

### 4.1 Ecological character

The Dee estuary contains extensive areas of intertidal sand and mudflats with large areas of saltmarsh at its head and along part of its north-eastern shore. The saltmarsh vegetation exhibits a complete succession from early pioneer vegetation colonising intertidal flats through lower, middle and upper saltmarsh types to brackish and freshwater transitions at the top of the shore. Although land-claim has led to a loss of many of these natural transitions, there are still a number of areas, particularly on the English shoreline, where transition to swamp vegetation still occurs. These are dominated usually by common reed *Phragmites australis* and sea club-rush *Bolboschoenus maritimus*. Uncommon saltmarsh species include saltmarsh flat-sedge, *Blysmus rufus*, a species close to its southern limit in North Wales together with the nationally scarce species, slender hare's-ear, *Bupleurum tenuissimum*, at its northern British limit of occurrence at the head of the estuary in Wales.

The extensive intertidal mudflats and sandflats of the Dee Estuary form the fifth-largest area within an estuary in the UK and contain many invertebrates, including worms, bivalves (e.g. cockles *Cerastoderma* sp.) and amphipods. Much of the upper part of the estuary consists of muddy fine sand dominated by *Hediste diversicolor* and *Macoma balthica*. The sediment flats in the outer estuary also have fine muddy sands but here they are dominated by *Cerastoderma edule* and *Arenicola marina*. Where water movement is greater the sediments tend to be coarser and sandier, with *Nephtys* sp. and *Bathyporeia* sp. It also supports some nationally scarce biotopes including honeycomb worm reefs, *Sabellaria alveolata* around Hilbre Island and piddock beds (*Barnea candida*) on Holocene clay banks within the estuary. These invertebrates provide an abundant food source for fish and are of particular importance for waterbirds, with over 120,000 birds overwintering on the estuary.

The saltmarshes themselves support a variety of vegetation communities characteristic of estuaries in northern and western Britain. Part of the estuary is dominated by the non-native common cordgrass *Spartina anglica* although its extent is much less than formerly. Its current extent reflects the fact that the estuary continues to accrete following historical land-claim. Species such as glasswort *Salicornia* sp. and annual seablite *Suaeda maritima* are also present in large amounts. Much of the saltmarsh remains ungrazed and this has allowed extensive stands of species intolerant of grazing, such as sea purslane *Atriplex portulacoides*, to develop.

The subtidal zone of the Dee is believed to provide an important breeding, sheltering and nursery area for coastal fish species. The Dee Estuary also supports a number of migratory fish species including river lamprey, *Lampetra fluviatilis*; sea lamprey, *Petromyzon marinus*; Atlantic salmon, *Salmo salmar*; sea trout, *S. trutta*; twaite shad, *Alosa fallax*; smelt, *Osmerus eperlanus* and eels, *Anguilla anguilla*.

The three sandstone islands which comprise the Hilbre complex, represent the only natural hard rock coast within the estuary. The coastal cliffs and maritime heathland and grassland on the plateau areas above the cliffs represent the only regional examples of these vegetative types. The sheltered eastern cliffs of Hilbre support common scurvygrass *Cochlearia officinalis* and sea campion *Silene uniflora*. The nationally scarce rock sea-lavender *Limonium britannicum* occurs, together with the regionally scarce sea spleenwort fern *Asplenium marinum*.

The sand dune system between the Point of Ayr and Prestatyn supports a range of dune habitats and typical flora and faunal species. This system is the largest remaining areas of a once extensive dune system to be found along the north east coast of Wales. A number of nationally rare species occur including Portland spurge *Euphorbia portlandica*; dune fescue, *Vulpia membranacea*; white horehound, *Marrubium vulgare* and seaside centaury, *Centaureum littorale*. Within the dune slacks the rare liverwort, petalwort, *Petalophyllum ralfsii* occurs. Many nationally scarce invertebrates including a number of Red Data Book species such as the sandhill rustic moth, *Luperina nickerlii gueneei*, the sand wasp, *Podalonia affinis*, and the mining bee, *Colletes cunicularis* also occur. The natterjack toad, *Epidalea calamita* and sand lizard, *Lacerta agilis* have been successfully reintroduced

to this system, where they historically occurred. Natterjack toads have also been successfully reintroduced to the smaller dune system at Red Rocks, where they became locally extinct in the early 1990's.

The Dee Estuary forms part of the complex of estuaries, which provide habitats for migratory waterbirds along the shores of Liverpool Bay, which in turn form part of the chain of such sites along the western coast of the UK. The relatively mild winter weather conditions found here compared to continental Europe can be of additional importance to the survival of wintering waterbirds during periods of severe weather. The Dee Estuary ranks amongst the top ten British estuaries for the size of its wintering waterbird population (Musgrove et. al., 2001). Outside of this period, the Dee Estuary is also of particular importance as a staging area for migratory waterbirds/seabirds on autumn and spring passages. It lies on the East Atlantic Flyway route. The Dee Estuary also supports populations of the breeding seabirds, little tern, *Sterna albifrons* and common tern, *Sterna hirundo* and is used by a number of different tern species on passage. Sandwich tern, *Sterna sandvicensis* occurs in important numbers at this time.

### 5.2.1. Factors adversely affecting the Site's ecological character

*Explanation of reporting category:*

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Introduction/invasion of exotic animal species	2	The Chinese mitten crab <i>Eriocheir sinensis</i> is an invasive non native species that was found in the Dee Estuary by the Environment Agency in 2006. The crab burrows into river and estuary banks and can cause severe erosion. It has been found upstream in the fluvial sections of the River Dee above Chester Weir too.	+	+	+
Introduction/invasion of non-native plant species	1	A programme of control including alien/alien woody species is currently underway within the Gronant Dunes and Talacre Warren SSSI. This will require ongoing work for a number of years yet	+	+	+
Overfishing	2	Review of existing fisheries byelaws excluding cockle fishery	+	+	+
Pollution – industrial waste	1	Contaminated land sites around the estuary	+	+	+
General disturbance from human activities	1	Dune systems are susceptible to destabilisation if not subject to active management to control recreational pressures from visitors and their activities	+	+	+
Transport infrastructure development	2	1. Port of Mostyn 2. Coastal path (foot/cycle)	+	+	+
Sand dune erosion and accretion along the North Wales open coast	2	Gronant Dunes and Talacre Warren	+	+	+

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

### **Introduction/invasion of exotic animal species.**

As yet no plan has been put in place. Data collation is underway through casual sightings but ideally a full scale investigation needs to occur to ascertain how widespread the species is.

### **Over fishing**

Now that the Dee Cockle Regulating Order is in place, the cockle fishery should be managed in a more sustainable manner. However there is a need to review the other sea fisheries byelaws on the Dee Estuary. The Sea Fisheries Committee on the Dee Estuary was the Environment Agency Wales, who have discussed their proposed byelaw revisions with various fishing and conservation groups and had proposed to formally consult on them. This is particularly important for various fish species as there is no minimum landing size stipulated in the byelaws which could be exploited both to the detriment of the fish stocks themselves and those animals feeding on them.

Additionally spawning areas need to be excluded from all fishing effort particularly in the canalised sections of the River Dee, upstream of the estuary. However the passage of the Marine Bill through the UK Parliament has stalled this process for the moment.

### **Transport Infrastructure Development**

#### **1. Port of Mostyn**

##### **a. Inshore Channel Dredging within the Dee Estuary**

In March 2010 consent was given for maintenance of the navigable channel to the dock for three years to a depth of -4m below Chart Datum (CD) with disposal of dredgings within the estuary at Mostyn Deep to an agreed disposal pattern. This is subject to an agreed monitoring package with an annual review of the findings prepared by the Port and is subject to independent scrutiny by consultants employed by the regulators involved. This depth of dredging was agreed would not cause significant adverse impact on the estuary. The application for the dredge to -4m CD, was subject to detailed Environmental Impact Assessment.

##### **b. Offshore Channel dredging**

The Port have indicated previously that they might wish to further deepen the offshore channel along the North Wales coast at some time in the future.

##### **c. Harbour Revision Orders (HRO)**

The Port of Mostyn have proposed a Harbour Revision Order (HRO) which would extend their statutory harbour area over a larger area of the estuary than currently and it would include the main shipping channel to the port from offshore at Rhyl too. This will, if approved, give them permitted development powers in respect of their core business over this area. The EAW who are currently responsible for navigation matters on the Dee Estuary have also submitted a HRO covering the whole area of the Dee Estuary over which they are currently responsible. The HROs overlap in part particularly in relation to the Inshore Channel to the Port/Mostyn Deep disposal area. The two HROs were subject to scrutiny at the same public inquiry in November 2005. The result is still awaited.

##### **d. New developments**

#### **a. Port of Mostyn, Mostyn, Holywell- Application for a construction license for the modification of an**

## **existing berth (No 1). Food and Environmental Protection Act 1985 Part 2**

CCW were consulted on 23rd December 2009, on this application and initially objected to it in our letter of 2 February 2010. The proposal involved the infilling of inter and subtidal land between the existing Mostyn breakwater and the mooring dolphins used currently by Ro-Ro vessels engaged in transshipping the A380 wings from Mostyn to Toulouse. The Port of Mostyn argued that they would need additional quay space to accommodate the number of vessels which would be engaged in construction work in connection with the Gwynt y Mor windfarm.

The proposal would involve the loss of 0.43 hectares of inter-tidal and 0.54 hectares of sub-tidal land, a total of 0.97ha. Much of the intertidal land comprised areas of slag waste from historic disposal from Mostyn ironworks and only a comparatively small area was actually inter-tidal mud and sandflats (0.12ha). It would also involve removing 50,000 cubic metres of sand from the estuary to infill the area of intertidal land required for the development. This sand would be derived from areas already consented for existing dredging of the navigation channel.

Apart from the direct loss of habitat, there was concern raised about possible disturbance to birds particularly redshank roosting on the breakwater in the vicinity of the development as well the small loss of intertidal habitat. Whilst the Port offered some mitigation to address possible impacts on bird populations in the vicinity of the development including screening, CCW requested additional mitigation measures including the provision of an additional, or much improved area suitable for bird roosting. Subsequently CCW wrote on 27 May 2010 to Welsh Government with our advice on the mitigation proposals set out in the letter of 19 May 2010 from ABP Mer, which supplements and in part replaces the mitigations described in the earlier options report.

We concluded that CCW would remove its objection once it had seen a draft consent that confirms that various conditions necessary to safeguard the Ramsar site, had been included. Approval for the development was subsequently given, although it has not yet been implemented. Subsequently an area suitable for bird roosting was constructed on land owned by the Port away from the development site. This is correct at time of writing, June 2012.

### **b. Port of Mostyn. Marine Licence Consultation Proposed Pontoon for Wind Farm Service Vessels. Applicants RWE nPower but within Port of Mostyn's Statutory Harbour Area**

On 22 February 2012, CCW responded to a consultation for marine licensing from Welsh Government under the Marine and Coastal Access Act 2009 for a pontoon at the Port of Mostyn to service maintenance vessels engaged in wind-farm work. The application was made by RWE nPower. It included an Environmental Statement (ES) as it was deemed to fall under the Marine Works (Environmental Impact Assessment) Regulations 2007 (As amended) under Annex II (10) (e) – 'Construction of roads, harbours and port installations, including fishing harbours (projects not included in Annex 1)'.

The application would result in the construction of a floating pontoon with walkways to land and would involve the installation of several piles to maintain the structure in situ. The piles would be situated mainly in subtidal areas, although some would be on intertidal land. The overall landtake within the site was small and the impact on coastal process was minimal. The structure would be removed at cessation of its use.

The main concern relating to this development was to a nearby high tide bird roost principally of redshank, a specific feature of the site and whether the development would cause their displacement or disturbance. CCW have not objected to the proposal provided that various recommendations are implemented. A decision on this is still pending. This is correct at time of writing, June 2012.

## **2. Coastal path**

In Wales there has been a proposal for a Dee coastal footpath along the whole length of the Welsh shoreline from

Chester to Gronant prior to recent government announcements about a coastal footpath for Wales and coastal access in England. This was the subject of considerable debate between various interested parties in the 1990's and a number of potential problem areas were identified. These mainly related to locations of roosting bird populations at high tide along the Welsh Dee coast, although some sections of that path did cross habitats of interest too. This route was not progressed at the time as monies were not forthcoming. The route is now being progressed again following Government announcements and funding. Sections of route are being implemented in a piecemeal fashion. This piecemeal approach makes consideration of the overall impact of any route on the Ramsar site difficult.

In addition to the coastal path there is a further proposal for a coastal cyclepath following the whole of the Welsh coastline as above. As with the coastal footpath this is being developed in a piecemeal fashion.

The implications of coastal access in England are currently unclear.

### **Sand dune erosion and accretion along the North Wales open coast**

The Gronant Dunes and Talacre Warren sand dune system shows signs of both accretion and erosion.

Erosion caused by terminal scour impacts of adjacent hard defences at the extreme western end of this system at Prestatyn has been rectified by beach nourishment with rock armour and shingle placed on the beach. Parts of the system to the west of the Prestatyn Gutter outfall onto the beach have been actively accreting such that new shingle bars forming to seaward of the dunes have developed new dune habitat, as sand has accreted on them. Further east however around Point of Ayr Lighthouse the dunes have regressed landward. A beach nourishment trial scheme with sand has slowed this regression in recent years and further nourishment schemes should be considered if suitable material is available.

If this system is to remain and not retreat it is essential that longshore drift along the coast from west to east is not interfered with by coastal defences to the west, by aggregate sand extraction or by offshore developments including channel dredging and windfarms. The second Shoreline Management Plan for cell 11a from the Great Orme to Southport currently being written needs to fully ensure that coastal processes are allowed to continue thereby maintaining the beaches and dunes. The dunes also need to be managed to ensure that they are not further threatened by recreational usage

Is the site subject to adverse ecological change?      YES

---

#### **6.1.1. Bibliographical references**

- Bamber, R. N., Evans, N. J., Sanderson, W. & Whittall, A. 2001. Survey of potential coastal saline lagoons and pools in Wales, December 1998.  
Bangor: Countryside Council for Wales Contract Science Report No. 377; 70 pp.
- Bamber, R. N., Evans, N. J., Sanderson, W. & Whittall, A. 2001. Coastal saline lagoons and pools in Wales: review and proposals. Bangor:  
Countryside Council for Wales Contract Science Report No. 464; 69 pp.
- Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC (eds.) (1996) *Coasts and seas of the United Kingdom. Region 13. Northern Irish Sea: Colwyn Bay to Stranraer, including the Isle of Man*. Joint Nature Conservation Committee, Peterborough. (Coastal Directorates Series.)
- Buck, AL (ed.) (1993) *An inventory of UK estuaries. Volume 3. North-west Britain*. Joint Nature Conservation Committee, Peterborough
- Burd, F (1989) *The saltmarsh survey of Great Britain. An inventory of British saltmarshes*. Nature Conservancy Council, Peterborough (Research & Survey in Nature Conservation, No. 17)
- Buxton, NE (1978) *The Dee estuary water storage scheme feasibility study. Vol. 4. A bibliography of ecological work on the Dee estuary*. Central Water Planning Unit, Reading
- Countryside Council for Wales (1993) *Welsh estuaries review*. Countryside Council for Wales, Bangor

- Countryside Council for Wales (2004) CCW Phase I Intertidal Survey dataset (unpublished)
- Countryside Council for Wales and Natural England (2010). The Dee Estuary European Marine Site
- Covey, R (1998) *Marine Nature Conservation Review Sector 11. Liverpool Bay and the Solway Firth: area summaries*. Joint Nature Conservation Committee, Peterborough (Coasts and seas of the United Kingdom. MNCR series)
- Craggs, JD (ed.) (1982) *Hilbre, the Cheshire island: its history and natural history*. Liverpool University Press, Liverpool
- Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge
- Dargie, T (2001) NVC survey of saltmarsh and other habitats in the Dee and Clwyd estuaries 2000. *CCW Contract Science Report*, No. 450
- Dee Estuary Conservation Group (1976) *The Dee estuary: a surviving wilderness*. Dee Estuary Conservation Group
- Dee Estuary Conservation Group (1996) *The Dee estuary*. Dee Estuary Conservation Group
- George, N (1999) *Liverpool Bay coastal natural area. A nature conservation profile*. English Nature, Peterborough
- Gouldstone, A (1994) *Survey of coastal fields adjacent to the Welsh shore of the Dee estuary winter 1993/4*. Royal Society for the Protection of Birds
- Henderson Ecological Consultants (1998) *Winter and autumn passage bird population at Point of Ayr, Flintshire: annual report 1996/97*. Henderson Ecological Consultants, H-100-BR-186
- Henderson Ecological Consultants (1999) *Winter and autumn passage bird population at Point of Ayr, Flintshire: annual report 1997/98*. Henderson Ecological Consultants, H-100-BR-189
- Henderson Ecological Consultants, (2000) *Winter and autumn passage bird population at Point of Ayr, Flintshire: annual report 1998/99*. Henderson Ecological Consultants, H-100-BR-203
- Huddart, D & Glasser, NF (2002) *Quaternary of northern England*. Joint Nature Conservation Committee, Peterborough (Geological Conservation Review Series, No. 25)
- Jemmett, A (1996) *The Dee Estuary Strategy final report: January 1996: a management strategy to safeguard the future of the Dee estuary*. Metropolitan Borough of Wirral, Birkenhead
- Jones, PS, Stevens, DP, Blackstock, TH, Burrows, CR & Howe, EA (eds.) (2003) *Priority habitats of Wales: a technical guide*. Countryside Council for Wales, Bangor
- Liverpool Bay Coastal Group (1999a) *Liverpool Bay Shoreline Management Plan Sub-Cell 11a: Great Ormes Head to Formby Point*. Data Collation Report.
- Liverpool Bay Coastal Group (1999b) *Liverpool Bay Shoreline Management Plan Sub-Cell 11a: Great Ormes Head to Formby Point*. Plan Document.
- Liverpool Bay Coastal Group (1999c) *Liverpool Bay Shoreline Management Plan Sub-Cell 11a: Great Ormes Head to Formby Point*. Context Report.
- McFarland, V, Barnacal, B & Craggs, J (1983) *Hilbre, the island in a wilderness. Birds, wildlife and history*. Deeside Publications, Heswall
- McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough. [www.jncc.gov.uk/SACselection](http://www.jncc.gov.uk/SACselection)
- Mills, DJL (1998) Chapter 11. Liverpool Bay to the Solway (Rhôs-on-Sea to the Mull of Galloway) (MNCR Sector 11). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 315-338. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)
- Musgrove, AJ, Langston, RHW, Baker, H & Ward, RM (eds.) (2003) *Estuarine waterbirds at low tide. The WeBS Low Tide Counts 1992–93 to 1998–99*. WSG/BTO/WWT/RSPB/JNCC, Thetford (International Wader Studies, No. 16)
- Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. [www.wwt.org.uk/publications/default.asp?PubID=14](http://www.wwt.org.uk/publications/default.asp?PubID=14)
- Nature Conservancy Council (1978) *Dee estuary research review*. Nature Conservancy Council (Internal Report, No. NC.157.D)
- Nicholas Pearson Associates (1992) *Use of inland field by waders in the non-breeding season at Point of Ayr, Clwyd*. Nicholas Pearson Associates, H-100-BR-108
- Nicholas Pearson Associates (1993) *Baseline ecological studies, ornithology: winter and autumn passage bird populations at Point of Ayr, Clwyd in the context of the Dee estuary*. Nicholas Pearson Associates, H-100-BR-159
- Nicholas Pearson Associates (1994) *Autumn and winter passage bird population at Point of Ayr, Clwyd: annual report, terminal construction Phase 1993/94*. Nicholas Pearson Associates, H-100-BR-167
- Nicholas Pearson Associates (1995) *Autumn and winter passage bird population at Point of Ayr, Clwyd: annual report, terminal construction Phase 1994/95*. Nicholas Pearson Associates, H-100-BR-179
- Nicholas Pearson Associates (1996) *Autumn and winter passage bird population at Point of Ayr, Clwyd: annual report, terminal construction Phase 1995/96*. Nicholas Pearson Associates, H-100-BR-185
- Ramsar Convention Bureau (1994) *Ramsar Advisory Missions: Report No. 34, Dee Estuary, United Kingdom (1994)*. Ramsar Convention Bureau, Gland. [www.ramsar.org/ram/ram\\_rpt\\_34e.htm](http://www.ramsar.org/ram/ram_rpt_34e.htm)
- Ramsar Convention Bureau (1995) *Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971): monitoring procedure, Dee estuary, United Kingdom: final report June 1995*. Ramsar Convention Bureau, Gland

- Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)
- Rice, KA & Putwain, PD (1987) *The Dee and Mersey estuaries. Environmental background*. (Contractor: University of Liverpool, Environmental Advisory Unit.) Shell UK Ltd.
- Shirt, DB (ed.) (1987) *British Red Data Books: 2. Insects*. Nature Conservancy Council, Peterborough
- Smith, R (2004) *Dee Estuary Birding* website. [www.deeestuary.co.uk](http://www.deeestuary.co.uk) [includes incorporated websites of other bodies]
- Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.)  
[www.jncc.gov.uk/UKSPA/default.htm](http://www.jncc.gov.uk/UKSPA/default.htm)
- Taylor, PM & Parker, JG (eds.) (1993) *The coast of north Wales & north west England. An environmental appraisal*. Hamilton Oil Company Ltd., London
- Tucker, GM & Heath, MF (1994) *Birds in Europe: their conservation status*. BirdLife International, Cambridge (BirdLife Conservation Series, No. 3)
- Weighell, AJ, Donnelly, AP & Calder, K (eds.) (2000) *Directory of the Celtic coasts and seas*. Joint Nature Conservation Committee, Peterborough
- West, AD & McGroarty, S (2003) *Modelling oystercatchers and their food on the Dee estuary, Traeth Lafan and Burry Inlet SPA to inform target setting and site management – Phase 1*. Countryside Council for Wales, Bangor (Marine Monitoring Project, No. 3)