Assessment of Threats to County Wildlife Sites

Report compiled by Norfolk Wildlife Trust 2009

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1. Background

Norfolk Wildlife Trust (NWT) carried out an exercise to assess external threats to reserves in 1999. This attempted to assess the level of threats to each reserve and come up with solutions. The rationale being that there are a range of threats which are in common across a number of sites (including impacts of abstraction, pollution etc.) which can be addressed by generic solutions. This work is due to be revised in 2009.

It has been the intention for several years to carry out a similar piece of work for County Wildlife Sites (CWS). In 2007 NWT published a report on the "Impacts of Development on County Wildlife Sites. This report found that despite perceived threat, the actual damage to CWS from development has historically been relatively small. However, the proposals for large scale housing development in Norfolk, within the next 20 years, along with effects related to climate change, are likely to increase the threat to CWS and other areas of semi natural habitat. In order to get some idea of the scale of this threat it was decided to compile this report, in order to assess future threats to CWS in more detail.

In addition a short un-published report was compiled by NWT in 1999 [1] on potential impacts of development proposals on CWS. This report assessed how many sites were potentially affected by the Minerals Plan that was adopted in 1996 and by housing proposals within Local Plans.

2. Summary

There are currently 1273 County Wildlife Sites in Norfolk. CWS may be threatened by internal factors such as lack of, or inappropriate management, which are largely addressed by advisory work by NWT and other organisations, or by external factors that are largely addressed by NWT planning work. This report outlines a range of external factors that threaten sites. These vary from major threats such as the impacts of new housing development to minor threats such as localised pollution.

The major threats are all planning related. 69 CWS are currently within or adjacent to proposed housing or mineral developments and risk being lost or damaged as a result of these developments. Three of these are threatened by associated infrastructure developments. A further 59 CWS are potentially at risk from coastal erosion or coastal flooding.

It would be possible to carry out a broader analysis to ascertain the number of CWS that could potentially be threatened by development owing to their proximity to existing settlements. Although, this has not be done for this report, an assessment was made for South Norfolk Council area in a separate piece of work, which considered the number of sites that lie within 1km of an existing urban area or 500m from a village and thus could be considered potentially threatened by future development. In that case 65 CWS or 25 % of the total in the district were found to lie close to current settlements. If this percentage was extrapolated to the whole of the county 317 CWS could potentially be threatened.

[1] Development Proposals in Norfolk, NWT 1999 (unpublished)

If a comparison is made with the 1999 report, it can be seen that 21 CWS were at that time adjacent or within proposed housing allocations compared with 32 in the present report and 18 CWS were within or adjacent to proposed Minerals and Waste allocations compared with 34 during the present consultation. It seems likely that this increase in threatened sites is directly related to the level of growth proposed over the next 20 years. Further to this, if proposals for 2021 onwards that are emerging in the review of the Regional Spatial Strategy are taken forward a great many more sites will be threatened.

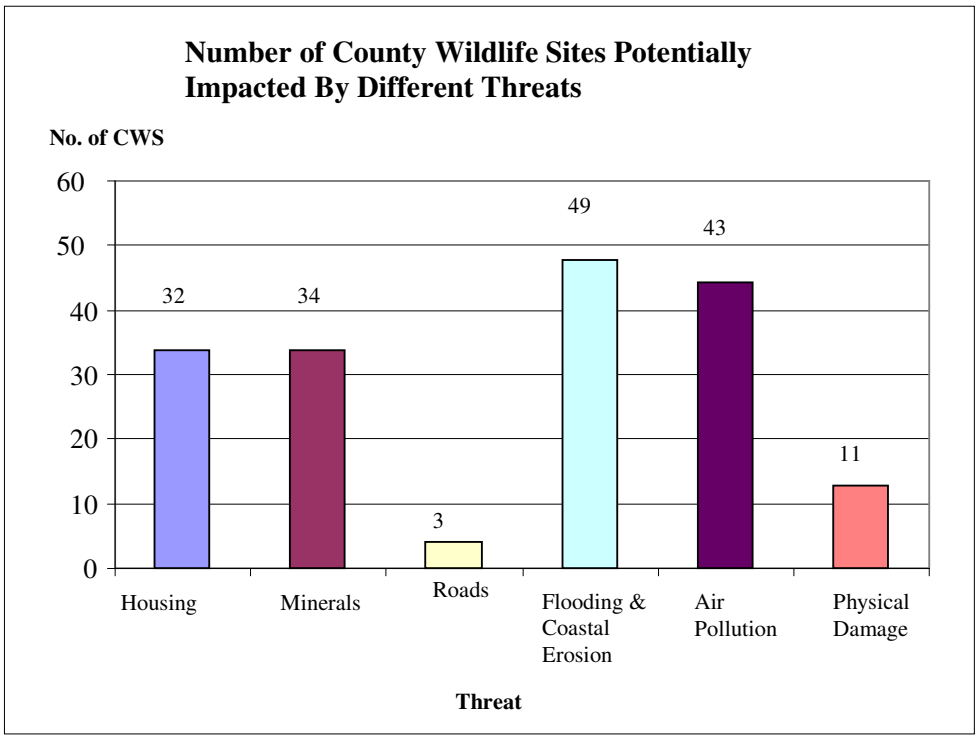
It is harder to assess those sites threatened by water abstraction, due to the need to assess hydrological conditions for each case. There are a total of 170 CWS that contain fen, swamp & mire habitats and a further 236 that contain standing water habitats, which are considered water dependent and potentially threatened. Many other sites have marshy grassland or wet woodland habitats, which could also potentially be threatened. However, very often water dependence is related to impedance of water and may not be related directly to ground water levels. Due to pro-active work in the past few years EA water resources officers now make a hydrological assessment for both SSSI and CWS when considering abstraction applications. Impacts on CWS are now routinely taken account of by the Environment Agency when assessing applications and so despite the large number of water dependent sites, there has only been a need to make a response to 12 abstraction applications between 2000 and 2006.

All of the above threats are addressed by NWT planning work and due to the continued level of threat from new developments associated with the Norwich, Thetford and King's Lynn growth points, it is important to maintain this work both at the strategic level in order to prevent threats arising and at the level of individual responses to planning applications.

Other external threats can be considered of a more localised nature and have mainly been picked up by NWT advisory staff when carrying out condition monitoring. Of 78 CWS monitored over the last 5 years, 11 were assessed as suffering from some form of physical damage caused by external factors. This includes dumping of rubbish and pollution of ponds. If extrapolated to all CWS, this would give a total of 14% of CWS suffering from some form of damage. At present although this type of threat may be fairly common, in most cases the impacts are minor in nature and may be best left to advisory staff. However, it is important to continue and expand the condition monitoring work in order to fully understand and address these threats and to take action where major impacts are indentified.

Threats that can be quantified have been included in Figure 1. However, when referring to this table it is important to bear in mind caveats relating to the figures that are discussed in this report.

Figure 1: Potential Impacts on County Wildlife Sites



3. Methodology

3.1 Introduction

NWT carried out an exercise to assess threats to NWT nature reserves in 1999. This work listed a detailed range of external threats which may impact on reserves and the presence of on-site staff allowed these threats to be assessed in detail. However, there are more than 1270 CWS in Norfolk and much less is known about individual sites. For this reason threats have to be assessed generically, unlike for reserves where specific threats for each reserve can be established.

The categories of threat chosen are:

- Planning
- Water abstraction
- Flooding/coastal erosion
- Pollution
- Physical damage
- Biological invasion from non-native species

The methodology for assessing each category varies and evidence comes from a variety of sources, including CWS condition monitoring records and records of past planning involvement for individual sites, along with information gleaned from strategic planning documents. The methodology adopted for each category of threat is explained in the relevant section.

3.2 Planning

3.2.1 Strategic Planning

Planning related threats have been assessed through reference to local authority development planning documents and NWT responses to these documents (Table 1). CWS within or adjacent to areas zoned for development, or put forward for zoning by developers have been assessed as being under threat. This also includes sites listed in Strategic Housing Land Allocation Assessments (SHLAAs), which are carried out by local authorities before housing allocations are made. Not all Local Development Frameworks (LDFs) are at the same stage so different documents are relevant for different authorities.

Using this approach it is possible to assess the number of CWS that are subject to an existing threat, as these cases all refer to CWS that are in close proximity to areas proposed for development. These results can then be compared with the results from the 1999 report on potential impacts of development proposals on CWS.

It would be possible to carry out a broader analysis to ascertain the number of CWS that could potentially be threatened owing to proximity to existing settlements. Although, this has not be done for this report, an assessment was made for South Norfolk Council area in a separate piece of work[2], which considered the number of sites that lie within 1 km of an existing urban area and 0.5 km of a village and thus could be considered potentially threatened by future development. The results of that work have been considered in this report.

3.2.2 Planning history/applications

Actual or existing threats have also been assessed by recording those that are or have been threatened by actual planning proposal. The source of this information is the NWT report on Impacts on of Development on CWS (2007), along with other information held by NWT on CWS and planning.

3.2.3 Infrastructure development

In conjunction with new housing, major infrastructure development is planned. Although not all finally agreed there are a number of potential road schemes at various stages of development. CWS within 1 km of current road lines have been assessed as being under threat

3.3 Water abstraction

It is difficult to quantify actual threats to individual CWS as a result of water abstraction. However, knowledge of habitats present on CWS allows an assessment to be made of those CWS that are water dependent. However, this does not mean that these CWS are dependent either on groundwater or levels in adjacent water bodies

[2] Rebuilding Biodiversity in South Norfolk. NWT 2009

rather it does give a broad indication of which sites are potentially under threat. This information has been used to respond to Environment Agency Catchment Abstraction Management Plans (CAMS) and has been recorded in various ways within the different CAMS, the first round of which have been completed for the various catchments that cover Norfolk.

An assessment could potentially be done by mapping sites adjacent to abstractions. However, the level of threat depends on hydrology of the area, which needs to be assessed professionally. It was therefore concluded that it is more useful to assess threats broadly by using sites already described by NWT and EA as being water dependent, as EA has agreed to consider these sites when considering applications for abstraction. Due to pro-active work in the past few years EA water resources officers now make a hydrological assessment for both SSSI and CWS when considering abstraction applications.

Valuable information on those CWS that are sensitive to abstraction is also found within the NWT Fen Assessment.[3]

3.4 Flooding/coastal erosion

A number of CWS are at risk either from coastal and tidal flooding, or from fluvial flooding. For the purposes of this study assessment has been restricted to coastal and tidal flooding as the great majority of CWS that occur on floodplains consist of wetland habitats that are unlikely to be harmed by occasional freshwater flooding, or which may depend on this happening.

On the coast, the risk has been assessed by considering the Shoreline Management Plans. Those CWS that fall within 100 year erosion zones or zones of flood risk, if there is no active intervention, are assessed as threatened. CWS on the floodplain in areas at risk of tidal flooding have also been included. However, the majority of this area is within the lower reaches of the Broads and there are currently very few CWS within the Broads Authority area because historically the Broads Authority has not recognised CWS within its area. However, the new Broads Biodiversity Action Plan has an action to assess CWS in the Broads.

3.5 Pollution

Risk of pollution is generally only known as a result of a site visit either when a condition assessment is made for a site, or when a management plan is written. Risks may also be recorded as a result of other site visits.

In addition limited strategic information is available and this has been assessed for the particular case of impacts of nitrogen based air pollution by looking at CWS that occur in those areas where Natural England (NE) consider SSSIs to be particularly vulnerable to pollution. This mainly relates to sensitive heath/acid grassland sites and fen sites that close to an air pollution source. In 2008 NE looked at units within 5 km of SSSIs and 10 km of European protected sites. Of 90 assessed, there were 54 that NE recommended needed conditions attached to the licences to reduce emissions (e.g. ammonia scrubbing). For 26 of these units the owners decided to appeal to the

[3] Norfolk Fens Assessment 2005-2006 – an assessment of non-SSSI fen sites outside the broads. Norfolk Wildlife Trust 2006

planning inspectorate and sites close to these units are considered to be currently at risk. Using this information, for the basis of this report CWS that contain over 0.5ha of heath or fen vegetation and that occur within 5km of these units have been assessed as at risk. 0.5ha has been chosen because this is the minimum size required for these habitats when assessing whether a site is of CWS quality.

3.6 Physical damage

Risk of physical damage is generally only known as a result of a site visit, either when a condition assessment is made for a site, or a management plan is written. Risks may also be recorded as a result of other site visits.

3.7 Biological Invasion

Biological invasion by non-native species is generally only known as a result of a site visit either when a condition assessment is made for a site, or when a management plan is written. Risks may also be recorded as a result of other site visits.

The Norfolk Non-native Species Initiative started in 2008 and is currently collecting information on the extent of non-native species in Norfolk, concentrating initially on wetland species. Records will be made available later in 2009 and these can then be correlated with CWS

4. Results

4.1 Planning

The NWT Report on the "Impact of Development on County Wildlife Sites" listed 49 sites that were subject to an actual threat from a planning application between 2000 and 2006[4]. Of these, 8 were recorded as being damaged during this time. Although that report showed that development isn't currently a major threat to CWS, future housing proposals indicate that there is far greater potential threat in the next 20 years. The review of the current East of England Plan could increase this threat further. The exact numbers will vary as the strategic planning process continues but at the current time 32 CWS are either within or adjacent to areas proposed for development by developers or local authorities, with a further 34 within or adjacent to proposed minerals sites (Table 1). In addition 3 CWS are threatened by proposed road schemes (Table 2).

The breakdown of figures includes 15 CWS in the Greater Norwich Development Plan Area that are highlighted in the Strategic Housing Land Allocation Assessment. In Breckland Council area 12 CWS are threatened, being adjacent to potential development sites listed in Breckland Site Specific Allocations and the Thetford Area Action Plan. The Borough of King's Lynn and West Norfolk have not yet reached Site Specific stage but a SHLAA has been carried out. 3 CWS have the potential to be impacted by sites that were included as potential housing sites by the Borough and these are recorded in the table. Representations will be made if these sites progress to Site Specific stage. In North Norfolk, 2 CWS are adjacent to areas identified as potential housing allocations. Norfolk Wildlife Services have been contracted by North Norfolk District Council to help them to assess the potential impacts of these and other allocations that may have an adverse impact on biodiversity

[4] Impact of Development on CWSs and other areas of semi-natural habitat. Norfolk Wildlife Trust 2007

With regard to housing development these figure should be considered the minimum number of sites that are potentially threatened as large scale housing development may lead to damage to sites within several kilometres, if they are subject to high levels of public pressure. The scale of potential threat is indicated by separate report by NWT for South Norfolk Alliance[5]. Using map based analysis this report assessed the number of sites that lie within 1km of an existing urban area or 500m from a village and thus could be considered potentially threatened by future development. In that case 65 CWS or 25 % of the total in the district were found to lie close to current settlements. If this percentage were extrapolated to the whole of the county 317 CWS could potentially be threatened.

CWS are not only under threat by housing development and 34 CWS are potentially threatened by proposals within the Norfolk Minerals and Waste Plan. As with other strategic plans, this number will fall once the Minerals Plan moves to a preferred options stage. However those sites that remain will be under greater threat.

Three CWS are potentially threatened by major infrastructure schemes, two of these are adjacent to the proposed route of the Norwich Northern Distributor Road and one is adjacent to probable route of the A11 bypass at Elveden.

4.1.1 Comparison with 1999 report

It is possible to compare these results with results from the 1999 report on potential impacts of development on CWS, as although the earlier report considered sites within 1km of proposed allocations it also recorded which of these were adjacent or within CWS so allowing comparison with the present work. 21 CWS were adjacent or within proposed housing allocations at that time, compared with 32 in the present report and 18 CWS were within or adjacent to proposed Minerals and Waste allocations compared with 34 during the present consultation. It seems likely that this increase in threatened sites is directly related to amount of growth proposed over the next 20 years. Further to this, if proposals for 2021 onwards that are emerging in the review of the Regional Spatial Strategy are taken forward a great many more sites will be threatened.

With respect to the housing allocations, since 1999, only one County Wildlife Site, in Downham Market, has been destroyed after an inspectors ruling at the Local Plan inquiry that the site should be developed. Of the rest a small number still have proposals that are being taken forward in the current LDF allocation consultations but the majority now have adjacent housing development. It is not clear what impact this has had on the CWSs concerned but it is very unlikely that mitigation was put in place at that time. More recently, however, three CWS in the valley of the River Yare at Bowthorpe in Norwich that were not subject to any mitigation during the initial Bowthorpe development have since received funding for mitigation measures in relation to the later stages of development.

[5] Rebuilding Biodiversity in South Norfolk. NWT 2009

Table 1

Local Authority Area	Planning Document	Date	CWS Threats
County	Norfolk Minerals And Waste LDF - Minerals Sites Allocations DPD: Issues And Options	Mar 08	34
Breckland	Breckland Council Site Specific Policies and Proposals: Issues and Options Consultation	Sep 08	6
Breckland	Breckland Council Site Specific Policies and Proposals: Additional Proposals	Feb 09	2
Thetford	Thetford Area Action Plan	Sep 08	4
North Norfolk	North Norfolk District Council Site Specific Allocations	Sep 06 & Nov 08	2
Great Yarmouth	Great Yarmouth Site Specific Policies and Proposals: Issues and Options Consultation	2008	0
West Norfolk	Strategic Housing Land Allocation Assessment (Site Specific Stage not yet reached)	2007	3
Norwich Broadland South Norfolk	Greater Norwich Development Plan, Strategic Housing Land Allocation Assessment (Site Specific Stage not yet reached)	2008	15
TOTAL			**66**

Table 2

Local Authority Area	Infrastructure Scheme	CWS Threats
Broadland	North Norwich Distributor Road	2
South Norfolk	Long Stratton bypass	-
Broadland	A47 Burlingham	-
Great Yarmouth	A47 Acle Straight	-
Breckland	A11 Elveden bypass	1
TOTAL		**3**

4.2 Water abstraction

According to information held by NWT a large percentage of CWS contain some wetland habitats and are thus potentially threatened by abstraction. Although there are a very large number of sites that have some wetland habitats, those sites that are most threatened by lowering of the water table are likely to be those containing fen, swamp and mire habitats. There are known to be 170 sites containing these habitats and these are assessed to be the most threatened. Many of these sites were included in the Fen Assessment Audit and this information is used when responding to water abstraction consultations. A further 236 sites are known to contain standing water habitats. Many other sites have marshy grassland or wet woodland habitats and could potentially be threatened. However, often this is related to impedance of water and clayey soils and may not be related directly to ground water levels.

As with planning threats the number of CWS with an actual threat is much smaller. NWT are routinely consulted by Eastern Area of the Environment Agency regarding abstractions and EA water resources staff consider impacts on water dependent sites, including CWS. As a result, between 2000 and 2008, only 12 responses have been made to water abstraction consultations regarding CWS, which were potentially threatened by abstraction. In all cases it was considered that EA took account of potential impacts on these sites when assessing the abstraction.

During the last 3 years the Environment Agency has completed Catchment Abstraction Management Plans for all river catchments in Norfolk and during this process have attempted to assess water dependent sites (Table 3). Information within CAMS should be a better indication of whether sites that are potentially under threat will be considered in the planning process. However, information from the different CAMS is not directly comparable because although some CAMS have only listed water dependent sites as background information, others have carried out further assessment on CWS, resulting in a smaller number of sites assessed as having an existing threat.

The Ely-Ouse and NW Norfolk CAMS have been developed by Central Area of EA Eastern region and have a common approach. Both CAMS recognise water dependent CWS within the catchment that will be considered on a case by case basis as individual abstraction applications are assessed. In addition the Ely- Ouse CAMS has included 2 CWS in the Restoring Sustainable Abstraction (RSA) program, which means that positive measures will be taken to ensure abstraction does not adversely affect these sites. This happened after lobbying from NWT using evidence from the Norfolk Fen Assessment.

The Broadland Rivers & North Norfolk CAMS have been developed by Eastern Area of EA Eastern region. The Broadland Rivers CAMS lists 215 water dependent CWS (as background information) for consideration when assessing abstractions. This list is based on information supplied by NWT. The North Norfolk CAMS also took account of water dependent sites including CWS, but these seem to be included under the heading of BAP habitats

Although approaches to utilising information regarding CWS within CAMS (and formats for supplying this information to others), have been slightly different between areas and individual CAMS, we are confident that EA are committed to considering

the impact of abstractions on CWS and that the work done over the last few years in responding to CAMS has been worthwhile.

Table 3

Area	Planning Document	Date
EA Eastern	Broadland Rivers CAMS	2006
EA Eastern	North Norfolk CAMS	2005
EA Central	NW Norfolk CAMS	2005
EA Central	Cam and Ely Ouse CAMS	2007
County	NWT Fen Assessment	2006/7

4.3 Flooding/Coastal erosion

There are 3 Shoreline Management Plans (SMPs) that cover Norfolk. Under scenarios included within these plans it has been assessed that 10 CWS are under risk from coastal erosion over the next 100 years (Table 4). In addition, 49 are at risk from coastal flooding, particularly in the Upper Thurne basin and around the Wash in the King's Lynn area.

For SMP 3b that stretches from Kelling to Lowestoft, there are 8 CWS threatened by coastal erosion, if there is no active intervention within the timescale of the SMP, up to 2105. In addition, a minimum of 26 CWS are threatened with coastal flooding if defences were to fail. The majority of these CWS are within the Broads, in the Upper Thurne area, which would be threatened by any breach in the coastal defences between Eccles and Winterton.

For the SMP 3b area that stretches from Hunstanton to Kelling there are fewer threatened CWS. This is partly because almost the whole of the coastal habitats are designated as SSSI and partly because the land rises fairly steeply from a narrow coastal plain with fewer areas potentially subject to coastal flooding.

For SMP 4d, most of the land adjacent to the Wash is low lying and there are 19 CWS potentially subject to coastal flooding, mainly in the vicinity of King's Lynn. Although large areas of the Fens are potentially affected by flooding there are very few CWS in this area.

Care needs to be taken when interpreting these figures however, as a soft cliff CWS may depend on erosion and as long as the new cliff line remains natural the CWS will retain its interest but in a position slightly inland. Similarly, sand dunes may move inland. CWS that are subject to coastal flooding may not necessarily be destroyed but may develop different habitats of equal value.

Table 4

Area	Planning Document	Coastal Erosion	Coastal Flooding
NE Norfolk	SMP 3b	8	26
N Norfolk	SMP 3a	2	4
The Wash	SMP 4d		19
TOTAL		**10**	**49**

4.4 Pollution

Information on pollution relating to CWS is sparse and only one site is recorded in NWT condition assessments as being polluted mainly owing to rubbish in a pond. This has been recorded under physical damage.

Using information supplied by Natural England on sources of nitrogen based pollution, 43 CWS that contain 0.5 ha or over of heath, acid grassland or fen vegetation were found to be within 5km of a poultry or pig unit that NE considers currently poses a risk to nearby SSSIs. These CWS were assessed as being at risk from pollution through nitrogen deposition. Of these 3 contained heath, 17 acid grassland and 25 fen habitats. The discrepancy in figures is owing to there being more than one habitat on some sites. The CWS concerned tend to be concentrated in the Brecks and the area North-west of Norwich and appear to be related to areas of heath and fen habitat and locations of large scale pig and poultry units

4.5 Physical damage/disturbance

Physical damage to CWS is recorded on NWT condition assessment forms. These forms have generally been used in relation to project related visits and most information has come from Norfolk Fen Assessment (2006 and ongoing) and NWT Grassland Assessment projects[6]. For a few sites this information is contained in the site management plans.

Using these sources only 11 CWS were assessed as being subject to physical damage. However, the number of sites that have so far been subject to condition assessment is 78 out of a total of 1270 CWS, which means that 14% of those sites visited have been subject to some form of physical damage. If the proportion of damaged sites is consistent across all CWS this would lead to a figure of 178 CWS subject to some form of damage.

To put this into perspective, in the majority of cases, damage only relates to a small area of the site, particularly where this relates to tipping of rubbish or garden waste and there are few sites that are subject to large scale damage or disturbance. One example is the Wades Pit area of CWS 211, which is very close to Wymondham and is not only subject to disturbance by motorbikes but also suffers regular disturbance to ponds (which are very important for great-crested newt and other amphibians) by dogs and people. It should be noted that the damage suffered by CWS like Wades Pit is related to the proximity of large scale settlement.

[6] The State of Norfolk's Magical Meadows. Norfolk Wildlife Trust 2008

4.6 Biological Invasion

No examples have been recorded as part of condition assessments. However, results currently being gathered by the Norfolk Non-native Species Initiative will be accessed in future in order to assess if this is a problem in relation to CWS. If problems are found to occur steps will be taken to minimise impacts on CWS

5 Recommendations

Due the very large number of CWS it is not thought useful to relate solutions to individual sites, rather to come up with a series of generic actions, which will help alleviate particular categories of threat. Many of these actions have been taking place for a number of years and this report serves to confirm the importance of continuing with these actions. Others represent potential new areas of work for NWT, the County Wildlife Sites Partnership and local authorities.

There are a number of drivers that should help ensure that these measures are carried forward. These include guidance within PPS 9[7], the DEFRA Local Sites Guidance[8] and the Biodiversity Duty for local authorities and public bodies, within the Natural Environment and Rural Communities Act 2006[9].

Threat	Action	organisation	timescale
Planning	• Ensure CWS are protected by policies and within development allocations in Local Development Frameworks	NWT LAs	
	• Ensure CWS system is based on up-to-date information in line with DEFRA Local Sites Guidance	CWS Partnership, LAs	
	• Ensure that CWS have high profile in green infrastructure strategies	NWT, LAs, NE	
	• Ensure that CWS are not adversely affected by planning proposals	NWT, LAs	
Water abstraction	• Ensure strategic plans (CAMS, River Basin Management Plans etc) take full account of CWS.	NWT	
	• Ensure threats to CWS are taken account of in water abstraction applications	NWT, EA	

[7] Planning Policy Statement 9: Biodiversity and Geological Conservation, OPDM, 2005
[8] Local Sites Guidance, DEFRA 2007
[9] Guidance for Local Authorities on Implementing the Biodiversity Duty, DEFRA, 2007

	• Manage wetland CWS to increase resilience to abstraction pressures (Fen Restoration Project)	NWT	
Coastal erosion/flooding	• Ensure strategic plans (SMPs, sea defence schemes etc) take full account of CWS • Ensure CWS are incorporated in Broads Authority Area	NWT, LAs, EA CWS Partnership, BA, NWT	
Pollution	• Follow up record of major pollution damage from CWS Condition Assessments • Ensure threats to CWS are taken account of in relation to air quality and water quality applications	NWT, EA EA NWT	
Physical damage	• Follow up record of major physical damage from CWS Condition Assessments	NWT	
Biological Invasion	• Work with Norfolk Non-native Species Initiative to gather evidence of non-native species on CWS • Ensure action is taken to minimise impacts of non-native species on CWS	NNSI NWT NNSI, NWT landowners	