Moray Council

Tuesday, 30 November 2021

NOTICE IS HEREBY GIVEN that a **Special Meeting** of the **Moray Council** is to be held at **Remote Locations via Video Conference**, on **Tuesday, 30 November 2021** at **14:00.**

BUSINESS

1.	**Sederunt**	
2.	**Declaration of Group Decisions and Members Interests ***	
3.	**Regional Economic Partnership** Report by Chief Executive	**5 - 10**
4.	**Remit of the Audit and Scrutiny Committee** Report by Depute Chief Executive (Education, Communities and Organisational Development)	**11 - 32**
5.	**River Spey Flood Mitigation Proposals** Report by Depute Chief Executive (Economy, Environment and Finance)	**33 - 198**
6.	**Short Medium Term Financial Planning** Report by Depute Chief Executive (Economy, Environment and Finance)	**199 - 216**

Any person attending the meeting who requires access assistance should contact customer services on 01343 563217 in advance of the meeting.

GUIDANCE NOTES

* **Declaration of Group Decisions and Members Interests -** The Chair of the meeting shall seek declarations from any individual or political group at the beginning of a meeting whether any prior decision has been reached on how the individual or members of the group will vote on any item(s) of business on the Agenda, and if so on which item(s). A prior decision shall be one that the individual or the group deems to be mandatory on the individual or the group members such that the individual or the group members will be subject to sanctions should they not vote in accordance with the prior decision. Any such prior decisions will be recorded in the Minute of the meeting.

THE MORAY COUNCIL

Moray Council

SEDERUNT

Councillor Shona Morrison (Chair)
Councillor Graham Leadbitter (Depute Chair)

Councillor George Alexander (Member)
Councillor James Allan (Member)
Councillor David Bremner (Member)
Councillor Frank Brown (Member)
Councillor Theresa Coull (Member)
Councillor John Cowe (Member)
Councillor Gordon Cowie (Member)
Councillor Lorna Creswell (Member)
Councillor John Divers (Member)
Councillor Tim Eagle (Member)
Councillor Ryan Edwards (Member)
Councillor Claire Feaver (Member)
Councillor Donald Gatt (Member)
Councillor Marc Macrae (Member)
Councillor Aaron McLean (Member)
Councillor Maria McLean (Member)
Councillor Ray McLean (Member)
Councillor Louise Nicol (Member)
Councillor Laura Powell (Member)
Councillor Derek Ross (Member)
Councillor Amy Taylor (Member)
Councillor Sonya Warren (Member)
Councillor Walter Wilson (Member)

Clerk Name:	Tracey Sutherland
Clerk Telephone:	07971 879268
Clerk Email:	committee.services@moray.gov.uk

REPORT TO: MORAY COUNCIL ON 30 NOVEMBER 2021

SUBJECT: REGIONAL ECONOMIC PARTNERSHIP

BY: CHIEF EXECUTIVE

1. REASON FOR REPORT

1.1 To seek agreement to participate in the Regional Economic Partnership for the Highlands and Islands with the Council Leader acting as the Council's representative in this partnership, supported by the Chief Executive.

2. RECOMMENDATION

2.1 It is recommended that the Council:

i) agree to participate in the Highlands and Islands Regional Economic Partnership (HIREP); and

ii) appoint the Council Leader as the Council's representative on the HIREP, supported by the Chief Executive.

3. BACKGROUND

3.1 The Phase 2 report of the Enterprise and Skills Review (2017) committed Scottish Government to enabling a network of Regional Economic Partnerships (REPs) across Scotland to meet its ambition of inclusive growth. This commitment acknowledged the importance of place and the need for "an approach that better understands regional strengths and opportunities, enabling a more tailored approach at both the regional and national level."

3.2 There is no prescribed model for a REP and therefore they vary in governance, scale and membership. In general, they are collaborations led by local authorities, the private sector, education and skills providers, economic development agencies, and the third sector. The Review highlighted that private sector representation on regional partnerships was expected "where government investment is sought".

Regional Economic Partnership In Practice

3.3 REPs have mostly formed around growth deals in Scotland to date and have focused on establishing an economic vision for their region, inclusive governance and economic action plans. However, the nature and scale of these REPs varies widely. For example, the three Ayrshire Local Authorities,

together with the enterprise and skills agencies, private sector, education and third sectors, formed a Regional Economic Partnership in 2019. The REP will deliver scrutiny of the growth deal, develop a shared regional economic strategy, and is working to co-create the Community Wealth Building project as part of the growth deal.

3.4 In contrast, in Moray our REP has been Moray Economic Partnership (MEP) and whilst MEP includes similar representatives, it does not extend beyond Moray. In the years before Moray Growth Deal was conceived, there was some discussion as to whether Moray should align itself with either the Aberdeen City Region Deal or the Inverness City Region Deal. This was not progressed as, due to our particular geography, we look both north and east for many economic and socio-economic purposes, being part of NHS Grampian with Aberdeen City and Aberdeenshire and the Convention of Highlands and Islands with many more northerly local authorities including Highland and the Islands. Argyll and Bute is in a similar position.

3.5 The role of REPs was highlighted in the Scottish Government response to the Advisory Group Report on Economic Recovery which identified the need for local and regional approaches to recovery to reflect the different challenges across Scotland. The Scottish Government response acknowledged that REPs would be enabled to develop economic recovery plans. MEP has done so.

3.6 As highlighted above, the Scottish Government has indicated REPs as important vehicles in developing a shared vision and understanding of a region's opportunities and challenges and accelerating inclusive economic growth at a regional level. There is also the potential to be a delivery vehicle for other funding, such as the Shared Prosperity Fund, but the routing of this is not yet clear.

A Highlands And Islands Regional Economic Partnership

3.7 The Enterprise and Skills Review acknowledged that, in addition to REPs forming around growth deals in Scotland, the Convention of the Highlands and Islands (COHI) was "a well-established forum which fosters partnership working to drive sustainable economic growth" across the Highlands and Islands region. This sentiment was echoed in the discussion at the October 2020 COHI meeting when it was agreed to progress discussions on the best means by which to strengthen regional economic structures.

3.8 The nature and scale of the Highlands and Islands region is markedly different from other REP areas in Scotland. In considering the remit of REPs (as set out in the Review) COHI meets the broad principles however, whilst it has a strong level of public partnership it differs from other REPs in its governance – through Scottish Government – and membership with no private or third sector members.

3.9 There is no precept to develop a new structure, however if a regional framework extending beyond Moray is required, COHI presents a solution but would potentially require adaptation. Some concerns have been expressed about the number of existing partnerships, the resource implications, and the need for added value from a new structure and this has been taken into account in discussions at COHI level.

3.10 COHI agreed that Highlands and Islands Enterprise (HIE) should undertake initial work to scope out and put in place Terms of Reference (ToR) for a Highlands and Islands REP. HIE subsequently facilitated a set of discussions with Local Authority Leaders and developed an initial ToR. That initial ToR has subsequently gone through several iterations to arrive at the present draft outlined at **Appendix 1**.

3.11 The ToR make it clear that HIREP is a body for collaboration and advocacy, focussing on areas of joint strategic purpose and co-ordinated activity to better promote regional growth. Sovereignty at local level will remain, as HIREP is seen as being complementary to local authority area groupings such as MEP rather than taking their place. In that respect, HIREP could be seen as similar to the collaborative governance set up under the Northern Strategic Territory Partnership Board and Northern Alliance for Education, seeking to support and promote expanded geographical co-operation where the advantages of this are clear.

3.12 The present iteration of the ToR is assessed as providing an appropriate balance across the requirements of the partners and a set of activities appropriate to Moray's requirements.

3.13 If Moray agrees to join HIREP, as is clear from the draft ToR it is envisaged that the Council Leader will be the Council representative supported by the Chief Executive.

3.14 The first meeting of HIREP is due to be called shortly and confirmation of Moray's position is now required. The draft ToR will be considered at this meeting.

4. SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))
The economic objectives of the HIREP appear to match those within the Corporate Plan and LOIP.

(b) Policy and Legal
There are no policy or legal implications not apparent from the ToR.

(c) Financial implications
There are no financial implications other than attending meetings of the HIREP and these are likely to be aligned with meetings of COHI Leaders where possible**.**

(d) Risk Implications
Non-participation in the REP is the key initial risk. Monitoring of HIREP activities will be important to guard against new risks emerging.

(e) Staffing Implications
Staff resources will be required to support Moray attendees at the HIREP and to support any additional activities generated by the HIREP.

(f) Property
None.

(g) Equalities/Socio Economic Impact
There are no direct implications.

(h) Consultations
The Depute Chief Executive (Economy, Environment and Finance), Jim Grant, Head of Economic Development and Growth and Tracey Sutherland, Committee Services Officer have been consulted.

5. CONCLUSIONS

5.1 COHI seeks to strengthen alignment between the Scottish Government and member organisations in order to support sustainable economic growth.

5.2 Work has been ongoing within COHI to create a framework for a REP which will meet the various needs across partners and governments whilst respecting the sovereignty of the Council, and the draft ToR is proposed as such a framework.

Author of Report:	Chief Executive
Background Papers:	Held with author
Ref:	SPMAN-1108985784-685 SPMAN-1108985784-687

A Regional Economic Partnership Model for the Highlands and Islands

Draft Terms of Reference

Following initial agreement at COHI to explore the strengthening of regional structures to support economic recovery, several discussions have taken place between Local Authority Leaders, HIE CEO and HIE Chair about the rationale for the establishment of a Highlands and Islands Regional Economic Partnership (REP).

These discussions have identified the potential for a REP focusing on regional opportunities and challenges and the need for clarity in defining the role and remit of a REP within a landscape that includes COHI itself, CPPs, City and Growth Deal Partnerships, and other area and sub regional groupings.

This paper sets out, for discussion, draft terms of reference for a Highlands and Islands REP.

Purpose

The Highlands and Islands Regional Economic Partnership's purpose is to enable inclusive and sustainable economic growth and build resilience throughout the region, by identifying and focussing on areas of joint strategic purpose to provide co-ordinated action in pursuit of regional growth opportunities and to address shared challenges.

Remit

The Highlands and Islands REP will fulfil its purpose through:

- Identifying opportunities for collaborative and co-ordinated action in pursuit of agreed regional priorities, ensuring, where appropriate, that stakeholders plans are aligned, and resources are deployed efficiently and effectively
- Advocating on agreed regional economic opportunities and challenges, and where appropriate leading in discussions with Scottish Government, UK Government and other organisations
- Being future focused in looking ahead to identify emerging regional opportunities and challenges where collaborative action can maximise outcomes and impact.
- Working to understand evolving approaches to external funding and reacting to maximise impact across all parts of the region
- Understanding sub-regional economic dynamics and, where appropriate, formulating solidarity actions to ensure that no part of the Highlands and Islands is left behind

Membership

Membership of the Highlands and Islands REP is likely to comprise:

- Highlands and Islands Local Authorities
- Highlands and Islands Enterprise
- Skills Development Scotland
- Scottish Funding Council
- University of the Highlands and Islands (and SRUC?)

- Nature Scotland
- HITRANS
- Private sector representation - tbc (Chamber, SCDI, FSB?)
- Third Sector / Social Economy representation – tbc (SCVO, other?)
- Other agencies – tbc (eg. Visit Scotland, Zero Waste Scotland, Scottish Forestry, Crown Estate Scotland)

Working Principles

Operation and governance is to be agreed through discussion as the REP is established. However, it is envisaged that:

- REP meetings will take place at least twice a year, co-ordinating with COHI, though may meet more frequently if required
- Chairing of meetings to rotate annually between Local Authority members
- Attendance from member organisations is to be decided by them, the expectation being that meetings are, as far as possible attended by an organisation's Leader / Chair with support from the CEO / senior officer
- An officer working group, or other arrangement, is put in place to action and implement REP decisions

Relationship with COHI and Growth Deal Partnerships

The Highlands and Islands REP is distinct from COHI in that it is led by the regional stakeholders and has a remit that extends across policy development and delivery oversight. The REP will inform and contribute to the COHI agenda.

The Highlands and Islands REP can complement and add value to the work of existing local authority area groupings by enabling a co-ordination of approach across shared opportunities and challenges and facilitating activity across local authority boundaries, where appropriate.

REPORT TO: SPECIAL MORAY COUNCIL ON 30 NOVEMBER 2021

SUBJECT: REMIT OF THE AUDIT AND SCRUTINY COMMITTEE

BY: DEPUTE CHIEF EXECUTIVE (EDUCATION, COMMUNITIES AND ORGANISATIONAL DEVELOPMENT)

1. REASON FOR REPORT

1.1 The report informs the Council that following the outcome of the vote taken at the Meeting of the Council on 10 November 2021 in relation to the approval the scrutiny remit of the Audit and Scrutiny Committee and of a Scrutiny Guide, it was noted that the outcome of the vote was declared before all councillors votes had registered on the system.

1.2 This report is submitted to Committee in terms of Section II (10) of the Scheme of the Council's Scheme of Administration, changes in committee responsibilities.

2. RECOMMENDATION

2.1 It proposed that the Council reconsider the report submitted to the meeting on 10 November 2021 (Appendix 1) in light of the issues relating to the vote.

3. BACKGROUND

3.1 Members will recall that at the meeting of the Moray Council dated 10 November 2021 following the debate on the report seeking clarification of the remit of the Audit and Scrutiny Committee there was a division which resulted in the taking of a vote.

3.2 When the vote was initially called by the Clerk some members experienced technical difficulties and it was unanimously agreed to abandon the vote and re-take it.

3.3 A second vote was called which resulted in an equality of votes and therefore (under Standing Order 63(e)) the clerk advised that the Chair had the casting vote. The motion was carried with eleven votes (ten plus the Chair's casting vote) to 10 and 3 abstentions.

3.4 Following the close of the meeting the Clerk noted that one vote had not been counted and that the outcome of the vote had been called prematurely. This

was not picked up at the time as the total number appeared correct (although an additional member had joined the meeting). .

3.5 Given the narrow margin of the result of the vote and the irregularity in the process it is considered prudent for the vote to be re-taken to remove any uncertainties over the decision.

3.6 Whilst the Council has become more accustomed to holding meetings online this incident highlights the ongoing challenges of online meeting administration and the importance of ensuring that the vote is closed before any result is declared. Members are also reminded to ensure that they have pressed the 'submit' button when they have made their choice.

4. SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))
Having strong governance arrangements in place contributes to the Corporate Plan aim of having a Sustainable Council.

(b) Policy and Legal
The advice of the Monitoring Officer is that there is sufficient uncertainty over the voting process to merit the vote being taken again and that it would not be appropriate to apply the six month rule (Standing Order 82).

(c) Financial implications
There are no direct financial implications from the recommendations in this report. Having strong scrutiny arrangements in place will assist with good financial governance.

(d) Risk Implications
None

(e) Staffing Implications
None

(f) Property
None

(g) Equalities/Socio Economic Impact
No direct implications.

(h) Consultations
CMT have been consulted.

5. CONCLUSION

5.1 The Council is asked to reconsider the report submitted to the meeting on 10 November 2021 on the remit of the Audit and Scrutiny committee (Appendix 1) due to an irregularity in the voting procedure.

Author of Report:	Head of Governance, Strategy and Performance.
Background Papers:	Moray Council Webcast - 10 November 2021
Ref:	SPMAN-2045703626-123 SPMAN-2045703626-124

REPORT TO: **MORAY COUNCIL ON 10 NOVEMBER 2021**

SUBJECT: **REMIT OF THE AUDIT AND SCRUTINY COMMITTEE**

BY: **DEPUTE CHIEF EXECUTIVE (EDUCATION, COMMUNITIES AND ORGANISATIONAL DEVELOPMENT)**

1. REASON FOR REPORT

1.1 The report seeks the Council approval, as part of the final stage of the Council's review of committee governance arrangements, to clarify the scrutiny remit of the Audit and Scrutiny Committee and approve a Scrutiny Guide.

1.2 This report is submitted to Committee in terms of Section II (10) of the Scheme of the Council's Scheme of Administration, changes in committee responsibilities.

2. RECOMMENDATION

2.1 It proposed that the Council:

(i) agree the remit of the Audit and Scrutiny Committee contained in paragraph 4.2 below;

(ii) agree that the Council's Scheme of Administration is revised to reflect the remit in terms of Appendix 1;

(iii) approve the Scrutiny Guide attached as Appendix 2 to be adopted as part of the Council's Second Tier Governance Documents;

(iv) consider reducing the frequency of meetings of the Audit and Scrutiny Committee from 8 weekly to quarterly; and

(v) consider reducing the number of Members who sit on the Audit and Scrutiny Committee.

3. BACKGROUND

Recent committee decisions

3.1 Following a governance review the Council agreed changes to its committee structure at a meeting on 30 June 2021 (para 24 of the minute). The Scheme of Administration was revised to reflect these changes and agreed at a meeting of the Council on 15 September 2021 (para 32 of the minute refers).

3.2 Two issues are outstanding from the 30 June decision:

- Clarify the scrutiny role of the Audit and Scrutiny committee with reference to a separate scrutiny guidance document.
- Consider the merit of a sub-committee for Children's Services with recommendations to the Education, Children's and Leisure Services Committee.

3.3 This report deals with the outstanding scrutiny issue. A separate report on this agenda addresses the position in relation to the Children's Services sub-committee.

Statutory background

3.4 Whilst there is no explicit statutory duty on local authorities in Scotland to put scrutiny measures in place, there is a statutory duty to pursue Best Value. Scrutiny and continuous improvement arrangements are closely linked to Best Value and are subject to Best Value recommendations by Audit Scotland.

Scrutiny through committees

3.5 Local authorities in Scotland approach scrutiny in different ways:

- In local authorities with an administration led **cabinet or executive** committee there is a need to have a separate scrutiny committee (or committees) with wide ranging call in powers to achieve political balance.
- In local authorities where the administration group significantly outnumbers opposition groups then more robust and formal scrutiny arrangements may be needed to achieve political balance.
- In local authorities where there is a finer political balance then scrutiny tends to be "frontloaded", largely taking place in meetings of the Council and service committees.

3.6 Whatever model is adopted it is important to ensure that there are adequate opportunities for Members to scrutinise service policy, decision making and performance and that scrutiny arrangements are kept under regular review to ensure that they meet the needs of the organisation.

3.7 Scrutiny of service policy, decision making and performance used to take place through the Council's Audit and Performance Review Committee. The Council chose to move this scrutiny function to service committees in a review of the Scheme of Administration in 2014 at which time the committee was renamed the Audit and Scrutiny Committee.

3.8 Since then service committees undertake the bulk of scrutiny activity in the Council with active questioning and monitoring of progress against agreed outcomes. The role of the Audit and Scrutiny Committee has been less clear in relation to its scrutiny function and would benefit from further definition.

Scrutiny guidance and training

3.9 In addition to the committee scrutiny function a number of local authorities have additional guidance and training for Members. The Audit and Scrutiny committee have identified that the Council would benefit from a scrutiny

guidance document and considered a draft Scrutiny Handbook at their meeting on 19 November 2019 (para 6 of the minute). This meeting agreed to set up a working group to consider the terms of a scrutiny handbook, however with the time and logistical pressures of the pandemic and then the subsequent governance review this working group has not met.

External scrutiny

3.10 In addition to scrutiny by Members through committees there are a number of ways in which effective scrutiny of Council policies, decision making and performance can take place. These are shown in draft Scrutiny Guide detailed at paragraph 4.3 below and attached as **Appendix 2**

4. PROPOSALS

4.1 Given the healthy level of scrutiny that takes place in the Council and its service committees it is considered appropriate that the Audit and Scrutiny committee assume a "safety net" role to pick up on areas which have been flagged by internal audit or external audit and regulators and ensure that these are followed through for improvement action.

4.2 It is proposed that the scrutiny role of the committee is defined as follows:

To scrutinise areas of policy, service delivery or performance identified for improvement in:

(i) internal and external audit reports where sufficient evidence of progress from the appropriate committee is not available;
(ii) reports or findings from external regulators where sufficient evidence of progress from the appropriate committee is not available.

To receive reports on the performance of and trends within the Council's services as a whole in terms of the Local Government Benchmarking Framework.

4.3 The Audit and Scrutiny Committee would be empowered to make recommendations to service committees in the areas identified for improvement.

4.4 To help clarify the scrutiny function within the Council, improve the quality of frontline scrutiny by service committees and assist Members in this process it is further proposed that the Council adopt the **Scrutiny Guide** attached as **Appendix 2** to this report and that this document is published within the Council's Second Tier Governance Documents.

4.5 To complement the guide, the Council's Organisational Development team are arranging further training for Members in scrutiny. This training delivery will be supported by the Improvement Service.

4.6 Agendas for the Audit and Scrutiny Committee tend to be shorter than for other service committees and it is proposed that the frequency of meetings is reduced from 8 weekly to 12 weekly. This reduced frequency would still allow for the timely consideration of audit reports.

4.7 Members may also wish to consider the number of members who sit on the Audit and Scrutiny Committee. The only membership requirement for this committee is that it should reflect political balance. There is no prescription on who the Committee chair should be although there is a convention in Moray that the chair is not a member of the administration group. Guidance and best practice suggests that a scrutiny committee benefits from its membership being drawn from more experienced Members.

5. SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))
Having strong governance arrangements in place contributes to the Corporate Plan aim of having a Sustainable Council.

(b) Policy and Legal
There are no legal requirements in relation to scrutiny. It is a matter of policy for the council to determine.

(c) Financial implications
There are no direct financial implications from the recommendations in this report. Having strong scrutiny arrangements in place will assist with good financial governance.

(d) Risk Implications
None

(e) Staffing Implications
None

(f) Property
None

(g) Equalities/Socio Economic Impact
No direct implications.

(h) Consultations
CMT, the Head of Finance, the Audit and Risk Manager and the Chair of the Audit and Scrutiny Committee have been consulted.

6. CONCLUSION

6.1 The Council is asked to review its scrutiny arrangements, approve an update of the remit of the Audit and Scrutiny Committee within its Scheme of Administration and approve a Scrutiny Guide as part of its Second Tier Governance Documents.

Author of Report: Head of Governance, Strategy and Performance.
Background Papers: none
Ref:

Appendix 1

Scheme of Administration: Audit and Scrutiny remit

(I) AUDIT AND SCRUTINY COMMITTEE

The following functions of the Council shall stand referred or delegated to this Committee:

Standards

(1) To ensure that the highest standards of probity and public accountability are demonstrated.

Audit Functions

(2) Considering reports from the Council's Internal Auditor.

(3) Considering reports from Audit Scotland concerning Council functions.

(4) Contributing towards making the Council, its Committees and Services more responsive to the audit function and its purpose.

(5) Enhancing corporate governance arrangements by promoting internal control and risk management, by supporting an anti-fraud culture, and by the review of revisions to financial procedures.

(6) Having responsibility for focussing audit resources through a process of endorsing the five year strategic audit plan and agreeing the annual programme of work.

(7) Monitoring delivery of the audit service through receipt of quarterly reports on work carried out by Internal Audit.

(8) Considering reports produced by the Council's External Auditor and by Audit Scotland.

(9) Considering the annual assurance statement provided by Internal Audit on the Council's control environment.

Scrutiny Functions

(10) To scrutinise areas of policy, service delivery or performance identified for improvement in:
(i) internal and external audit reports where sufficient evidence of progress from the appropriate committee is not available;

(ii) reports or findings from external regulators where sufficient evidence of progress from the appropriate committee is not available.

(11) To receive reports on the performance of and trends within Council's services as a whole in terms of Local Government Benchmarking Framework.

Inquiries

(12) To deal with all matters relating to local inquiries into matters affecting children.

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SCRUTINY GUIDE

Approved by: Moray Council on [date]

Author: Head of Governance, Strategy and Performance

Date for review: Nov 2025

This document is a guide for the public, councillors and officers to how scrutiny works in Moray Council. It is divided into nine parts:

1. What is scrutiny?
2. An overview of council scrutiny
3. External scrutiny
4. Internal scrutiny
5. Scrutiny by councillors through the committee process
6. Scrutiny by councillors outside the committee process
7. The role of the Audit and Scrutiny Committee
8. Principles of good scrutiny for councillors
9. Scrutiny tools and techniques for councillors

1. What is scrutiny?

1.1 The Council raises and is allocated a significant amount of public money to deliver services for the public. Effective scrutiny helps the Council demonstrate that this money is being spent wisely and accountably and that it is continually seeking to improve the services it provides to the public.

1.2 Scrutiny arrangements in Scottish local authorities are not covered by statute but are a matter for each local authority to determine.

1.3 The following extracts from the Improvement Service Scrutiny Notebook are useful:

> ***The overall objective of scrutiny is improvement. There is an unremitting demand upon council services to deliver real improvements to their communities, customers or users.***
>
> ***Scrutiny should be more than a process of enquiry. It is a vital component of good governance and improves councils' decision-making, service provision and cost-effectiveness.***

2. An overview of council scrutiny

2.1 The following diagram shows the ways in which Council policies, actions and decisions can be scrutinised, both externally and internally.

SCRUTINY

OF THE COUNCIL AND ITS DECISIONS

EXTERNAL

EXTERNAL AUDIT AND BEST VALUE AUDIT

PUBLIC SCRUTINY AND ENGAGEMENT

- Elect councillors / councillor access and lobbying
- Other consultations
- Consultations on specific projects
- Community council consultation
- Other consultations
- Public performance reporting
- Access to committees through petitions process
- Complaints process
- Statutory appeals and litigation

OTHER REGULATORS AND COMMISSIONERS

SCRUTINY BY THE PRESS, MPs AND MSPs

INTERNAL

INTERNAL AUDIT

- Review policies systems and processes

SCRUTINY BY COUNCILLORS

- Informal questions to officers
- Briefings and group leader forum
- Project boards and working groups
- Committee debate, written questions and question time
- Notice of motion to committee

3. External scrutiny

3.1 This diagram shows that, as well as being accountable to a number of external regulatory bodies, the Council are directly accountable to the public in a number of ways.

4. Internal scrutiny

4.1 The wide range of Council functions and the decisions required to keep these functions operating are delegated to committees (made up of councillors) and to officers. It helps to look at the different, but complementary role of councillors and officers:

> **Councillors** set strategy, review resources, performance and risk through Council and Committee meetings. They are accountable to the electorate
>
> **Officers** keep services running, implement policies/decisions and provide options to the Council and its committees for decisions to be made. They are accountable to the Council and its committees.

5. Scrutiny by councillors through the committee process

5.1 Most Council functions are delegated to committees which meet regularly to consider policy, budget and performance information for the services within the remit of that committee. The Council's current committee structure, as detailed in its Scheme of Administration, can be found on the following webpage. [link to be inserted]

Scrutiny is every councillor's job. It helps ensure that the Council remains transparent, accountable and open, resulting in improved public policies and services.

Council and committee meetings provide the primary means for councillors to carry out their scrutiny role*.*

5.3 Through debate and questioning at committee councillors can query and seek assurances on:

- Budget and financial information
- Progress against plans and policies
- Service performance
- Complaints

5.4 Councillors can request further action in areas where the need for improvement action is needed:

- Further evidence, consultation, investigations facts or reports
- Closer monitoring and reporting of areas of concern

- Escalation of areas of concern

Options for “delving deeper” are explored in more detail in paragraph 9 below.

5.5 Council decisions are taken by majority vote and situations may arise where a minority group of councillors feel that they have not received adequate assurances in relation to an area of concern. The Council’s **Standing Orders** make provision for councillors to seek further scrutiny on any topic by

- Seeking **clarification** on minutes of prior meetings
- Raising a **Notice of Motion**
- Submitting a **Written Question** to the committee chair which is answered in public session.
- Asking a verbal question during **Question Time** at a committee meeting.

6. Scrutiny by councillors outside the committee process

6.1 There are a number of other ways in which councillors can seek assurances outside of a formal meeting:

- Informal questions to officers: Officers are generally available to answer questions raised by councillors. This provides an informal means of scrutiny and can save escalation of issues.
- Briefings to councillors. Briefings can be a useful way for information to be presented to councillors on complex issues. Councillors have the opportunity to ask questions of officers and explore options.
- Policy development meetings with officers and senior councillors.
- Project boards and working groups.

7. Additional scrutiny through the role of the Audit and Scrutiny Committee

7.1 The role of the scrutiny function of the Audit and Scrutiny committee is to facilitate additional scrutiny that does not duplicate scrutiny carried out by other means.

7.2 Whilst the Chair of the Audit and Scrutiny committee has traditionally been nominated by the largest non-administration group, the role of chair and of the committee should be non-political and focused on improvement.

7.3 The role of the committee is defined in the Council’s Scheme of Administration as:

> ***To scrutinise areas of policy, service delivery or performance identified for improvement in:***

(i) internal and external audit reports where sufficient evidence of progress from the appropriate committee is not available;

(ii) reports or findings from external regulators where sufficient evidence of progress from the appropriate committee is not available.

To receive reports on the performance of and trends within the Council's services as a whole in terms of the Local Government Benchmarking Framework.

8. Principles of good scrutiny for councillors

8.1 The four principles of good scrutiny per the Improvement Service are:

- To provide 'critical friend' challenge to council services as well as to external authorities and agencies;
- To reflect the voice and concerns of the public and communities;
- To lead and own the scrutiny process;
- To make an impact on the delivery and improvement of public services.

8.2 Scrutiny in context

Best practice guidance highlights that:

- In a climate of reducing resources the importance of scrutiny has never been greater.
- The principal power of a scrutiny committee is to influence the decisions and policies of the council and other organisations involved in delivering of public services.
- For scrutiny to be effective, it must be seen as an investment in improvement, which requires it to be targeted, proportionate and effective from a cost benefit perspective.

8.3 Effective Scrutiny

Whilst debate can focus on politics, it is important for effective scrutiny that:

- The focus is not on negatives or apportioning blame, but is a genuine endeavour to improve service delivery;
- An objectivity is displayed that is likely to encourage the political administration to acknowledge and accept points arising from scrutiny activity;
- There is a willingness from all party groups and individuals to make scrutiny work effectively; otherwise the reviews are unlikely to add value.

Good scrutiny can involve the public in certain situations; however the rationale for doing so would be predicated on the expected outcomes from any review taking

place. This would include consideration of the capacity of the council in terms of its governance and risk framework to take forward recommendations likely to arise from the scrutiny process and the costs of resourcing any consultation or engagement activity.

9. Tools and Techniques for scrutiny

9.1 Carrying out effective scrutiny requires a number of skills. In particular, there is a need for members of the Committee to undertake useful questioning when undertaking any of the responsibilities delegated by the Council. There is also a need to understand and, where appropriate, challenge the performance data that is presented to the Committee.

9.2 This section of the guide provides some of the tools and techniques that can be useful in delivering good scrutiny across the range of functions of the Council.

9.3 Questioning and Listening Techniques

(i) Why are questions important?

Detail from officers/consultees is often the most valuable source of information. The right questions are the most effective way to get the information you want in a way that you understand. Questioning is not about winning the debate but establishing the facts. A good question will:

- Establish validity of key data
- Seek clarification
- Seek further evidence
- Explore ideas
- Question assumptions
- Challenge facts or opinion

(ii) Open Questions

Open questions allow the respondent to inform the questioner about a situation in their own words. This gives the committee an opportunity to listen, process the response and take note of any gaps or concerns that could be crucial to the review.

An example of an open question would be:

"What are your thoughts regarding the provision of youth facilities?"

(iii) Probing Questions

One of the most important questioning techniques for those undertaking scrutiny is the probing method. Probing questions are used to obtain further information from a respondent. For example:

Respondent: Our performance is the best in Scotland.

Questioner: “You said that our performance is the best in Scotland. How do you know? How is that measured?”

(iv) Follow Up Questions

Follow up questions are needed if there are inconsistencies, questions not answered, answers not clear or insufficient detail. Those asking questions need to be persistent and pursue the answers they are looking for. For example:

Respondent: We benchmark with the other 31 Scottish Councils on a set of performance indicators and Audit Scotland has ranked us the best in Scotland.

Questioner: How have you achieved this?

Respondent: Our success is due to the staff involved.

Questioner: Can you explain in more detail how our staff have achieved this success?

(v) Closed Questions

Closed questions are answered yes or no and are used to verify the situation.

Questioner: So you are saying that staff training has led to the improvement in performance?

Respondent: Yes

(vi) Good Practice in Questioning

There is a difference between holding to account and helping to improve. A questioner will focus on points of interest and ask more about any gaps in the information. Body language and tone also make a difference. Identify the questions in advance to:

- Ensure that you know what information you want.
- Help to explain what you are trying to get at.
- Address issues that members and the public are really concerned about
- Ensure the correct person is there to deal with the questions
- Focus on helping to improve as well as holding to account
- Question like a ‘critical friend’

(vii) Bad Practice in Questioning

It is possible to ask questions that have an adverse effect on how the respondent will answer:

- Leading questions – force the respondent to answer in a certain way

- Multiple questions – confuse the respondent
- Hypothetical questions – if so unlikely to happen, why ask?
- Unfocused, broad questions – difficult to answer
- Discriminatory or offensive questions

(viii) Active Listening

We listen to obtain information, understand and learn. Research suggests that we remember between 25-50% of what we hear. In a ten minute conversation, most people will only 2.5 to 5 minutes of the conversation. Therefore:

- Focus on any introductory remarks
- Show that you are listening
- Provide feedback and check your understanding of points
- Avoid making a judgement too quickly
- Respond appropriately

9.4 Making Sense of Performance Data

(i) Typical Features of a Performance Report

A typical performance report at the Council contains some common features:

- Area of performance being measured – eg education, economy, environment
- Number of performance indicators – the number used will depend on the area being reported with increasing emphasis being placed on a few key indicators.
- Target for each performance indicator – targets may be set by the Service, Partnership, nationally
- Trend information over a defined period – the Council tends to look at performance over a three year period
- Overall result for each performance indicator – often we use arrows to illustrate trends

(ii) What do the statistics tell us?

- Are we improving? Look at the trend information, what's happened over the last three years?
- Are we on track to reach our targets? Are the targets that have been set reasonable? Have we achieved what we set out to achieve? Performance trend and achievement of target are separate issues.
- Do we understand why we are performing at the current level and what is being done to improve? Is there an adequate explanation?

(iii) Challenging Service Analysis

Committee members will not necessarily be experts in all areas. There will be occasions when it is reasonable to ask questions about what Services have said. For example (data for illustration only):

Performance Area	Relevant Indicator	Target 2017/18	Performance Data and Trend		Comments	Target 2018/19
Waste collection	% of household waste collected on due date	90%	2015/16 – 80% 2016/17 – 82% 2017/18 – 83%	↑	We will continue to improve.	95%

- Do we agree that performance is improving? Over the last three years, we have improved by 3%. Is this a significant improvement?
- We have not reached our target for 2017/18. Was this ever achievable? Why is it set so high? Past performance suggests that 90% is not a realistic target. Why have we increased it to 95% for 2018/19?
- Is the comment adequate to explain why we are achieving current levels of performance? Do we know what real action is being taken to improve our performance in this area?
- Is this indicator alone enough to tell us how we are performing in the area of waste collection. What else do we need to know?

Further Information

Useful Web Links

The Centre for Public Scrutiny http://www.cfps.org.uk

The Improvement Services http://www.improvementservice.org.uk

Scottish Government http://www.scotland.gov.uk

Audit Scotland http://www.audit-scotland.gov.uk/scrutiny

REPORT TO: MORAY COUNCIL ON 30 NOVEMBER 2021

SUBJECT: RIVER SPEY FLOOD MITIGATION PROPOSALS

BY: DEPUTE CHIEF EXECUTIVE (ECONOMY, ENVIRONMENT AND FINANCE)

1. REASON FOR REPORT

1.1 To inform the Council of issues related to flood risk from the River Spey at Garmouth, as set out in the Notice of Motion agreed at the meeting of Moray Council on 15 September 2021 (paragraph 5 of the minute refers).

2. RECOMMENDATION

2.1 It is recommended that the Council:

i) consider the history of the investigations since 2007 and Moray Council Policy on Flood Risk Management, outlined in paragraph 3.8, including the reasons why this Policy was agreed in 2016;

ii) if minded to instruct works, progress the best value solution, Local Land Raising at a cost of £25,000 to £45,000, excluding staff costs, as outlined in paragraph 3.12; and

iii) agree that if the proposal put forward by the community is to be progressed, it should be progressed by the community, as outlined in paragraph 3.23.

3. BACKGROUND

3.1 At a meeting of Moray Council on 15 September 2021 (para 5 of the minute refers), it was agreed that Officers would bring a report to this meeting of the Council with details of the potential solutions identified by Officers with indicative costs and a high level review of the proposals put forward by the community, based on the report drafted by Hamish Moir of cbec eco-engineering UK Ltd (cbec).

Flood History

3.2 Garmouth consists of approximately 220 households and 500 people. The village is surrounded by agricultural land, except to the east where Garmouth Golf Course separates the village from the River Spey. The dismantled railway line runs in an east - west direction and spans the River Spey. Ross

House, at Queenshaugh, is a single isolated property located south of the dismantled railway line.

3.3 The vast majority of Garmouth is elevated above the River Spey's natural floodplain. However, a small number of properties located at the north east end of the village are located at a lower elevation on the edge of the River Spey's floodplain. There are approximately 10 properties currently at risk of flooding in Garmouth.

3.4 There are two flood mechanisms at Garmouth, which are dependent on water level within the River Spey.

1. Mechanism one – occurs at lower return periods, where the River Spey floods the land to the south of the rail embankment. Water flows across the fields through the two openings in the embankment into the golf course and towards low lying properties at Garmouth.
2. Mechanism two - occurs when levels are high enough to overtop the left hand bank of the river to the north of the railway embankment. At this point both mechanisms will be working as one, causing significant and wide scale flooding of the low lying land around the Garmouth and Kingston area.

Haskoning Study 2007

3.5 In October 2007 Moray Council commissioned Royal Haskoning to undertake a Pre-Feasibility Study for a Flood Alleviation Scheme (FAS) at Garmouth, to identify the potential for further investment in a grant eligible Flood Alleviation Scheme for Garmouth. The report looked at a number of different factors, including flood history, existing flood risk, environment and geomorphology. These areas informed the options, which could be available to protect Garmouth including the cost of constructing them and the benefits they would provide. The report concluded that the indicative baseline flood damages in Garmouth are estimated to be £350,000. These damages are based on 2007 figures, which are now out of date, however, the economic feasibility would be broadly the same, as construction costs have also increased since 2007. The report identified a number of flood protection measures that could be implemented at Garmouth. These options were assessed against technical feasibility, economic feasibility and sustainability. The report concluded that while it was technically feasible to construct a flood protection scheme for Garmouth it was not economically feasible to do so, as the cost of protection works are significantly higher than the damages. Based on the recommendations in this report a full feasibility study, which would include a detailed benefit cost analysis, was not progressed. Further detail on this study can be found in **Appendix 1**.

3.6 Since 2007 the frequency of flooding at Garmouth has increased and in the last 3 years this has been more significant. The increase in the frequency has not changed the number of properties affected by flooding but has changed how often they flood. The increase in flood frequency occurs when water levels are lower than in 2007. As the depth of flooding is low the increase in damages is not significant and will not have a significant impact on the economic feasibility of providing a flood protection scheme for Garmouth.

3.7 The change in frequency is due to the current position of the River Spey, compared to its position in 2007. As the bank has been eroded, lower ground

behind the bank is now exposed and is subject to overtopping at lower water levels than was the case in 2007, increasing the frequency of flooding at Garmouth.

Moray Council Flood Risk Management Policy

3.8 At a meeting of Moray Council on 25 May 2016, members agreed the current policy with regard to delivering Flood Protection Schemes (paragraph 11 of the minute refers). The current policy is "To deliver schemes that are approved in the Flood Risk Management Plans". As part of the Council's commitment to achieving a financial sustainable position, the Council agreed to review its policies and priorities to reduce capital expenditure and avoid abortive work. The current Flood Risk Management Policy was agreed as part of this review. This Policy means that flood protection works will not be progressed for some communities within Moray that are affected by flooding because they are not included in the Flood Risk Management Plans. These communities include Portgordon, Arradoul and Garmouth.

3.9 There are no actions identified for the development of a Flood Protection Scheme at Garmouth in the Flood Risk Management Plans for Cycle 1 (2016 – 2022) or Cycle 2 (2022 – 2028). When developing the Flood Risk Management Plans, actions to implement Flood Protection Schemes are only identified where it is economically feasible to do so. For a scheme to be considered feasible the benefits from reduced damages must exceed the cost of the works. The study undertaken in 2007 demonstrated that it is not economically feasible to construct a flood scheme at Garmouth. The number of properties at risk of flooding from the River Spey has not changed since this study was undertaken, therefore, the economic feasibility has not changed, which is why a scheme has not been identified for Garmouth. The frequency of flooding has increased but as outlined in paragraph 3.6, this will not significantly impact on the economic feasibility of providing a flood protection scheme for Garmouth. If a scheme is not included in the Flood Risk Management Plans, it will not be considered for grant funding from Scottish Government.

Moray Council Investigation 2020

3.10 In October 2020 Garmouth and Kingston Amenities Association raised concerns with regard to the increase in flooding at Garmouth. The Association claimed that flooding is now occurring when water level readings at the SEPA Boat O'Brig level gauge are lower than had occurred previously. In response to these concerns, Moray Council committed to:

1. review existing topographical survey information between the River Spey and Garmouth Village, so that the flow mechanism can be understood for different flood levels;
2. review options to reduce the interaction of the Black Burn and the River Spey until normal floodplains are active; and
3. review operational Flood Warning Level.

3.11 Local Councillors wrote to community representatives on 4 February 2021, advising the study was in progress and on completion a meeting would be arranged with the community and other interested parties to discuss its findings.

3.12 The study was completed in July 2021 and the report on its findings was shared with community representatives in August 2021. The study identified seven potential solutions to reduce the frequency of flooding. Since completing the original report two of the solutions have been modified, these have been detailed in the revised report, which is provided in **Appendix 2**. A short description of each solution is provided below, along with indicative costs. The costs identified for each solution do not include staff costs which would come from the Council's revenue budget and would range from £9,000 to £20,000 depending on the complexity of the solution. The level of protection provided, in terms of return period, cannot be quantified without undertaking complex river modelling, which would cost in the region of £100k. However, these options will provide a barrier between the river and properties in Garmouth, to a level that is equal to or exceeds the bank levels in 2007. Therefore, each of the solutions identified below will mitigate against the recent increase in frequency of flooding at Garmouth. To undertake these mitigation works would not comply with Council Policy, as only works that are economically feasible would be included in the Flood Risk Management Plans. Additional detail on the advantages and disadvantages of each solution is provided in **Appendix 2**.

1. **Offset Flood Bund** (**£300,000 to £400,000) -** This solution is to install an offset flood bund. The bund would follow the line of the Ross House access track before heading behind Ross House and back to the railway embankment. The bund would be made up of a rock core and earth face.

2. **Low Level Bunds at Railway Embankment**: (**£100,000 to £125,000) -** This solution is to place low level rock armour bund within the bridge openings on the railway embankment.

3. **High Level Bund at Railway Embankment** *(***£400,000 to £500,000) -** This solution is to install a larger bund\wall within the bridge holes with an approx. height of 2m. The wall would be constructed of concrete and independent of the railway bridge.

4. **Low Level Wall at Spey Street Burn** (**£75,000 to £125,000) -** This solution it to install a low level wall along the burn and parallel to the village hall, with a small rise at the footpath bridge over the burn. The wall could be constructed of brick.

5. **Adaption Plan** (**£30,000) -** An Adaptation Plan would be developed in conjunction with Community Engagement. The Plan would consider the current and future flood risk to receptors and assets and consider how they can be modified to manage the flood risk.

6. **Natural Flood Management (£100,000 to £150,000) -** This solution is to plant the field in certain locations with Willow obtained from the east bank of the River Spey. In addition to planting Willow, fallen trees will be buried in the field with the root balls exposed. The placement of Willow and root balls should cause the river to deposit sediment in low lying areas and raise the land locally creating a natural barrier to flooding.

7. **Local Land Raising (£25,000 to £45,000) -** This solution would raise the land in and around Ross House and Black Burn to fill the depressions which are highlighted in the ground elevation model (LIDAR data). Fill would be protected and planted.

3.13 During the investigation officers spoke to and met with community representatives and a number of affected people, to understand what the issues were and what had changed over the last year. A number of site visits were undertaken to better understand the change in flood mechanism in this area. Since completing the investigation, officers have met with local landowners to discuss the proposals.

3.14 On 14 October 2021 a meeting was held with community representatives, landowners and other interested parties to discuss the findings of the investigation. At this meeting community representatives advised that they would like to progress the work identified in the report by cbec outlined in paragraph 3.18, which the community commissioned. The Kingston and Garmouth Amenities Association advised that a combination of the solutions identified by officers and the proposal identified in the cbec report would provide the most sustainable solution to flooding issues at Garmouth.

3.15 As stated in Section 3.9 of this report, there is no statutory funding available to undertake flood protection works at Garmouth. In Policy terms there would also be no funding available from Moray Council to undertake these works. However, alternative funding sources to undertake these works, such as the Scottish Land Fund and The Peoples Postcode Lottery, are available for the community to bid for.

Community Proposal - CBEC

3.16 Cbec was commissioned by Innes Community Council to undertake development of sustainable options for the management of the lower River Spey. A review of this work has been undertaken by officers, based on the information provided in the report drafted by Hamish Moir of cbec. A copy of this report is provided in **Appendix 3**.

3.17 The report states that “The highly dynamic nature of the Lower Spey in the vicinity of the Spey Viaduct means that if left unchecked, continuing erosion of the left bank at Ross House poses a potential risk of destabilising adjacent infrastructure, properties, local amenities and land use.”

3.18 The proposal put forward by cbec is to encourage the dominant flow of the river to migrate towards a more easterly orientation that approaches the main span of the Spey Viaduct. This would be achieved by installing a large wooden structure approximately 300m upstream of Ross House and undertaking sediment management in the river to encourage flow down a previously active channel.

3.19 Officers have reviewed the proposal outlined in cbec’s report and have identified a number of issues, which are listed below.

1. The proposed design is indicative and the report recommends that a member of the cbec design team be present on site to identify modifications required to the design during construction (refer **Appendix 3** page 21).

2. The proposal is based on engineering judgement and no modelling or detailed design calculations have been provided to demonstrate the integrity of the proposal.
3. The report focuses on channel management and does not identify any benefits the proposal would have with regard to flood mitigation. As such, the economic feasibility of this proposal cannot be assessed.
4. The report does not specify a design life for the proposal or what the future maintenance requirements might be.
5. The proposal has been designed to withstand a moderate size of flood event, which has not been quantified in the report.
6. The cost information provided for the proposal is very high level and does not include an allowance for risk. The estimated cost without risk is £82,350.
7. The proposed method of construction is to undertake "field fitting", which could result in significant changes being made during construction, which could increase costs.

3.20 The main driver for the proposal put forward by cbec is to stabilise the situation by reducing the risk of bank erosion. However, the report does not provide any evidence to demonstrate that this proposal will provide mitigation with regard to the recent increase in flood frequency at Garmouth.

3.21 Based on the information in the report, there is uncertainty with regard to how robust this proposal would be and what the ongoing maintenance requirements might be for the party responsible for the finished works. There is also insufficient design information to allow anyone other than the cbec designer to progress this proposal. As such, Moray Council should not participate in the delivery of this proposal.

Conclusion

3.22 The proposals identified by Moray Council at para 3.12 above will address the increase in flood frequency at Garmouth, which has been caused by erosion of the left hand bank of the River Spey at Queenshaugh. These proposals will not stabilise the river and reduce the risk of further erosion. As such, over time the banks of the river will continue to erode and could, at some point in the future, undermine the flood mitigation measures identified by Officers. To progress any of the solutions identified in Section 3.12 of this report would contravene current Council Policy with regard to Flood Risk Management. Should members choose to contravene this Policy it may create a precedent with regard to undertaking flood mitigation works that are not economically feasible. This work would also have to be funded by Moray Council, or community accessed funding, as it would not be eligible for grant funding from Scottish Government. Should members choose to progress one of the solutions identified in Section 3.12, then the lowest cost solution of raising land locally at a cost of £25,000 - £45,000 would provide best value. This is because the level of protection that each of the proposed solutions will provide cannot be quantified beyond reducing the flood frequency to 2007 levels. .

3.23 The cbec proposals put forward by the community, if successful, would stabilise the river and reduce the risk of further erosion. However, the report drafted by cbec does not indicate what flood protection this proposal would provide. As Moray Council has had no involvement in the development of this proposal, it should not progress this work, as it could not take responsibility for the integrity of the design or the potential ongoing maintenance implications

associated with it. The work required to develop this proposal was commissioned by the community and should be progressed by the community, should it choose to do so.

4. SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))

Empowering and connecting communities

(b) Policy and Legal

To undertake flood mitigation works at Garmouth would contravene Council Policy with regard to Flood Risk Management. Council Policy is "To deliver schemes that are approved in the Flood Risk Management Plans".

(c) Financial implications

When the Council approved the budget for 2021/22 on 3 March 2021 (paragraph 3 of the Minute refers) it balanced only by using one-off financial flexibilities. The indicative 3 year budget showed a likely requirement to continue to make significant savings in future years. All financial decisions must be made in this context and only essential additional expenditure should be agreed in the course of the year. In making this determination the committee should consider whether the financial risk to the Council of incurring additional expenditure outweighs the risk to the Council of not incurring that expenditure.

Should members agree to fund flood mitigation and / or bank stabilisation works at Garmouth, this funding would need to come from the Council's revenue budget, or community raised funding, as it would not be eligible for grant funding from Scottish Government.

(d) Risk Implications

The method of construction indicated in the proposal put forward by the community indicates that there is some uncertainty with regard to the proposed design. Any changes made during the construction process are likely to increase costs.

There is uncertainty with regard to the design life of the proposal put forward by the community.

To progress any of the solutions identified in Section 3.12 of this report would contravene current Council Policy with regard to Flood Risk Management. Should members choose to contravene this Policy it may create a precedent with regard to undertaking flood mitigation works that are not economically feasible.

(e) Staffing Implications

There are currently no staff resources within the Consultancy Section available to undertake the work identified in this report. If any of the solutions identified in 3.12 are progressed the design and site supervision work would need to be outsourced at a cost of approximately £9,000.

(f) Property
Low lying properties in Garmouth will continue to flood with increased frequency if no mitigation works are undertaken.

(g) Equalities/Socio Economic Impact
There are no equalities / socio economic implications associated with the recommendations in this report.

(h) Consultations
Depute Chief Executive (Economy Environment & Finance), Head of Economic Growth and Development, Chief Financial Officer, Legal Services Manager and Tracey Sutherland, Committee Services Officer have been consulted and their comments incorporated into the report.

5. CONCLUSIONS

5.1 The flood frequency at Garmouth has increased recently due to erosion of the left hand bank of the River Spey.

5.2 Council officers have identified seven potential solutions to reduce the frequency of flooding back to 2007 levels. The option that provides best value is the lowest cost option, which is to raise land locally at a cost of £25,000 to £45,000.

5.3 A proposal has been put forward by the Garmouth community that indicates it would stabilise the river banks by reducing erosion. It is uncertain to what level this proposal would reduce the increased frequency of flooding at Garmouth.

Author of Report: D Halliday
Background Papers:
Ref: SPMAN-524642768-506

Garmouth Flood Alleviation Scheme
Pre-Feasibility Study

The Moray Council

November 2007
Final Report
9S9650

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Date/initials check	23/11/07
Approved by	Paul Hart
Date/initials approval	23/11/07

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APPENDICIES

1 INTRODUCTION

1.1 Aim of the Study

In October 2007 The Moray Council (the Council) commissioned Royal Haskoning to undertake a Pre-Feasibility Study for a Flood Alleviation Scheme (FAS) at Garmouth.

In accordance with the Council's original brief (*ref letter dated 3rd September 2007 Council ref G.02.01*) and the agreed proposal (*MFA430 October 2007*), the aim of this study is to identify the potential for further investment in a grant eligible FAS for Garmouth. This study concentrates on determining the feasibility of a 1 in 100 year standard FAS for Garmouth. This study addresses the fluvial flood risk presented by the River Spey, but does not consider flood risk from other sources, for example coastal or pluvial.

1.2 The Study Area

1.2.1 General Description

Garmouth is a small rural settlement located in Moray approximately 10 miles east of Elgin. Garmouth consists of approximately 220 households and 500 people *(Moray Local Plan 2000)* and is located on the west bank of the River Spey just 1km inland from Spey Bay. *Figure 1* shows Garmouth's proximity to the River Spey and the Moray Firth. Garmouth is surrounded by agricultural land, except to the east where Garmouth Golf Course separates the village from the River Spey. The Golf Course Club House and the village sewage treatment works are located on the golf course east of the village. The southern extent of the village is defined by the dismantled railway line that runs in an east - west direction and spans the River Spey. Ross House, at Queenshaugh, is a single isolated property located south of the dismantled railway line.

1.2.2 Flood History

Garmouth is located at the downstream end of the River Spey Catchment. The River Spey is a major watercourse and ranks 7th in the UK in terms of estimated peak flow, 8th in terms of mean annual discharge and 9th in terms of catchment area (2988km^2) *(River Spey Catchment Management Plan 2003).*

The vast majority of Garmouth is elevated above the River Spey's natural floodplain. However a small number of properties, located at the north east end of the village, are located at a lower elevation on the edge of the River Spey's floodplain. *Figure 2* shows

the topography of the River Spey valley and Garmouth area. Garmouth's close proximity to the River Spey has meant it has suffered from repeated flooding.

To determine Garmouth's flood history a flood chronology was produced utilising the following sources:

- British Hydrological Society's (BHS) "Chronology of Hydrological Events in the United Kingdom"; *www.dundee.ac.uk/geography/cbhe;*
- Consultation with Council Officers;
- Previous work undertaken to develop the Rothes Flood Chronology;
- The River Spey – Flooding at Garmouth. Engineer's Report and Proposals. *Babtie, Shaw and Morton*. 1995, and;
- An Investigation into the Flooding of Garmouth, Speyside. *Aberdeen University Engineering Services*. October 1993.

The full flood chronology can be found in *Appendix A*. The flood chronology for the River Spey identifies 44 flood events that have occurred in the past 252 years, between 1755 and 2007. This equates to an indicative flood frequency of once every six years. Considering more recent events only, the flood chronology details 20 flood events that have occurred in the last 18 years, between 1989 and 2007. This equates to an indicative flood frequency of more than one event each year.

The apparent increase in flood frequency could be associated with an increase in properties being constructed on the River Spey's floodplain such that there is an increased occurrence of residential flooding and reporting of flooding. Alternatively, the gradual degradation of the existing flood defences may have resulted in a gradual reduction in standard of protection and subsequently an increase in flood frequency.

1.2.3 Existing Flood Risk

The existing flood risk to Garmouth has been assessed by combining a basic steady state HEC-RAS hydraulic model with local flood knowledge. The model consists of eight cross sections (developed using available LiDAR data) and extends 1.5 km south of Garmouth to 0.5 km north of the village. The extent of the model is shown on *Figure 1*. The railway embankment is represented in the model (including the two gaps) but the model does not take into account any tidal affect. The extreme flows used in the model were derived using the Annual Maxima gauged series at SEPA's Boat O' Brig gauge station (MFA075) and are given in *Table 1* below:

Table 1: River Spey Flood Frequency Estimation

Return Period (years)	Peak Flow (m^3/s)
5	734
10	897
25	1143
50	1363
100	1621
200	1926

The model provides an estimate of the water level – return period relationship upon which flood risk can be estimated.

Figures 3 – 8 show the estimated existing flood risk to Garmouth at the 5, 10, 25, 50, 100 & 200 year return periods. There is good correlation between the flood extents estimated during this study and SEPA's 1 in 100 year fluvial flood risk map, given in *Appendix B*.

The key flood mechanism at the lower return periods (5 and 10 years) appears to be the River Spey breaking its left bank upstream of the railway embankment. The floodwater then flows across the floodplain inundating Ross House and surrounding fields, before flowing through two gaps in the railway embankment. Flood water then follows the line of the Black Burn before flooding the north east area of Garmouth. Specific flood mechanisms above the 10 year return period are less clear as the depth of water is sufficient to flood the whole River Spey valley. 2D hydrodynamic modelling would be required to determine additional flood mechanisms, the interaction between fluvial flow and the tidal effect and key risks such as flow velocity.

Local knowledge gained through consultation with Council officers indicates that parts of Garmouth village flood on an annual basis. *Figure 9* shows the indicative annual flood extent based on local knowledge. Two properties (Ross House and Willowbank) are known to have flooded annually in recent years. A comparison of *Figures 3* and *9* shows there is a good correlation between the observed annual flood extent and the estimated 5 year return period flood extent.

Table 2 shows the number of properties at flood risk for the range of return periods.

Table 2: Number of Properties at flood risk in Garmouth

Return Period (years)	Residential Properties	Other Properties
1	2	-
5	6	The Church Hall & Village Hall
10	6	The Church Hall & Village Hall
25	6	The Church Hall, Village Hall & Golf Club House
50	6	The Church Hall, Village Hall & Golf Club House
100	6	The Church Hall, Village Hall & Golf Club House
200	6	The Church Hall, Village Hall & Golf Club House

Table 2 shows that six residential properties are estimated to be at flood risk in Garmouth. All six properties are at flood risk from the 1 in 5 year return period, as are the Church Hall & Village Hall. The Golf Club House is estimated to be at risk from return periods above 1 in 10 years.

1.2.4 Environment

A Baseline Environment Study has been undertaken to identify all the key environmental issues and their potential implications on the development a FAS. The baseline study has been used to inform the wider team of the environmental issues and has influenced the option development. The Baseline Environment Study is provided in full in *Appendix C*.

In summary, the River Spey catchment and Spey Bay are very heavily designated for a wide range of habitats, species and landforms. Environmental designations within the study area include several international, European, national and local designations. Specific designations include; Special Areas of Conservation (SAC's) designated under the EC Habitats Directive (1992), Special Protection Areas (SPA's) designated under the EC Birds Directive (1979) and Sites of Special Scientific Interest (SSSI's) notified under the Wildlife and Countryside Act (1981). The River Spey SAC designation is based on the presence of four international SAC qualifying species. These are Atlantic salmon, sea lamprey, otter and freshwater pearl mussel. The most significant habitat in the area is the vegetated shingle habitats. The baseline study identifies several of the six residential properties at flood risk and the railway embankment as listed buildings.

1.2.5 Geomorphology

A Baseline Geomorphological Study has been prepared to identify the primary geomorphological processes, historical trends and likely future trends. The study was undertaken in consultation with representatives of Scottish Natural Heritage (SNH) and Scottish Environmental Protection Agency (SEPA) who have a detailed knowledge of the current geomorphological processes. The baseline study provided a platform of knowledge on which to assess the likely impacts of any proposed flood alleviation options or management strategies on the geomorphological processes within the application area. The Baseline Geomorphological Study is provided in full in *Appendix D*.

In summary, the Lower River Spey and Spey Bay are of high geomorphological value and highly geomorphologically active. There are three SSSI's underpinning the area's SAC designations; the Lower River Spey, The River Spey and Spey Bay. The Lower River Spey designation cites fluvial geomorphology as one of its defining characteristics. The area is also designated a Site of Interest for Natural Science (SINS) for its geomorphological interest.

2 BASELINE FLOOD DAMAGE ASSESSMENT

2.1 Introduction

A baseline flood damage assessment has been undertaken to provide an estimate of potential "do nothing" flood damages in Garmouth. The "do nothing" flood damage estimate will then be set against a cost estimate for each identified option to provide an outline benefit-cost ratio. The baseline flood damage assessment is primarily based on the six residential properties at flood risk.

Two estimates of baseline damages have been undertaken to provide a comparison. The first estimate utilises previous MFA work to provide an estimate of 'Do Nothing Present Value Damage (PVD)' per property. The second method recognises the Scottish Government's requirement to cap residential flood damages at the market value of the property.

2.2 Estimate 1: MFA Experience

Table 3 below shows the PVD per property for the Elgin (MFA473), Rothes (MFA355) and Forres (Burn of Mosset) FAS (MFA178 & 236):

Table 3: PVD per property for other Moray FAS

FAS	PVD per property (£)
Elgin	38,585
Rothes	51,643
Forres (Burn of Mosset)	55,237
Average	48,490

Key influences on PVD that may account for the variation in individual schemes includes frequency of flooding, depth of flooding and property type and value.

Using the average PVD per property from previous MFA schemes, an indicative baseline flood damage estimate for Garmouth is calculated as 6 x £48,490 = £296,940. Allowing for some additional flood damages to the Church Hall, Village Hall and the Golf Course Club House flood damages are likely to be of the order of £350,000.

2.3 Estimate 2: Capped Market Value:

The Scottish Government requires the flood damages for any individual property to be capped at the estimated market value of the property. The market value of the properties in Garmouth therefore provides an upper limit to potential flood damages in Garmouth.

Property value websites were researched to establish an average property value in Garmouth based on recent sale prices. This resulted in an average property value in Garmouth of £116,000. With six residential properties at flood risk, the upper limit of flood damages in Garmouth is estimated to be £700,000.

2.4 Summary

The indicative baseline flood damages in Garmouth are therefore estimated to be £350,000.

3 FLOOD RISK MANAGEMENT OPTIONS

3.1 Introduction

An optioneering workshop was held on the 1st November 2007 with the aim of generating initial flood alleviation ideas. Seven members of the project team were present, including representatives of the Council and Royal Haskoning. Project team members present at the workshop spanned the key project disciplines; engineering, environment and geomorphology.

3.2 Options

The team was encouraged to take a catchment approach and the following initial ideas were identified:

- Do nothing;
- Maintain existing practice;
- Catchment management;
  - Land use management / Afforestation.
- Flood storage;
  - Online and Offline storage.
- Channel diversion;
- Channel dredging;
- Culvert River Spey underground to Spey Bay;
- Temporary and / or demountable defences, and;
- Flood Embankments.

Each of the flood alleviation ideas identified is discussed below.

3.2.1 Do Nothing

The 'true' do nothing scenario involves walking away from a problem and not undertaking any works at all. The 'Flood Prevention and Drainage (Scotland) Act 1961' (amended in 1997) places duties on Local Authorities to assess the condition of watercourses from 'time to time' to determine if the watercourse is likely to cause flooding of non agricultural land, and exercise their powers to reduce flood risk if a risk is identified. The Council prioritises maintenance based on risk assessment and budget constraints (i.e. maintenance issues are identified and ranked according to potential flood risk severity). As many as possible of the top ranking maintenance issues are then dealt with within the budgetary constraints. Therefore, a do nothing scenario may occur if the flood risk maintenance issues at Garmouth are not significant enough to be prioritised within the budgetary constraints. A do nothing option does not provide increased flood protection to Garmouth.

3.2.2 Maintain Existing Practice

At present the Council undertakes minor ad-hoc works as the need arises. The works are identified during routine watercourse inspections, during post flood event inspections or through notification of need by the community. The works are prioritised under the risk assessment system described above and undertaken if budgetary constraints allow. The majority of recent works involve erosion protection, vegetation clearance from drainage ditches and drainage network repairs *(The Moray Council Biennial Report 2005)*. Maintaining existing practises does not provide increased flood protection to Garmouth.

3.2.3 Catchment Management

A catchment management approach identifies specific areas of land in the catchment where a change in land use would improve the attenuation characteristics of the area and reduce peak flows reaching Garmouth. Catchment management methods may include;

- Afforestation (increasing the tree cover in the catchment, including wet woodlands) to increase rainfall interception and slow the catchments hydrological response;
- Replacing arable land for grassland to increase infiltration & reduce runoff;
- Reducing intensive grazing (particularly sheep) to improve catchment infiltration;
- Improving moorland management through construction of strategic "moorland grips" to reduce runoff.

A catchment management approach would require the co-operation of landowners who would be required to change or limit their existing land use practices.

Whilst catchment management is a sustainable method of reducing flood risk, the hydrological and flood risk benefits generally take a number of years to be realised. For example, catchment experiments within the UK have demonstrated that afforestation (70% afforested catchments) can reduce peak flows by up to 15% *(Institute of Hydrology 1976)*. However, further studies have demonstrated that the time taken for the canopy to reach maturity to offer this 15% reduction is approximately 18 years (Robinson et al 1998).

The Council would have difficulty in promoting such an approach as a structured flood alleviation strategy. The Scottish Government has stated that such an approach would not be grant eligible. The Council would therefore have to fund 100% of the costs associated with implementing a catchment management approach. The estimated costs associated with afforestation for various proportions of the River Spey's catchment are shown in *Table 4 below*. In addition, the Council has very little control over the stewardship of land in private ownership.

Table 4: Estimated River Spey Catchment Afforestation Costs*

Proportion of River Spey Catchment	Area (km^2)	Cost of Afforestation (£ Million)
¼	747	62.2
1/3	996	83.0
½	1494	124.5
¾	2241	186.7

* based on a cost estimate of £83,300 per km^2 (MFA016)

3.2.4 Flood storage

Flood storage involves the retention and controlled release of flood water upstream of the flood risk area and can take the form of online or offline storage.

Online storage involves storing flood water upstream of an impounding structure that spans the river valley and releases flow in a controlled manner. Online storage is not considered a viable option for the River Spey for a number of reasons:

- The volume of water requiring storage to achieve a 1 in 100 year standard of defence is of the order of 10 mn m^3. The construction cost of such a scheme would far exceed the baseline flood damage estimate outlined in *Section 2*.
- Online flood storage would significantly alter the hydrological and geomorphological regime of the river and very likely have significant impacts on several important sites with environmental designations, and;
- The River Spey is known to have a highly mobile, coarse sediment load. Any storage site would be subject to a high rate of sedimentation and subsequent loss of storage volume. A high maintenance regime for sediment removal would therefore be required.

Offline storage involves diverting floodwaters from the main channel to a controlled flood area (adjacent floodplain or storage reservoir) thereby reducing peak flows and volumes. The stored flood water is then released back into the main channel in a controlled manner when water levels have dropped. The removal of flood embankments protecting agricultural land is often an effective way of reconnecting the watercourse with its natural floodplain and increasing upstream attenuation. A detailed study of potential offline storage sites within the River Spey catchment is beyond the scope of this study, but an

initial review of the Ordnance Survey maps of the catchment suggests there may be a number of potential sites. Despite this it is very unlikely that an offline storage scheme would be economically viable as landowner compensation would almost certainly greatly exceed the baseline flood damage estimate outlined in *Section 2*.

3.2.5 Channel Diversion

Channel diversion alleviates flooding by diverting flood flows around or away from the problem area. The high natural topography around Garmouth prohibits channel diversion to the west as a means of flood alleviation from the River Spey, see *Figure 2*. The location of Bogmoor and Spey Bay villages on the eastern floodplain makes diversion of the River Spey to the east unfeasible. Furthermore, and most significantly, the high geomorphological activity of the River Spey would make a channel diversion extremely difficult to maintain and subsequently expensive.

3.2.6 Channel Dredging

Channel dredging as a means of increasing channel capacity and hence, reducing flood risk, is unsustainable. As discussed above, The River Spey is known to have a highly mobile coarse sediment load and any dredged channel would simply fill back up with sediment. The unsustainable nature of this idea means it is contrary to the objectives of the Water Framework Directive and subsequently if promoted would be very unlikely to obtain the necessary environmental licenses under the Controlled Activities Regulations (2005).

3.2.7 Culvert River Spey underground to Spey Bay

This idea is not considered technically feasible.

3.2.8 Flood Barriers

Flood barrriers prevent flood inundation by acting as a physical barrier to flow. The barriers could take the form of permanent flood embankments or walls or alternatively temporary and / or demountable defences.

Temporary and / or demountable defences are non-permanent flood defences assembled and used only during high flow events. Temporary and / or demountable defences require sufficient flood warning lead time in order to be mobilised and erected. Consultation with SEPA officers (Derek Fraser – SEPA Aberdeen) indicated that due to

the large size of the Spey catchment (2988km^2) and the good network of river level gauge stations within the catchment, flood warning lead times are often in the region of 24 hours.

Temporary and / or demountable defences have a high operational requirement with trained teams required to be on call on a permanent basis. This high operational requirement is undesirable for the Council.

Several alignments of potential flood embankments that would offer protection to Garmouth were identified during the optioneering workshop. The embankment alignments identified are listed and discussed below:

Alignment 1: Set-back flood embankment around Garmouth;
Alignment 2: Embankment on west bank of River Spey protecting all*;*
Alignment 3: Embankment on west bank of River Spey north of the railway embankment plus infilling of railway embankment;
Alignment 4: Localised ring fencing of properties, and;
Alignment 5: Infill railway embankment gaps.

Alignment 1 – Set-Back Flood Embankment around Garmouth.

Description:

This option involves the construction of a 0.8km flood embankment around the eastern perimeter of Garmouth. Alignment 1 is shown on *Figure 10*. The embankment would be set-back as far as possible from the River Spey to maximise the use of the River Spey's natural floodplain and limit embankment height. The maximum embankment height for a 1 in 100 year standard of protection would be approximately 2.5m.

Issues & Risks:

- Does not provide protection to Ross House, the golf course club house or the Scottish Water wastewater treatment facility;
- Road crossings are required for the Kingston Road & the golf course access track;
- The local surface deposits are highly permeable alluvial sands and gravels, likely to affect the geotechnical design of the embankment;
- Some tree and vegetation removal would be required, and;
- Several of the houses adjacent to the embankment are listed. Care would need to be taken not to affect their foundations. Furthermore the embankment may cause a visual impact for the protected residents.

Benefits:

- Alignment 1 provides protection to five residential properties;
- The set back embankment limits the impact on the River Spey's natural hydrological and geomorphological regime as well as reducing embankment erosion risk, and;
- The impact on the golf course is minimised.

Cost Estimate:

Utilising flood embankment cost estimates from the River Findhorn FAS (developed by Morrison Construction Services Ltd), the indicative cost of a representative flood embankment is approximately £835 per metre. This cost estimate is based on the 'North Forres' embankment which is similar in nature to the embankment discussed above (set back from the river). The cost of the flood embankment outlined in Alignment 1 would therefore be approximately £670,000. Allowing additional expense for crossing the Kingston Road and golf course track, land negotiation and operation and maintenance, the whole life cost of Alignment 1 is likely to exceed £1 million.

Alignment 2 – Flood Embankment on West Bank of River Spey Protecting All.

This option involves the construction of a 1.5km flood embankment to the north and east of Garmouth to protect all properties at risk of flooding. Alignment 2 is shown on *Figure 11*. This option would not be economically justifiable as the cost of the flood embankment alone would be approximately £1.25mn.

Alignment 3 – Flood Embankment on West Bank of River Spey with Infilling of Railway Embankment.

This option involves the construction of a 1km flood embankment to the north and east of Garmouth to protect all properties north of the dismantled railway embankment. Alignment 3 is shown on *Figure 12*. The embankment would tie into the existing railway embankment with the two gaps in the dismantled railway embankment, known to be flow routes during high flow events, in-filled.

This option would not be economically justifiable as the cost of the flood embankment alone would be approximately £835,000.

Alignment 4 – Localised Defences around Properties

This option involves constructing localised defence structures around individual properties and clusters of properties. Alignment 4 is shown on *Figure 13*. The total length of embankment required is approximately 1km. The Kingston Road would need to be raised over a length of approximately 250m and form part of the embankment.

Again, this option would not be economically justifiable as the cost of the flood embankment alone would be approximately £835,000.

Alignment 5: Infill railway embankment gaps

This option would be to block the two gaps in the left hand side of the railway embankment. The gaps are known to act as a flow route for flood water into Garmouth. This option would be significantly cheaper than any of the above embankment options but would be unlikely to achieve a 1 in 100 standard of protection. 2D hydraulic modelling would be required to determine the standard of protection provided by this option and the knock on hydrological and geomorphological consequences of blocking this flow route.

3.2.9 Summary of Options

Table 5 provides a summary of the flood risk management options discussed above:

Table 5: Summary of Flood Risk Management Options

Option	Standard of Defence (yrs)	Technically Feasible	Economic	Sustainable
Do Nothing	< 5	-	-	-
Maintain Existing Practice	< 5	-	-	-
Catchment Management	100	Y	N	Y
Flood Storage				
On line	100	Y	N	N
Off line	100	Y	N	Y
Channel Diversion	100	Y	N	N
Channel Dredging	100	Y	N	N
Culvert River Spey	100	N	N	N
Flood Embankments				
Temporary /Demountables	100	Y	N	Y
Alignment 1	100	Y	N	Y
Alignment 2	100	Y	N	Y
Alignment 3	100	Y	N	Y
Alignment 4	100	Y	N	Y
Alignment 5	< 100	Y	?	Y

Table 5 demonstrates that whilst there may be technically feasible 1 in 100 year standard flood alleviation options none are economically justifiable.

3.3 Flood Risk Management Strategies

3.3.1 Introduction

At present there are a number of people and properties at flood risk from the River Spey. The River Spey is a powerful watercourse that has the potential to cause considerable damage, with structural damage to property and loss of life a serious risk during a major flood event. This situation is likely to be exacerbated by climate change. There is a range of long term flood risk management strategies that could be implemented that would reduce the existing flood risk in Garmouth. These are described below:

3.3.2 Development Control

The Moray Local Plan (2000) states 'whilst Garmouth may appear to have reached it's optimal size, gap site development continues'. With specific reference to flood risk the Local Plan states 'Flooding risk and sewage capacity have been a constraint to development and the Council is investigating a detailed flood risk policy in relation to specific types of development proposals'. The relevant extract for Garmouth from The Moray Local Plan (2000) is given in *Appendix E*.

MFA and the Council's Development Control team should review the existing flood risk policy, strengthen development control in the village and ensure no further properties are built in the River Spey's floodplain.

3.3.3 Progressive Retreat

The properties identified to be at flood risk from the River Spey are listed in *Appendix F*. As and when these properties are placed on the market for sale, the Council could buy them and remove them from the floodplain. This strategy would gradually reduce the number of people and properties at flood risk and, if pursued long enough, would *eliminate* the risk of flooding from the River Spey to Garmouth. Although not grant eligible, the cost of this strategy would be spread over several years. This strategy is in line with UK national flood risk management policy 'Making Space for Water' (DEFRA 2004) and could eliminate flood risk rather than just reduce it.

3.3.4 Removal of Properties

A more direct approach than the 'progressive retreat' strategy would be to compulsory purchase the six residential properties currently at flood risk and remove them from the floodplain.

This strategy would eliminate flood risk in Garmouth within a relatively short time period, but may encounter community and resident resistance and objection.

3.3.5 Flood Proof Properties

The six residential properties at flood risk could be flood proofed to make them more tolerant to flooding. Simple and relatively low cost flood proofing techniques include;

- Preventing water from entering the property by installing flood gates, removing ground level air vents / bricks;
- Ensuring there is a flow route through the property so that flood water can exit the building, rather than ponding in it;
- Changing interior ground floor surfaces to hard surfaces such as flagstones. Hard surfaces are much more resistant to flooding than traditional soft floor coverings (carpets etc) and can be washed down following a flood event, and;
- Raising the electric circuits and wiring to above the estimated flood level.

3.3.6 Improved Flood Warning

Regardless of what flood alleviation measures or strategies are proposed for Garmouth, there is benefit to increasing the length of flood warning time for the River Spey issued prior to a flood event. The greater the flood warning lead time the more time people have to prepare for the onset of flooding and the more time the emergency services and responsible authorities have to react in preparation for an event. Consultation with SEPA officers (Derek Fraser – SEPA Aberdeen) indicated that due to the large size of the Spey catchment (2988km^2) and the good network of river level gauge stations within the catchment flood warning lead times are often in the region of 24 hours and that this is unlikely to be improved significantly. Improvements should therefore focus on the effective dissemination of the flood warning and reaction of those at risk. This is best achieved through community education discussed below.

3.3.7 Community Education

Raising the community's awareness of the flood risk, how to obtain flood warnings and how to effectively respond to a flood warning could significantly reduce the risk to life and

property in Garmouth. Raising community awareness could be easily and cost effectively achieved through holding individual meetings with those at flood risk.

3.3.8 Emergency Planning

Flood events are difficult, stressful scenarios to deal with. However a rapid, effective response can significantly reduce the risk to life and property and greatly reduce the overall impact of a flood event. Having a comprehensive emergency plan that is readily available and easy to understand and communicate will significantly increase the chance of an effective flood response. Emergency Plans can be tailored towards either the residents at risk of flooding or the responsible authorities. A comprehensive emergency plan for residents may include information on:

- Flood warnings and what to do when you receive one;
- Emergency contact numbers;
- Developing a Family Flood Plan;
- Local Emergency Accommodation;
- Cleaning up after a flood, and;
- Useful telephone numbers, websites etc.

A comprehensive emergency plan for responsible authorities may include information on:

- Roles and Responsibilities;
- Flood risk areas;
- Contact information for residents at risk;
- Identified access routes, and;
- Local Emergency Accommodation.

4 CONCLUSIONS

The conclusions that can be drawn from this report include:

- The River Spey has a long history of flooding Garmouth with recorded events dating back to 1755;
- 44 flood events have been identified over the past 252 years which is equivalent to an indicative flood frequency of once every six years;
- Over the past 18 years, 20 flood events have been recorded which is an indicative flood frequency of more than one event a year;
- Six residential properties, the church hall, village hall and the golf course club house are currently at flood risk in Garmouth;
- The six residential properties, church hall and village hall are estimated to be at flood risk at the 1 in 5 year return period;
- Two residential properties within Garmouth regularly flood on an annual basis;
- Present Value flood damages in Garmouth are approximately £350,000;
- Whilst it might be technically possible to develop a FAS for Garmouth with a 1 in 100 year standard of protection the scheme would not be economically justifiable;
- A range of long term flood risk management strategies exist that, if adopted by the Council, would reduce and possibly eliminate the fluvial flood risk from the River Spey to properties in Garmouth.

5 RECOMMENDATIONS

Based on the findings of this report it is recommended that:

1 The Council **does not** invest further in the development of a 1 in 100 year capital flood alleviation scheme as it is highly unlikely that a positive benefit – cost ratio could be achieved;

2 The Council **does** invest further in developing a range of long term flood risk management strategies that over time would reduce the flood risk in Garmouth. It is recommended that The Council invest in the following activities to manage flood risk in Garmouth:

- i Consultation between the Council's Development Control Team and Royal Haskoning to disseminate flood risk information and knowledge and ensure no further development occurs on the River Spey floodplain;
- ii Undertake 2D hydrodynamic modelling of the River Spey and Spey Bay to better understand the flood risk and hazards to Garmouth. This would be achieved through a better understanding of the flood mechanisms, fluvial / tidal interaction and potential flow velocities during extreme events[1];
- iii Hold a 2 day workshop (site visit and workshop) to develop further the following long term flood risk management strategies for Garmouth:
  - Progressive retreat from the floodplain;
  - Removal of property from the floodplain;
  - Flood proofing properties, and;
  - Enhanced emergency planning.

3 Once the appropriate flood risk management strategy for Garmouth has been determined, undertake a programme of community education involving individual meetings with property owners at flood risk too discuss future options.

[1] This level of hazard mapping is likely to be required under the EU Floods Directive.

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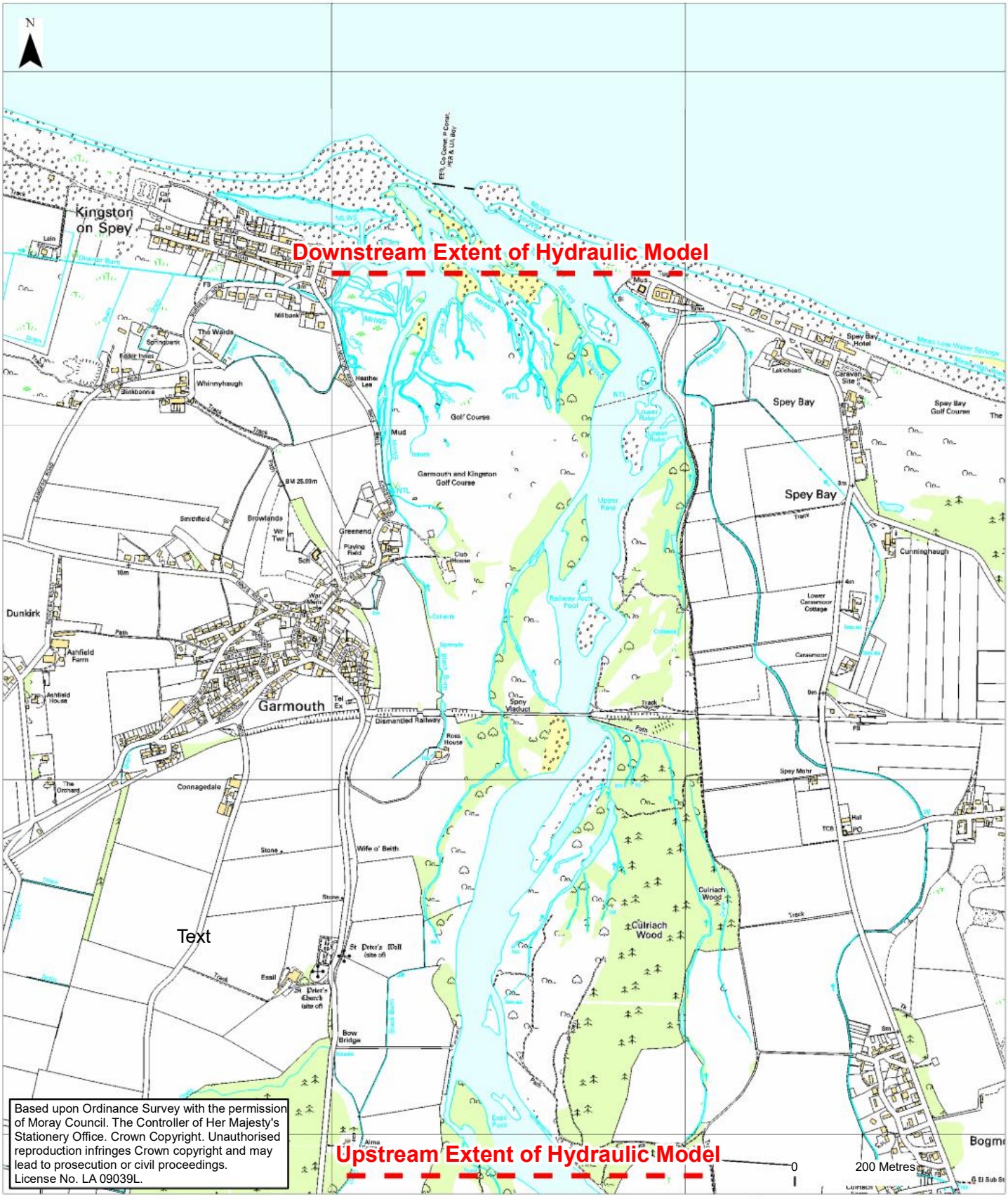
FIGURES



Key:

Source:
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Title:
Garmouth Location Plan

Project:
Garmouth Flood Alleviation Scheme
Pre-Feasibility Study

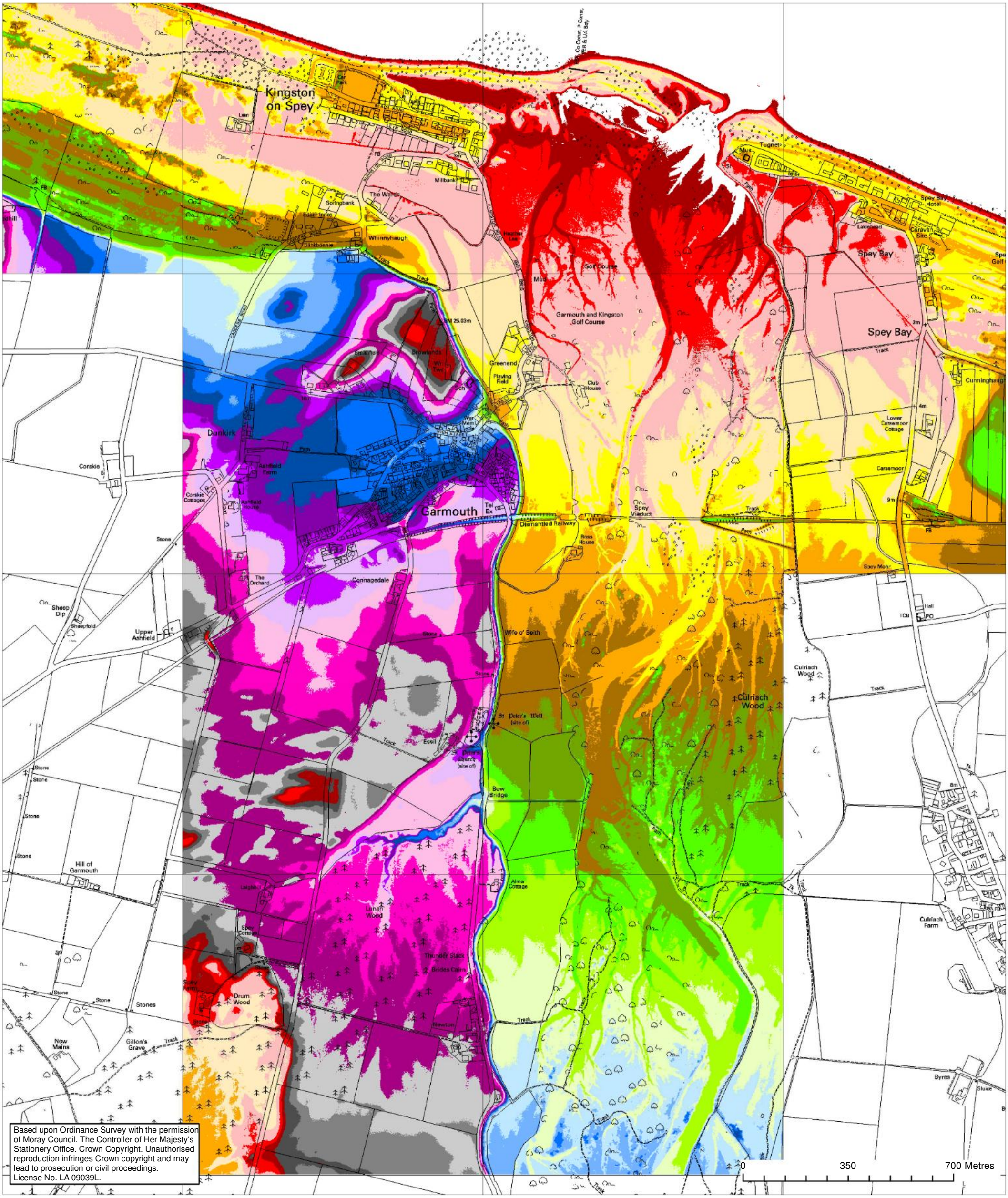
Client:
The Moray Council

Date:
November 2007

Scale:
1:15,000

Figure:
1

ROYAL HASKONING



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Source:

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Title:
Topography of River Spey Valley and Garmouth area

Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

Client:
The Moray Council

Figure:
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Date:
November 2007

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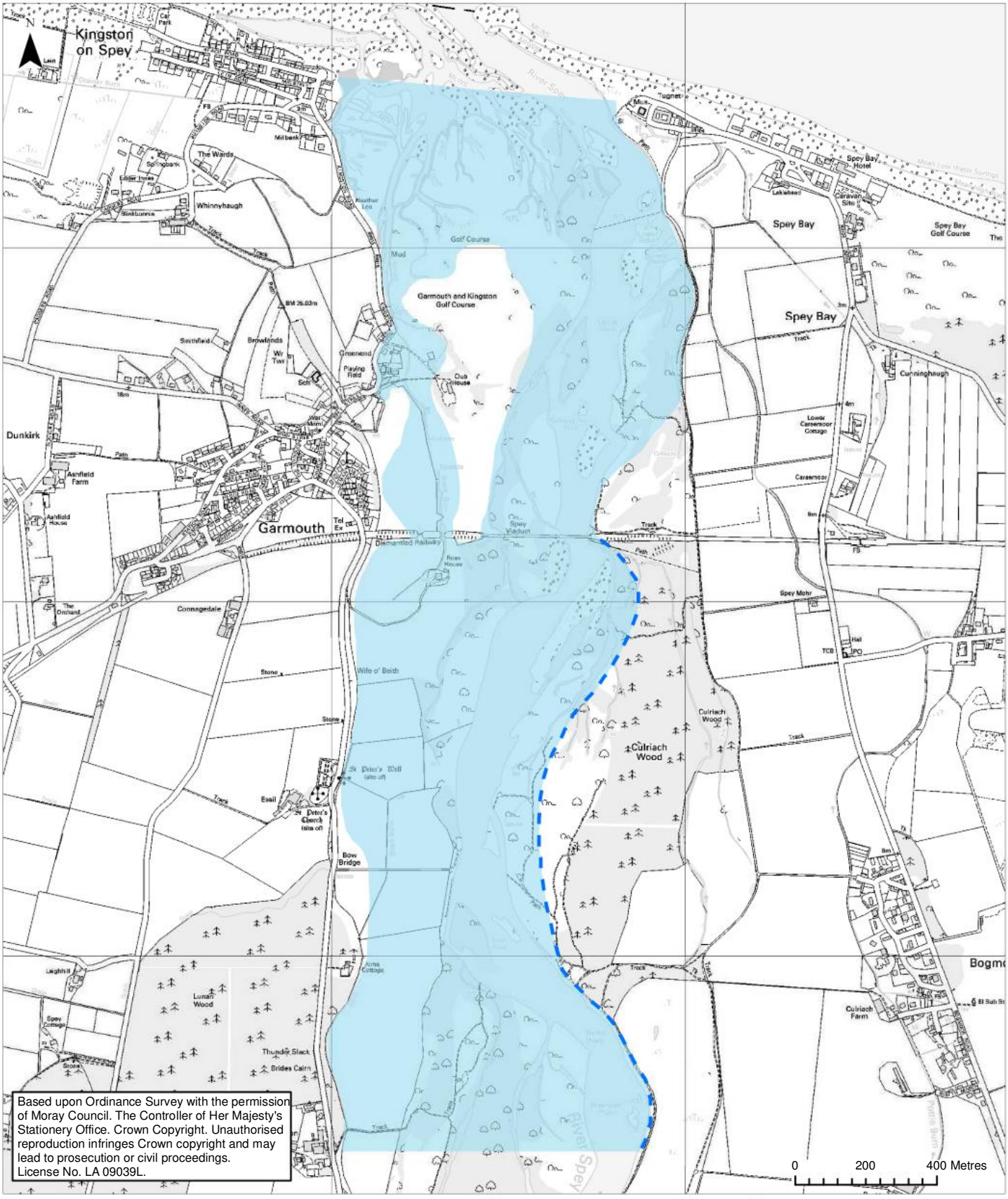

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5 Year Return Period

Area of Lower Confidence

Flood Extent

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Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

Client:
The Moray Council

Date:
November 2007

Scale:
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Figure:
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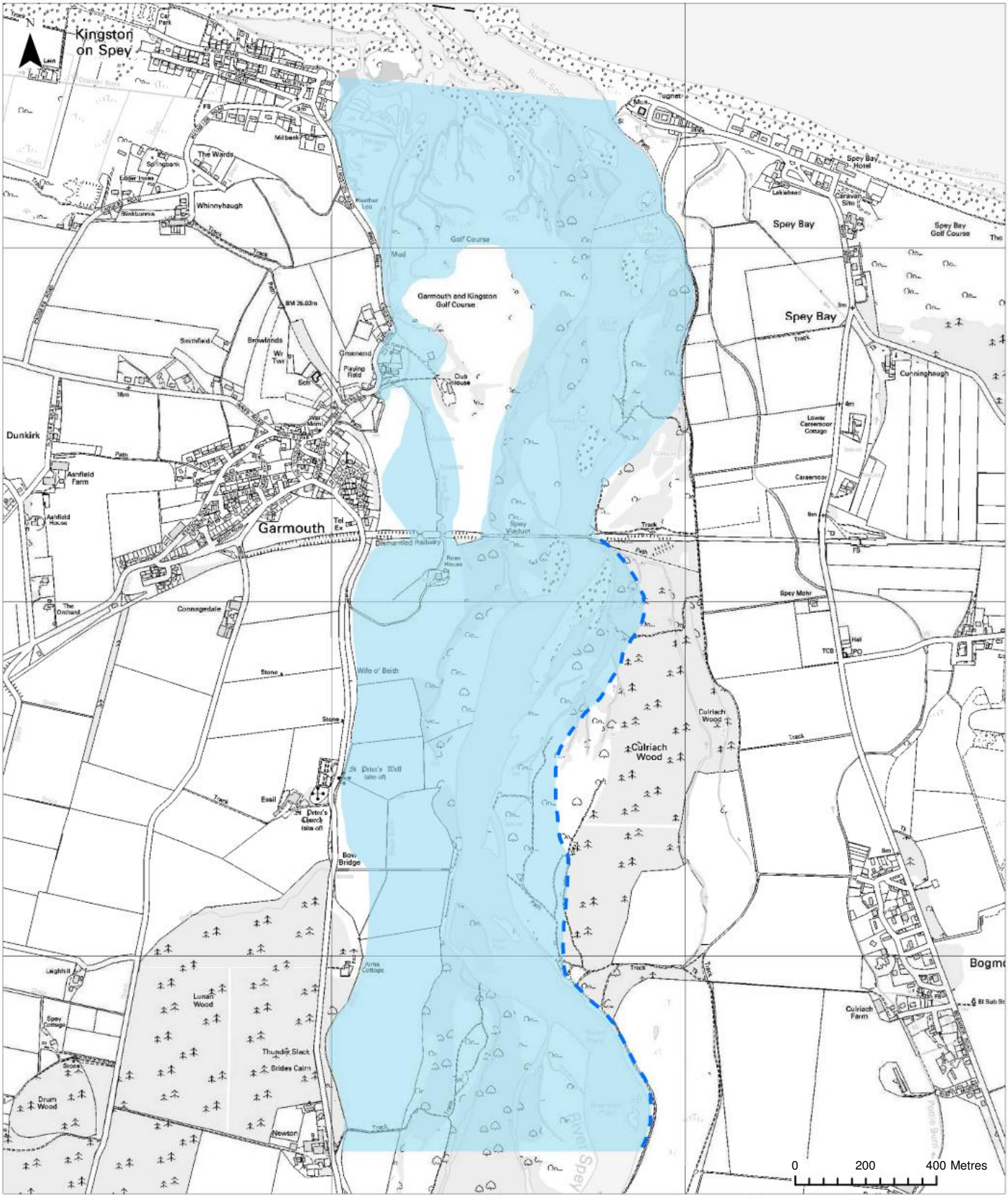

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Garmouth Flood Alleviation Scheme
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Client:
The Moray Council

Date:
November 2007

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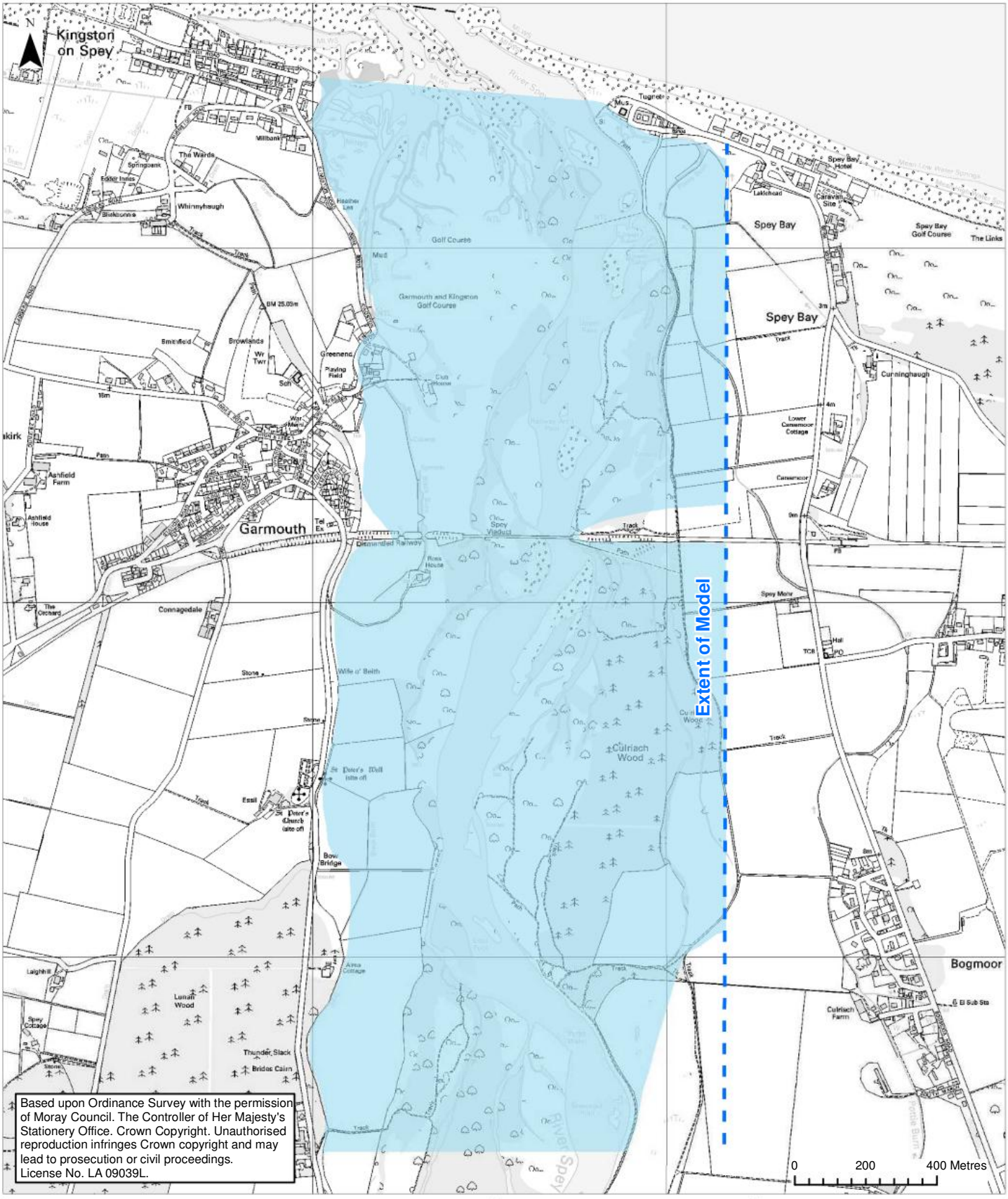

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Key:

25 Year Return Period

Area of Lower Confidence

Flood Extent

Source:

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Title:
Indicative 25 Year Return Period Flood Extent

Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

Client:
The Moray Council

Date:
November 2007

Scale:
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Figure:
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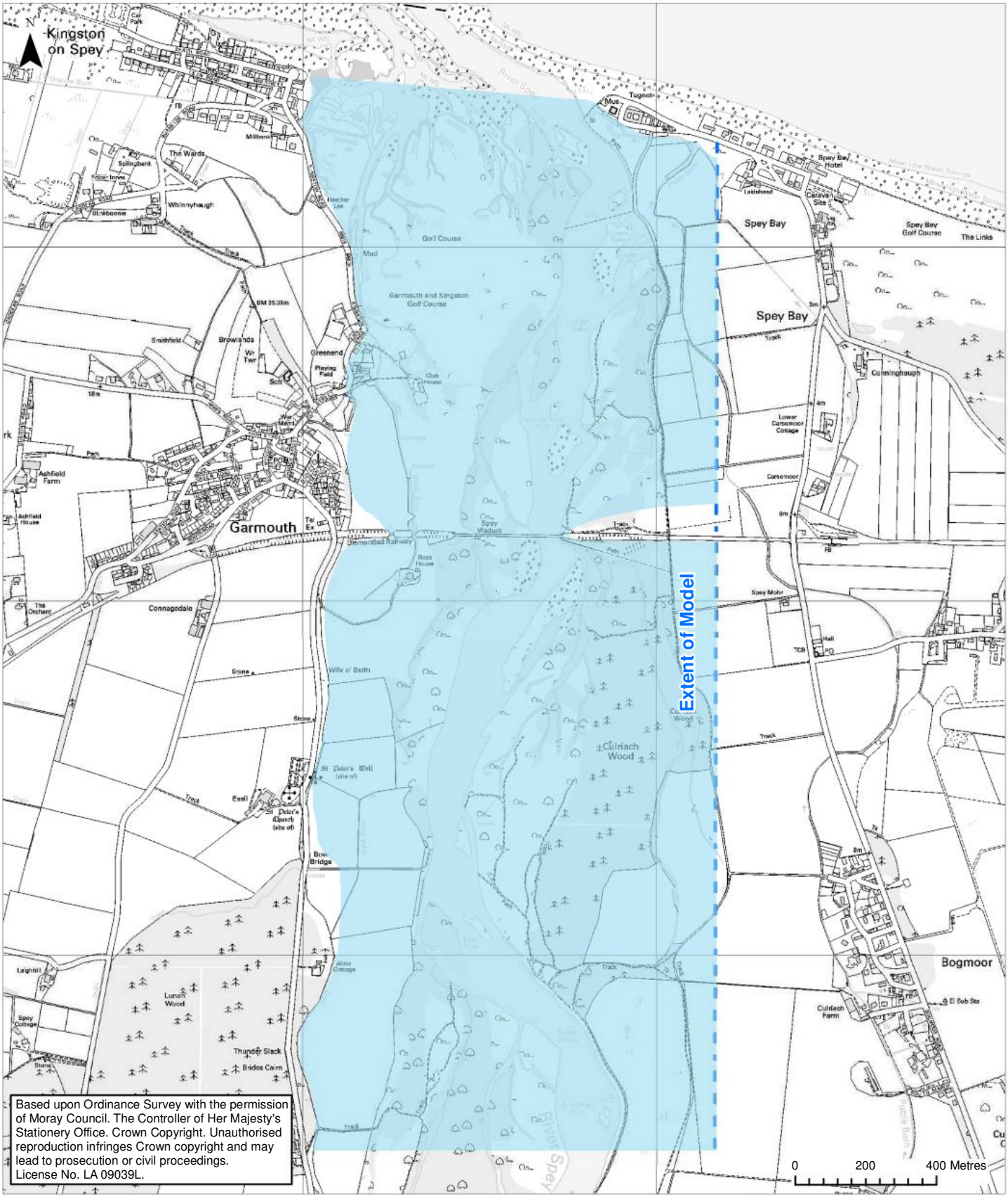
ROYAL HASKONING



Key:

50 Year Return Period

Area of Lower Confidence

Flood Extent

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Title:
Indicative 50 Year Return Period Flood Extent

Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

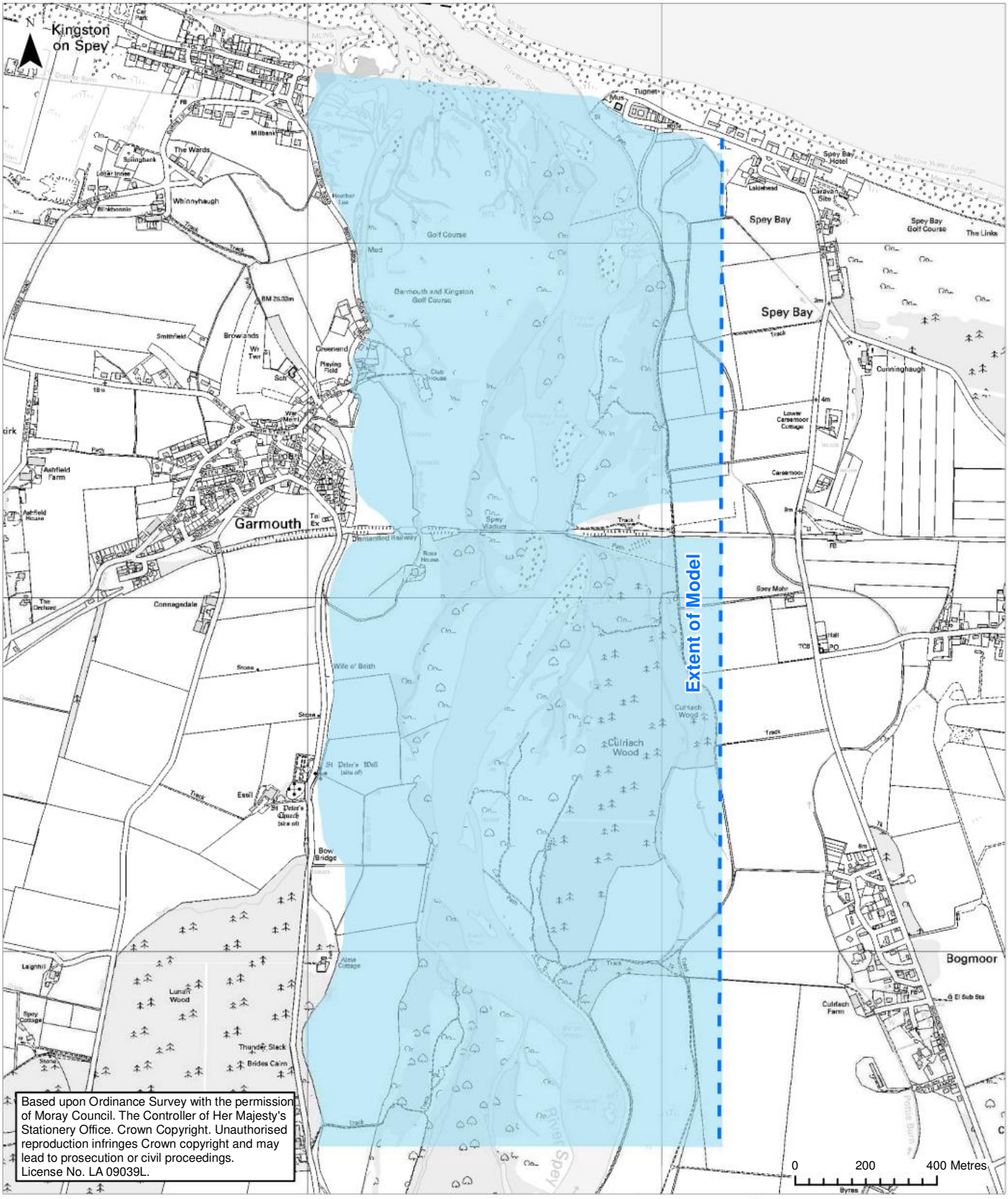
Client:
The Moray Council

Date:
November 2007

Scale:
1:15,000

Figure:
6

ROYAL HASKONING



Key:

100 Year Return Period

Area of Lower Confidence

Flood Extent

Source:

Title:
Indicative 100 Year Return Period Flood Extent

Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

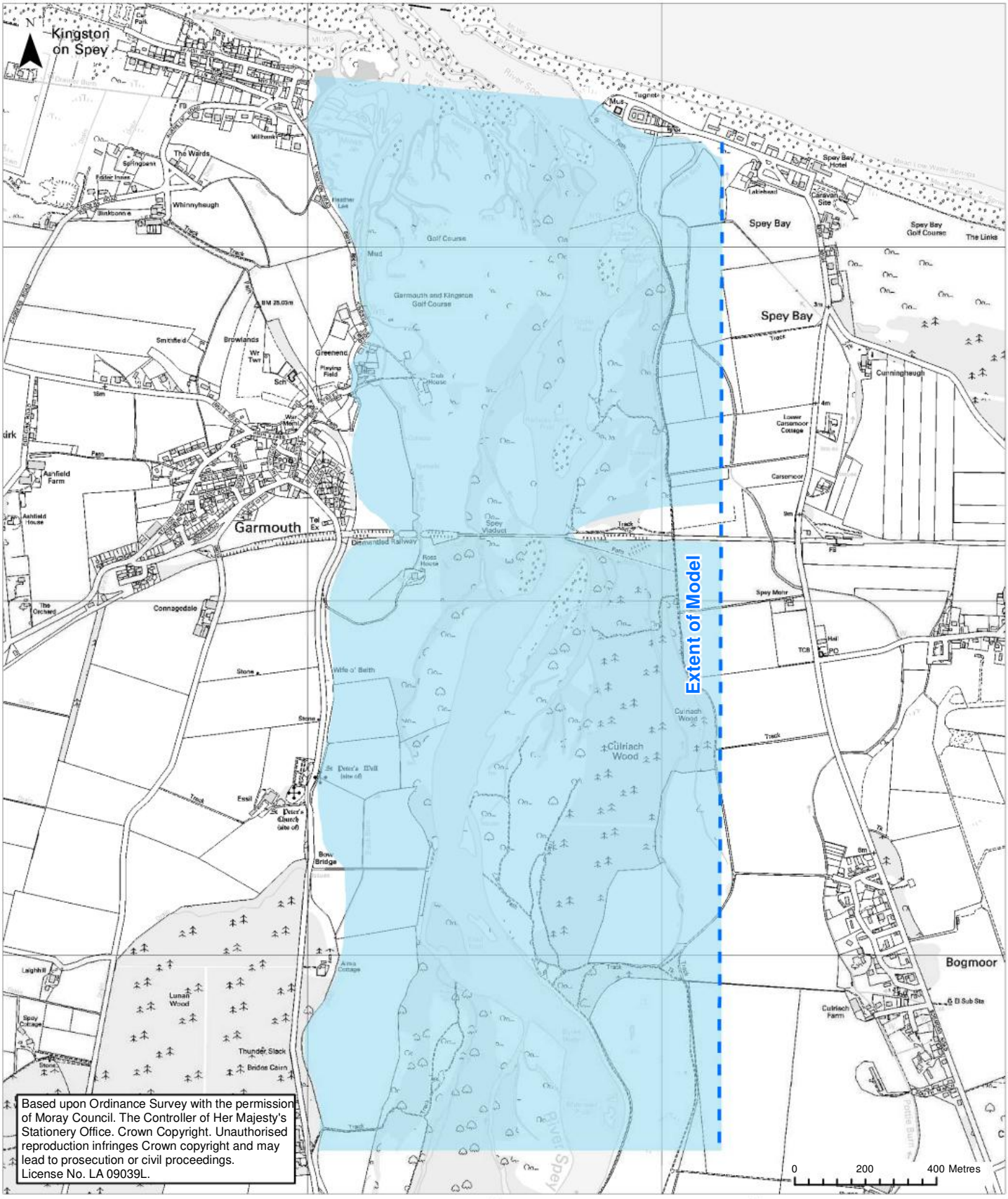
Client:
The Moray Council

Figure:
7

Date:
November 2007

Scale:
1:15,000

ROYAL HASKONING



Key:

200 Year Return Period

Area of Lower Confidence

Flood Extent

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Indicative 200 Year Return Period Flood Extent

Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

Client:
The Moray Council

Date:
November 2007

Scale:
1:15,000

Figure:
8

ROYAL HASKONING

Key:

Flood Extent Based on Local Knowledge

Source: Ian Robertson - The Moray Council

D:\Projects\Garmouth\Projects

Title:
Indicative Annual Flood Extent Based on Local Knowledge

Project:
Garmouth Flood Alleviation Scheme
Pre-Feasibility Study

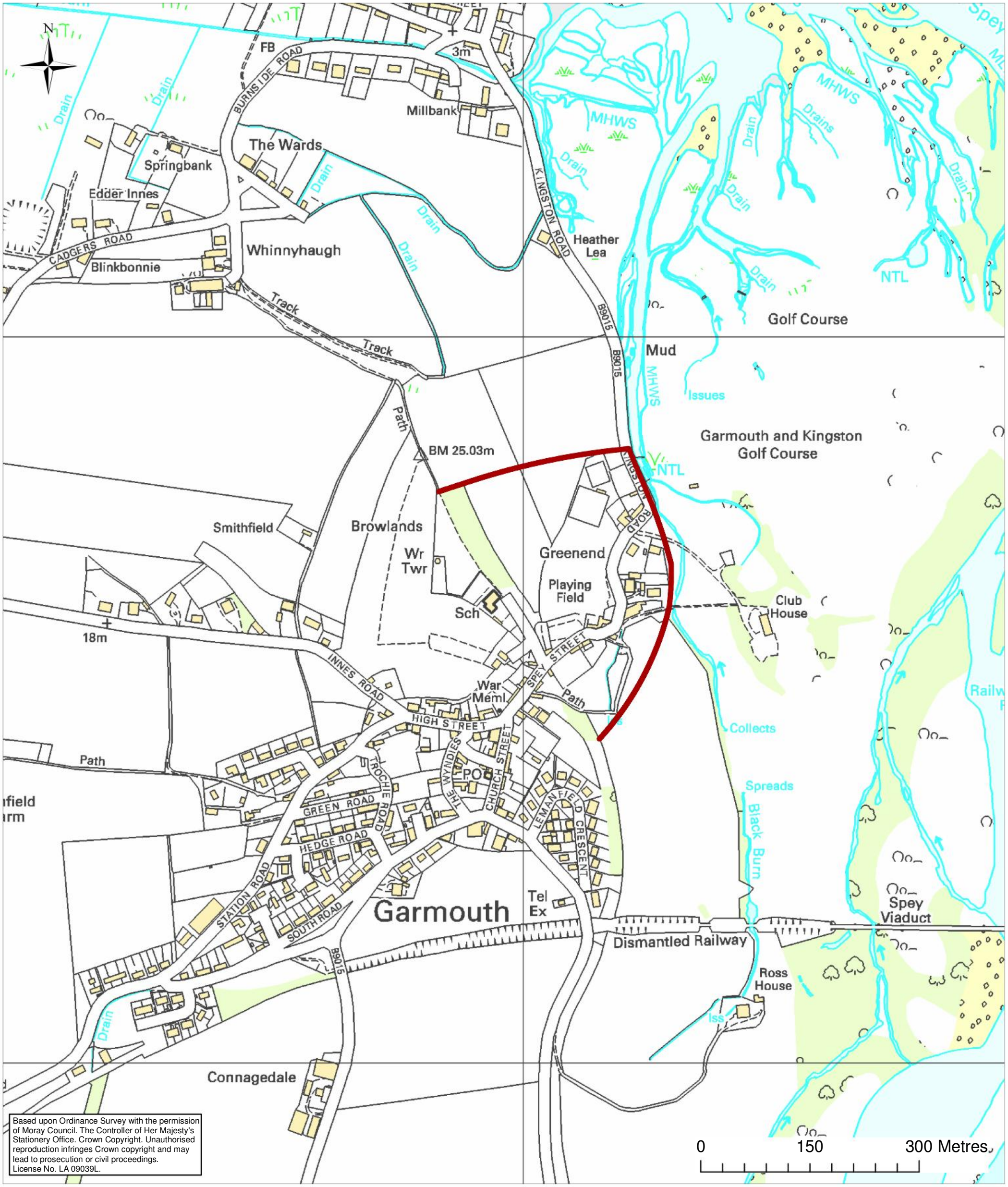
Client:
The Moray Council

Date:
November 2007

Scale:
1:5,500

Figure:
9

ROYAL HASKONING



Key:

Embankment Alignment

Source:

Title:
Alignment 1: Set Back Flood Embankments Around Garmouth

Project:
Garmouth Flood Alleviation Scheme
Pre-Feasibility Study

Client:
The Moray Council

Figure:
10

Date:
November 2007

Scale:
1:5,000

ROYAL HASKONING

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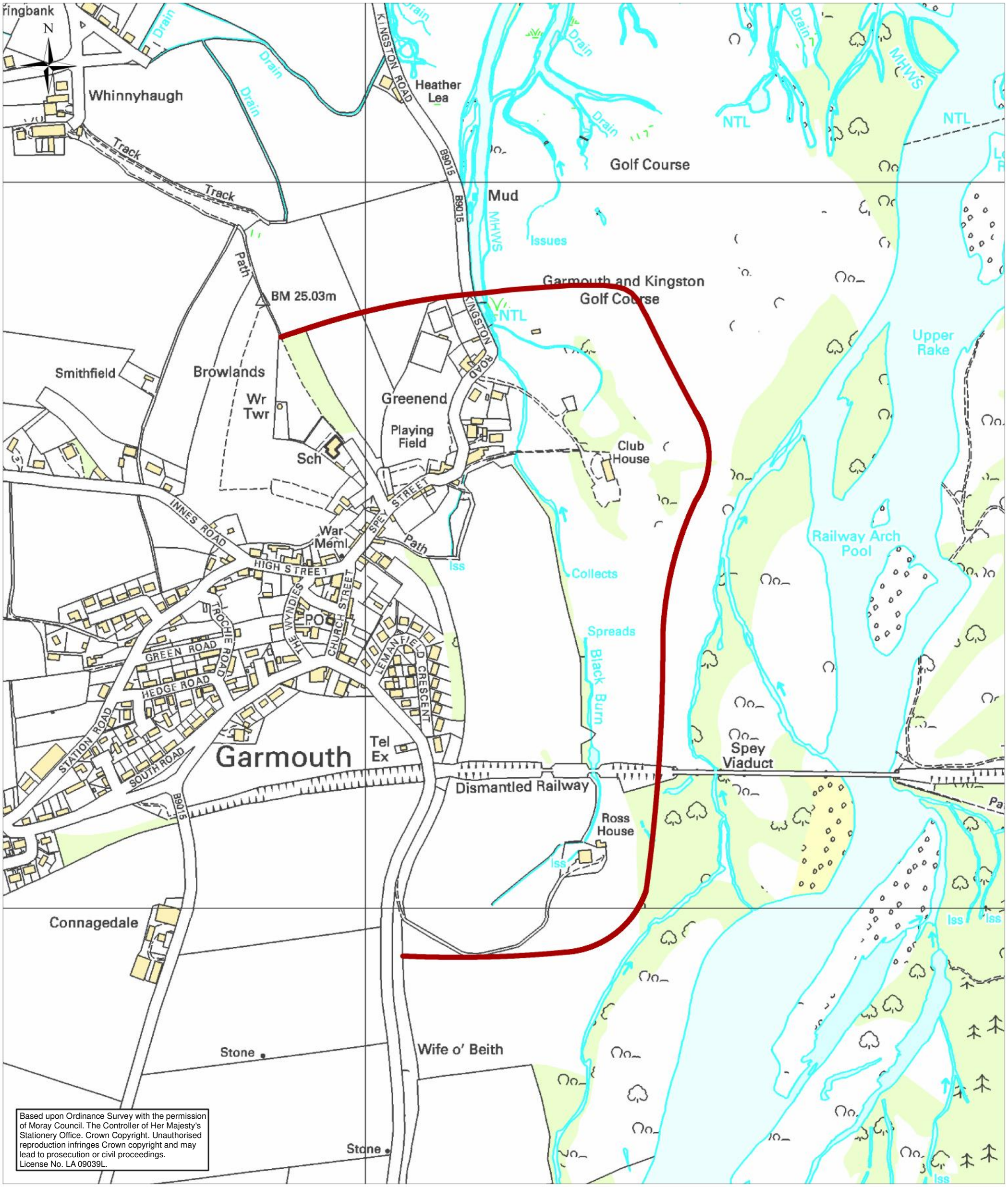


Key:

Embankments Alignment

Source:

I:\9r3414\Technical_Data\Arcview\Figures\Garmouth

Title:
Alignment 2: Flood Embankment on West Bank of River Spey Protecting All

Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

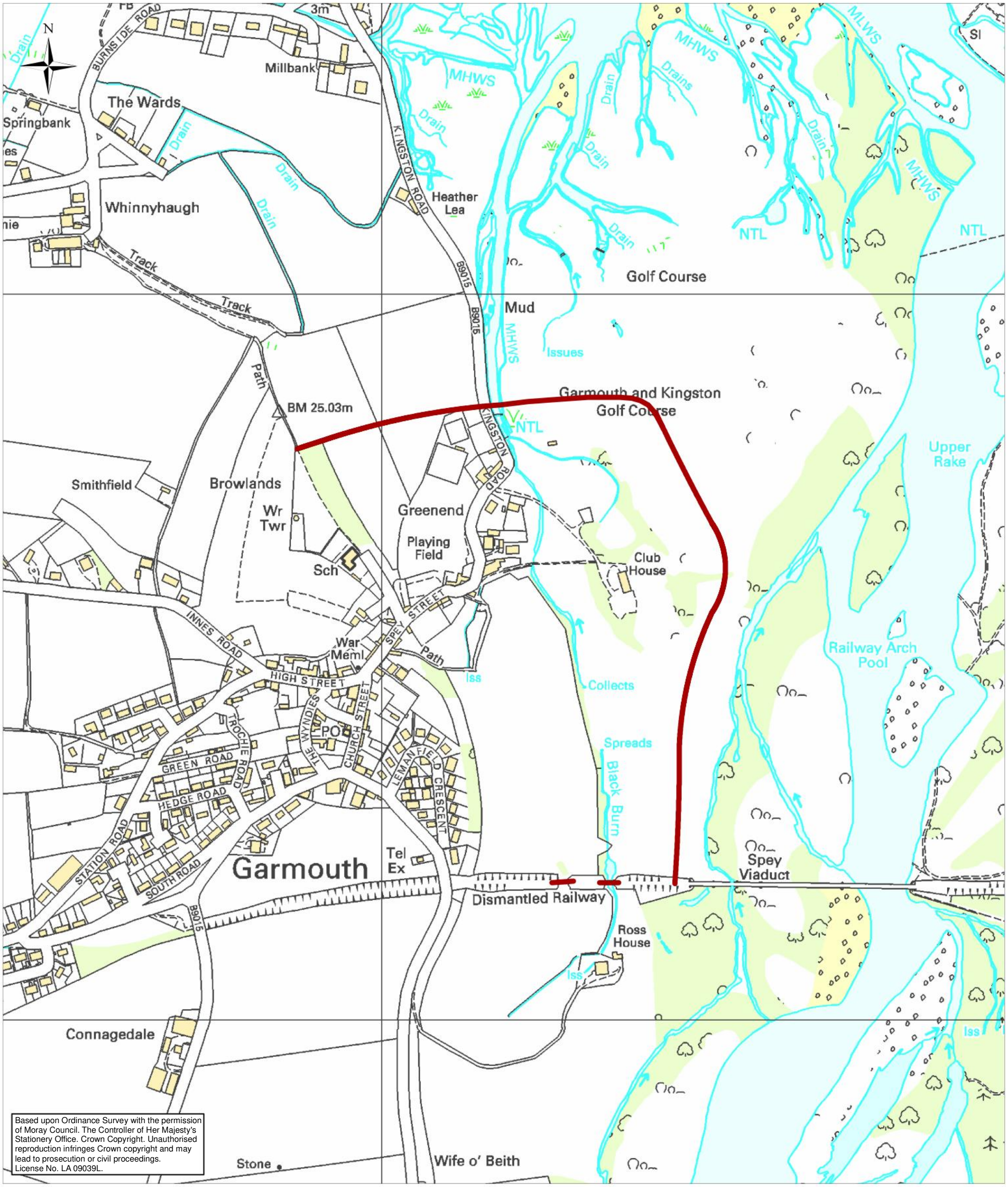
Client:
The Moray Council

Date:
November 2007

Scale:
1:5,000

Figure:
11

ROYAL HASKONING



Key:

Embankment Alignment

Source:

Title:
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Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

Client:
The Moray Council

Figure:
12

Date:
November 2007

Scale:
1:5,000

ROYAL HASKONING

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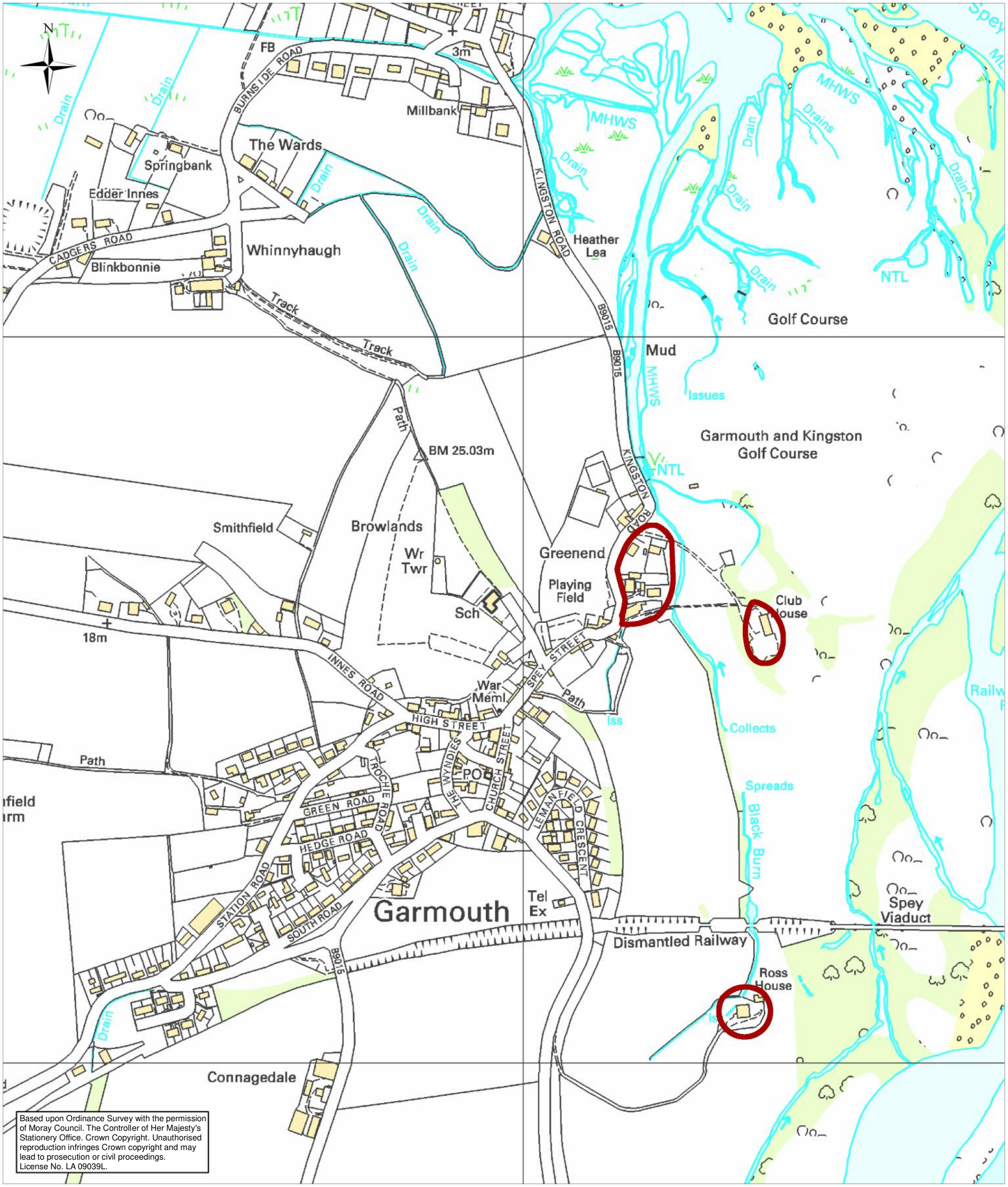

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Source:

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Title:
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Project:
Garmouth Flood Alleviation Scheme Pre-Feasibility Study

Client:
The Moray Council

Date:
November 2007

Scale:
1:5,000

Figure:
13

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APPENDIX A
Garmouth Flood Chronology

River Spey Flood Chronology

Year	Month	Day	Peak Flow (m^3s^{-1})	Description
1755	September	11		This event was reported as taking place due to the "...greatest fall of rain ever known in the north of England (sic) which swelled all the rivers and did a great deal of damage to the neighbouring fields. The rivers of Spey and Findhorn rose above twelve feet perpendicular more than usual, and carried off a great deal of timber, grain, cattle etc."
1768	August			"...in Scotland, besides what has been already related, the country from Inverness to Perth has been flooded in an uncommon manner..."
1829	August		1917	The exceptionally violent and damaging floods that swept down the River Spey in 1829 are known as the Muckle Spate Flood described by Lauder and also by Nairne which "bore away the most part of the Bridge of Fochabers." This refers to Telford's sandstone bridge over the Spey at Fochabers that was partially swept away. The River Spey was described on the 4th August as "one vast undulating expanse of dark-brown water, from the foot of the hill of Benagen, on the one hand to the sea on the other, about ten miles in length, and in many places more than two miles broad." Peak discharges of the great 1829 flood have been estimated by Dr. Prus-Cacinski of C.H. Dobbie and Partners as 1917m^3s^{-1}, approximately thirty times the long-term average. The following eye-witness account describes the scene that presented itself at the mouth of the River Spey in Morayshire. "For several miles along the beach, crowds of were employed in endeavouring to save the wood and other wreck with which the heavy rolling tide was loaded; whilst the margin of the sea was strewed with the carcasses of domestic animals, and with millions of dead hares and rabbits. Thousands of living frogs, also, swept from the fields, no-one can say how far off, were observed leaping among the wreck." *(Sir T.D. Lauder's account of the Great Floods in Morayshire, August 1829, p312, Second Ed.)*. Many houses and other buildings in Kingston were destroyed in the Muckle Spate.
1832	October			"On Monday night last, in consequence of heavy rains that fell throughout the day, the small brooks that wash the village of Rothes, swelled to a considerable size, and occasioned no small degree of confusion and alarm among the inhabitants. In the course of the night they burst their banks, entered several of the houses, and laid part of corn land and potatoes under water. When the rain ceased, the water subsided and no further inconvenience was sustained."
1852	October			"In Scotland, where similar visitations are usually attended with such destructive consequences, the floods were more extensive and more disastrous than have been known since the great floods of 1829. The terrific rains were attended by many great storms at sea, by which many vessels were wrecked. In

Year	Month	Day	Peak Flow (m^3s^{-1})	Description
				Inverness-shire, the Deveron, the Spey, and the Findhorn came down with their characteristic violence, committing great havoc, bearing with them trees torn up by the roots, planking, and the ruins of farm buildings. On all the streams numerous bridges were swept away. The Spey rose eight feet in a few hours, and bore on its waters evidences of its devastating powers. In Morayshire the damage was considerable."
1856	October			Disastrous flood: From Speyside: corn was swept away from fields adjacent of the River Spey. Sheep and pigs were observed to floating down the Spey.
1861	September			"The Spey was on only two occasions as high since 1829. About Rothes, several of the villagers have lost their crops with Spey.
1862	June			
1864	October			"The rivers are in higher flood than they have been since 1829. The Spey, the Findhorn, the Lossie, and smaller streams, are roaring from bank to brae, and in many instances are over their banks, and flood the haugh lands along their courses."
1868	February			"…the river rose within 19 inches of memorable flood of August, 1829…"
1873	September			"The rivers in the south of Banff, more highly flooded than for the farmers." [Spey]
1874	August			"The Spey also overflowed on the Haugh of Rothes, and did great damage to potatoes and crops."
1882	September			"Inundations by the rising of the Lossie and Spey, N. Scotland; bridge is broken and other damage"
1888	January			Spey Flood: not much damage done
1894	February			Disastrous floods, caused by sudden thaw
1906	March			Rainfall observer for Kingussie noted "Highest flood in the Spey for thirty years."
1915	September	26		This event was preceded by 40 hours of extreme rainfall combined with strong winds. Water discharged over the lower land that spread out into extensive lakes and submerged large tracts of agricultural land. The most extensive flooding from this event occurred in the lower reaches of the Spey. It was noted that, "the immense damage caused by this flood surpassed any that had been experienced since the great flood of 1829."
1915	October			The immense damage suffered in the north-east of Scotland as a result of this great rain storm. Certainly surpassed any experienced in the district since the historic "Moray Floods" of 1829. A large proportion of the precipitation found its way into the Findhorn valley, and the Spey was also seriously affected, and the most extensive floods appear to have occurred in the lower reaches of these two rivers."
1924	October			Floods in the Spey, not as bad as in 1915
1928	February	9		Flooding in the Spey Valley was extensive on the 9th with the river bursting its banks at Garmouth.
1953				River Spey flooded in Green Street, Rothes

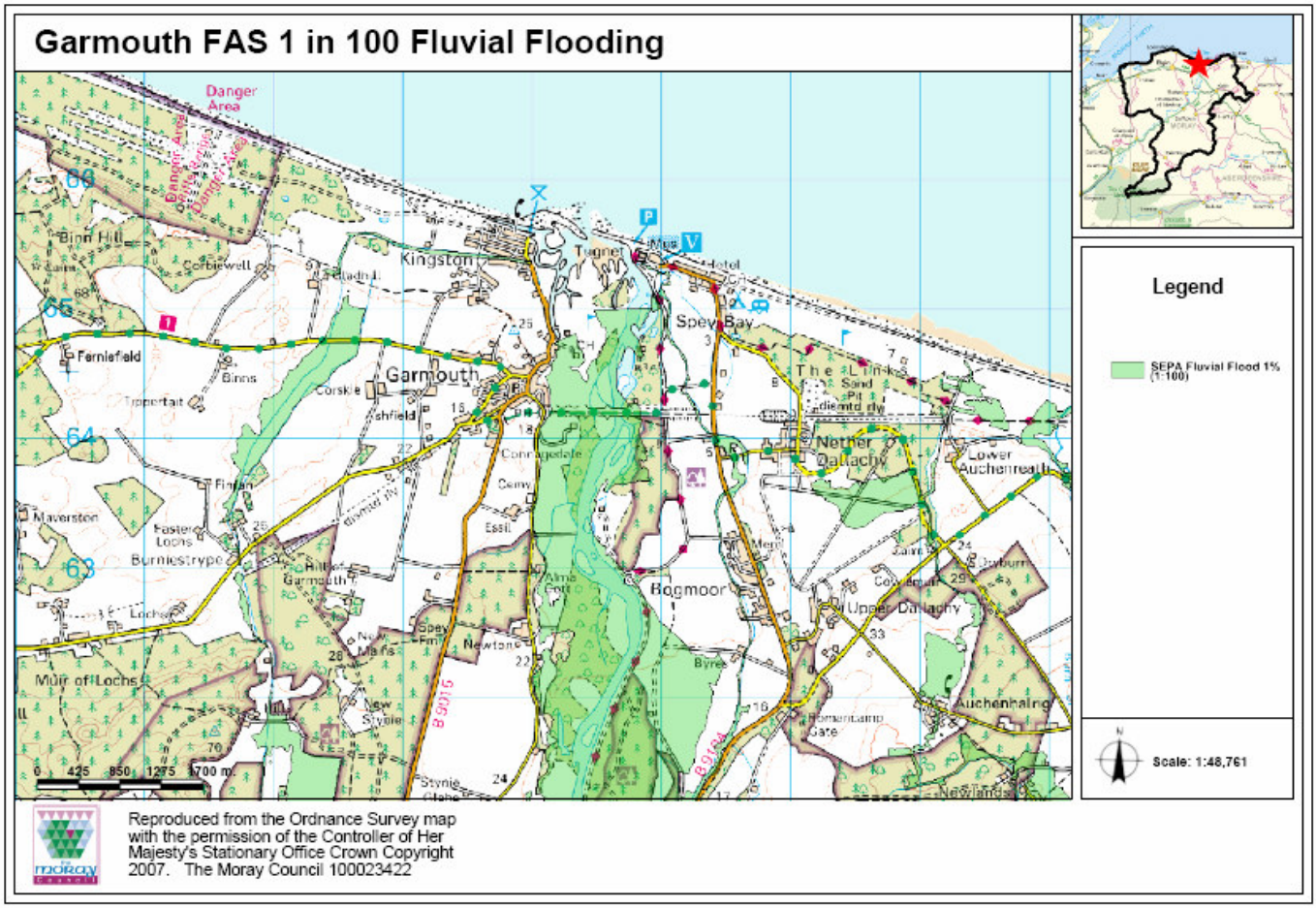
Year	Month	Day	Peak Flow (m^3s^{-1})	Description
1956	August			Occluded fronts associated with depressions moving in a NNE direction produced heavy rains. The torrential summer downpours resulted in general flooding over Speyside.
1960	August			Rainstorm caused flooding of Spey; not so severe
1970	August	16-18	1675	The Spey in spate in 1970 had a flow rate of $1675m^3s^{-1}$, which was more than three times higher than the mean peak annual discharge since 1952 and approximately twenty-six times the average discharge since 1952. This episode resulted form the coincidence and superposition of two thunderstorms over the Spey catchment. Between 48 and 60mm of rainfall occurred in the 48-hour period to 0900 on the 18th August. The torrential summer downpours resulted in general flooding over Speyside. The ferocity of the spate washed away part of the B9104 and the Gordon Estate Wall.
1989				Major flood occurred.
1990	February			Moray hit by floodwater catastrophe: Not as bad as 1970
1990				Major flood occurred. An estimated $5545.4m^3$ of topsoil had been stripped from the North Field at Queens Haugh by the tractive force of the flowing water.
1993	January	16	690	The area around Garmouth experienced serious flooding. Snow was general over the region for days preceding this date. Warm winds caused a sudden increase in temperature that brought about a rapid thaw. The resultant melt waters were unable to penetrate the frozen ground and the consequent runoff led to a rapid rise in the river level, which peaked at $681.1m^3s^{-1}$, measured at Boat o'Brig gauging station, over a period of 56 hours subsiding over the next 36 hours before increasing to a second max of $690.3m^3s^{-1}$. This was the highest flow rate in January and the highest monthly flow peak since October 1981. It is estimated that the peak flow of 55 to 84 cumecs overtopped the west bank of the River Spey upstream of the viaduct. This flow inundated the fields surrounding Ross House on route towards the railway viaduct. At the railway viaduct, flood plain flows are restricted to passage through two arch openings each approximately 6m wide. The arches had insufficient capacity to convey the peak flows from the January 1993 flood event and the flows moved into storage in the upstream field. A survey undertaken by BSM (Babtie Shaw and Morton) identified a flood wrack mark at the openings at a level of 6.0m OD. At this level, the combined discharge has been estimated through the openings has been estimated to be 30 to 51 cumecs. This range represents a lower and upper bound estimate for partial blockage by storm debris and free flow conditions, respectively. This flood water level exceeds the level of the land to the east and therefore a proportion of the remaining discharge will pass back into the River Spey. This has been estimated to be between 25 and 33 cumecs depending on the condition and

Year	Month	Day	Peak Flow (m^3s^{-1})	Description
				density of bank vegetation. The remainder of the incoming discharge will move into storage in the upstream field until flood waters in the Spey subside at which time the field will drain via the viaduct openings and pathways into the main river channel. Flows that pass through the easterly opening in the railway embankment, approximately 14 to 24 cumecs at the storm's peak) feed into the Black Burn. Flows that pass through the westerly opening of the railway embankment, 27 cumecs maximum, spill across the field to the west of the Black Burn passing down the westerly side of this field. The footpath at the bottom end of this field falls towards the footbridge across the Black Burn and flood discharges will tend to pass along this and into the Burn. However, high water levels from flood waters in the Black Burn cause flows from the westerly field to back-up and consequently a proportion of this discharge is carried along the main road and into Garmouth. The flows that pass along the main road re-enter the Black Burn by passing down the entrance track to the Golf Course.
1993	September			This was a similar event to the January 1993 event but on a smaller scale. After the spate of September 1993, the Spey cut approx 10 metres into the west bank over a reach of 30 metres, bringing it into very close proximity with the northern portion of the golf course. This exposed a small channel that flows directly into the lagoon formed from the old course of the river.
1995	September	10	700	With the Spey in full spate, serious flooding meant that the 16th green, 17th tee and fairway at Garmouth and Kingston Golf Course were washed away.
1997	July	01	678	POT Data.
2000	April	26	554	The Tugnet ice house was flooded in spring 2000, presumably by the Spey rather than the sea washing in.
2000	October	12	546	POT Data.
2000	November	08	684	The Spey flooded the floodplain woods of Culriach Wood.
2001				Part of the new replacement 17th fairway created following the 1995 floods was lost when the river again altered its course.
2002	November	15-17	757	See 4th biennial report. "River Spey burst through the west bank and inundated several homes in its path."
2004	January	19	458	POT Data.
2004	June	24	560	POT Data.
2005	January	10	426	POT Data.
2005	March	16	433	POT Data.
2005	October	11	471	POT Data. Garmouth and Kingston Golf Course flooded three times during October 2005.
2005	November	26	647	POT Data.
2006	December	01-06		Water flooded through breach in river bank upstream of Queenshaugh. Flooded fields, golf course and threatened Willow Cottage (SEPA Flood Watch). Flooding of Ross House commenced on 2nd December and was

Year	Month	Day	Peak Flow (m^3s^{-1})	Description
				at its highest (bout 150mm in the house) through to the following Sunday when it subsided. There was a repeat flooding on Monday 4th December and it remained high until 6th when it started to subside.
2006	December	12-14		Flooding to Willowbank Cottage – see Moray Council photographs 14/10/2006. Peak Over Threshold data from Boat o Brig gauge station recorded as 402.444 cumecs on 13/12/2006. Ross House was flooded on 14th December and there was between 150mm and 225mm of water in the property. Water subsided a couple of days after that, leaving the access road into Queenshaugh wrecked and the kitchen full of water. The rear of the house is higher than the front and has concrete floors. The front of the house is lower than the rear and contains the kitchen which has timber floors.

Appendix B
SEPA 1 in 100 Year Fluvial Flood Risk Map

SEPA 1 in 100 Year Fluvial Flood Risk Map



Appendix C
Environmental Baseline Study

Garmouth Environmental Baseline Study

7 November 2007
MFAG 568

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Client	The Moray Council
Reference	/R/303628/Edin

Drafted by	Joanna Girvan
Checked by	
Date/initials check	
Approved by	
Date/initials approval	

SUMMARY

CONTENTS

1 INTRODUCTION

This report provides environmental and general information on the area being investigated for the potential Garmouth flood alleviation scheme (FAS). The aim of the scheme is to offer flood alleviation to the village of Garmouth which is situated approximately 1.3 Km upstream of the mouth of the River Spey. The village is small with a population of 494 people occupying some 200 properties, 7 of which are at risk from flooding from the Spey at the 1:100 return period. The area covered by the initial investigation is outlined in red in Figure 1 below. The study area contains the channel and banks of the Spey from a point 1.2 Km upstream of the Spey viaduct down to the river mouth. The western part of the village lies on high ground where flooding is not an issue, therefore only the eastern end of the village is included in the study area. Although Garmouth lies very close to the point where the Spey discharges into the Moray Firth, tidal flooding will not be considered as part of this scheme which will be restricted to fluvial flooding only. Figures 2 and 3 show SEPA flood maps illustrating the extent of fluvial and coastal flooding at the 1:100 return period.

Figure 1. Map showing the lower River Spey, the villages of Garmouth and Kingston, the golf course, the viaduct and the initial study area for Garmouth FAS (outlined in red)

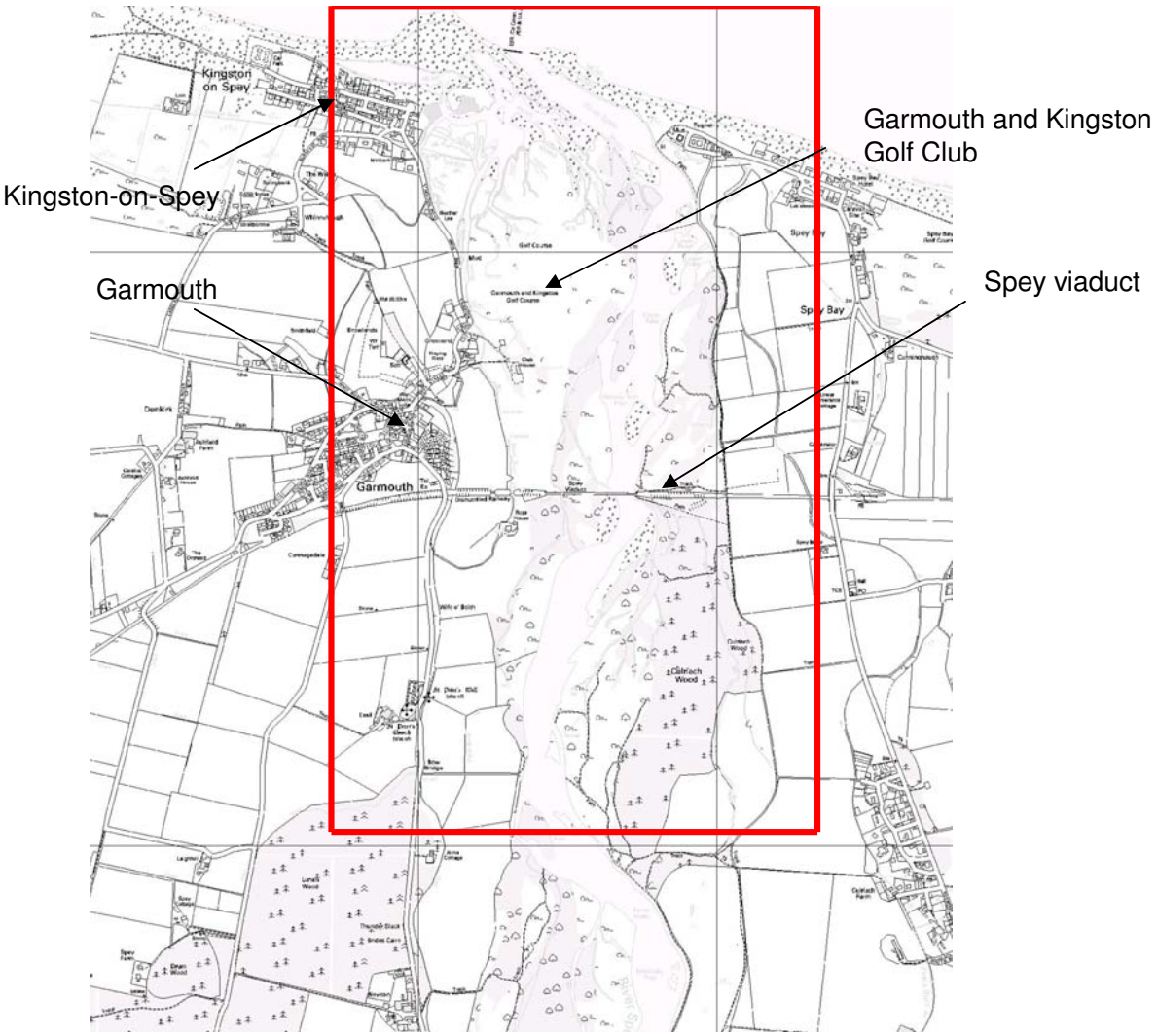


Figure 2. SEPA flood map of Garmouth area showing estimated extent of fluvial flooding at the 1:100 return period. Study area outlined in red

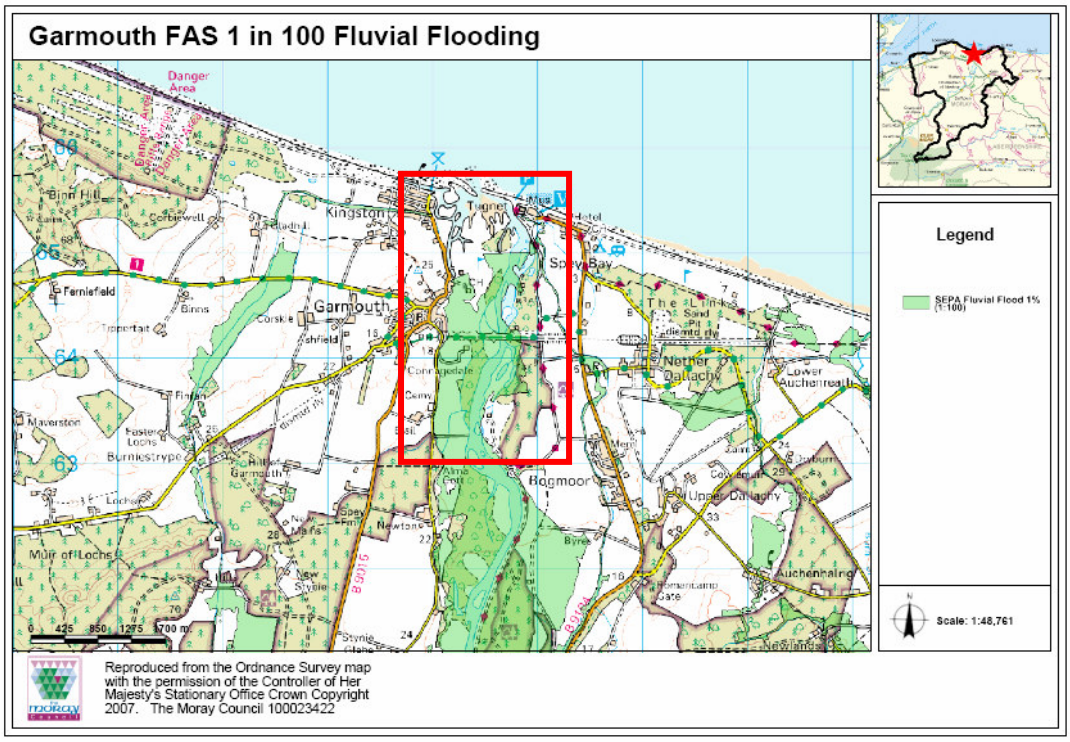
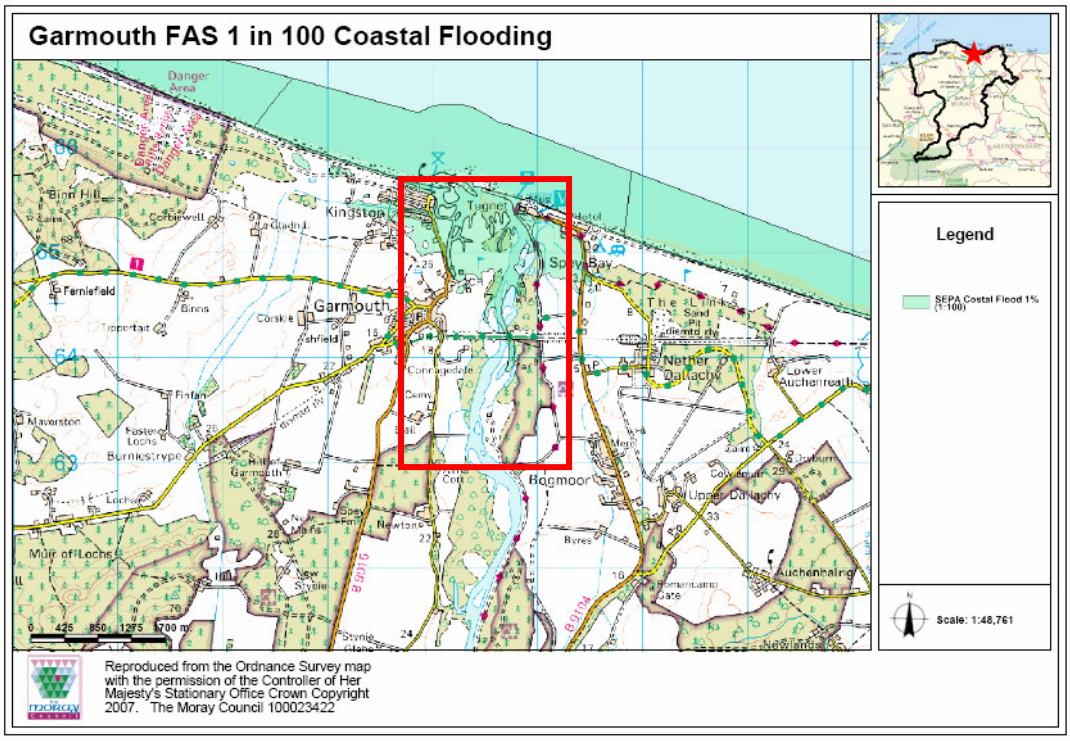


Figure 3. SEPA flood map of Garmouth area showing estimated extent of coastal flooding at the 1:100 return period. Study area outlined in red



2 ENVIRONMENTAL DESIGNATIONS

Consideration must be given to designated sites in the area of any potential FAS. If special protection is given to a site or species under local, national or European legislation, it is important to be aware of any restrictions this will impose on works and adopt good practise measures to minimise impacts on the protected features. In addition, any works that affect a designated site may be subject to an appropriate assessment under the Habitat Regulations (1994). It should be borne in mind that designated sites that are not contained within a FAS area may still be affected by it, for example in-stream FAS works may have an impact on downstream areas, or disturbances to ground water may affect ground water dependent habitats off-site.

The study area for the Garmouth FAS encompasses a 2.5 Km stretch of the lower River Spey. This part of the Spey has several international, European, national and local designations associated with it including Special Areas of Conservation (SAC's) designated under the EC Habitats Directive (1992), Special Protection Areas (SPA's) designated under the EC Birds Directive (1979) and Sites of Special Scientific Interest (SSSI's) notified under the Wildlife and Countryside Act (1981). The designations are listed in Table 1 and outlined below:

Table 1. Environmental designations affecting the River Spey and Garmouth area

Designation type	International, European, national or local?	Name	Could be impacted by FAS?
SSSI	National	Lower River Spey	Yes
SSSI	National	River Spey	Yes
SSSI	National	Spey Bay	Yes
SAC	European	Lower River Spey & Spey Bay	Yes
SAC	European	River Spey	Yes
SPA	European	River Spey Insh marshes	No
RAMSAR	International	River Spey Insh marshes	No
SSSI	National	River Spey Insh marshes	No
SAC	European	Insh Marshes	No
SPA	European	Moray and Nairn Coast	Yes
RAMSAR	International	Moray and Nairn Coast	Yes
SAC	European	Moray Firth	Unlikely
SWT Nature Reserve	Local	Spey Bay Wildlife Reserve	Yes
Sites of Interest to Natural Science	Local	Lower River Spey and Spey Bay SINS	Yes
Coastal Protection Zone	Local	Spey Bay CPZ	Yes

2.1 SAC's

The River Spey SAC is based on the presence of four international SAC qualifying species. These are Atlantic salmon, *Salmo salar*, sea lamprey, *Petromyzon marinus*, otter, *Lutra lutra* and freshwater pearl mussel (FWPM), *Margaritifera margaritifera*. The two fish species and the FWPM require very high water quality to survive, and have correspondingly high regulatory standards set for them under the WFD. The mid to lower reaches of the Spey support an internationally important, viable, population of FWPM. It is becoming increasingly rare to find large populations that are viable i.e. with recruiting juveniles, and so the Spey requires protection from siltation, in-channel disturbance and deterioration in water quality. The stretch of the river at Garmouth, however, may be too far downstream to provide habitat for the mussels as it is influenced by the tide and may therefore be brackish – a condition that the mussels are unable to tolerate. The mid to lower stretches of the river offer excellent lamprey spawning and migratory habitat, with larvae being widely distributed in the marginal silts of this area. The upper catchment provides good nursery habitat for salmon which benefit from unimpeded migratory routes and absence of flow modifications such as impoundments and abstractions.

The Lower River Spey and Spey Bay SAC (Figure 4) is based not on priority species but on habitats. There are two priority habitats that are a primary reason for site selection – perennial vegetation of stony banks and alluvial forests with alder and bird cherry. The stony banks refer to the widespread shingle habitats of this area. These are part of the same shingle aggregation as Culbin Bar near the mouth of the River Findhorn, and are shaped by the same processes. Individually they are the two largest shingle sites in Scotland, and together form a unique vegetated shingle complex. Species-rich dry heath occurs on the shingle ridges while the damper hollows contain wet-heath and vegetation comparable to dune slacks. The habitat is heavily dependent on the coastal and fluvial depositional processes that sustain it. Shingle enters the system from the Spey while coastal dynamics move and shape the shingle along the coast. Any disturbance to sediment dynamics should be avoided. Alluvial forest is found on the more stable, damper parts of the braided channel, and comprises valley alder, willow, ash and bird cherry.

The River Spey discharges into the Moray Firth, just outside the eastern limits of the Moray Firth SAC. The Firth has been designated on the basis of the presence of bottlenose dolphins and sandbanks that are always covered by sea. These features are influenced primarily by marine and coastal processes, and so are unlikely to be affected by any FAS works of the potential scale of Garmouth.

2.2 SSSI's

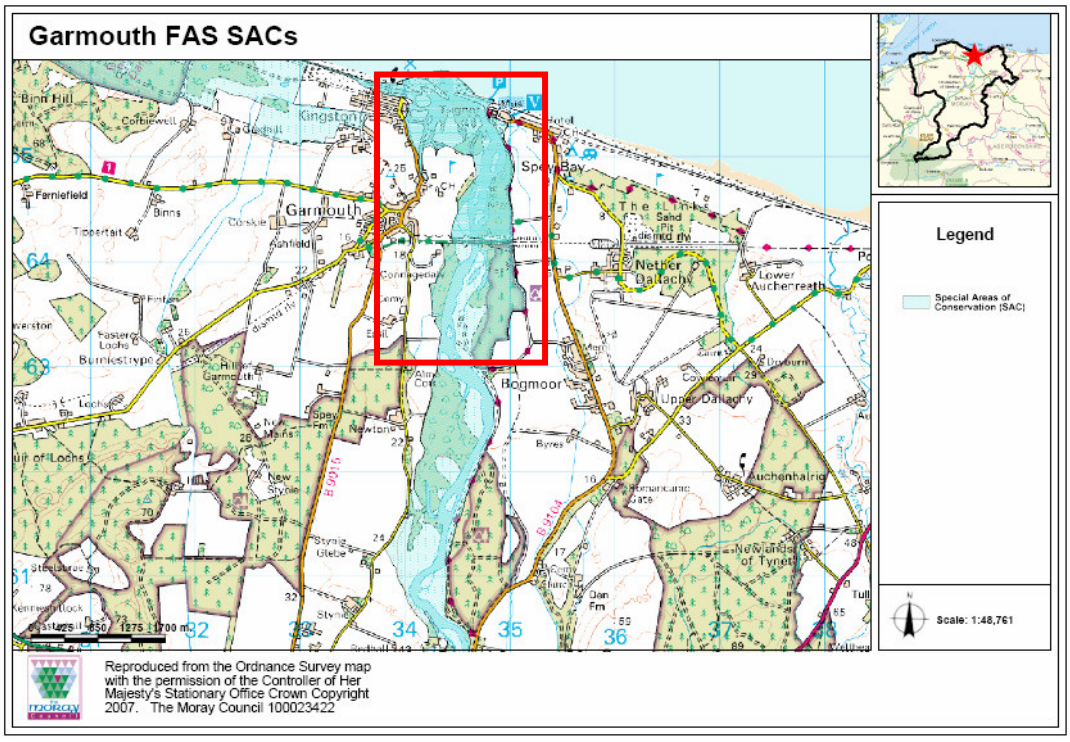
There are three SSSI's underpinning the SAC designations – the Lower River Spey, The River Spey and Spey Bay. The Lower River Spey cites the common tern, fluvial geomorphology, river shingle / sand and wet woodland as qualifying features. The River Spey SSSI cites Atlantic salmon, freshwater pearl mussel, sea lamprey and otter as notified features while the Spey Bay SSSI is designated on the strength of shingle, scrub, saltmarsh, coastal geomorphology of Scotland and hydromorphological mire range.

2.3 SPA's / RAMSAR sites

The Moray and Nairn Coast SPA and RAMSAR site includes the areas of Findhorn Bay, and Culbin Bar to the west, and the Lower River Spey corresponding to the study area. As mentioned earlier, these aggregations are part of the same unique shingle complex, and are shaped by the same processes. The shingle of the Lower Spey provides feeding and breeding habitat for migratory waterfowl including a schedule 1 species and winter foraging for resident passerines. Bird species that forage in the area include bar-tailed godwit, common scoter, dunlin, greylag goose, long-tailed duck, oystercatcher, pink-footed goose, redshank and wigeon. The area is also an important breeding and feeding site for osprey.

There is also a SPA on the River Spey at Insh Marshes which is located just south of Aviemore. The site is also RAMSAR, SSSI and SAC designated for its breeding birds and mire habitat. However, since the Insh Marshes lie approximately 100 Km upstream of the study area it is very unlikely that there will be an impact from any proposed FAS at Garmouth.

Figure 4. Lower River Spey – Spey Bay SAC (transparent blue areas on map). Study area outlined in red



2.4 Spey Bay Wildlife Reserve

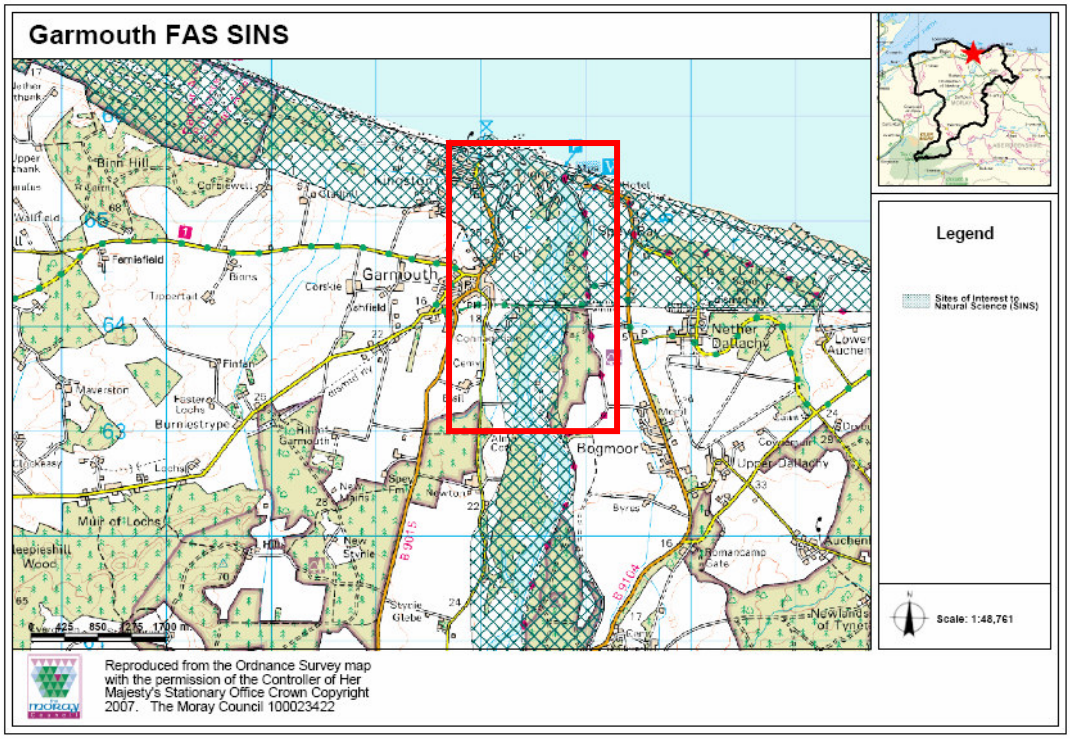
Spey Bay Wildlife Reserve is a Scottish Wildlife Trust nature reserve. The reserve includes the shingle beach and the river estuary and supports a diversity of plants and invertebrates. The area represents an example of clear ecological succession from bare shingle to young woodland. Management of the site involves the gradual spot clearing of

trees and whin that are invading the area from a conifer plantation to the west. This allows the development of a mosaic of small heath habitats resulting in increased structural and species diversity.

2.5 Sites of Interest to Natural Science (SINS)

This is a local designation put in place by Aberdeenshire Council. SINS's are identified by the Council as sites of regional importance for geology, geomorphology, botany, entomology, ornithology and freshwater biology. The Spey Bay SINS is designated for its geomorphological interest, and is shown by the hatched area in Figure 5 below.

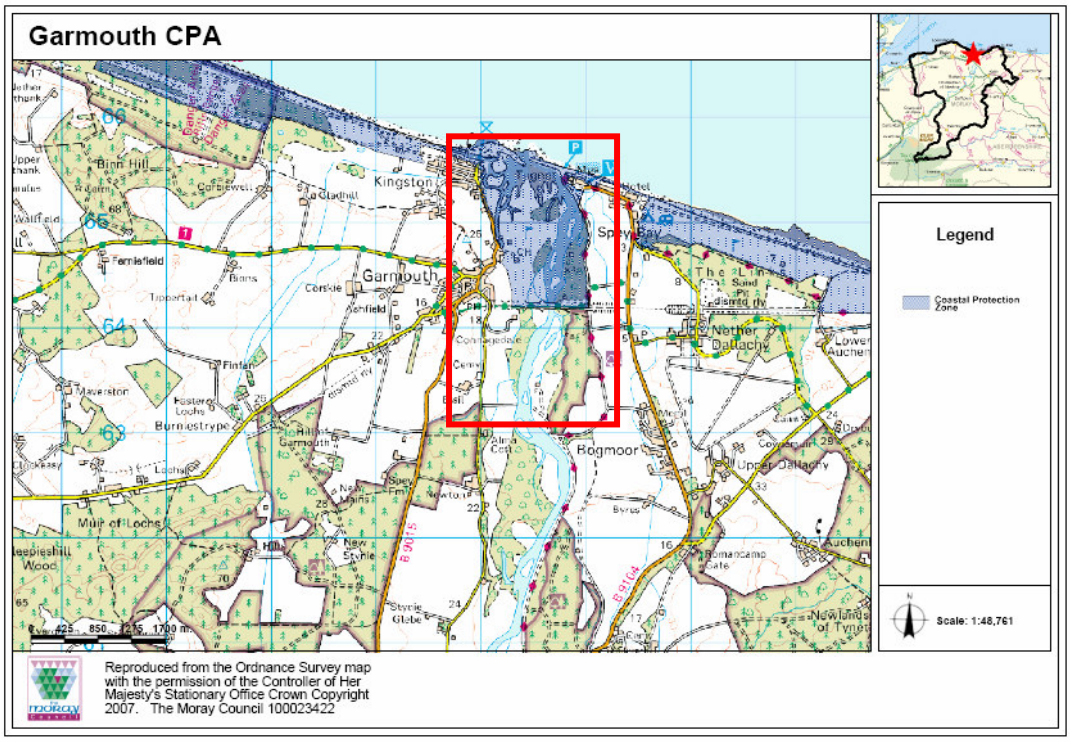
Figure 5. Area of the Lower River Spey and Spey Bay SINS (shown by hatched area on map). Study area outlined in red



2.6 Coastal Protection Zone (CPZ)

A Coastal Protection Zone has been designated by Moray Council along the southern coast of the Moray Firth. This includes the Spey mouth and estuary, and Spey Bay (Figure 6). The area has been designated in line with National Guidance (NPPG13 'Coastal Planning') to protect undeveloped coastline in the face of development pressures. Only certain types of development will be allowed in the CPZ, and these must be sensitively designed and located to ensure that there is no damage to the coastal environment.

Figure 6. Spey Bay Coastal Protection Zone (transparent blue area on map). Study area outlined in red



3 PRIORITY SPECIES AND HABITATS

The UK Biodiversity Action Plan (UKBAP, 1994) is the UK's response to the Convention on Biological Diversity (1992). The UKBAP has identified national priority habitats and species, and has developed targets and plans to help protect and restore them. While there are no legal protections arising from the UKBAP, local and national plans have been prepared to promote improvements in these priority species and habitats. In general, national species and habitat steering groups have developed broad guidance for approaching the conservation of these priorities while local authorities have been responsible for producing small-scale plans which enable action to be taken 'on the ground'. Any local BAP (LBAP) plans affecting the study area should be carefully considered to avoid or reduce any detriment due to FAS works. The study site for Garmouth FAS lies within the area of the North East Scotland LBAP. The LBAP is contributed to by a range of organisations including Aberdeen, Aberdeenshire and Moray Councils, SEPA, SNH and SWT, Forestry Commission, University of Aberdeen and RSPB. The partnership carried out an audit of priority species and habitats in 1998.

3.1 Species

Species that are of particular concern to the LBAP are the water vole, *Arvicola terrestris*, and the red squirrel, *Sciurus vulgaris*. The LBAP carries out activities such as surveying, obtaining funding for small projects, and promoting and facilitating research on these species. The presence / absence of a species in an area is denoted using a grid with each square measuring 10 Km^2. In 1998, red squirrels were present in the 10 Km square containing the study area (Alexander *et al*., 1998), and current data provided on the NESBReC (North East Scotland Biological Records Centre) website suggests that this is still the case. A red squirrel survey may therefore be necessary.

Both data sources indicate that the nearest known population of water voles is located near Aberlour (around 30 Km south of Garmouth). However, it is possible that there is suitable water vole habitat within the study area e.g. along the Black Burn, and so this should be investigated as a survey may need to be carried out.

Other species recorded in the 10 Km square of the study area include pipistrelle bats, brown hares, otters and grey partridge. Freshwater pearl mussels are present in the mid to lower reaches of the River Spey, but they may not be present near Garmouth as the water may here may begin to become brackish as it is affected by the tidal zone.

Badgers are not a priority species under the UKBAP, but they are covered by the Protection of Badgers Act (1992), and need to be taken into account by any potential FAS. According to NESBReC data, they are widely distributed throughout Moray, and may have quite dense populations in the study area. A survey is therefore likely to be necessary and a licence under the Act may be required.

Otter, red squirrel and pipistrelle bats are protected under the Wildlife and Countryside Act (1981), and if they are present in the study area, a licence under the Act may be needed for any works that may disturb them or their habitats.

3.2 Habitats

The main priority habitat found within the study area is coastal vegetated shingle. 19% of Scotland's coastal shingle is found in North East Scotland, and is represented here by two of the best examples of this habitat in the country - Spey Bay and Findhorn Bay / Culbin Bar. Shingle may arrive from rivers or glacial outwash, or may be redistributed from the sea bed by long shore drift along the coastline. While there are many shingle beaches in the UK, few shingle bars are stable enough to support perennial (permanent) vegetation. On the seaward side of stable shingle structures, plants such as sea kale, *Crambe maritime*, sea pea, *Lathyrus japonicus*, and sea campion, *Silene uniflora*, are common pioneers, but further upstream, as in the mouth of the River Spey, the vegetation may tend towards alder, *Alnus glutinosa*, willows, *Salix* spp., ash, *Fraxinus excelsior*, dry and wet heath species and scrub. Shingle structures are very important for many species, supporting breeding birds and diverse invertebrate communities, with some species entirely restricted to shingle habitats.

4 CULTURAL HERITAGE

There are many listed buildings, archaeological sites and conservation areas located in the proposed study area. The locations of these features are illustrated in Figures 7 to 10. While there are numerous archaeological sites, they are generally not considered to be of regional significance and are not scheduled. This includes various cairns, crop marks and wells that are no longer traceable and are not known locally. However, there are several listed buildings that are of national importance.

4.1 Listed buildings

Listed buildings are any building or structure of architectural or historic importance which is included in the List of Buildings of Special Architectural or Historic Interest compiled by Historic Scotland. They are divided into three categories:

A. Buildings of national or international importance
B. Buildings of regional importance
C. Buildings of local importance

There are several 'Category A' listed buildings at Tugnet on the eastern shore of the Spey mouth (Figure 7, no. 1). This includes Tugnet ice house which is the largest industrial ice house remaining in Scotland. It was built circa 1830, replacing an earlier ice house dating from the 1790's, and used to store ice for preserving fish at the height of the salmon fishing industry. Now it serves as a museum for the Wildlife Centre located there. The salmon fishing station itself is also a 'Category A' listed building, including the courtyard square, associated dwellings and fish house. Tugnet cottage and steading, built circa 1800, are 'Category B' listed and the late 19th century Tugnet House is 'Category C' listed.

4.2 Conservation areas

Conservation areas are areas of special historic and architectural interest, the character and appearance of which it is desirable to preserve of enhance. Most conservation areas contain groups of buildings extending over areas of villages or towns, although they can also cover battlefields, parks or designed landscapes. Development is not precluded in a conservation area, but planning permission will only be granted as long as it can be shown that the character and appearance of the area will not be harmed. If any trees are present, they are considered as contributing to the character of the area and may not be removed without permission. In some cases, a Tree Preservation Order may be issued by the planning authority, in which case consent to remove the trees must be obtained.

There are two conservation areas in the study area. They are the village of Kingston, and the eastern end of Garmouth i.e. the low-lying part that is prone to flooding (Figure 8). Many of the original buildings remain in Garmouth, including clay-bool constructed cottages and the Garmouth Hotel and church which date from the 18th century. There are no tree preservation orders in the study area.

Figure 7. Listed buildings in the Garmouth area (indicated by blue squares). Study area outlined in red

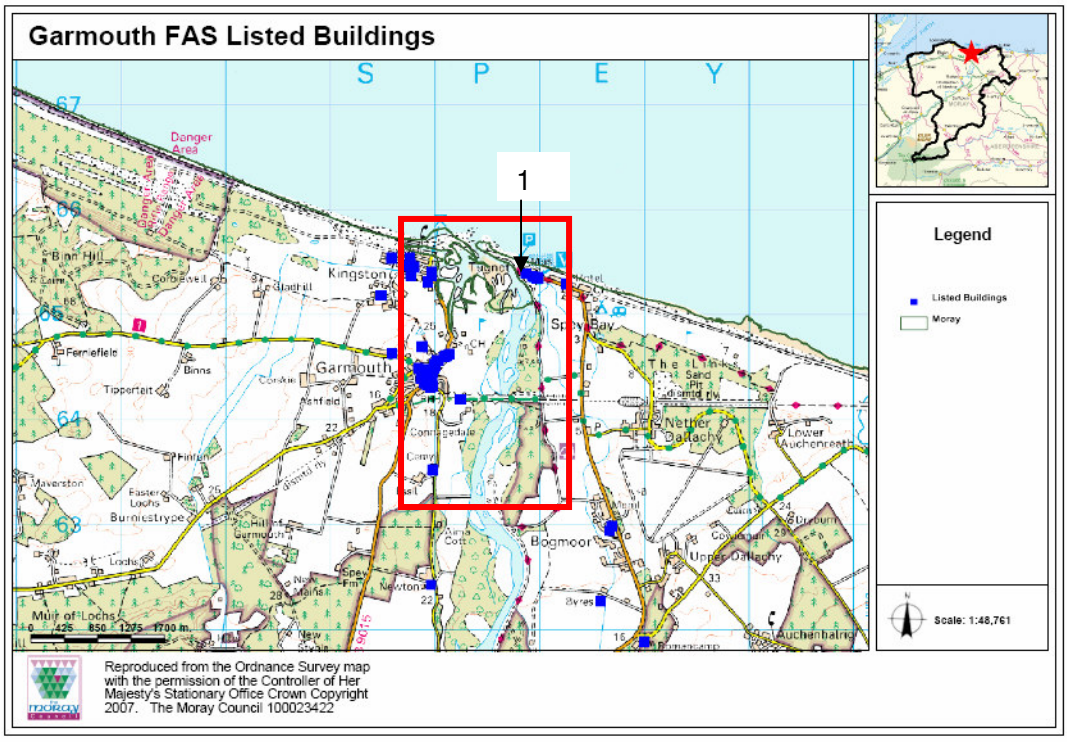
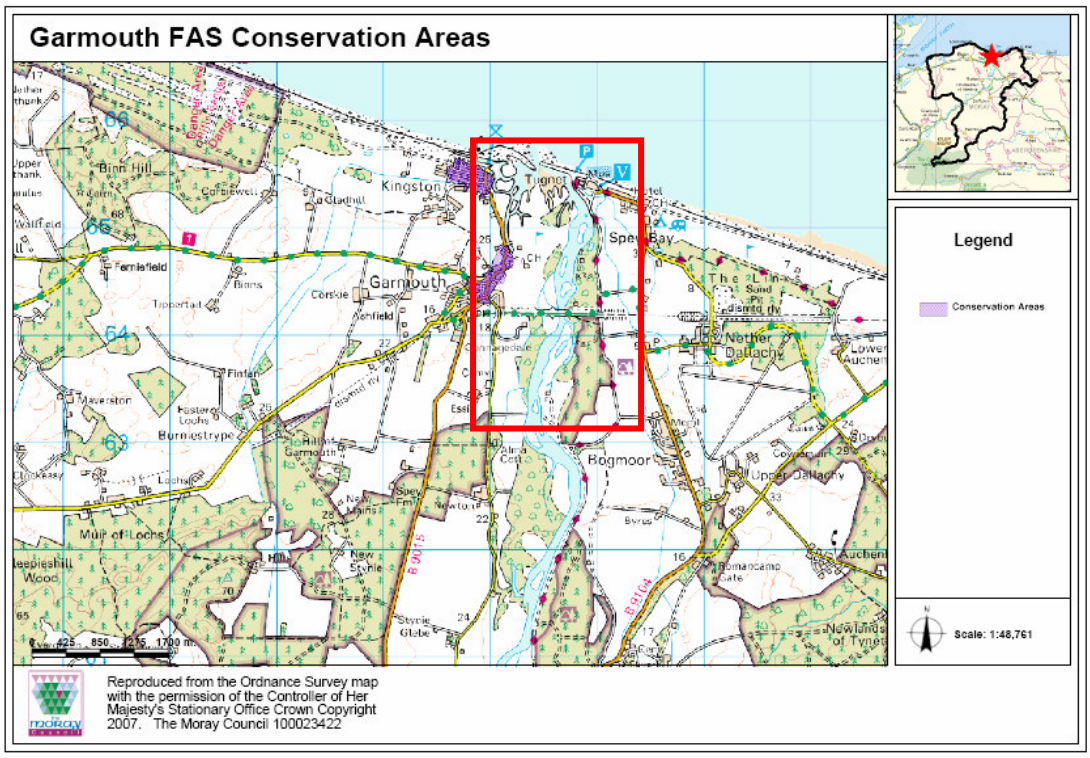


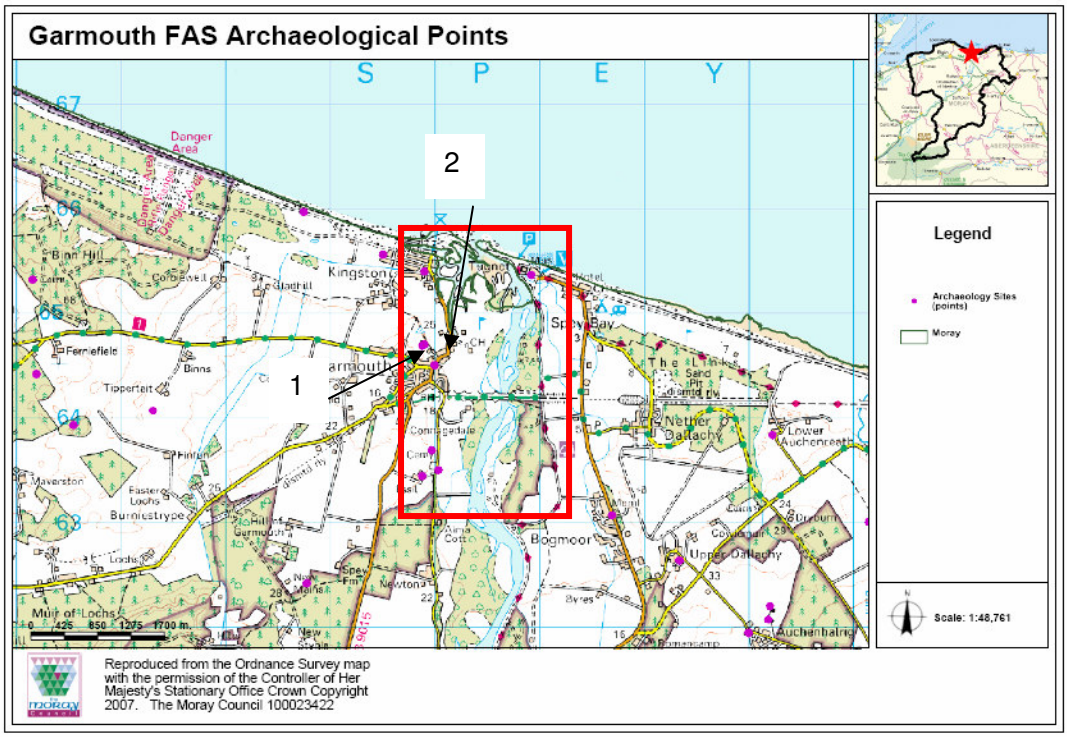
Figure 8. Conservation areas around Garmouth (indicated by purple polygons). Study area outlined in red



4.3 Archaeological sites

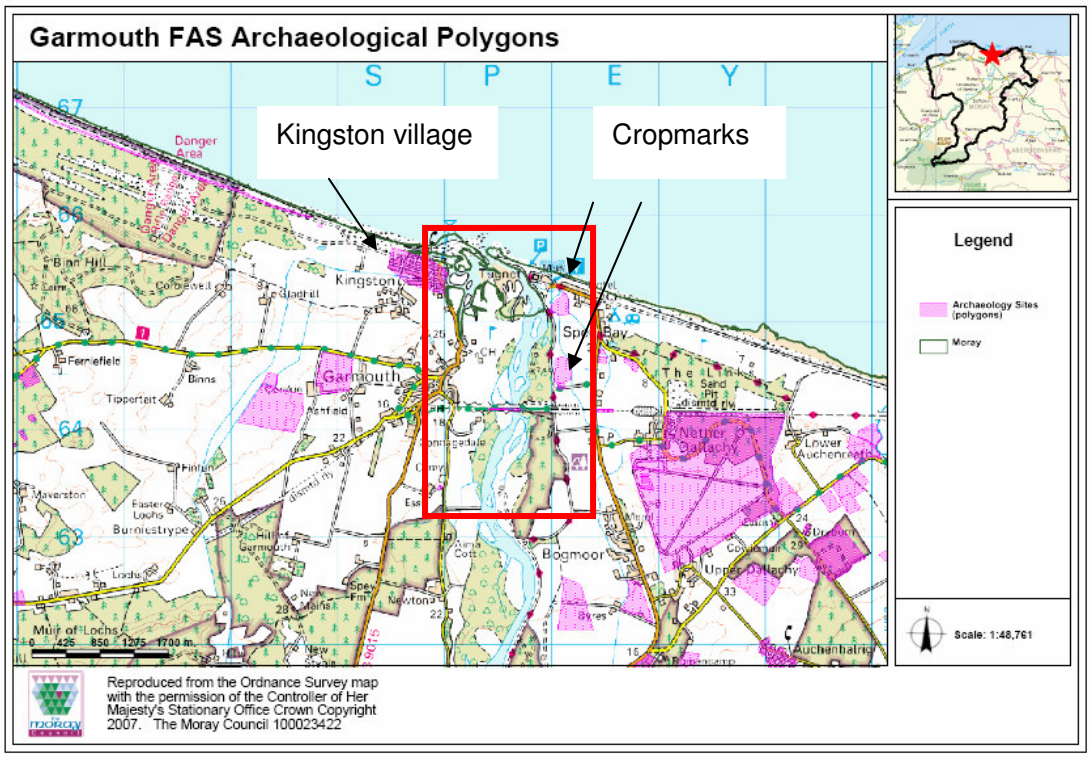
While there are numerous archaeological sites, they are generally not considered to be of regional significance and are not scheduled. There are, however, two features of note. The first is a stone circle located at Browland (Figure 9, no. 1), just north of Garmouth village. It consists of four boulders set in the ground, and may have archaeological significance although this has not yet been confirmed. The second is the Garmouth water tower (Figure 9, no. 2) which is located on the hill on the northern boundary of the village. It dates from the late 19th century, and is no longer used, however, the Garmouth and Kingston Amenities Association lease it and are currently restoring it. While it is not a scheduled monument, it is considered to have some significance at the national level.

Figure 9. Archaeological sites in the Garmouth area (indicated by purple points). Study area outlined in red



While discrete structures such as the water tower, wells or cairns are represented by points (Figure 9), sites covering larger areas are depicted by polygons (Figure 10). There are three archaeological polygons in the study area. These are the village of Kingston and two cropmarks (Figure 10), but they are not considered to be of local, regional or national significance.

Figure 10. Archaeological areas in the Garmouth area (indicated by purple polygons). Study area outlined in red



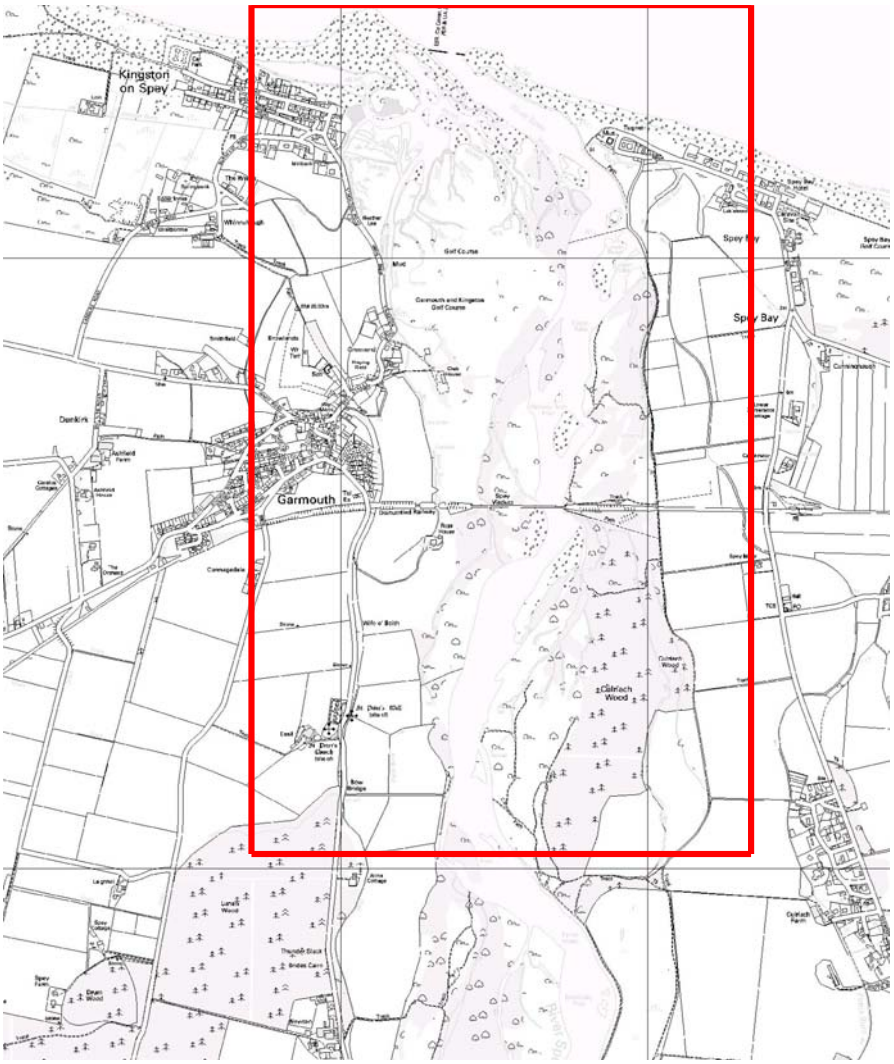
5 LAND-USE AND LOCAL COMMUNITIES

Land-use in the study area comprises (in order of decreasing area) agriculture, forestry, an urban centre (Garmouth), recreational and amenity areas including a large golf course, and several rural communities (Tugnet and The Wards).

5.1 Agriculture

The land around Garmouth is widely used for agriculture, primarily arable farming for cereal production. However, vegetables, cattle and pigs are also produced. The soils of the area are predominantly podzols derived from acid parent materials. Since podzols tend to be low in nutrients, it is likely that fertilisers are relied upon heavily. There are no areas of Prime Agricultural Land in the study area. Agricultural activities are important not only to the social and economic well being of the area, but also contribute to its landscape value. There are around 35 fields contained within the study area (Figure 11).

Figure 11. Map showing field boundaries within the area of Garmouth FAS. Study area outlined in red

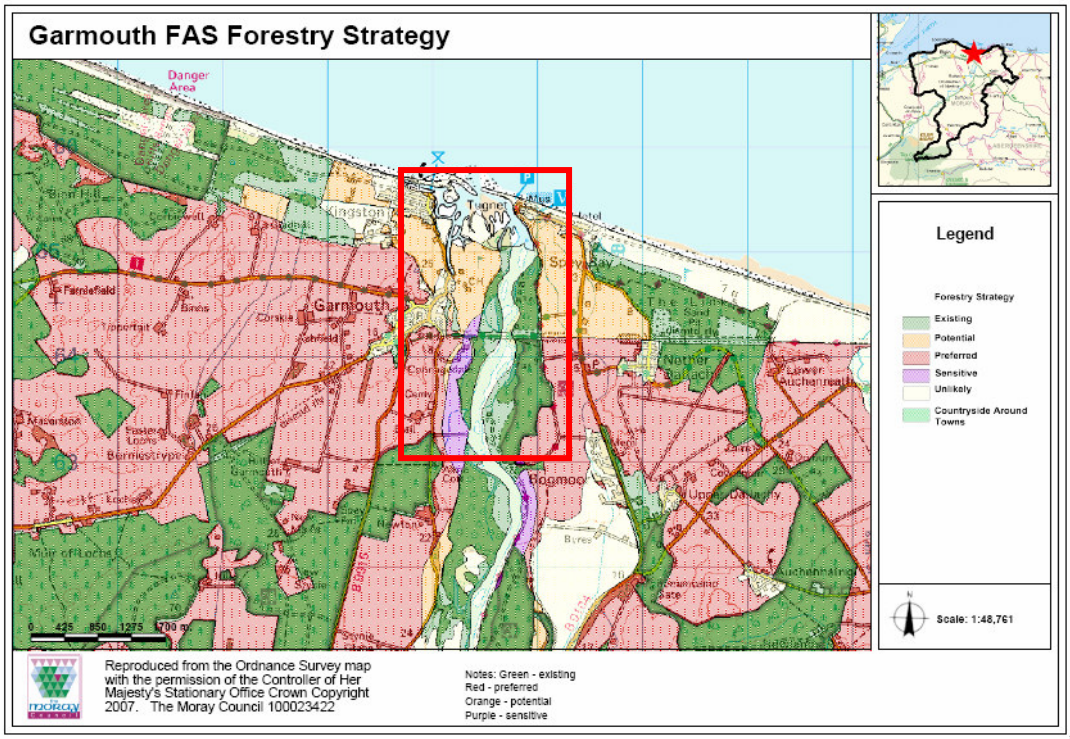


5.2 Forestry and woodland

Moray Council, SNH and the Forestry Commission produced the Moray Forestry Strategy in 2002. The strategy, which is currently being updated, aims to promote sustainable forestry in Moray. A large proportion of the land area of Moray is covered by woodland. The national average forest cover is 17% whereas in Moray, the figure is closer to 27%. Forestry is therefore of particular important to the economic, social and environmental character of the area.

Figure 12 shows that there are substantial pockets of forestry in the study area (dark green areas on map). The banks of the river in the study area are well planted, and there are large areas of agricultural land that have been identified in the Moray Forestry Strategy as being suitable for planting native woodland (red = preferred, and orange = potential sites for planting).

Figure 12. Map showing existing, potential, preferred and sensitive areas of forestry according to the Moray Forestry Strategy. Study area outlined in red

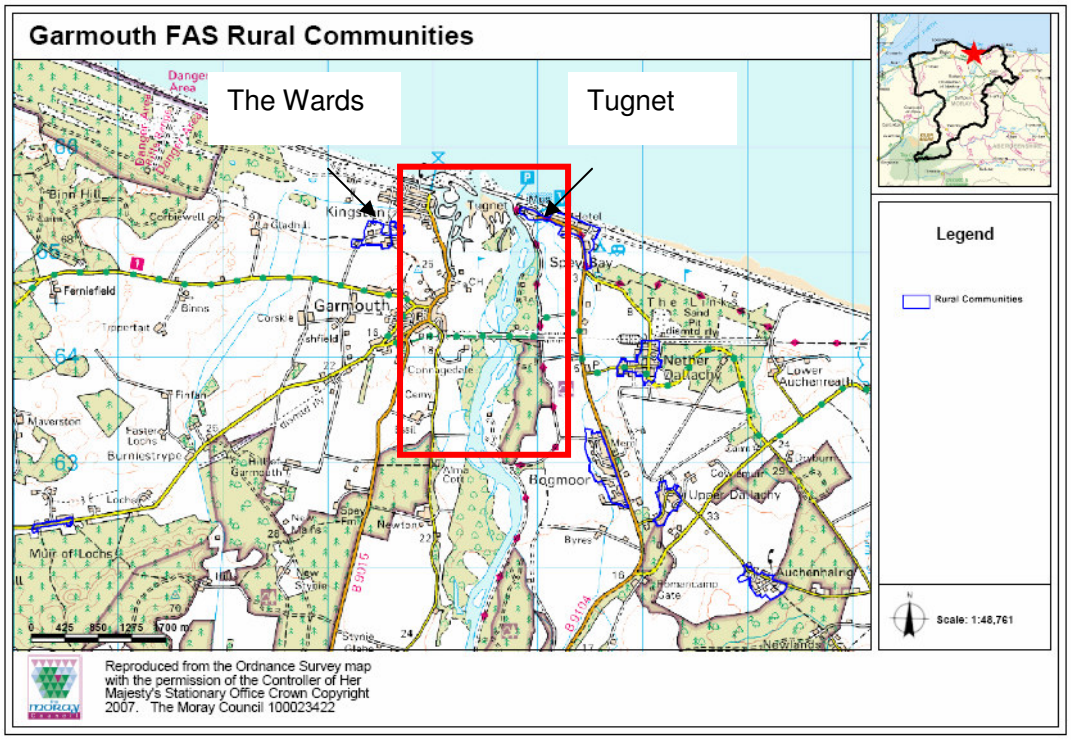


5.3 Urban and Rural Communities

There are two urban centres contained partially within the study area. These are the twin villages of Kingston-on-Spey and Garmouth. Garmouth has a population of 494 people occupying 200 properties while Kingston has 208 people in 82 households (2001 census).

Figure 13 shows rural community areas as defined by Moray Council (outlined in blue). The rural community at Tugnet falls within the study area, and the rural community at The Wards, on the outskirts of Kingston may also be affected as it is very close to the study area.

Figure 13. Rural communities in the area of Garmouth (outlined in blue). Study area outlined in red



6 RECREATION AND AMENITY

6.1 Angling

The River Spey is protected at a national and European level because of its Atlantic salmon population. It provides excellent habitat for salmon, and is a world class angling river. It is the 7th largest catchment in the UK at 2998 Km^2 with a main river stem of 157 Km in length. The lower stretches of the river are unusually fast flowing therefore providing many miles of excellent salmon fishing waters. It is thought that angling on the Spey generates £11.8m in revenue yearly and supports 367 jobs. The annual catch on the river has been in the region of 10,000 fish in recent years, and in addition, around 2000 sea trout are also taken. The lower reaches are where the best salmon angling is concentrated, while sea trout and brown trout angling occurs mainly in the upper and middle stretches of the river.

6.2 Garmouth and Kingston golf course

Garmouth and Kingston golf course is located on the west bank of the River Spey between the villages of Garmouth and Kingston–on-Spey (Figure 1). It is of extremely high importance to the local economy and community, drawing visitors into the area. Due to its location on the bank of the river, it is very prone to flooding, and the club house is one of the 7 buildings vulnerable at the 1:100 return period. Flooding of the course itself may result in loss of revenue if it becomes unplayable, and may subsequently require costly rehabilitation.

6.3 Watersports

Watersports on the River Spey generate £1.7m for the local economy and support 42 jobs. Activities include kayaking, canoeing and rafting and a canoeing. While these activities take place predominantly in sections of the river far upstream of the study area, there is one canoeing access point within it, at the eastern shore of the river mouth near Tugnet.

6.4 Cycling

A section of the Sustrans (sustainable transport charity) National Cycle Route passes through Garmouth, joining the old railway path and crossing the Speyside viaduct. The Moray Council Development Plan for Garmouth proposes that the cycle path, which is part of the Cullen to Garmouth route, should be protected from development.

6.5 Walking

'Walk in Scotland' features several walking routes around Garmouth, taking in the old railway line and bridge, the beach, the banks of the Spey and the Moray Firth Wildlife Centre at Tugnet. The Moray coastal trail also passes through Garmouth crossing the beach and shingle and using forest tracks to head inland before crossing the viaduct and turning north up the east bank towards Spey Bay. The Spey Bay Reserve is renowned for the long and short walks located within it.

The Speyside Way is one of four official long distance routes in Scotland (the others are the West Highland Way, the Great Glen Way and the Southern Upland Way). The

Speyside Way links the Moray coast with the Grampian Mountains and follows the valley of the River Spey. In the Garmouth area, the route approaches the mouth of the Spey from the east using old railway and forest paths, it passes Tugnet ice house before turning south along the eastern bank of the Spey.

6.6 Wildlife

There is a wildlife centre at the mouth of the Spey where sightings of bottlenose dolphins, seals, otters, ospreys and wildfowl are frequent. The centre was previously known as the Moray Firth Wildlife Centre which was developed in partnership with the Whale and Dolphin Conservation Society (WDCS). The society now runs the centre full time, and it is now referred to as the WDCS Wildlife Centre.

The Spey Bay Wildlife Reserve and the Lower River Spey are centres for large numbers of bird watchers attracted to the area by the wide diversity of water fowl that are found there.

6.7 Public Amenity and Development

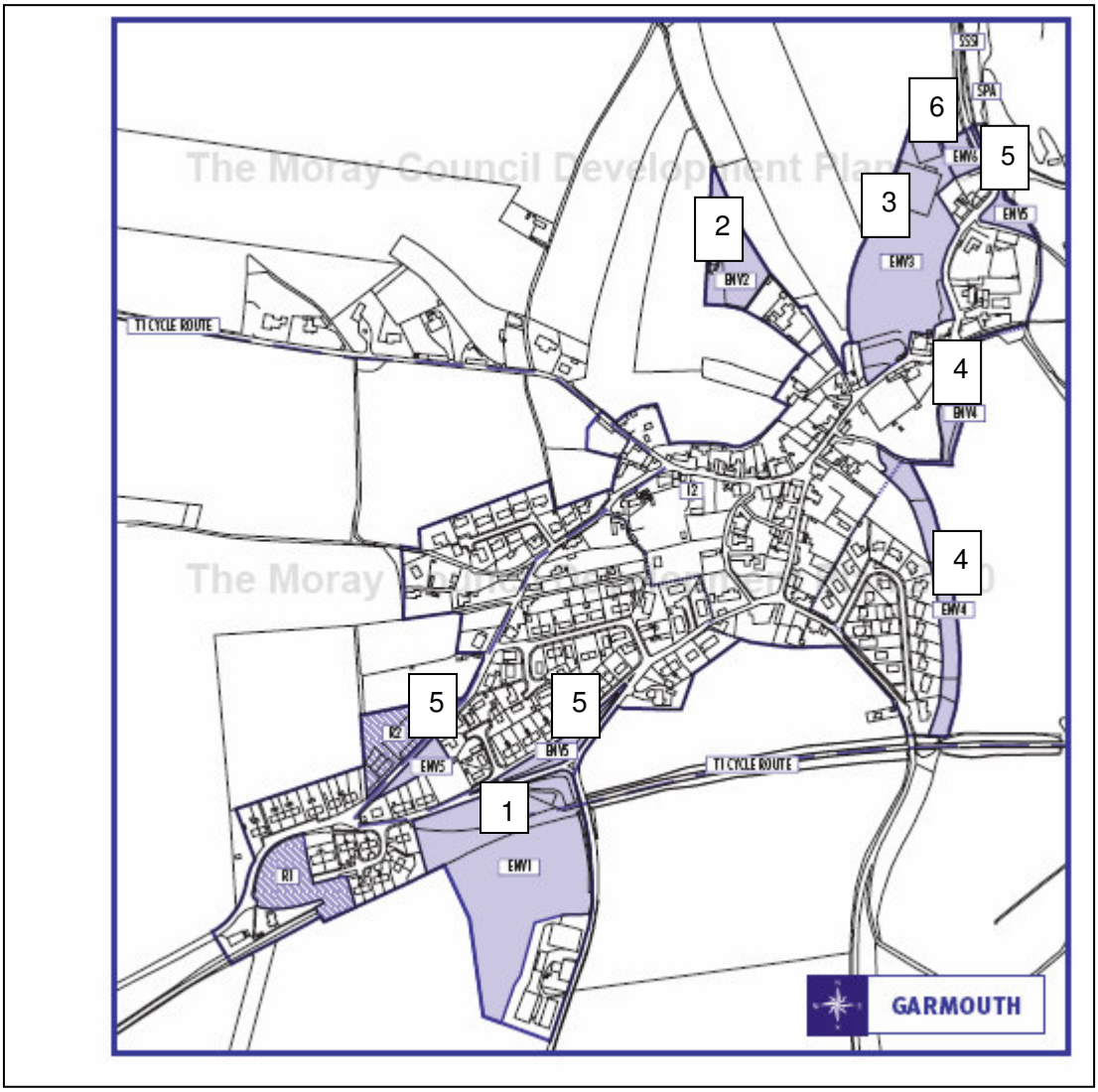
Recently, Garmouth has been growing at a slow rate as the Council has considered that further significant development would be detrimental to the character of the village and inappropriate to the structure of its narrow streets and lanes. It is planned that any development will only be permitted if it sustains and enhances the environment of the village.

Under their Public Amenity and Open Spaces policy (L/ENV18), the Moray Council has identified 6 areas in Garmouth that contribute to the amenity and environment of the village (Moray Local Plan, 2000 – under review). The site descriptions are as follows;

1. Railway sidings and community woodland – with car park, picnic facilities and public footpaths giving access to old railway line and woodland
2. Old water tower – landmark served by footpath
3. Playing field and tennis courts – to be maintained for recreational use and open space
4. East of orchard and natural woodland bank – on the terrace of the Spey and prone to flooding
5. Open spaces on South Road, Station Road and Kingston Road
6. Bowling club car park - can be used for adjacent recreational facilities

See Figure 14 below for map locations. The purpose of policy L/ENV18 is to protect these areas from inappropriate development or any activities that could compromise their contribution to the amenity of the area. Other policies central to the Moray Council's plan for Garmouth's environment are L/ENV10 (settlement boundaries) to prevent urban sprawl into rural areas surrounding the village, and L/IMP1 (development in built up areas).

Figure 14. Six amenity areas identified by Moray Council in Garmouth (Moray Local Plan, 2000)



7 STAKEHOLDER CONCERNS

Stakeholders in the Garmouth area (listed in Table 2) were contacted by letter on the 15th October 2007. Responses were requested by the 9th November and these are still being received. Any concerns raised will be addressed in full after that date.

Table 2. List of Garmouth stakeholders approached and issues raised

Scottish Environment Protection Agency
Aberdeenshire Council Archaeological Services
Garmouth and Kingston Golf Club
Garmouth and Kingston Amenities Association
SUSTRANS
River Spey District Salmon Fisheries Board
Forest Enterprise
Forestry Commission
Historic Scotland
North East Biodiversity Partnership
Moray Council (Air, Noise)
Moray Council (Contaminated Land)
Moray Council (Estates)
Moray Council (Planning)
Moray Council (Access Manager)
Moray Council (Environmental Protection)
Moray Ramblers
RSPB
Scottish Executive Development Department
Scottish Executive Protected Species Unit
Scottish Native Woodlands
Scottish Wildlife Trust
WWF Scotland
Transport Scotland
Scottish Natural Heritage

8 CONCLUSIONS

There are many environmental designations to consider in the area of the potential Garmouth Flood Alleviation Scheme. The primary concerns are maintaining passage and habitat for Atlantic salmon and sea lamprey, and maintaining the integrity of the vegetated shingle habitats. Due to the presence of species reliant on the channel substrate, the fragility of the shingle habitat and the immense volume of water discharging from the River Spey, in-channel works are unlikely to be technically, economically or environmentally viable. On land, licences are likely to be required for works involving disturbance to otter, water voles, badgers, red squirrel and bats as these species may all be present in the study area. Surveys for these species are therefore likely to be required. Garmouth and Kingston golf club is very heavily affected by flooding, and will probably constitute the main parcel of land involved in any flood alleviation scheme.

9 RELEVANT LEGISLATION

- The Convention on wetlands of international importance especially as wildfowl habitat (Ramsar convention, 1975)
- Convention of Biological Diversity, 1992
- Council Directive 92/43/EEC on the Conservation of natural habitats and of wild flora and fauna (EC Habitats Directive, 1992)
- Council Directive 79/409/EEC on the conservation of wild birds (EC Birds Directive, 1979)
- Directive 2000/60/EC of the European parliament and of the council establishing a framework for the community action in the field of water policy (EU Water Framework Directive, 2000)
- Biodiversity: the UK Action Plan, 1994
- The Water Environment and Water Services (Scotland) Act, 2003
- The Conservation (Natural Habitats, &C.) Regulations, 1994
- Wildlife and Countryside Act, 1981
- Nature Conservation (Scotland) Act, 2004
- Protection of Badgers Act, 1992

10 REFERENCES

- Alexander, G., Leaper, G., Francis, I. & Tulloch, M. (1998) Biodiversity in North-east Scotland: an audit of priority habitats and species. North-east Scotland Local Biodiversity Action Plan Steering Group
- Moray Local Plan (2000 / 2006)

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Appendix D
Geomorphology Baseline Study

Garmouth Flood Alleviation Scheme

Geomorphological Desk Study

Moray Council

22 November 2007
Final Report
9S9650

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Document short title	Geomorphological Desk Study
Status	Final Report
Date	22 November 2007
Project name	Garmouth Flood Alleviation Scheme
Project number	9S9650
Author(s)	Matthew Hardwick
Client	Moray Council
Reference	9S9650/R/302046/PBor

CONTENTS

1 INTRODUCTION

In October 2007, the Moray Council commissioned Moray Flood Alleviation to undertake, a study to assess the feasibility of a flood alleviation scheme for protecting the village of Garmouth. As part of the baseline assessment for the development of future options, a desk-based Geomorphological Assessment was requested to outline the main geomorphological issues, both locally and further-a-field. Selected proposals and maps, and initial thoughts on questions posed by Paul Hart (Scheme Project Manager for Garmouth FAS) were supplied.

Instructions were issued for a short report to be prepared to:

- Comment on sediment-related problems which may pose a risk the development of a flood alleviation scheme.
- Comment on the wider geomorphological reach scale implications of channel alteration and waters edge construction.

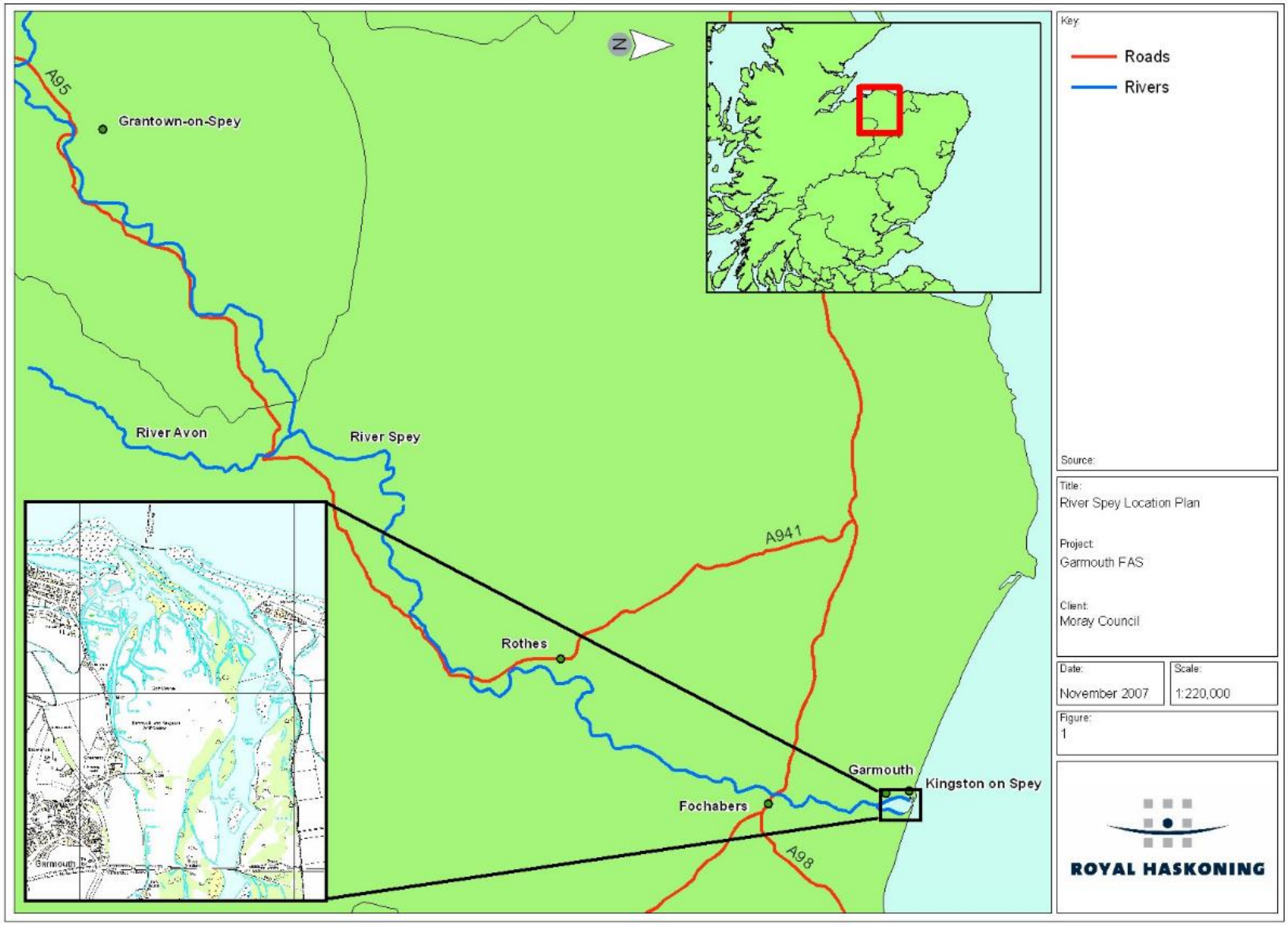
This document presents the findings of the desk based study.

1.1 Catchment Characteristics

The river system in the middle Spey exhibits a meandering pattern with a mean gradient of 1:1200. Downstream of Grantown, the gradient steepens to 1:380 giving rise to the most extensive area of braided river in Britain. Steepening in this location in the lower course is unusual for a British River. It results from a general elevation of the Moray coast due isostatic recovery following recession of an ice sheet about 10 000 years ago.

The 2988 km^2 catchment of the Spey, which ranks ninth in Britain in area, drains the northern slopes of the Cairngorms and eastern slopes of the Monadhlaith Mountains. Peak discharges rank seventh highest in Britain, and Inter-basin transfers of water, from the upper parts of the catchment to the Great Glen, reduce the flow in the River Spey and have an attenuating effect on flood flows within upper/middle parts of the catchment. However, many of the floods in the lower catchment are the result of the flashy hydrology of the Spey and also the River Avon (major tributary confluencing downstream of Grantown-on-Spey) which is not affected by impoundments (Figure 1). More generally, the tendency for flash floods is related to the low permeability of the rocks comprising of Cairngorm and Monadhliath. Overall the most notable flood events within the Spey catchment occurred in 1829, known as the Great Moray Floods, and in 1970. The return period estimated for these are 150 years and 45 years, respectively. Flooding was widespread, affecting Tugston, Garmouth and Kingston.

The Spey Bay estuary and coastline encompass a whole host of interests. The area is designated as a Site of Special Scientific Interest (SSSI). Commercial salmon fishery in the Spey has been important for many years, the fishery ranking among the top five rivers in Scotland. In addition, there is extensive Forestry Commission land and two golf courses in the area, in particular Garmouth Golf Club, making it one of high amenity and recreational value.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A95
Grantown-on-Spey
River Avon
River Spey
A941
Rothes
Garmouth
Kingston on Spey
Fochabers
A98
Key:
Roads
Rivers
Source:
Title:
River Spey Location Plan
Project:
Garmouth FAS
Client:
Moray Council
Date:
November 2007
Scale:
1:220,000
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2 HISTORICAL ANALYSIS

2.1 Lower Spey

In the lower reaches of the River Spey, the river exhibits some braided reaches, which is indicative of the high flow energy present in this part of the fluvial system. Lewin and Weir (1977) found that the pattern and intensity of braiding are different to those which prevailed in the late 1800s, attributing the changes to human constraints on channel evolution and to extensive afforestation in the catchment, which has affected sediment supply and discharge characteristics. The ability of the River Spey to transport material downstream to its mouth is evident from historical accounts, including one describing the Great Moray Floods of 1829. It was reported at the time that some of the stones forming part of the bridge over the Spey at Fochabers were carried downstream following collapse of the bridge, and were removed from the shore at the mouth four days later. The high sediment delivery to the estuarine area significantly affects the development and changes to planform and spit development at the mouth of the Spey.

In addition, the history of channel change in the lower Spey relates to the ability of the river to erode its banks and, in doing so, transport sediment. These depend heavily on channel gradient, discharge and the sediment size, and also, more importantly in gravel bed rivers such as the River Spey, the process of bed armouring. Armouring affects the overall transport rate, whereby grains are transported away by the flow and the remaining material is protected from erosion by the larger grains, which accumulate to form a coarse layer at the surface of the bed (Thorne *et al.,* 1987).

2.2 Reach scale – Spey Bay (Railway Viaduct to Mouth of River Spey)

The geomorphology of Spey Bay is the result of a complex interaction between fluvial flows in the River Spey and the coastal wave climate. Historically, the major morphological feature resulting from this interaction has been a spit across the mouth of the river. Changes in the position of the river mouth are shown in Figure 3, which is based on cartographic records analysed by Grove (1955) and OS mapping/aerial surveys performed in a 1990-1992 study (Riddell and Fuller, 1995).

There appears to be a tendency for the river mouth to shift westwards towards Kingston, due to westward migration of the spit formation under the action of long shore drift, with the most significant migration being 1.2 km west from a location centred on the axis of the estuary in the past (Figure 3). However, the westward trend in shifting of the mouth has reversed several times, due to the natural breaching of the spit (Figure 3). Events of this type were recorded in 1829, 1981 and 1989. Breaching results in a realignment of the course of the river to a position central between the coastal villages of Kingston and Tugnet.

The potential for large and rapid changes in this part of the Lower Spey, is significantly illustrated at the site of the now disused Spey Bay Railway Viaduct, at the upstream limit of our study reach (Figure 1). Analysis of historical maps and aerial photographs shows that, here, the main channel has moved nearly 200m to the east since the bridge was

constructed, with flows passing via the minor, easterly spans for most of the bridge's life. The path of the main channel between the railway viaduct and the mouth has undergone considerable change during this century (Figure 2*)*. It is this reach of the river which has received the most attention in the past, owing to the scale of the changes observed and its close proximity to people and property, such as the village of Garmouth, and recreational amenities, such as Garmouth Golf Course (Figure 2).

Based on the historical nature of the estuary and its ability to change constantly, rapidly and unpredictively, together with the high conservation/recreational importance of this area, it is recommended that engineering intervention should be minimised. It is recommended that any engineering works should be set back, as far as is possible away from the channel, allowing the estuary to adapt to change within a wide morphologically-active corridor.

Interestingly, analysis of available sources revealed a significant relationship between the bridge span through which the main channel flows and the channel planform between the bridge and the mouth. Recent aerial photographs show that since the early-1990s the River Spey has occupied the western span of the Railway Viaduct, whereas it had flowed through the eastern span for the majority of the bridge's existence (Plate 1 and 2). This channel shift may be attributed to the majority of the eastern and middle bridge spans currently being block by sediment and vegetation, influencing the path taken by flows approaching the bridge. This sediment accumulation appears to have been exposed above the low flow elevation for a considerable period of time, allowing vegetation to colonise it and forming a stabilised, semi-permanent bar that directly influences the position and orientation of flows entering the study reach.

Incidentally, analysis of both historical maps and aerial photos shows that when the flow was routed through the eastern part of the bridge, the channel planform was less sinuous than at present, with the river active corridor of the river being much narrower than it is currently. Since the main channel has occupied the western span of the railway viaduct, the planform downstream has become much more sinuous, adopting a 'wandering' configuration that involves the channel shifting across a much wider morphologically-active corridor. It is the larger meander loops which have developed in the active channel that are responsible for widening the corridor. These are now resulting in progressive erosion of the area occupied by Garmouth Golf course, especially in areas where the natural resistance to erosion due to fluvial attack has been reduced due to destruction of the floodplain forest and breaching of the wooded riparian fringe at the edge of the morphologically-active corridor. Plate 3 shows the area of erosion at the $17^{th}/18^{th}$ holes on the Garmouth Golf Course resulting from the growth and migration of large meander loops in the active channel, coupled with development of active back channels in the wandering planform of the river.

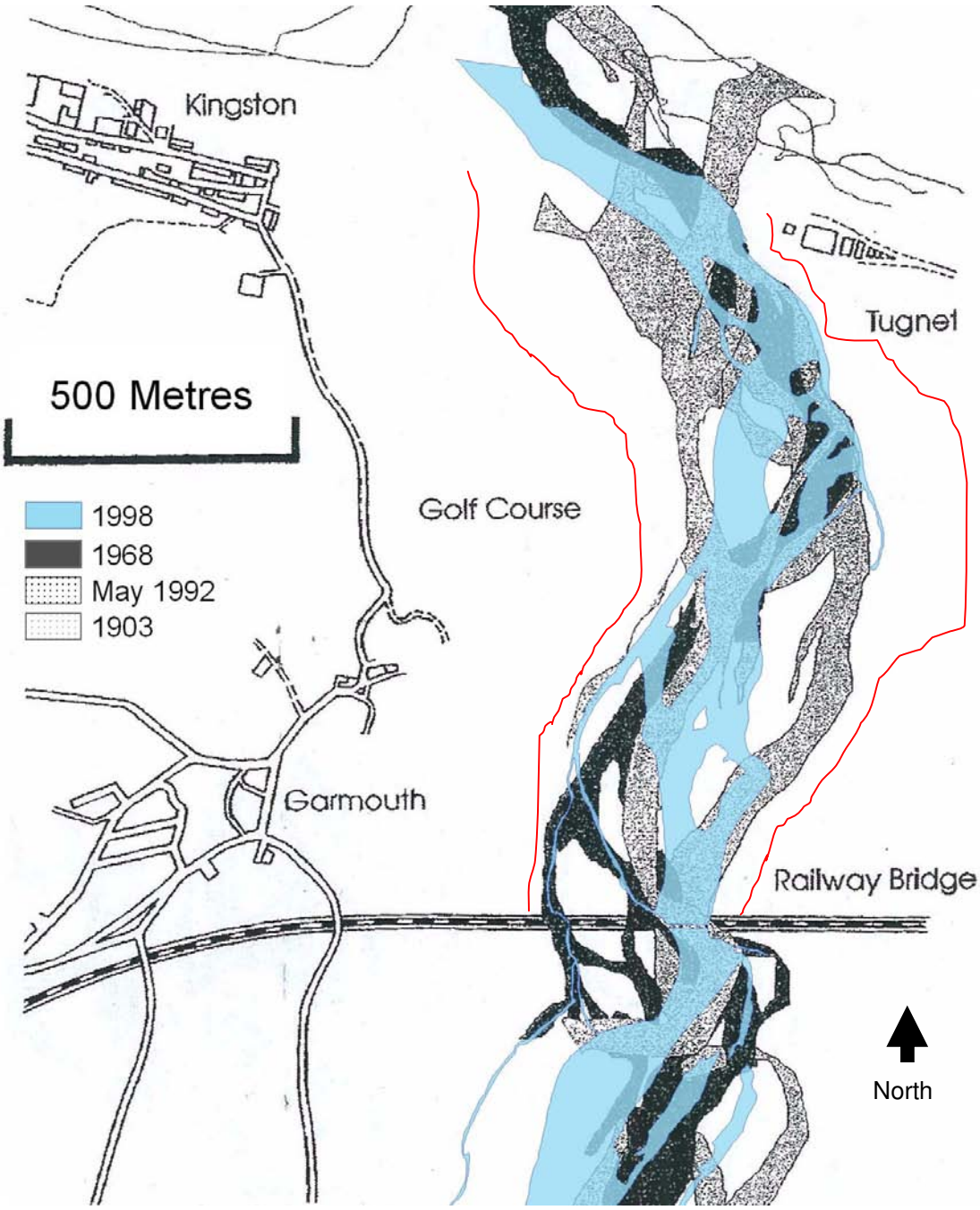

Figure 2 Historical channel changes between the Railway Viaduct and mouth of the River Spey.

Plate 1 Main channel flowing through eastern span of the Railway Bridge (1991)

Plate 2 Main channel flowing through western span of Railway Viaduct (1998)

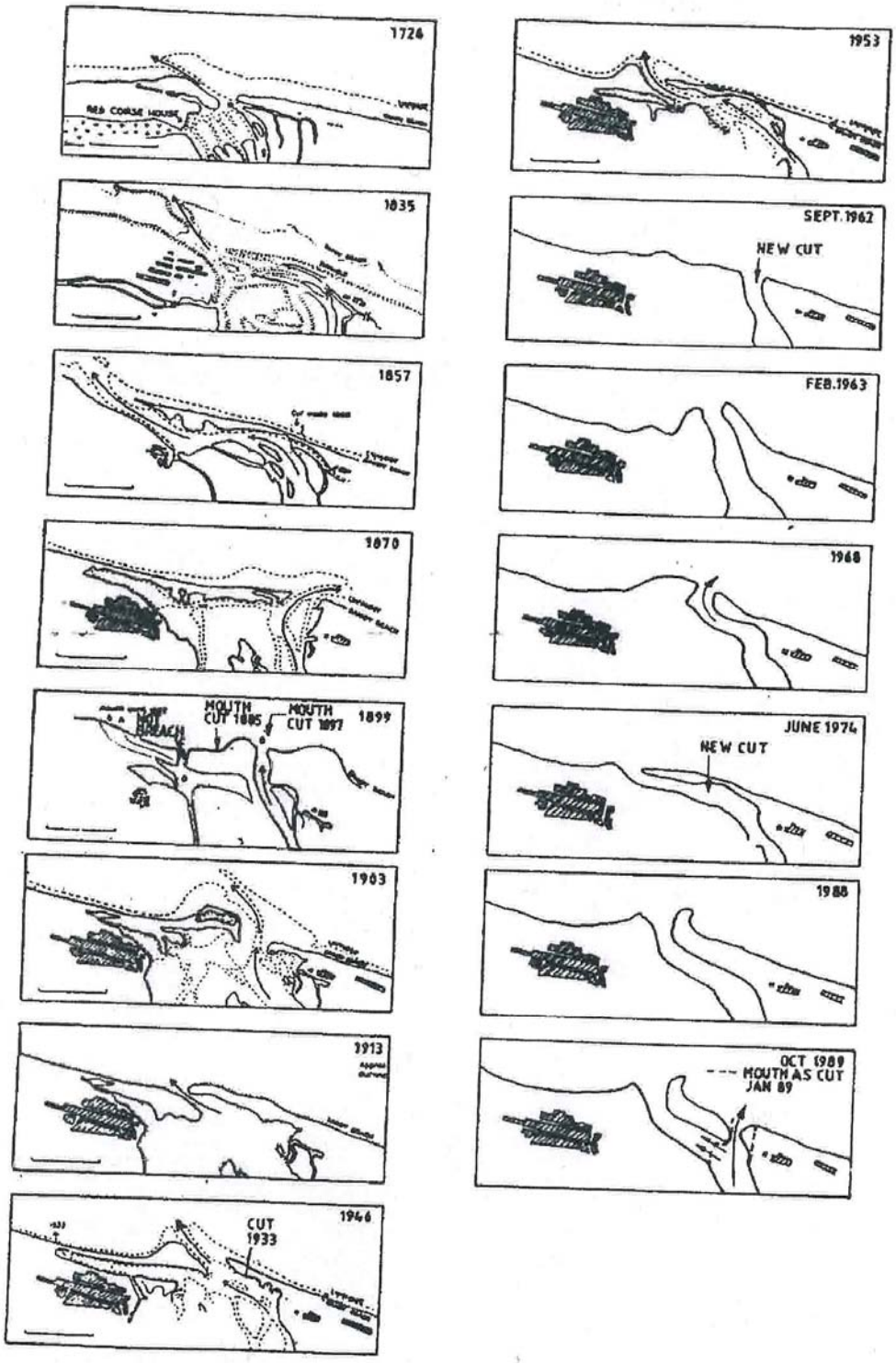

Figure 3 Evolution of the mouth of the River Spey between 1726 and 1989

Plate 3 Arrow marks the area where Garmouth Golf Club is currently experiencing major bank erosion and the loss of their 17th/18th hole. The area highlighted in red is the approximate area lost since this photo was taken in 2000, due to development of meander loop through bank erosion coupled with the active back channel.

3 OVERVIEW OF GEOMORPHOLOGICAL ISSUES

Morphological response of the estuary to engineering intervention

The underlying philosophy for the management strategy is to implement methods that are in sympathy with the environment and that avoid or minimize disturbance to the area. Training the course of the river downstream of the railway viaduct using hard structures would be contrary to the aim of preserving the landscape of the area, and would be inappropriate given the high mobility of the river channel, as demonstrated by the number and extent of channel changes observed during the last century.

A more appropriate solution to reducing flood risk in the village of Garmouth, and simultaneously accommodating the high channel mobility and high sediment loads delivered to the estuary, is to allow the planform of the river to develop naturally, but within tolerable boundaries. The rapid geomorphological assessment reported above has allowed us to identify the boundaries to the morphologically-active river corridor and formulate a management strategy which will prevent damage property in the form of erosion and flooding, while allowing the river/estuary to retain its natural morphological functions, forms and features. Figure 2 shows the boundary extents (marked in red) for the active estuarine corridor, which should be maintained to allow the river to adapt naturally and in accord to future changes in the flow and sediment regimes. The boundaries tend to reflect the current channel planform to a high degree as this is responsible for generating the widest active corridor observed during the period of record. This is the case because it is in its present configuration that the river generates the highest meander amplitude and greatest number of morphologically-active back channels observed during the last 100 years.

Meander development and bank erosion at Garmouth Golf course (principally (17th and 18th holes)

The meander geometry and pattern downstream of the Railway viaduct is still evolving and is controlled primarily by three factors: discharge regime, meander bend curvature and bank composition/bank protection.

The main process of river bank erosion on the area concerned is hydraulic action. As discharge increases so does the flow velocity, and this leads to an increase in shear stress exerted on the channel boundary (bank and bed). As shear stress increases, sediment particles are entrained from the channel boundary resulting in bank erosion. However, this rate of erosion is also significantly influenced by the meander bend curvature and bank protection. Currently the meander loop currently attacking the golf course area has a very large amplitude which will continue through bank erosion.

Furthermore, the rate at which bank erosion occurs on the apex of the bend is exacerbated by the shear strength of the bank materials reducing the effectiveness of hydraulic action. The banks of the Spey are composed of coarser grained sediment (sands and gravels) forming non-cohesive banks which erode more easily. Recent available sources of historical maps and aerial photographs from the last 20 years show the presence of active back (chute) channels running parallel to the golf course and also the progressive loss of vegetation, which acts of a natural protection against fluvial

attack. *It is not clear as to whether the loss of vegetation has been induced by natural processes or by human induced changes.*

Bank erosion along the left bank adjacent to the golf course is posing a serious management issue because the meander loop is used for recreational use (Plate 3). Although the meander lies within an SSSI, intervention to reduce bank erosion and/or flooding is required in the very near future to ensure the golf course can continue to operate. The possibility of encouraging vegetation growth along the riparian fringe could increase protection against fluvial attack, prolonging the recreational use of the land for a significant period of time.

Formulation of integrated coastal zone, estuarine and fluvial strategy

Due to the complex interaction of fluvial flow, tides and wave climate, and the impact on sediment transport, there is significant uncertainty as to how the geometry and pattern of meanders will evolve in the near future. It is therefore recommended that an integrated Spey Bay strategy study, which links the morphological development of the River Spey with the development of the River Spey mouth and coastal zone, is carried out. This could be conducted through the utilisation of a detailed geomorphological dynamics assessment, perhaps coupled with investigation of sediment transport pathways and associated loads a 2-dimensional morphological model such as DHI's MIKE-21.

4 REFERENCES

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Lewin, J. and Weir, J.M.C (1977). Morphology and recent history of the Lower Spey. *The Scottish Geographical Magazine.*

Thorne, C.R., Hey, R.D. and Bathurst, J.C (1887). *Sediment Transport in Gravel-Bed Rivers.* J. Wiley and sons, Chichester.

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Appendix E
Garmouth extract from Moray Local Plan (2000)

GARMOUTH

THE PLANNING BACKGROUND

Garmouth has experienced a relatively slow rate of growth during the period of the 1993-98 Local Plan, reflecting the shift in policy that further significant development would be detrimental to the character of the village and inappropriate for the limitations of the road structure. The former Haulage Contractor's business on Station Road was identified in the 1993-98 Plan as an Opportunity Site with potential for residential development and a planning application for the development of 11 house plots was approved in July 1997. Gap site development meanwhile has continued.

The nature of Garmouth, with its narrow streets and lanes suggests that the village may have reached its optimum size. Flooding risk and sewage capacity have been a constraint to development and the Council is investigating a detailed flood risk policy in relation to specific types of development proposals.

CHARACTER OF THE VILLAGE

Garmouth functions essentially as a commuter village, principally for Elgin. It is still small enough to maintain a village character which so many places of similar size have lost in recent years. The Conservation Area centred on High Street, Spey Street and Church Street, has been successful in maintaining and enhancing the attractiveness of the village, derived from its narrow streets, irregular building lines and a variety of architectural styles. Outwith the Conservation Area the village has a mix of local authority housing to the west end and more contemporary bungalow developments at Northfield Place and Lemanfield Crescent.

OBJECTIVES

(i) To safeguard the existing quality of the village by restricting further expansion of the village on the grounds of its Conservation Area character and road structure.

(ii) To only permit development which sustains and enhances the environment of the village.

POLICIES AND PROPOSALS

In addition to the site specific requirements identified below and in development briefs, all developments must meet the terms of the Implementation policies (L/IMP1-8) in Chapter 8 (relating to siting, layout and design, character impact, landscaping, drainage, environmental and traffic impact). Subject to the scale of the development having a measurable impact on local community facilities, amenities or infrastructure, funding policies L/F1 Developer Contributions and L/F2 'Commuted Payments' in Chapter 7 may also apply.

BUSINESS ACTIVITIES

The Local Plan policies for business development are contained in Chapter 1 'Economic Development'.

All sizeable commercial and industrial enquiries will be directed to the industrial sites in Lhanbryde and Mosstodloch.

TOURISM

The governing policies for Tourism are L/ED16 and 17 in Chapter 1 (Tourist Facilities and Accommodation and Roadside Signs). The Economic Development policies in Chapter 1 apply where relevant and policy L/CF4 in Chapter 5 safeguards established routes for walking, cycling, trails and cross-country skiing.

T1 SUSTRANS Cycle Network
The Council is promoting the Moray section of the SUSTRANS National Cycle Network and will consequently protect the route through Garmouth.

ENVIRONMENT

The policies for the maintenance and enhancement of the environment are found in Chapter 2 (Environment).

The principal policies for the local environment are L/ENV10 'Settlement Boundaries' and L/ENV18 'Public Amenity and Open Spaces' in Chapter 2, and L/IMP1 'Development in Built Up Areas' in Chapter 8.

Under the terms of policy L/ENV18 (Public Amenity and Open Spaces) a number of spaces have been identified which contribute to the environment and amenity of the town. The purpose of policy L/ENV18 is to protect the integrity of these spaces from inappropriate development and to ensure that their contribution to the amenity of the built up area is not compromised.

Population 524

ENV1 Railway Sidings/Community Woodland
Car park, picnic facilities and public footpaths providing access to the disused railway line and community woodland. This area is to be maintained as open space for public recreational use.

ENV2 Old Water Tower
Site of the original water tower serving Garmouth and Kingston areas. This local landmark occupies an elevated site on the northern boundary of the village and is served by a public footpath.

ENV3 Playing Field/Tennis Courts
Area to be retained for recreational use and open space.

ENV4 East of Orchard/Woodland Bank
Wooded area on the terrace of the River Spey and east of the burn. The area in the vicinity of the burn is subject to flooding when the Spey is in spate. The natural woodland should be retained.

ENV5 Open Space: South Road, Station Road & Kingston Road
Small landscaped areas which should be maintained as amenity land for the adjoining housing.

ENV6 Bowling Club Car Park
Area to be retained as informal car park for adjacent recreational facilities.

There are wider environmental designations relating to areas of local, national and international scientific importance and to areas of high scenic and landscape quality which in most cases may relate to areas just beyond the settlement boundary. Where sites of scientific importance are found within settlement boundaries, these are designated as ENV in the Proposals Map.

CPZ **The designation of the Coastal Protection Zone includes the banks of the River Spey as far as the viaduct. Much of this area is susceptible to flooding and erosion so the Council will investigate flood prevention and alleviation measures along with monitoring of both the River Spey and Spey Bay coastline (see L/ENV26).**

SSSI **The Spey estuary Site of Special Scientific Interest designation extends to the northern edge of the village. The estuarine section of Spey Bay is part of a Special Protection Area and Ramsar wetland site. The SSSI is also currently part of a candidate Special Area of Conservation (SAC).**

SINS **A Site of Interest to Natural Science area abutting the northern and eastern boundaries of the village is designated for its geomorphological interest.**

Detailed maps of all the above are held by The Moray Council.

Conservation Area

The governing local plan policy for development within Conservation Areas is L/ENV15 in Chapter 2. (Listed Buildings are controlled under policy L/ENV14).

The boundary remains unchanged. There will be a policy to restrict sub-division within the Conservation Area, on grounds of character, amenity, access and servicing. (See detailed maps held in the Council Environmental Services Department offices).

HOUSING

The main governing local plan policy for new housing developments is L/H3 in Chapter 3 (Servicing and Layout of new Housing Developments). Policy L/H7 in Chapter 3 (Affordable Housing provision) may also apply depending on the size and location of the development.

R1 Station Road
The remainder of the Station Road site is designated for specialist housing (see policy L/H8 in Chapter 3). The existing Council development already contains a number of houses specifically designed for the elderly and it is considered that an additional provision on this site would be compatible with this development. Access as existing via "The Sidings".

R2 Haulage Contractor's Yard, Station Road
The site has been vacated and the industrial buildings recently removed, prior to the development of 11 house plots.

UTILITIES AND SERVICES

Waste Water Treatment

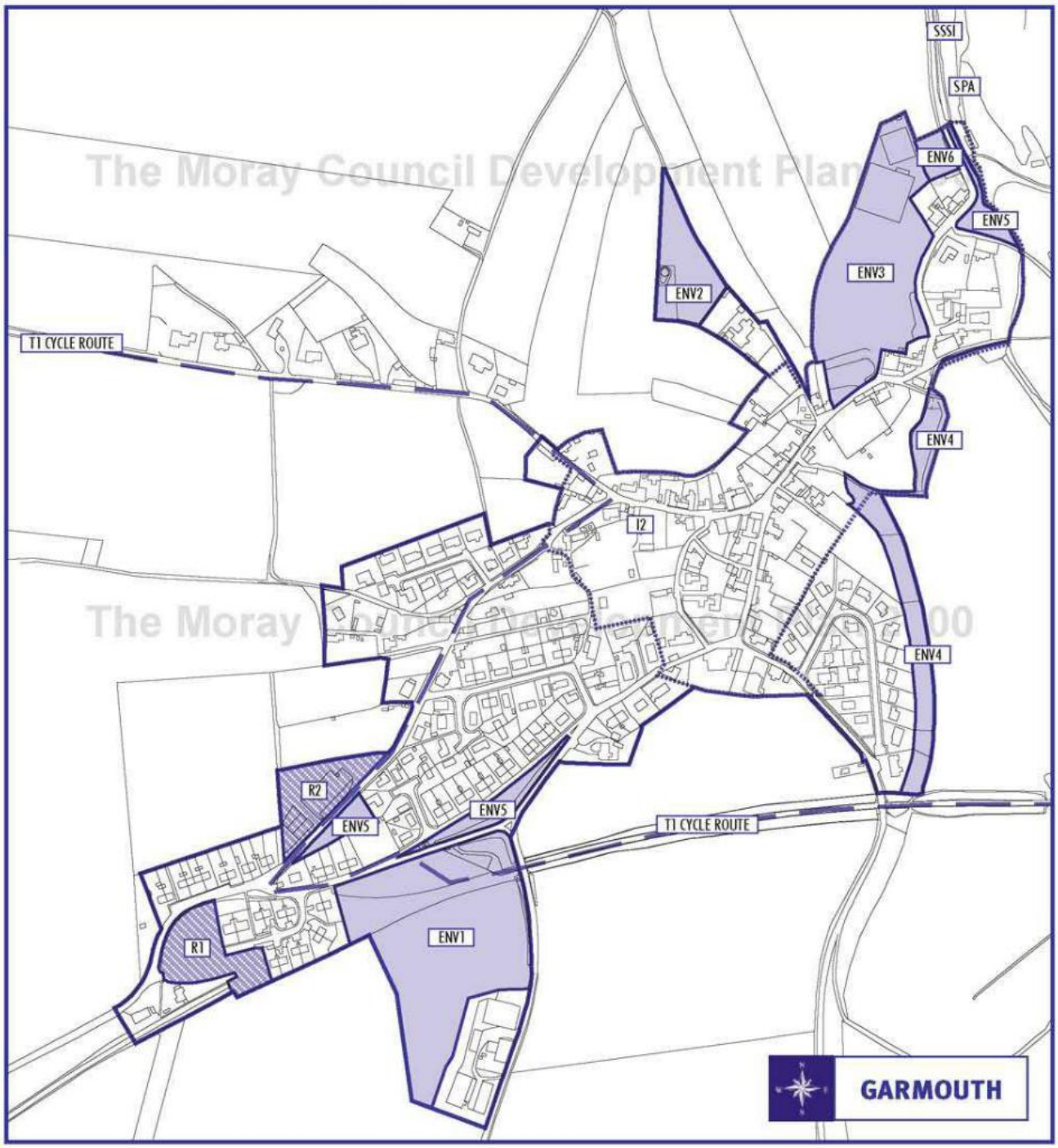
The North of Scotland Water Authority are confident that the public sewer is able to manage waste from existing housing land allocations. The village settling tank has a limited capacity at present and a new system will be required before any further development beyond that designated can be permitted. NOSWA are listed as a statutory consultee for any planning applications with associated drainage problems.

Flood Risk

Parts of the village are subject to a persistent flood risk from the River Spey and developments within these areas will be subject to assessment under terms of policy L/ENV26 'Control of Development in Flood Risk Areas'.

Flood Prevention Scheme

The Moray Council will pursue the preparation of a Flood Prevention Scheme for Garmouth and Kingston under the terms of the Flood Prevention (Scotland) Act 1961 as amended. This scheme will be prepared in line with statutory process under the Act, require extensive hydrological research and will be subject to public consultation and environmental assessment.



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Appendix F
Properties at Flood Risk in Garmouth

Figure E.1: Properties at Flood Risk in Garmouth

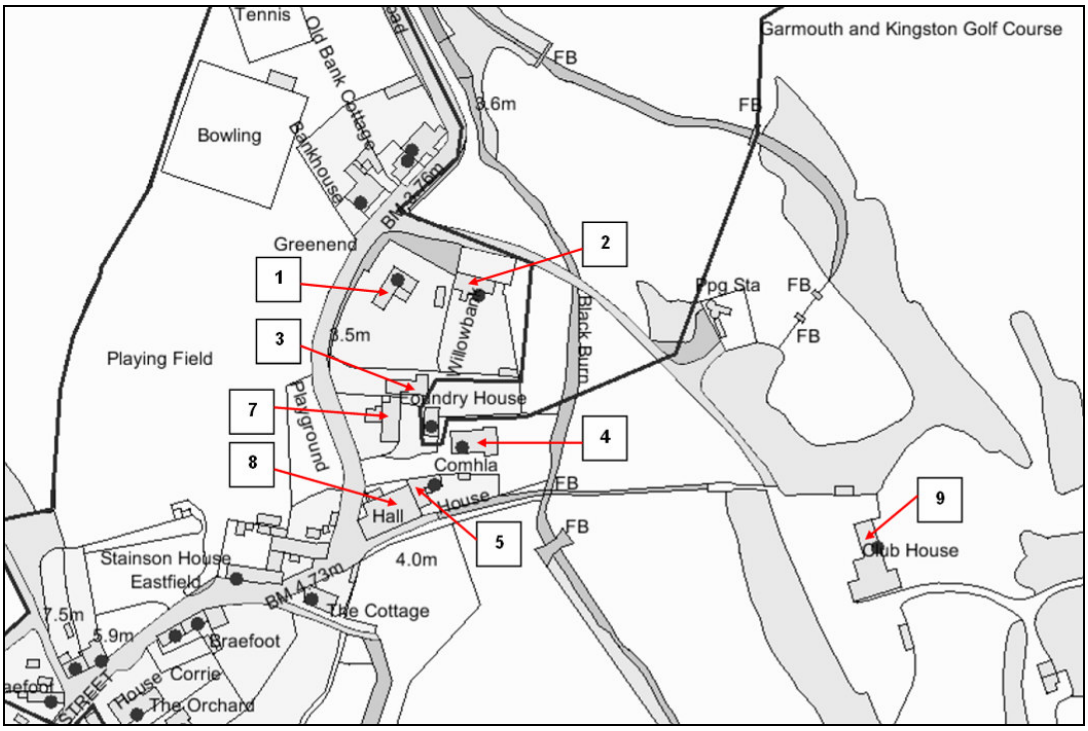
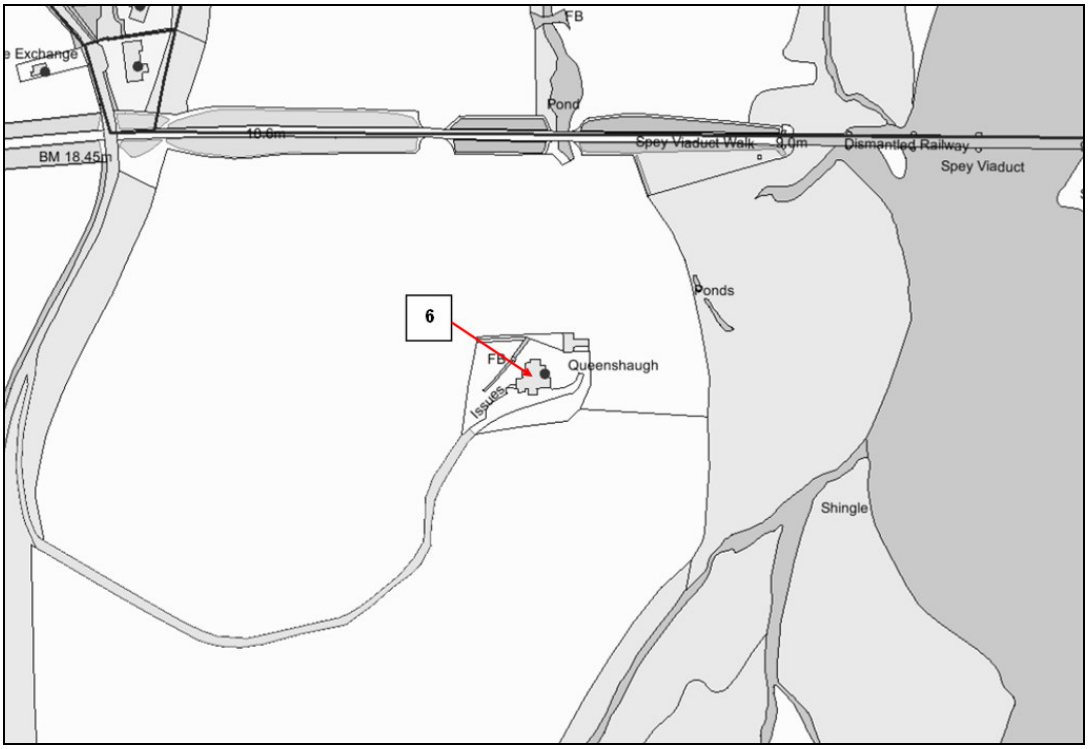


Figure E.2: Properties at Flood Risk in Garmouth



Property 1

Address: Greenhead House, Spey Street, Garmouth, Fochabers, IV32 7NJ

Property 2

Address: Willowbank Cottage, Spey Street, Garmouth, Fochabers, IV32 7NJ

Property 3

Address: Foundry House, Kingston Road, Garmouth, Fochabers, IV32 7NT

Property 4

Address: Comhla, Spey Street, Garmouth, Fochabers, IV32 7NJ

Property 5

Address: Marshall House, Spey Street, Garmouth, Fochabers, IV32 7NJ

Property 6

Address: Ross House, Garmouth, Fochabers, IV32 7LE

Owner: Mrs. Molly Duncan

Photograph unavailable

Property 7

Address: The Church of Scotland Parish Hall, Spey Street, Garmouth, Fochabers, IV32 7NJ

Property 8

Address: Village Hall, Spey Street, Garmouth Fochabers, IV32 7NJ

Property 9

Address: Club House, Garmouth and Kingston Golf Course, Spey Street, Garmouth, Fochabers, IV32 7NJ

Appendix G
Garmouth Photos

Garmouth Flood Event – 14/12/2006

Plate F.1:

Plate F.2:

Plate F.3:

Plate F.4:

Plate F.5:

Plate F.6:

Plate F.7:

Plate F.8:

Plate F.9:

Plate F.10:

Plate F.11:

Plate F.12:

Plate F.13:

Plate F.14:

Plate F.15:

Plate F.16:

Plate F.17:

Plate F.18:

Plate F.19:

Plate F.20:

Garmouth Flooding Review Spring 2021

Prepare by: Will Burnish
Date: June 2021
CONSULTANCY
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Environmental Services
PO Box 6760
ELGIN
IV30 9BX

Contents

Garmouth Flooding Review

1. Introduction

Garmouth is a small rural settlement located in Moray approximately 10 miles east of Elgin. Garmouth consists of approximately 220 households and 500 people and is located on the west bank of the River Spey just 1km inland from Spey Bay. Garmouth is surrounded by agricultural land, except to the east where Garmouth Golf Course separates the village from the River Spey. The Golf Course Club House and the village sewage treatment works are located on the golf course east of the village. The southern extent of the village is defined by the dismantled railway line that runs in an east - west direction and spans the River Spey. Ross House, at Queenshaugh, is a single isolated property located south of the dismantled railway line.

Garmouth is located at the downstream end of the River Spey Catchment. The River Spey is a major watercourse and ranks 7th in the UK in terms of estimated peak flow, 8th in terms of mean annual discharge and 9th in terms of catchment area (2988km2). The vast majority of Garmouth is elevated above the River Spey's natural floodplain. However, a small number of properties located at the north east end of the village are located at a lower elevation on the edge of the River Spey's floodplain. Garmouth's close proximity to the River Spey means it has suffered from repeated flooding. There are approximately 10 properties that are currently at risk of flooding in Garmouth.

Return Period (years)	Residential Properties	Non Residential Properties and Utilities
1	2	0
5	6	3
10	6	3
25	6	4
50	6	4
100	6	4
200	6	4

Table 1: Properties at Risk (Garmouth Flood Alleviation Scheme Pre-Feasibility Study Report 2007)

The number of properties at risk has not changed since the feasibility study was undertaken in 2007, however, the frequency of flooding has increased. The Garmouth Flood Alleviation Scheme Pre-Feasibility Study Report 2007 can be found in Appendix B.

2. Roles and Responsibilities in Flooding

A number of statutory bodies and stakeholders have responsibilities with regard to flood risk. A list of the key stakeholders, with details of their role and responsibilities, with regard to flood management is provided below.

Landowner – Organisations and individuals are responsible for protecting their property from flooding. Help and advice on how to protect their property can be obtained from the following organisations.

1. SEPA
2. Moray Council
3. Scottish Flood Forum.

4. Scottish Water

Moray Council - Moray Council is responsible for delivering actions identified in the Local Flood Risk Management Strategies and Plans. The Strategies and Plans are developed and delivered over a six year cycle in partnership with other authorities. Garmouth is in the Findhorn, Nairn and Speyside Local Plan District, for which Moray Council is the Lead Local Authority. During severe flooding, Moray Council works with the emergency services and coordinates shelter for people evacuated from their homes.

SEPA - SEPA is Scotland's national flood forecasting, flood warning and strategic flood risk management authority. SEPA is responsible for publishing Scotland's Flood Risk Management Strategies and working with other authorities, including Moray Council on developing Local Flood Risk Management Plans. SEPA has developed and operates Floodline, which provides live flooding information and advice on flooding 24 hours a day, seven days a week. People who live in flood risk areas can sign up to Floodline to receive alerts and warnings when flooding is predicted to happen in their area.

Crown Estate Scotland- As a landowner, the Crown Estate Scotlandis responsible for protecting its property against flood risk. As with other landowners it must not undertake action which could increase flood risk.

Spey Fishery Board - The Spey Fishery Board is responsible for providing fisheries protection, ensuring fish passage over obstructions to migration, and protecting juvenile fish and spawning redds.

Scottish Water - Scottish Water is responsible for foul drainage and the drainage of rainwater run-off from roofs and any paved ground surface from the boundary of properties. Scottish Water also works in partnership with other authorities in the development and delivery of the Flood Risk Management Strategies and Plans. Scottish Water is not responsible for private pipework or guttering within the property boundary.

The Scottish Government – The Scottish Government oversees the implementation of the Flood Risk Management (Scotland) Act 2009, which requires the publication of Flood Risk Management Strategies and Plans. Scottish Government is responsible for the prioritisation of works identified in the Strategies and Plans and the allocation of grant funding for these prioritised works. Scottish Ministers are responsible for setting the policy framework for how organisations collectively manage flooding in Scotland.

NatureScot– NatureScothas provided general and local advice in the development of the Flood Risk Management Strategies. Flooding is seen as a natural process that can maintain the features of interest at many designated sites, so NatureScothelps to ensure that any changes to patterns of flooding do not adversely affect the environment. NatureScotalso provide advice on the impact of Flood Protection Schemes and other land use development on designated sites and species.

Scottish Flood Forum – The Scottish Flood Forum provides support for those who are affected by or are at risk of flooding. It provides flood advice, information, awareness, education and training to individuals and communities to help reduce the risk of flooding

3. Background

In response to a letter from Garmouth & Kingston Amenities Association dated 30th October 2020 and subsequent site visits and meetings with residents, Moray Council agreed to undertake the actions listed below:

1. Review existing topographical survey information between the River Spey and Garmouth Village, so that the flow mechanism can be understood for different flood levels. This action could take up to 6 months if additional survey data is required.

2. Review opportunities to reduce the interaction of the Black Burn and the River Spey until normal flood plains are active. This will take at least 6 months and can only be undertaken when the survey work is complete.

3. Review operational Flood Warning Level. It is hoped that this will be complete by Christmas. This is subject to receiving data from SEPA through a Formal Data Request.

This report is the output from item 2 above.

Over the last year significant erosion has continued just upstream of Ross House and the difference in alignment can be seen on photographs 1 and 2 below. The left hand bank has eroded by over 5m and the original access track to Ross House is now lost to the River Spey. The erosion, although significant, has not changed the flood risk profile within Garmouth.

Photo 1: Ross House 12/12/19

Photo 2: Ross House 3/3/21

Photo 2: Ross House 29/6/21

The erosion of the left hand bank of the River Spey has caused the bank level to drop, which allows flow from the river to enter the old Black Burn and flow towards the village at lower levels than before. This change in the flood mechanism has increased the frequency of flooding to properties in Garmouth. The depth of flooding has not increased, therefore, the number of properties at risk has not changed, only that these properties may flood more frequently. Appendix B shows the flood maps produced as part of the 2007 flood study. With the change in left hand bank position and greater understanding of climate and rainfall, the stated return periods at which the onset of flooding begins are likely to be less now.

Moray Council undertook a walk over inspection to understand the change in flood mechanism. The visit highlighted a number of issues, details of which are described below and shown in Figure 1:

1. **Point 1** – indicates the location of the erosion of the left hand bank of the River as described above. Historic maps show the Black Burn crosses Ross House access track at the point where the road runs parallel to the River Spey. The bank in this area is now lower by about 300mm for about 4m. This reduced level is enough to push a significant flow along the old burn line (there is a clear depression on the Aerial Image and 3D Survey Data and on the ground) towards the east bridge, where the burn exits the culvert under the field. See photos 1 and 2, Appendix A.

2. **Point 2** - debris is artificially raising the water level, causing it to over top the east bank and run down towards the east bridge. This was evident on the ground as seen in Photo 3, Appendix A.

3. **Point 3 -** there has been a significant build-up of debris on the trash screen under the bridge. This debris is restricting flow and pushing water over to the west along the western edge of the golf course between the burn and fairways, which was evident in a number of locations. See Photo 6, Appendix A.

4. **Point 5 -** there is a large build-up of sediment, which is restricting the flow of water out of the burn and in high flows will cause the burn to back up. See photo 8, Appendix A.

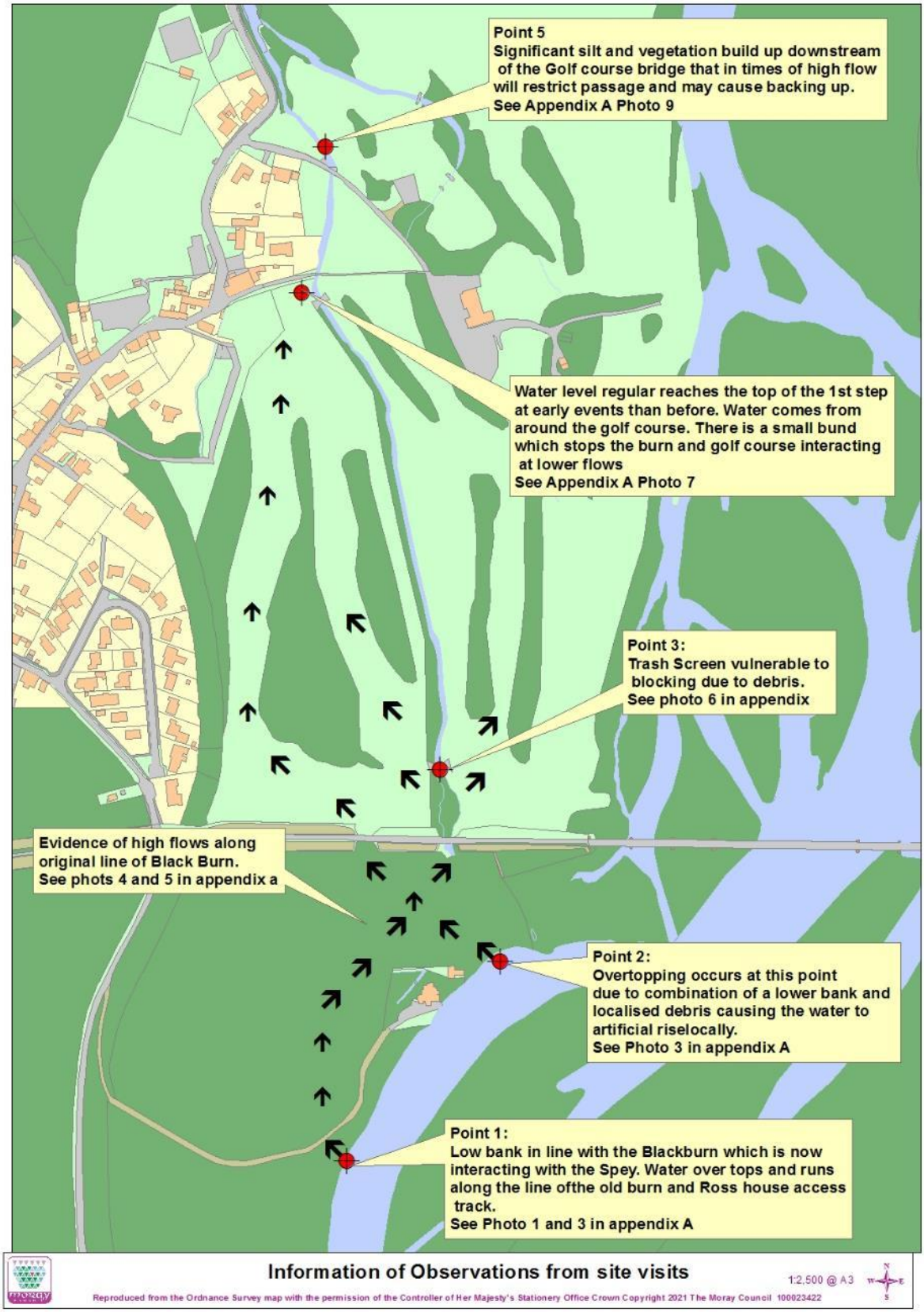


Figure 1: Map of Flood routing through Garmouth

Figure 2 shows the output from the 3D Survey Data, which clearly shows the flood route. It also highlights potential areas where further interaction with the River Spey and the low lying areas could occur.

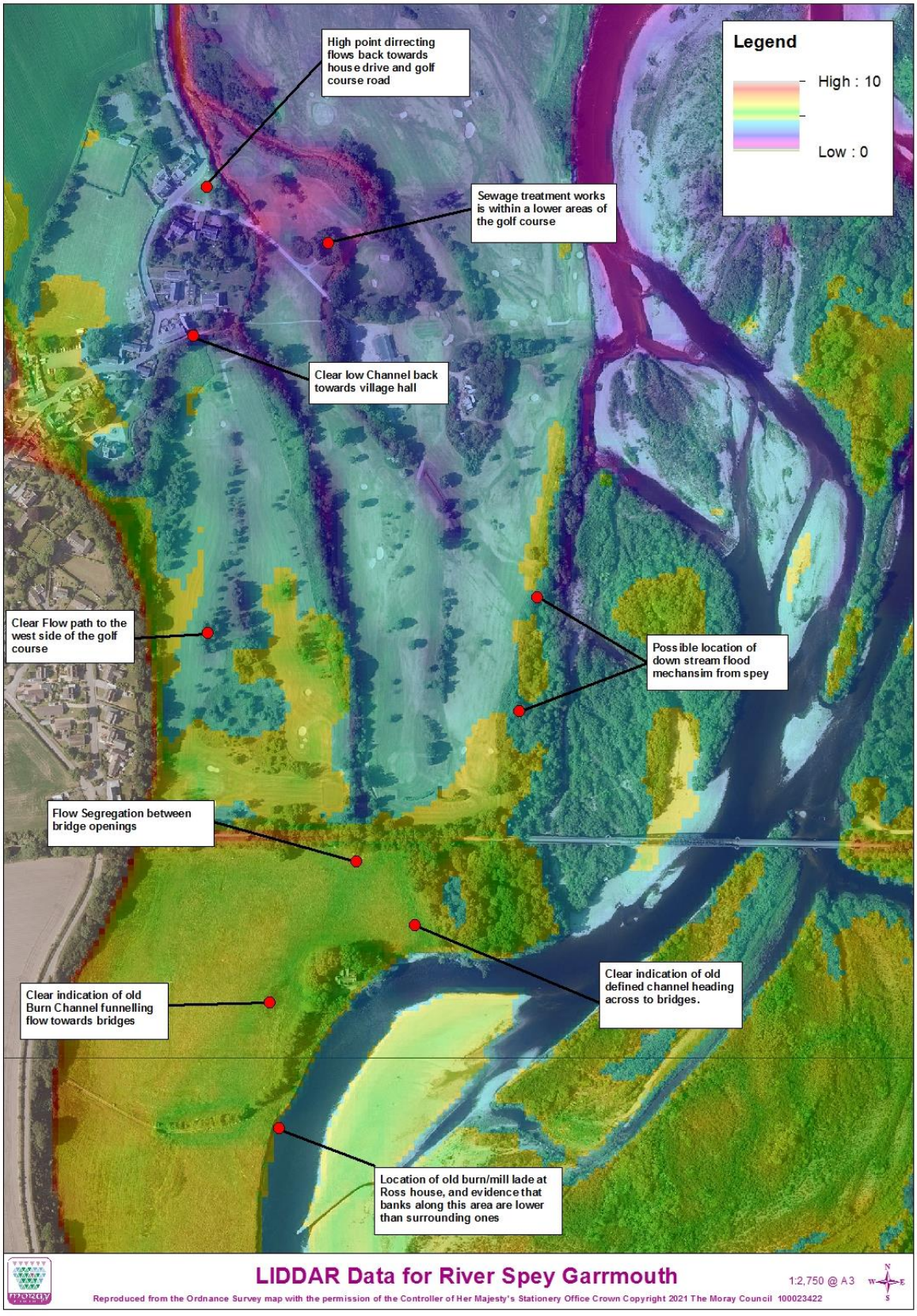


Figure 2: Map of 3d Data of Garmouh

4. Current Moray Council Policy

Moray Councils Policy, with regard to undertaking flood mitigation works, is to deliver only those schemes which have been identified in the Local Flood Risk Management Plans.

In 2007 Moray Council undertook a study into the feasibility of providing a flood protection scheme for Garmouth. The findings of this study are that given the limited number of properties at risk and the costs associated with constructing a flood protection scheme, it is not economically feasible to construct a flood scheme for Garmouth. This position has been monitored since 2007 but as there has been no significant change in flood risk, no action to provide a scheme for Garmouth has been included in the Flood Risk Management Plans.

The current actions for Garmouth in the Local Flood Risk Management Plan are:-

- Community flood action groups
- Maintain flood warning
- Awareness raising
- Emergency plans/response
- Strategic mapping and modelling
- Flood forecasting
- Self help
- Maintenance
- Planning policies

Further detail on the actions is provided in the Findhorn, Nairn and Speyside Local Flood Risk Management Plan, which can be found in section 2.5 and Pages 31 -35 covering Spey Bay (Potentially Vulnerable Area 05/04) (http://www.moray.gov.uk/downloads/file105636.pdf)

5. Potential Mitigation

5.1. FRM Act Section 59 Clearance and Repair Schedule (including routine maintenance)

Moray Council has a responsibility to undertake works on the Clearance and Repair Schedule under Section 59 of the Flood Risk Management (Scotland) Act 2009 (the Act). The Clearance and Repair Schedule is the output from Moray Council's inspection regime, which is carried out under Section 18 of the Act. The Clearance and Repair Schedule is a programme of works required to alleviate flood risk. Moray Council adds an item to the Clearance and Repair Schedule, where a body of water gives rise to such a risk and Moray Council considers that clearance and repair works would substantially reduce that risk. The type of works that would be included are:-

- removing obstructions from a body of water;
- removing things that are at significant risk of becoming such obstructions; and
- repairing artificial structures which form part of the bed or banks of a body of water.

Further information on clearance and repair can be found here.
https://www.gov.scot/publications/flood-risk-management-scotland-act-2009-guidance-duties-local-authority/pages/8/

5.2. Routine Maintenance by Landowners

Routine maintenance is a key function in reducing the potential flood risk within any flood prone area. Garmouth has a number of areas where routine maintenance is key to ensure that the risk of flooding is not increased. These tasks are listed below.

- Quarterly clearance and post event clearance of the Trash Screen at the Golf Club.

- Quarterly clearance in and around the old bridge structure along the golf course.
- Quarterly clearance of Golf Course Access Bridge.
- Yearly channel vegetation clearance along Black Burn through the Golf Club including 50m down stream of Access Bridge.
- Removal of trees effecting flows in the River Spey in and around Ross House.

The tasks highlighted above are tasks which landowners should undertake to reduce the impacts of flooding.

5.3. Potential Structural Works

As stated in section 4 there are currently no actions within the current Flood Risk Management Plan to undertake any flood protection works at Garmouth, therefore, there is no funding available from either Scottish Government or Moray Council to deliver the solutions identified below.

Moray Council officers have identified six high level solutions that could be applied to the area around Garmouth. Applying these solutions could reduce the flood frequency to 2007 levels but would not reduce the overall flood risk. These solutions are high level and have been based on available data listed below and engineering judgement.

- Observed flood events.
- Pre flood event site visits.
- Engineer judgement.
- Assessment of LIDDAR/ Aerial and geographical data.
- 2007 Flood Study.

To assess the impact of flooding during various return periods and provide details of the design required to protect property during these events would require the construction of a mathematical flood model. To construct a flood model of the River Spey for the Garmouth area would cost in excess of £100,000.

Solution 1: Offset Flood Bund: This solution is to install an offset flood bund. The bund would follow the line of the Ross House access track before heading behind Ross House and towards the railway embankment, where it would terminate at the wall on the base of the railway embankment. The bund would be made up of a rock core and earth faces. The bund would be at a height of around 500mm and would be set at a level similar to the bank edge height based on the 2007 LIDDAR data.

Advantages	Disadvantages
• This option returns the risk back to pre-2007 • Reduction in flood frequency • Ease of construction • Minimal environmental impact • Medium design life	• High construction cost • Only returns risk level to around 2007 • Does not protect Garmouth from flooding, but would reduce the risk from lower return events between 1: 2 and 1:10 • Susceptible to erosion • Loss of farming land • Possible issue with regard to compliance with the Reservoirs Act

Estimated cost range for this solution is: - £300,000 to £400,000

Solution 2: Low Level Bunds at Railway Embankment: This solution is to place low level rock armour bunds within the bridge openings on the railway embankment. The height of the bunds would be set at around the same levels as the lowest point of the river bank on the 2007 LIDDAR Survey. This would mean that on the south side they would be around 500mm high and the north side about 1m with the invert of the bridge also filled in with rock armour.

Advantages	Disadvantages
• Low cost solution • Easy to construct • Limited susceptibility to erosion, as rock will move and settle • No loss of existing flood plain • Reduce frequency of flooding but not extent • Minimal ecological risk • Medium term design life	• Possible issue with regard to compliance with the Reservoirs Act • Only returns risk level to around 2007 • Does not protect Garmouth from flooding , but would reduce to the risk from lower return events between 1: 2 and 1:10 • Loss of access through bridges for vehicular traffic

Estimated cost range for this solution is: - £100,000 to £125,000

Solution 3: High Level Bund at Railway Embankment: This solution is to install a larger bund\wall within the bridge holes with an approx. height of 2m. The wall would be designed as a weir structure to allow a gradual increase of flow down the Black Burn, until the weir becomes inundated. The wall would be constructed of concrete and independent of the railway bridge. Scouring of the wall would be prevent by rock armour installed between the hard structure and with a rip-rap invert being created on both sides.

Advantages	Disadvantages
• Provide a medium level of protect to Garmouth • Controlled discharge of water until high return periods are meet • Reduction in the frequency of flooding • No loss of existing flood plain • Minimal ecological risk • Limited susceptibility to erosion, as rock will move and settle • Long design life	• High cost solution • Difficult to construct due to the foundation required to hold water back • Medium solution to preventing flooding in Garmouth • May require further flood modelling to confirm no change elsewhere to flood risk • Possible issue with regard to compliance with the Reservoirs Act • Loss of access through bridges for vehicular traffic • Loss of public access through the bridge • Does not protect Garmouth from flooding , but would reduce to the risk from lower return events between 1: 2 and 1:10

Estimated cost range for this solution is: - £400,000 to £500,000

Solution 4: Low Level Wall at Spey Street Burn: This solution it to install a low level wall along the burn and parallel to the village hall, with a small rise at the footpath bridge over the burn. This would not remove flood risk from the rear of the properties but would reduce the number of times Spey Street is flooded and ensure continued emergency access. The wall could be constructed of brick and would be no higher than 300mm.

Advantages	Disadvantages
• Low cost solution • Reduce the number of times Spey Street is closed • Long design life • Minimal ecological risk • Easy to construct	• No defined level of protection for Garmouth • Consent of landowners would be required • Very low risk of increased flooding to rear of properties • Loss of floodplain (Spey Street)

Estimated cost range for this solution is: - £75,000 to £125,000

Solution 5: Adaption Plan: An Adaptation Plan could be developed in conjunction with Community Engagement. The Plan would consider the current and future flood risk to receptors and assets and consider how they can be modified to manage the flood risk. The Plan would use triggers based on climate change, rainfall data, sea level rise and erosion rates. When triggers are met, set actions would be undertaken.

Advantages	Disadvantages
• Allows for long term financial planning • Gives clear points when action will be undertaken based on data • Not just a single body action • Long term solution to increasing problem • Manages climate change	• No physical work at the start of the Plan • Will require continued finance to allow actions to be undertaken • Will not provide full protection to all flood events

Estimated cost range for this solution is: - £30, 0000 (mainly time with minimal works)

Solution 6: Natural Flood Management: This solution is to plant the field in certain locations with willow obtained from the East bank of the River Spey. In addition to planting willow, fallen trees will be buried in the field with the root balls exposed. The placement of willow and root balls should cause the river to deposited sediment in low lying areas and raise the land local creating a natural barrier to flooding. This solution being a natural one does not provide a defined level of protection. However, the level of protection will increase over time, by catching woody debris during floods, which form obstructions to flow and restrict the amount of water that can pass though the field and down in to Garmouth. This solution provides a longer term sustainable solution to the flooding issue:-

Advantages	Disadvantages
• Low cost solution • Positive environmental impact	• No defined level of protection for Garmouth

• Easy to construct • Medium term design life • No loss of flood plain • Increased public access	• Requires land owner agreement • Susceptible to erosion • Loss of farming land

Estimated cost range for this solution is: - £100,000 to £150,000

Solution 7: Localised Land Raising: This solution is locally in fill the low area of land where the current water flows during the lower water level events. The works would be infilled using clean natural locally won material. The initial edges of the fill will be protected with erosion matting. The fill will be see with native species and allowed to vegetate

Advantages	Disadvantages
• Low cost solution • Positive environmental impact • Easy to construct • Minimal loss of Flood plan • Easy to maintain	• No defined level of protection for Garmouth • Requires land owner agreement • Susceptible to erosion • Loss of farming land • Short term design life due to erosion risk

Estimated cost range for this solution is: - £25,000 to £45,000

6. Possible Funding Options

As stated in Section 5.3, there is no statutory funding available to undertake flood protection works at Garmouth. However, alternative funding sources to undertake works at Garmouth, which the community could bid for, are provided below.

- Scottish Land Fund https://www.tnlcommunityfund.org.uk/funding/programmes/scottish-land-fund#section-2
- People Post Code Lottery

7. Moray Council Actions

Listed below are the actions which Moray Council are proposing to take forward within the next Flood Risk Management Cycle from 2022 to 2028. The proposed strategies and plans will be published for public consultation on 26th July for 4 months:-

1. Creation of an Adaption Plan – Solution 7 will be developed to manage the changing dynamics of the River Spey due to climate change.
2. Manage Flood Warning System – Update and review on a yearly basis with SEPA to ensure current trigger levels are appropriate.
3. Quarterly inspection of the Black Burn and River Spey banks between Queenshaugh and Kingston. Where applicable add works to the Clearance and Repair Schedule.
4. Maintain Flood Warning Signs.
5. Where applicable ensure all works related to Garmouth and Kingston are completed from the Clearance and Repair Schedule.

8. Conclusion

The erosion of the left hand bank of the River Spey at Queenshaugh has increased the frequency of flooding at Garmouth. While the frequency of flooding has increased, the number of properties at risk has not. As such the economic case for providing a flood protection scheme at Garmouth is the same as it was in 2007, which is, it is not considered economically feasible to construct a flood protection scheme at Garmouth.

There are potential actions that could be taken to reduce the frequency of flooding to levels experienced in 2007 but as there is no statutory funding available for these works alternative funding would need to be obtained. Alternative sources of funding have been identified in Section 6 of this report.

If the Garmouth community is successful in obtaining the funding required to undertake works, Moray Council officers may be able to assist the community with advice on design, procurement and contract management of the works it would take forward.

Appendix A

Site Walkover Photos

Photo 1 showing Interaction between River Spey/Access Road and Black Burn

Photo 2 Showing flood water following line of Black Burn into field from access road

Photo 3 Showing debris which has artificial raised levels locally

Photo 4 Showing line of Black Burn and flatting of grass due to flood

Photo 5 Showing line of Black Burn and flatting of grass due to flood and over topping

Photo 6 Showing blocked Trash Screen.

Photo 7 showing steps where flood level came up to tread of second step.

Photo 8 Showing heavy siltation

Appendix B

Garmouth Flood Alleviation Scheme Pre-Feasibility Study Report 2007

Appendix

Solution Drawings

Notice of Motion
Moray Council
15th September 2021

River Spey Flooding

Over the last few years the residents of Garmouth have faced increased flooding events effecting several homes and businesses in and around the village. Despite some discussions during committee and from the local MSP nothing has yet been put to council or the Scottish Government which seeks to alleviate the problem.

The community are deeply concerned about the increased flooding events and the local community council have undertaken significant work to look at soft engineering options to try and provide a solution.

Attached to this motion is several documents -

1. A report from Innes Community Council highlighting their views on the flooding events and the work they have done.
2. A report from Dr Hanish Moir an expert in water management detailing the history of the area and potential solutions.
3. A cost breakdown of the proposed solution put forward by Dr Moir
4. Pictures of the planned works

We believe in community, we believe that where they come together to raise issues of importance to their towns and villages we as elected members should be responsive. Today we, working with Innes community council, propose, that council –

1. Recognise the increased flooding events impacting upon Garmouth and the potential future impacts as detailed in the attached reports.
2. Agree to Moray Council providing 50% of the proposed costs upto £41,000 to undertake the soft engineering options to help try and alleviate the situation.
3. Work with Innes community council to engage with the Crown Estate and other relevant partners to seek match funding for the works.
4. Agree in consultation with Innes community council who the lead agency would be in undertaking the works once the finances have been put in place.

Signed

Cllr Marc Macrae Cllr Tim Eagle

Innes Community Council

Secretary: James A Mackie,
Mo Dhachaidh, South Road, Garmouth, IV32 7 LX
Telephone 01343 870310.
Email secretaryinnesscc@gmail.com

River Spey, Garmouth Report, August, 2021

Innes Community Council is a statutory body formed under the Moray Council scheme for Community Councils. The Community Council area is bordered on the eastern side by the River Spey at Garmouth and Fochabers. Two of the current Community Councillors have between them over 100 years living experience in Garmouth and of the River Spey in all its conditions. Innes Community Council is a legitimate organisation to take the lead on this project.

For over 10 years Innes Community has acted in response to concerns raised by residents of Lower Garmouth about the movement of the River Spey westwards and ever closer to Garmouth. The river has moved 600 yards westwards in the past 20 years and half of that distance has been inside the last 5 years. The erosion westwards gathers speed each year, with climate change induced heavier, and more rain not helping the situation. Changes in the main course of the River Spey has seen greatly increased deposition of gravel on the east bank opposite where it is eroding the west bank at Queenshaugh. A high number of trees washed out in floods get stranded on these gravel deposits accentuating the problem, both factors acting to force the river further westwards, especially in high waters.

Innes Community Council has, over the period of time, liaised with all land and property owners affected and threatened by the great increase in the number of flooding incidents. Innes Community Council has liaised and spoken with Moray Council officials and other statutory bodies discussing solutions to reduce the number of flooding events in Lower Garmouth. SNH and SEPA have said that they would support any application for a project that guided the river away from Lower Garmouth on condition that no materials were taken into or out of the area of the engineering works. Any works to guide the river eastwards must be classed as sustainable or 'green' engineering i.e. they work in sympathy with natural river process and use natural materials (i.e. Large Wood Structures – LWS) obtained from the vicinity of the works.

The ratio of flooding incidents in Garmouth has risen over the years from an average of 1 or 2 days a year to the current situation where Lower Garmouth and Spey Street were flooded on 11 days between October, 2020 and February, 2021. In January, 2021, Innes Community Council

held a virtual meeting of landowners, residents, agencies, politicians and others with an interest in Garmouth. A total of 35 individuals participated. Neither Moray Council officials or SEPA reps attended the meeting. ICC produced a report (attached) showing the net financial loss to land and property owners in Lower Garmouth attributed to increased flooding events over the previous 5 years. The calculated sum was over £1.87 million. Some of those costs are ongoing as the result of loss of land and other household costs. Innes Community Council have kept photographic evidence of this section of river going back more than 10 years. These total more than 5,000 photographs and many have been shared over that time with Crown Estates Scotland and Moray Council officers.

In 2021, Dr Hamish Moir, MSc, PhD, UK Managing Director and Principal Geomorphologist of cbec eco-engineering, Inverness, was commissioned to produce a report detailing what engineering works would be required to guide the river eastwards away from the lands of Essil Farm, and Queenshaugh and, thus, Lower Garmouth. Dr Moir has more than 25 years of experience working in the water resource industry of the UK and the US, particularly in the areas of river engineering, management and restoration. He has extensive training in the fields of fluvial geomorphology, in-stream ecology interactions and river engineering, both in research and consultancy capacities. Dr Moir has extensive experience in project management, both in the delivery of large academic research projects and leading many consultancy assignments in relation to river management.

Dr Moir's report details engineering works that would be classed as a sustainable 'green' engineering. One part was the placing of numbers of trees as engineered Large Wood Structures (LWS) removed from the river following flood events. Wooden piles (made from untreated Larch posts) would be pushed into the west side of the riverbed upstream of the boundary between Essil Farm and the lands of Queenshaugh. Once in place, trees already stored on site would be built around the wooden posts/ piles before being covered in gravel removed from associated adjacent channel management works (see below). This construction would guide the river eastwards away from Queenshaugh towards the original main channel on the east bank opposite Ross House. That channel formed part of the main course of the River Spey up until October 2012. Currently there is a small stream running down the old channel. This would be reprofiled to encourage flow through this more easterly orientation, allowing the river to develop a new main channel along the route of the pre-2012 channel (i.e. the channel management works, referred to above). The combination of the two parts of the projects would take the river away from the west bank. Over time the current channels would become overspill

areas for flood waters and would fill up with silt and sediment creating a bank to continue guiding the river eastwards towards its pre-2000 course and, in doing so, dramatically reduce flood events in Lower Garmouth. Sustainable, 'green' engineering methods would be used. See attached report by Dr Moir and diagrams by Innes Community Council of the proposals.

Once this initial project is completed, annual minor maintenance work may be required just to maintain the river in a controllable area which will greatly reduce flooding while allowing the river to adjust naturally. The use of trees washed down from further upstream could be used as part of any further sustainable engineering works.

The proposed engineering works would arrest the current westerly migration of the meander in the vicinity of Ross House. In doing so, the river will be able to push the gravel that annually comes downstream out to sea rather than accumulating upstream of the viaduct and accentuating meandering processes, increasing flood risk to Lower Garmouth. Various reports by experts over the past decades show that the erosion of Kingston Beach is partly caused by the failure of the gravel brought downstream annually by the river to enter the sea and be pushed up as replacement gravel on the beach. Coastal erosion currently is a major problem in Kingston. By opening up the river, such erosion could be prevented, and the beachhead built up naturally by the gravel that should flow down the River Spey.

The proposed engineering works would have other significant benefits to the local ecology and environment. Former native woodlands and plants would flourish, improving the environment allowing the return of various native species of animals and birds. With less unstable dynamic meandering behaviour, aquatic life such as invertebrates would be able to colonise and increase in numbers providing food for both fish and some species of birds. The constant movement of the river and riverbed has caused a large decline in the number of salmonid fish species in the area, partly through less food availability, constant movement of the riverbed disturbing/ destroying habitats (e.g. spawning) Other wildlife has been adversely affected by the erosion and constant flooding. The constant erosion has allowed the growth over large areas of non-native species such as Giant Hogg Weed and Japanese Knotweed all to the detriment of native plant species, thus wildlife.

Innes Community Council is a body capable of taking the lead in the project. The management of the proposed project should be carried out with great experience of river management and

hydrology, namely Dr Moir. River management is a specialist skill, not something standard trained general engineers can carry out successfully.

James A Mackie,
Secretary to Innes Community Council.

Attachments: -

Dr Hamish Moir's full report,
Financial breakdown of the project
Simple diagram to show proposed works

PROJECT COSTINGS

PROJECT No:	CLIENT:	CLIENT REF:	PROJECT:	
LOWER SPEY 08082021	INNES COMMUNITY COUNCIL	GARMOUTH FLOODING	ROSS HOUSE BEND	
EQUIPMENT NUMBER:	**EQUIPMENT DESCRIPTION:**	**SHEET NUMBER:**	**REVISION:**	**DATE:**
SPEY WORK AUGUST 2021	PROJECT WORKSCOPE & COSTINGS	1 OF 1	A	10/8/2021

1:PROJECT TEAM:

1a:Project Expert and site supervision
Dr Hamish Moir/ CBEC £5000
1b: Project labour and specialist professionals
3-Contracted Persons on site/ offsite £12000

2: WORK PROGRAM:
Sepa/ Crown approved contractor

2a: Prepare Old Channel £3200
2b: Prepare Large Wood Structure (LWS) to take fallen trees £1600
2c: Move existing fallen trees and start to stake £4800
2d: Obtain other trees as required- contingency £6000
2e: Stake LWS area £2000
2f: Backfill LWS area with material extracted from Old Channel £4000
2g: Tidy up and prepare Viaduct Area £1600

3: EQUIPMENT:
Specialist Purchase and Hire

3a: Maxi Postmaster £9100
3b: Non-treated/ extra length Timer stakes £3750
3c: Water Craft/ River access £3500
3d: Waders and specialist PPE £2500
3e: Site hut and welfare unit £1200

4: MISCELLANEOUS / CONTINGENCY

4a: Prepare West bank and access £2000
4b: New landscaping and LWS Willow planting £7800
4c: Tidy work site, banks and access £2500
4d: Compensate Landowners for loss of crop/inconvenience £4800

5: POST PROJECT
5a: Post Project monitoring and Adaptive Managemet
Dr Hamish Moir/ CBEC £5000

6: DURATION
The Scope of work is to be done on a "site fit basis" with continuation over a 4 week period in 3rd quarter of 2021.

TOTALS: £82350

Date:	11th August 2021	**Version:**	FINAL
To:	Innes Community Council		
From:	Hamish Moir, cbec eco-engineering UK Ltd		
Project:	Lower Spey Sustainable Channel Management		
Subject:	Proposed options and outline designs for channel management at Ross House		

1. INTRODUCTION

cbec eco-engineering UK Ltd was commissioned by Innes Community Council, to undertake the development of sustainable options for the management of the lower River Spey in the reach extending ~500 m upstream from the Spey Viaduct (crossing the main channel of the river at OS NGR NJ 3458 6418). This section of the River Spey has historically been very dynamic but currently is presenting significant risk to local property, services, and infrastructure as it migrates to the west in the vicinity of Ross House.

Recent observations of the lower River Spey at Garmouth indicate that there is:

- Evidence of significant erosion of the channel margin directly impacting Ross House associated with the migration of the channel in this direction and likely exacerbated due to agricultural practices.
- Significant overbank flow onto the west floodplain through preferential flow paths and associated with significant scour through the conduit under the viaduct causeway.
- Significant deposition of large wood and sediment through the reach of interest.
- Significant section of hard bank protection (rock armour/ rip-rap) and embankment extending ~200 m downstream from this at the upstream extent of the surveyed reach that impacts natural river processes.
- The highly dynamic nature of the Lower Spey in the vicinity of the Spey Viaduct means that if left unchecked, continuing erosion of the left bank at Ross House poses a potential risk of destabilising adjacent infrastructure, properties, local amenities, and land use. The existing flood issues at Garmouth are also likely to continue unabated.

The proposed approach is to, through an understanding of local river processes, encourage the dominant flow of the river to migrate back towards a more easterly orientation that approaches the main span of the Spey Viaduct more directly. This is to be achieved through working with natural river process as opposed to traditional intrusive 'hard engineered' measures to force the river into a specific course (e.g., rock armour, channel dredging etc). Specifically, after assessments of local river conditions, an approach that implements Large Wood Structures (LWS) within the margins of the active channel in combination with localised sediment reprofiling (i.e., not removal/ dredging) is determined to be most appropriate.

This type of intervention will judiciously add 'roughness' to the channel, encouraging the natural deposition of sediment (cobbles, gravels etc) that will begin to deflect flow away from the western margins of the river (i.e., where continued migration/ bank retreat presents significant risks to local property, infrastructure, services etc) to occupy an accentuated back channel (a previous course of the main river flow).

This report presents outline designs and an implementation strategy for the deployment of a significant LWS and associated sediment reprofiling at an optimal location on the river and summarises the design process including the outputs of the desk-based site characterisation, geomorphic walk-over and the design approach.

2. CATCHMENT CHARACTERISTICS

The River Spey is an upland river located in the north east of Scotland (Figure 2.1), with a catchment area of 3,008 km^2 at its tidal limit at Spey Bay (NJ 3455 6566). It rises in the western Cairngorm Mountains, then draining into Loch Spey and, from there, it flows north east through Newtonmore, Kingussie, Aviemore, Grantown on Spey, Rothes, and Fochabers in the Vale of Strathspey before discharging into the Moray Firth, a total distance of ~170 km.

The River Spey initially flows through steep and confined glacially sculpted valleys related to underlying resistant bedrock in the upper catchment area. Superficial deposits relate to glacial deposits laid down during the Quaternary period. As the River Spey flows north east, channel gradient (and therefore energy) reduces and valley confinement decreases causing sediment to be deposited, encouraging the development of alluvial barforms. This is enhanced further by a supply of coarse sediment from the numerous tributaries which join the River Spey along its course.

At the downstream extents of the River Spey (i.e., the reach of interest, downstream from Fochabers) in particular, relict meanders are observed within the surrounding floodplain, suggesting active channel migration has occurred over time (Figure 2.2). This dynamic condition is associated with the river actively migrating through and reworking its floodplain, although with associated bank erosion most likely enhanced in recent historic times due to the reduction in riparian tree cover (at the specific site and throughout the catchment), an increase in intensification of agriculture and climate change. Military maps of Scotland produced between 1747 and 1752 by William Roy show that the River Spey was very dynamic which reflects the likely naturally active and morphologically diverse reference state. The channel through this section is eroding into fluvio-glacial, raised marine and alluvial material, providing a plentiful supply of a wide size-range of sediments. Valley confinement and slope decreases downstream of Fochabers, decreasing the channel's ability to transfer sediment and, with a consistent supply of coarse sediment from upstream and adjacent floodplain areas, facilitating the development of extensive alluvial barforms with associated erosion on the opposite banks. Downstream of the Spey viaduct and Garmouth, the valley gradient further reduces at the coastal margin and the River Spey forms multiple channels and a delta at the Spey Bay Nature Reserve.

Land use within the River Spey catchment is primarily agricultural (pastoral and arable) along the lower lying open floodplains, with managed forestry and moorland dominating the steeper valley sides. Soils within the catchment are predominately free draining mineral podzols with smaller areas of brown earths present.

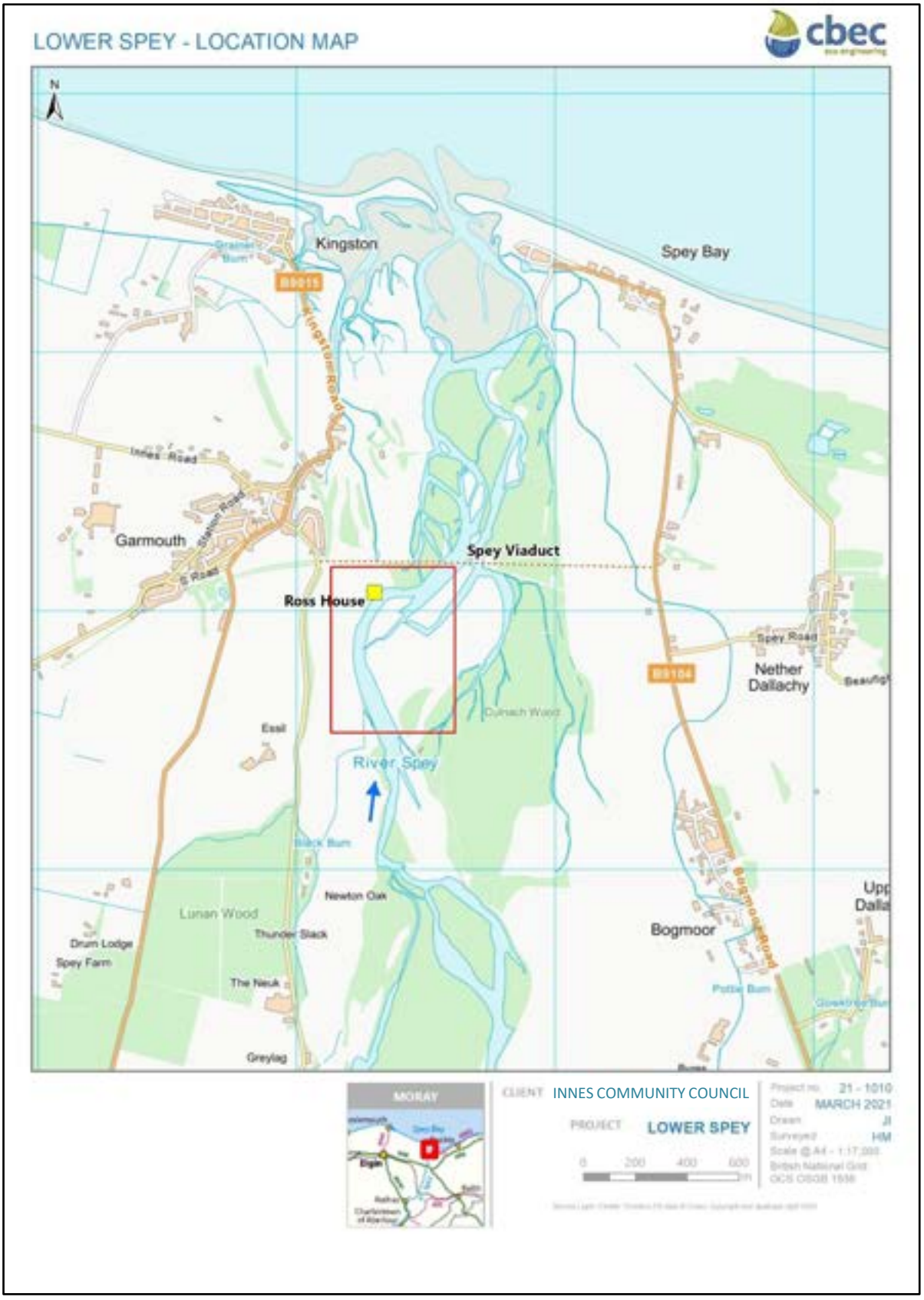


Figure 2.1. Location map for the Lower River Spey study reach in the vicinity of Ross House near Garmouth.

Between Fochabers and Garmouth the river corridor is characterised predominately by a high energy active meandering channel. The banks in many locations are vertical and composed of alluvial material of a sand/ gravel/ cobble mix. The channel bed, where observed, is a mix of large cobbles and gravels and with the extensive point, medial and lateral bars characterised primarily by coarse gravels and sand. Riparian vegetation is poor with the river corridor being mainly grassland with limited tree cover. The surrounding land is primarily given over to pastoral agricultural outside of the channel corridor. To the east of the active channel area within the historical mapped extents of the river, there is a clear succession of vegetation establishment that reflects the physical evolution of the reach (i.e., scroll bars and relict channels associated with varying maturity and types of vegetation, although including some INNS).

In terms of Water Framework Directive (WFD) classification, the River Spey at the study location (River Fiddich to tidal limit waterbody ID: 23065) is currently classified as having an overall WFD status of 'Good', as is the Lossiemouth to Portgordon Coastal Waterbody (SEPA, 2018). The River Spey at Ross House forms part of the designated River Spey and Lower River Spey Sites of Special Scientific Interest (SSSI), the River Spey and Lower River Spey-Spey Bay Special Areas of Conservation (SAC), and the Moray and Nairn Coast Special Protection Area (SPA) and Ramsar site.

The closest SEPA gauging station to the study location is on the River Spey at Boat o' Brig approximately 12 km upstream. This station records annual average rainfall as 1119 mm where elevations reach 1306 mAOD (FEH, 2020). The closest rain gauge to Ross House is located at Dipple at Fochabers (Station number: 115217) which is approximately 5.6 km upstream. This station records average monthly rainfalls ranging between 103mm in August to 48 mm in February over the last 10 years.

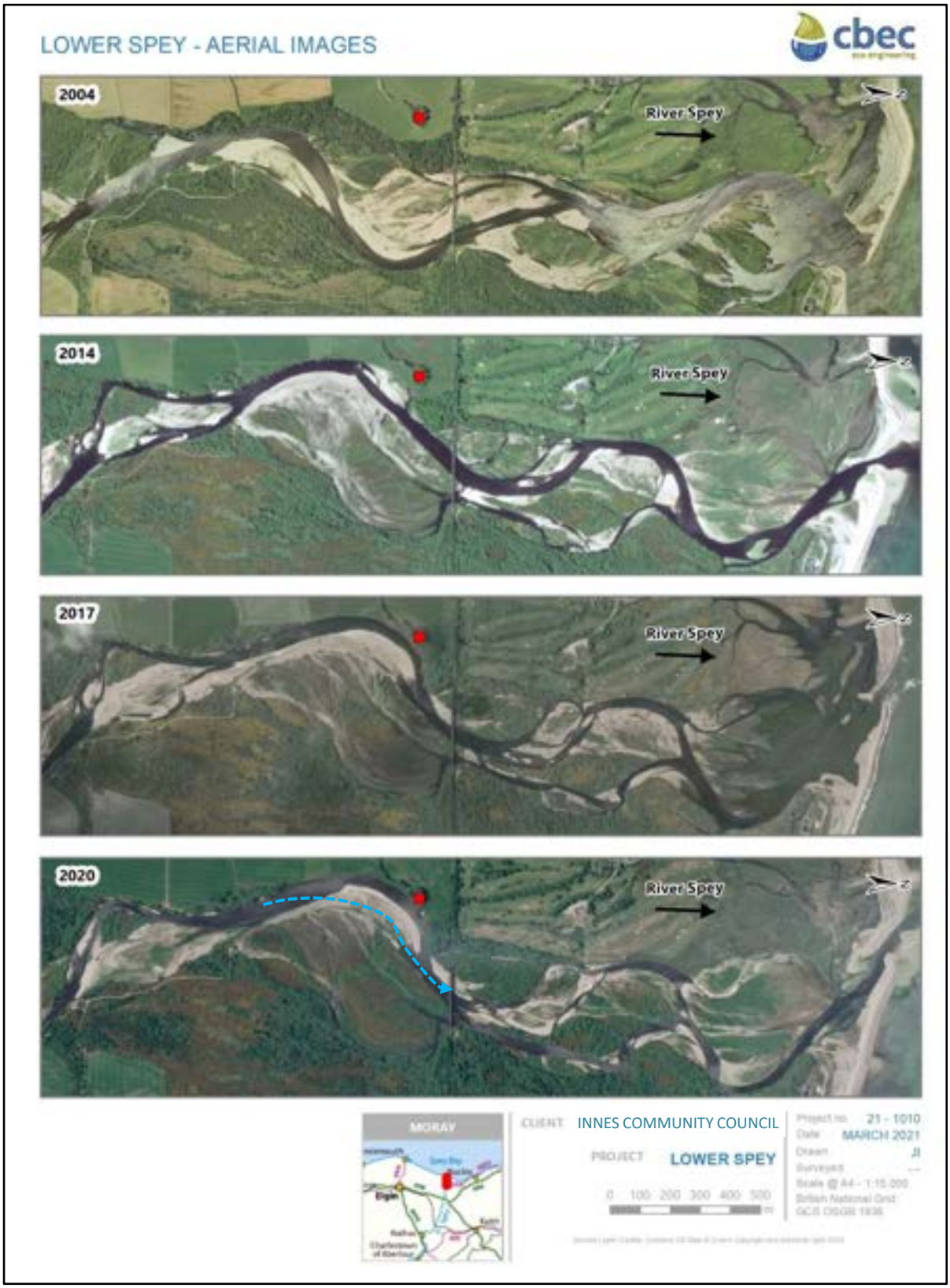


Figure 2.2. Aerial imagery of the lower River Spey at Garmouth and Spey Bay showing significant changes in the location and morphology of the channel between 2004 and 2020. For instructional purposes, the dashed light blue line in the 2020 frame represents the preferred alignment of the main flow of the river that the proposed works intend to deliver.

3. HISTORICAL ASSESSMENT

Aerial Imagery (Figure 2.2) and historical maps (Figure 3.1) illustrate the highly dynamic behaviour of the lower River Spey in the Garmouth area which has implications for the study section at Ross House.

There is a demonstrably high degree of change (both channel migration and associated morphological evolution) over the period of record (i.e., since the earliest accurate topographic maps). From the available aerial imagary, it is estimated that the lower River Spey has migrated diagonally 350 m across its active corridor since 2004 to the northwest as the meander bend has evolved, or translated, across to the Ross House vicinity (Figure 3.2). This lateral mirgation equates to an average of ~17 m of migration per year (although actual migration has been sporadic, primarily in relation to periods of high flow events), indicating a highly dynamic section of the lower River Spey at this location.

In particular, the historical maps[1] note that:

- Ross House is located at the former Mill of Garmouth. Maps produced after 1905 show that the mill lade, Millcroft and Corn Mill to the south of the Mill of Garmouth between Newton and Essil are no longer marked and may have been lost as the Spey has migrated west.
- The Black Burn originates to the south of Newton and flows north through Garmouth to Spey Bay. Between 2004 and 2012 the Black Burn watercourse at this location was also captured by westward migration of the River Spey.
- The Black Burn originally flowed to the west of Ross House and formed part of an artificial drainage network linked with the mill lade system. The former course can be seen on modern aerial imagery as a topographic low/wetter ground.
- Maps published in the 1960s show that there is evidence of a new topographic low to the east of Ross House which has been connected to the Black Burn and the mill lade at the former Millcroft location. It is not clear if this connection was artificially dredged as a navigation/ access channel but remains apparent on recent OS maps and aerial imagery.

Summary of historical observations

The oldest published maps (Roy, 1747-1752) and paleo-evidence from aerial images (i.e. both pre-dating properly geo-referenced maps) indicate a very dynamic environment of an actively wandering/ braided system with very wide active corridor. This is the natural 'reference state' for the river. More recent maps and aerial imagery identify that this condition continues to the present day but now impacts infrastructure. The presence of the viaduct acts as a 'throttle' to sediment transport, resulting in a net accumulation of material in the reach upstream, associated with enhanced geomorphic process (i.e. barform development and associated material channel migration through bank erosion).

[1] National Library of Scotland (NLS). Available at https://maps.nls.uk/.

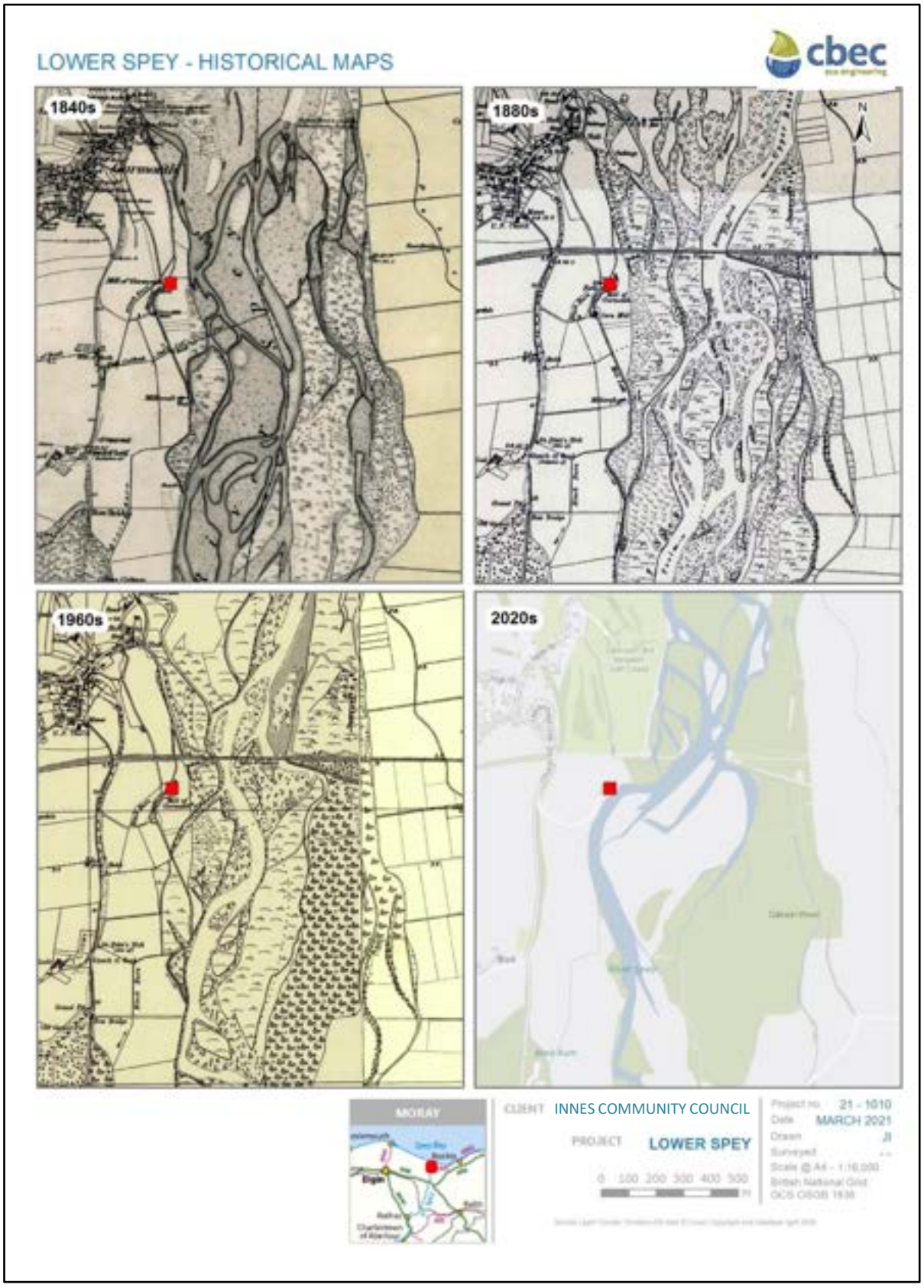


Figure 3.1. Historical channel changes of the lower River Spey near Garmouth from published maps over the last ~160 years. The location of Ross House is indicated by the red square.

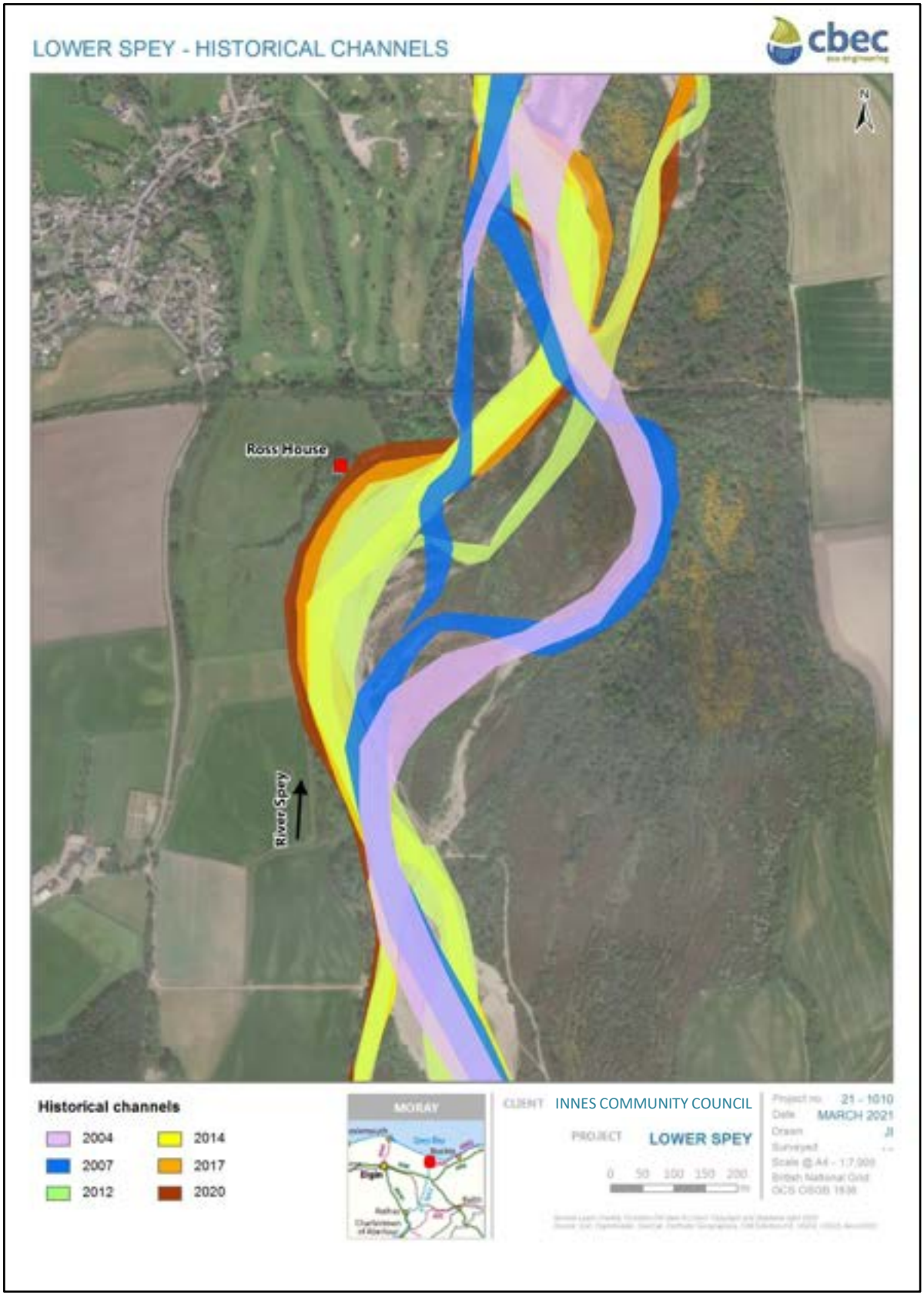


Figure 3.2. Summary of recent historical channel changes of the lower River Spey near Garmouth from aerial imagery since 2004. The location of Ross House is indicated by the red square.

4. GEOMORPHIC WALKOVER

cbec conducted a geomorphic walkover (following a 'fluvial audit' type of methodology) to assess the current physical condition of the watercourse. This process allowed accurate interpretation of the location and extent of important features influencing the physical condition of the river (e.g., sediment input from bank/ terrace erosion and tributaries; area of sediment stored in active bar features; anthropogenic/ engineering pressures; riparian vegetation).

4.1.1. Location

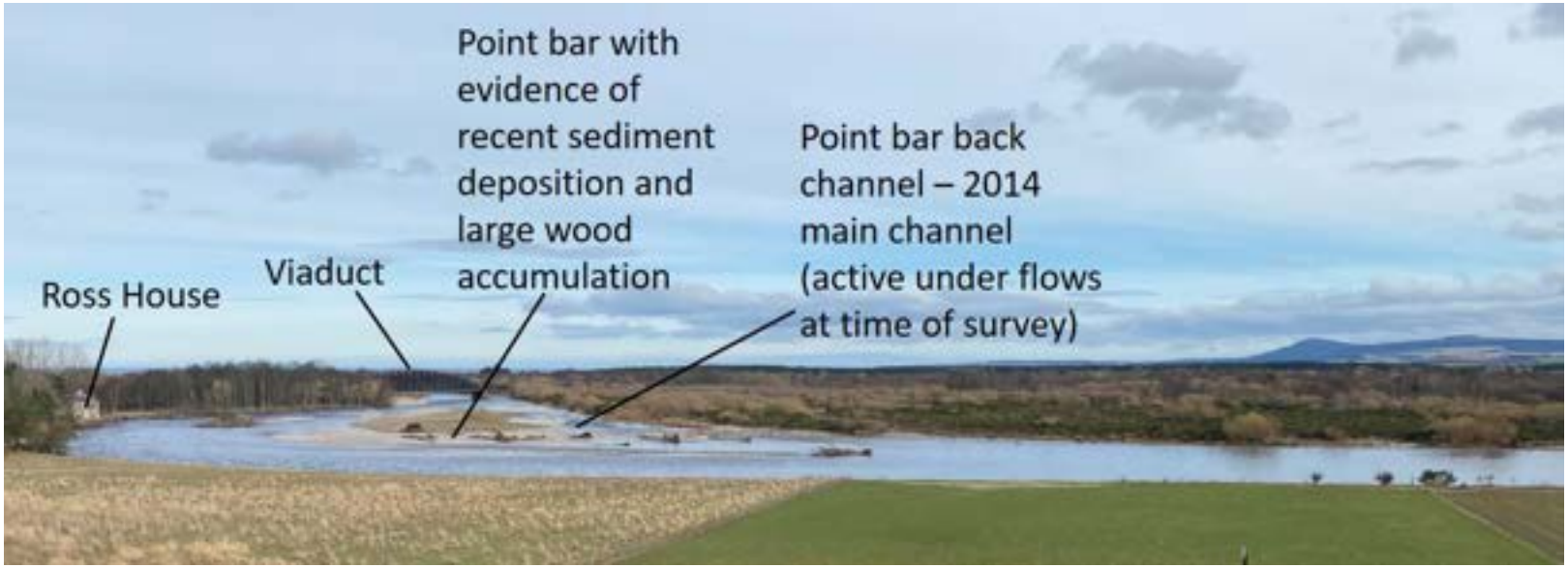
The geomorphic walkover/ fluvial audit survey covered a ~1.5 km extent of the River Spey from just downstream of the Spey viaduct (OS NGR NJ 3446 6437, i.e., downstream extent) upstream to adjacent to Alma Cottage (NJ 3430 6307).

4.1.1. Method

The fluvial audit was undertaken on 9th March 2021 by Dr Hamish Moir and Dr Eric Gillies who have experience in delivering geomorphology and hydraulic modelling assessments and river management solutions. Although not a flood event, river flow was somewhat elevated so certain aspects of in-channel characteristics (e.g., a proportion of the extent of alluvial barforms) were partially obscured. However, this did not significantly hinder the assessment of the geomorphic condition of the site. Locations and characteristics of physical features were recorded using a hand-held GPS and camera. The data were subsequently transformed into GIS format to allow visualisation and further analysis. The types of features and characteristics recorded are listed below.

- **Reach scale channel morphology** (using a classification scheme that draws on aspects of other recognised procedures – SEPA, 2012; Montgomery and Buffington, 1997; Brierley and Fryirs, 2000).
- **Sediment sources/ storage** (e.g., tributaries, bank erosion, within-channel storage in barforms), noting dominant sediment sizes.
- **Indicators of the sediment transport regime** (e.g., the form, texture and vegetation cover of bar features and bed forms).
- **Vegetation** - both in-channel vegetation (e.g., 'large woody material', macrophytes) and riparian/bankside cover, as well as invasive alien species.
- **River engineering pressures** (e.g., bank protection, realignment, embankments, hydraulic structures, bridge crossings, etc.).

Table 4.1. Geomorphic walkover photographs and observations (upstream to downstream, noting that flows were elevated during the survey).

Location	Observations	Photo
Site overview		

NJ 3430 6310 (Alma Cottage, Newton. Upstream extents of survey)	Hard bank protection (rock armour/ rip-rap) at the upstream extent of the surveyed section of the river. This structure (and the associated embankment adjoining downstream) act to inhibit natural river processes (e.g., connection with the west floodplain and channel migration).	
	Artificial embankment extending ~200 m downstream from the end of the rock bank protection in the photo above. This feature inhibits high flows naturally connecting with the river left/ west floodplain, focussing overbank flow into the reach downstream (i.e., in the vicinity of Ross House).	

NJ 3421 6383	View downstream to Ross House with active bank erosion river and location of incipient overbank flow evident on left/ west margins of the channel. The significant sediment and large wood accumulation (i.e., associated with the developing point bar feature) is evident on river right/ east. The point bar back channel is partially visible to the far right of the photograph.	
NJ 3430 6406	The east corner of Ross House, directly on the line of the eroding top of bank edge (note that the bank erosion has extended further since this photograph was taken and a section of the corner wall of the building has collapsed as a result).	

NJ 3437 6411	Looking upstream to Ross House, showing evidence of active bank erosion and large wood accumulation (with associated sediment deposition).	
NJ 3456 6417	Significant sediment accumulation under the viaduct on river left/ west side of channel. Also note the large wood material trapped on around the pier of the viaduct.	

NJ 3458 6418	View upstream from Spey viaduct, close to downstream extent of survey. Note the significant accumulations of large wood and alluvial sediment, indicative of a highly dynamic geomorphic environment. Ross House is located just out of the photograph on the right (i.e., river left/ west). The 2014 back-channel and preferred route is shown as red dashed arrows.	
NJ 3458 6418	View downstream from Spey viaduct, close to downstream extent of survey. As in upstream reach, note the significant accumulations of large wood and alluvial sediment, indicative of a highly dynamic geomorphic environment.	

NJ 3431 6419	Evidence of preferential floodplain flow path around west side of Ross House, towards viaduct causeway.	
NJ 3431 6419	Scour located at the entrance to the conduit under the viaduct causeway related to overbank flow through the floodplain preferential flow paths (see above photograph).	

Summary of walkover observations

- Evidence of significant erosion of the west channel margin, associated with the migration of the channel in this direction (i.e., directly impacting Ross House). Likely exacerbated due to simple riparian vegetation cover (i.e., relating to agricultural practices).
- Significant overbank flow onto the west floodplain through preferential flow paths (i.e., possibly related to natural and anthropogenic historical channels) and associated with significant scour through the conduit under the viaduct causeway.
- Significant deposition of large wood and sediment through the reach of interest, intrinsically linked to (and enhancing) the processes of lateral channel migration and morphological change.
- Significant section of hard bank protection (rock armour/ rip-rap) and embankment extending ~200 m downstream from this at the upstream extent of the surveyed reach that impacts natural river processes - means that overbank flow for moderately-sized flood events is focussed in the area between the downstream end of the embankment (and the viaduct – i.e., potentially accentuating the impact of this process to channel margins and the floodplain). Other than this, little other evidence of direct engineering pressures.
- **The highly dynamic nature of the Lower Spey in the vicinity of the Spey Viaduct means that if left unchecked, continuing erosion of the left bank at Ross House poses a potential risk of destabilising adjacent infrastructure, properties, local amenities, and land use. The existing flood issues at Garmouth are also likely to continue unabated.**

5. DESIGN RATIONALE

The historical assessment and geomorphic walkover observations confirmed the dynamic nature of the lower River Spey which poses a significant risk to the Ross House property on the left bank (and other significant infrastructure downstream).

The principal driver for the proposed restoration/ management interventions resulting from this project will be the reinstatement, as much as is practicable, of natural channel-floodplain physical and ecological functioning on the study reach (and the associated benefits that this will bring). To achieve this, we propose to apply an over-arching philosophy of 'process-based restoration'. This concept is gaining increasing interest in river management worldwide and Dr Moir has recently co-authored a paper on the practical applications of the philosophy (Beechie *et al*., 2010). The underlying concept of the theory is that by firstly determining the 'reference state' for the river and subsequently tackling the impacts to the processes of water and sediment supply, transport, and storage at the largest possible spatial scale, this will permit the physical recovery of the river in a more natural, stable, and self-sustaining manner, thereby also providing the fundamental basis for ecological recovery. In this way the river itself will subsequently do the work of maintaining a 'natural' and self-regulating environment with the minimal requirement for subsequent intrusive interventions.

To reiterate, since physical form and processes provide the template for many important ecological functions (and the associated biota and their habitats), restoring these generic controls at appropriately meaningful scales will bring about, in the medium to longer terms, a sustainable ecological benefit. Ecological benefit will also be explicitly assessed in terms of local protected species. Therefore, in addition to site-specific restoration interventions, the range of options presented may

well include broader-scale suggestions on the management of the entire reach and span 25 years or more into the future.

As with any construction that involves working in the natural environment, complete and spatially continuous supporting data sets (e.g., services, ground conditions etc) are not always available. Therefore, unexpected issues may arise once the construction phase has begun. Under such circumstance, we are required to make decisions at short notice as to how designs need to be modified to solve these issues. This process is known as 'field-fitting', with this term used throughout this document where necessary.

The proposed channel management options are illustrated in Figure 5.1. and aim to reproduce natural processes for the development of stable bar or island features that divert the course of the river and drive long-term morphological evolution. Natural log jams commonly encourage changes in flow process and sediment dynamics that lead to the development of bar features.

Aerial imagery indicates a transverse bar forming a submerged riffle across the channel as it extends from the exposed point bar on the right bank. Figure 5.1 indicates the approximate locations[2] for the proposed implementation works (i.e., installation of LWS, described in more detail below) that aim to align with the sub-surface extents of the riffle; representing an existing net zone of sediment accumulation (i.e., associated with reduced the depth of flow), the aim is to enhance these processes by increasing the roughness of the channel in this area.

Upstream from the riffle, an exposed embryonic lateral bar was evident on the aerial image in Figure 5.1 during low flow conditions. Recent site observations suggest that this lateral bar feature is no longer as apparent although the associated transverse bar/riffle crest have remained largely in situ indicating a zone of net sediment storage. This natural sediment accumulation along the left bank can be accentuated through the addition of a substantial LWS, a feature that will increase roughness and reduce the competency of the flow in the vicinity of the structure, encouraging a zone of enhanced/ preferential sediment deposition. The gradual increase in elevation and volume of this left bank bar associated with the enhanced sediment transport processes will direct flows away from the left bank and towards the existing point bar back channel to the right/ east.

The former 2014 channel (Figures 2.2 and 3.2 and Table 4.1) is preserved as a topographic low within the accumulating right bar feature and acts as a back-channel feature. Reprofiling (i.e., lowering) the channel bed at the entrance to this back-channel feature will further encourage the main flow route of the Spey to follow this former flow path of the river and, therefore, away from the left bank where Ross House and other infrastructure are at considerable risk. Material excavated from the backwater can be redistributed to support the construction and stabilisation of the LWS on the left bank.

There are two potential construction approaches with regards to installation of the proposed management options:

1) Installation follows a phased approach such that the LWS will be installed from upstream to downstream over a series of interventions to better mimic natural bar evolution. In this way the LWS will more effectively tie into the embryonic lateral bar feature, gradually enhance sediment accumulation, and allow diversion of the flow

[2] Note that the physical condition of the channel has changed from that of the background photograph, meaning that the specific location of the works will likely require to be 'field-fitted' to some degree to reflect the current form of the site.

path into the 2014 channel and restoration of adequate dimensions to contain a range of flows. In the absence of detailed morphodynamic modelling this will allow progressive adjustments to designs following high flow events before implementing the next phase of construction. The disadvantage being that this will take quite a lot of time, to the extent that the ongoing risk is not managed in a sufficient timeframe. An issue may also arise with regards to sourcing the required ballast and back-fill for the LWS if the back channel reprofiling is not partially or fully undertaken at the same time.

2) Construction of the full design (i.e., full extent of LWS and associated reprofiling of the back channel) is undertaken is a single phase of works. The advantage of a single phase of works is that it more quickly reduces ongoing risk to property and infrastructure and the number of occasions disruptive in-channel and bankside construction works take place. The disadvantage is that the design cannot be progressively adjusted in response to flow events which increases the risk of damage.

It is recognised that constructing a substantial LWS could potentially constrict the width of the existing River Spey flow path if the former 2014 channel is not sufficiently increased in dimensions. It is therefore advised that, under both options 1 and 2, some degree of associated reprofiling of the back channel is undertaken. However, given the ongoing high risk to Ross House and other downstream infrastructure, construction option 2 is recommended; although allowing for greater confidence that the ultimate implemented works will perform as required, it is likely that the timescales necessary to deliver option 1 will be too great (i.e., given the high degree of risk to Ross House and other downstream infrastructure).

The proposed management options at the locations shown in Figure 5.1 are intended to provide sustainable medium- to long-term solution for the risk posed to the Ross House founded on a process-based approach which work in tandem with interim bank stabilisation measures at the property. It is also anticipated that the management options proposed in this report will tie into long-term plans proposed for this reach of the River Spey which may include restoring the main flow path to the 2004 alignment (Figure 3.2).

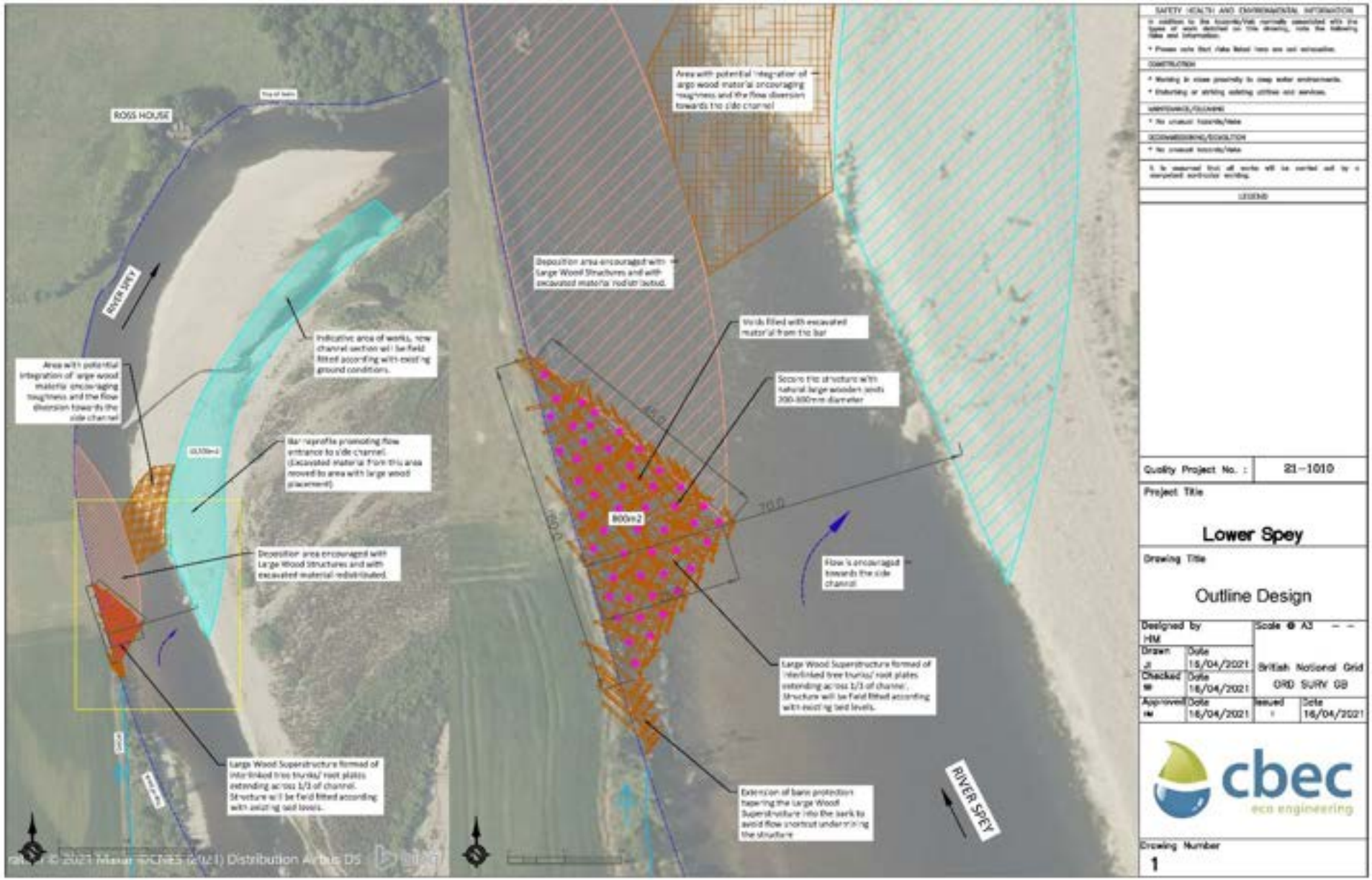


Figure 5.1: Location and general design specifications of proposed channel management works to encourage flow diversion into the former 2014 channel.

6. IMPLEMENTATION AND DESIGN OF LARGE WOOD FEATURES AND CHANNEL REPROFILING

To ensure the effectiveness of the LWS for reducing the risk to the specific area of concern (i.e., in the vicinity of Ross House), the development of the proposed design has also considered the wider study area (and adjacent sections of river) for the site. The interaction between flow, channel geometry (e.g., depth, width, slope) and bed particle size is important for determining how sediment is stored and mobilised in the vicinity of the proposed LWS (and, therefore, how it impacts the evolution of flow patterns over time). Our experience has shown that if the large wood structures are not suitably scaled to the channel dimensions (particularly width), their influence on river processes (i.e., particularly sediment transport) may not be sufficient to provide the desired effect (i.e., in this case, diverting the main flow of the river away from area of risk). For this reason, multiple trees of sufficient size have been recommended to construct the LWS to ensure that the area presented to the flow (i.e., the vertical extent above the channel bed and the width of structure presented to the prevailing flood flow direction) is sufficient to exert an appreciable influence on in-channel processes (i.e., to direct flow into the back-channel feature).

Ideally detailed design specifications would be supported by hydraulic or morphodynamic modelling for best results – both to determine the likely trajectory of evolution of the channel post-construction to result in the required longer-term adjustment of the main flow direction and to ensure that the required stabilisation of the structure has been adequately specified (i.e., relating to hydraulic forces experienced during high flow events). Given the current budget and time constraints, the outline design presented here has been based on expert judgement and, given the complex geomorphic processes exhibited at the site, there is some residual uncertainty associated with this.

6.1 LARGE WOOD STRUCTURES

The trees comprising the LWS should be generally oriented so that the root plates face upstream (i.e., relative to the prevailing flow direction) at an angle of 30°-45°. To further increase structure stability, the root plates should be buried into the channel bed to about half of their diameter and with the retained length of trunk away from the root plate being angled down into the channel bed. Given the dynamic character and high hydraulic forces of the River Spey at the design reach, the proposed LWS requires to be constructed with an interlinked latticework structure, with each large wood[3] element being stabilised by other elements lying over it (i.e., forming an 'engineered log jam', Figure 6.1; with each large wood element overlapping by at least 25% of their total trunk length at their downstream and upstream extents.

Furthermore, wooden posts of 200-300mm diameter shall be buried to a depth of up to 2 m where feasible into the channel bed to stabilise the trunks. These should rest up against the downstream side of the trunks of each large wood element, one at the base (i.e., at the root plate) and another near the opposite end (although other intermediate posts can also be implemented). The placement of the posts will require an element of field fitting to account for the location of branches and the local condition of the channel bed (e.g., difficulty of driving them into the substrate). The design principles are based on extensive experience of the design team gained in high river energy environments, published research and methodological guidelines (e.g., Brooks et al. 2006; Gallisdorfer, M.S. 2014).

Sediment excavated from the associated reprofiling of the eastern back channel (see Section 6.2, below) will be used to infill the voids between the large wood elements comprising the LWS. This

[3] Trunks with root plates attached

material will be sufficient to also fill on top of the wood elements, providing ballast to resist buoyancy and drag forces during high flow events. The resulting engineered log jam structure essentially forms a bank-attached flow deflector as shown indicatively in Figure 6.1. It is anticipated that the constructed structures will have more sediment integrated within them as explained in Section 5 and shown on Figure 5.1.

The combination of the sufficient burial of the large wood elements into the bed/ bank of the channel, their combined interlinked latticework structure, the stabilising wooden posts, and the sediment fill/ ballast, the LWS will remain intact in up to moderately size flood events.

In our experience, an element of field fitting is always required to ensure the structures are implemented correctly, based on site-specific characteristics. For this reason, cbec always recommends that a member of the design team is on site for key stages of the construction phase. This ensures the designs are built as specified, maximising habitat value and the longevity of the structures.

Figure 6.1: Examples of engineered log jam flow deflectors (from Brooks, A. P. 2006)

6.2 CHANNEL REPROFILING

The proposed excavation must be subtle so that it only serves to accentuate the back channel as a preferential flow path rather than constructing a new channel of sufficient cross-sectional area to carry all the flow of the Spey. There must be very gradual lateral and longitudinal grading of the back channel, ensuring that there are no abrupt breaks in slope that subsequent hydraulic processes could exploit causing adverse impacts such as bed incision and head-cut and lateral erosion processes. As such, we recommend field fitting the extent and scale of excavation based on the morphology of the back channel at the time of construction works.

Most of the excavation should be undertaken in the upstream entrance to the back channel – once sufficient flow enters the back channel, hydraulic forces should work to mobilise any excess material within it further downstream.

Riparian planting is normally recommended to reduce erosion rates by promoting increased bank stabilisation through the establishment of root structures and added roughness to the channel margins. Fencing may be required to prevent grazing of native tree species within the planted areas of the riparian corridor whilst acknowledging the limitations of current land use and landownership.

7. IDENTIFICATION OF LICENCES AND PERMISSIONS

Following consultation with the relevant local planning departments and SEPA, the licencing requirements and permissions that may be required to be able to undertake the proposed management works have been outlined in Table 7.1.

Table 7.1 Licencing and Permissions for Lower Spey sustainable channel management

Organisation	Type of Licence/ Permission	Comment
SEPA	Control Activities Licence (CAR)	CAR and/or GBR25 (likely CAR)
SNH	Freshwater Pearl Mussel Survey	To be completed 2 weeks prior to construction works commencing.
SNH	Otter Survey	To be completed 2 weeks prior to construction works commencing.
Moray Council	Planning Permission	Planning permission not required.

8. POST-CONSTRUCTION MONITORING CONSIDERATION

Post-construction monitoring of the physical condition of the study site is important to assess the stability and function of the built design (especially immediately after construction) and to support any 'adaptive management' of the design that may subsequently be required. Prior to developing the monitoring scheme, areas of particular concern or risk should be identified with particular attention on these areas within the proposed plan.

Monitoring is recommended immediately after the construction work has been completed and should ideally involve topographic surveying (although could include less intensive methods such as reconnaissance walk-over surveys and fixed-point or aerial 'drone' photography, see below). This would provide a 'post-implementation' baseline condition of the individual site against which subsequent monitoring could be assessed. The bank stabilisation and in-channel sediment management works will have the greatest potential for change in the period immediately following implementation (particularly in response to high flow events) prior to a state of 'dynamic equilibrium' being achieved. Therefore, resurveys are recommended after significant flood events ('bankfull' or higher) for a period until a condition of stability is reasonably determined to have been achieved.

Potential monitoring methods:

- **Fixed-point photography:** to visually capture the physical evolution occurring at specifically selected GPS-locations, at relatively frequent intervals (e.g., once every three months).
- **Geomorphic walkover resurveys**: post-construction and then subsequent geomorphic walkover surveys to assess the physical conditions of the site. Comparison between surveys allows evolution to be assessed.
- **Drone survey**: overhead survey of the site to visually capture the changes in the physical evolution of the site.

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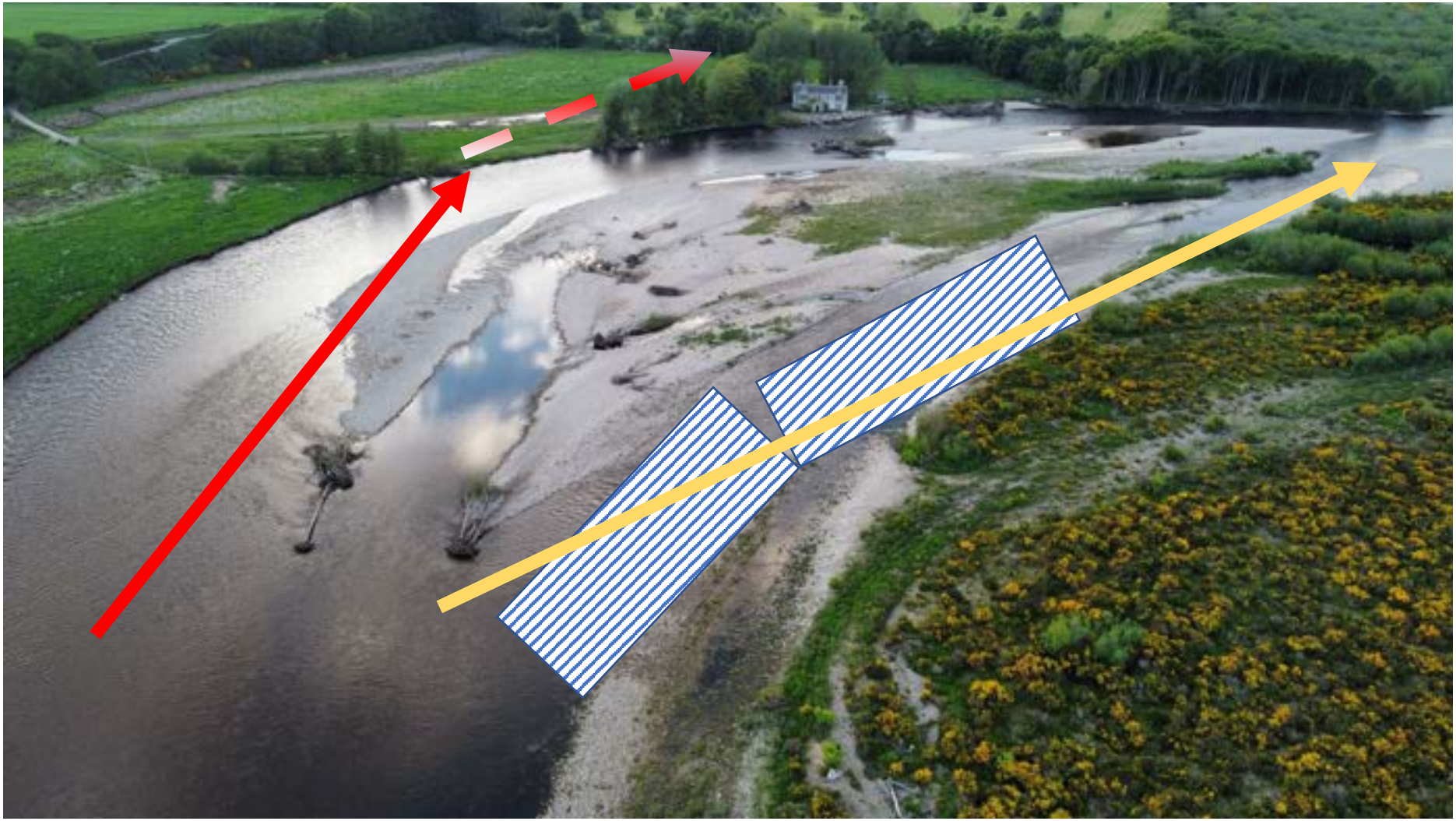
Proposed engineering works for River Spey at Queenshaugh, August, 2021



Red line current main flow of river directly into lands of Queenshaugh. Broken line direction river heading
Red box represents proposed tree construction to guide river eastwards. Yellow line direction that river will be guided.
Blue hash box. Channel to be deepened and widened to encourage river eastwards away from Queenshaugh land.

Prepared by Innes Community Council. Email secretaryinnesscc@gmail.com Tel 01343870310

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Proposed engineering works for River Spey at Queenshaugh, August, 2021

REPORT TO: **MORAY COUNCIL ON 30 NOVEMBER 2021**

SUBJECT: **SHORT TO MEDIUM TERM FINANCIAL PLANNING**

BY: **DEPUTE CHIEF EXECUTIVE (ECONOMY, ENVIRONMENT AND FINANCE)**

1. REASON FOR REPORT

1.1 To inform the Council of the updated financial projections for 2021/22, 2022/23 and 2023/24.

1.2 To consider the factors underpinning the indicative capital plan for 2022 to 2032.

1.3 This report is submitted to Council in terms of Section III (A) (2) of the Council's Scheme of Administration relating to considering Capital and Revenue budgets and long term financial plans.

2. RECOMMENDATION

2.1 It is recommended that the Council:

(i) Notes the revised budget estimates for 2021/22, 2022/23 and 2023/24;

(ii) Notes the emerging budget pressures summarised in paragraph 3.2;

(iii) Notes the requests for service redesign and realignment summarised in paragraph 3.8;

(iv) Notes the recent capital plan review as described in paragraphs 3.17 to 3.37;

(v) Approves funding for small scale service improvement as set out in paragraph 3.11;

(vi) Approves further use of covid ear-marked reserves as set out in paragraph 3.12; and

(vii) Approves savings of £73,000 for 2022/23 as set out in paragraph 3.16.

3. BACKGROUND

3.1 As approved by Council at its meeting on 20 September 2021 (paragraph x of the Minute refers), Heads of Service have been asked to identify budget pressures for their services and potential redesign proposals to build on the Improvement and Modernisation Programme (IMP) approach and look for opportunities to develop preventative work, demand management and other transformation of service with a view to generating efficiencies in the medium to long term. This is an initial scoping exercise and a further request for this will be made in December, to feed into the budget setting process.

Budget pressures

3.2 The Council has always recognised budget pressures as part of its financial planning process. Budget pressures arise from a range of causes: changing legislative requirements, increased demand, contractual obligations, new government policies and priorities. The drivers for change for different services need to be recognised to assist onward planning and this should form part of the budget setting process where at all possible. Emerging budget pressures are being monitored. A firm estimate of the impact of increased energy prices has already been reported and an indicative estimate to cover other emerging budget pressures has been included in the updated overview at **APPENDIX 1.** Work to refine these will continue. .

3.3 As reported to the Economic Development and Infrastructure Services Committee on 19 October 2021 (paragraph x of the Minute refers) Scotland Excel has reported rising energy costs. The Council has been protected from these in 2020/21 due to the future purchase of energy under the Scotland Excel contracts but these increases are now featuring in costs going forward and increased costs of £411,000 in 2022/23 and a further £214,000 in 2023/24 are now expected on current rates of consumption. The school estate accounts for around 70% of the Council's energy consumption and under the current DSM scheme schools energy costs are fully funded, based on historical consumption. Other inflationary costs are starting to come through, and recent increases on the contractual prices for purchase of meat give rise to a budget pressure of £50,000. Inflation appears to be on an upward trajectory, with predictions of a peak in early 2022 and further pressure from contract inflation seems likely.

3.4 Scottish Government have committed to reducing teachers' class contact time by 1.5 hours per week. Scottish Negotiating Committee for Teaching Staff (SNCT) have approved a new career pathway for teachers, introducing a lead teacher post. Both these developments have implications for schools devolved budgets. Scottish Government have also issued revised guidelines for Devolved School Management (DSM) schemes, which should be implemented by April 2022. There will be on-going budget pressure arising from the reduction in class contact time and new career pathway but meantime there is a pressure related to creation of a project officer post to work on the wider issues.

3.5 The Planning Act 2019 and National Planning Framework (NPF) 4 introduce further requirements for the planning process. The requirements for policies to deliver net zero, identify and register self-build opportunities, and role of planning in health and wellbeing can all be met within existing resources. However, there are a range of other requirements which cannot be met from existing resources: preparation of a Regional Spatial Strategy (RSS) and delivery of RSS projects; introduction of Masterplan consent areas, a new planning control offering the opportunity for fast tracking to development on the ground and supporting the local economy; increase in requirements for the Evidence report for the Local Development Plan (this will also involve other services); potential for work on Local Plans to support local communities, along with Community Support and NHS Grampian; a greater focus on Open Space Strategy, Forest and Woodland Strategy and Town Centre Regeneration. The proposed response to these pressures is to establish a Senior Planning Officer post on a permanent basis. A post at senior grade is needed due to the nature of the strategies under development and ability to work with a high degree of insight and autonomy to frame and consult on these.

3.6 Legislation relating to records management, the protection of data and access to information has developed significantly over recent years, with the expectations of regulators and the public also increasing as well as the volume and complexity of requests for information. There is significant risk to the Council in terms of inspections and fines if we do not have appropriate systems and processes in place. There is also an imminent requirement to consider the location of both the Records Store and Archives in response to National Records Scotland requirements (Archives) and internal estate management requirements (Records Store). There needs to be a close link with Information Security roles in ICT in relation to Cyber Security (which is an increasing risk to the Council). .

3.7 The Council has an obligation arising from the Scottish Joint Negotiation Committee (SJNC) agreement 2018-21 to consolidate the Scottish Living Wage into our pay structure. Independent consultants have developed options for consideration and these have been costed. As the outcome of negotiations is not yet known an indicative amount has been included in this report.

Service redesign and realignment

3.8 Consideration of service redesign and realignment takes place in the context of priorities, possibility of preventative spend and demand management, longer term efficiencies and is an area where the Council has more discretion than budget pressures. Development of options have been reported to Group Leaders but it is too early in the budget setting process to consider detail as the Council's overall financial position and therefore room for manoeuvre remains uncertain. An indicative amount of £180,000 has been included in the updated overview in recognition that the Council will want to reshape budget to fund priorities, even if the scope for doing this on a recurring basis is limited at present. Options will be detailed and brought back as part of the budget setting process.

3.9 Schools real time data and Performance Indicators (PIs): The service has identified a requirement for up to date data around a range of key indicators including the Local Government Benchmarking Framework and also a system of real time data for users – there are systems available and an options appraisal would need to be developed. Gathering of data for the Learning Estate Programme (e.g. trend date and sensitivity analysis around school roll forecasts) would enable better management and mitigation of risks as the programme develops. This information could be used to support the Council priority of improved educational attainment and to that extent could be viewed as preventative in the medium to long term, albeit direct savings cannot be identified. Given the current investment in improving attainment and wellbeing, this would appear to be a reasonable adjunct to help to monitor and inform progress.

3.10 Youth Work (Buckie and Forres): There are Third Sector youth work providers with dedicated premises in Keith and Elgin, but not in Buckie or Forres. There has been a perception of increased anti-social behaviour in both of these communities during the pandemic. The proposal is for a pilot scheme led by a new youth work team working in partnership to develop new community led youth projects and safe spaces for young people to meet. Transformation investment could be guided by Participatory Budgeting (PB) with young people involved in the decision-making process. This would be a preventative approach, aiming to reduce vandalism and other anti-social behaviour and to improve young people's health and well-being, with potential to generate reduction in spend on the consequences of anti-social behaviour over time.

Small scale service improvements

3.11 At its meeting on 24 August 2021, the Economic Growth, Housing and Environmental Sustainability Committee (paragraph x of the Minute refers) approved funding of £100,000 for small scale service improvements. One proposal for use of this fund is put forward for consideration and recommended to be supported. The proposal is to digitise the title deed safe, a one-off project to scan and index the approximately 5,000 property titles/title packages/legal documents held in the secure title safe. These need to be accessed by solicitors and estates surveyors on a daily basis. They are also copied to the wider public for a fee. Accessing these records is cumbersome given the layout of the safe and requires a physical visit. Deeds often go missing and there is a cost associated with getting replacement deeds from Registers of Scotland. Both legal and estates sections are facing the challenge of an increase in workload (the Council's leasing portfolio is increasing) with static or diminishing staffing resources and staffing pressures within Legal Services in particular are significant. The proposal would help alleviate this workload pressure by freeing up some staff time. Across Legal Services and Estates it is estimated that 10 hours a week staff time is spent accessing files and this time would be saved, giving a more efficient service. Titles are currently in a standalone system but it may be possible to make links with wider council records management systems such as the GIS digital mapping system. The project should give improved economic development outcomes, as quicker access to title records means that business leases can be agreed quicker, giving tenants access to properties and maximising rental

income, and will assist in external market property transactions. A one-off cost of £75,000 for a specialist contractor is estimated.

Use of reserves

3.12 The Council at its meeting on 20 September 2021 (paragraph x of the Minute refers) approved use of £10.128 million covid ear-marked reserves. A further £87,000 is recommended to be allocated from covid earmarked reserves with an adjustment of £500,000 to the amount previously approved as summarised below:

	Para	Allocation £000s	£000s
Covid ear-marked reserves @ 31 March 2021			16,421
Approved allocation 24/08/2021		10,128	
Test and Protect admin staff (approved Corporate Committee 12 October 2021)		10	
Mental Health and wellbeing (approved when budget set 03/03/2021)		275	
Economic Recovery (approved 28/10/2020)		219	
Community Council elections (approved 30/06/2021		14	
HR support for Education recovery (approved 30/06/2021)		14	
Transfer from funded by general reserves: Summer activities One-off costs Living Wage consolidation Learning Estate review team		 10 30 243	
Continuation of Flexible Food Fund (balance of funding)		248	
Emerging issues:			
Registration service	3.13	48	
Home schooling	3.14	63	
Reduction in projected income shortfall	3.15	(500)	
TOTAL		10,802	

3.13 From statistics required to be reported as part of the response to the pandemic, it has become evident that over a seven week period up to 27 August the number of deaths was 38% higher than the average for the last 5 years, not including the Covid effect last year, and the trend is an increasing one. This has resulted in an increase in both the number of registrations required which take longer due to the restrictions on how these can take place, as well as the burial ground administration required in response to the increase in the number of internments. This has placed severe pressure on the current staff within the Moray Registration Service and it is therefore requested that the Council authorise the allocation of Scottish Government pandemic funding to recruit two temporary posts of a Grade 3 Administrative Assistant to support the Registration Service in the delivery of the burial grounds administration and to undertake other general administration tasks

within the Registration Office. These posts will also form part of a planned review of the burial grounds and burial grounds admin service.

3.14 During the pandemic the number of requests for home education rose significantly, alongside additional requests for personalised Additional Support Needs (ASN) flexible learning packages and an increased level of support required for children on the edge of care or in residential care, within or outwith Moray. The Council is insufficiently resourced to carry our statutory duties associated with Home Education. To address this it is proposed to appoint a Principal Teacher – Home Education (1fte) to take on the growing case load of Home Educated families, to undertake face to face visits for home education, flexible education package providers, residential care and education providers outwith Moray, and to look at the Flexible Schooling policy which requires to be developed. As it is unclear whether the demand for home education is likely to continue at this level post pandemic it is proposed that in the first instance this is a temporary post funded from covid ear marked reserves. If demand does continue at the current level this will become a recurring budget pressure for 2023/24.

3.15 As noted at the Council meeting on 20 September 2021, loss of income and Council Tax Reduction will be kept under review. The first estimated actual for 2021/22 was reported to Corporate Committee on 30 November 2021 and that included a shortfall in income for the year projected to be £1.2 million above the £0.5 million originally budgeted for, an improvement on the position estimated at the end of quarter 1, which was for a further £1.5 million loss of income. Council Tax Reduction is also showing an improved position and is projected to be £200,000 less than budgeted for.

3.16 Recently various proposals have been made through notices of motion at Council for expenditure on items identified by members as issues they would like to promote. The covid ear-marked reserve is a potential funding source for such initiatives, particularly if spend is one-off. The impact in financial planning terms would be a requirement to find further savings in 2023/24, where the balance of the covid reserve is being used to reduce budget savings. Savings required by 2024/25 are currently estimated to total £14 million across 2023/24 and 2024/25 with very little currently emerging through service redesign and realignment to address this.

Savings

3.17 Two savings are recommended to be approved for 2022/23 at this juncture. Neither impact on staff and so do not require consultation. However, it is good practice to approve savings in a timely fashion as that gives clarity as to the balance to be sought at a later juncture. Uptake of the green waste collection service continues to increase. Income for 2020/21 is £55,000 above budget and it is proposed that the budget for 2022/23 is increased by £50,000, assuming a similar level of sales and no increase in cost. The Council's contract for banking services came to an end during this financial year and has been renegotiated, allowing a one-off saving of £23,000 in 2022/23.

Capital plan review

3.18 The Council maintains a 10 year indicative capital plan for financial planning purposes. This is reported to Council as part of the budget-setting process and the capital plan for the coming financial year approved when the Council Tax and revenue budget are approved. In the last few years the 10 year Capital Plan has had a light touch review and as reported to Council on 15 September 2021 a more detailed review had been undertaken. The review took place at time when many services were experiencing shortfall in capacity and there will be a mop-up exercise during December / January to further inform the draft Capital Plan. This review to date is reported on in the following paragraphs.

3.19 All capital budget managers were asked for information underpinning the capital plan. Information requires to be up-to-date and capital funding requirements should be developed in a strategic fashion, bearing in mind the Council's priorities, availability of external funding (where appropriate), asset management requirement. Recent work on the Property Asset Management Appraisal (PAMA) needs to be factored in to consideration of work required on Council buildings. The emerging implications of the Climate Change Strategy need to be accommodated in the financial planning process. There have been opportunities to apply for significant funding streams, such as the Local Bridges Maintenance Fund and the Levelling Up Fund. Co-dependencies exist between some areas of the Capital Plan – for example the Learning Estate Review will impact not only on capital plans for school buildings but also on the leisure estate and ICT requirements. Further implementation of the PAMA will also impact on ICT requirements. Ideally development of the PAMA would be informed by Service Asset Plans. The Council's Asset Management Plans are based on asset type, following CIPFA recommendations. As yet there are no Service Asset Plans – which cut across asset types and (crucially) look to identify future requirements based on service plans - and the capacity to develop these is currently limited, but without them taking a strategic approach to the Council's buildings will be difficult. The Climate Change Strategy potentially impacts on all building related spend and all vehicle spend. The major influences on the future shape of the capital plan will be the Learning Estate Review and the Climate Change Strategy. Both will take time to develop and Service Asset Plans will evolve in parallel. The capital plan proposed in February 2022 will require to factor in an interim level of spend for both, recognising that the detail will be developed as plans are developed, in the case of Climate Change based on consultants' specialist advice.

3.20 Areas of historic budget where there is a need for a review in the light of current information and identification of needs have been highlighted and the Asset Management Working Group will develop a prioritised approach to these areas for improvement. It is anticipated that excepting the major areas where it will take time to develop detailed plans as highlighted above, much of this information will be available for the budget setting meeting in February.

3.21 The Capital Plan is divided into service areas and these are discussed individually below and summarised in **APPENDIX 2** to this report.

3.22 **Learning Estate** The current 10 year plan contains £227.06 million related to the Leaning Estate. It is recognised that the information is based on historic estimates and requires to be updated as results of the condition surveys being currently carried out become available. Funding bids for the Learning Estate Improvement Programme (LEIP) are being prepared. Without significant external funding the improvements required to the Learning Estate are unaffordable. Development of the Learning Estate Strategy will inform capital requirements in this area. As condition surveys are completed and work on the Strategy progresses amendments to the current plan will be recommended.

3.23 **Leisure and Libraries** The current capital plan includes £5.257 million for replacement swimming pools, refurbishment of pitches, equipment and furniture. The interim review indicated expenditure of £10 million is more likely to be realistic. Condition surveys of the leisure estate will be used to further develop this estimate, which also includes a sum for refurbishment of Moray Leisure Centre based on a recent condition survey. However, given the age of the building and nature of the facilities in it, a further review based on carbon is required to link to the Climate Change Strategy and an options appraisal undertaken. As noted in paragraph 3.19 there will be a strong link between this area of the Capital Plan and the Learning Estate Strategy.

3.24 **Corporate** The current version of the 10 year plan includes £1.918 million for corporate buildings, equipment and furniture. The £770,000 Place Based Investment Programme, funded by Scottish Government, is included in this section of the Capital Plan. This was the subject of a report to Council 0n 30 June 2021 (paragraph x of the Minute refers) and was used to support development of Buckie harbour as a base for windfarm maintenance.

3.25 **Depots** £1.5 million is currently included as an estimated sum to implement the depots review. That review has concluded and it is likely that the sum included will be recommended to be reduced, subject to further recommendations regarding fleet carbon reduction as this will affect depot requirements

3.26 **Industrial Estate** The current version of the 10 year plan includes £13.537 million investment in the Council's industrial portfolio, with £2.5 million being part of the proposals for economic recovery after the pandemic. Investment in the industrial portfolio is underpinned by business cases for investment and these will be reviewed before the latest 10 year capital plan is reported to Council in February 2022.

3.27 **Parks and Open Spaces** This is an area where in the past the Council did not have good asset management information. In recent years work has been undertaken to improve the information available and further work by way of detailed site audits is planned. The current 10 year plan has £6.495 million for this area, with £3.47 million for cemetery provision.

3.28 **Waste Management** The current version of the 10 year plan contains £16.504 million, of which £13.3 million is for the NESS Energy from Waste plant. The budget includes replacement refuse bins and will require to be reviewed when the Council decides whether the current 3 week collection

cycle is to be retained or the fortnightly rota reinstated. The timescale for this is dependent on discussions with the trade unions.

3.29 **Roads Improvements** The current 10 year plan includes £101.459 million for roads improvements. This reflects an increased budget in future years to cover the cost of additional works originally forecast to be required due to the reduced level of roads works approved for the last few years as a calculated budget saving. As noted when the budget for 2020/21 was set, the originally forecast deterioration of road conditions was not reflected in the then latest roads condition survey. As agreed at that juncture, the future roads programme requires to be held under review as up-to-date condition surveys are carried out. The current plan still reflects what may be considered to be a worst case scenario. When the capital plan for 2021/22 was approved a cap was put on spend on roads to ensure that it could be carried out in-house. If the capital budget is to be increased over time to the level originally anticipated to be required to maintain roads at the approved asset standard and the work is to be carried out in-house (which would be the preferred option of the service) an increase in staffing would be required as there is no capacity to do this level of work – spend of over double the current level of spend - in-house at present. Proposals would require to be brought forward and if approved would be expected to represent a commitment to keep expenditure at the higher level going forwards. However, the situation for the short term remains that the results of the roads condition surveys will be used to monitor immediate need and as trends develop to inform the need for updated modelling.

3.30 **Street Lighting** The current plan includes £8.807 million for replacement street lighting columns. It is envisaged that that sum will be sufficient to enable old columns to be replaced when life-expired to ensure the safety of the general public and so no change to this budget will be proposed in February 2022.

3.31 **Car parks** The current plan includes provision of £0.972 million for works at multi-story car parks, based on condition surveys.

3.32 **Traffic and road safety** The current 10 year plan contains budgets totalling £5.791 million – these are historic and require to be reviewed. The service is keen to do so but there was not sufficient capacity to do this in time for the review of the capital plan. A timeframe for this, expected to be in the early stages of 2022/23, will be agreed with the service.

3.33 **Bridges** The current plan includes provision of £15.287 million for replacing / refurbishing bridges. Schemes are based on strategic prioritisation, with this kept under review and schemes reprioritised to reflect changing circumstances when necessary. The Council has been successful in attracting funding from Scottish Government for Key Lifeline Bridges. This will fund a project included in the plan for 2021/22 and enable other works planned for later in the plan to be brought forward. Detail was reported to Corporate Committee this morning. Further re-profiling in response to emerging works has been required in 2021/22. The service had re-profiled the capital budget for the review, with an anticipated spend requirement of

£20 million and this will be reviewed again following the grant award to input into the budget setting process.

3.34 **Flood management** The current plan contains £6.675 million, the bulk of which is planned for flood alleviation schemes in Lossiemouth Seatown and Portessie. The schemes are contingent on Scottish Government funding but the funding allocated to flood management by Scottish Government is oversubscribed and the availability of future funding is therefore currently unclear. Work is being carried out at a national level to scope the extent of the problem and its likely impact.

3.35 **Harbours** The allowance of £4.713 million in the current plan is historic and requires to be updated in conformance with the Harbours Asset Management Plan. Timescales for this, expected to be early in 2022/23 at the latest, will be agreed with the service.

3.36 **Fleet** The current plan includes a budget of £34.022 million for replacement vehicles and plant in accordance with the Vehicle Asset Management Plan. This assumes like-for-like replacement and will require updating in the light of the Council's Climate Change Strategy. Costs of vehicles will increase and the cost of infrastructure – charging points – requires to be factored in. The consultant's report on this aspect will inform future plans.

3.37 **ICT** The current plan includes £6,699 million expenditure on ICT. The requirements for spend will be reassessed in the light of PAMA, the Learning Estate Strategy, development of Scottish Governments arrangements for a device for every child and so should be regarded as provisional.

3.38 **Economic Development and Moray Growth Deal (MGD)** The current plan contains budgets of £1.782 million for economic development projects in 2021/22 and £9.957 million for Council-led MGD projects across the lifetime of the deal, excluding potential borrowing costs as Lead Agency for which £4m has been earmarked. The plan requires to be amended to reflect all projects and partner contributions, to enable the profile of borrowing to support the pattern of grant funding from Scottish Government, which will lag behind spend, and facilitate development of Prudential Indicators to enable this. This cannot be done until the profile is finalised.

Short term financial planning

3.39 The revised budget position for 2021 to 2025 is included as **APPENDIX 1** to this report, updated to incorporate the additional emerging budget pressures referred to in paragraph 3.2. The underlying position of the Council in 2021/22 remains that budgeted expenditure is overcommitted against funding, with reliance on the use of Business Rates Incentivisation Scheme (BRIS) retention and financial flexibilities (now swapped out against ear-marked covid reserves) to balance the budget. The initial estimated out-turn for 2021/22 indicates an overall overspend, adding to the likely pressure on reserves for this financial year. The budgets reflect the position if all funding and savings above are incorporated. The budget also assumes covid ear-marked reserves will be fully utilised in 2023/24, giving maximum protection against the need to make savings in the short term, although that still results in a projected savings target of over £8 million in 2023/24.

3.40 The projected figures do not include recurring budget to address increased poverty or promote wellbeing and support a limited move towards preventative approaches. The projected figures for 2023/24 indicate that the underlying budget position is still one of overcommitment.

3.41 The figures reflect the Council decision to set aside monies to fund transformation of services and other priorities, but the funding is all from reserves and can only be used for development and not for recurring expenditure. This means that as well as generating savings for 2023/24, a clear strategy within services receiving transformation funding will be needed to sustain improvements when this funding ends without generating recurring additional revenue costs as failure to do so will further increase the savings which require to be identified.

3.42 There are still significant uncertainties regarding the Council's finances, particularly regarding pay awards for 2021/22 (although progress has been made with the non-teaching workforce) and for future years and the impact of the consolidation of the Living Wage, with significant differences between the different models investigated. Inflation is increasing and the impact of this is beginning to be felt. The level and duration of grant funding we might expect for the 1.25% increase in National Insurance announced in the UK Sending Review is unclear. This increase is likely to result in contract price increases, particularly for social care providers and Early Learning and Childcare partner providers and is also likely to create pressure, along with higher rates of inflation, for higher pay awards for local authority staff and procured services in the near future. Projections for the level of Scottish Government grant support remain as previously reported, showing a modest increase in core funding to reflect the last Scottish Government Spending Review, but this is likely to change following the Scottish Government's next Spending Review on 9 December 2021.

3.43 Another area where there is significant uncertainty is the Council's capital plan, as discussed above. This impacts on revenue spend and the Council adopted a Performance Indicator for affordability of the proportion of the revenue budget spent on servicing debt. The Local Government Benchmarking Framework uses the ratio of financing costs to net revenue stream to measure this and the most recently available results for the Council and its benchmarking family are set out below. As can be seen, Moray is in a fairly central position.

Authority	**13/14**	**14/15**	**15/16**	**16/17**	**17/18**	**18/19**	**19/20**
Moray	8.36%	8.22%	9.58%	8.66%	9.52%	9.95%	9.50%
Aberdeenshire	6.29%	6.47%	6.16%	6.47%	6.38%	6.59%	6.62%
Highland	12.20%	12.40%	11.90%	12.90%	13.60%	13.30%	13.00%
East Renfrewshire	9.70%	9.70%	8.60%	8.30%	8.70%	9.00%	9.00%
Midlothian	4.70%	4.30%	3.90%	3.50%	3.90%	2.90%	3.00%
Stirling	10.00%	10.00%	10.00%	10.00%	9.00%	9.00%	9.00%

3.44 As the detail of the capital plan is developed for budget setting purposes the estimated impact on revenue will be costed. It should be noted that interest

rates are at a historic low and any increase in interest rates will limit the Council's ability to fund capital expenditure.

3.45 The capital plan will require to make provision for the impact of carbon net zero, and the draft capital plan brought forward as part of the budget-setting process will include an indicative one-line budget for this. Over time, as details of required spend become clearer this will become subsumed into the service lines.

Timescale

3.46 More detailed revenue proposals will be brought to Council on 19 January 2022, with budget setting planned for 22 February 2022.

4. SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))

The Council's budget should reflect the Council's priorities as expressed in the Corporate Plan and LOIP.

(b) Policy and Legal

The Council must set a balanced budget as required by the Local Government Finance Act 1992 (section 93).

(c) Financial implications

The financial implications are set out in the report. The Council faces challenges in developing both revenue and capital plans, with an underlying requirement to make savings. There are sums set aside for transformation of services but these can only be spent once and only amount to less than 5% of the Council's funding requirement.

(d) Risk Implications

There are many risks inherent in financial planning. Current major risks for the planning process are identified in the report. However, the biggest risk would be if the Council did not adequately plan for the future.

(e) Staffing Implications

There are no staffing implications arising from this report.

(f) Property

None arising directly from this report.

(g) Equalities/Socio Economic Impact

None arising directly from this report.

(h) Consultations

CMT and Heads of Service have been consulted in the preparation of this report and comments incorporated.

5. CONCLUSION

5.1 The Council has an underlying requirement to make savings and the focus should be on transformation of services to reduce costs whilst still delivering services.

5.2 Use of funding from the covid ear-marked reserve will cover additional costs and loss of income in 2021/22 and facilitate balancing the budget in 2022/23, while new transformation plans are developed.

5.3 The Council's Capital Plan has significant areas still to be reviewed and developed. Some of these areas are anticipated to be reviewed prior to setting the budget, but some are dependent on longer term pieces of work. The Council needs to incorporate an element to cover the cost of transition to net carbon and this will add a further budget pressure.

Author of Report: Lorraine Paisey, Chief Financial Officer
Background Papers:
Ref:

Revenue Expenditure	**2021/22** £000s	**2022/23** £000s	**2023/24** £000s	**2024/25** £000s
Service allocations (assuming prior year savings are achieved)	209,813	236,664	224,851	222,561
Adjustments to brought forward figure:	(153)	(19,283)	(385)	0
Opening budget	209,660	217,381	224,466	222,561
Pay and price increases	3,470	4,000	4,140	4,220
(Decrease) / Increase in Loan Charges	(1,500)	362	1,800	1,450
New Burdens	5,598	64	0	0
Budget pressures:				
Approved or noted for future years when budget set	5,408	810	620	650
Approved since budget set	14,815	306	(150)	(50)
Emerging	787	1,772	214	0
	238,238	224,695	231,090	228,831
Revenue Funding				
General Revenue Grant / NDRI	167,814	169,492	171,187	172,899
New burdens funding not included in grant above	5,598	64	0	0
Covid Funding (one-off)	4,466			
Council Tax	44,405	46,246	48,312	50,187
BRIS retention	1,859			
Release from Repairs and Renewals Reserve		704		
Funding from General Reserves:				
Further approved funding from Free General Reserves	10,349			
Funded from Ear-marked reserves:				
Transformation	3,415	998	749	0
Covid	10,778	6,643	2,289	0
Transfer to ear-marked reserve for Transformation	(1,816)			
Transfer to ear-marked reserve for Covid	(3,289)			
Transfer to other ear-marked reserves	(6,915)			
	236,664	224,147	222,537	223,086

SAVINGS REQUIRED	1,574	548	8,553	5,745
Savings Summary				
Savings Approved:				0
Approved when budget set	1,052	135	0	
Temporary savings	143	47	0	0
Further savings approved				
Indicative Savings from I&M Programme	191	306		
Other savings proposed	188	60	0	0
To be funded by financial flexibilities				
Savings to be identified	0	(0)	8,553	5,745
	1,574	548	8,553	5,745
Estimated Free Balance on General Reserves	5,000	5,000	5,000	5,000
Estimated Balance on covid Reserve	8,932	2,289	0	0
Estimated Balance on Transformation /Priorities Reserves (1)	12,134	11,136	10,387	10,387

(1) Includes £4 million MGD cash flow – profile to be developed

APPENDIX 2

	2021/22 £000s	2022/23 £000s	2023/24 £000s	2024/25 £000s	2025/26 £000s	2026/27 £000s	2027/28 £000s	2028/29 £000s	2029/30 £000	2030/31 £000	2031/32 £000	Total £000
Fleet	3,572	3,045	3,045	3,045	3,045	3,045	3,045	3,045	3,045	3,045	3,045	34,022
Waste Management	11,709	2,289	1,346	145	145	145	145	145	145	145	145	16,504
Depots	0	1,000	500	0	0	0	0	0	0	0	0	1,500
Road Improvements	4,766	5,293	7,100	7,800	8,900	10,600	12,600	11,100	11,100	11,100	11,100	101,459
Street Lighting	807	800	800	800	800	800	800	800	800	800	800	8,807
Parks and Open Spaces	436	2,234	755	935	305	305	305	305	305	305	305	6,495
Bridges	1,534	3,839	690	7,154	650	610	50	610	50	50	50	15,287
Flood Management	180	100	745	200	1,000	1,050	3,400	0	0	0	0	6,675
Harbours	1,713	300	300	300	300	300	300	300	300	300	300	4,713
Libraries & Leisure	959	1,970	1,165	183	140	140	140	140	140	140	140	5,257
Traffic	321	215	23	39	7	43	43	1,061	39	39	39	1,869
Road Safety	549	360	366	334	328	330	407	312	312	312	312	3,922
Car Parks	842	130	0	0	0	0	0	0	0	0	0	972
Industrial Estates	1,505	4,361	1,630	1,105	2,286	1,190	60	755	645	0	0	13,537
Moray Growth Deal	2,224	885	1,210	447	187	2,483	1,327	627	207	0	0	9,597
ICT	1,212	553	611	579	542	502	632	502	562	502	502	6,699
Learning Estate	9,325	10,897	17,587	23,375	17,211	42,680	45,965	17,705	71,905	10,205	10,205	277,060
Corporate	1,111	80	87	80	80	80	80	80	80	80	80	1,918
Economic Development	1,782	0	0	0	0	0	0	0	0	0	0	1,782
	44,547	**38,351**	**37,960**	**46,521**	**35,926**	**64,303**	**69,299**	**37,487**	**89,635**	**27,023**	**27,023**	**518,075**