APPENDIX 6

SUMMARY OF DOCUMENTS

This appendix includes a summary of the documents submitted with the application and a Review of the Environment Statement (ES) for the Findhorn/Pilmuir FAS. A copy of an appraisal undertaken by SNH on the impact of the Findhorn/Pilmuir FAS on the Moray & Nairn Coast Special Protection Area (SPA) and Ramsar site at Findhorn Bay for "Appropriate Assessment" purposes are also attached.

a) FINDHORN/PILMUIR FAS: ENVIRONMENTAL STATEMENT (APRIL 2008)

The ES comprises a single document (18 Chapters) with supplementary Appendices A – O (some confidential) set out in additional documents with supporting information, survey details, tables and figures etc. The ES describes the background and need for the scheme, including consideration of alternative options and approaches during the development of the preferred solution plus the range of legislation and planning policy to be considered. Following this, the approach methodology and scope of the environmental impact assessment is explained (Chapter 5) and then applied in subsequent impact assessment, Chapters 6 – 17 covering land use and local community, recreation and amenity, historic environment, landscape and visual, soils, geology and hydrogeology, surface water hydrology and water quality, geomorphology, aquatic ecology, terrestrial ecology, traffic, noise and vibration and air quality. In each chapter, potential impacts – adverse and beneficial - are identified for the construction and operation phases of the scheme, together with identification of mitigation measures where appropriate. The conclusions of the assessment are set out in Chapter 18.

The ES includes a Non-Technical Summary (NTS) giving a general overview of the Findhorn/Pilmuir FAS. The NTS is contains a summary of all impacts and mitigation measures (Appendix 7).

b) FINDHORN/PILMUIR FAS: REVIEW OF THE ENVIRONMENTAL STATEMENT

The Environmental Statement (ES) for the Findhorn/Pilmuir FAS was reviewed in August 2008 by the Institute of Environmental Management & Assessment (IEMA). This review is a qualitative assessment based on legislative requirements and current reasonable best practice standards for ES.

IEMA do not oppose or support developments, hence the Review seeks to ensure that all relevant environmental information is made available to decision-makers, and it highlights where each issue would benefit from additional details being provided, to fill gaps in information or to provide clarification. As a public document, the ES should contain all the necessary environmental information for decision-makers and where appropriate, a Review grade is identified for each criterion. Grades ranging from **A** (excellent, no tasks left incomplete) to **F** (very poor, most tasks left incomplete) and **N/A** (not applicable).

The ES for the Findhorn/Pilmuir FAS was awarded the following grades: -

- **2 x A** Excellent, no tasks left incomplete
- **8 x B** Good, only minor omissions and inadequacies
- **2x C** Satisfactory despite omissions and inadequacies.

1 General Criteria

1.1 Description of the Development – B

IEMA consider that the purpose and objectives of the development are clearly identified at the outset in the Statement of Need and with reference to the general history of flood occurrences in Forres and the Pilmuir and River Findhorn catchment area. The likely impacts of climate change on frequency and severity of flooding in the vicinity are indicated and the ES alludes to economic and social impacts associated with such flood events. Detailed aerial photographs superimposed with flood risk at various flood events including 1 in 200 year, visually represent the extent of such flood events and help identify the need for the development.

Chapter 4 of the ES provides a comprehensive explanation of both the planning context and environmental legislation and guidance relevant to the Findhorn/Pilmuir FAS. Chapter 3 provides a breakdown of the proposed works and sets these against Scottish Executive's Guidance for Flood Alleviation Schemes, the Water Framework Directive and the Controlled Activities Regulations 2005.

Although a detailed construction methodology has not been developed, there is a summary of likely construction methods and timescales for each section of the scheme, with overall construction anticipated to last for 2½ years. Further detail is provided within each of the assessment chapters of anticipated volumes of traffic, materials, excavations, waste, contaminated land, tree removal, etc. Whereas the ES states that a draft construction methodology is provided, the Review notes that Appendix F is limited to a draft Environmental Method Statement, a Fuel Oil Management Statement and a Cementatious Materials Method Statement.

Wastes associated with the development are considered, with 220,000 cubic metres of gravel material to be excavated from the river channel (to increase capacity) and 160,000 cubic metres to be re-used on site within the constructed banks. The remainder will be processed to a customer specification and sold where possible.

Whilst post construction maintenance activities are required and set out in an Operation and Maintenance Manual, the ES also identifies anticipated activities, a schedule of timing and a schedule for a planned inspection regime within Chapter 3. A possible, general approach to decommissioning of the scheme is also indicated

1.2 Site Description – A

IEMA consider the Findhorn/Pilmuir FAS proposals to be intrinsically linked with the nature of the site, and the current and anticipated future problem of flooding in and around Forres. The proposed linear works focus on the River Findhorn through Forres extending from Pilmuir to Mains of Moy. Figure MFAG590/3.1 helps to illustrate the location and extent of the scheme and set the works in the context of the river catchment area as a whole. The Review notes that it would have been helpful if locations used to define the study area were identified i.e. Redcraig, the railway bridge, the 'Back Run' and Mains of Moy as these are not readily identifiable on some diagrams.

Chapter 6 provides a comprehensive summary description of the baseline environment addressing the different land-uses in the study area between Redcraig to Railway Bridge and Railway Bridge to the 'Back Run'. Table 6.6 summarises land-uses along the length of the proposed scheme and figures and photographs are included to illustrate land-use in the study area. In addition, each impact assessment chapter provides further detail on the baseline in relation to the specified topic, including photographs to provide a visual aid, as a basis for assessment of each topic.

The ‘do nothing’ scenario as considered (Chapters 2 and 6), mainly focuses on the negative impacts of continued and worsening flooding. More detailed consideration of the baseline and the ‘do–nothing’ scenario is provided in each assessment topic chapter.

Chapter 4 provides a detailed explanation of applicable local planning and development policy with tables to identify whether the Findhorn/Pilmuir FAS supports or departs from policy. Most impact assessment chapters also identify specific local plan policies relevant to the topic in question.

1.3 Scoping – B

Chapter 5 provides a comprehensive explanation of the EIA process undertaken to produce the ES, including reference to the relevant EC Directive and other legislation. IEMA note that rather than request a formal scoping opinion, an informal scoping process was undertaken, with two scoping consultations conducted in 2004 and 2007.

The scoping in 2004 identified environmental constraints and opportunities in relation to flood alleviation in the River Findhorn and Pilmuir catchment area. In 2007, a scoping and consultation document was produced for key stakeholders to comment on the scheme and highlight environmental issues and impacts for consideration. IEMA notes that feedback on the consultation document (Appendix C) identifies comments received and responses from MFA, but the public appear absent from the list of consultees. IEMA welcome the level of consultation and engagement with the local community. The ES states that comments received have, where possible influenced the scheme and that consultation will continue to be important during detailed design and construction. IEMA consider that it would have been helpful for each impact assessment topic chapter to identify where consultees comments (including the public) have been addressed.

According to the Review, the scope of the EIA, in terms of topics identified, appears to be appropriate but IEMA consider that it is unclear what issues have been scoped out, if any, and reasons for this. However, in each chapter, the ES identifies where further consents and licences are required under separate legislation including an Appropriate Assessment

1.4 Consideration of Alternatives – B

The Findhorn/Pilmuir FAS proposal has been subject to a process that has enabled consideration of a range of options and approaches, including how options were identified and the formal (funnel-shaped) evaluation process undertaken (Chapter 2). In addition there were literature reviews and investigations to establish the extent and nature of flooding from the River Findhorn and surface and groundwater at Pilmuir and a workshop to generate initial ideas for flood alleviation which were then refined and grouped.

Seven alternatives were considered including afforestation; natural washlands; flood storage; flood embankments; channel diversion; temporary and/or demountable defences; and improved flood warning. These options were subject to a feasibility study and consultation with stakeholders leading to a report identifying a preferred strategy based on flood embankments and improved flood warnings. IEMA note that whilst the report is not included in the ES, Chapter 2 summarises the rationale.

For Pilmuir surface and groundwater three approaches identified were with flooding assessed using an outline option appraisal and economic evaluation. The Review notes that the criteria used are not presented in the ES, only the conclusions from the initial evaluation is given with justifications for rejecting options clearly stated. Following these initial studies, the two flood alleviation schemes were combined to provide a single scheme with six options identified and subjected to formal evaluation through a multi–criterion analysis including sustainability and environmental impact considerations, to identify the preferred solution. The ES summarises the criteria and how they have been used, with justifications for accepting or rejecting options clearly stated.

IEMA note that whilst the ES (Chapter 2) refers to sustainability guidance developed for use on this and other MFA schemes based on sustainability indicators (which received a positive commendation by DEFRA), the indicators and rationale of how this assessment process has been applied is not outlined, nor have the outcomes of the individual sustainability assessment been stated. However, the Review notes that Chapter 2 also identifies where scheme design options have been chosen to help improve the environmental performance of the scheme and mitigate negative effects where possible.

2 Issue Specific Criteria

2.1 General Comments

2.1.1 Baseline Conditions – A

In addition to a summary of existing land-use (Chapter 6), each topic chapter provides specific detail of the relevant baseline conditions and the 'do nothing' scenario, together with an explanation of the assessment methodology used before impacts are described. According to IEMA, this helps introduce the reader to current conditions likely to be affected by the development, and provide a basis for subsequent assessment.

Details of data collection and survey methods are provided, with further details supplied within appendices and the baseline conditions are evaluated in terms of their sensitivity or importance, which is clearly defined within the assessment methodology. Any uncertainty over baseline conditions is usually stated, for example, where "…the potential exists for further archaeological sites to lie as yet undiscovered...", a precautionary principle is identified through mitigation i.e. archaeological watching brief (Chapter 8).

2.1.2 Prediction of Impact Magnitude – B

To aid consistency throughout the ES, IEMA note that Table 5.3 provides an example of the approach used to predict impacts. However, with each topic chapter outlining the assessment methodology to be used and establishes a detailed baseline, including the 'do-nothing' scenario, the impact assessment methodology used to predict effects/impacts is different dependent upon the issue under consideration. In determining impact magnitude, both temporal and spatial considerations are taken into account with consideration of impacts separated into construction and operation phase impacts. Where uncertainty over likelihood or scale of impact magnitude exists, worst-case scenario or clearly explained justifications are employed.

According/

According to the Review, cumulative effects are briefly discussed relative to construction and operational effects on the local community and although the sensitivity and magnitude of cumulative effects are stated and recorded (Table 6.12), but it is unclear how the construction cumulative magnitude has been determined. IEMA consider that it would have been appropriate for the ES to state whether this was based on professional judgement, or to have provided an example of the criteria/method used to arrive at this determination. Elsewhere in the ES the Review indicates that cumulative effects are not addressed in relation to effects on other receptors e.g. landscape, ecology, hydrology and recreation although cumulative effects are considered for Appropriate Assessment.

2.1.3 Impact Significance –B

Chapter 5 identifies a clear method of determining significance with the assessment of impact significance identified as a factor of the potential magnitude of change and the importance or sensitivity of the receptor. According to IEMA, this approach is consistently used throughout the impact assessment chapters.

The ES identifies the importance of identification of sensitivity or value of the resource in the determination of significance. IEMA consider that clear criteria are used to determine sensitivity with consideration based upon comparison with regulations or standards e.g. British Standards; compliance with policy, plans and guidance documents e.g. local plan; reference to criteria (protected species, designations); consultation with stakeholders; and experience and professional judgement by specialists. In addition, a detailed description of the methodology and criteria used to determine sensitivity is included in each chapter.

In each chapter, the attribution of significance – both positive and negative impacts - is stated both within the text, with a clear justification provided, before mitigation is identified, along with any residual impact significance (post mitigation). The summary Tables at the end of each chapter allow the reader to clearly see the significance levels attributed.

However, Table 5.7 defines Major Adverse Impact as a "serious concern and therefore should be deemed unacceptable". According to IEMA it is not the job of the ES to decide what is acceptable, but simply to assess the impacts and their level of significance. If such statements/criteria are set within the assessment framework, IEMA consider that there is a risk that objectivity concerns might exist over individual assessments. Accordingly, it would be more appropriate for the ES to concentrate on defining and explaining which impacts are 'significant'.

2.1.4 Mitigation – B

IEMA notes the pro-active approach taken to mitigation, with an early focus on the design of the preferred scheme to avoid negative impacts, and create opportunities for enhancement. This iterative process has used stakeholder involvement and consultation to address issues (details included in ES), with much of the mitigation focussing on construction impacts rather than 'end of pipe' solutions during operation. For example, a landscaping scheme developed to restore habitats and landscape (Appendix B).

Where significant adverse effects are identified, the Review notes that the ES highlights mitigation measures to address these effects, providing details of location and timescale. Where follow up is required as part of the mitigation (for example method statements or monitoring), this is usually stated.

2.1.5 Follow-Up – C

To ensure that works are in line with those specified and to the required standards various management plans and method statements have been/are to be developed for example, construction management plans and method statements. Maintenance activities are to be identified prior to the construction and documented in an Operation and Maintenance Manual. The ES includes a summary of the maintenance activities anticipated (including frequency), the planned inspection regime and tasks to ensure the scheme is operating correctly. IEMA consider that it would have been beneficial to identify the personnel responsible for conducting these inspections as this would aid commitment to EIA follow-up. Each topic chapter (where appropriate) includes a section indicating the nature and location of monitoring measures required, for example, for Aquatic Ecology, Surface Water Hydrology.

Throughout the ES, references are made to guidelines or wider permissions (consents and licences), often as evidence of mitigation and follow up. In some cases these specify methods of working and monitoring requirements that are concurrent with, or in addition to, those determined under the EIA and planning process (e.g. surface water hydrology and water quality). Although these references are welcome, IEMA indicate that they do not always explain how mitigation will occur or the details of follow up measures. The Review considers that some commitments outlined are not strongly/clearly worded and in such instances there may be doubt over the level and extent of commitment (see below).

2.2 Issue-Specific Comments

2.2.1 Land use and local community Chapter 6 highlights potential negative effects, particularly during construction upon various designations of land-use including agricultural and industrial. According to the Review, the approach of addressing land-use and local community issues alongside each other appears suitable given the development's context, although IEMA consider this is slightly unusual relative to wider EIA practice. The Review also notes from Chapter 6 that whilst mitigation measures are outlined, these follow up measures are not explained in any detail, except a brief reference to monitoring and the responsibility for Moray Council which is described as "essential to maintain the long term performance of the scheme". Given the described importance of monitoring and follow up, IEMA would have expected a fuller explanation of the responsibilities and roles of respective parties.

2.2.2 Recreation and amenity The ES identifies aspects will significantly impact on specific routes, in particular the Sustrans National Cycle Network (route 1), described as a major adverse impact during construction with a number of mitigation measures proposed to reduce the effects to a moderate adverse residual impact (and also that SUSTRANS will be consulted at appropriate stages). The Review considers it surprising that "no monitoring is proposed" and that the relevant responsible authority is not described in relation to any possible maintenance or follow-up issues.

2.2.3 Historic environment In the ES the baseline surveys identify a likelihood of uncovering of unknown archaeological sites, hence a precautionary principal is applied and a potential moderate adverse impact predicted during construction. IEMA welcome this approach.

A major adverse impact (construction) on the Gresham Farm Scheduled Ancient Monument (SAM) is identified and with mitigation, this impact is reduced to a moderate adverse residual impact. Whilst this is welcomed, the Review considers that it is not clear how the identified measures (para. 8.58) can reduce the impact to this degree. IEMA consider it may be clearer if, for example, the percentage of the SAM affected was less after mitigation (e.g. 25% impact reduced to 15% with mitigation). Construction impacts on the setting of the SAM are considered in the ES, which states that "as all the archaeological features of the SAM which are afforded protection are below surface level, under the agricultural fields, the impacts on the setting is negligible". Given that Historic Scotland and ACAS both requested that the impact on setting be addressed. IEMA consider it is somewhat surprising to see such a simplistic/straightforward assessment.

2.2.4 Landscape and visual impact The Review indicates that it would have been helpful for the ES to have provided for comparison a photo of the current view of the railway bridge, and a photomontage of the expected view after construction of the scheme, to aid objectivity and help support the attribution of a positive impact.

2.2.5 Soils, geology and hydrogeology No comments to make.

2.2.6 Surface water hydrology and water quality In the ES, Plate 11.1 highlights the interactions between hydrology, water quality and aquatic life. IEMA welcome this as it helps illustrate the potential interactions and indirect effects of works, and aids understanding of the need to cross reference between chapters. However, they consider that it would have been appropriate to identify the potential for cumulative effects of the scheme with other projects in the area.

In the ES, Chapter 11 identifies the formal and informal consultation that has taken place, including that with the local community. Whereas the ES states that all consultation comments received are contained in Appendix C, IEMA note that this appendix only contains responses received from key stakeholders in response to the scoping and consultation document. There are no details of responses from the public or other consultation events. Similarly, Table 11.4 sets out criteria for determining the sensitivity/value of receptors but the Review notes that the ES does not explain how the levels are set and if they follow any accepted guidance. Without any such wider explanation or reference, IEMA consider it is surprising to see the national designations e.g. SSSI as only falling in a band of medium sensitivity.

According to the ES, tender procedures will include requirements to develop construction method statements in consultation with SEPA and SNH and to follow, a series of SEPA guidelines. In their Review, IEMA advise that whilst commitments to guidelines are welcome, they do not by themselves explain the mitigation methods that will be used. Similarly, in relation to a proposed pollution management plan, the use of some descriptive/vague terms rather than clear commitments is a possible concern. For example, "refuelling will take place in a designated area, **preferably** on impermeable surfaces…"; "measures to protect against spillages will be used **as appropriate** and **may** include the use of bunds…. etc" and "use pre-cast concrete sections **where possible**". Although IEMA appreciate that full details may not be possible at this stage, they consider that stronger/clearer commitments would be welcome, given the context of this development and its potential 'downstream' impacts on designated sites i.e. the Moray and Nairn Coast SPA / RAMSAR.

2.2.7 Geomorphology The ES separates the river into distinct reaches i.e. Randolph's Leap to airfield and airfield to caravan site. Th Review notes that these locations/features are not readily identifiable in any of the diagram/figures in the ES or Appendices and it would have been helpful for the diagrams to identify all locations referred to in the ES.

2.2.8 Aquatic ecology Paragraph 13.8 states that relevant policies and legislation for the topic are listed in Table 13.1. This Table focuses on international and national policy and legislation only, although it is appreciated that any lower level plans / policies must accord with those identified. However it would have been appropriate to consider local policies and include them within the Table. Section 13.150 references a mitigation measure regarding works near the watercourse at dawn and dusk (during the salmon migration and breeding season). The reference however is rather unclear with regard to the diurnal length of time 'outwith' works. Given that one of the scoping responses specifically requested "2 hours after dawn and before dusk" it would have been helpful if this commitment was more clearly explained.

2.2.9 Terrestrial ecology IEMA note that whist Chapter 14 refers to various international European, national and local designated sites surrounding the scheme, yet Figure 14.1 in showing the immediate scheme location, does not allow identification of some designations highlighted in the key and elsewhere within the ES (RAMSAR site, SSSI or SAC). In addition the Review notes that Figure 1 (Appendix M – Appropriate Assessment) highlights the scheme location in a different place to that discussed/identified in the ES, hence clarification of site location on diagrams is requested.

2.2.10 Traffic No comments to make.

2.2.11 Noise and vibration The Review considers that Chapter 16 identifies that there is uncertainty at this stage surrounding the route of construction staff traffic and as such, qualitative assessments of the impact have been made, with suggestions for general mitigation provided.

2.2.12 Air quality According to IEMA the consideration of dust impacts is a little unclear and although having the potential to cause significant nuisance at nearby receptors such as residential properties and ecologically sensitive areas, only human receptors are considered and it is not clear if any ecological receptors are affected.

3 Presentation of Results

3.1 Presentation - B

The Review considers the presentation of the information is of good quality and figures and diagrams are in colour where appropriate, and clear and provided with a key. Photographs help the understanding of the effects of the proposed development. Whilst the layout is clear and logical, including a general contents page and individual more detailed contents pages at the start of each chapter, IEMA consider the main ES would have benefited however from the provision of a contents page/list of appendices (supplied in CD Rom format only), and supporting documents/reports.

A/

A glossary and explanation of abbreviations is provided, with a full reference list provided after the conclusion, although IEMA notes that some abbreviations are not listed e.g. CAT. Producing the ES in both hard format and on CD-ROM is welcomed by IEAM as it provides readers of the ES with options. With each impact assessment chapter following the same general format, including identification of proposed mitigation and summary findings and attributions of impact significance (stated in bold), the Review considers that this enables the reader to clearly navigate and understand the assessment process and determinations.

3.2 Objectivity - C

Generally, IEMA consider the ES to be a balanced document, which provides both the potential positive and negative environmental effects of the proposal with reasoned and justifiable arguments. They also consider that the close involvement of the EIA team, Royal Haskoning, also part of Moray Flood Alleviation, in the development of the scheme does not appear to have resulted in a biased or unbalanced document. Rather, this relationship has facilitated early involvement and close scoping with statutory consultees.

Although the approach to significance is thorough, with explanative criteria outlined, IEMA highlight an objectivity concern regarding the explanation of 'Major Adverse Impacts' and that work on sustainability guidance and indicators has only been briefly explained. Objectivity of the ES could be improved by inclusion of public consultee comments, in particular it would have been appropriate to detail consultation and responses from those individual businesses affected by the scheme proposals.

3.3 Non-Technical Summary – B

The Review considers the Non-Technical Summary (NTS) to be a comprehensive summary of the main ES and indicates the main environmental impacts of the proposal. The layout of the NTS is logical and clear and each impact topic is addressed in the same manner as the main ES, which assists non-specialists to follow the information. As a separate document that facilitates a wider readership the NTS presentation is of good quality with A3 fold out colour maps/diagrams, which clearly illustrate the location of and need for the proposals. IEMA point out that the NTS would have benefited, however, from inclusion of a few photographs/photomontages to illustrate the viewpoints used and elements of the final design of the scheme.

The NTS provides summary tables of appropriate impact assessment in as concise a manner as possible, which is welcomed for this linear and complex development. However, the Review notes that the table include references only found within the main ES. For example, the Landscape and Visual Assessment summary table (and chapter) contains references to viewpoints and the land-use and community table contains receptor references not identified, represented or contained elsewhere within the NTS. IEMA consider the language in the NTS is often quite challenging and contains terms of a technical nature or acronyms that are not previously explained e.g. SAM and 'riparian woodland'.

4 Recommendations

IEMA consider that follow up measures and commitments should be as clear as possible within the ES. They appreciate that full details of every measure cannot be outlined at this stage but it would be appropriate for measures, principles and commitments to be as clear as possible, especially in the context of this development and its potential 'downstream' impacts on designated sites e.g. Moray & Nairn Coast SPA / Ramsar site.

c) FINDHORN/PILMUIR FAS: FLOOD RISK ASSESSMENT (April 2007)

The FRA (27 pages & Appendix A (12 figures)) considers the impact of flood risk in areas for which the scheme is designed to alleviate flooding i.e. within and around Forres (upstream and downstream of the defended area). It sets out information so that the council, SEPA and other interested parties can be satisfied that changes in flood risk as a result of the Findhorn/Pilmuir FAS are acceptable within existing policy. The text is supported by tables, flood graphs and figures (Appendix A) to illustrate the impacts of the Findhorn/Pilmuir FAS.

Flooding Context and Scheme Description

Existing Fluvial and Pluvial Flooding

The FRA refers to the separate catchment areas for the River Findhorn and Pilmuir noting the current standard of defence and flood history (for Findhorn) and estimates the damages and number of properties, residential and non-residential, at risk of flooding from events, fluvial for River Findhorn and pluvial for Pilmuir catchment areas at various return flood events including 1 in 200 years. In addition, from extensive hydrological investigation both catchments, separate models have been developed.

Outlying properties at risk of flooding from the River Findhorn and existing standards of defence are included to demonstrate that the scheme, once implemented, will not make them worse off i.e. at Red Craig, Broom of Moy, Mains of Moy and isolated properties/generally on right hand bank downstream of railway bridge. Flood maps, showing flood extent before and after implementation of the scheme are included and additional significant sources of fluvial flooding are identified i.e.

- Burn of Mosset, where separate FAS is being constructed and Findhorn/Pilmuir FAS takes account of design and operation principles of the scheme and the proposals will not exacerbate flooding caused by a design exceedance event in the Burn.
- Muckle Barn, where the model for the Findhorn/Pilmuir FAS does not represent the flow regime/hydrology, Mains of Moy has higher flood risk from the Muckle Barn, an assessment outwith the scope of this scheme.

In terms of additional pluvial flooding from isolated incidents in or out of Forres, the FRA indicates the proposals do not exacerbate instance of pluvial flooding by blocked surface water flow paths. Similarly, from investigations of the groundwater regime, the FRA indicates the proposals will not adversely affect the existing regime, thus not increase the likelihood of increased risk to properties or land. However, there will be a continued residual risk of groundwater flooding (at Pilmuir) once the scheme is complete. Tidal flooding does not affect Forres but whilst tidal influence is important on assessing risk downstream of Forres and flood defences at Findhorn have been include in modelling, no assessment of impact of extreme tidal/surge has been undertaken.

Flood Risk Assessment

The FRA indicates that all areas benefit or are no worse off from the Findhorn/Pilmuir FAS with 1 in 200 year studies of defence, with an allowance for climate change i.e.

- Forres - fluvial flooding within Forres will be alleviated, floodwater will no longer flow through/flood Forres (except when design standard of defence exceeded) due to construction of West Forres Embankment and North Forres Embankment.
- Pilmuir – the drainage channel will not stop all flooding as the urban element of the Pilmuir rainfall catchment will not be picked up by the channel. When comparing the current/do nothing situation, the proposal will protect an increased number of residential (117) and non-residential (8) premises from fluvial flooding.

- Red Craig – the flood defence works do not affect the flood risk for upstream properties including the number of properties at risk. From modelling, river channel water levels are unchanged following implementation of the works.
- Broom of Moy – whilst works to protect Forres increase the volume of water under the railway bridge and the gravel extraction river channel works increase channel capacity resulting in lower river channel levels at Broom of Moy. Compared with the current situation, less (at 1 in 100 year event or loss) or the same number (at 1 in 200 year event) of properties would be affected after implementation of the scheme.
- Mains of Moy – from modelling, vegetation removal and gravel extraction will increase the Findhorn and Back Run channel conveyance capacities. For low return period, water levels in the Findhorn area Mains of Moy are lower but for high periods (1 in 100 and 1 in 200 year events) channels levels would be 0.1 and 0.15 m higher than current. Up to 1 in 100 year events, the properties are better off but at 1 in 200 year event, one additional, currently unoccupied property floods compare with the current situation. However Mains of Moy has higher flood risk from Muckle Barn, the assessment and mitigation of which is outwith the scope of the Findhorn/Pilmuir FAS. If embankments were proposed as part of Findhorn/Pilmuir FAS, this would exacerbate flooding at Mains of Moy, as water entering from Findhorn Back Run would become trapped.
- Isolated properties – the proposed works do not increase the flood risk of properties affected at different return periods and at 1 in 200 year event, the number of properties affected, and therefore at flood risk, is reduced as a result of vegetation removal/gravel extraction increasing channel conveyance capacities.

Fiver Findhorn Water Levels – from graphs/tables, river channels are generally unchanged or lower from current levels up to and including 1 in 50 year event. Downstream of Forres railway bridge, levels increase for a 1 in 100 to 1 in 200 year event but the rise is relatively small, generally less than 0.15m. The vegetation clearance/gravel extraction assists in minimising the rise in river levels.

Flood Paths, Velocity and In-Channel flows

Forres Flood Mechanism – currently existing defences are overlapped downstream of Red Craig and at the gauging station. Upstream of the railway bridge, water overtops the right bank flowing along roads within the town. With the Findhorn/Pilmuir FAS, the West Forres Embankment will redirect flood water under the railway bridge with gravel extraction/vegetation removal increasing conveyance capacity redirecting down and up stream water levels.

Downstream Flood Mechanism – Water overtops and breaches the existing embankment upstream of the Bailey Bridge and downstream of the railway bridge (left bank), threatening Broom of Moy. The floodwater flows north over the flood plain towards Mains of Moy. The North Forres Embankment will direct flows away from Waterford Road. Vegetation removal/gravel extraction will minimise river levels. Excavating the entrance to the Back Run will allow water upstream to fall, restoring the river channel to its former regime. Flooding of isolated downstream properties will continue to occur.

In terms of velocity of flows, any increase after implementation of the scheme, at various locations, is minimal. In terms of the onset of flooding (flood frequency), within Forres, flooding is greatly reduced, from 1 in 25 to 1 in 200. With the latter, the FAS will protect 965 properties currently at risk (from Findhorn).

Secondary Flooding (ground water, surface water, sewer, other)
The proposed set-bank embankments and river channel works address the fluvial flooding risk to Forres. Whilst flooding from Muckle Burn is not included and flooding from Burn of Mosset is addressed by a separate FAS, flooding from other sources are not alleviated by the FAS. Whilst an investigation of the effect on Scottish Water assets was investigated, any improvements (by Scottish Water) is outwith the scope of this FAS. However, flap values are proposed to prevent floodwater entering Pilmuir drainage system.

In drainage terms, the FAS does not increase flood risk to property in Forres. Downstream, one occupied property and four isolated properties are affected. The risk to life and homes and the railway line are greatly reduced by the FAS.

In terms of residual flood risk (post scheme), events in excess of the design event will result in flooding but to a less extent than without the FAS. In terms of breaching and failure, the defence embankments are designed to withstand a 1 in 200 year event including an allowance for freeboard and climate change. Regular inspection and maintenance should be undertaken. Should defences in the downstream not be maintained, the risk of failure and breaking could increase, an increase in risk to properties in the downstream area. It is anticipated that the existing flood warning systems currently in place will continue to be maintained and operated as at present or modified as necessary in consultation with SEPA.

d) INFORMATION TO INFORM APPROPRIATE ASSESSMENT FOR FINDHORN/PILMUIR FAS (April 2008).

This report is prepared by the council's agent, presenting information expected to provide the basis for the final Appropriate Assessment determination, rather than as Appropriate Assessment (AA) itself. Although four Natura 2000 sites are within varying proximity of the River Findhorn and the FAS footprint, only one will potentially be impaired by the construction and/or operation of the scheme i.e. the Moray & Nairn Coast SPA (Special Protection Area) and Ramsar site. The report then considers the potential impact of this site on this designation.

The report describes the legislative background to the requirements for AA and notes that plans or projects not directly connected with or necessary for the management of the SAP are considered to have a "likely significant effect" and therefore subject to AA. In addition, the report considers the ecological context of Findhorn Bay and the interest features and conservation objectives of the SPA and Ramsar site, which is also "underpinned" by a SSSI designation, although bird species features are not included in the SSSI designation.

Various potential impacts associated with the construction and/or operation of the Findhorn/Pilmuir FAS on the SPA and Ramsar Site are considered i.e. sedimentation and invasive species are considered along with the potential effects and impacts of the scheme in combination with other development in the catchment. The report notes that the restriction on the river course, by the existing railway bridge and artificial bank restrictions affect the quality and character of sediments carried to the estuary. These dynamics are outwith the scope of the project but the report recommends that over time the river be given more space to move and return to a more natural landscape.

According to the report mitigation is in place to address potential impacts of disruption to sedimentation dynamics and spread of invasive species i.e. gravel extraction and an invasive species management plan to minimise these impacts. The report concludes that there will be no significant impact of the scheme within Findhorn Bay. Other applications and the existing impact of bank protection revetments to the railway bridge could possibly act "in combination" with the Findhorn/Pilmuir FAS.

The original report (April 2008) was up-dated in October 2008. The conclusions are unchanged.

e) SNH APPRAISAL OF THE FINDHORN/PILMUIR FAS ON MORAY & NAIRN COAST SPA AND RAMSAR SITE (MAY 2009)

This appraisal (as attached) was prepared by SNH and submitted as part of SNH's initial consultation response on the planning application for the Findhorn/Pilmuir FAS. Following submission of amended plans, SNH has advised that the amendments do not affect their appraisal of the impact of the Findhorn/Pilmuir FAS on the Moray & Nairn Coast SPA and RAMSAR site.

Under an EU Directive, and current Habitat Regulations, Moray Council, as a competent authority, is required to undertake an AA of the implications of the Findhorn/Pilmuir FAS upon the Moray & Nairn Coast SPA and Ramsar site. However, to assist the Council (and other authorities required to undertake a similar assessment) the appraisal by SNH examines a range of issues expected to be taken into account in preparing an AA. The required AA, to be undertaken by Moray Council, may be based on the appraisal provided by SNH, although the Council may wish to carry out further appraisal before completing the AA.

The appraisal identifies the European and conservation objectives for qualifying interests, noting that the Findhorn/Pilmuir FAS is not directly connected with, or necessary to conservation management of the site. No likely significant effects are identified on disturbance to SPA and Ramsar qualifying species (fauna interests) or on forest floodplain (at Spey Bay not Findhorn Bay/Culbin) (Ramsar habitats). However, the appraisal identifies likely significant effects arising from removal of shingle and gravel on intertidal habitats of Findhorn Bay (Ramsar) and avian species viability (SPA and Ramsar). However, following assessment of the impact of change in sediment regime of the River Findhorn and upon inter-tidal habitats of Findhorn Bay, SNH consider there will be no adverse long-term impact on habitats and species interests depending on these habitats. Therefore, based on the appraisal, SNH conclude that there will be no adverse impact on the integrity of the Moray &Nairn Coast SPA and Ramsar site as a whole as a result of the proposed Findhorn/Pilmuir FAS.