Coastal & offshore development

Capability statement

Entec

Entec is one of the UK's largest environmental and engineering consultancies. Our technical and business skills are dedicated to delivering strategic, technical and engineering solutions which bring commercial benefit to customers at home and overseas. This know-how is based on over 50 years' consulting experience in the public and private sectors.

Certificate No. EMS 69090 Certificate No. FS13881

Entec operates a Quality Management System in accordance with the latest requirements of the international standard BS EN ISO 9001 and an Environmental Management System compliant with BS EN ISO 14001. Both are audited by BSI Management Systems.

Coastal & offshore development

Obtaining permission for coastal or offshore development, whether it be oil extraction, aggregates dredging or installation of a ship jetty or a wind farm, increasingly requires environmental investigation, and often formal environmental impact assessment (EIA), to satisfy the complex regulatory regimes applying in maritime areas. Many projects involve associated onshore works and thus also extend into areas covered by local authority planning control.

Matters are complicated further by the protection of many estuarine and maritime areas for their wildlife conservation interest, for example under the EC Habitats Directive, or the protocols developed under the United Nations Regional Seas Programme. Other international designations impose water quality standards to prevent eutrophication (over-enrichment) or to protect shell-fisheries or bathing waters. Similarly, many onshore parts of the coastal zone are the subject of special measures to protect their landscape or heritage value.

Other users of the sea may object to development proposals on the grounds of interference with their rights to navigate or to fish, while coastal communities may be concerned about noise, visual impact or impacts on coastal defences, and extensive consultations are often necessary to resolve these issues.

Many companies find that use of a single consultant to manage the whole process in an integrated way results in efficient achievement of necessary permits for a well-designed development with a maximum degree of public support.

Entec's approach

Drawing on extensive coastal and marine experience, Entec staff can help you through project complexities to reach a successful conclusion. Our approach is rooted in the following principles:

- applying our practical experience of managing the consultation and communication process to engage all types of consultee at appropriate levels;
- minimising project delays arising from permitting procedures;
- adopting an integrated approach to projects with multiple permitting requirements, avoiding wasteful and inefficient preparation of several different environmental reports and repeated approaches to consultees;
- assisting throughout the project life-cycle, from project conception and baseline environmental studies to project completion, monitoring and establishment of environmental management systems;
- providing early feedback to the project design team, to facilitate incorporation of cost-effective mitigation of adverse environmental impacts as a fundamental part of the design, avoiding more costly design modifications at a late stage;
- providing a one-stop-shop for undertaking EIA, addressing environmental regulatory issues and managing the consultation process - both onshore and offshore;
- undertaking risk assessments, ranging from ship collision risk to operations involving hazardous materials;
- providing a comprehensive construction project management service, from development of objectives, through programming, costing, team building, design and procurement to construction, staff training and commissioning.

Preliminary investigations

Consideration of alternative sites
Review of existing information available
Baseline marine surveys

Identify permitting requirements

Provide regulatory advice
Initial consultation with regulatory bodies (if appropriate)

Environmental screening

Identify environmental or other information needed to progress the scheme
Initial consultations
Determine requirement for EIA
Prepare screening report, obtain screening opinion/prior opinion (as appropriate)

EIA scoping

Define EIA scope - including survey requirements and assessment methodologies
Conduct survey work, as required
Continue consultation
Continue discussion of avoidance/mitigation/enhancement measures with design team
Prepare scoping report

EIA and preparation of Environmental Statement

Collect information
Predict effects
Detailed consultation
Identify avoidance/mitigation/enhancement
Determine significance of residual effects
Report findings in an Environmental Statement

Permit applications

Collate supporting information
Submit applications for marine and land-based permits
Manage advertising and consultation requirements
Provide expert witness at Public Inquiry (if required)

Project implementation

Provide construction, design and management services
Develop and implement Environmental Management plan
Monitor environmental changes as necessary

How we can help

Entec's typical approach to assisting customers in progressing their coastal and offshore development proposals is demonstrated in the diagram on the left.

Preliminary environmental investigations

Often initial investigations and surveys are required to establish the baseline conditions and sensitivities of potential development areas. The results may inform decisions on the location of the development (on a broad scale or local basis), on installation methods to be adopted or on the water quality standards to be achieved in an effluent discharge, for example.

Permitting

A wide range of permits is often required for a single project. For example, in the UK, these may include a Coast Protection Act consent or a ministerial order, planning permission, a licence for deposits in the sea, permission from the port authority and a discharge consent in the case of a sea outfall. In some cases the requirements are initially unclear to the regulatory authorities and Entec has facilitated discussions with all parties to resolve matters on behalf of clients.

Consultation

Entec recommends early consultation with all stakeholders as part of 'scoping' the environmental work required before the development can go ahead. This reduces the risk of unforeseen objections being raised at a late stage in the process. Similarly, in the case of research or review projects, early consultation allows prompt identification of valuable information held by others, thus reducing the likelihood of wasted duplication of effort. In either case, particularly with a controversial project, the manner of initial approach to consultees is critical and can make the difference between co-operation and ongoing adversarial relationships. Entec has extensive experience of successful management of this process.

Environmental impact assessment

Environmental impact assessment (EIA) is now an established statutory requirement before any significant development proposal is given the go-ahead, and marine projects are no exception. Entec favours a stepwise approach, involving a scoping report, preceded by options and other reports as appropriate, as part of the process of developing good communications with all stakeholders. In this way, we ensure that all valid concerns are addressed in the EIA process, aiming to avoid 'showstopper' issues surfacing during the final, formal consultation and facilitating more cost-effective development of final design solutions.

Land links

The nature of oil and gas or offshore power generation developments is such that an EIA will typically include a review of the potential impacts of the offshore structures, the connecting pipelines or cables and the effects of providing associated onshore facilities. Such projects benefit greatly from the multi-disciplinary resource which Entec provides.

Risk assessment

In an increasingly regulated working environment, recognised good practice is progressively being embodied in formal risk assessments. For certain industries requirements relate to particular processes or substances handled, for example through the COMAH regulations. Entec has wide experience of risk assessments, including HAZOP, COMAH, safety case preparation, ship collision risk assessment, due diligence studies and post-accident investigations.

Project and construction management

Construction management is a complex and specialised area, increasingly controlled in the UK through the Construction, Design and Management Regulations, implemented in order to fulfil the requirements of EC Directive 92/57/EEC. Obtaining the right support in this area can be crucial to the success of a project and Entec will draw on its extensive resources to put together a team of specialists which matches in detail the project requirements from conception, through design and construction, to final commissioning. Entec excels in this area, with many projects obtaining prestigious awards.

Case studies

The following pages demonstrate Entec's capabilities in the area of services for coastal and offshore development, using case study examples. ▶

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Teesside Offshore Wind Farm

EDF Energy - Northern Offshore Wind

EDF Energy is a major generator of electricity in the UK. In response to international and national concerns about climate change the UK government is seeking to generate 20% of its electricity supply from renewable sources by 2020. EDF Energy - Northern Offshore Wind Limited (NOWL) are proposing to build an offshore wind farm up to 100 MWe (sufficient to generate power for 70,000 homes), consisting of 30 turbines occupying approximately 10km^2, approximately 1.5km offshore of Redcar.

Entec was engaged to carry out an environmental impact assessment (EIA) for this project, carrying out studies to assess the potential impacts that the construction and operation of the wind farm may have on the following areas:

- Commercial fisheries
- Marine ecology
- Ecology and nature conservation studies
- Marine hydrophysical studies
- Landscape and visual impact assessment
- Shipping and navigation
- Noise studies
- Archaeological and cultural heritage studies
- Socio-economics and social impact assessments.

Entec's environmental specialists are assisting NOWL in applying for the appropriate marine consents to construct and operate an offshore wind farm via the appropriate regulatory channels. Onshore works above mean high water include a proposed electrical substation and cable route which are being considered as part of a planning application to the local planning authority. Entec is managing the application process to meet these planning requirements.

Our environmental specialists prepared cost-effective data collection strategies and interpreted data to develop appropriate and innovative mitigation; ensuring that the environmental information was effectively communicated to those involved in the decision making processes. Full consultations with marine and coastal user groups and statutory organisations were carried out to answer questions and concerns and to engage a positive stakeholder interest. Entec has considerable experience of working with commercial fisheries and carried out a full consultation with the fisheries community to collect information on fishing effort and to deal with concerns.

The skills used by the environmental appraisal team are complemented by other areas of expertise such as contaminated land, regeneration, and development planning, in conjunction with our strong track record of working with a broad range of public and private sector clients

Assessing the environmental impacts of an offshore windfarm in the North Sea at a site off Coatham Sands, between Redcar and the mouth of the River Tees

A computer generated photomontage of the view of the windfarm from Seaton Carew near Redcar

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Tidal Power Generator Environmental Appraisal – Project 'Stingray'

The Engineering Business

The Engineering Business Ltd carried out a tidal power generation demonstration project that involved the installation of a 150 kW demonstration model of a tidal power generator known as 'Stingray' in Yell Sound, Shetland. The Stingray generator transforms the energy of moving water into hydraulic power, which turns an electrical generator by means of a hydraulic motor.

Tidal stream technology is still relatively underdeveloped, thus the project formed part of a feasibility study partially funded by the DTI New and Renewable Energy programme. Feasibility studies such as this one are crucial to the development of the technology and in furthering progress towards government renewable targets.

Whilst the Stingray pilot study did not require a full EIA, supporting environmental information was required for various marine permit applications. Entec produced a scoping document and also undertook an environmental appraisal of the pilot study proposals.

The pilot study took place adjacent to Yell Sound Coast candidate Special Area of Conservation (SAC), and close to the Sullom Voe proposed SAC. The appraisal considered direct effects and indirect, secondary, short, medium and long-term, permanent and temporary, positive and negative effects of the Stingray generator and the associated cables and anchors. An essential phase of the appraisal was early consultation with key bodies. All consultee responses were taken into consideration in this appraisal and the issues raised were carefully considered.

Entec worked in conjunction with local consultants and wildlife groups to carry out studies of the marine benthos, otters, seals, cetaceans and seabirds.

Navigational issues were also considered along with the potential impact on local fisheries. Surveys of the littoral (shore) were carried out, and underwater video surveys of the marine benthos in the proposed location were also carried out. Geophysical surveys were undertaken to assess the depth of the proposed area, including estimates of bedrock type and sediment depth and a search for objects on the sea bed.

Desk studies supported by consultation were carried out for other sectors such as archaeology, navigation and fisheries.

Courtesy of The Engineering Business

Breeding bird, breeding seal and otter holt surveys were carried out by local wildlife specialists prior to the installation of Stingray. Entec's environmental specialists prepared cost-effective data collection strategies and interpreted data to develop appropriate mitigation. Entec working in tandem with the developer ensured that the appropriate environmental information was effectively communicated both to those involved in decision making and to stakeholders.

Assessing the potential effects of a proposed tidal power generation demonstration project in the Shetland Isles

Courtesy of The Engineering Business

Courtesy of Kieran Murray

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Integrated SHE Assessment of an Offshore Oil Field Development, Abu Dhabi

Zakum Development Company (ZADCO)

Two studies - an environmental impact assessment and a quantitative risk assessment study - were carried out to help ZADCO make an informed decision on an investment in the planned expansion of oil production facilities linked to Arzarnah Island in the Arabian Gulf.
Entec's environmental and risk management staff worked alongside each other to examine the risks posed to the marine and coastal environment from a potential oil spill.

A particular problem was the disposal of exhaust gases from sour gas treatment. Entec studied various options, all of which were likely to have significant effects on safety and the environment. This led to a fundamental re-appraisal of the whole project and its design.

Had the studies been left until the detailed design or construction phases, the identification of these problems at this stage would have led to major constraints on the operation of the plant.

Full integration of safety and EIA studies is increasingly being accepted as best practice in the oil and gas industry. In this instance, Entec highlighted at the design stage the significant safety risks from toxic gas associated with the oil reservoir. This enabled our client to make fully informed decisions with regard to the safety, health and environmental aspects of the project. On the basis of the studies, ZADCO decided not to invest in a development with technical difficulties and potentially severe safety risks.

Integration in Entec services helps highlight safety risks at an early stage

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Comparative Risk Assessment for Site Selection of a LNG Import Terminal

Union Fenosa Gas

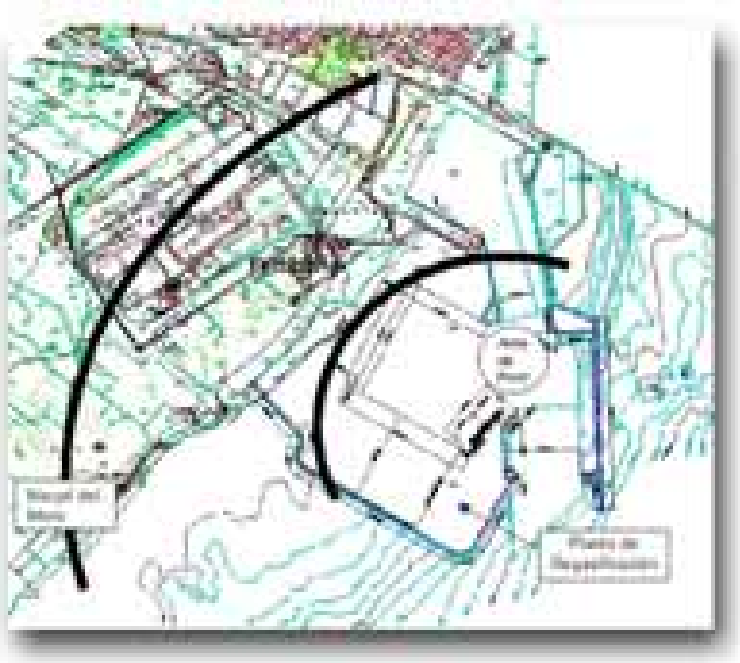
The major Spanish utilities company, Union Fenosa was planning a new liquid natural gas (LNG) import terminal near Valencia. There were alternative proposals for the terminal site.

Entec carried out a review of the proposed terminal design, identified relevant major accident scenarios that could affect neighbouring industries or public areas then carried out a risk analysis. The results were presented as both individual risks at comparable locations (nearest industries, key points within the ports, local residential and recreational areas) and average societal or group risk.

The assessment of tolerability of the risks was made against international criteria to supplement the Spanish regulations under the EU Seveso 2 (COMAH) Directive. It was shown that all the proposed locations could be used within the constraints of these criteria but the preferred location was furthest below the limits in the criteria. The preferred location also presented fewer constraints to future development. In addition Entec was able to identify the scenarios contributing most to the risks and so highlight the priorities for any risk reduction measures.

Entec also reviewed previous analyses of the risks and resolved discrepancies. The output consisted of a series of reports covering the risk analysis of the preferred location, a comparative assessment of the alternative locations, a review of the previous risk assessments and a series of presentations to be used in external discussions of the proposals.

Outline quantitative risk assessment against international criteria to show compatibility with existing developments and future town planning issues



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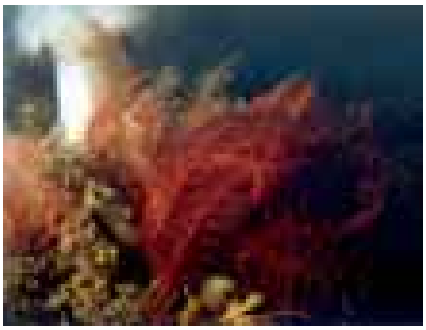
New Oil Tanker Facility at Milford Haven

Texaco

Texaco was looking to improve the competitiveness of their export operations by providing new loading facilities for tankers at their Pembroke Refinery. The project involved refurbishing a partially redundant jetty and linking this to their existing jetty by a pipe bridge on piles in the seabed. This would reduce the need for vessels to anchor while awaiting a berth, thus also securing an improved safety regime for shipping operations. They commissioned Entec to undertake an environmental impact assessment (EIA) in support of applications for permission for the works.



The development site is adjacent to a national park and within a special area of conservation (SAC), and the EIA was completed taking these into account. Entec worked closely with Texaco and their local contacts, to ensure that the interests of all stakeholders were considered in full. The environmental statement covered impacts on the marine environment, as well as impacts on the surrounding wildlife, including birds, bats and badgers. Other issues assessed included noise, traffic, cultural heritage and landscape. Appropriate mitigation was recommended for adverse impacts. The results of the study were presented at a public meeting, where participants were able to raise concerns and, in fact, also to express support.

Entec managed the applications for the necessary permissions from the Department for The Environment, Transport and the Regions (DETR), the Ministry of Agriculture, Fisheries and Food (MAFF) and the port authority. The EIA also supported an IPC variation application to the Environment Agency Wales and lease negotiations with Crown Estate. Close consultation with two local planning authorities was important, in relation both to their roles as statutory consultees for the marine works and their planning authority functions regarding permitted development rights for temporary construction work sites.

Entec secured the necessary permissions in time to meet Texaco's critical deadlines. Establishment of early dialogue with local interests and the wide range of technical capability available within Entec were crucial factors in producing an environmental statement that generated no further objections during the formal public consultation. This ensured a smooth passage of the applications, with no unexpected delays.

Environmental impact assessment and marine permits for Texaco

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Ouseburn River Improvement Scheme

The Ouseburn Partnership

Through the work of the Ouseburn Partnership, the Lower Ouseburn Valley in Newcastle upon Tyne is currently enjoying a period of investment and regeneration. The vision behind this effort is the achievement of a vibrant urban village, incorporating mixed use residential, craft and other commercial enterprises, maintaining a strong sense of community.

The Ouseburn is the thread around which industry developed in the valley. From its emergence at a culvert to the Tyne, the tidal river is 1 km in length and the steep valley and historic context create a place with a distinct character and unique opportunities. However, the gloomy appearance of the river at low tide, with high vertical river walls, exposed outfalls and an unattractive bed, was seen as a deterrent to attracting redevelopment.

Entec undertook studies to identify a preferred option for improving the waterway environment and encouraging economic development, while maintaining the significant industrial cultural heritage aspects and maximising recreational and other environmental benefits. The options study involved a three stage process to determine the preferred design water level, the location of any control structures and the design of such structures.
The preferred option involved a tidal weir incorporating a navigation lock.

The preferred option was subjected to an economic appraisal, following which Entec prepared a scoping report to advise on the content of a full EIA. The study included consideration of engineering feasibility, including stability of existing structures, groundwater impacts and design of new structures, as well as environmental impacts on users and potential users and on the environment, including flooding, contaminated land, water quality and ecology. Active public participation was an essential part of the process. As a result of Entec's work, the proposed scheme was included in tender invitations for redevelopment of major brownfield sites along the river valley.

Working with the Ouseburn Partnership towards urban village regeneration

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Environmental Advice at Longannet Colliery

Scottish Coal

A deep coal mine in an ecologically sensitive location

Scottish Coal is the largest coal mining company in Scotland. Until recently it operated Longannet Colliery, the last deep mine in Scotland. Up to the disastrous flooding at Easter 2002, which led to the closure of the mine, Entec had been working closely with Scottish Coal to develop its plans to extend the mine workings and thus secure the future of the mine and its 700 employees.

Longannet Colliery produced about two million tonnes per year of low-sulphur coal, all of which was used for electricity generation at the adjacent Longannet Power Station, and played an important part in meeting the government's policy for a secure and diverse energy supply. Coal reserves beneath Fife were exhausted, and the company needed to expand its workings under the Firth of Forth and land to the south in order to access, in the first instance, an estimated 10 million tonnes of coal. Although extraction would have taken place about 500m below ground, it was predicted that this would cause localised subsidence of up to 1 metre at the surface.

Entec worked closely with Scottish Coal to assess the effects of this subsidence on surface features, and in particular its effects on the mudflats and saltmarshes of the Forth Estuary. The Forth Estuary is internationally important for its wintering birds and nationally important for its saltmarsh habitat, and is designated as both a Special Protection Area (SPA) and a Site of Special Scientific Interest (SSSI). Working with specialists from the Universities of Newcastle and Stirling, Entec reviewed the predicted effects of the subsidence on the ecology of the estuary and hence its bird populations. Following a series of discussions with Scottish Natural Heritage (SNH) and the Royal Society for the Protection of Birds (RSPB), both of which had registered their intentions to object to the proposal, a layout for the mining panels was agreed that was unlikely to have a detectable effect on birds, and the company contributed to a scheme to create new inter-tidal habitat on reclaimed land adjacent to the estuary.

Entec prepared the planning application and environmental statement, addressing other issues including hydrogeology as well as ecology, and this was about to go to committee with an officer recommendation for approval when the flooding put an end to the mine.

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North Northumberland Coastal Secondary Works

Northumbrian Water

In accordance with the Urban Wastewater treatment Directive, NWL are required to provide secondary treatment to coastal discharges by 2005 for populations up to 10,000. Entec was commissioned by NWL to carry out feasibility study and conceptual design to provide secondary treatment for five sites along the North Northumberland Coastline.

The five sites are Bamburgh, Seahouses, Beadnell, Boulmer and Hadston. Options considered are individual sewage treatment works, transferring flows to combined sites or transferring flows to an existing sewage works.

Entec reviewed the treatment processes available to achieve the required discharge consents at each site as well as identifying suitable transfer rates for pumped flows.

Planning and environmental issues were also addressed as part of the site selection process.

During conceptual design Entec developed the preferred solutions for each site including the progression of all planning and environmental issues to allow scheme completion by 2005, as required by the UWWTD.

Feasibility study and conceptual design for secondary treatment works

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Levenmouth PFI
Scottish Water

Levenmouth PFI is a £45 million private finance initiative (PFI) project to construct and operate a wastewater treatment works (population equivalent 500,000) on behalf of Scottish Water for a period of 40 years. The project includes:

- distributed catchment pumping;
- a new sea outfall, 1 kilometre in length to achieve 35:1 dilution;
- a treatment works built on a green field site which comprises preliminary, HRAS, secondary settlement and UV tertiary treatment, with a full sludge treatment facility (STF) incorporating importation facilities, and a drying system to produce a pelletised product for further utilisation. The STF incorporates the benefits of a 2.6MW combined heat and power system

Entec has been fully involved with the project, from the submission of the pre-qualification proposal through all the project stages to financial close. Entec has also provided technical management throughout the duration of the construction and commissioning period (Dec 1999 to Nov 2002). Management of the commissioning process and operational testing for the client has also been carried out by Entec, including process, mechanical, electrical and ICA

In particular, Entec has provided staff to the service company to undertake the following roles:

- assistant bid manager;
- technical manager;
- technical advisor;
- advice and management of 'competent authority' requirements (SEPA / council)
- planning supervisor; and
- sludge strategy advisor.

And have undertaken a full range of technical, commercial and construction tasks.

The roles required an in-depth knowledge of the PFI process. The breadth and depth of this understanding in relation to the many and varied technical, legislative, commercial, financial and legal issues ensured Entec allowed the service company to meet their financial return requirements whilst ensuring that the project is delivered to the ultimate client successfully.

As the Levenmouth wastewater works and sludge treatment plants were put into operation after 28 October 2000, authorisation was required under the Pollution Prevention and Control (Scotland) regulations. Entec worked with the operator (Caledonian Environmental Services) and the Engineering teams to prepare and submit a PPC application to SEPA during the design and construction phase of the project. As this plant was the first of its type to be authorised under the new regulations, much of the application was developed without full sector guidance. Entec's approach demonstrated that the scheme met all regulatory requirements, accommodated developments in plant design in preparing the application and assisted regulatory understanding and interpretation. Further prompt responses to extensive supplementary questions from the regulator saw the plant authorised in January 2002, for commissioning and operation to proceed on schedule.

Engineering and environmental knowledge applied commercially, assists PFI delivery

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Duddon Estuary Bathing Water Bacterial Impact Study

Environment Agency

The Duddon Estuary is situated in south-west Cumbria, England. Bathing waters within the estuary had frequently failed to achieve compliance with the bacterial standards of the EC Bathing Waters Directive. The Environment Agency commissioned Entec to identify bacterial inputs to the estuary, from point and diffuse sources, to obtain estimates of load budgets for faecal indicator bacteria under dry and wet weather conditions and to recommend priorities for remedial action.

The initial phase of the study involved identification and characterisation of all known foul discharges to the estuary, establishment of river flow (discharge) measuring stations and identification of water quality sampling points. These were located so as to enable assessment of loads entering the coastal zone of the estuary, as well as separation of the principal sources of faecal bacteria within the tributary catchments.

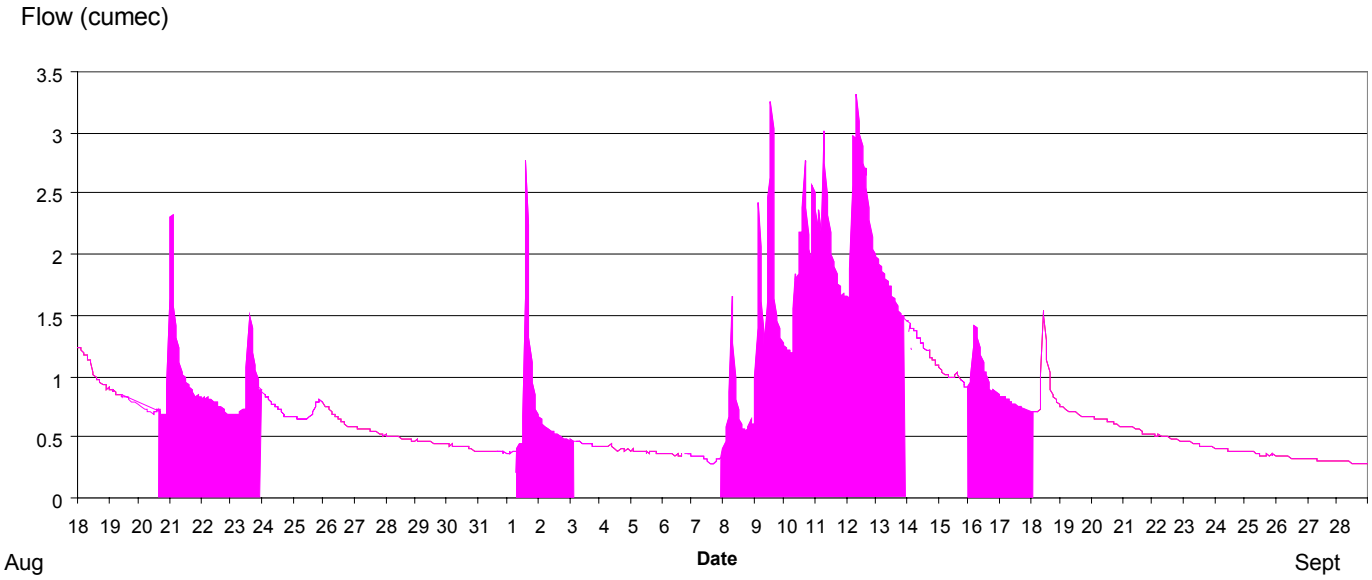
Survey work extended over a ten-week period during the 1998 bathing water season and involved collection and analysis of water samples for bacteria, in conjunction with estimates of volumetric discharge, both during dry weather and during three rainfall events. During base flow conditions, scheduled routine surveys measured flows and bacterial concentrations from foul and surface water inputs. Spot samples were collected both on weekdays and at weekends and during holidays. During the three rainfall events, flows and bacterial concentrations in foul and surface water inputs were monitored intensively for a 48-hour period, including monitoring of discharges from combined sewer overflows.

Analysis of the data showed that overall, under both baseflow and high flow conditions, bacterial loads to the estuary were dominated by sewage discharges.

The study concluded that the loads of faecal bacteria entering the Duddon estuary could be reduced significantly by improving the level of sewage treatment at four principal wastewater treatment works discharges and identified them as priorities for improvement.

The results of the investigation assisted the Environment Agency in identifying remediation measures in order to secure bathing water compliance.

Analysing bathing water quality and recommending remediation measures



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MNCR Area Summaries - Sealochs in Northwest Scotland

Joint Nature Conservation Committee

The Marine Conservation Review (MNCR) was formed in 1987 with the objective of extending knowledge of benthic marine habitats, communities and species in Great Britain and identifying sites and species of nature conservation importance. The MNCR, operating under the Joint Nature Conservation Committee (JNCC), required a series of area summaries, each describing the physical, biological and conservation features of sealochs in north-west Scotland and Skye. The area summaries were compiled in the standard MNCR area summary reporting format, for publication in the Marine Nature Conservation Review report series and the information they provide is of central importance to site management.

The contract required area summaries for twelve lochs on Skye and relevant maps for a further 17 mainland lochs. Each area summary included a description of the physical features of the site, including physiographic type, tidal range and salinity, a detailed review of species and habitats of the littoral and sublittoral, a list of conservation sites and a description of human influences. References and a comprehensive list of sites surveyed were appended. Raw data were available from a series of marine biological surveys of shores and subtidal undertaken by the MNCR between 1988 and 1991. These data, lists of species, which are not easy to assimilate, were reviewed and transposed into the required format to provide a clear picture of biotope type and quality within each loch. Maps were created using the PC based GIS, MapInfo, showing site bathymetry, sites surveyed and indicative distributions of the main biotopes, to complement the text.

Through our knowledge of marine communities and our extensive experience in literature review and mapping, Entec provided text and maps, in line with standard MNCR guidelines, which were clear, unambiguous and technically robust.

Collating information on marine ecosystems

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Regulatory Impact Assessments for the Radioactive Discharges Strategy and Statutory Guidance

Department for Environment, Food and Rural Affairs

Advising Ministers on regulatory costs and benefits

At the 1998 meeting of the 'OSPAR' Commission (the body concerned with the protection of the marine environment of the North-East Atlantic), Ministers made agreements regarding discharges of radioactive substances with the aims of progressively reducing those discharges and so reducing concentrations of radionuclides in the marine environment. To implement these agreements, the UK Government and devolved administrations have produced draft documents for the Radioactive Discharges Strategy and associated Statutory Guidance to the Environment Agency.

Since 1998, the UK Government has required that all proposed regulations be subject to a 'Regulatory Impact Assessment' to assess the costs, benefits and risks that could affect businesses and others. In 2001, Entec was commissioned by the Department for Environment, Food and Rural Affairs (DEFRA) to carry out Regulatory Impact Assessments for the draft Radioactive Discharges Strategy and associated statutory guidance. This process required the extensive gathering of facts and opinions from those affected, balancing the impacts suggested and reporting back to DEFRA and Ministers on the likely outcomes of the proposals.

Entec gathered information on the possible impacts using several techniques; scenario-based questionnaires on future business plans, interviews, consultation reviews and internet and other searches. Based on the information gathered Entec generated a balanced view of the costs and benefits and reported this to Government, in monetary terms where possible.

The report showed that significant costs will be borne by the UK through adoption of those proposals, although many of the impacts were not readily valued in conventional terms, requiring extensive discussion and judgement of the possible outcomes. Possibly significant risks, to the energy mix of the UK, to employment patterns and other social issues in some remote areas were identified and highlighted to Government.

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Climate Change - Flood Occurrence Review

Scottish Executive

Current predictions of climate change suggest that over the present century Scotland will become warmer and wetter, sea levels will rise and the number of storms around the coast will increase. As a result, the threat of inland and coastal flooding will increase and cause greater associated impacts upon Scotland's economy and society.

To assess the implications of these changes, Scottish Executive commissioned Entec and the University of Dundee in 2001 to undertake a wide ranging review of the magnitude and location of flooding across Scotland. The study consisted of a literature review, new runoff modelling based on climate change scenarios, flood trend analysis; GIS based analysis of flood risk data for Scotland; estimate of economic losses using GIS; public awareness assessments and expert consultation.

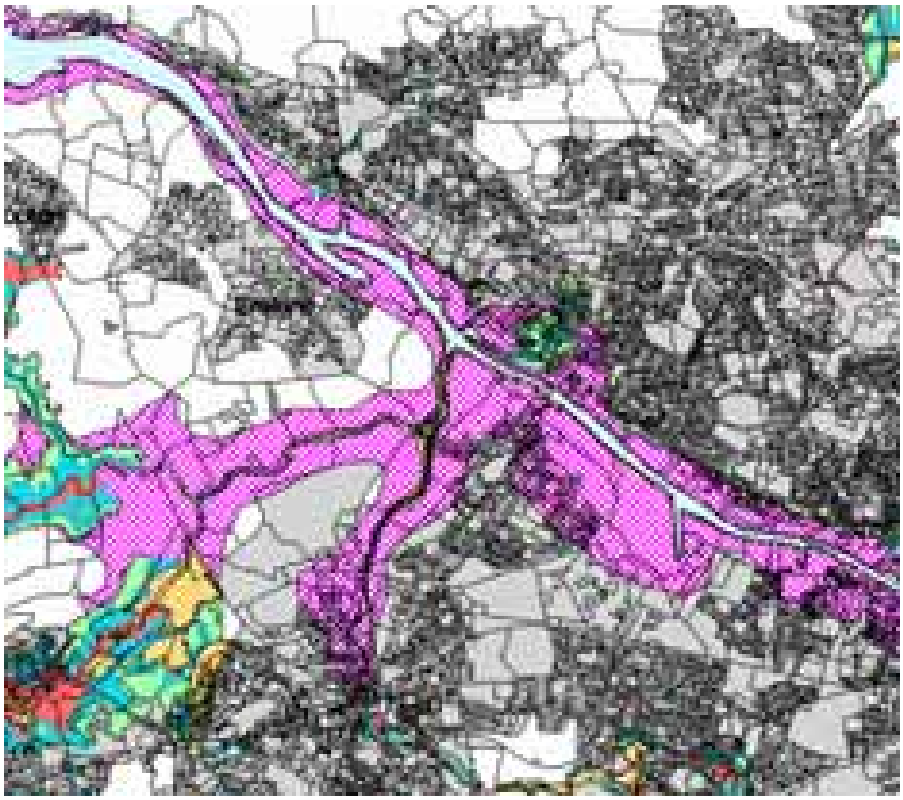
The main findings of the research can be summarised as follows:

- Since the mid 1980s Scotland has seen an increase in the number of floods and high flows on many large rivers. Similar 'flood rich' periods have occurred but these events could occur increasingly in the warmer and wetter Scotland predicted by climate scientists.
- The sea level at Aberdeen has risen by nearly 70mm since 1900 and parts of the Scottish coast has seen an increase in flood risk. This situation worsens when storm-generated surges add several metres to high tides around vulnerable coasts.
- Climate scenarios prepared by the UK Hadley centre suggest that inland floods in the 2080s may increase by up to 10% (low-medium low scenarios) and up to 20% (medium to high scenarios). In especially sensitive river basins, this could mean that a 1:50 year flood would become a 1:20 year flood.
- By 2050 sea levels are predicted to rise by an additional 80-300mm, which, when combined with future storm surges could make most of Scotland's coasts below the 5 metre contour more vulnerable to flood risk.
- At present, 93,000 Scottish properties are at risk from coastal flooding and 77,000 from inland flooding. Current estimates of annual average damage from inland floods are around £20 million. This could rise by 27% (2020), by 86% (2050) and 115% (2080) due to climate change.

In addition to these findings, the study identified a range of recommendations to improve the scientific understanding of inland and coastal floods and find better ways of identifying and managing flood risks. Many of the study's recommendations are also assisting in the planning of future research to mitigate flooding risk across Scotland.

A number of publications have been produced for the study and are available via the Scottish Executive website at www.scotland.gov.uk/cru/

Assessing and quantifying flood risk in Scotland as a consequence of climate change



Sample client list

Acordis
ADMA-OPCO (Abu Dhabi)
AMEC Offshore Wind
British Gas
Department for Environment, Food and Rural Affairs (UK)
Department for International Development
Donegal County Council
DONG Olierør
East of Scotland Water
Environment Agency
Exchem
Hanson Aggregates Marine
Joint Nature Conservation Committee
MoD
Newcastle City Council
Northern Offshore Wind
Northumbrian Water
North West Development Agency
Offshore Wind Power
Rashid Petroleum
Scottish Coal
Scottish Executive
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