

Angus Council

Angus Shoreline Management Plan SMP2

Appendix K: Metadata and Bibliography



Dighty Water, Monifieth

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Approved by
1	0	Draft for consultation	March 2015	J Young
1	1	Consultation Draft	November 2015	S Box
2	1	Final	October 2016	S Box



Halcrow Group Limited (A CH2M HILL Company)

Burderop Park, Swindon, Wiltshire SN4 0QD

Tel +44 (0)1793 812479 Fax +44 (0)1793 812089

www.ch2m.com

Halcrow Group Limited has prepared this report in accordance with the instructions of their client, Angus Council, for their sole and specific use. Any other persons who use any information contained herein do so at their own risk.

© Halcrow Group Limited 2016

The Supporting Appendices

These appendices and the accompanying documents provide all of the information required to support the Shoreline Management Plan. This is to ensure that there is clarity in the decision-making process and that the rationale behind the policies being promoted is both transparent and auditable. The appendices are:

A: SMP2 Development	This reports the history of development of the SMP2, describing more fully the plan and policy decision-making process.
B: Stakeholder Engagement	All communications from the stakeholder process are provided here, together with information arising from the consultation process.
C: Baseline Process Understanding	Includes baseline process report, defence assessment, NAI and WPM assessments and summarises data used in assessments.
D: Strategic Environmental Assessment (SEA) Environmental Report	This report identifies and evaluates the baseline environmental features (human, natural, historical and landscape) and presents an overview of the environmental assessment process, showing how the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive) are met.
E: Issues & Objectives Evaluation	Provides information on the issues and objectives identified as part of the Plan development, including appraisal of their importance.
F: Policy Development and Appraisal	Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing. Also presents the appraisal of impacts upon shoreline evolution and the appraisal of objective achievement.
G: Policy Scenario Testing	Presents the policy assessment and appraisal of objective achievement towards definition of the Preferred Plan (as presented in the Shoreline Management Plan document).
H: Economic Appraisal and Sensitivity Testing	Presents the economic analysis undertaken in support of the Preferred Plan.
I: Habitat Regulations Assessment	Presents an assessment of the effect the plan will have on European sites.
J: Water Framework Directive Assessment	Presents the Water Framework Directive assessment of the potential hydromorphological changes and consequent ecological impact of the preferred SMP2 policies.
K: Metadatabase and Bibliographic database	All supporting information used to develop the SMP2 is referenced for future examination and retrieval.

Within each appendix cross-referencing highlights the documents where related appraisals are presented. The broad relationships between the appendices are illustrated below.

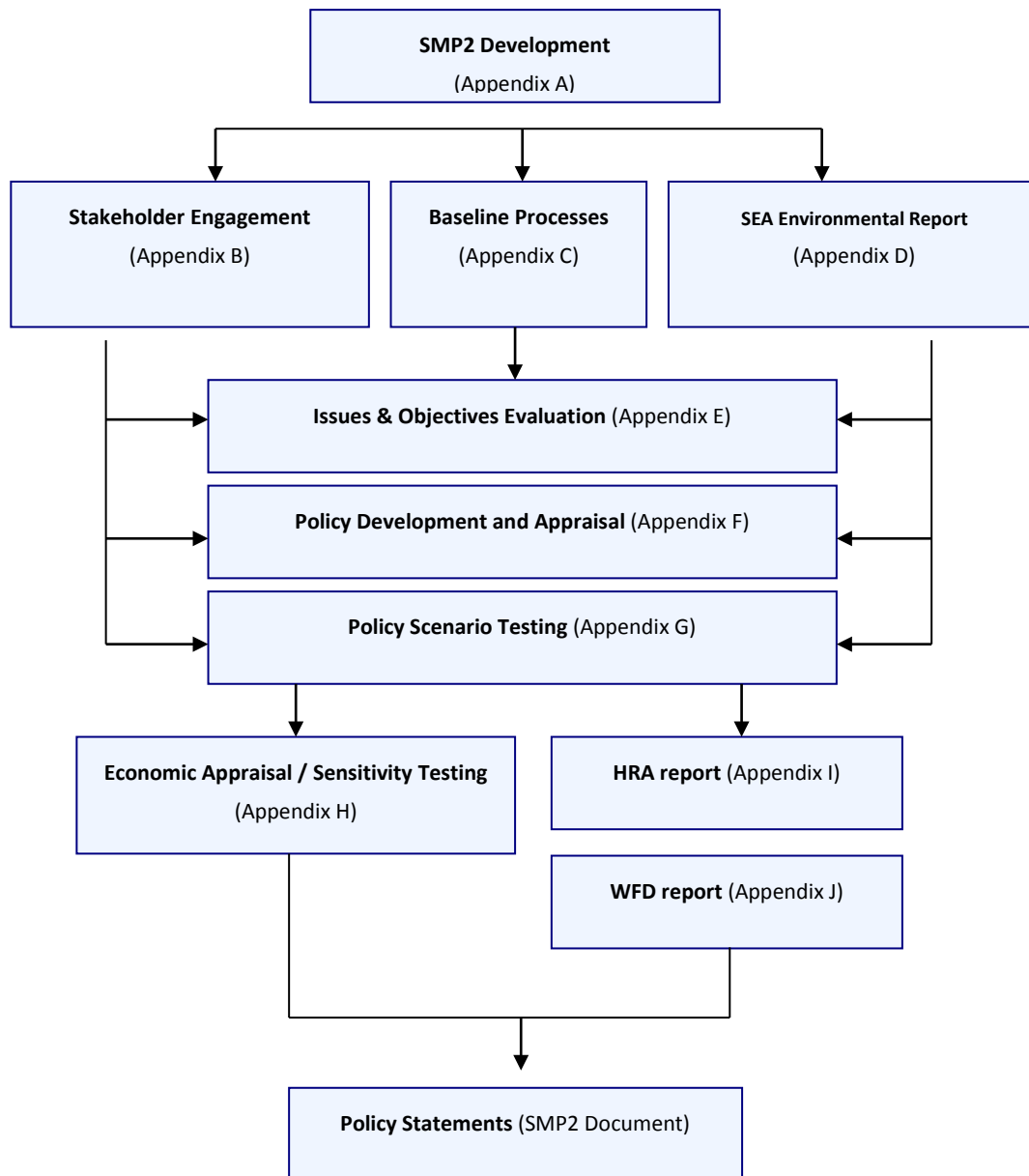


Table of Contents

K.1	BIBLIOGRAPHIC DATABASE	1
K.1.1	Main SMP2 Document.....	1
K.1.2	Appendix A – SMP2 Development.....	1
K.1.3	Appendix C - Baseline Process Understanding	2
K.1.4	Appendix D – SEA Environmental Report	5
K.1.5	Appendix E – Issues and Objectives.....	6
K.1.6	Appendix G – Policy Appraisal	6
K.1.7	Appendix H – Economic Appraisal	6
K.1.8	Appendix I – Habitat Regulations Assessment	6
K.1.9	Appendix J – Water Framework Directive assessment.....	7
K.2	MAPPED DATA	8
K.2.1	Main SMP2 Document – Policy Maps.....	8
K.2.2	Appendix C – ‘No Active Intervention’ Flood and Erosion Risk Maps	8
K.2.3	Appendix D – Theme Maps.....	9
K.2.4	Appendix H – Economic Appraisal	10

K.1 Bibliographic Database

This Appendix includes a list of the key reference materials used in the development of the Shoreline Management Plan.

K.1.1 Main SMP2 Document

References stated in the Main SMP2 Document are as follows:

- Angus Council (2004) **Angus Shoreline Management Plan**. Angus Council, Forfar.
- Angus Council (2011) **Angus State of the Environment Report**. Angus, Forfar.
- Defra (2006) **Shoreline Management Plan Guidance**. Department for Environment, Food and Rural Affairs, London.
- Dundee City Council (2011) **Dundee Coastal Study**. Dundee City Council, Dundee.
- Milne, F.D. and Dong, P. (2010) **The Morphodynamics of Montrose Bay and Implications for Coastal Management**. *Montrose Beach Environmental Development Plan Phase 1 Report*. Angus Council, Forfar.
- Milne, F.D. and Dong, P. (2011) **Management of Erosion at Montrose**. *Montrose Beach Environmental Development Plan Phase 1 Report*. Angus Council, Forfar.
- Scottish Government (2009) **The River Basin Management Plan for the Scotland River Basin District 2009-2015**. Scottish Government, Edinburgh.

K.1.2 Appendix A – SMP2 Development

References stated in Appendix A are as follows:

- Angus Council (2004) **Angus Shoreline Management Plan**. Angus Council, Forfar.
- Angus Council (2011) **Angus State of the Environment Report**. Angus Council, Forfar.
- Ball, T., Werritty, A., Duck, R.W., Edwards, A., Booth, L. and Black, A.R. (2008) **Coastal Flooding in Scotland: A Scoping Study. Project FRM10**. Scottish and Northern Ireland Forum for Environmental Research, Edinburgh.
- Defra (2006) **Shoreline Management Plan Guidance**. Department for Environment, Food and Rural Affairs, London.
- Milne, F.D. and Dong, P. (2010) **The Morphodynamics of Montrose Bay and Implications for Coastal Management**. *Montrose Beach Environmental Development Plan Phase 1 Report*. Angus Council, Forfar.
- Milne, F.D. and Dong, P. (2011) **Management of Erosion at Montrose**. *Montrose Beach Environmental Development Plan Phase 1 Report*. Angus Council, Forfar.
- Halcrow (2007) **Montrose Bay Mathematical Modelling Studies**. Halcrow Group Limited, Swindon.
- HR Wallingford (1997). **Coastal Cells in Scotland**. Scottish Natural Heritage Research, Survey and Monitoring. Series No. 56.
- Tay Estuary Forum (2009) **Tay Estuary and Adjacent Coastal Management Plan 2009-2014**

K.1.3 Appendix C - Baseline Process Understanding

The Baseline Process Understanding has developed from a number of key references, i.e. the previous SMP and current studies. Other reports have also been reviewed, some of which were cited in the aforementioned studies. References stated in Appendix C are as follows:

- Al-Mansi, A. M. A. (1990) **Wave refraction patterns and sediment transport in Monifieth Bay, Tay Estuary, Scotland**. Marine Geology. Issue 91 (4). Pg 299-312.
- Angus Council (2004) **Angus Shoreline Management Plan**. Angus Council, Forfar.
- Angus Council (2007) **Montrose Beach Environment Development Plan – First Stage Report**. Angus Council. Forfar.
- Ball, T., Werritty, A., Duck, R.W., Edwards, A., Booth, L. and Black, A.R. (2008) **Coastal Flooding in Scotland: A Scoping Study**. Project FRM10. Scottish and Northern Ireland Forum for Environmental Research, Edinburgh.
- Ballantyne, C.K. & Harris, C. (1994) **The periglaciation of Great Britain**. Cambridge University Press. Cambridge.
- Baxter, J.M., Boyd, I.L., Cox, M., Donald, A.E., Malcolm, S.J., Miles, H., Miller, B. and Moffat, C.F. (Eds). (2011) **Scotland's Marine Atlas: Information for the national marine plan**. Marine Scotland, Edinburgh.
- Beedie, L. (2010) **Quantifying the Erosion of Montrose Beach using TLS and Photogrammetry**. Undergraduate Dissertation. University of Glasgow.
- Bruun P (1988) **The Bruun Rule of erosion: a discussion on large-scale two and three-dimensional usage**. Journal of Coastal Research 4, 626-648.
- Caledonian Geotech. (1987). **Coastal Erosion Study, Phase II**. Tayside Regional Council. Dundee
- Cameron, I.B. and Stephenson, D. (1985). **British Regional Geology: The Midland Valley of Scotland**, 3rd ed. British Geological Survey & NERC. London: H.M.S.O.
- Charlton, J. A. (1980) **The tidal circulation and flushing capacity of the outer Tay Estuary**. Proceedings of the Royal Society of Edinburgh. Issue 78B. Pg 33-46.
- Cooper N J and Jay H (2002). **Predictions of large-scale coastal tendency: development and application of a qualitative behaviour-based methodology**. Journal of Coastal Research Special Issue 36, 173-181.
- Cunningham, D. (1895) **The estuary of the Tay**. Proceedings of the Institution of Civil Engineers. Issue 120. Pg 3-17.
- Dawson, A.G., Long, D. and Smith, D.E. 1988. **The Storegga Slides: evidence from eastern Scotland for a possible tsunami**. Marine Geology. 82. 271-276.
- Dawson, A.G., Smith, D.E. and Dawson, S. 2001. **Potential impacts of climate change on sea levels around Scotland**. Scottish Natural Heritage, Research, Survey and Monitoring Report, No 178. SNH, Edinburgh.
- Defra (2006a) **Shoreline Management Plan Guidance**. Department for Environment, Food and Rural Affairs, London.
- Defra (2006b) **Flood and Coastal Defence Appraisal Guidance FCDPAG3 Economic Appraisal Supplementary Note to Operating Authorities – Climate Change Impacts**

- Dixon, M. J. and J. A. Tawn (1994) **Extreme sea-levels at the UK A-class sites: site-by-site analyses.** Proudman Oceanographic Laboratory, Internal Document, No 65, 229pp
- Dixon, M.J. and Tawn, J.A. (1997) **Trends in UK extreme sea levels: a spatial approach.** Geophysical Journal International, 111,607-616
- Environment Agency (2009) **Characterisation and prediction of large scale, long-term change of coastal geomorphological behaviours: Final Science Report.** SC060074/SR1.
- Environment Agency (2011) **Development and Dissemination of Information on Coastal and Estuary Extremes** (SC060064) Environment Agency.
- Environment Agency (2011b) **Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities.**
- Ferentinos, G. and McManus, J. (1981). **Nearshore processes and shoreline development in St Andrews Bay, Scotland, UK.** Special Publications International Association of Sedimentologists. 5. 161-174.
- Gatliff, R.W. (1994) **Geology of the central North Sea.** British Geological Survey, London.
- Gordon, J.E. (1993) Maryton. In: Gordon, J.E. and Sutherland, D.G. (Eds). **The Quaternary of Scotland.** Chapman & Hall, London. pp. 493-497.
- Gunn, D. J. & Yenigun, O. (1987) **A model for tidal motion and level in the Tay Estuary.** Proceedings of the Royal Society of Edinburgh. Issue 92B. Pg 257-273
- Halcrow (1998) **Montrose Bay Shoreline Management Study, Site B Golf Course Frontage Final Report.** Halcrow Group Limited, Swindon.
- Halcrow (2002) **Futurecoast.** CD produced as part of the Futurecoast project for Defra.
- Halcrow (2007) **Montrose Bay Mathematical Modelling Studies.** Halcrow Group Limited, Swindon.
- Hambly, J., Dawson, T. and Meneely, J. (2010). **The Eroding Limekilns at Boddin Point, Angus: preservation by digital record.** The SCAPE Trust, The University of St Andrews.
- Hansom, J.D. (2001) **Coastal sensitivity to environmental change: a view from the beach.** Catena, 42. 291-305.
- Hansom, J.D. (2003) Barry Links. In: May, V.J. and Hansom, J.D. (Eds) **Coastal Geomorphology of Great Britain.** Chapman & Hall, London.
- Hansom, J.D. and Rennie, A. (2003) **Assessment of rates and causes of change in Scotland's beaches and dunes.** Scottish Natural Heritage Report, Battleby, Scotland.
- Hansom, J.D., Rennie, A.F., Dunlop, A. and Drummond J. (2010) **A methodology to assess the causes and rates of change to Scotland's beaches and sand dunes Phase 1.** Scottish Natural Heritage Commissioned Report No. 364 (ROAME No. F05AC701). Scottish Natural Heritage, Edinburgh.
- Hanson S, Nicholls R J, Balson P, Brown I, French J R, and Spencer T (2007). **Capturing coastal morphological change within regional integrated assessment: an outcome-driven fuzzy logic approach.** Tyndall Working Paper 113.
- HR Wallingford. (1989) **Unpublished report on Barry Buddon Range.**
- HR Wallingford. (1993) **Coastal erosion, The Faulds, Montrose: Initial appraisal study.** Report EX 2828. HR Wallingford, Wallingford.

- HR Wallingford (1995) **Tidal Modelling of Montrose and Lunan Bays**. Report EX 3195. HR Wallingford, Wallingford.
- HR Wallingford (1997). **Coastal Cells in Scotland**. Scottish Natural Heritage Research, Survey and Monitoring. Series No. 56.
- HR Wallingford, ABP Mer and Pethick J (2006). **Review and formalisation of geomorphological concepts and approaches for estuaries**. RandD Technical Report FD2116/TR2.
- Hulme M, Jenkins G J, Lu X, Turnpenny J R, Mitchell T D, Jones R G, Lowe J, Murphy J M, Hassell D, Boorman P, McDonald R and Hill S (2002). **Climate Change Scenarios for the United Kingdom: The UKCIP02 Scientific Report**. Tyndall Centre for Climate Change Research, School of Environmental Sciences, University of East Anglia, Norwich, UK. 120pp. Accessed from: http://www.ukcip.org.uk/index.php?option=com_content&task=view&id=353&Itemid=408.
- IPCC (2007) **IPCC Fourth Assessment Report: Climate Change 2007**. http://ipcc.ch/publications_and_data/ar4/wg2/en/contents.html
- Lowe, J.A. and Gregory, J.M. (2005) **The effects of climate change on storm surges around the United Kingdom**. Philosophical Transactions of the Royal Society of London Series A. 363. 1313-1328.
- MacGregor, A.R. (1996) **Fife and Angus Geology**. The Pentland Press, Edinburgh.
- Mannion, M.B. (1999) **Montrose Bay – Coastal Management in Practice**. In: Fleming, C.A. (ed.), Coastal Management: Interesting Science, Engineering and Management. Thomas Telford, London. pp. 127-136.
- Milne, F.D. and Dong, P. (2010) **The Morphodynamics of Montrose Bay and Implications for Coastal Management**. Montrose Beach Environmental Development Plan Phase 1 Report. Angus Council, Forfar.
- Milne, F.D. and Dong, P. (2011) **Management of Erosion at Montrose**. Montrose Beach Environmental Development Plan Phase 1 Report. Angus Council, Forfar.
- Milne, F.D., Dong, P. and Davidson, M. (2012) **Natural Variability and Anthropogenic Effects on the Morphodynamics of a Beach–Dune System at Montrose Bay, Scotland**. Journal of Coastal Research. 28. 375-388.
- Mitchell, P. (1997) **Coastal Erosion on the Angus Coastline**. Scottish Natural Heritage, Angus Area.
- Montrose Basin Heritage Society. (2004) **Ebb and Flow: Aspects of the History of Montrose Basin**. The Pinkfoot Press, Forfar.
- Paterson, I. B. (1981) **The Quaternary geology of the Buddon Ness area of Tayside, Scotland. Report of the Institute of Geological Sciences**. No 81 Volume 1.
- Pethick J (2000) **Coastal sensitivity to sea level rise: calibrating the rate of coastal change**. Catena 42, 307-322.
- Pye K and Saye S E (2003). **Sand dune processes and management for flood and coastal defence**. Report to Department of Food, Environment and Rural Affairs. contract no. CSA5303.
- Pye K and Saye S E (2005). **The Geomorphological response of Welsh sand dunes to sea level rise over the next 100 years and the management implications for SAC and SSSI sites**. Prepared for Countryside Council for Wales. Contract no. FC-7302271.
- Ramsay, D.L. and Brampton, A.H. (2000) **Coastal Cells in Scotland: Cell 2 – Fife Ness to Cairnbulg Point**. Scottish Natural Heritage Research Survey and Monitoring, RSM No 144.

- Rice, R. J. (1962) **The morphology of the Angus coastal lowlands**. Scottish Geographical Magazine, 78, 5-14.
- Sarrikostis, E. & McManus, J. (1987) **Potential longshore transports on the coasts north and south of the Tay Estuary**. Proceedings of the Royal Society of Edinburgh. Issue 92B. pg 297-310.
- Shennan I and Horton B (2002). **Holocene land-and sea-level change in Great Britain**. Journal of Quaternary Science 17, 511-526.
- Smith, D.E. (1997) **Sea-level Change in Scotland During the Devensian and Holocene**. In: Gordon, J.E. (Ed). Reflections on the Ice Age in Scotland. Scottish Association of Geography Teachers & Scottish Natural Heritage. Glasgow. 136-151.
- Smith, D.E. & Cullingford, R.A. (1985) **Flandrian relative sea-level changes in the Montrose basin area**. Scottish Geographical Journal. 101. 91-105.
- Smith, D.E., Morrison, J., Jones, R.L., Cullingford, R.A., (1980) **Dating the main postglacial shoreline in the Montrose area, Scotland**. In: Cullingford, R.A., Davidson, D.A., Lewin, J. (Eds.), Timescales in Geomorphology. Wiley, Chichester, pp. 225–245.
- Steers, J.A. (1973) **The Coastline of Scotland**. Cambridge University Press. Cambridge.
- Sutherland, D.G. and Gordon, J.E. 1993. **The Quaternary in Scotland**. In: Gordon, J.E. and Sutherland, D.G. (Eds). The Quaternary of Scotland. Chapman & Hall, London. pp. 11-47.
- The Courier (Dundee), 2011. **Proposal to save Ferryden cairn threatened by erosion**. April 11, 2011.
- Trewin, N.H. (1987) Devonian of St. Cyrus and Milton Ness. In: Trewin, N.H., Kneller, B.C. and Gillen, C. (Eds). **Excursion guide to the geology of the Aberdeen Area**. Geol. Soc. Aberdeen. (1987). pp. 251–258
- Turner, A., Cox, J. & Luurtsema, S. (2008) **The Story of St Cyrus National Nature Reserve**. Scottish Natural Heritage. Inverness.
- UKCIP (2005) **Updates to regional net sea level change estimates for Great Britain**. Available at <http://www.ukcip.org.uk/resources/publications/documents/124.pdf>
- UKCIP (2009) **UK Climate Projections 2009**. <http://www.ukcip.org.uk/ukcp09/>
- UK Hydrographic Office (2011) **Admiralty Tide Tables: United Kingdom and Ireland**. Volume 1.
- URS Scott Wilson (2012) **Arbroath Flood Strategy: Flood Risk and Management Options Report**. Report commissioned for Angus Council.
- Wright, R. (1981) **Beaches of Tayside**. Department of Geography, University of Aberdeen, for the Countryside Commission for Scotland. Reprinted 2001 by Scottish Natural Heritage as a Commissioned Report.

K.I.4 Appendix D – SEA Environmental Report

A number of reports and other information sources were reviewed in the development of the thematic studies. The maps produced also used information layers from websites such as MAGIC.

- Angus Council (2011): **State of the Environment Report for Angus 2011**
- Angus Council (2004): **Angus Shoreline Management Plan 1**

- SEPA, SNH and Historic Scotland (now Historic Environment Scotland) (2011): **The Scottish Strategic Environmental Assessment Review**, SEPA, Stirling
- www.snh.gov.uk
- www.sepa.org.uk
- www.historic-scotland.gov.uk

K.I.5 Appendix E – Issues and Objectives

References stated in Appendix E are as follows:

- Defra (2006a) **Shoreline Management Plan Guidance**. Department for Environment, Food and Rural Affairs, London.

K.I.6 Appendix G – Policy Appraisal

References stated in Appendix G are as follows:

- Defra (2006a) **Shoreline Management Plan Guidance**. Department for Environment, Food and Rural Affairs, London.
- Milne, F.D. and Dong, P. (2011) **Management of Erosion at Montrose**. Montrose Beach Environmental Development Plan Phase 1 Report. Angus Council, Forfar.

K.I.7 Appendix H – Economic Appraisal

References stated in Appendix H are as follows:

(a) Reports

- Defra (2004) **National Appraisal of Defence Needs and Costs (NADNAC)**. Defra, London.
- Environment Agency (2005) **Flood Risk Management Estimating Guide Unit Cost Database**. Environment Agency, London.
- Environment Agency (2010) **Flood and Coastal Erosion Management Appraisal Guidance (FCERM-AG)**. Environment Agency, London.
- Environment Agency/SEPA/Defra (2010) **Coastal Flood Boundaries (Project SC060064)**.
- Flood Hazard Research Centre (2010). **Multi-Coloured Manual**. FHRC, London.
- RICS. **Rural Land Market Report**. London
- Registers of Scotland. **Quarterly House Price Statistical Report**.

(b) Other data

Other data used in the economic appraisal includes:

- Macaulay Land Use Research Institute. **Macaulay Land Capability for Agriculture (LCA) classification**.
- NLPG. **National Land and Property Gazetteer**. London

K.I.8 Appendix I – Habitat Regulations Assessment

References stated in Appendix I are as follows:

- Aberdeen Council (2012): **Aberdeen Local Development Plan 2012** and Supplementary Guidance.
- Angus Council (2014): **Proposed Angus Local Development Plan** (February 2014).
- Angus Council (2012): **Angus Council Climate Change Strategy and Action Plan 2012 – 2016**
- Angus Council (2010): **Angus Core Paths Plan 2010**
- Angus Council (2009): **Angus Local Plan Review (2009)**.
- Angus Council (2004) **Angus Shoreline Management Plan**. Angus Council, Forfar.
- Atkins Ltd (2014): **Kincardine Offshore Windfarm Environmental Scoping Report**, April 2014
- Defra (2006). **Shoreline Management Plan Guidance**. Department for Environment, Food and Rural Affairs, London.
- Dundee Council (2013): **Dundee Local Development Plan** (adopted December 2013).
- Dundee Council (2011): **Dundee Coastal Study 2011**.
- Scottish Natural Heritage (2015): **Habitat Regulations Appraisal of Plans; Guidance for Plan Making Bodies in Scotland**. Scottish National Heritage, Inverness.
- TAYPlan (2015): **Proposed Strategic Development Plan 2016-2036** (May 2015).
- TAYPlan (2012): **Strategic Development Plan 2012-2032** (May 2013).
- Tayside Biodiversity Partnership (2015): **Tayside Biodiversity Action Plan 2015-25** (2nd Edition Consultative) Coastal & Marine Ecosystems.
- Tayside Geodiversity (2015): **Tayside Geodiversity Action Plan**. Tayside Biodiversity Partnership.
- Tay Estuary Forum (2009): **Tay Estuary Forum Management Plan 2009-2014**
- **Renewable energy projects information**: <http://www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/index.cfm/maplarge/1> last accessed 01.02.16
- **Scottish Government renewal energy licensing information**: <http://www.gov.scot/Topics/marine/Licensing/marine/scoping> last accessed 01.02.16

K.I.9 Appendix J – Water Framework Directive assessment

References stated in Appendix J are as follows:

- Environment Agency, 2009a, **Water Framework Directive: step by step process for assessing Shoreline Management Plans, 82_09**.
- Environment Agency, 2009b, **Water Framework Directive: overview for assessing Shoreline Management Plans 81_09**.
- Natural Scotland, 2009, **The River Basin Management Plan for the Scotland River Basin District, 2009-2015**.
- Scottish Government/SEPA, 2015, **The river basin management plan for the Scotland river basin district, 2015-2017**.

K.2 Mapped Data

K.2.1 Main SMP2 Document – Policy Maps

(a) Basemapping (Communication, Topography and Coastline)

Simple map information based upon the Ordnance Survey, Meridian data (provided under licence, © Crown Copyright) to form the backdrop to the mapped information. Angus Council Licence number: 100023404 (2012).

(b) Present coastline

This was defined from a combination of Ordnance Survey mapping, aerial photography, and data input the National Coastal Erosion Risk Mapping project as part of that projects' local validation stage.

(c) Indicative Erosion Zones

These were defined as part of the assessment of shoreline response for the final policy and NAI (see **Appendix C** and the **main document** for details of this assessment) for years 20, 50 and 100 from present.

(d) Flood Zone Mapping

SEPA 2012 and 2014/15 flood zone mapping was provided by SEPA. This mapping provides a general overview of areas of land in natural floodplains and indicates where coastal flooding is possible. It should be noted that SEPA is continually updating its maps and these should be used in preference to those presented in this SMP.

(e) National Nature Conservation Designation

For clarity of presentation, this combined datasets for: National Nature Reserves and SSSI sites (see below in Section L.2.3).

(f) International and National Nature Conservation Designation

For clarity of presentation, this combined datasets for: SPA, Ramsar, SAC, National Nature Reserves and SSSI sites (see below in Section L.2.3).

(g) Important Heritage Sites

For clarity of presentation, this included only Scheduled Ancient Monuments.

(h) Policy unit boundaries

These were defined as part of the SMP2 and mapped accordingly.

K.2.2 Appendix C – ‘No Active Intervention’ Flood and Erosion Risk Maps

(a) Basemapping (Communication, Topography and Coastline)

As above.

(b) Present coastline

As above.

(c) Indicative Erosion zones

These were defined as part of the assessment of shoreline response for the two scenarios: ‘no active intervention’ and ‘with present management’ (see Appendix C for details of this assessment) for years 20, 50 and 100 from present.

(d) Flood Zone Mapping

As above.

K.2.3 Appendix D – Theme Maps

(a) Data obtained from MAGIC website

A number of data sets were obtained from the government website MAGIC (Multi-Agency Geographic Information for the Countryside). Copyright information is available on the website: www.magic.gov.uk:

- Areas of Outstanding Natural Beauty;
- Shellfishery harvesting areas;
- Heritage Coasts;
- National Parks;
- Ramsar sites;
- Special Areas of Conservation (SAC);
- Special Protection Areas (SPA);
- Sites of Special Scientific Interest (SSSI);
- National Nature Reserves; and
- Local Nature Reserves.

(b) Data Obtained from Scottish Heritage

Heritage Environment Records (HERs), formally known as Sites and Monuments Records, are a primary source of information on the local historic environment. Data from these were provided by County Archaeologists, and supplemented with national datasets from Scottish Heritage. The following classes were mapped:

- Grade 1 listed;
- Grade 2* listed;
- Scheduled Ancient Monument;
- Conservation Areas
- World Heritage Sites;
- Protected Wreck Sites; and,
- Registered Parks and Gardens.

(c) Data obtained from Scottish Natural Heritage

A number of data sets were obtained from Scottish Natural Heritage. These datasets were obtained in 2008:

- Historic Landfill sites;
- Authorised landfill sites;
- EA indicative flood map; and,
- Critical infrastructure.

K.2.4 Appendix H – Economic Appraisal

(a) National Property Database

Environment Agency licensed data comprising of Ordnance Survey AddressPoint and Valuation Office data. This has not been reproduced on the final maps presented, but was used in the analysis of property loss.