



Ramsar Convention

Monitoring
Procedure

Final Report

DEE ESTUARY

UNITED KINGDOM

Gland, Switzerland, June 1995

CONVENTION ON WETLANDS OF INTERNATIONAL
IMPORTANCE ESPECIALLY AS WATERFOWL HABITAT
(RAMSAR, 1971)

CONVENTION RELATIVE AUX ZONES HUMIDES
D'IMPORTANCE INTERNATIONALE
PARTICULIÈREMENT COMME HABITATS DES OISEAUX D'EAU
(RAMSAR, 1971)

**CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE
ESPECIALLY AS WATERFOWL HABITAT (Ramsar, 1971)**

Monitoring Procedure - Dee Estuary, United Kingdom

FINAL REPORT

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I EXECUTIVE SUMMARY

1. In 1985, the United Kingdom designated the Dee Estuary, straddling the border between North Wales and North-west England, for the List of Wetlands of International Importance maintained under the Ramsar Convention. The Dee is one of the most important estuaries in Europe for wildfowl and waders, with well over 100,000 birds present in winter, including internationally important numbers of more than ten species. As a result of information contained in the 1990 UK National Report, and with the approval of the UK authorities, the Dee Estuary was included in the 'Montreux Record' - a subset of Ramsar sites in need of priority conservation attention. The National Report stated that "the site's multiple ownership, crossing county and national boundaries, hampers any comprehensive planning" and referred to a series of specific pressures liable to affect the site adversely.
2. The 1993 National Report provided information on the steps being taken to overcome any threats to the site. The UK Government announced subsequently that it would be inviting the Ramsar Bureau to apply the Monitoring Procedure, the Convention's mechanism for working with governments on detailed site-based issues, to review the many factors influencing the estuary. A three-member Ramsar mission visited the Dee Estuary in November 1994 and visited both the English and Welsh shores, accompanied by representatives of Government Departments, local authorities, statutory bodies, and NGOs, and in co-operation with local industrialists. A one-day conference then discussed the many complex issues raised by the field visits.
3. This report has been compiled by the members of the Monitoring Procedure mission and is submitted by the Ramsar Bureau to the Government of the United Kingdom. As requested by the Government, the report presents an analysis of the extent of present problems (section III), and makes a series of recommendations for action. Conclusions and recommendations arise within the text of each section, but the key recommendations are summarized in section IV.
4. The report recognizes that significant progress has already been made in a number of areas and that the success stories from the Dee can serve as useful models, both elsewhere in the UK and in other parts of Europe. However, the Monitoring Procedure mission concluded that further action is needed urgently if the Dee Estuary is to be removed from the Montreux Record. Particular difficulties arise from the administrative complexity of the site, and the resulting lack of coherent policy development, guidance, and implementation.
5. Much of the Welsh shore of the estuary is heavily industrialized, leading to actual and potential conflict in the conservation and wise use of the Dee. Planning measures should ensure that any loss of part of the Ramsar site to industrial development should be under exceptional circumstances ("in the urgent national interest" according to Article 4.2 of the Ramsar Convention) and fully compensated for. A buffer zone should be established to guide future development away from sensitive areas.
6. Particular difficulties also arise as a result of historical industrial activity, which has left a legacy of seriously contaminated land sites bordering the estuary. The efforts currently being made to reclaim and make safe these sites are welcome and should be further intensified.

7. An estuary-wide plan for the maintenance of coastal defences is needed in order to address the effects of rising sea levels in a strategic manner. The planning of future defences should be imaginative and make full use of 'managed setback' and 'soft engineering' techniques to maintain or enhance the ecological character of the estuary, whilst providing extremely cost-effective protection.

8. Cockling on the Dee Estuary has been a multi-million pound industry in some recent years. However, the resource is currently not managed in a way that is compatible either with conservation interests or with long-term economic viability. Bye-laws currently under consideration may not be sufficient to achieve sustainable management; international experience from Ramsar sites in the Wadden Sea may provide helpful guidance.

9. Wildfowling and other recreational activities are amongst the issues where positive developments have taken place and where the principle of voluntary self-regulation have an important role to play. There is a high level of mutually beneficial cooperation between wildfowlers and conservation organizations, whilst efforts to prevent adverse impacts from other activities have generally proved successful, although the report draws attention to a few sites where specific concerns remain.

10. Some of the most important tools for implementing many of the recommendations contained in this report will be the three complementary, estuary-wide management initiatives currently under way, namely the Shoreline Management Plan, the Dee Catchment Management Plan, and the Dee Estuary Strategy. It is vital that these initiatives are supported by Government, where necessary through appropriate modifications to legislation and planning policy guidance. The Government should also ensure that implementation of the Dee Estuary Strategy be fully funded, through all appropriate means, over an initial period of at least three years.

11. It is hoped that the United Kingdom will provide information on its response to this report as part of its National Report to the Sixth Meeting of the Contracting Parties to the Ramsar Convention, to be held at Brisbane, Australia, in March 1996.

Note: the end-paper to this report is a fold-out, quick-reference map showing the principal sites mentioned in the text

II INTRODUCTION

II (a) The Ramsar Convention

12. The Convention on Wetlands of International Importance especially as Waterfowl Habitat was established in 1971 at a conference held in the Iranian town of Ramsar. It currently has 86 Contracting Parties from all regions of the world. States which join the Convention accept four major obligations: (i) to designate at least one wetland in their territory for the Ramsar List of Wetlands of International Importance and to maintain the ecological character of the wetland(s) concerned; (ii) to make 'wise use' of all wetlands in their territory, whether or not the wetlands are included in the List; (iii) to establish wetland reserves and to provide adequately trained staff for their wardening and management; and (iv) to engage in international cooperation, especially in regard to trans-border wetland systems and migratory wetland species.

13. The main policy-making body of the Convention is the Conference of the Contracting Parties, which meets once every three years. Between meetings of the Conference, the Convention is managed by a Standing Committee composed of Regional Representatives. The day to day running of the Convention is carried out by the Ramsar Bureau (or secretariat) which is co-located in Switzerland with the headquarters of IUCN - The World Conservation Union.

14. For further details, refer to 'The Ramsar Convention Manual' (Davis, 1994).

II (b) Montreux Record and Monitoring Procedure

15. There are currently more than 700 sites included in the List of Wetlands of International Importance. Approximately 10% are also included in the 'Montreux Record', a register of Ramsar sites where 'changes in ecological character have occurred, are occurring or are likely to occur as a result of technological developments, pollution or other human interference'. Contracting Parties are obliged by Article 3.2 of the Convention to bring such changes to the attention of the Ramsar Bureau. The Montreux Record was established by Recommendation C.4.8 of the 1990 meeting of the Conference of the Contracting Parties (held at Montreux, Switzerland) and formalized by Resolution C.5.4 of the 1993 meeting of the Conference (held at Kushiro, Japan). Resolution C.5.4 stated that the record should be referred to as the Montreux Record, determined that its purpose is - among others - to identify priority sites for positive national and international conservation attention, and instructed the Bureau to maintain the Montreux Record as part of the Ramsar Database. The Bureau only includes sites in the Montreux Record with the approval of the Contracting Party concerned. Operation of the Montreux Record is reviewed by the Convention's Scientific and Technical Review Panel (STRP).

16. The Monitoring Procedure is a mechanism which is operated by the Ramsar Bureau, at the invitation of the Contracting Party concerned, to address issues at sites included in the Montreux Record. The aim of the Monitoring Procedure is to bring about the steps necessary for the removal of the site from the Montreux Record.

The Monitoring Procedure usually takes the form of one or more site visits by Bureau staff and specialists who are expert in the particular issues involved. The specialists may be representatives of other Contracting Parties or partner organizations. A report is then compiled and submitted by the Ramsar Bureau to the government concerned. The report generally includes a detailed analysis of the situation and recommendations for future action in order to arrive at acceptable solutions. Since its inception in 1988, the Monitoring Procedure has been implemented in more than 25 countries. It has been implemented once before in the UK, namely at the Lough Neagh and Lough Beg Ramsar site (Northern Ireland) in 1989.

17. For further details, refer to 'The Ramsar Convention Manual' (Davis, 1994).

II (c) The United Kingdom and the Ramsar Convention

18. The UK became a Contracting Party to the Convention in January 1976. As of 15 May 1995, the UK has designated 89 wetlands for the Ramsar List; more than any other Contracting Party. The UK has played an active role in the Convention's work and submits detailed National Reports to the triennial meetings of the Conference of the Contracting Parties. Furthermore, the UK pays an annual contribution (currently SFR 121,930.00) to the Convention's core budget and has made many additional voluntary contributions in support of specific projects. As host country of one of the Convention's principal technical advisers (the International Waterfowl & Wetlands Research Bureau - IWRB) the UK is a permanent observer on the Ramsar Standing Committee. The Administrative Authority responsible for implementation of the Convention in the UK as a whole is the Department of the Environment. The Joint Nature Conservation Committee (JNCC) is also normally represented on UK delegations at official Convention meetings.

19. The United Kingdom is responsible for 28% of the estuarine resource of the North Sea and Atlantic coasts of Europe (English Nature, 1992), which hosts around 40% of all the waders wintering in north-west Europe or about one in five of the waders wintering in the whole of the North Sea coast, Atlantic coast of Europe, and North Africa. More than 1.5 million wildfowl, many of which depend largely on estuarine areas, also winter in the UK, whilst millions of other waders and wildfowl use UK estuaries as essential resting and feeding sites during their long-distance migrations (RSPB, 1993). The UK therefore has a major international responsibility to safeguard and manage its estuaries in the interests of nature conservation.

II (d) The Dee Estuary Ramsar Site

20. The Dee Estuary was designated for the List of Wetlands of International Importance on 17 July 1985 (note: wetlands included in the List are generally referred to as 'Ramsar sites'). At the same time, it was also classified as a Special Protection Area (SPA) under the EU Directive on the Conservation of Wild Birds. The boundary of the Ramsar Site and SPA coincides exactly with that of the Site of Special Scientific Interest (SSSI) designated under national legislation. A comprehensive summary of the physical, ecological, and socio-economic/land-use characteristics of the estuary is available in Jemmett (1994a).

21. The Dee Estuary qualifies under several of the Convention's criteria (see Davis, 1994) for identifying internationally important sites. In particular, it regularly supports in excess of 20,000 waterfowl (the average peak count for the five winters 1988/89 to 1992/93 was 145,760 birds, placing the Dee amongst the top five sites for waterfowl in the UK; see Waters & Cranswick, 1993). The estuary also regularly supports at least 1% of the appropriate biogeographical population of one or more waterfowl species: during the same five-year period, the average peak counts met or exceeded the 1% thresholds for: Shelduck (*Tadorna tadorna*), Teal (*Anas crecca*), Pintail (*Anas acuta*), Oystercatcher (*Haematopus ostralegus*), Grey Plover (*Pluvialis squatarola*), Knot (*Calidris canutus*), Dunlin (*C. alpina*), Black-tailed Godwit (*Limosa limosa*), Bar-tailed Godwit (*L. lapponica*), Curlew (*Numenius arquata*), Redshank (*Tringa totanus*) and Turnstone (*Arenaria interpres*).

II (e) Inclusion of the Dee Estuary in the Montreux Record and initiation of the Monitoring Procedure

22. As a result of information contained in the 1990 UK National Report (Ramsar Convention Bureau, 1992), and with the approval of the UK authorities, the Dee Estuary was included in the Montreux Record. The National Report stated that 'the site's multiple ownership, crossing county and national boundaries, hampers any comprehensive planning'. The report also referred to tipping at Point of Ayr and actual or potential difficulties relating to the proposed Flint by-pass, development of Mostyn Dock, unregulated cockling, coastal defence work, invasion by hybrid cord-grass (*Spartina*), and the impact of recreation.

23. The 1993 UK National Report (Ramsar Convention Bureau, 1994) provided information on the steps being taken to overcome threats to the site. However it also stated that 'the UK Government is considering whether the Ramsar Monitoring Procedure should be implemented to review the many factors influencing this complex site'. The UK announced subsequently that it would be inviting the Ramsar Bureau to apply the Monitoring Procedure and that the Dee Estuary should therefore remain on the Montreux Record.

II (f) Implementation of the Monitoring Procedure on the Dee Estuary

24. A Monitoring Procedure mission, coordinated by the Department of the Environment (in close cooperation with the Welsh Office, statutory nature conservation agencies, local authorities and non-governmental organizations) and by the Ramsar Convention Bureau, visited the Dee Estuary from 14-16 November 1994. The Ramsar Convention was represented by a three-person team as follows:

Mr Palle Uhd JEPSEN, Senior Conservation Officer, Ministry of Environment, Denmark

Mr François LETOURNEUX, Director, Conservatoire du Littoral et des Rivages Lacustres, France

Mr Tim JONES, Senior Technical Officer, Ramsar Convention Bureau, Switzerland

25. The first two days of the mission involved field visits to the English and Welsh shores of the estuary, whilst the third day was devoted to a small conference attended by the key agencies and organizations concerned with management of the Dee. A detailed itinerary is attached as Appendix A.

26. Prior to the mission, the UK Government had indicated that its expectations, which effectively formed the Terms of Reference for the Monitoring Procedure team, were as follows:

(i) An analysis of the extent of the present problems, identifying the existing legislative and administrative protection controls and their effectiveness, and an indication of any gaps in protection systems;

(ii) Recommendations on the possibilities for improving protection systems through formal and informal mechanisms;

(iii) Recommendations on action to ensure that problems which might arise in the future will be effectively monitored.

27. The structure and general content of this report, which have been agreed with the UK Government, reflect these terms of reference, but have been further guided by the wishes and recommendations of the one-day conference held at the end of the Monitoring Procedure Mission.

28. The Ramsar Bureau has always stressed the value of using the Dee Estuary as a case study, from which lessons might be drawn and applied elsewhere, not only in the UK, but also at other European estuaries (in spite of differing legislative and planning frameworks), notably those along the heavily populated and industrialized Atlantic and North Sea coasts. Especially relevant are sharing of experience of coastal/estuarine planning, and experience of tackling multiple and/or overlapping administrative responsibility and jurisdiction. Many wetlands in Europe face pressures from multiple uses, and the Ramsar Convention encourages all Contracting Parties to consider the potentially serious cumulative effect of numerous, but individually small-scale, impacts.

29. The establishment of integrated management plans for Ramsar sites, especially complex estuarine wetlands, is a high priority under the Convention; the Bureau hopes that the recommendations in this report will form a valuable contribution to the estuary-wide initiatives which are already under way for the Dee. Nevertheless, during their visit to the estuary, the Ramsar representatives emphasized that the Monitoring Procedure should be seen as a framework within which the many factors influencing management of the site might be addressed in an international context. It is not the role or intention of the Monitoring Procedure to 'second-guess', or otherwise undermine, the progress which has already been made at local and national levels.

Note: the end-paper to this report is a fold-out, quick-reference map showing the principal sites mentioned in the text

III KEY ISSUES

III (a) Site boundaries and planning considerations

Background

30. The boundaries of wetland protected areas require special consideration since wetland ecosystems are generally far more liable to be influenced adversely by activities in surrounding areas than are terrestrial ecosystems such as forest or heathland. In the case of an estuary it is crucial that sufficient safeguards are put in place to ensure that activities within the adjacent coastal zone and elsewhere within the catchment do not cause deterioration in the functions and values of the site. In this respect, it is important to consider the implications of the location of the Dee Estuary SSSI/Ramsar site boundary for planning of land use in and around the estuary.

31. The boundary of the Ramsar site and EU Special Protection Area (SPA) follows exactly that of the SSSI which was notified under the Wildlife and Countryside Act (1981) in 1983. The international site boundaries were confirmed by the UK Government in 1985.

32. In most parts of the estuary, the site boundary follows the landward limit of the inter-tidal zone, including most of the salt-marsh fringing the estuary. Where engineered coastal defences have been built into the estuary, the site boundary generally follows the seaward edge of these defences. The definitive Ramsar site and SPA boundary is shown on a 1:25,000 map published jointly by English Nature and the Countryside Council for Wales in May 1994. This map is reproduced in Appendix B to the present report.

Government planning policy guidance on nature conservation

33. The statutory basis for the conservation of internationally important natural habitats and wild flora and fauna is the 'Conservation (Natural Habitats &c) Regulations 1994' which apply throughout England, Scotland and Wales. These regulations cover the Dee Estuary (see paragraph 37 for more details).

34. In October 1994, following the entry into force of the Conservation (Natural Habitats &c) Regulations, the Government issued updated planning guidance on nature conservation matters to local authorities in England ('Planning Policy Guidance: Nature Conservation' PPG9, Department of the Environment, 1994). This document (paragraphs 29-30) states that:

- "the key importance of SSSIs means that development proposals in or likely to affect them must be subject to special scrutiny";
- there is a requirement for "a local planning authority to consult about planning applications in any consultation area around an SSSI defined by English Nature";

- "the authority is also required to consult where an application...is likely to affect an SSSI even if the application falls outside the SSSI and any consultation area".

35. In Wales, updated guidance reflecting the Conservation (Natural Habitats &c) Regulations 1994 has not, so far, been issued. Planning guidance on nature conservation in Wales is therefore provided by the existing Welsh Office Circulars 52/87 (Nature Conservation, DOE/WO 1987) and 1/92 (Planning Controls over Sites of Special Scientific Interest, DOE/WO 1992a). Circular 1/92 states that:

- "SSSIs are a key part of the nature conservation framework and the Government wishes to ensure that their value is taken fully into account in the operation of the town and country planning system";
- "the General Development Order 1988 now requires local planning authorities...to consult about planning applications in any consultation area defined by...the Countryside Council for Wales around an SSSI";
- "where a consultation area has not been defined, planning authorities should give particular attention to any planning application in the vicinity of an SSSI so as to decide whether or not such consultation is needed".

36. At the request of the Government, English Nature and the Countryside Council for Wales are giving priority to defining consultation areas (normally up to 500m, but exceptionally up to 2 km) around sites of international importance. A consultation area for the English shore of the Dee Estuary was notified to local planning authorities in March 1994, but no such notification has been issued in Wales.

37. Because the Dee Estuary is designated as an EU Special Protection Area (SPA), it is subject to legal protection through the provisions of The Conservation (Natural Habitats &c.) Regulations 1994 which implement the EU Habitats Directive in England, Scotland and Wales. These relate especially to establishment of the Natura 2000 network of Special Protection Areas (designated under the Birds Directive, 79/409/EEC) and Special Areas of Conservation (designated under the Habitats Directive, 92/43/EEC). The planning guidance issued by the Government to local authorities in England (PPG9, Department of the Environment, 1994) indicates the special measures to be taken when considering planning applications likely to affect a designated SPA such as the Dee Estuary. Paragraph C9 (in Annex C) of the guidance, and paragraph 7 of Welsh Office Circular 1/92 state that, "The Secretary of State will normally call in...planning applications which are likely significantly to affect sites of international importance". The Secretaries of State may also intervene at the development plan stage and may, ultimately, modify a plan which includes local proposals inconsistent with national planning policies.

38. When considering planning applications likely to affect an SPA/SAC, local authorities in England are required to implement the procedure summarized graphically in Appendix C to the present report (reproduced from PPG9, Department of Environment, 1994). Of particular note is the requirement to consider whether a development proposal, "either individually or in combination with other proposals", is likely to have a significant effect on the SPA or SAC. Attention should be given to seeking alternative solutions for schemes likely to have a

significant effect, and planning permission for the application "must not be granted unless the proposed development has to be carried out for imperative reasons of overriding public interest including those of a social or economic nature". Still stricter provisions apply to the granting of planning permission likely to affect SPAs or SACs which host a priority habitat or species (as determined under the Habitats Directive).

39. If followed in a complete, consistent and timely fashion, the Government's Planning Policy Guidance on Nature Conservation should offer a high degree of safeguards against development which would or could affect the Dee Estuary adversely. However, there are several areas warranting further attention. The first and foremost of these is the risk of inconsistent application of planning policy guidance. The administrative complexity of the planning framework controlling development in and around the Dee Estuary means that six different local authorities and at least two Government Departments are involved. Although it was clear during the Monitoring Procedure mission that considerable coordination efforts are being made, these will need even greater emphasis in the future (see section III (i) on Integrated management of the Dee Estuary).

40. Although the Conservation (Natural Habitats &c) Regulations apply equally to England and Wales, it is of particular concern that, at the time of writing, no updated planning guidance on nature conservation has been issued to local authorities in Wales to correspond with that issued in England. Instead, local authorities must refer to the older Joint Circulars produced by the Department of the Environment and the Welsh Office (see Department of the Environment and Welsh Office, 1987 & 1992a) and quoted above in paragraph 35. Even though these circulars emphasize the importance of nature conservation and SSSIs, it is imperative for integrated management of the Dee Estuary that updated guidance be issued swiftly in Wales and that it be entirely consistent with the guidance already issued in England. The position of administrative boundaries must not be permitted to inhibit the consistent application of a coherent planning policy guided by the Government.

Consultation areas and buffer zones

41. Notification of formal consultation areas (as referred to in PPG 9 and Welsh Office Circular 1/92), surrounding the entire SSSI/Ramsar site, should be completed as quickly as possible, through establishment of a consultation area for the Welsh shore. In the view of the Monitoring Procedure team, the boundary of the consultation area should be drawn widely, thus applying the precautionary principle promoted by the Ramsar wise use provisions (Davis, 1993). This means that presumption should be given to a wide consultation area of between one and two kilometres, since as the Government has indicated in its guidance to local authorities on coastal planning (Department of the Environment and Welsh Office, 1992b), "particular care should be taken to assess the impact of proposals affecting estuaries, not only on the immediate site and surroundings, but also on the cumulative effects on the estuary itself".

42. The concept of a consultation area should be extended and adapted to create an appropriate buffer zone for the entire estuary, irrespective of administrative boundaries. At present, the site boundary is drawn very tightly around what might be considered a core area of highest

ecological interest. Government guidance concerning planning consultation areas (PPG9 in England, WO Circular 1/92 in Wales) stresses that these zones should be as narrow as is consistent with protecting the scientific interest of the site, and normally 500 m or less, although in the case of wetlands in particular, the zone may extend up to a maximum of 2 km. This approach could form an important first step towards establishment of a truly effective buffering mechanism for estuarine sites and other particularly sensitive habitats.

43. The need for a buffer zone is especially great in coastal areas which are vulnerable to the effects of global sea-level rise. The Welsh shore of the Dee Estuary is especially vulnerable to the phenomenon referred to as "coastal squeeze" whereby coastal wetlands and other important habitats are eroded by rising sea level, but unable to migrate inland owing to the proximity of industrial development and/or major transport infrastructure, with associated sea defences, close to the shore. Attention should be given to ensuring that further development is located away from present agricultural areas (or otherwise undeveloped land) so that the possibilities of managed coastal setback (see paragraph 2.19 of Department of the Environment & Welsh Office, 1992b) using soft engineering techniques may be maximized. For reasons of practicality it is suggested that physical features (such as field boundaries) be used as the basis for delimiting any buffer zones established.

44. On the English side of the estuary, agricultural land bordering the SSSI should be included in a buffer zone, whilst the RSPB reserve at Inner Marsh Farm (and adjacent land) should be brought within the SSSI (see below). The contaminated land sites on the Welsh shore of the estuary should be considered as important buffer zone components which should not be subject to re-development once they have been made as safe as possible through restoration and landscaping techniques. Similarly, agricultural land between the railway line, and/or the A548 road, and the SSSI/Ramsar boundary on the Welsh shore should also be included within a buffer zone, or even brought within the site boundary.

45. Active consideration should be given to extending the SSSI and Ramsar/SPA boundary to include adjacent wetland habitats of high ecological value (such as Inner Marsh Farm). The Royal Society for the Protection of Birds has recently conducted a detailed study, during a four-year period, of the value of grassland areas which lie adjacent to, but outside, the SSSI/Ramsar site boundary. This study (e.g. Gouldstone, 1994) indicates that many of the remaining pasture areas around the estuary are of importance as high-tide feeding and roosting sites for waders. The RSPB's Inner Marsh Farm reserve should be included within the SSSI and Ramsar site and consideration should be given to the possibilities for extending similar wetland restoration measures to adjoining land. Extension of the SSSI and internationally designated sites would help ensure that such areas, currently being reduced by encroaching development, are adequately safeguarded.

46. The Dee Estuary SSSI is adjoined in England by North Wirral Foreshore SSSI, Red Rocks SSSI and Dee Cliffs SSSI, and in Wales by Gronant Dunes and Talacre Warren SSSI. Gronant Dunes and Talacre Warren form an important part of the natural coastal defences which shelter the Dee Estuary from the open sea of Liverpool Bay. The dunes are an integral part of the coastal and estuarine system and of national importance for breeding Little Terns (*Sterna albifrons*). The sandy foreshore is also an important high tide roost for birds, especially Cormorant (*Phalacrocorax carbo*) and Sanderling (*Calidris alba*). It is highly desirable that these areas be included within the Ramsar site. Sandy shores, including dune complexes, are

covered within the Ramsar 'classification of wetland type' and have been included in other UK Ramsar/SPA designations, such as the Burry Inlet in south Wales.

47. It would also be appropriate to consider inclusion of North Wirral Foreshore, Red Rocks and Dee Cliffs SSSIs within the Ramsar site, since they form part of an ecologically integral area. North Wirral Foreshore SSSI is of particular importance for wintering waders, whilst Red Rocks SSSI supports the nationally rare Natterjack Toad (*Bufo calamita*).

48. It should be emphasized that the points raised in paragraphs 41-47 are consistent with the principle of wetland zonation contained in Recommendation C.5.3 of the Conference of the Contracting Parties to the Ramsar Convention, adopted at Kushiro, Japan in 1993. The aim of buffer zones is not to extend the Ramsar site itself, but rather to ensure that land-use decisions in the surrounding area are fully consistent with the conservation objectives of the Ramsar designation. Extending the boundaries of the designated site is a separate issue and one that deserves careful attention to see if, in retrospect, the boundaries should have been drawn more widely in certain locations, subject to acceptable ecological justification. This appears to be a clear and rational approach which would have specific, one-off results in terms of boundary modifications. It is not intended, and it should not be inferred, that an effective buffering mechanism, combined with a modest extension of the Ramsar site boundary, would lead to constant pressure for yet further expansion in the future. The constraints resulting from already existing land-use around the estuary, especially on the Welsh shore, would, in any case, preclude this.

III (b) Industrial development and transport infrastructure

Background

49. The extensive lowland areas associated with many estuaries have long been attractive as sites for the development of industrial and urban centres and the transport infrastructure which serves them. The Dee Estuary is no exception and has been subject to considerable development since the industrial revolution. For historical reasons (see paragraphs 52-53 below), virtually all of the industry directly adjoining the SSSI/Ramsar site is located on the Welsh shore. This reflects the former siting of several large manufacturing industries (notably steel and textile manufacturing), which were of dominant importance in the regional economy. These former 'heavy' industries have largely disappeared as a result of the changing national and international economic context, but have been replaced by a wider range of much smaller companies, a trend which is ongoing.

50. The industrialization of the Welsh shore of the Dee Estuary, and the importance of the North Wales coast as a tourist destination, have also meant that the estuarine zone has been substantially developed as a transport corridor, with a major road (the A548) and a railway line adjoining, or running very close to, the SSSI/Ramsar site boundary along much of its length. With the newest wave of industrialization and substantial growth in national road traffic volume, has come pressure to upgrade the road network by means of bypassing town-centre 'bottlenecks'.

51. There are two inter-related issues which arise from the situation summarized above. The first is that of problems inherited from historical industrial activity at a time when less importance was attached to environmental considerations. The second issue is that of actual and potential conflicts associated with proposals for new industrial and transport development. These issues are dealt with in the two sub-sections below, with cross-references, where necessary, to other parts of this report.

Ongoing impact of past industrial development

52. Industrial development has already significantly modified the Welsh side of the Dee Estuary, so that rather little of the shoreline is free from development. It is important that the utmost efforts are made to ensure that new development is kept away from surviving natural or semi-natural areas so that flexibility can be retained in terms of buffer zones, possible habitat enhancement/restoration and alleviation of coastal squeeze. Many of these themes are developed further in other sections of this report (e.g. paragraphs 41-48)

53. Many of the heavy industries formerly located around the Dee Estuary generated toxic waste which was tipped indiscriminately onto coastal fields, salt-marsh and mud-flats. Furthermore, many of the tip sites received waste from other areas, well beyond the estuary or its catchment. Very little is known about the detailed content of some of the sites, whilst others have recently been subject to extensive investigation, monitoring and treatment aimed at reducing their actual or potential damage to the present-day environment. It is important that the problems associated with contaminated land sites are recognized and accepted as a consequence of an era that is past, when little or no thought was given to the impact of industrial development upon nature conservation or upon the wider environment. Nevertheless, serious problems exist, requiring extremely expensive restoration measures to be undertaken through the cooperative efforts of Government, local authorities, other statutory bodies and private companies. Detailed consideration is given to this topic under section III (d) of this report.

Recent development and new proposals

54. A number of major developments have recently taken place on the Welsh shore of the estuary and others are proposed (or are likely to be proposed) in the near future. The planning framework which controls development in and around the SSSI/Ramsar site is discussed in section III (a) of this report under the heading of 'Site boundaries and planning considerations'. The following paragraphs consider the detailed issues raised by each individual proposal. The Monitoring Procedure team recognizes the importance of distinguishing between actual impacts of existing development and potential impacts from development proposals. Every effort has been made to make this distinction in the discussion of the case studies presented below.

Hamilton Oil (Point of Ayr) and PowerGen (Connah's Quay)

55. One of the most significant recent events has been the discovery of major gas reserves in

Liverpool Bay. In 1989 and 1991, Hamilton Oil Company Ltd. was awarded licensing blocks for oil and gas exploration off the Clwyd and Southport coasts, resulting in the discovery of major oil and gas fields, including the Hamilton and Hamilton North gas fields approximately 15 miles offshore from the Point of Ayr. It has been estimated that the two gas fields hold approximately one trillion cubic feet of gas (Hamilton Oil Company, 1992). In 1991 Hamilton Oil Company Ltd. announced plans for the development of a gas processing terminal at Point of Ayr. A planning application was subsequently approved by the Government (through the Welsh Office) following a Public Inquiry in 1992.

56. Hamilton's development site directly adjoins the Dee Estuary SSSI and Ramsar site boundary but does not make any incursion into it. However, pasture land within and around the proposed development site had been identified by conservation organizations, including the RSPB, as being of significant importance at high tide for roosting and feeding waders. Furthermore, the pipeline bringing gas onshore was to be routed through Gronant Dunes and Talacre Warren SSSI. These factors led to a number of environmental conditions being attached to the granting of the planning application for the gas terminal itself (the pipelines were dealt with under separate applications to the Department of Trade and Industry and Delyn Borough Council). The company's subsequent actions and implementation of environmental safeguards have been exemplary and have drawn praise from non-governmental conservation bodies.

57. Amongst the positive steps taken have been:

- open and constructive dialogue with conservation organizations and local people and provision of comprehensive yet comprehensible public information materials;
- appointment of a resident ecologist to advise the company and liaise with statutory and non-statutory conservation agencies;
- purchase and management for conservation, in conjunction with CCW and RSPB, of 40 ha of pasture land;
- significant habitat enhancement within part of the 40 ha site;
- funding of a major restoration and conservation programme for Gronant Dunes and Talacre Warren SSSI, going far beyond simply repairing the damage done through laying of the gas pipeline;
- conclusion of an eight-year management agreement with the RSPB for the nature reserve located within the Dee Estuary SSSI, immediately adjacent to the gas terminal site;
- initiation of a ten-year ecological monitoring programme to assess the impact of the development;
- establishment of a rigorous environmental emergency response plan.

58. Also in 1991, a planning application was made by PowerGen plc for the construction of a Combined Cycle Gas Turbine (CCGT) power station which would use gas brought ashore by

Hamilton Oil Company and which would be located at Connah's Quay. This application also received Government approval, through the Department of Energy. In contrast to the development at Point of Ayr, the Connah's Quay CCGT construction does entail an incursion into the SSSI and Ramsar site boundary by the extension of a training wall to allow cooling water to be extracted from and discharged into the estuary. CCW is satisfied that the cooling water discharge will have minimal effects on the ecology of the estuary; however, the construction of the intake and outfall will lead to the direct loss of a small part of the site (less than 1 ha). A further incursion, but without direct loss, will occur when a pipeline linking the CCGT with British Gas is installed, following the granting of planning permission in 1994.

59. In October 1994 a further planning application was submitted by PowerGen for construction of a gas processing plant to upgrade the quality of surplus gas to a level acceptable for onward supply to the British Gas system. The site for this latest proposal is adjacent to the CCGT and directly adjoins the SSSI and Ramsar site boundary.

60. In mitigation for the incursion into and small loss of SSSI land, and other indirect impacts, PowerGen has offered three areas of land where positive management for nature conservation will be funded by the company. One parcel of land is adjacent to the RSPB's Oakenholt nature reserve and will be the subject of wetland creation and enhancement measures. Another area is the present site of Deeside Naturalists' reserve and visitor centre, where further habitat enhancement will be carried out. All three areas are currently outside the SSSI and Ramsar site boundary.

61. At the time of the Ramsar Monitoring Procedure field visits, both the Point of Ayr gas terminal and Connah's Quay CCGT developments were well under way, as was a major project to link the two via a 27-kilometre long underground pipeline, mainly routed inland.

62. Several points arise from the summary of events presented above. The first is that both the Point of Ayr and Connah's Quay developments have increased the pressure of coastal squeeze on the Dee Estuary. This should be taken into account when considering further development proposals on land immediately adjoining the SSSI and Ramsar site boundary. The limited areas of undeveloped land adjoining the site boundary on the Welsh shore should be treated in line with the Government's Planning Policy Guidance 20: Coastal Planning (Department of the Environment & Welsh Office, 1992b) which states 'development plan policies should normally not provide for development which does not require a coastal location'. Realization of an effective buffer zone to protect the Dee Estuary from further 'hemming in' is especially needed in this area (see paragraphs 41-48).

63. A further point is the piecemeal nature of development at Connah's Quay, for which there have been three separate planning applications, the piecemeal treatment of pipeline development, and the separate consideration of the development at Point of Ayr, even though the two sites were inextricably linked in commercial terms. It appears that there was no strategic overview of the cumulative impact of the entire development, which involved three local authorities and several Government Departments. Rigorous application in Wales of the guidance given for England in PPG9 would help to avoid such a sequence of events in the future and it is to be hoped that such guidance for Wales will be forthcoming.

64. A third issue to arise from the Hamilton and PowerGen developments is that of mitigation.

This is discussed fully in section III (c) below. However, it is important to note that adverse environmental impacts from development cannot necessarily be overcome through mitigation measures. The positive approach and environmental protection work carried out by Hamilton Oil Company is commendable, but in many respects is a separate issue from whether or not the development should have been granted permission in the first place. This is the kind of question which should be addressed in the context of an integrated, estuary-wide management framework such as that being developed as the Dee Estuary Strategy (see section III (i)).

Point of Ayr Colliery

65. Disposal of waste from the deep coal mine at Point of Ayr, formerly operated by British Coal and now owned and operated by the private company RJB Mining Ltd., has traditionally been within the Dee Estuary. In April 1985, three months prior to designation of the Dee Estuary Ramsar site and EU Special Protection Area, British Coal received planning permission for an extended shore-tip, on the southern side of the colliery, to meet its tipping requirements until the 1990s. A boundary was agreed within which tipping onto intertidal mud-flats inside the SSSI boundary (and now within the Ramsar/SPA boundary) could occur, leading to the direct loss of 15.5 ha of intertidal flats from the protected area.

66. The National Rivers Authority inherited responsibility for the tip site in September 1989, following privatization of the former Welsh Water Authority. The agreement to tip expired in 1990 and the NRA agreed, in principle, to renewal for a further 15 years over the extended area, subject to the meeting of certain stringent environmental conditions. In practice, reaching agreement on these conditions took several years and meant that a new lease was only concluded in 1994. Until that time, the tip was completely open to tidal action, meaning that coal waste continued to be washed into the wider estuary. It is only very recently that the area concerned has been enclosed by a bund (1.2 km in length, 7 m in height), at the requirement of the National Rivers Authority. However, at the current rate of tipping (less than 50% of the rate envisaged in the early 1980s), and possibly owing to the unrestricted tidal action on the tip until 1994, the bunded area would not be filled until well into the next century.

67. Since the Monitoring Procedure mission visited the site, an application (in the form of a proposed variation in the conditions approved in 1985) to extend the life of the tip until 2005 has been submitted. CCW has emphasized the need for mitigation measures to be associated with such an application. It has been proposed that the tipped-over area will ultimately be restored and landscaped to form a 'perched' fresh-water wetland area to serve as a high-tide roost for wading birds. However, the feasibility of creating an important roosting area in this location needs careful attention. The NRA and RJB Mining are actively considering additional measures (see also paragraph 95).

68. The Monitoring Procedure team recognizes the economic and social importance of maintaining viable industries around the Dee Estuary; it is understood that some 600 jobs depend on Point of Ayr colliery. Nevertheless, the sequence of events outlined above raises a number of concerns. Firstly, it is unacceptable that the tip remained unbunded for almost a decade, so that coal waste was dispersed into the estuary by tidal action. Secondly, it is also unacceptable that all of the 15.5 ha site granted in 1985 was isolated from tidal influences in 1994, despite the fact that only part of the area had actually been tipped over. Since the tip had

existed without a bund for ten years, it would have been preferable to await the outcome of a further application to extend the life of the tip into the next century, before determining the position of the bund.

69. Although nature conservation and development control legislation is identical in both England and Wales, consideration of the recent application to extend the life of the tip may be made more problematical by the lack of up-to-date Government Planning Policy Guidance in Wales (see section III (a) above). In the absence of Welsh guidance reflecting the Conservation (Natural Habitats &c) Regulations 1994, it is recommended that the procedure for consideration of development proposals affecting SPAs and SACs in England (PPG9, Department of Environment, 1994) should be applied. This would require conclusive demonstration that there is no alternative tip site and that the life of the tip must be extended for imperative reasons of overriding public interest. If planning permission were eventually granted, compensatory measures would have to be taken (see section III (c) below). It is the view of the Monitoring Procedure team that both the land owners (i.e. NRA) and users (i.e. RJB Mining) should be involved in the provision of such compensation. It should be recalled that Article 4.2 of the Ramsar Convention stipulates that Contracting Parties may only restrict the boundary of a Listed site "in its urgent national interest". However, it is understood that no boundary restriction is envisaged in this particular case, because of proposals to landscape and 'restore' the tipped-over site.

70. The tip on the northern side of the colliery remains unbunded and subject to tidal erosion. Steps should be taken to seal this tip face to prevent waste material being washed into the estuary. However, it should be ensured that such measures do not lead to further significant loss of intertidal flats.

Flint Bypass

71. The A548 main road (from Queensferry to Prestatyn and Rhyl) runs along the Welsh shore of the Dee Estuary and is the subject of several Clwyd County Council proposals for upgrading to dual carriageway. For a number of years, one of these proposals has been to build a bypass around the town of Flint. Following a public inquiry in 1990, a coastal route for the proposed bypass was rejected by the Secretary of State for Wales because of the unacceptable impact that it would have upon a scheduled Ancient Monument (Flint Castle) and upon the Dee Estuary SSSI, Ramsar site and SPA, including direct loss of 11.4 ha of the protected area (Clwyd County Council, 1994). This development proposal was one of the factors which led to the inclusion of the Dee Estuary Ramsar site in the Montreux Record.

72. Following further work, including consideration and rejection of an inland route, Clwyd County Council were, at the time of the Monitoring Procedure mission, considering a modified coastal route which would have led to a smaller direct loss of SSSI and Ramsar site (less than 3 ha) but which would have meant construction of a dual carriageway road directly adjoining the site (in an area of the estuary especially vulnerable to coastal squeeze - see section 3.1.3) for a distance of approximately 3 km. Part of the area adjoining the proposed route is occupied by the RSPB's Oakenholt Marsh nature reserve.

73. On visiting the site of the proposed bypass, the Monitoring Procedure team concluded that

proceeding with the development would have entirely unacceptable impacts upon the Dee Estuary SSSI, Ramsar site and SPA. Furthermore, the team considered that there could be no circumstances under which a coastal route could be made acceptable through mitigation. Instead, attention should be refocused onto other options, including consideration of revised inland routes. The Government's Planning Policy Guidance on Coastal Planning (PPG20, Department of the Environment and Welsh Office, 1992b) applies in this respect and states 'development plan policies should normally not provide for development which does not require a coastal location'.

74. At the time of finalization of this report (June 1995), the Monitoring Procedure team understands that Clwyd County Council has announced a decision not to proceed with plans for the coastal route, following formal consultation. It is understood that this decision, which is welcomed by the Monitoring Procedure team, was taken for environmental reasons.

Mostyn Dock

75. During the second half of the 1980s a series of planning applications was made for the extension of port facilities at Mostyn Dock. If approved and implemented, the proposals covered by these applications would have led to the loss of up to 5.2 ha of intertidal area from within the SSSI and Ramsar site. The applications were either withdrawn, or once approved, never implemented. Nevertheless, concern over potential loss of part of the Ramsar site was one of the factors leading to the inclusion of the Dee Estuary in the Montreux Record in 1990.

76. In 1993, Mostyn Dock Company (which in 1988 became a statutory harbour authority with permitted development rights inside a limited area) proposed a further development of the docks. This would involve the bunding-off and infilling of 8.7 ha of intertidal flats within the SSSI, Ramsar site and SPA, to create new berths for larger vessels in order to enhance the economic viability of the docks and the economic development opportunities within the area arising from oil and gas developments in Liverpool Bay. Furthermore, an approach channel would be deepened by some 1.4 m by dredging to permit access to the new berthing area, thus allowing access for up to 22 hours per day; the docks are currently only accessible during a one-hour window at high tide. In view of the actual loss of area from the SSSI and Ramsar site which would be caused by implementation of the proposal, the Secretary of State for Wales withdrew the permitted development rights for Mostyn Docks, meaning that a planning application then had to be made to the local authority (Delyn Borough Council). An application was duly submitted, with associated mitigation measures. It was subsequently 'called in' (i.e. referred to Central Government for decision) by the Secretary of State for Wales and was due to be considered by a public inquiry in September 1994. However, the proposal was withdrawn shortly before the inquiry commenced. A new application was submitted at the end of 1994 and, at the time of writing, a public inquiry is scheduled for July 1995.

77. As discussed in paragraphs 65-70 above, dealing with Point of Ayr colliery, the absence of Government Planning Policy Guidance on Nature Conservation in Wales causes some difficulties in relation to Mostyn Dock. Nevertheless, the Conservation (Habitats &c.) Regulations 1994 apply in Wales and restrict the granting of planning permission for development which is likely significantly to affect an SPA. Research by the RSPB has shown the intertidal flats in the vicinity of Mostyn Dock (especially the Mostyn and Salisbury Middle

Banks) to be of particular importance as feeding grounds for wading birds. Whilst issuance of updated planning guidance from the Welsh Office is awaited, consideration of any new application for expansion of Mostyn Dock will nevertheless be treated according to the provisions of the Conservation (Natural Habitats &c) Regulations 1994. As with the possible extension of tipping at Point of Ayr, the legal tests set by the Habitats Directive would require unequivocal demonstration that there is no alternative means of ensuring the economic viability of the docks and that development would be for imperative reasons of overriding public interest (or, in the words of Article 4.2 of the Ramsar Convention, in the "urgent national interest" of the Contracting Party concerned). If planning permission was granted, compensatory measures would have to be taken (see section III (c) below).

National Power (Shotton)

78. In 1990 and 1992, National Power plc received planning consents for the development of a Combined Cycle Gas Turbine (CCGT) power station on part of the former British Steel site at Shotton. At the time of the Monitoring Procedure field visit, the power station had been completed and was already in operation. This case study involved the redevelopment of already industrialized and contaminated land (see section III (d) paragraphs 108-109) and did not lead to any incursion into or loss from the SSSI/Ramsar site.

79. An application for an additional CCGT power station received planning permission in 1990, but this will not now be built as the consent has lapsed.

Third road crossing of the River Dee

80. A new road crossing of the Dee is currently under construction near Shotton. The road will pass between the National Power CCGT plant and Broken Bank Tip, crossing the river a few tens of metres south of the southernmost part of the SSSI/Ramsar site boundary. Although not resulting in direct loss from the site, construction of the road contributes to the 'hemming in' of the estuary and limits future management options.

General comments

81. Most of the proposed and approved development applications discussed above (with the exception of the Hamilton Oil Company development at Point of Ayr and the National Power/third Dee crossing developments at Shotton) have led or would lead to direct loss of small areas of intertidal land from the Dee Estuary SSSI and Ramsar site. The loss could amount to around 28 ha (larger than either the Holburn Lake or Llyn Idwal Ramsar sites elsewhere in the UK) - a significant cumulative impact, with no guarantee that further losses of coastline would be avoided, nor that adjoining 'conserved' areas would be unaffected by disturbance. All of the developments also have (or would have) the effect of increasing the pressure of coastal squeeze on the Welsh shore of the site. Whilst development proposals are considered in the context of development plans, there remains a trend of individual consideration of planning applications, instead of a much more strategic approach which gives due attention to the likely cumulative impact of several proposals.

82. The Ramsar Convention actively promotes wise use of wetlands, but development of industrial activities which lead to the actual loss of part or parts of a Ramsar site cannot be considered as wise use. Instead, they must be considered in the light of the Convention's provisions for compensation, in the event of boundary restriction in the urgent national interest.

83. Whilst Environmental Assessment (EA) is mandatory or advised for certain development proposals, the Monitoring Procedure team believes that it would be beneficial for a greater degree of independence to be brought to the EA procedures which are presently implemented on the basis of an environmental statement provided and paid for by the prospective developer. Whilst this arrangement is consistent with the 'polluter pays' principle, the independence of an environmental statement prepared by (or under contract to) the developer is clearly questionable.

84. Consideration should also be given to the development of specific guidance for EAs in relation to wetland sites, giving full recognition to the wide zone of potential impact.

III (c) Compensation/mitigation and restoration

Requirements of the Ramsar Convention and EU Habitats Directive

85. Article 4.2 of the Ramsar Convention states, "Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection in the same area or elsewhere, of an adequate portion of the original habitat".

86. Article 6.4 of the EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora states in relation to designated SPAs and SACs that "If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted".

87. The provisions of the Habitats Directive, are given the force of law throughout the UK by the Conservation (Natural Habitats &c) Regulations 1994 and reflected in the Government Planning Policy Guidance on Nature Conservation (PPG9, Department of the Environment, 1994). The latter document, which, as stated previously, applies to England only states in relation to SSSIs in general that, "Where there is a risk of damage to a designated site, the planning authority should consider the use of conditions or planning obligations in the interests of nature conservation".

88. Many of the recent development applications (both approved and in progress) around the Dee Estuary have incorporated compensation or so-called 'mitigation' packages. However, it should be recalled that the international obligations applying to the Dee Estuary consider that development likely to affect a designated site, therefore requiring compensatory measures,

should only be permitted in exceptional circumstances. The Ramsar Convention makes it clear that boundary restrictions should be demonstrated as being in the "urgent national interest", whilst the Habitats Directive speaks of "imperative reasons of overriding public interest". The Monitoring Procedure team considers it doubtful whether all of the recently implemented and proposed development applications can be considered as meeting these requirements. There also appears to be a worrying trend in recent development proposals towards treating the concept of mitigation as something which can be 'bolted on' to make almost any proposal acceptable. It is hoped that this point may be addressed by decision-makers in the guidance which they offer to prospective developers. In general terms, there should be a presumption against development in, or close to, internationally important wetlands. As stated elsewhere in this report, loss of part of a Ramsar site to industrial development is incompatible with the Convention's wise use provisions.

89. When, in the exceptional circumstances that industrial development in or adjoining a Ramsar site is clearly demonstrated as being in the urgent national interest, consideration can be given to implementing the Convention's provisions concerning compensation. There has been no formal interpretation or guidance on this matter agreed by the Conference of the Contracting Parties. However, there is a useful summary of application of Article 4.2 contained in paragraphs 102-118 of DOC. C.5.16 *Review of National Reports*, (Ramsar Convention Bureau, 1994), submitted to the Kushiro meeting of the Conference of the Contracting Parties. Additionally, the Monitoring Procedure team considers that:

- Compensation should not be treated on a superficial 'area for area' basis. It does not mean simply designating any wetland area which is at least as big as the part of the Ramsar site being lost to development. Furthermore, provision of even 200 ha at location Y is not necessarily adequate compensation, in ecological terms, for loss of 10 ha at location X. Similarly, loss of even a small part of an extensive wetland of international importance cannot and should not be compensated for by designation of several still smaller parcels of land.
- Instead, compensation should take into account the wetland functions and values which are lost when part of a Ramsar site is deleted. Hence, for example, an area of intertidal mud-flats of high importance as a source of invertebrate food for feeding waders cannot and should not be equated with an equivalent area of reed-bed. Special attention should be given to the requirement for compensation with the original habitat type and to management of any area offered in compensation. Even if the habitat at location B is of a similar type and extent to that at location A, other factors, (e.g. disturbance), related to site management, may mean that the value of the site offered in compensation is much lower.

Compensation/mitigation for development in the Dee Estuary

90. Since there were only very brief field visits to a few of the areas concerned, the Monitoring Procedure team does not consider it appropriate that this report should comment on the details of compensation or mitigation measures proposed (or likely to be proposed) as part of current planning applications. However, some general comments can be made and some important lessons may be drawn from recently approved developments which have involved

elements of compensation (see also section III (b)).

91. The Monitoring Procedure team considers that too many of the mitigation sites being proposed or likely to be proposed as part of new planning applications, would only meet the Ramsar compensation requirements at the most superficial level. As emphasized above, proposing compensation does not automatically make an unacceptable development any more acceptable. Application of Article 4.2 should be in exceptional circumstances. Small, fragmented pockets of degraded wetland habitats, often surrounded by industrial or other intensive land use, should not be regarded as adequate compensation for the loss of part of the intertidal mud-flats of the Dee Estuary.

92. The Hamilton Oil Company Development at Point of Ayr is at the other end of the scale; here, the measures taken by the developer have met to the fullest extent possible both the letter and the spirit of the compensation requirements, even though there was no actual loss of land from the internationally designated site.

93. The mitigation measures being implemented by PowerGen at Connah's Quay are more modest than those undertaken at Point of Ayr, even though some actual damage to the Ramsar site will be incurred. The Monitoring Procedure team would especially welcome the extension of mitigation measures to include additional land between the northern limit of the PowerGen development and Oakenholt Marsh. This would form an important contribution to establishment of an effective buffer zone in this part of the estuary, as called for in section III (a).

Restoration measures in the Dee Estuary

94. "For centuries the 'dash to drain' increased land available for agriculture and development. Now the emphasis is on restoring lost wildlife sites" (Worrall and Peberdy, 1994). This quotation from a recent article in 'enact', English Nature's journal on land management for nature conservation, summarizes well the current climate which exists for adopting measures to reverse some of the environmentally damaging practices of the past. This climate has been fostered by both international factors, such as reform of the EU's Common Agricultural Policy (including the 1992 Agri-environment Regulation, see Appleby, 1994), and national factors such as the statutory requirement for the National Rivers Authority to further the conservation of flora and fauna.

95. The Monitoring Procedure team was impressed by the restoration of freshwater wetland habitats on drained former wet meadows at Inner Marsh Farm RSPB reserve on the English/Welsh border. A strategy should be developed through partnerships between private land-owners, local authorities, statutory bodies such as CCW, English Nature Countryside Commission, MAFF, WOAD and NRA, and conservation organizations such as the RSPB, for the implementation of other restoration projects elsewhere around the estuary. This should be part of a proactive programme aimed at enhancing the Dee Estuary SSSI, Ramsar site and SPA, rather than a reactive programme aimed at mitigating losses elsewhere. Particular attention could be given to the enhancement of pasture areas between the SSSI/Ramsar site boundary and the railway line or the A548 road on the Welsh shore of the estuary north of Connah's Quay. Land north of Shotton, between Broken Bank tip and Inner Marsh Farm also

appears to offer good potential for imaginative wetland restoration measures, that would qualify the land to be brought within the SSSI and Ramsar site boundary. Consultation with the Ministry of Defence would clearly be required at an early stage of any such discussions.

96. As a significant contribution to the steps suggested above, the Dee Catchment Management Plan includes a proactive programme of habitat restoration and the National Rivers Authority is currently promoting the restoration of wetland habitats at Bagillt and Point of Ayr in collaboration with the RSPB and RJB Mining Ltd.

97. The proposed Welsh Development Agency application for industrial development of an extensive area of agricultural land at Shotwick, some 2 km east of the SSSI/Ramsar site boundary at Broken Bank tip, is of concern, since it appears likely that material to raise the level of the development site would be extracted from land adjacent to the RSPB reserve at Inner Marsh Farm. Although a deep-water lake might be created as a result of such extraction, this would be of much lesser value in wetland conservation terms than the kind of restoration measures outlined above. It could also cause serious water-level management difficulties on the RSPB reserve. Efforts should be made to locate an alternative source of material, thereby maximizing flexibility for enhancement of the Dee Estuary SSSI and Ramsar site.

III (d) Water quality, waste management and pollution

Background

98. Water is the essential ingredient of wetland ecosystems; hence, maintenance of good water quality, implementation of environmentally responsible waste management and prevention of pollution are pre-requisites for the successful conservation of wetland habitats and the flora and fauna depending on them. The Dee Estuary is an important fishery and fish nursery area, whilst the catchment of the Dee, the most regulated river in Europe, is the source of drinking water for more than two million people (National Rivers Authority Welsh Region, 1994). It is clear that there are strong economic and social imperatives for achieving and maintaining high water quality standards.

99. Owing to the largely rural nature of its catchment (area 2,088 km², human population estimated to be less than half a million), the Dee is of generally good water quality throughout its length, although a number of tributaries are adversely affected by sewage or agricultural pollution. There is a comprehensive monitoring programme and a phased programme of improvements has been agreed with many industries to ensure that effluent quality improves to an acceptable standard. (National Rivers Authority Welsh Region, 1994).

100. Since the Dee Estuary is at the end of the system and receives industrial, sewage and agricultural effluent it could be anticipated that some water quality problems might exist. However, the overwhelming majority of the estuary has been shown to be of 'good' water quality, with only a small area on the English side, offshore from Heswall, falling into the 'fair' category. No part of the estuary falls into the 'poor' or 'bad' categories (National Rivers Authority Welsh Region, 1994).

Sewage outfalls

101. The small part of the estuary which falls into the second class of water quality receives significant impact from sewage effluent discharged at Heswall. The sewage discharged at this point currently receives only primary treatment (involving reduction in suspended solids and a partial reduction in biological oxygen demand) and is therefore a significant source of pollution when it enters the estuary. The pollution originating from the Heswall outfall has been identified as one of the reasons why water quality at West Kirby Designated Bathing Beach has failed, until 1994, to meet the standards set by the EU Bathing Waters Directive. The sewage works at Heswall will be upgraded to provide full treatment, including ultra-violet sterilization, by the administrative year 1996/97. This should ensure that the entire estuary qualifies under the 'good' water quality category, and that West Kirby beach continues to comply with EU standards. Since sewage outfalls may lead to the presence of artificially high concentrations of invertebrate food for waders, careful monitoring of bird distribution and numbers - especially for Redshank (*Tringa totanus*) - should be implemented at Heswall to determine the impact of water quality improvements. However, it is the view of the Monitoring Procedure team that potential value for birds of locally sewage-enriched areas should not prevent the upgrading of treatment in the interests of the wider environment.

102. There are two other primary treatment outfalls remaining around the estuary, both in the vicinity of Bagillt, north of Flint. These are much smaller outfalls, having combined total discharge consents of 60% of the Heswall outfall. Nevertheless, the National Rivers Authority has established that there is a localized pollution problem, with adverse implications for fishery activities, and steps will be taken to upgrade the Bagillt treatment works in due course (M. Chapman/NRA, pers. comm.).

103. There are a further eight sewage effluent disposal sites immediately adjoining the estuary, all except one (a secondary treatment works at Point of Ayr) of which involve tertiary treatment.

104. The work being undertaken by the National Rivers Authority, Welsh Water and other bodies to raise the quality of sewage effluent entering the Dee Estuary and its catchment is most welcome and provides an excellent case study of the improvements to water quality which can be achieved. However, in view of the international importance of the site, all remaining work to upgrade the treatment of sewage should be completed as soon as possible.

Industrial discharges

105. The National Rivers Authority (NRA) works to control pollution from industrial effluents by regulating a system of consents to discharge. Consents are only granted if the NRA is satisfied that measures have been taken to protect other uses of the water body receiving the discharge, and to prevent harmful substances from entering the wider environment. Some of this work is carried out in conjunction with Her Majesty's Inspectorate of Pollution (HMIP) within the framework of Integrated Pollution Control (NRA Welsh Region, 1994). At Warwick International, a chemical manufacturing company located at Mostyn, Integrated Pollution Control was instituted and led to changes in the production process which improved the quality of effluent significantly. In keeping with integrated pollution control procedures, the NRA, in consultation with HMIP, is currently assessing if further treatment of effluent from the company is necessary.

106. White Sands Gutter, a channel running through the salt-marsh at the south-easternmost extent of the SSSI and Ramsar site receives effluent from Shotton Paper and British Steel. The effluent runs out into the estuary where it is diluted and dispersed by tidal action. It is likely that improvements to the outfall will be made as part of the works associated with construction of the third Dee crossing. Other industrial discharge consents have been granted in the vicinities of Oakenholt, Flint Point, Mostyn Docks and Point of Ayr (NRA Welsh Region, 1994).

107. As noted in section 3.4.2, the work of the NRA in promoting and enforcing adherence to strict environmental standards is to be praised. The Monitoring Procedure team was concerned by comments that the role of the NRA in environmental protection and nature conservation might be weakened by proposed Government legislation to establish an Environment Agency. It is to be hoped that the current responsibilities of the NRA will be maintained or extended.

Contaminated land

108. The Monitoring Procedure team visited four contaminated land sites on the Welsh shore of the Dee Estuary; at Broken Bank (Shotton), Flint Point, Bagillt (Bettisfield Colliery) and Greenfield respectively. All of these sites were subject to indiscriminate tipping of waste from earlier industrial activity (see paragraphs 52-53 of this report).

Broken Bank (Shotton)

109. At Broken Bank tip, waste from Shotton steel works and elsewhere was dumped directly onto salt-marsh at the head of the Dee Estuary. Following closure of the steel works, the tip site was acquired by Clwyd County Council with the aim of making the land suitable for alternative uses (including the development by National Power plc of a Combined Cycle Gas Turbine (CCGT) power station). This necessitated the investigation and monitoring of the tip and revealed a high degree of toxic waste and significant ground water pollution. For example, ammonia (NH₃) concentrations were found to be some 250 times higher than the maximum permitted level. Ground water is now being pumped out from under the tip for treatment in a small plant located next to Shotton Paper.

110. The Monitoring Procedure team noted the efforts put into restoration and monitoring work carried out at Broken Bank tip in 1991 and 1992. The work was implemented by the landowner, Clwyd County Council, using a Welsh Development Agency derelict land grant. It is especially commendable that, following initial proposals for industrial development, it has now been decided that the restored and landscaped tip should form part of a significant buffer zone between the estuary and industrial development south and east of the third Dee road crossing, currently under construction. The southern section of the Ministry of Defence rifle range and former British Steel cooling lagoons are also to be included in this buffer zone, offering excellent opportunities for further restoration and habitat enhancement (see paragraphs 93-96 above).

Flint Point

111. Flint Point has been the site of tipping for a variety of categories of waste over a period of many years. Chemical waste from former Flint-based industrial operations, including the large Courtaulds textile manufacturing operation, was dumped directly onto salt-marsh. More recently, part of the area has been used by Delyn Borough Council as a tip for domestic waste (consent granted in 1986 and extended in 1992; now ceased), with ongoing tipping of inert material (according to planning consent granted in 1993). When the active tip site has been filled, restoration and landscaping measures will be implemented to establish a public open space. The proposed Flint Bypass coastal route would cross the area; however, it is strongly recommended elsewhere in this report that a coastal route for the bypass should be abandoned (see section III (b) paragraphs 71-73).

112. The part of the site which contains unknown quantities of toxic waste directly adjoins the SSSI and Ramsar site in an area of the shoreline which is especially vulnerable to erosion,

owing to the migration (perhaps artificially induced) of the deep-water channel towards the Welsh shore of the estuary. The National Rivers Authority has expressed considerable concern over the potential risk posed by erosion of the tip and leakage of highly toxic leachate; although the tip face has been partially clad with boulders to reduce tidal erosion, and the main channel has been guided away from Flint Point, there has been no attempt to seal the tip. Measurements taken by the NRA have recorded pH levels in excess of pH 12 on the foreshore (within the SSSI) adjacent to the tip. The area of concern is owned by Delyn Borough Council which took over the land following the cessation of Courtaulds' activities in the 1980s. The Monitoring Procedure team fully recognizes that Delyn Borough Council is faced with the technical complexity and extremely high financial cost of making safe and restoring land which it was not responsible for contaminating. The Monitoring Procedure team welcomes the commitment expressed by Delyn Borough Council to implementing a monitoring programme and urges relevant sectors of local and central Government to provide sufficient financial support for all necessary measures to make the tip safe.

Bagillt (Bettisfield Colliery)

113. Bagillt tip received waste from the now defunct Bettisfield Colliery over a period of many years. Waste was tipped directly onto salt-marsh and the tip face remained unprotected, until recently, from tidal action, despite the rapid erosion of the shoreline in this part of the estuary. The Monitoring Procedure team welcomes the significant steps taken by Delyn Borough Council and the tip operators, Leigh Environmental Ltd., in conjunction with the National Rivers Authority to ensure that Bagillt tip no longer poses a major threat to the estuarine environment. The shoreline has been subject to boulder cladding and an appropriate monitoring system has been put in place. The protection works have led to the loss of small areas of land within the SSSI and Ramsar site (< 1 ha). Although the operations were carried out in the interests of environmental protection, it is nevertheless appropriate, and to be welcomed, that consideration is being given to habitat enhancement measures elsewhere in the vicinity of the tip. A further phase of protection works may be carried out, but the overall loss of land within the SSSI/Ramsar site would remain less than 1 ha.

114. Leigh Environmental Ltd. will continue to operate the site for the tipping of inert waste for the next three to three-and-a-half years, after which restoration and landscaping measures will be taken to provide for low-intensity after-use of the area as a public amenity. Consideration is being given to the establishment of a coastal public footpath and bird-watching facilities. Whilst the principle of promoting public access to, and appreciation of, an internationally important wetland is laudable, it will be important to ensure that the siting of any footpath, and/or associated facilities, avoids disturbance of key feeding and roosting areas for waders and other water birds.

Greenfield

115. Greenfield tip, like that at Flint Point, was created by the indiscriminate dumping onto salt-marsh of chemical waste generated by the textile manufacturing company Courtaulds. Investigation of the tip by Delyn Borough Council, in conjunction with the National Rivers Authority has shown that it has a high heavy metal content (especially zinc and copper) and that

it has been seriously undermined by tidal action. Consideration is currently being given by Delyn Borough Council to the steps necessary to safeguard the tip from catastrophic collapse and to restore it for low-intensity public amenity use. As is the case for Flint Tip, the costs involved are extremely high for a relatively small parcel of land. Delyn Borough Council is likely to propose a scheme in two phases: the first involving stone cladding for the tip face and construction of groynes to guide the deep-water channel away from the shore; and the second the capping of the surface and back-edge of the tip to protect Greenfield industrial estate from toxic leachate. These two schemes have been estimated as costing £1.6 million and £0.9 million respectively. The protection works would be accompanied by a comprehensive monitoring programme to determine their effectiveness and to indicate whether any more stringent measures would be required.

116. The Monitoring Procedure welcomes the commitment of Delyn Borough Council to making Greenfield tip as safe as possible. It is to be hoped that all relevant sectors of local and central Government will give their support for the provision of funds necessary for the work to be carried out, once planning permission had been granted. If feasible, it would be desirable for the protection works to be carried out as a single, integrated programme.

117. As for Bagillt tip, the protection works, if implemented, will lead to the loss of small areas of land within the SSSI and Ramsar site. Although the work will be in the interests of environmental protection, it is nevertheless appropriate that consideration is being given to possible mitigation measures. Once restored, the tip site should form a component of the buffer zone proposals contained in paragraphs 41-48 of this report.

General comments

118. The adverse impact of historical and ongoing tipping in and around the Dee Estuary is one of the most important factors to be addressed in the context of maintenance of the site's ecological character and its continuing presence on the Montreux Record. In addition to the cases described in some detail above, the Monitoring Procedure team also visited sites affected by past tipping activities of British Steel at Connagh's Quay (fly ash) and Mostyn Docks (furnace slag).

119. The recently completed work and ongoing efforts to make safe and landscape contaminated land sites adjoining the Dee Estuary are extremely impressive, and due regard should be paid to the instrumental roles of local authorities and the National Rivers Authority; the latter in the context of the River Dee Catchment Management Plan. Nevertheless, considerable problems still remain, and every means possible should be found for implementing environmental protection measures effectively and rapidly. Central Government has an important role to play in provision of financial support for such work to be carried out.

120. Although not discussed at the time of the Monitoring Procedure visit, the team understands that the provisions of the Food and Environment Protection Act (FEPA) 1985 are relevant, and that MAFF, as the licensing authority under FEPA, is responsible for issue of licences for the deposit of materials in the sea. MAFF is also required to have regard for the need to protect the marine environment, the living resources which it supports, and human health.

121. Every opportunity should be taken to designate restored contaminated land sites as buffer zones for the SSSI and Ramsar site which will not be subject to development. Wherever possible, landscaping of former tips should provide for habitat enhancement which will benefit estuarine and other wildlife.

III (e) Coastal defences and flood prevention

Background

122. In England and Wales, the Coast Protection Act 1949 gives functions relating to the prevention of erosion by the sea, including powers to undertake works, to certain local authorities. The Water Resources Act 1991 requires the exercise of a general supervision over all matters relating to flood defence by the NRA and also empowers them to undertake flood defence work on Main Rivers and against sea or tidal waters. Local Authorities can undertake flood defence works under the Land Drainage Act 1991 other than on Main Rivers. The River Dee is a Main River to its mouth at Point of Ayr, but the boundary of the coast, for the purposes of the Coast Protection Act, extends to the Delyn and Wirral upstream boundaries. This means that only the NRA can undertake Flood Defence works within the estuary, whilst only Wirral and Delyn local authorities may undertake Coast Protection works.

123. The Dee is the most regulated river in Europe; nevertheless, substantial areas in the lower valley and around the estuary remain prone to flooding. If current predictions of a rise in sea level (20 cm \pm 10 cm by 2030; Jemmett, 1994a) due to climate change are correct, the demand for protection from erosion and flooding is likely to increase.

Coastal defences in the Dee Estuary

124. Within the Dee Estuary, responsibility for maintenance of tidal defences is split between the 'maritime' district councils under the Coast Protection Act 1949 (Delyn Borough Council and Metropolitan Borough of Wirral), other local authorities, the National Rivers Authority, and private landowners. The Government Departments responsible are the Ministry for Agriculture Fisheries and Food (MAFF) in England and Welsh Office (Agriculture and Environment Departments) in Wales. Under current legislative provisions, only expenditure by the NRA, Delyn Borough Council and Metropolitan Borough of Wirral can benefit directly from Government grant in aid.

125. As noted earlier in this report, the migration of the deep water channel from the east to west has led to accelerated erosion of salt-marsh on the Welsh shore of the estuary, especially between Flint Point and Greenfield. Serious flooding occurred along the Welsh shore in 1990, when tidal and weather conditions combined to over-top coastal defences. Serious erosion occurred at Flint Point, which has since been reconstructed by Delyn Borough Council, according to the provisions of the Coast Protection Act 1949.

126. Elsewhere in the estuary, such as Thurstaston shore (on the English side) and between Greenfield and Mostyn in Wales, private landowners have undertaken their own coastal protection measures. At Thurstaston, the local golf club has placed boulder cladding along part of the shoreline adjoining the Dee Cliffs SSSI, whilst north of Greenfield, British Rail has built-up large boulders to a level which appears to be both unnecessary and visually intrusive. As noted above in section III (d), considerable efforts are ongoing to make safe contaminated land sites adjoining the estuary. The former operators of these tips, such as the Courtaulds site at

Greenfield, tended to use inert waste, such as concrete blocks and construction rubble, to provide superficial 'shoring-up' of these tip sites. The National Rivers Authority has indicated that it is maintaining a 'watching brief' on the English shore of the estuary, but that no major defence works are planned.

127. During the twentieth century, much of the inner estuary, especially towards the English shore, has been subject to rapid colonization by salt-marsh vegetation. This has been partly attributed to artificial diversion of the main channel of the Dee, but also to the introduction in 1928 of the cord grass *Spartina anglica* (Jemmett, 1994a). This expansion of salt marsh has led to the stabilization of sand and mud banks, accelerated siltation and further spread of salt-marsh vegetation, although recent evidence suggests that the rate of spread has slowed dramatically and that some reversal of the trend may be taking place. The Monitoring Procedure team was able to view extensive tracts of salt marsh at the RSPB's Parkgate/Gayton Sands reserve. Clearly, the presence of extensive salt marsh forms an important contribution towards coastal protection in this part of the estuary. In this context, the serious and rapid erosion of salt marsh along the Welsh shore of the estuary, especially between Flint Point and Greenfield, is of special concern.

Shoreline Management Plans

128. The multiplicity of responsibility and range of methods used means that the current coastal and flood defences bordering the SSSI and Ramsar site are extremely variable in form and quality. MAFF and the Welsh Office promote grant aiding to local authorities for preparation of Shoreline Management Plans (SMPs). The Government encourages the preparation of SMPs on the basis of entire coastal sediment 'cells' (or sub-cells) and expects that normally a single lead authority (generally a maritime district council within the meaning of the Coast Protection Act 1949) will apply for grant aid on behalf of all local authorities within a coastal cell. In the case of the Dee Estuary, the lead authority could be Delyn Borough Council or the Metropolitan Borough of Wirral (as maritime district councils), or the National Rivers Authority. It is not clear whether other local authorities within the Dee Estuary could benefit from grant aid for an SMP, although it is the Monitoring Procedure team's understanding that the Government would look favourably on the preparation of an estuary-wide SMP. The Welsh Office Environment Department has indicated that the Welsh Office and MAFF would be able to consider an application by a lead authority on behalf of authorities in both England and Wales (H. Payne/Welsh Office, pers. comm.).

129. In October 1994 MAFF issued a consultation draft of a Guide for Shoreline Management Plan operating authorities (MAFF Flood and Coastal Defence Division, 1994). This states that, "Shoreline Management Plans are intended to provide a strategic framework for the management of coastal defences for a specified length of coast.....This guide provides an introduction and outline procedure to facilitate a consistent approach to the production of such Plans for the coastline of England and Wales". The draft goes on to encourage voluntary fora for discussion on coastal issues to play a key role in the development of SMPs. The guide also indicates the Ministry's expectation that individual operating authorities will compile their own strategies within the context of the overall SMP for a coastal cell or sub-cell. It is understood that the finalized draft was launched in June 1995, as the present text was being finalized.

130. The Tidal Dee User's Group (TDUG), formed by representatives of all parties concerned with management of the tidal section of the Dee, has already undertaken studies which will assist in the development of a Shoreline Management Plan by the Group. The TDUG holds definitive data sets on coastal processes within the estuary; these have been made available to assist with assessment of development applications.

131. The Monitoring Procedure team considers it essential that there be a coordinated, estuary-wide approach to the planning, implementation and monitoring of all coastal defences. This should include the strategic integration of soft engineering techniques to promote the continued existence of important habitats in parts of the estuary especially vulnerable to coastal squeeze (see earlier sections on buffer zones and restoration). As well as helping to ensure the survival of coastal wetlands, the use of soft engineering methods and managed setback can offer highly cost-effective flood protection. The dune systems at the mouth of the Dee Estuary play an important part in protecting the coast from the full impact of the open sea. However, engineered coastal protection works elsewhere have led to the dunes becoming starved of sediment and this, combined with recreational pressure, has led to serious degradation. The restoration and conservation work initiated at Gronant Dunes and Talacre Warren SSSI, with funding from Hamilton Oil Company Ltd. (see paragraphs 54-57), is an important example of the soft engineering techniques which may be used to enhance coastal defences.

132. Where it is determined that it is imperative to build new, traditionally engineered defences, which would lead to encroachment into the SSSI and Ramsar site, consideration should be given to appropriate compensation measures (see paragraphs 84-92 on compensation/mitigation). Central Government and local authorities should ensure that administrative arrangements do not inhibit the rapid implementation of an holistic Shoreline Management Plan for the Dee Estuary. Such an SMP should be implemented within the broader frameworks established by the forthcoming Dee Estuary Strategy and the National Rivers Authority Catchment Management Plan (see section III (i)).

III (f) Cockling

Background

133. Improvements in water quality following the cessation of many of the highly polluting industrial activities of former decades is thought to have been responsible for an expansion of cockle beds within the Dee Estuary. Cockles (*Cerastoderma edula*) occur in six main areas of the outer estuary: off the Welsh shore, at Mostyn Bank, Salisbury Bank, near Bagillt, and Holywell Bank; and off the English shore at Thurstaston Bank and West Kirby Bank (National Rivers Authority Welsh Region, 1994). The locations of these beds are shown in Appendix D.

134. Shellfisheries in England and Wales are regulated primarily by Sea Fisheries Committees (SFCs) or by the National Rivers Authority acting as an SFC. EU Directive 91/492/EEC lays down the health conditions for the production and placing on the market of live bivalve molluscs and has been implemented by the Food Safety (Live Bivalve Molluscs and Other Shellfish) Regulations 1992. Joint responsibility for the Regulations lies with MAFF and the Department of Health, whilst local authorities are responsible for enforcement. Filter feeding bivalve molluscs, such as cockles, can accumulate toxins and pathogens which may be harmful to human health. Directive 91/492/EEC requires shellfish harvesting areas to be classified according to microbiological criteria, thereby determining whether the shellfish concerned can be consumed directly, or whether treatment is required prior to consumption. Cockles from the Dee Estuary fall into the latter category.

135. Shellfish are also covered by EU Directive 79/923/EEC, which provides for the monitoring and protection of water quality in designated shellfisheries. However, none of the cockle beds within the Dee Estuary has been designated under the EU Directive. It may be appropriate to consider whether such designations might be made.

136. Since the Monitoring Procedure team visited the estuary, it is understood that the South Wales Sea Fisheries Committee have consulted on a proposal to combine all Welsh sea fisheries interests into an All Wales Committee, encompassing the Dee Estuary. Careful consideration should be given to the possible impact of these proposals on effective integrated management of the Dee Estuary.

137. There is a public right of fishery (also covering shellfish) in the Dee Estuary and harvesting of cockles on a subsistence basis has been an important traditional activity. However, the expansion of the cockle beds, combined with strong regulation of cockle production in the Wadden Sea, has led to the emergence of a lucrative international market dominated by a Dutch-financed industry. Populations of harvestable cockles are subject to cyclical development, so that the commercial value of the Dee shellfishery has been subject to a series of peaks and troughs. Commercially significant years have been 1983, 1987, 1991 and 1992. In 1987, the value of the cockles harvested from within the SSSI and Ramsar site boundary is estimated to have been £3 million. At that time, up to 500 gatherers were operating in the estuary, with one bag (80 lbs \approx 36 kg) of cockles fetching about £5 (National Rivers Authority Welsh Region, 1994). The price per bag had doubled by 1991 as productivity fell below the level of demand and as the Dutch cockle industry in the Wadden Sea was limited

by management measures (NFNA, 1991). Cockle fishery was banned in the German part of the Wadden Sea from 1 March 1992, whilst in the Danish part, cockling is only permitted in three specific, well-defined areas, of which only one is fished each year. 26% of the Dutch Wadden Sea is closed for cockling and there are restrictions on the use of other areas. A review, which may lead to the permanent closure of further zones will be conducted in 1997 (Common Wadden Sea Secretariat, 1994).

138. Cockles harvested from the Dee Estuary are processed in part locally (at plants in Birkenhead and Greenfield) and in part in the Netherlands. The international dimension becomes still more significant, since the principal markets for the final canned product are in Spain and Portugal.

Current controls and problems

139. Cockling activities are regulated by the National Rivers Authority through application of two bye-laws, one restricting the minimum harvestable size to 21 mm, the other designating use of hand rakes of up to 305 mm as the only permitted harvesting method. Since the expansion of the commercial shell fishery during the late 1980s and early 1990s, concern has grown over the impact of cockling operations on the ecology of the estuary and on other users. The following specific concerns have been identified:

- because a public right of fishing exists in the Dee Estuary, the number of individual operators is unregulated and unknown;
- illegal use of mechanical harvesting methods occurs, though not commonly;
- inadequate regulation has led to widespread and serious over-harvesting of the resource;
- unregulated access to the cockling grounds using motorized transport causes:
 - + damage to sensitive coastal habitats including sandy shores, dunes and mud-flats;
 - + disturbance to feeding waders;
 - + potential danger to other users of the estuary .

Proposed new bye-laws

140. In response to these concerns, the NRA (acting as a Sea Fisheries Committee, under the Sea Fisheries Regulation Act 1966) has advanced the introduction of new bye-laws which now await confirmation by the Welsh Office and MAFF. The proposals would not restrict the number of operators, but would make it compulsory for each operator to be in possession of a permit; provide for a vehicle-licensing system to be introduced; establish a close season (31 March to 1 July annually); and would permit the NRA temporarily to close individual cockle beds threatened by over-harvesting. The bye-laws would be enforced by the NRA's small team of bailiffs, currently also responsible for policing illegal salmon-netting in the estuary. Once approved, the bye-laws would be monitored, and if insufficient to solve the problems outlined

above, consideration would be given to advancing a regulatory order which would restrict the number of operators by means of a quota system. At the time of finalization of this report (June 1995) it is understood that the NRA is considering objections it has received to the proposed bye-laws.

Cockling in the context of wise use

141. Commercial cockling may be compatible with the Ramsar Convention's provisions on wise use. The Convention defines wise use of wetland resources as, "their sustainable utilization for the benefit of mankind in a way compatible with the maintenance of the natural properties of the ecosystem". 'Sustainable utilization' is defined as, "human use of a wetland so that it may yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations" (Davis, 1993).

142. The Monitoring Procedure team considers that cockling, as currently carried out in the Dee Estuary, is incompatible with the above definitions of wise use and sustainable utilization. It welcomes steps towards more effective control of harvesting operations, but is extremely concerned that the use of bye-laws allowing unrestricted access will not be effective. The Monitoring Procedure team believes that strict regulations should be introduced in order to safeguard both the ecological character of the estuary, and the long-term economic value of the Dee cockle fishery. Regulations should be introduced to limit the number of operators and their vehicles through a paid-for permit system. Areas where the use of motorized vehicles is permitted should be limited and effectively controlled. Furthermore, a rotation system should be operated, so that not all of the cockle beds are harvested simultaneously; there should be regular stock assessment and research should be carried out into wader/cockling interactions and the impact of disturbance. In the light of research results, consideration should be given to the need for a winter close season.

143. The international commercial link between the Dee Estuary cockle harvesting industry and the Netherlands processing and retailing industry warrants particular attention. As noted above, the market value of Dee Estuary cockles increased significantly following the strict regulation of Wadden Sea cockle fishery. The Wadden Sea, shared by Denmark, Germany and the Netherlands is covered almost in its entirety by a series of Ramsar site and EU Special Protection Area designations. It is notable that, following the regulation of the Wadden Sea shell-fishery, application of the principles of wise or sustainable use, has led the trilateral Wadden Sea policy developed and applied jointly by Denmark, Germany and the Netherlands, to close sizeable areas of the Wadden Sea to cockling activities, in order to limit negative ecological impacts (Enemark, 1993). It is of some concern that management problems formerly experienced in the Wadden Sea have now arisen in the Dee Estuary. It may be appropriate for the Government of the United Kingdom to enter into discussions with the Government of the Netherlands in the framework of the Ramsar Convention's Article 5 provisions on international cooperation.

III (g) Sustainable management of fauna and flora

Background

144. The principal terrestrial and semi-terrestrial wildlife interest of the Dee Estuary is summarized in the citation which accompanied designation of the SSSI in 1983. Particular mention is made of the internationally important numbers of migrating and wintering wildfowl and waders (see paragraph 21 of this report for list of key species) which use the estuary; the presence of Grey Seals (*Halichoerus grypus*); and the major expanses of salt-marsh communities. In addition to the SSSI citation may be added the importance of the estuary's marine environment for supporting extensive beds of cockles (*Cerastoderma edula* - see section III (f) above) and providing nursery and feeding areas for sea fish such as Flounder (*Platichthys flesus*), Grey Mullet (*Renimugil labrosus*) and Bass (*Dicentrarchus labrax*).

145. All of the special features of conservation interest mentioned above require monitoring and management activities to ensure that their diversity and numbers are maintained or increased. This is especially true of the wildfowl, fish and shell-fish components of the estuary's fauna since these groups are subject to direct exploitation by people through recreational wildfowling, commercial fishing and commercial cockle harvesting. All of the water birds in the estuary are vulnerable to disturbance from recreational activities, especially during the high-tide period when safe roosting areas are extremely limited in number and extent (see section III (h) below). All groups of the estuary's flora and fauna are potentially at risk from the effects of any major pollution incident. Careful monitoring and management of salt-marsh and coastal pasture is also required, since these important habitats may be vulnerable to direct loss through encroaching development and erosion, or more subtle degradation through invasion by cord-grass *Spartina* and changes in grazing regimes.

Monitoring of water birds

146. The United Kingdom has one of the world's most comprehensive and detailed systems of wildfowl and wader population monitoring, carried out through the Wetland Bird Survey (WeBS) launched in 1993 by merging the former National Waterfowl Counts (NWC) and Birds of Estuaries Enquiry (BoEE). WeBS is funded by the British Trust for Ornithology, The Wildfowl & Wetlands Trust, Royal Society for the Protection of Birds and the Joint Nature Conservation Committee (JNCC - on behalf of Countryside Council for Wales, English Nature, Scottish Natural Heritage, and Department of the Environment for Northern Ireland). It provides an annual overview of the status of each species of water bird for a large proportion of the UK's wetlands, including all internationally important bird sites, based on monthly counts carried out by an unpaid network of volunteer bird-watchers.

147. Despite the Government's recognition and designation of Ramsar sites and wetland SPAs at an integrated, 'entire wetland' level, and the considerable resources and effort put into WeBS, the UK's land-use planning system places a considerable onus on statutory and non-statutory conservation organizations to demonstrate the specific importance of individual parcels of land. The resources to undertake detailed field-by-field monitoring of every internationally

important wetland in the UK do not exist and therefore it is often difficult for a natureconservation case to be sustained at the required level of detail in Public Inquiries or other stages of the planning process. The survey work carried out by the RSPB, on behalf of CCW, on the Welsh shore of the Dee to identify important areas of coastal pasture for birds is an example of additional monitoring being carried out in an attempt to ensure that further loss of important habitats (in this case outside, but adjoining, the SSSI and Ramsar site boundary) does not occur.

148. The Monitoring Procedure team commends the level of water bird monitoring being carried out on the Dee Estuary and recommends that the survey work being carried out in addition to WeBS be maintained, and, if resources permit, extended. However, the team is concerned that an estuary-wide approach to planning (as recommended elsewhere in this report) should not require the national or international value of small sub-sections of the estuary to be proven. Steps should be taken to amend planning guidance to promote an integrated approach more strongly than is the case in PPG9 (Department of the Environment 1994). If proof of the specific interest of a parcel of land is required, the emphasis should be on demonstrating that the proposed development site is not of special value.

Wildfowling

149. Wildfowling is a traditional activity on the Dee Estuary and is nowadays entirely controlled by the Dee Wildfowlers' Club (DWC), formed in 1952. During the 1950s and 1960s, controls were introduced by the club to help balance the requirements of wildfowling and nature conservation, involving the setting aside of substantial parts of the estuary as no-shooting zones. Such zones now account for 90% of the mud-flats and 65% of the salt-marsh in the estuary. Membership of DWC is restricted to about 200 trained, skilled wildfowlers and the club supports wildfowling as a sporting activity only; all birds shot are eaten by DWC members. A wardening system is operated to prevent poaching. In addition to the statutory requirement for shooting practices within the SSSI and Ramsar site to be agreed with CCW and EN, the DWC also enters into regular discussion with the RSPB and is a founder member of the Dee Estuary Conservation Group (DECG). The DWC is committed to the principles of sustainable management of wildfowl populations and carries out management activities to enhance estuarine habitats for wildfowl and for other fauna and flora. (Dee Wildfowlers' Club, 1993).

150. A system of self-regulated bag limits is in operation, with the currently agreed limits being 8 birds per visit on RSPB land holdings, and 10 birds per visit elsewhere. The average numbers of each species taken per annum are approximately: Wigeon 1500; Pintail 500; Teal, Mallard and Canada Goose 500 (average for the three species combined). Puntgunning is still carried out in the estuary at a low level; currently there are 1-2 shots fired per year, taking between 100 and 150 birds (Dee Wildfowlers' Club/BASC, pers. comm.). On land owned by the NRA and leased to the DWC, the bag limit of 10 birds also applies to puntgunning.

151. The Monitoring Procedure team welcomes the efforts made by the Dee Wildfowlers' Club to ensure that their activities are carried out in a way which is compatible with the principles of sustainable management. The positive, cooperative relationship between wildfowling and nature

conservation interests on the Dee Estuary is a model which provides an important example for Ramsar sites in the United Kingdom and elsewhere in Europe. The team supports the continued monitoring and review of bag totals and bag limits, and welcomes the steps being taken to ensure that poaching and any other unacceptable shooting practices are eliminated as far as possible. Puntgunning raises a number of emotive arguments which do not have a place in any objective assessment of the practice. At the current level of operation, the annual take of birds through puntgunning clearly poses no threat to overall wildfowl numbers in the estuary.

152. Nevertheless, given the possibility of inadvertent killing of protected species, and the potentially significant disturbance associated with puntgun firing, an objective, independent review should be carried out to assess the compatibility of puntgunning with Ramsar and SPA designation. The Monitoring Procedure team wishes to emphasize that it is not drawing any conclusion or making any implication that should be seen as pre-judging the outcome of such a review, of what is clearly a sensitive issue.

Sustainable management of cockle beds and sea fish

153. The sustainable management of the Dee Estuary cockle beds is covered in section 3.5 of this report. The management of the sea fishery in the estuary is governed by the Dee Estuary Sea Fisheries Bye-laws confirmed in August 1992 (Hodgson, 1992). These provide for zonation of the estuary; define the methods and equipment which may be used; and prohibit certain activities. The Monitoring Procedure team notes the existence of these bye-laws but is not in a position to offer any specific comments.

154. MAFF and the Welsh Office have designated the Dee Estuary as a statutory Bass (*Dicentrarchus labrax*) nursery area and this designation limits netting and boat fishing activity in a way that also offers some protection for other fish and may reduce possible disturbance to feeding/roosting birds.

III (h) Recreational activities

Background

155. In addition to being an important recreational resource for the people living around its shores, the Dee Estuary is close to several major centres of population (especially the Merseyside and Greater Manchester conurbations) and is therefore a venue of regional, or even national, importance for coastal recreation activities. These activities include wind-surfing, sand-yachting, boating, bird-watching, horse-riding, dog-exercising, walking, and picnicking. Owing to the large volume of people involved (up to 20,000 visitors per day use Wirral Country Park during peak periods in the summer) and the estuary-wide nature of the activities, controls generally have to be introduced through careful resource planning and provision of incentives and opportunities for self-regulation. This approach has generally been successful, although there are a few areas of concern.

Wind-surfing and sand-yachting

156. The foreshore at West Kirby, on the English side of the estuary, is a popular venue for walking and dog-exercising. It also has a major wind-surfing facility in the form of West Kirby Marine Lake. The lake receives up to 15,000 users a year who could, potentially, form a serious source of disturbance to the major high-tide wader roosts which occur in the vicinity. Through the Dee Estuary Volunteer Wardens network, an effective system of regulation has been introduced on the Wirral shoreline, involving a combination of marker buoys cordoning-off sensitive areas and interaction with users (including walkers) to provide them with information about the importance of the estuary for waders and the necessity for roosting and feeding areas to remain undisturbed. The Monitoring Procedure team was extremely impressed by the dedication and achievements of the Voluntary Wardens and encourages support of the network from statutory bodies. This might include assistance with provision of interpretation boards and leaflets to complement and promote the wardens' personal out-reach work. However, the team was also concerned that complete reliance on a voluntary system is unsatisfactory, since it cannot be guaranteed that coverage will always be available. Volunteers should supplement, not substitute, a team of professional wardens. The Monitoring Procedure team understands that sand-yachting is presently carried out at a very low intensity within the North Wirral Foreshore SSSI and Talacre and Gronant Dunes SSSI, directly adjoining the Ramsar Site. It is recommended that the development of this potentially highly disturbing activity be monitored, and regulatory bye-laws introduced if necessary.

Recreational vehicle use

157. Beach ecosystems are extremely vulnerable to damage by vehicles (as has already been mentioned in relation to commercial cockling - see section III (e)). Parts of the Dee Estuary foreshore are currently being degraded by vehicle use associated with recreational activities. In addition to damaging fragile habitats, vehicle use on beaches also poses a potential danger to pedestrian beach users. Specific examples of such problems are to be found at Heswall shore

(in England) and at Point of Ayr in Wales. At Heswall, some damage has been caused by use of 4-wheel drive vehicles and motor cycles on the beach, and by parked cars of customers using a shoreline restaurant. At Point of Ayr, serious damage to the dune system has been done through unrestricted beach access, related to cockling, but also to general recreation, especially use of 4-wheel drive vehicles and parking for walking and dog-exercising.

158. The Monitoring Procedure supports the steps being taken to regulate access at both sites and welcomes the fact that this is being done in full consultation with local people, who might otherwise feel that their traditional rights of access were being unreasonably curtailed, or that income from beach-based tourism would suffer. The programme of conservation work being undertaken at Point of Ayr should ultimately lead to the cessation of beach driving and parking. This may eventually require a physical barrier, but should also involve the establishment of an alternative 'inland' parking area as close as possible to the sea-wall.

Walking and general recreation

159. The 1993 Deeside Environmental Strategy prepared by the Welsh Development Agency recommended enhanced public access to the shoreline of the Dee Estuary through establishment of a coastal footpath. This measure is being promoted by local authorities and is supported by CCW, subject to satisfactory nature conservation safeguards (see below) being built into the plan. The Monitoring Procedure team welcomes in principle steps to increase public access to the Dee Estuary, and to promote public appreciation of the estuary as a nature conservation site of international importance. Nevertheless, planning of such measures, including the coastal foot-path under consideration, should take into account the need to guide visitor pressure away from fragile and sensitive sites such as sand-dunes undergoing restoration, and important feeding or roosting areas for water birds. The team was impressed by the substantial voluntary effort already being made to shield such sites from as much disturbance as possible, but notes that complete success will need a degree of additional physical and legal regulation.

III (i) Integrated management of the Dee Estuary

Background

160. The Ramsar Convention places very great emphasis on the need for an integrated approach to wetland management. This is clear from Article 3.1 which states, "The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory". Decisions by the Conference of the Contracting Parties have provided interpretation and further guidance on this theme. These have included the adoption of Recommendation C.4.10 ('Guidelines for the implementation of the wise use concept') and the annex to Resolution C.5.6 ('Additional guidance for implementation of the wise use concept') which promote integrated management planning. Recommendation C.5.3 ('Essential character of wetlands and the need for zonation') recommends that, "the essential character of wetlands be recognized and that measures....notably inclusion of a whole catchment approach and/or creation of buffer zones, be taken to ensure that the ecological character of Ramsar site is not placed at risk". Finally, Resolution C.5.7, adopted in 1993, calls on Contracting Parties to develop management plans for each wetland designated for the List.

161. In the United Kingdom, significant progress has been made in the last two years towards the elaboration of integrated management plans for many of the country's most important estuaries. These initiatives have followed the publication in 1992 of Government Planning Policy Guidance on Coastal Planning (PPG20, Department of the Environment and Welsh Office, 1992b). In order to promote strategic planning in estuaries, the Government allocated funding to be used for this purpose by English Nature. This body currently has an annual budget of £250,000 dedicated to the goal of having facilitated the production of management plans for 80% of the estuarine area in England by the year 2000 (English Nature, 1992). CCV has not received any funding specifically for the preparation of estuary strategies, but has cooperated closely with the work of English Nature on the Dee and Severn Estuaries. The Ministry of Agriculture, Fisheries and Food and the Welsh Office are promoting strategic Shoreline Management Plans (see section III (e) of this report). These initiatives are to be welcomed, and every effort should be made to ensure that the resulting management plans are implemented swiftly and effectively.

Existing estuary-wide initiatives

162. There are three on-going estuary-wide management initiatives in the Dee Estuary, namely promotion by the Tidal Dee Users Group (TDUG) of a Shoreline Management Plan (SMP); consultation on a River Dee Catchment Management Plan prepared by the National Rivers Authority Welsh Region (NRA); and preparation of and consultation on a Dee Estuary Strategy (DES), under the auspices of the Dee Estuary Forum (DEF - membership is open to all organizations with an active interest in, or use of, the estuary). There is substantial interaction between the three initiatives, which all have differing emphasis. However, the existence of three different plans is a potential source of further confusion of the planning framework, and ever-closer collaboration will be needed to overcome perceived as well as actual overlap.

163. The eight broad issues discussed in the preceding sections of this report all have implications for the development and implementation of the three management plans. It is hoped that the conclusions and recommendations presented in section 4 can be fully considered by each. Since the Dee Estuary Strategy is aimed at providing an integrated framework for sustainable management and does not extend to the wider Dee catchment (subject of the NRA plan), it is hoped that the completed DES will accommodate the findings of this report.

164. The DES has as its overall objective to "Draft a management plan for the purpose of achieving the conservation and sustainable multi-use of the natural resource; and, providing a policy framework for integrating current and future uses and interests in the Dee Estuary" (Jemmett, 1994b). The development of the strategy is being funded jointly by the Dee Estuary Forum, English Nature, Countryside Council for Wales, local authorities and the Ministry of Defence and overseen by a Steering Committee drawn from the DEF. A project officer was recruited in 1992 to coordinate drafting of the strategy. Significant achievements to date have been formulation of a Vision Statement (Jemmett, 1994c), publication of an assessment of issues affecting the estuary (Jemmett 1994d), and publication of a review of a report providing an overview of the estuary's natural characteristics, utilization and management (Jemmett, 1994a).

165. A draft of the DES (Jemmett 1995) has been circulated for formal consultation during winter/spring 1994/95 and the final version will be published later in 1995, once amendments arising from the consultation process have been incorporated. The DES is founded on the principle of cooperation and consensus between all bodies involved with management or use of the estuary. It will therefore be advisory rather than prescriptive in nature. The Monitoring Procedure team welcomes this as an extremely positive approach, but emphasizes that the DES can only succeed within the context of an appropriate administrative and legislative framework and with adequate financial resources.

166. Some of the conclusions and recommendations of this report go beyond what is appropriate for inclusion in an advisory strategy. These include recommendations relating to individual developments and specific proposals for amendments to legislation. Nevertheless, the DES can provide a vital mechanism for the delivery of wise use in the Dee Estuary and particular attention should be given to setting measurable, estuary-wide targets that can be used to determine the effectiveness of the strategy. These do not need to address the details of individual development proposals, but might for example, include the target of preventing any net loss of intertidal mudflats and salt-marsh, or the target of revising the SSSI/Ramsar site boundary (with a view to site extension) by a particular date. Because of the importance of the DES, the Monitoring Procedure team calls upon Government, local authorities and statutory bodies to ensure that implementation of the DES is fully funded for an initial period of at least three years.

IV CONCLUSION AND RECOMMENDATIONS

The Monitoring Procedure team concluded that, whilst many positive measures have been, or are being, undertaken, the Dee Estuary continues to be affected by a number of adverse influences which must be overcome if the site is to be removed from the Montreux Record. The recommendations summarized below are drawn from the preceding pages, and the relevant paragraph numbers are given in parentheses. The recommendations are sub-divided to indicate priorities for action; the first group being those which the Monitoring Procedure team consider to be the measures required for ensuring that the site can be removed from the Montreux Record. The second group contains recommendations for actions considered to be of a lower priority, but which should nevertheless be implemented if the long-term conservation and wise use of the Dee Estuary is to be achieved. The third group relates to wider actions which might be considered by the Government in developing and applying policies which affect internationally important wetlands in general and not only the Dee Estuary.

It is suggested that the United Kingdom Government should include information on implementation of the Monitoring Procedure in its National Report to the Sixth Meeting of the Conference of the Contracting Parties (Brisbane, March 1996). Supplementary information concerning the steps taken to implement these recommendations could be provided at the meeting itself.

A. Recommendations for immediate action

A1. The Government should ensure, as an urgent priority, that Planning Policy Guidance (especially on Nature Conservation matters) is issued to local authorities in Wales, and that such guidance is entirely consistent with that already issued in England. This is an essential prerequisite for effective integrated management of the Dee Estuary. (33-40)

A2. Establishment of a formal consultation area around the SSSI/Ramsar site should be completed as soon as possible, through notification of such an area for the Welsh shore. The boundary of the consultation area should be drawn widely, generally up to the 2 km maximum, thus applying the precautionary principle promoted by the Ramsar Convention's wise use provisions. (41-48)

A3. There should be more effective strategic assessment of the cumulative impact, on both the statutory site and the consultation area around it, of multiple development proposals, such as those at Point of Ayr, Mostyn Docks, Connah's Quay, and Shotton. (54-83)

A4. Deletion of parts of the Ramsar site for industrial development cannot be considered as being compatible with the Convention's wise use provisions and should only be permitted in exceptional circumstances. The proposed extension of tipping at Point of Ayr colliery, and the proposed development of Mostyn Docks should be considered according to the requirements of the Ramsar Convention and the Conservation (Natural Habitats &c) Regulations 1994. The applications should only be granted if it is demonstrated conclusively that there are no

alternatives, and that the proposed developments are in the "urgent national interest" (Ramsar Convention) and should be permitted for "imperative reasons of overriding public interest" (EU Directives). (65-70)

A5. Urgent attention should be given to developing, financing and implementing pollution prevention, landscaping and monitoring programmes at Flint Tip, Bagillt Tip, Greenfield Tip, and other contaminated land sites around the estuary, to build on the encouraging work which is already under way. Although such work is in the interests of environmental protection, attention should be given to possible mitigation measures for any loss of wetland which results. Furthermore, once restored, the sites concerned should be considered as part of the buffer zone for the estuary and should not be subject to re-development or other intensive after-use. (109-121)

A6. A coordinated, estuary-wide approach to the planning, implementation and monitoring of all coastal defences should be established as a matter of urgent priority. This should include the strategic integration of soft engineering techniques to promote the continued existence of important habitats in parts of the estuary especially vulnerable to coastal squeeze. The Government should ensure that administrative arrangements do not inhibit the rapid implementation of a Shoreline Management Plan for the Dee Estuary. The SMP should be compatible with the broader frameworks established by the Dee Estuary Strategy and the NRA Catchment Management Plan (128-132)

A7. The new cockling bye-laws advanced by the NRA should be confirmed by Government as soon as possible and their effectiveness should be closely monitored. As a next step, consideration should be given to the introduction of strict regulations, with effective enforcement, in order to safeguard the ecological character of the estuary, to limit disturbance to feeding birds and to ensure the continued economic value of the Dee cockle fishery. Such regulations could be based on the effective measures taken in the Wadden Sea Ramsar sites. (139).

A8. Every effort should be made to ensure that the three on-going, estuary-wide initiatives be implemented swiftly, effectively and, above all, in a coordinated and mutually beneficial way. (162-166)

A9. The Dee Estuary Strategy should include targets which enable the effectiveness of its implementation to be measured. Government, local authorities and statutory bodies should ensure that implementation of the DES is fully funded for an initial period of at least three years. (162-166)

B. Recommendations for additional measures specific to the Dee Estuary

B1. The concept of the consultation area should be extended and adapted to create an effective buffer zone for the entire estuary, irrespective of administrative boundaries. The buffer zone should be operated to ensure that any new development is not located on "green field" sites, and that possibilities of managed coastal setback using soft engineering techniques, may be maximized. (41-44)

B2. The Dee Estuary SSSI and Ramsar/SPA boundary should be revised with a view to extending the site, where justified on the basis of survey results, to include adjacent pasture and wetland habitats of high ecological value (e.g. Inner Marsh Farm), together with Gronant Du and Talacre Warren SSSI, North Wirral Foreshore SSSI, Red Rocks SSSI and Dee Cliffs SSSI (45-47)

B3. The tip on the northern side of Point of Ayr colliery should be protected from tidal action to prevent waste material from being washed into the estuary. It should be ensured that such protection work does not lead to further significant loss of intertidal flats. These principles should be applied to all unprotected tip sites around the estuary. (65-70)

B4. A strategy should be developed for the implementation of wetland restoration measures at appropriate sites around the estuary. This could be based on the proposals contained in the NRA's Catchment Management Plan and should be part of a proactive programme aimed at enhancing the designated site, rather than a reactive programme aimed at mitigating losses elsewhere. Particular attention could be given to pasture areas between the SSSI/Ramsar site boundary and the railway line north of Connah's Quay. Land north of Shotton, between Broken Bank tip and Inner Marsh Farm appears to offer good potential for imaginative restoration measures that may qualify the area for SSSI and Ramsar site status. Existing mechanisms of particular relevance could be Environmentally Sensitive Areas and Countryside Stewardship (England) and Tir Cymen (Wales). (94-97)

B5. Efforts should be made to locate an alternative source of land-fill material for the proposed Welsh Development Agency industrial complex at Shotwick Fields, some 2 km east of the SSSI/Ramsar site, in order to maximize the opportunities for enhancement of the Dee Estuary SSSI and Ramsar site. (97)

B6 All remaining work to upgrade the treatment of sewage effluent entering the estuary should be completed as soon as possible. (101-104)

B7. Where it is determined to be imperative to build new, traditionally engineered defences, which would lead to encroachment into the SSSI and Ramsar site, appropriate compensation measures should be considered. It is accepted that, in certain cases, such defences will be built with the aim of enhancing the conservation status of the site. There should not be a strict requirement for compensation in such cases, but it is hoped that some opportunities may be taken to combine construction with habitat enhancement (e.g. through sensitive contouring for wildlife of any borrow pits created). (131-132)

B8. The international commercial link between the Dee Estuary cockle harvesting industry and the Netherlands processing and retailing industry warrants particular attention, since problems formerly experienced in the Wadden Sea appear to have been exported to the Dee Estuary. It may be appropriate for the Government of the United Kingdom to enter into discussions with the Government of the Netherlands to discuss the situation in the framework of the Ramsar Convention's Article 5 provisions on international cooperation. (141-143)

B9. Steps should be taken to provide more practical and financial support from statutory bodies to the Dee Estuary Volunteer Wardens. The volunteers should supplement, not substitute, effective controls and wardening by public bodies. (156)

B10. Sand-yachting, as an activity which may cause serious disturbance to wading birds, should be closely monitored, and regulatory mechanisms introduced if necessary. (156)

B11. The programme of dune and beach conservation work being undertaken at Point of Ayr should ultimately lead to the cessation of beach driving and parking. This may eventually require a physical barrier, but should also involve the establishment of an alternative 'inland' parking area as close as possible to the sea-wall. (157-158)

B12. Planning of means to increase public access to the shores of the estuary (e.g. the coastal foot-path under consideration by Delyn Borough Council) should take into account the need to guide visitor pressure away from fragile and sensitive sites such as sand-dunes undergoing restoration, and important feeding or roosting areas for water birds. (157)

C. Recommendations with wider implications

C1. Environmental Assessment (EA) procedures, presently implemented on the basis of an environmental statement provided and paid for by the prospective developer, should be reviewed to determine whether the degree of actual and perceived independence in such procedures could be enhanced. Consideration should also be given to the development of specific guidance for EAs in relation to wetland sites, giving full recognition to the wide zone of potential impact. (81-84)

C2. Compensation, under Article 4.2 of the Ramsar Convention, should not be treated on a superficial 'area for area' basis. Instead, it should be based on the wetland functions and values which are lost when part of a Ramsar site is deleted. Special attention should be given to the requirement for compensation with the original habitat type and to management of any area offered in compensation. Loss of even a small part of an extensive wetland of international importance should not be compensated for by designation of several even smaller fragments of wetland elsewhere. Hence, pockets of degraded wetland habitats, often surrounded by industrial or other intensive land use, should not be regarded as adequate compensation for the loss of part of the intertidal mud-flats of the Dee Estuary. The Government should consider issuing further Planning Policy Guidance relating to compensation and mitigation. (85-89)

C3. The current obligation upon the National Rivers Authority to further the conservation of flora and fauna in the course of its duties should be maintained when the new Environment Agency is established. (105-107)

C4. Water bird survey and monitoring work carried out in addition to WeBS should be maintained, and, if possible, extended. However, the team is concerned that an estuary-wide approach to planning should not require the national or international value of small sub-sections of the estuary to be proven. Steps should be taken to amend planning guidance, and, if necessary, legislation, to promote an integrated approach more strongly than is the case at present. If proof of the specific interest of a parcel of land is required, the emphasis should be on demonstrating that the proposed development site is not of value. (146-148)

C5. The positive, cooperative relationship between wildfowling and nature conservation interests on the Dee Estuary should be used as a model for Ramsar sites in the United Kingdom and elsewhere in Europe. Monitoring and review of bag totals and bag limits should be continued, and the compatibility of puntgunning with Ramsar and SPA designation should be subject to, independent, objective review. (149-152)

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VI GLOSSARY OF ACRONYMS & ABBREVIATIONS

BASC	British Association for Shooting and Conservation
BoEE	Birds of Estuaries Enquiry
CCGT	Combined Cycle Gas Turbine
CCW	Countryside Council for Wales
DECG	Dee Estuary Conservation Group
DEF	Dee Estuary Forum
DES	Dee Estuary Strategy
DWC	Dee Wildfowlers' Club
EN	English Nature
EU	European Union
IUCN	The World Conservation Union (International Union for the Conservation of Nature and Natural Resources)
IWRB	International Waterfowl & Wetlands Research Bureau
JNCC	Joint Nature Conservation Committee
MAFF	Ministry of Agriculture, Fisheries and Food
NRA	National Rivers Authority
NWC	National Waterfowl Counts
PPG	Planning Policy Guidance
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SFR	Swiss Francs
SMP	Shoreline Management Plan
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
STRP	Scientific & Technical Review Panel
TDUG	Tidal Dee Users Group
WeBS	Wetland Birds Survey

VII ACKNOWLEDGEMENTS

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Gland, Switzerland
June 1995

VIII Appendices

Appendix A - itinerary for Monitoring Procedure mission

Appendix B - 1:25,000 map of SSSI/Ramsar/SPA boundary

Appendix C - p. 18 of PPG9 - graphic of procedure for processing planning applications affecting SPAs/SACs.

Appendix D - map of cockle beds - see map 17 in NRA Catchment MP (main volume)

APPENDIX A

Itinerary for Monitoring Procedure Mission

Monday 14 November 1994

Field visits to:

West Kirby Marine Lake

Thurstaston

Heswall

Parkgate/Gayton Sands

Inner Marsh Farm RSPB Reserve

Shotwick Fields/Broken Bank tip

Tuesday 15 November 1994

Field visits to:

Deeside Naturalists' Society Reserve/PowerGen development, Connah's Quay

Flint Castle (to view proposed coastal route for Flint Bypass)

Flint Tip

Magillt/Bettisfield Colliery tip

Greenfield tip

Lostyn Dock

British Coal, Point of Ayr Colliery

Hamilton Oil, Point of Ayr gas terminal

Malcre Warren, Point of Ayr

Wednesday 16 November 1994

One-day conference, held at Alyn and Deeside District Council offices, attended by representatives of:

Alyn & Deeside District Council (ADDC)

Confederation of British Industry (CBI)

Countryside Council for Wales (CCW)

Dee Estuary Conservation Group (DECG)

Dee Estuary Forum (DEF)

Dee Estuary Strategy (DES)

Deeside Naturalists' Society (DNS)

Delyn Borough Council (DBC)

Department of the Environment (DoE)

English Nature (EN)

Joint Nature Conservation Committee (JNCC)

Ministry of Agriculture, Fisheries and Foods (MAFF)

Metropolitan Borough of Wirral (MBW)

National Rivers Authority (NRA)

Port of Mostyn (PoM)

Ramsar Convention Bureau (RCB)

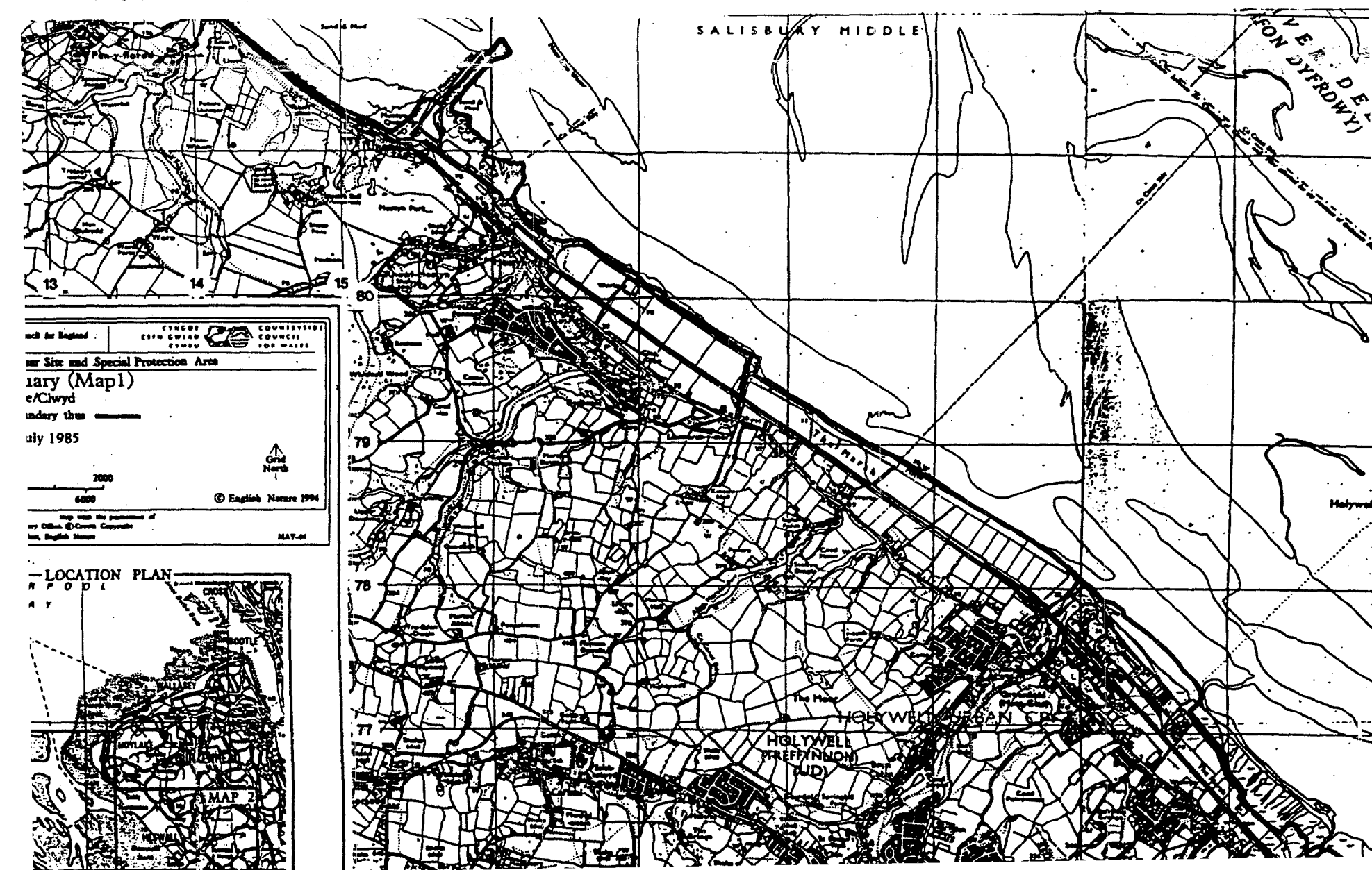
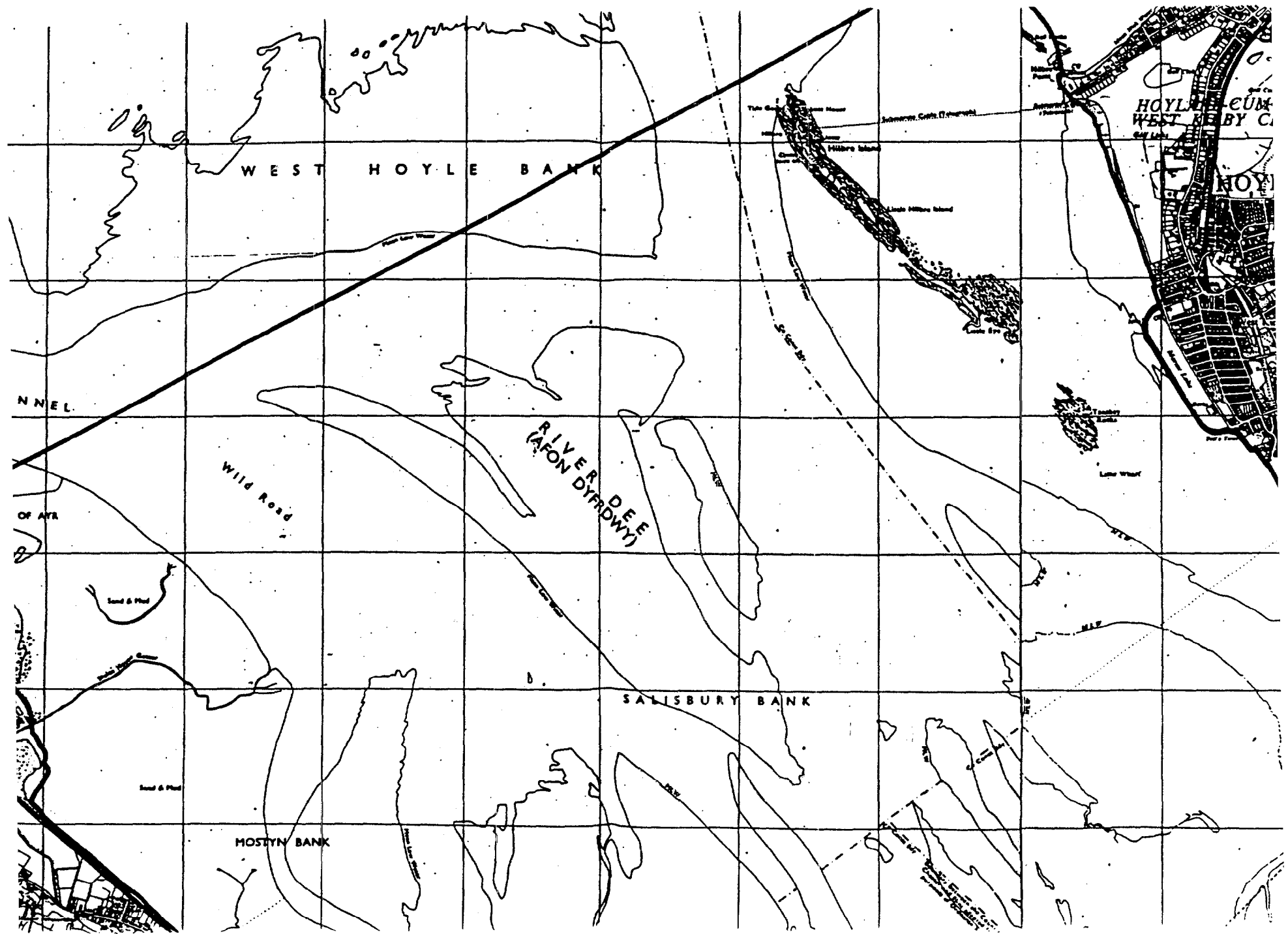
Royal Society for the Protection of Birds (RSPB)

Tidal Dee Users Group (TDUG)

Welsh Office (WO)

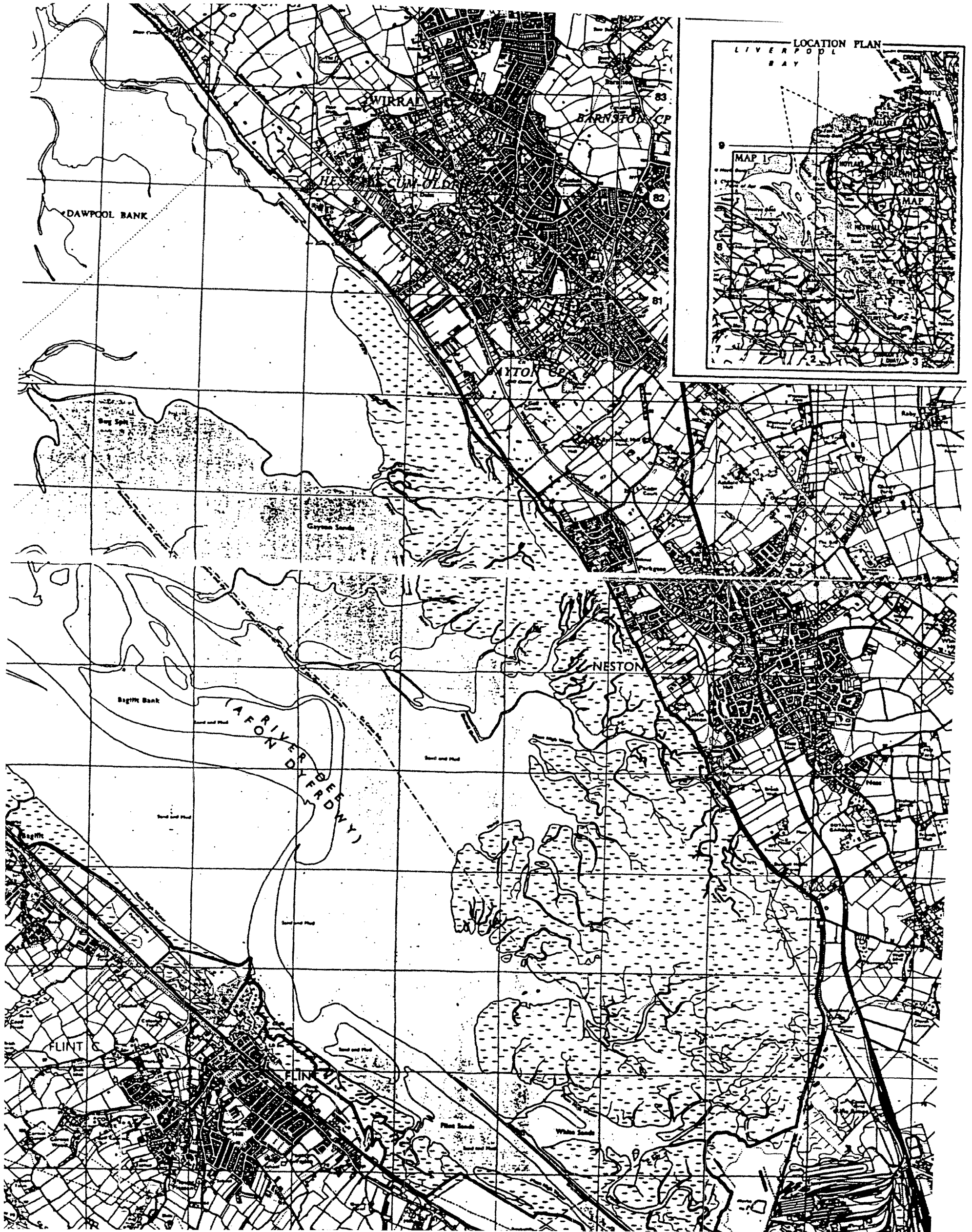
APPENDIX B

1:25,000 map showing SSSI, Ramsar site* and SPA* boundary
*as designated by the UK Government in July 1985.



CINCOR COMMISSIONED
 COUNCIL FOR WALES
 COUNCIL FOR WALES
 Special Protection Area
 Primary (Map 1)
 Clwyd
 July 1985
 © English Nature 1994
 MAY-04

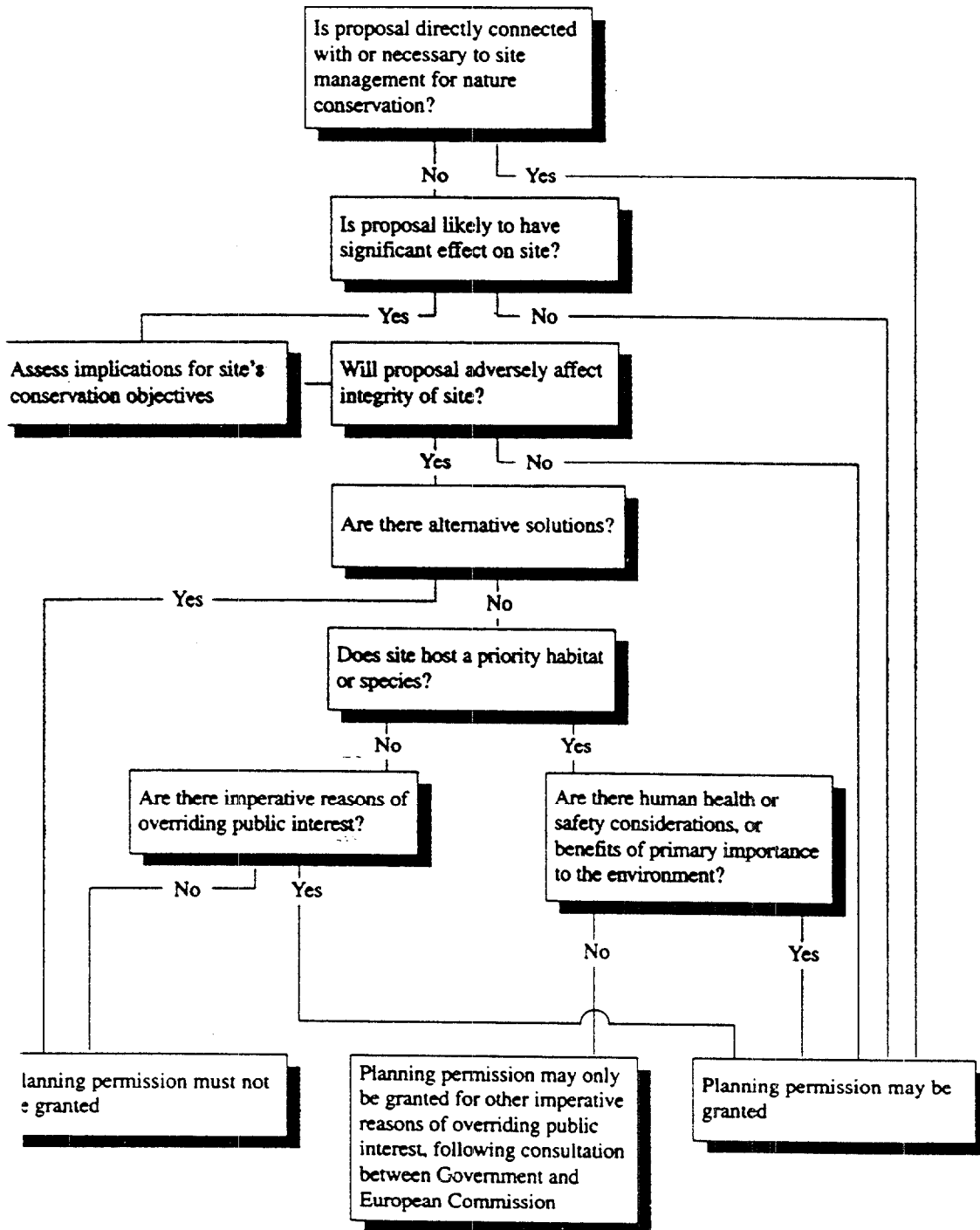




APPENDIX C

Taken from PPG9
(Department of the Environment, 1994)

Consideration of development proposals affecting SPAs and SACs



Fold-out, quick reference map to show principal locations mentioned

