

Natural England advice on the impact to Natura 2000 sites at Lymington Estuary (SAC, SPA, Ramsar) of the proposed introduction of Wightlink W class ferry service

Advice to Wightlink (Harbour Authority), Lymington Harbour Commissioners (Harbour Authority), (New Forest District Council (re permitted development consent) and Marine Fisheries Agency (re Fepa application))

Version 3

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Summary

This advice note represents Natural England's advice to statutory and competent authorities considering the effects of Wightlink's proposed W class ferry on the Natura 2000 sites in the Lymington River.

Natural England's advice relies upon evidence of the scale of impacts presented in H R Wallingford 2009 (EX 5937 R3). H R Wallingford have undertaken extensive technical discussions with all parties, including ABP mer for Wightlink, the Lymington Harbour Commissioners, Black and Veatch, BMT Seatech, the Lymington Society and the Lymington River Association. Some differences of view remain between all parties, and in particular Wightlink, advised by ABP mer, are questioning the findings of Wallingford's report.

Following these discussions H R Wallingford's advised extent of impact due to drawdown and backflow effects has been reduced from that noted in Natural England's preliminary advice. However, renewed uncertainty surrounding possible thruster impacts has also been noted.

Having considered all the evidence Natural England continues to advise that current evidence indicates that the "C" class ferry has been a factor in the ongoing deterioration in the extent of mudflats and saltmarshes at Lymington. This deterioration is over and above background changes and the influences of ferries in upstream sections appears to dominate over natural influences. The introduction of the "W class" ferries can be expected to prolong ferry-induced impacts on inter-tidal habitats and consequently further losses are likely to be attributable to ferry operations, even when mitigated by recent reductions in speed.

The ferry-related effects from the C-class vessels since 1998 and the introduction of the W-class vessels are estimated to be of the order of 0.4ha loss of habitat per decade from the inter-tidal at Chart Datum and a detrimental habitat change affecting 1.3 ha per decade. These effects are predicted to continue, albeit at reducing rates, for tens of years.

During the period of ongoing effects of the ferry operation along the navigation channel, the wider designated site will continue to suffer rapid coastal squeeze habitat losses from

vegetation die-back and outer wind-wave erosion, of around 5-6 ha a year. These effects will substantially change the nature of the estuary over the next 40-100 years.

While habitat losses to the wider designated site are dominated by coastal squeeze rather than the ferries, it has nevertheless been shown that the previous effect of the C class ferry together with predicted effects of the W class ferry would have a further anthropogenic detrimental effect. Consequently it must be concluded that the conservation objectives for the Natura 2000 sites cannot be secured.

Natural England therefore advises that it cannot be ascertained that the introduction of the “W class” ferries will not have an adverse effect on the Natura 2000 interest.

Wightlink, although questioning the findings of the Wallingford report, are currently in ‘without prejudice’ discussion with Natural England and the Lymington Harbour Commissioners in relation to mitigation. No formal proposals have been presented at this time.

Introduction

Where an appropriate assessment of a plan or project is undertaken, the Habitat Regulations require that it is demonstrated, beyond reasonable scientific doubt, that an adverse effect will not occur. This note gives Natural England’s advice whether the proposal to introduce the W class ferries at Lymington might result in impacts that could be considered an ‘adverse effect’ in an appropriate assessment carried out by competent authorities.

This note relies upon evidence of the scale of impacts presented by a number of sources cited in H R Wallingford 2009 (EX 5937 R3), and in particular the assessment of evidence within that report. This advice follows extensive technical discussions with all parties, including ABP mer for Wightlink, the Lymington Harbour Commissioners, Black and Veatch, BMT Seatech, the Lymington Society and the Lymington River Association.

Some differences of view remain between all parties. In particular Wightlink question the technical assessments within Wallingford’s report.

This note also relies upon the approach to adverse effect developed by the Environment Agency and on recent clarification of ‘cumulative’ and ‘in combination’ effects provided by Natural England.

Guidance on ‘adverse effect’

In 2004, internal guidance on assessing adverse effect was produced for the Environment Agency and English Nature. Exerts from the guidance are produced in Appendix 2.

Impacts must be assessed in relation to the conservation objectives for the site, and these are described in full in the 'Regulation 33 Package' for the European Marine Sites (English Nature 2001). The relevant objectives here relate to maintaining the extent and quality of the inter-tidal habitat.

In addition to the above Natural England advises that an appropriate assessment must consider past cumulative anthropogenic effects together with the predicted 'in combination' effects of a plan or project. The magnitude of any effect to be considered by the appropriate assessment must therefore include the effects of the C class ferries (and other anthropogenic influences eg. recreational boating) since the International sites were given legal protection in 1998.

Also the magnitude of the 'in combination' effect to be considered by the proposed change from the C class to the W class ferry in 2009 must consider the entire effects of the W class ferry per se.

International site features and potential impact area

The area of potential ferry-induced effects is along the navigation channel. The key Natura 2000 site features here are the inter-tidal mud and saltmarsh which are either SAC or Ramsar features in their own right or supporting features for SPA and Ramsar birds.

H R Wallingford have advised that the impact of ferries does not substantially interfere with the vertical accretion of the saltmarsh.

The impacts of the C class ferry operation since the Natura 2000 sites were identified in 1998

Any effects arising from the operation of the C class ferries have been examined both to inform the likely future effects of the W class ferry over its lifetime, and also to estimate the magnitude of any effects to be considered as 'cumulative' effects in the appropriate assessment .

1. H R Wallingford present evidence to show that the rate of erosion of the mudflat alongside the navigation channel has increased from the time the C class ferry was introduced.
2. Further evidence is presented to show that the combination of drawdown and return currents from past ferry movement would have led to significant past erosion of the lower mudflat.
3. Evidence of the thrust jet interacting with the foreshore on the outside of the bend at Short Reach suggests an additional erosion mechanism.
4. The effects of tidal currents and wind waves generate levels of bed shear stress which are, except for extreme tides, less than those historically generated by the C class ferries and less than the estimated erosion threshold on the lower mudflat.

5. There is therefore both circumstantial evidence for the observed erosion on the inner parts of the Harbour having been caused by the C class ferry, and a measured mechanism by which this could have occurred.
6. The recent reduction in speed of the C class ferry means that the erosion of the lower part of the inter-tidal which has been historically observed will have been greatly reduced. There is still the possibility of thrust jet impacts around the outer bend at Short Reach, but this is uncertain.
7. A reasonable estimate of the losses of designated habitat at Chart Datum from 1998 when the Natura 2000 sites were designated until present is 0.4ha.
8. The C class is also predicted to have caused a change in the designated habitat at Mean Low Water, reducing the profile and nature of the inter-tidal affecting an area of 1.3ha since 1998. However this effect is not a direct loss of habitat.
9. The above changes to the inter-tidal are judged to reduce invertebrate diversity and abundance as the inter-tidal erodes into more consolidated sediment, and will result in a greater proportion of the habitat being flooded for longer periods. These effects are judged to be detrimental to maintaining the quality of the habitat.

Predicted impacts of the W class during predicted 35 year service

At current speed limits and standard operational conditions:

1. The new W class ferry is larger and more powerful than the C class ferry and will cause more drawdown, higher return currents, more near-bed turbulence and backflow and produce a greater thrust jet. It will, however, be operating at a more rigorously regulated speed compared to the C class.
2. The evidence of the drawdown measurements indicates that the W class ferry has the ability to generate drawdown-induced current speeds across the mudflat, near low water and during ferry passing, of the order of those which have led to significant past erosion of the mudflat in the inner Harbour.
3. This will result in an enhanced rate of loss of sediment at Mean Low Water compared to the present scenario (C class vessels adhering to the speed restrictions in the Harbour), and a similar rate of loss compared to the situation prior to 2007 (C class vessels not adhering to the speed restrictions).
4. The widening of the Low Water channel is predicted to continue, especially around the bend at Cocked Hat/Cage Boom, caused by a combination of the thrust jet and return currents. In general the recession of the Chart Datum contour is expected to be the same as has historically been observed for the C class vessel. However, depending on the operational mode that will be used by the W class vessel it is possible that the interaction of the thrust jet around the bend at Cocked Hat/Cage Boom will increase, and thereby enhance the local rate of erosion at this point.

5. Hence Wallingford present evidence to indicate that the W class ferry can be predicted to have around the same effect that the C class had historically when speed limits were not so strictly regulated.
6. On this basis the absolute losses of designated habitat predicted by the introduction of the W class are 0.4 ha at Chart Datum per decade.
7. Similarly a further 1.3ha per decade of inter-tidal habitat at Mean Low Water will be affected by further losses of sediment, reductions in the profile and hence quality of the habitat.
8. These effects are predicted to continue, albeit at increasingly slower rates, until the navigation channel adapts to the size of the new ferry, over 30-50 years. Over this timeframe there would be a maximum loss of inter-tidal at Chart Datum of 2 ha and 3.7 ha of inter-tidal would experience changes to the profile and quality.
9. The above prediction of effects will occur against the context of rapid change in the estuary. Natural change is predicted to result in all vegetation having disappeared by 2040 and there is likely to be increasing wind wave penetration into Short Reach (Cocked Hat/Cage Boom) as the outer marshes continue to erode through wind wave action. These changes are likely to significantly change the estuary system before the upper estimate for erosion is achieved.

Conclusion of impacts relating to plan to introduce the W class ferry considered together with effects arising from the past operation of the C class ferry.

Current evidence indicates that the “C” class ferry has been a factor in the ongoing deterioration in the extent of mudflats and saltmarshes at Lymington. This deterioration is over and above background changes and influences of ferries in upstream sections appears to dominate over natural influences. Over the 10 years since the Natura 2000 sites were designated in 1998 this effect is estimated to be of the order of 0.4 ha absolute loss of inter-tidal at Chart Datum and 1.3 ha of inter-tidal experiencing a loss of sediment and reduction in profile.

The introduction of the “W class” ferries can be expected to prolong ferry-induced impacts on inter-tidal habitats and consequently further losses are likely to be attributable to ferry operations, even when mitigated by stricter adherence to the speed limits. Impacts are predicted to be of a similar order of magnitude to those described above, 0.4ha per decade of absolute losses per decade at Chart Datum and 1.3ha inter-tidal per decade experiencing further losses of sediment and changing profile. There is particular uncertainty relating to possible thrusters effects around the sharpest bend in the river at Cage Boom/Cocked Hat posts.

The further losses of sediment around Mean Low water do not result in an absolute loss of habitat area, but rather a change in the quality of that habitat. As the inter-tidal is continually eroded into more consolidated sediments invertebrate diversity and abundance can be expected to fall, although it is recognised that this is a continuation of an historic process that began before the Natura 2000 sites were designated. Further, as

the inter-tidal profile continues to fall a greater proportion of the area will be flooded for a greater proportion of the time, changing the nature of the habitat and reducing the exposure for feeding birds.

During the predictable, slow, cumulative effects of the ferry operation, the site will continue to suffer rapid coastal squeeze losses from vegetation die-back and outer wind-wave erosion, of around 5-6 ha a year.

While overall habitat losses to the wider designated site are dominated by coastal squeeze change and erosion, rather than the ferries, it has nevertheless been shown that the cumulative effect of the C class ferry together with predicted effects of the W class ferry would have a further anthropogenic detrimental effect. Consequently it must be concluded that the conservation objectives for the Natura 2000 sites cannot be secured.

Natural England therefore advises that it cannot be ascertained that the introduction of the "W class" ferries will not have an adverse affect on the Natura 2000 interest.

The W class at Lymington Harbour Commissioners Interim Safe Operating Procedure

Wightlink have asked for Natural England Advice on the environmental effects of the W class operated with Lymington Harbour Commisioners's Interim Safe Operating Procedure (See Appendix 1).

1. Running the ferry with fore thrusters only on full power and aft thrusters on the lower power setting will increase flow and turbulence underneath the ferry and will increase the risk of further deepening the navigation channel. In the past the deepening of the navigation channel has accompanied a widening of the navigation channel and, over time, a substantive loss of lower inter-tidal habitat.
2. Not passing in the river will be beneficial for the environment in preventing the greatest drawdown erosion effect, but will still leave a substantive long term drawdown erosive effect as predicted by HR Wallingford (albeit predicted to be a significant improvement on the historical effect from the C class).
3. Not waiting in the river will be beneficial in reducing propulsion effects.
4. Not operating in winds above 20 knots will be beneficial for the environment in reducing the propulsion force required to keep the vessel on course and therefore the erosive force to the channel bottom. It will also reduce the need for drift angles which could bring propulsion close to the banks. Nevertheless an effect on the channel bottom still could not be ruled out, with possible long term consequences for the inter-tidal area.

Conclusion: While the Safe Operating Procedure will bring some benefits in reducing environmental effects it will not offset all potential effects that could, over the long term, cause a loss of habitat.

Mitigation advice

The Habitat Regulations allow a consideration of mitigation to offset a predicted adverse effect. Mitigation of the impact described above can take the form of ferry operational changes to reduce the direct effect the ferry may have. It can also, in principle, take the form of habitat creation within the boundary of the Natura 2000 sites to offset any habitat losses that may occur. Any uncertainty relating to effects would also have to be accounted for.

All mitigation must be demonstrated to be technically and practically feasible, and legally enforceable.

Although questioning the evidence for a significant impact, Wightlink has been engaged in discussions about mitigation.

Operating procedures to limit environmental effects

1. To reduce impacts of the W class to the currently operated C class, and substantially reduce drawdown and backflow erosion, would mean reducing speed a further 25-30%. HR Wallingford advise, however, that while this would substantially reduce hydrodynamic effects of drawdown to those similar to naturally occurring current speeds, the erosive effects would still be more than negligible.
2. As speed is reduced however there are consequences for greater propulsion influences on the channel bottom and banks from the greater time that the ferry is in the river and the possible increased requirement for the use of drift angles, particularly around Short Reach.
3. Other mitigatory action could include operational constraints on tide levels, wind conditions, frequency of crossings, passing and waiting in the river. Current discussions have not been fruitful, indicating relatively small reductions in impact associated with substantial losses of ferry service.

Habitat Creation

1. Natural England advises that it is, in principle, possible to mitigate a loss of habitat within the boundary of the European site by creating or restoring habitat elsewhere within that site.
2. To meet the requirements of the Habitat Regulations such a scheme would have to demonstrate a clear net benefit in habitat area and quality, and a high level of confidence that this would be achieved.
3. The estimated ferry-induced habitat losses and changes described above are cumulative over many years which may allow time for a habitat creation scheme to develop.

References

Chapman Caroline 2004: European Sites Guidance. Internal (Environment Agency)
Guidance to decisions on 'site integrity': A framework for provision of advice to competent
authorities

HR Wallingford 2009 V3 EX 5937 Wightlink Lymington Shoreline Management and
Geomorphological Advice to Natural England

'Regulation 33 package' English Nature advice under Regulation 33 of the 'Habitat
Regulations' English Nature 2001

Appendix 1 Lymington Harbour Commissioners- Interim Safe Operating Profile

This is reproduced from the information received from BMT Seatech

1. The aft thruster must only be used on the lower power (harbour) setting in the river except in very exceptional circumstances when failure to use the normal power setting would endanger the ferry or other users.
2. As a precautionary measure, on all occasions until all masters/helmsmen have gained sufficient river experience, operations in the river should be limited to mean windspeeds up to 20 knots, gusting 25, as measured at the Lymington Starting Platform. Any revision of this limit will require further independent risk assessment and agreement with LHC.
3. No waiting in the river.
4. No passing in the river at all until all outstanding trials have been completed satisfactorily.
5. When in the berth or on the slip the vessel must be secured alongside and both thrusters must be shut down

Appendix 2

Adverse Effect Guidance: Caroline Chapman 2004

A simple, pragmatic checklist for assessing likely effect on integrity is provided below. This has been derived from the provisions of the Habitats Directive as outlined above, and is supported by existing UK case studies.The checklist below should be used to identify if there is a potential mechanism through which an adverse effect on integrity may occur. Further site-specific factors would then need to be considered, in particular in the case of dynamic coastal sites.

Has the appropriate assessment shown:

- 1. That the area of annex I habitats (or composite features) will not be reduced?**
 - 2. That there will be no direct effect on the population of the species for which the site was designated or classified?**
 - 3. That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?**
 - 4. That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)?**
 - 5. That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?**
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If the answer to all of these questions is 'Yes' then it is reasonable to conclude that there is not an adverse effect on integrity. If the answer is 'No' to one or more of the questions then further site-specific factors need to be considered in order to reach a decision.

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The scale of any impact is an important factor in reaching a conclusion over whether it is possible to ascertain no adverse effect on site integrity. It is not possible to provide specific criteria on scale but there are certain key factors which should be taken into account.

The key factors to consider with regards scale are outlined below:

Is the feature itself directly affected? Any direct loss of a designated feature would serve to reduce either the area of a key habitat or the population of a key species. When considering loss of designated features it is necessary to distinguish between permanent loss of a feature (eg: through construction of a building) and reversible loss of a feature (eg: through invasion of scrub).