term assuming that the bridges are replaced by the scheme and then replaced a second time by the MAT during the design life of the scheme.	G	There are no technical difficulties associated with narrowing the width of the bridge decks (assuming that they would then be replaced at a later date by the MAT. This aspect would change to amber if the abutment widths had to be future-proofed for the MAT).	R	Increased environmental impact assuming that the MAT proceeds and needs to replace the bridges a second time. The increased impact would be due to the disturbance occurring twice.	A	Public opinion regarding the impact of the MAT on replacement bridges is divided. Opposition is predominantly with regard to the width and length of the ramps. The length is a function of the design flood level and is independent of the MAT. The width could be reduced if MAT requirements are excluded.	A	Increased H&S implications assuming that the MAT proceeds and needs to replace the bridges a second time. The increase would be due to the construction works occurring twice.	Reject	It is assumed that the MAT project will likely proceed at some point during the lifetime of the scheme. This modification is therefore not consistent with the scheme's objective to seek to achieve multiple benefits.
25	-	WS15	Additional flood gate at 49B Edinburgh Road	A	Capital cost increase associated with providing an additional flood gate (approximately £50,000). Additional operation & maintenance cost associated with one additional flood gate.	A	There may be technical challenges associated with the operation and maintenance of a flood gate in a coastal environment. Specifically the risk of windblown sand inhibiting the closure or sealing of the gate, since it is assumed it would normally be in the open position.	A	Potential increase in pedestrian access to the beach at this location if the access is formalised.	A	This modification was only raised by one objector. There may be opposition to this modification from neighbours who have not objected so far but who might object to the modification.	A	Existing access is informal and comprises a sandy slope from the road down to the beach. Formal access would have to include ramped access unless a a departure from standard is obtained.	Undecided	The benefit of this modification would be negligible. While it would likely enable one objection to be withdrawn, this was not an issue raised by the rest of the community. It may introduce an additional O&M burden which as been design out elsewhere.
26	12	WS34	Relocate the new Shortshoppes Street Footbridge further downstream	A	There may be a cost increase associated with relocating the new bridge if this resulted in a longer clear span. This could occur if the river width is wider or the bridge is more skewed at the new location.	G	There are no technical difficulties associated with relocating the new bridge downstream.	G	There are no environmental difficulties with relocating the bridge downstream	A	Relocating the bridge downstream would reduce visual impacts to 14-16 Eskside East. Relocating downstream would impact the ability to construct the new bridge offline while the existing bridge remained open to the public, and would mean more pedestrian disruption during the construction phase. Relocating the bridge downstream would negatively impact the desire line from the bottom of the eastern downstream ramp when heading towards the High Street.	A	Due to the social impacts stated, there are increased health and safety risks during the construction phase as a result of not constructing the new bridge offline, and having to potentially send pedestrians over Rennie bridge, which has a narrower footpath next to a busy road.	Undecided	The benefits associated with relocating the bridge are limited to three properties on Eskside East, whilst the disbenefits associated with cost, offline construction and desire lines would impact the wider community.
27	12	WS34	Remove the proposed ramp on the upstream eastern side of the new Shorthope Street Footbridge	A	Omitting the ramp would result in a small cost reduction to the Scheme, but may result in a net greater cost once the impact on the MAT design is factored in.	A	Omitting the ramp would have a future impact on the MAT as it is assumed the route would go up and over the upstream and downstream ramps. Without the upstream ramp, the MAT route would have to be adjacent to the structure. This would occupy more space and could clash with the existing road, which is already narrow.	A	Omitting the ramp would have a negligible environmental impact with respect to the scheme, but there would be a negative impact if the MAT route then had to go around the outside of the remaining downstream ramp. Doing so would occupy more space.	A	Omitting the ramp would reduce visual impact on 14-16 Eskside East, but would make the approach to the bridge more awkward for users.	A	Omitting the ramp could have a negative health and safety impact if it led the subsequent MAT design to have to narrow the road in order to pass the remaining downstream ramp.	Undecided	The benefits associated with relocating the bridge are limited to three properties on Eskside East, whilst the disbenefits would impact the wider community.
28	25	WS6-16	Remove coastal defences from the Scheme between The River Esk and the Brunstane Burn	R	Removing the coastal defences would reduce cost but could also impact the economic appraisal in terms of cost of damages avoided by the scheme. It is likely that such a change would reduce the scheme's benefit to cost ratio. Further analysis would be required to determine how significant this reduction would be.	A	Removing the coastal defences would be technically achievable. However, if a coastal flood did then occur and the defences on the River Esk had been built, flood water could potentially become trapped behind defences in areas such as New Street and Eskside West during higher return period events. Further flood modelling would be required to ascertain the extent of this risk.	A	Whilst removing the coastal defences from the Scheme would eliminate the environmental impact from their construction, their omission would leave Fisherrow Links susceptible to erosion as a result of rising sea levels, as well as at flood risk from higher return period events.	R	Removing the coastal defences from the scheme would leave properties across the west of the town at increasingly greater flood risk during the lifetime of the rest of the Scheme. This approach would discriminate against some properties and would be inconsistent with the Scheme's objectives.	R	Without coastal defences there would be increased risk to life from coastal flooding during the lifetime of the rest of the Scheme.	Reject	This modification would be incompatible with the Scheme's objectives, would significantly alter all aspects of the Proposed Scheme, and would compromise the business case for the Scheme.
29	25	WS6-16	Change the coastal defences from a wall on land to a tidal barrier	R	A tidal barrier, either across the Firth of Forth or around the Musselburgh coastline, would be significantly more expensive to construct than fixed defences on land. Even if technically possible, a tidal barrier would introduce significant O&M costs. It is very likely that both the capital and operational costs would be unaffordable to the council.	R	A tidal barrier across the Firth of Forth , downstream of Musselburgh would be technically unachievable due to the width and depth of the estuary. Even a smaller tidal barrier around Musselburgh's coastline would be technically very challenging. Tidal barriers are technically complex structures. It is very likely that the O&M burden on the council would be prohibitive. A tidal barrier would also likely have significant technical challenges associated with marine traffic and siltation.	R	A tidal barrier would impact the outer Firth of Forth SPA. Since there are viable less damage alternative solutions to reduce flood risk, such a barrier would fail an HRA assessment.	A	Whilst removing the coastal defences on land might be desirable by some residents, a tidal barrier around Musselburgh's coastline would require agreement from the Crown Estate, Marine Directorate, NatureScot and other stakeholders.	R	The O&M burden of a tidal barrier would introduce unnecessary health and safety risks which would not exist for a static defence on land.	Reject	This modification would be economically, technically and environmentally unviable.
30	25	WS6-16	Change the coastal defences from the proposed flood wall to a beach nourishment programme	R	Replacing the coastal defences with a beach nourishment programme would have significant economic impacts. Beach nourishment could mitigate wave overtopping in the short term but would be ineffective against inundation as a result of climate change induced sea level rise. As a result, this would significantly impact the economic appraisal in terms of cost of damages avoided by the scheme. Beach nourishment would likely have to be repeated during the lifetime of the scheme, thus introducing a significant O&M cost to the council which is not eligible for Scottish Government funding. It is highly likely that such a change would reduce the scheme's benefit to cost ratio and compromise its business case.	R	Beach nourishment could mitigate wave overtopping in the short term but would be ineffective against inundation as a result of climate change induced sea level rise. Therefore it does not provide an equivalent level of protection to the proposed coastal defences.	A	The environmental impact of beach nourishment would depend upon how much sand was required, how closely this could be sourced, and the whole life carbon cost associated with this. There would also be an impact on the SPA. It is noted that beach nourishment would likely need to be repeated during the lifetime of the scheme, thus introducing potentially cumulative effects.	A	Whilst removing the coastal defences on land might be desirable by some residents, beach nourishment by itself would not provide an equivalent level of flood risk reduction.	A	Further design development would be required to establish potential health and safety risks associated with this form of construction, taking account of the likely need to repeat the process during the lifetime of the scheme.	Reject	This modification is economically prohibitive and not compatible with the scheme's objectives in terms of standard of protection and allowance for climate chance. Subject to further investigation however, it could form part of an adaptive strategy in addition to the proposed coastal defences.
31	25	WS23	At Mall Avenue, relocate proposed flood wall to the edge of the road at Mall Avenue	G	Changing the position of the wall here would have negligible impact on cost.	G	Changing the position of the wall here would be technically achievable, subject to removal of the trees next to Mall Avenue.	R	All the mature trees on the west side of Mall Avenue would have to be removed to facilitate this modification. As well as the environmental impact, this would affect the historic setting of both the Roman Bridge and the Rennie Bridge, which could prevent listed building consent being obtained. This alternative defence alignment was considered and discounted during the outline design as a result of consultation with the public and statutory stakeholders.	R	Public consultation indicated that impact on trees was among the most contentious issues relating to the scheme design. There would likely be significant opposition to the removal of mature trees on Mall Avenue in proximity to the Roman Bridge and The Rennie Bridge.	G	There are no health and safety concerns associated with this modification.	Reject	This modification is rejected on the basis of increased impact on trees, and the likely opposition of the public associated with this. The design was altered at this location specifically to reduce impact on trees.