HABITATS REGULATIONS ASSESSMENT

For proposed development subject of two planning applications, PF/20/0523 and PF/20/0524, at Crisp Maltings, land off Fakenham Road, Great Ryburgh, Norfolk

North Norfolk District Council (the Local Planning Authority, or LPA) is a competent authority under the EU 'Habitats' Directive 92/43/EEC, which is 'retained EU law' under sections 2-4 of the European Union (Withdrawal) Act 2018. Prior to, and since, the withdrawal of the UK from the European Union, the *Habitats Directive* is implemented into UK legislation by the Conservation of Habitats and Species Regulations 2017 as amended (referred to as the *Habitats Regulations*) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Under Article 6(3) of the Habitats Directive this LPA must consider if the project i.e. the development proposal, is likely to have a significant effect on the conservation objectives of a European Site (which form part of the national site network) or adversely effect the integrity of a European Site, alone and in combination with other plans or projects. This process is generally referred to as a Habitats Regulations Assessment (HRA).

The '*Integrity*' of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of species for which it was designated (NPG, 2019).

The HRA process is not defined in legislation but is used to address Articles 6(3) and 6(4) of the Habitats Directive, as implemented by Regulation 63 of the Habitats Regulations. In completing this HRA reference has been made to the information contained in the EC guidance document *Managing Natura 2000 sites: The provision of Article 6 of the 'Habitats' Directive 92/43/EEC (European Communities, 2018)*, *The Habitats Regulations Assessment Handbook (April, 2021)* (Tyldesley, D. & Chapman C.) by DTA Publications as well as relevant case law.

Description of the project (the development) and other relevant background information:

The project involves two planning applications (references PF/20/0523 and PO/20/0524) that seek approval for the following development:

- PF/20/0523: Full planning application for the construction of 15 no. grain silos and 1 no. 5,574m^2 warehouse with associated drainage, access and external lighting; and
- PO/20/0524: Hybrid planning application for the creation of a HGV access road to serve an expanded Crisp Maltings Group site (Full Planning permission) and construction of buildings and structures required to increase the maximum output tonnage of malt of the Maltings site in any one calendar year to 175,000 tonnes (currently 115,000 tonnes) (Outline application with all matters reserved except for access).

The above planning applications have been classified as EIA development under the 2011 EIA Regulations as a result of a Screening and Scoping Opinion carried out by NNDC (26th June 2017). The applications include the submission of an Environmental Statement and Non-Technical Summary.

A further planning application was also submitted as part of the EIA development for the erection of dwellings (ref. PO/20/0525) however this was subsequently withdrawn by the applicants and the Environmental Statement/Non-Technical Summary and other relevant documents updated to reflect this withdrawal.

Figure 1 Site Location Plan and development area identified by red line (extracted from the Environmental Statement, Non-Technical Summary)

The development site is located adjacent to, and partly within, an existing Maltings facility located in the small village of Great Ryburgh, which itself is located approximately 3km (Euclidean distance) to the south-east of the market town of Fakenham in north Norfolk (37km from Norwich). The development site as a whole covers an area of approximately 6.44ha (64,386m^2) of mainly existing agricultural land, associated hedgerows and ditches but does include a point of access within the existing Maltings facility (see Figure 1).

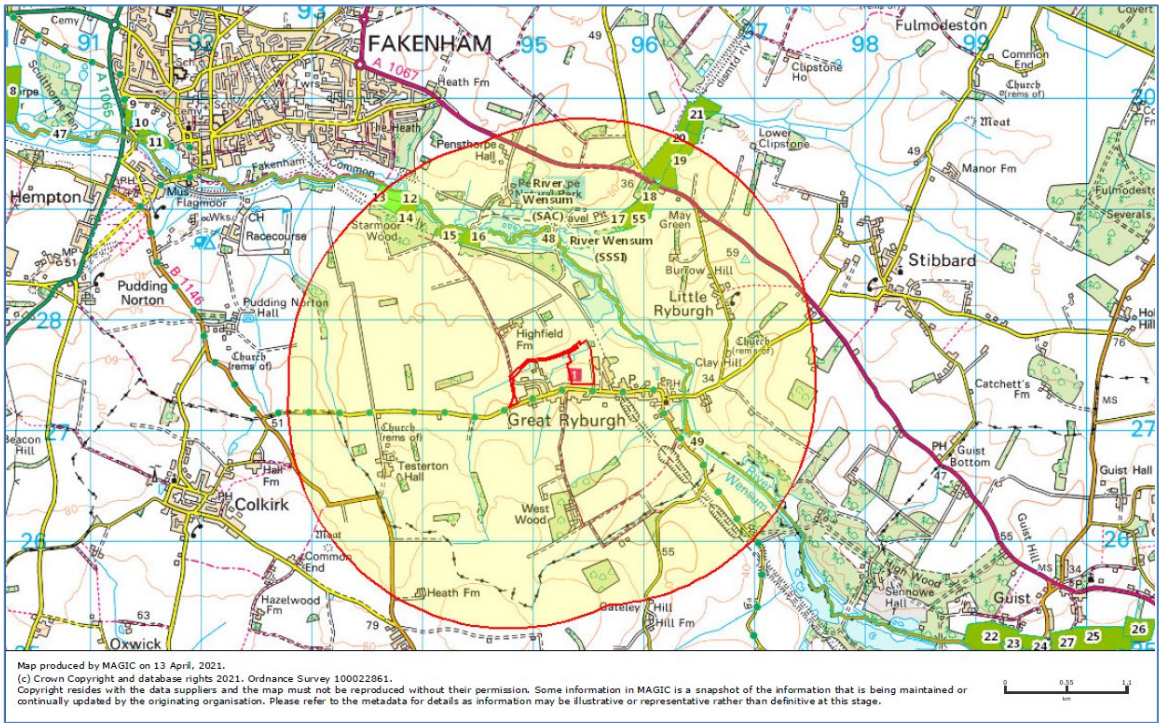

Figure 2 Magic Map: development site (outlined in red in centre of circle) and 2km search area for European, Ramsar and SSSI sites.

The development site is located 350m (at the closest distance) to the **River Wensum** Special Area of Conservation (SAC). The River Wensum SAC is part of the Emerald Network (Bern Convention) of sites within Europe designated for special conservation interest and previously formed part of the Natura 2000 sites designated for particular habitat and species features and as such is protected as a European Site under the Habitats Regulations. The **River Wensum** is also a Site of Special Scientific Interest (SSSI), which is divided into several units many of which fall within 2km of the development site (see Figure 2).

Table 1 provides a list of the documents/reports received in support of the planning application that provide detail necessary to inform the Habitats Regulation Assessment (HRA) and also comments received from relevant bodies that can also inform the HRA.

Organisation	Document	Date
For the applicant: BMF Consulting Ltd.	Flood Risk Assessment and Drainage Strategy – January 2020 (Ref 1152 FRA Rev A) revised and resubmitted as Appendix 10.3 of updated ES Addendum (Ref 1152 FRA Rev B)	18/03/20
For the applicant: BMF Consulting Ltd.	Plan: Surface Water Exceedance Flow Paths (Drawing No. 1152/02/09 Rev -, dated 31/05/20)	08/06/20
For the applicant: BMF Consulting Ltd.	Report: Surface Water Maintenance Plan, May 2020 (Ref 1152 MP Rev -)	08/06/20
For the applicant: BMF Consulting Ltd.	Letter: Response to consultation comments made by NNDC Landscape and Ecology Officer, relevant to flood risk and drainage aspects – Final Issue (Issue B)	13/08/20
For the applicant: Hopkins Ecology Ltd.	Shadow Habitats Regulations Assessment – although this document is entitled 'Shadow HRA', the document seeks to provide the information reasonably required by the competent authority enable it to undertake a HRA. To confirm the 'Shadow HRA' has not been commissioned by or on behalf of the competent authority	18/02/20
For the applicant: Hopkins Ecology Ltd.	Updated Shadow Habitats Regulations Assessment – see note above on Shadow HRA	17/12/20
For the applicant: Hopkins Ecology Ltd.	Ecological Report (Ecology Assessment)	18/02/20
For the applicant: Hopkins Ecology Ltd.	Updated Ecological Report (Ecology Assessment)	13/01/21
For the applicant: Hopkins Ecology Ltd.	*Responses and Additional Information Regarding the Draft Habitats Regulations Assessment*	02/06/21
For the applicant: Hopkins Ecology Ltd.	*Responses on Comments Regarding the Ecological Assessments (Other than the HRA)*	02/06/21
For the applicant: Hopkins Ecology Ltd.	Various documents to accompany response provided on 2nd June, inc. environmental tracker, waste effluent data and procedures, permits and monitoring data	22/06/21
For the applicant: Hopkins Ecology Ltd.	Conference call between NNDC (KW), Applicant (Dr.GH) and Agent (JL - Bidwells) to discuss email sent by KW to GH on 17th June in response to further information supplied on 2nd June.	25/06/21
For the applicant: Hopkins Ecology Ltd.	Further information (document entitled '*Additional Information Regarding the Draft Habitats Regulations Assessment Following the 'Conference Call' of 25 June 2021'*, dated 2nd July 2021) to assist LPA in HRA following conference call on 17th June, including additional comments from Drainage Consultant	05/07/21

Natural England PF/20/0523 and PO/20/0254	Email: response to consultation – NE stated *no objection* subject to securing appropriate mitigation measures, however they considered that without appropriate mitigation the application would: • have an adverse effect on the integrity of River Wensum Special Area of Conservation • damage or destroy the interest features for which River Wensum Site of Special Scientific Interest has been notified. Furthermore they stated that in order to mitigate the adverse effects and make the development acceptable, the mitigation measures detailed in the shadow Habitat Regulations Assessment Screening Report (by Dr GW Hopkins CEnv MCIEEM dated 18 February 2020) will be required and should be secured by an appropriate planning condition or obligation.	21/05/21
Natural England PO/20/0524	Email: response to consultation – No further comments to those raised in their letter dated 21st May 2020.	16/02/21
Natural England PF/20/0523	Email: response to consultation – "No objection - Based on the plans submitted, Natural England considers that the proposed development will not have significant adverse impacts on statutorily protected nature conservation sites or landscapes"	22/02/21
Environment Agency PF/20/0523	Letter: response to consultation – No objection subject to conditions on groundwater and contaminated land and without these conditions, the proposed development on this site poses an unacceptable risk to the environment and they would object to the application. "This site is located above Principal and Secondary Aquifers (Chalk and Lowestoft Formation) and the application overlies a Source Protection Zone 1 for the groundwater abstractions at the adjacent Maltings, it also overlies a Water Framework Directive (WFD) groundwater body, and is also in a WFD drinking water protected area with an adjacent watercourse. The site is considered to be of very high environmental sensitivity. The future use could present potential pollutant linkages to controlled waters. Consideration for the risk posed by surface water drainage will need to be undertaken".	28/05/20
Environment Agency PF/20/0523	Email: response to re-consultation – No further comments to those raised in their letter dated 28th May 2020.	10/02/21
Environment Agency PF/20/0523	Email/letter: response to re-consultation and email from GL (11/02/21) – Reiteration of requirement for condition which stipulates that drainage strategy would need to be updated to determine what mitigation measures are required to provide sufficient treatment prior to discharge.	16/03/21

	Also that the site is subject to an Environmental Permit (EPR/FP3037PA/V008[1]) that currently places no restrictions on quality of surface water. If a pollution event occurs the EA would require the operator to take action to address this following the event. In 2020 the EA identified that phosphate pollution in the surrounding ditch network was occurring which arose from the site and required the operator to improve drainage and the management of the drainage system. The EA recommended that similar measures were incorporated into the drainage strategy to prevent related events occurring from the proposed development. The EA considered that the proposed development would be unlikely to address the existing phosphate pollution issues and "decrease the contamination" caused by existing operations at the site. Furthermore, that the effluent treatment plant has an emission limit of 1mg/l for phosphate (Total phosphorus as P).	
Environment Agency PO/20/0524	Letter: response to consultation – No objection subject to conditions and without these conditions, the proposed development on this site poses an unacceptable risk to the environment and they would object to the application.	22/05/20
Lead Local Flood Authority (Norfolk County Council) PF/20/0523	Email: response to consultation – Object to the application in the absence of an acceptable Flood Risk Assessment (FRA) and Drainage Strategy relating to: • There is no evidence of permission or confirmation of the discharge rate from the IDB allowing discharge into their network • No information has been submitted to demonstrate what the exceedance routes are for flows in excess of a 1% AEP rainfall event plus 40% climate change allowance. • A maintenance and management plan has not been submitted as part of this drainage strategy.	04/05/20
Lead Local Flood Authority (Norfolk County Council) PO/20/0524	Email: response to consultation – Object to the application in the absence of an acceptable Flood Risk Assessment (FRA) and Drainage Strategy (same as PF/20/0523)	15/05/20
Lead Local Flood Authority (Norfolk County Council) PF/20/0523 and PO/20/0254	Email: The applicant has provided an amended Flood Risk Assessment (FRA) and Drainage Strategy to account for the local flood risk issues and surface water drainage at this location, together with a Surface Water Maintenance Plan (Appendix 10.3A of ES Addendum). Following review of the amended FRA and other documents the LLFA remove their objection subject to securing conditions to prevent flooding.	03/08/20
Lead Local Flood Authority (Norfolk County Council)	Email: response to consultation –	10/02/21

[1] For clarity, the Environment Permit that is currently valid at the site is EPR/FP3037PA/V00**9** which was issued on 9th March 2021

PF/20/0523 and PO/20/0254	No further comments to those raised in their letter dated 3rd August 2020.	
Norfolk Rivers IDB (Water Management Alliance) PF/20/0523 and PO/20/0524	Email: response to consultation – "We note that initial testing and investigations recommend a drainage strategy reliant on infiltration and attenuation features. The proposed restricted surface water discharge to be conveyed into the Board's watercourse to the east (Great Ryburgh Drain, DRN096G0101) will require land drainage consent in line with the Board's byelaws (specifically byelaw 3)... the ability to implement a planning permission may be dependent on the granting of these consents. As such we strongly recommend that the required consent is sought prior to determination of the planning application"	24/04/20
Norfolk Rivers IDB (Water Management Alliance) PF/20/0523 and PO/20/0524	Email: response to consultation – "The proposals will require land drainage consent for the discharge of surface water into the Board's district, and for the alteration of a watercourse. As yet no consent has been granted, however we have received an application for these consents and we are in the process of assessing the proposals"	11/02/21
Norfolk Rivers IDB (Water Management Alliance) (Eleanor Roberts) – Notice of Intention to Grant Consent	Notice of Intention to Grant Consent to discharge surface water run-off from Land to north of Fakenham Road, Great Ryburgh. One-off surface water development contribution required to cover increased flow and volume based on an additional impermeable area of 31,035m^2 discharging at 10.69l/s.	14/05/21
Anglian Water PF/20/0523	Letter: Suggested Informative Statements and Conditions Report - Anglian Water recommends that petrol/oil interceptors be fitted in all car parking, washing and repair facilities. Failure to enforce the effective use of such facilities could result in pollution of the local watercourse and may constitute an offence.	21/04/20
For the applicant: Jake Lambert (Bidwells)	Email with attachments containing additional information following conference call of 25th June 2021 including an update from Dr Graham Hopkins with additional information to support HRA and in response to KW email sent 17th June 21.	05/07/21

Table 1 List of documents and comments received for the planning application relevant to the Habitats Regulations Assessment (not including those submitted as part of Environmental Statement)

Natural England in their response to the planning applications did not indicate that a HRA (incorporating an appropriate assessment) would be required, however they stated that the development would have an adverse effect on the integrity of the River Wensum SAC and that mitigation would be required to make this acceptable. The implication that an adverse effect would occur and mitigation be required would suggest the need for such an assessment. To this end North Norfolk District Council, as the competent authority, has undertaken this HRA.

In addition, the Environment Agency (EA) in their comments dated 22nd May 2020 stated that the '*extensive proposals'* of the development would involve "*substantial changes*" to the current Pollution, Prevention and Control (PPC) permit (ref. FP3037PA), which would require consideration and approval from the EA prior to implementation. The EA note that *"it is clear that, at this early stage, the operator has insufficient detail to compile a permit variation*" and as such the EA are not in a position to offer anything other than general advice on the application and that "*additional measures*" will be required to control the potential environmental effects of the planned expansion.

This HRA will assess the potential for:

- Direct impacts on **The River Wensum** SAC as a result of the construction and operation of the development, both alone and in combination with other plans or projects.

Further consideration will also be given to the River Wensum SSSI that is part of the European Site.

Is the project directly connected with or necessary for the management of the European Site?

No

Habitats site/s that may be affected by the development and a description of the site:

Name & UK ref No.	Description
Sites within 2km of development site:	
River Wensum SAC - UK0012647	A water course of plain to montane levels with floating vegetation often dominated by water-crowfoot. The river supports a rich and abundant invertebrate fauna, diverse mollusc fauna and a diverse fish community, including native freshwater crayfish, Desmoulin's whorl snail, bullhead and brook lamprey.

Nationally designated sites (Sites of Special Scientific Interest) and/or Ramsar sites that may be affected by the development, and a description of the site:

Name & reference	Description
Sites within 2km of development site:	
River Wensum SSSI	The Wensum has been selected as one of a national series of rivers of special interest as an example of an enriched, calcareous lowland river. With a total of over 100 species of plants, a rich invertebrate fauna and a relatively natural corridor, it is probably the best whole river of its type in nature conservation terms, although short stretches of other similar rivers may show a slightly greater diversity of species. The upper reaches are fed by springs that rise from the chalk and by run-off from calcareous soils rich in plant nutrients. This gives rise to dense beds of submerged and emergent vegetation characteristic of a chalk stream. Lower down, the chalk is overlain with boulder clay and river gravels, resulting in aquatic plant communities more typical of a slow-flowing river on mixed substrate. Diversity of plant species is further enhanced by mills and weirs; upstream the river slows to produce characteristic deep water plant communities, whilst below the barriers they are replaced by species tolerant of swirling and turbulent water. Unusually for a lowland river in England, much of the adjacent land is still traditionally managed for hay crops and by grazing, giving a wide spectrum of grassland habitats some of which are seasonally inundated. The mosaic of meadow and marsh habitats, including one of the most extensive reedbeds in the country outside the Broads, provide niches for a wide variety of specialised plants and animals. The River itself supports an abundant and diverse invertebrate fauna including the native freshwater crayfish *Austropotamobius pallipes* as well as a good mixed fishery. Brown trout Salmo trutta fario form the major component of the fish community of the upper Wensum, whilst the middle and lower reaches are dominated by chub *Leuciscus cephalus*, pike *Esox lucius*, eel *Anguilla anguilla* and barbel *Barbus barbus*. Kingfisher *Alcedo attthis* and little grebe *Tachybaptus ruficollis* breed along the River, whilst the adjacent wetlands have good populations of reed warblers *Acrocephalus*

	scirpaceus, sedge warblers *Acrocephalus schoenobaenus* and barn owls Tyto alba.

The qualifying features of the Natura 2000 site and/or the special interest features of any associated SSSI/Ramsar:

The Broads SAC	
Reference	**Feature description**
H3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot
S1016	*Vertigo moulinsiana* - Desmoulin`s whorl snail
S1092	*Austropotamobius pallipes* - White-clawed (or Atlantic stream) crayfish
S1096	*Lampetra planeri* - Brook lamprey
S1163	*Cottus gobio* - Bullhead

River Wensum SSSI – units within 2km of the site			
SSSI Unit	**Special Interest Feature**	**Condition Status**	**No. of adverse condition reasons**
Unit 012 - 1023152 Great Ryburgh Common North	Fen, marsh and swamp - Lowland	Favourable	N/A
Unit 013 - 1023209 Great Ryburgh Common South West	Broadleaved, mixed and yew woodland - Lowland	Favourable	N/A
Unit 014 - 1023153 Great Ryburgh Common South East	Fen, marsh and swamp - Lowland	Unfavourable – recovering	2
Unit 015 – 1023116 Starmoor Plantation	Broadleaved, mixed and yew woodland - Lowland	Unfavourable – recovering	1
Unit 016 – 1023121 Spa Well Wood Meadow	Neutral Grassland - Lowland	Unfavourable – recovering	3
Unit 017 - 1023123 The Carr, Pensthorpe Makins	Neutral Grassland - Lowland	Unfavourable – recovering	1
Unit 018 - 1023154 Makins	Fen, Marsh and Swamp - Lowland	Unfavourable – recovering	1
Unit 019 - 1018795 Little Ryburgh Common	Fen, Marsh and Swamp - Lowland	Unfavourable – recovering	3
Unit 020 - 1023124 Kettlestone Common Kettlestone Poors Trustees	Neutral Grassland - Lowland	Unfavourable – recovering	4
Unit 048 - 1025552 Fakenham Mill – Great Ryburgh Mill	Rivers and Streams	Unfavourable – no change	9
Unit 049 - 1025554 Great Ryburgh Mill – Bintree Mill	Rivers and Streams	Unfavourable – no change	8
Unit 055 - 1028479 Langor Drain above confluence with Wensum	Rivers and Streams	Unfavourable – no change	9

Conservation Objectives for Natura 2000 Sites:

Conservation Objectives for the **River Wensum SAC** (Natural England, published 27th November 2018 – version 3):

- Subject to natural change, ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
    - The extent and distribution of qualifying natural habitats and habitats of qualifying species
    - The structure and function (including typical species) of qualifying natural habitats
    - The structure and function of the habitats of qualifying species
    - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
    - The populations of qualifying species, and,
    - The distribution of qualifying species within the site.

The Conservation Objectives are to be read in conjunction with the accompanying *Supplementary Advice* document.

Supplementary Advice/Site Improvement Plans (SIPs):

River Wensum
Supplementary advice on conserving and restoring site features for the River Wensum SAC was published on 25th January 2019 by Natural England. The document presents attributes which are ecological characteristics of the designated species and habitats within the designated site, and is to be read in conjunction with the SAC Conservation Objectives (CO). The listed attributes are considered to be those that best describe the designated site's ecological integrity and which, if safeguarded, will enable the achievement of the CO. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The Supplementary Advice for River Wensum SAC is considered in the assessment of likely significant effects arising from the project.

A site improvement plan (SIP), published 8th October 2014, has also been produced for the River Wensum SAC. It raises six prioritised issues that are considered to be currently impacting or threatening the condition of the features and outlines the outstanding actions required to address them. The six prioritised issues identified for the River Wensum are:

1. Physical modification;
2. Inappropriate weirs, dams and other structures;
3. Siltation;
4. Invasive species;
5. Water pollution; and
6. Water abstraction

Siltation, water pollution (water quality) and water abstraction are considered to be of most relevance in this HRA.

Pre-assessment '*screening*' stage - Test of Likely Significant Effect

The screening assessment will consider the potential for likely significant effects, alone and in combination with other projects or plans, for the construction and operation stages of the development. Decommissioning is not included in the assessment as there is no decommissioning schedule identified and the lifespan of the development is unknown.

The screening assessment has been informed in part by the 'Shadow Habitats Regulations Assessment' (Hopkins Ecology, Feb 2020 and updated Dec 2020), which provides an overview of the existing and proposed Crisp Maltings operations:

The existing Maltings receives deliveries of cereals, predominantly barley, and processes them to provide malt. The process chain is as follows: grain drying, steeping to stimulate germination, germination (to produce sugars from starch during the germination process) and kilning to stop germination and dry the grain to a moisture content of <5%. The finished malt is stored in silos before cleaning and grading after which it is delivered to customers. Effluent is produced predominantly from steeping, humidification and cleaning and is treated on site before discharge. Releases to air include combustion products and particulates from processing and fugitive sources.

The 'Shadow HRA' states that the aspects of the current site operation that are relevant to the River Wensum SAC include:

- Water discharges: treated effluent;
- Water discharges: accidental releases;
- Water discharges: surface water drainage;
- Emissions to air; and
- Abstraction.

In addition to the above, other aspects of the project that are considered relevant to the HRA include the effects of construction activities, including the potential for those arising through solids and other pollutants entering onsite water courses.

The elements and parameters of the project that have the potential for having significant effects on the River Wensum include:

- Size, scale, area and land-take;
- Physical changes that will flow from the development (e.g. from construction activities);
- Emissions and waste arising from construction and operation (e.g. disposal to land, water or air);
- Resource requirements (e.g. water abstraction for the development); and
- Cumulative impacts with other plans or projects.

The pathways of potential impact are set out in the table below:

Parameter/ Action of development	**Pathway of potential Impact (changes)**		**Effect (consequence)**	
	Construction	**Operation**	**Construction**	**Operation**
Size and scale of development and land-take	Direct loss and/or degradation of habitat feature, or supporting habitat resulting in a direct loss of species	n/a	Reduction or change in the extent and distribution of the feature (**habitat loss**), or a reduction or change in abundance of species as a result of the reduction or change in supporting habitat (**habitat loss**)	n/a
Physical changes (activities): noise/general disturbance	Increase in general noise and disturbance due to construction activities	Increase in general noise and disturbance due to operational activities	Reduction or change in the extent or distribution and/or population of the feature (**displacement**)	Reduction or change in the extent or distribution and/or population of the feature (**displacement**)
Physical changes (activities): dust/airborne chemicals	Increase in dust particles and airborne chemicals (air pollution) due to on-site preparation and construction activities leading to a reduction in air quality and water quality	n/a	Reduction or change in the extent or distribution and/or population of the feature (**pollution**)	n/a
Physical changes (activities): pollution events and changes to surface water drainage	Pollution of soil, groundwater and/or surface water due to run-off from construction activities leading to a reduction in ground and surface water quality and soil quality; potential release of endocrine disrupting chemicals and impacting on habitat integrity.	Pollution of surface water arising from accidental releases and from surface water drainage discharge leading to a reduction in water quality; potential release of endocrine disrupting chemicals and impacting on habitat integrity.	Reduction or change in the extent or distribution and/or population of the feature (**pollution**)	Reduction or change in the extent or distribution and/or population of the feature (**pollution**)

Emissions to water, including waste water (effluent) treatment and disposal	n/a	Increase in quantity and/or or change in quality of waste water requiring treatment and subsequent discharge into surface water leading to a reduction in water quality	n/a	Increase in nutrient and sediment loading resulting in changes to the supporting processes on which the features rely (**pollution**)
Emissions to air: airborne particles and chemical compounds arising from combustion processes and road traffic	Increase in airborne particles and pollutants (air pollution) due to construction traffic leading to a reduction in air quality	Increase in, or changes to airborne particles or chemical compounds (air pollution) due to operational combustion activities and road traffic generated by the development leading to a reduction in air quality	Increases in nutrient deposition/acidification resulting in changes to the supporting processes on which the features rely (**pollution**)	Increases in nutrient deposition/acidification resulting in changes to the supporting processes on which the features rely (**pollution**)
Resource requirements: water abstraction	n/a	Increase in demand for water leading to increased abstraction volumes resulting in un-naturalistic flow regimes.	n/a	Change to the natural hydrological regime of the river affecting the structure and function (including its typical species) and ability of the river to adapt and be resilient to environmental changes (**hydrology**)

Cumulative Impacts with other plans or projects: in combination effects	n/a	In combination increases in releases to water, either through accidental releases, surface water drainage and/or treated effluent discharges into surface water leading to a reduction in water quality. In combination increases in airborne particles or chemical compounds (air pollution) due to combustion activities and/or agricultural sources (e.g. poultry farms) leading to a reduction in air quality In combination increases in demand for water leading to increased abstraction volumes resulting in un-naturalistic flow regimes.	n/a	Increases in nutrient and sediment loading, resulting in changes to the supporting processes (hydrology and pollution), reductions and/or changes in the extent and distribution of the features and changes to the hydrological regime (**in combination effects**) Increases in nutrient nitrogen deposition and acidification resulting in changes to the supporting processes on which the features rely (**in combination effects**) Changes to the natural hydrological regime of the river affecting the structure and function (including its typical species) and ability of the river to adapt and be resilient to environmental changes (**in combination effects**)

Assessment of the likely significant effects of the project on Natura 2000 sites:

Key to LSE Screening Matrix:

C. Construction stage of development/project

O. Operation stage of development/project

✓ A potential Likely Significant Effect cannot be ruled out

✕ A potential Likely Significant Effect has been ruled out

Effect is not relevant to this feature at that particular stage of the project/development

The River Wensum SAC										
EU Code: UK0012647										
Distance to development site: 0.35km										
European site features	**Likely effect of project**									
Effect	**Habitat Loss**		**Displacement**		**Pollution**		**Hydrology**		**In combination effects**	
Stage of Development	**C**	**O**	**C**	**O**	**C**	**O**	**C**	**O**	**C**	**O**
3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	**✕a**		**✕b**	**✕d**	**✕b ✓c**	**✓e (i, ii & iii) ✕e (iv)**		**✓f**		**✓g**
1016 Desmoulin's whorl snail *Vertigo moulinsiana*	**✕a**		**✕b**	**✕d**	**✕b ✓c**	**✓e (i, ii & iii) ✕e (iv)**		**✓f**		**✓g**
1092 White-clawed (or Atlantic stream) crayfish, *Austropotamobius pallipes*	**✕a**		**✕b**	**✕d**	**✕b ✓c**	**✓e (i, ii & iii) ✕e (iv)**		**✓f**		**✓g**
1096 Brook lamprey, *Lampetra planeri*	**✕a**		**✕b**	**✕d**	**✕b ✓c**	**✓e (i, ii & iii) ✕e (iv)**		**✓f**		**✓g**
1163 Bullhead, *Cottus gobio*	**✕a**		**✕b**	**✕d**	**✕b ✓c**	**✓e (i, ii & iii) ✕e (iv)**		**✓f**		**✓g**

Evidence supporting conclusions (The River Wensum SAC):

The development site contains ditches and streams that connect with, but are outside of, the River Wensum SAC. The 'Shadow HRA' states that these surface water features do not support relevant vegetation and species [of the River Wensum SAC] and are not considered to be supporting habitat.

Effluent and wastewater from the malting and operational processes (primarily from steeping, the humidification system and cleaning) is treated on-site via an effluent treatment plant (ETP) prior to discharge into a stream which is a tributary of the River Wensum. The ETP uses screens, gravity settlement and aerobic treatment to reduce effluent biological oxygen demand (BOD) and suspended solids before being emitted to the river. Discharge from the effluent treatment plant is monitored as part of the PPC permit, with limits set for BOD, suspended solids, ammonia, total phosphorus, flow and pH.

The operational aspects of the development include the malting and roasting of grains, including in the speciality malting plant (SMP), combustion processes for the generation of hot water and hot air/steam with two combustion plants consisting of a natural gas fired thermal fluid boiler and a gas oil fired CHP. Releases from these installations include products of combustion and particulate matter. The emissions to air from these operational processes are monitored as part of the PPC permit, with limits set for nitrogen oxides and particulate matter.

Water pollution has been identified as one of the top three issues in all Natura 2000 rivers. The whole of the River Wensum (including SSSI units 48 and 49 nearest the development site) is currently in unfavourable condition due to the impacts of water pollution and physical factors such as channel morphology and turbidity. A diffuse pollution plan is in place for the river from its headwaters to the lowest limit of the SAC, within which the principle impacts on water quality are identified as agricultural run-off and consented point discharges, which includes the Crisp Maltings consent.

*The Crisp Maltings complex abstracts production water from its own borehole (under Abstraction licence 7/34/11*G/0319).*

Case law from the European Court of Justice (CJEU), People over Wind and Peter Sweetman v Coillte Teoranta*, has ruled that measures intended to avoid or reduce the harmful effects of a plan or project on a European Site should not be taken into account at the 'screening stage' of the HRA in order to determine whether the plan or project would be likely to have a significant effect on a site. Measures intended to avoid or reduce the harmful effects of a plan or project on a European Site ('mitigation measures') should be taken into consideration as part of an appropriate assessment into the effects of the project and the integrity test.*

a. Construction activities relating to the development, including routes for movement of associated plant, materials and personnel, will not occur within the SAC. No habitats, or supporting habitats, of the River Wensum SAC will be lost as a result of construction activities. A significant effect is ruled out.

b. The ES states that the greatest potential for impacts arising from dust and fine particles on air quality from on-site preparation activities and traffic associated with the construction activities will be in the areas immediately adjacent to the principal means of site access for construction traffic. In addition, that exhaust emissions from construction plant operating during the construction phase will contribute to local pollutant concentrations in the vicinity of the equipment/plant. A detailed IAQM assessment is undertaken where there are ecological receptors within 50m of the Site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, or up to 500m from the Site entrance(s), as it is considered that within these distances the

impacts of dust soiling and increased particulate matter would have the greatest impact on local air quality at sensitive receptors. Where the need for a detailed assessment is screened out, the conclusion is that the level of risk to ecological receptors is considered to be 'negligible'. The ES states that there are no ecological receptors within the IAQM assessment criteria (stating that the River Wensum SAC/SSSI is approximately 350m to the north east of the Proposed Development) and therefore no requirement to consider ecological receptors in the assessment of construction phase effects. As the ES concludes that the level of risk to the River Wensum is 'negligible' a significant effect is ruled out

c. Construction activities could result in run-off into the soil, groundwater and surface water (connecting streams and ditches) during construction and mitigation will be required. A significant effect cannot be ruled out. **See Section 1 of Appropriate Assessment**

d. The development site is largely screened from the River Wensum SAC by the existing Maltings and trees and is over 350m from the development site. The existing Maltings facility exhibits a current level of general noise and disturbance associated with an industrial operation. The intervening vegetation/buildings and distance from the river, and the lack of reported disturbance related issues arising from the existing facilities, are considered sufficient to reduce any general or noise disturbance from the proposed development to a negligible level. The designated features are considered to be relatively insensitive to incidental or indirect disturbance. A significant effect is ruled out.

e (i). The 'Shadow HRA' considers that water discharge via accidental releases are considered a possibility during the operational phase of the development. The prevention and control of accidental releases is considered to constitute mitigation and a significant effect cannot be ruled out. The 'Shadow HRA' concludes that surface water run-off could potentially contribute a minor change to local hydrology and have deleterious impacts on water quality. A surface water drainage strategy will need to be implemented and although integral to the scheme, this would constitute mitigation. A significant effect cannot be ruled out. **See Section 2 of Appropriate Assessment**

e (ii). The 'Shadow HRA' considers that the treatment of effluent required as part of the operational aspects of the development proposal is considered to constitute mitigation. A significant effect cannot be ruled out. **See Section 3 of Appropriate Assessment**

e (iii). Of the existing and proposed development, the 'Shadow HRA' identifies the following elements as contributing to releases to air: "*combustion products from natural gas in the production of hot water and hot air, and fugitive releases"*. The Shadow HRA goes on to state that "*the level of emissions is not thought sufficient to be included within the scoping of the scheme's EIA, either for nature conservation or adjacent and nearby residential receptors"*. However, the Shadow HRA Stage 1 'screening' section identifies pathways of potential impact for releases to air during the operational phase of the development as "*dust and particulate releases*" and concludes that even in the absence of dust control measures the release of dusts and other materials would not impact the integrity of the River Wensum SAC given the distance between the site and the river. The Shadow HRA uses the terms '*combustion products from the production of hot water and hot air*', '*fugitive releases*', '*dusts*' and '*particulate releases*' in different sections of the assessment process when referencing releases to air and it is not clear which, or if all, of the potential impact pathways for releases to air have been adequately assessed in the Shadow HRA for likely significant effects.

The PPC permit for the existing Crisp Maltings site identifies a number of point source emissions to air, which covers both *combustion* emissions and *dust* emissions. It therefore seems reasonable to use these terms as the potential impact pathways for emissions to air for the operational aspect of the development (other than those generated by road traffic and assess in section e(iv) below). Not all of the point source emissions identified in the PPC Permit have limits set or are monitored, however, the CHP generation plant and the Wanson Thermal Fluid Boiler have monitoring requirements for oxides of nitrogen and carbon monoxide with limits set for oxides of nitrogen. The Speciality Malt Plant (abated by wet scrubber) has monitoring and limits set for total particulate matter. With respect to the potential impacts of these identified releases to air on the natural environment, oxides of nitrogen will contribute to nitrogen deposition which is a major growth nutrient. Nitrogen enriches and acidifies the soil and can lead to the eutrophication of water bodies. Too much nitrogen is accepted as one of the main drivers of biodiversity change across the globe and a critical level for all vegetation types from the effects of nitrogen oxides has been set as 30µg/m^3 (APIS, 2021). The River Wensum SAC is identified as being sensitive to elevated levels of air pollutants and exceeding critical values could modify the chemical status of the substrate, accelerating or damaging plant growth, altering vegetation structure and composition and causing the loss of sensitive typical species associated with it. The impacts of dust emissions on the features of the River Wensum are less clear.

However, dust and particulate control measures are in use at the Maltings, which could constitute mitigation, and emissions are considered to be sufficiently detrimental to the environment as to warrant monitoring as part of the PPC permit. The effect of the proposed increase in the output tonnage of malt produced as part of the Maltings site, from 115,000 tonnes to 175,000 tonnes in any one calendar year, on emissions to air is currently unknown. Without a conclusive screening assessment of the impacts of the development from emissions to air and given the sensitive nature of the River Wensum SAC to air pollution together with the identification of potential impact pathways, a significant effect cannot be ruled out. **See Section 4 of Appropriate Assessment**

e (iv). The ES states that the completed development will result in traffic travelling to and from the site and as such will have an impact on local pollutant concentrations, both on and around the site. The main pollutants of concern for road traffic are typically considered to be NO_2, PM_{10}, and $PM_{2.5}$. The ES acknowledges that of these pollutants, emissions of NO_2 and PM_{10} are most likely to result in exceedances of the statutory air quality standards and objectives. In terms of ecological receptors, the ES has made reference to Natural England's guidance on advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001), which draws upon the threshold criteria contained within Highways England's Design Manual for Roads and Bridges and requires screening against threshold criteria both 'alone' and 'in-combination' with other Plans and Projects. The River Wensum SAC/SSSI is approximately 350m to the north east of the Proposed Development. The Site is largely screened from the River Wensum SAC by the existing Maltings and trees and is over 350m from the development site. However, no exceedances of the relevant threshold criteria (Page 12, Figure 2 of Natural England's guidance) are predicted on roads which fall within 200m of the SAC 'alone'. Furthermore, as no growth is forecast on the local road network between the baseline and 2022 (the anticipated opening year of the Proposed Development), the relevant threshold criteria are not predicted to be exceeded 'in combination'. On this basis, the ES concluded no further assessment of the effects of changes in traffic due to the operation of the Proposed Development on River Wensum SAC/SSSI was considered necessary and a significant effect is ruled out.

f. The 'Shadow HRA' states that any increases required in the quantity of water to be abstracted as a result of the proposed development will be under the current abstraction permit. The 'Shadow HRA' concludes that the control of the abstraction volume under the existing permit is considered to constitute mitigation and a significant effect cannot be ruled out. **See Section 5 of Appropriate Assessment**

g. The 'Shadow HRA' identifies that the Appropriate Assessment carried out by the Environment Agency for the various discharge consents for the River Wensum identified an in combination effect on the SAC, based on levels of phosphorus exceeding targets as determined via modelling. In addition, the current abstraction licence was also subject to an Appropriate Assessment by the Environment Agency and potential impacts on the River Wensum SAC were identified in combination with other abstraction licences. The River Wensum SAC is sensitive to elevated levels of air pollutants and exceeding critical values effect vegetation structure and composition causing the loss of sensitive typical species associated with it. A number of activities and operations are permitted to emit releases to air which could, in combination, lead to elevated levels of nutrient nitrogen deposition/acidification and a reduction in air quality. As a result a significant effect cannot be ruled out in combination with other operations and activities (plans or projects). **See Section 6 of Appropriate Assessment**

Have any likely significant effects from the development, alone or in combination with the other plans or projects, on the qualifying features of the European sites listed above identified?

Yes	**Proceed with next stage and if not yet consulted, consult Natural England (under Regulation 63(3)) and proceed with Stage 2 - Appropriate Assessment**
~~No~~	~~Proceed with next stage~~
~~Unsure/Unclear~~	~~Ask for additional information from application and return to step 1~~

Stage 2 - Appropriate Assessment

What are the implications of the plan or project on the conservation objectives of the European Sites listed above?

Potential for adverse effect on integrity – The River Wensum SAC and the River Wensum SSSI	
1	**Pollution of soil, groundwater and/or surface water due to run-off from construction activities leading to a reduction in ground and surface water quality and soil quality**
	The HRA screening stage has identified that construction activities associated with the project could result in run-off into the soil, groundwater and surface water (connecting streams and ditches) during construction and mitigation will be required. The 'Shadow HRA' asserts that as a result of construction works it is possible that solids and other pollutants could enter the stream during the construction period, either from the main development works and/or at the crossing-point of the access road over the stream and as part of other infrastructure works. In terms of suspended solids, the deposition of suspended solids in the River Wensum would be detrimental to the Annex 1 habitat (H3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation) through the smothering of plants and by limiting photosynthesis (Dr Hopkins, July 2021). Also to the qualifying features of Brook lamprey (S1096 *Lampetra planeri*) by altering the characteristics of the sandy berms they utilise as habitat and also Bullhead (S1163 *Cottus gobio*) by reducing the quality of the riffle habitat and through an increase in silt limiting water flow through the course substrate where they shelter. Furthermore, high levels of suspended solids in the water column would limit the availability of light to aquatic plants which could affect their growth, this includes vegetation associated with the Annex 1 feature of H3260 (Dr Hopkins, July 2021). High sediment loads in surface water run-off can also smother gravels and other features used by white-clawed crayfish (S1092 *Austropotamobius pallipes*) for shelter; high turbidity can also block their gills (Natural England, Jan 19). Dr Hopkins states that occasional exceedances of suspended solids are only likely to have a minor effect on river ecology and that the significance of the effect would vary with season, river flows and stages of plant growth. Furthermore, that alternative sources of solids, such as field and road run-off, are likely to be the major contributors, which is acknowledged by Natural England. The Conservation Objectives Supplementary Advice (COSA) for the River Wensum SAC (Natural England, Jan 2019) lists the *sediment regime* as a structure and function attribute of the Annex 1 H3260 feature, and has a target of restoring the natural supply of coarse and fine sediment to the river. The natural supply of coarse sediments to the river are limited in extent and excessive fine sediment supply can lead to the smothering of coarse substrates and the loss of flora and fauna dependent on them. The COSA and the Site Improvement Plan (SIP) (Natural England, 2014) identifies that the catchment of the river is currently characterised by excessively high levels of fine sediment and sand entering the river from roads, tributaries and agriculture. River units 48 and 49 of the SSSI were in unfavourable condition at the last assessment (2010) and targets for turbidity and siltation were not being met, although mechanisms to address some of the issues had been identified and were in the implementation stage. The COSA also identifies *water quality* as a supporting process attribute of the Annex 1 H3260 feature with a target of achieving at least '*good'* chemical status (i.e. compliance with relevant Environmental Quality Standards), with values to be applied throughout the site and not just at

	routine sampling points. Following the last assessment of the River Wensum SSSI (2010) water quality was recorded as *favourable* and the chemical status was *good*. However, the SIP suggests that water quality is an issue that affects all SAC features with adverse impacts arising from discharge, pesticides and nutrients entering the river from the catchment, including from roads and from land within the catchment. Based on the above assessment, without mitigation, occurrences of sediments and pollutants entering the river from the construction element of the development, however intermittent or minor, could undermine the ability to achieve the conservation objectives of the qualifying features of the SAC by affecting the extent, distribution, structure and function of the features and the supporting processes on which the features rely. Failure to meet the conservation objectives will result in an adverse effect on the integrity of the designated site.
2	**Pollution of surface water arising from accidental releases during operation and from surface water drainage discharge leading to a reduction in water quality**
	The HRA screening stage has identified that the pollution of surface water via accidental releases into the surface water drainage system is considered a possibility during the operational phase of the development. The prevention and control of accidental releases is considered to constitute mitigation and therefore requires consideration through an appropriate assessment. In addition, the screening stage concludes that surface water run-off could potentially contribute a minor change to local hydrology and have adverse impacts on water quality. A surface water drainage strategy will need to be implemented and would constitute mitigation. The project (development) encompasses two different planning applications that seek full permission for the erection of a warehouse and 15 silos, a HGV access road and associated drainage, as well as outline permission (with all matters reserved) for the expansion of the output of the malting process. The extent of the land area which will be exposed to potential pollutants will increase as part of the project beyond the boundaries of the existing maltings site into what is currently a greenfield site (field/pasture). The site will also extend beyond the existing boundaries covered by the PPC permit. Pollution could occur through the new proposed land use including through the provision of the new HGV access road, as well as through the warehouse and silo provision, the increase in the service yard area and the increase in the maltings output and operations facility. The development proposes a Drainage Strategy to deal with the surface water arising from the development proposals and new impermeable areas, this is set out in the planning application documentation (and Environmental Statement), including in the *Flood Risk Assessment and Drainage Strategy (1152 FRA Rev B)*, the document entitled *Surface Water Drainage Calculations (1152 DC Rev A)* and the *Surface Water Maintenance Plan (1152 MP Rev A)*. The application sets out that the Drainage Strategy has been designed in accordance with Sustainable Urban Drainage System (SuDS) principles and proposes a design strategy that incorporates both infiltration and also discharge to a local watercourse. The drainage strategy consists of three separate networks: • Network 1 – HGV access road between Fakenham Road and Highfield Lane; • Network 2 – HGV access road from Highfield Lane to the proposed expanded site area; and • Network 3 – Warehouse, silos and access road (detailed) and proposed Maltings expansion area. With Networks 1 and 3 discharging to a watercourse (tributary of the River Wensum) and Network 2 discharging by infiltration.

	The development has the potential to release pollutants into the local surface water network and groundwater via the proposed drainage strategy, including pollutants associated with the new road and other impermeable surfaces (i.e. warehouse, silos, service yards, parking areas) as well as from contamination of the surface water drains arising from future operational requirements associated with the expansion of the malting process. The release of pollutants could occur through accidental releases, flood events or from the general day to day operation of the malting plant. The three main elements of pollutants of surface water runoff associated with the road drainage network are considered to be suspended solids, metals and hydrocarbons. The PPC permit identifies the potential chemical pollutants from the existing maltings site as fuel oil, sodium hypochlorite, polyaluminium chloride, gibberellic acid, sulphur, oils and greases, Propane, and various laboratory chemicals. The 'Shadow HRA' suggests that the range of potential pollutants from the development is unlikely to change or increase for the proposed future operations (expansion of malting process) from the existing processes. There is a direct pathway for pollutants to enter the River Wensum SAC from the road and other impermeable areas, including potential pollutants arising from the expansion of the malting process, either accidentally or intentionally, by infiltration through soils/groundwater and through discharges into surface water via the surface water drainage system. As stated in Issue 1 above, the COSA for the River Wensum SAC states that a wide range of pollutants may impact on habitat integrity depending on local circumstances. In order to meet the required *water quality* attribute target the river would need to comply with relevant Environmental Quality Standards (EQS) and achieve at least a '*Good*' chemical status. No recent or up to date data has been submitted with the planning applications as to what the current chemical status of the river is, either locally around the development site, or as a whole. As stated previously, the 2010 condition assessment for Units 48 and 49 of the River Wensum SSSI states that the water quality is *favourable* and the chemical status is *good* (which is also presented in Table 4 of the 'Shadow HRA'), yet these units remain in *unfavourable* condition with targets for turbidity and siltation not being met. The 'Shadow HRA' acknowledges that water pollution could, in part, be responsible for the unfavourable condition status (this view is supported by Natural England in the *Diffuse Water Pollution Plan*, 2015) but attributes this mainly to elevated levels of phosphorus and suggests that other pollutants are present but not at levels that are "*thought to exceed common standards monitoring*" and it is evident that, in 2010 at least, the CSM target was being met for '*other pollutants*' (as opposed to phosphorus pollution targets). Given the lack of up to date monitoring data on the water quality status of the river and the potential impact that pollutants would have on habitat integrity, the precautionary principle is applied and it is anticipated that any surface water discharges arising from the development that contain pollutants of any amount could undermine the conservation objectives of the SAC. Based on the above assessment and without mitigation occurrences of sediments and pollutants, from either accidental releases or the day to day operation of the development, entering the river via the surface water drainage network, however intermittent or minor, could undermine the ability to achieve the conservation objectives of the qualifying features of the SAC by affecting the extent, distribution, structure and function of the features and the supporting processes on which the features rely. Failure to meet the conservation objectives will result in an adverse effect on the integrity of the designated site.
3	**Increase in waste water quantity requiring treatment and subsequent discharge into surface water leading to a reduction in water quality**

	The HRA screening stage has identified that the treatment of effluent required as part of the operational aspects of the development are considered to constitute mitigation and an appropriate assessment is required. Part of the development (hybrid planning application: ref. PO/20/0524) in outline form includes the expansion of the Maltings facility to increase the maximum output tonnage from 115,000 tonnes to 175,000 tonnes in any one calendar year. This increase in output would require additional buildings and infrastructure, as indicated in Section 5.13 of the ES Addendum and on the indicative master plan Appendix 5.1A Parameters Plan, however the precise details of the development in this location is to be determined at the reserved matters stage. Drainage attenuation features for this part of the development form part of the wider surface water drainage system (as detailed in Issue 2 above). The increase in the maltings process output is likely to result in increases in emissions to air and water, although the full details are currently unknown. Details of the existing maltings process is provided in the Introductory Note for the current permit (re. EPR/FP3037PA). Essentially the maltings process includes drying, storing, steeping, germination and kilning of grain to provide malted cereals in bulk or as a bagged product. A recent variation to the PPC permit has included a Speciality Malt Plant (SMP) in the process, which adds an additional step of roasting to provide speciality malts. Some of these processes result in waste water being generated. Information for the HRA provided by Dr Hopkins (1st June 2021) states that in order to increase the output capacity at the maltings, the capacity of the effluent treatment process (further details provided below) on the development site would need to be increased with new plant and structures, but it is likely that these will be similar to the existing treatment process with appropriate improvements in technology and capacity incorporated into the design (to be agreed at the detailed design stage). The location of any additional requirements to the treatment process will be determined at the detailed design stage but these are likely to be situated close to the existing facility. Furthermore, it is likely that the same discharge point for the treated effluent, or a second discharge point into the same watercourse, will be used for any new/additional treatment processes. It is stated that any quantitative changes to effluent arising as a result of the increase in maltings process will be dependent on the final level of operations. And in terms of qualitative changes, although the level of output would depend on the processes undertaken, a significant change in pollutants from the existing operations is not expected as the raw product would continue to be barley and the onsite processes would continue to relate to malt production. The applicant expects that efficiencies and new technology in the maltings/effluent treatment process would mean that expansion levels would not scale up directly from current levels. Details of the existing Effluent Treatment process have been provided in Appendix 3 of the document entitled '*Responses and Additional information Regarding the Draft Habitats Regulations Assessment*' (Dr Hopkins, 1st June 2021). In summary: all process water is treated in the effluent plant, which consists of two treatment tanks, one holding tank and a v-notched weir. The treated effluent is then discharged in a controlled manner into a local watercourse which is a tributary of the river Wensum. The treatment tanks contain activated sludge (aerobic micro-organisms that digest organic matter) with which the process water is mixed with oxygen by aeration, this process reduces the amount of total suspended solids (TSS) in the effluent. A period of settlement follows the aeration in which the activated sludge settles to the bottom of the tank leaving low TSS water at the top of the tank. The sludge is periodically removed from the bottom of the tank and taken off site by lorry, while the water from the top of the tank is drawn off by a floatation device and is subsequently discharged via the weir to the river Wensum tributary. The water over the weir is monitored by instrumentation for discharge volume and TSS levels. TSS levels are to be kept within the PPC permitted levels (25mg/l), if levels go above 20mg/l the discharge is halted and the treated effluent diverted back to the treatment tanks for further treatment. Daily volume limits are set by the PPC permit at 1400m^3, once the set point of 1390m^3 has been reached the treated effluent is

diverted to the holding tank until further discharge can proceed within permitted levels. The effluent plant is fully automated and controlled using an electronic control system and will alarm if any issues occur within the process.

As part of the PPC permit, there is a requirement to self-monitor all of the equipment used for effluent monitoring on a regular basis, which is audited yearly as part of the Environment Agency's 'M-Certs' monitoring scheme, which ensures that the monitoring standard and method complies with either the British Standard or ISO standard. The weekly effluent data for January 2020 to May 2021 has been provided to the Local Planning Authority (LPA), which provides data from the effluent monitoring system for pH, Ammonium (as N), Ammoniacal Nitrogen, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), TSS, Aluminimum and Phospohrous. The data includes that monitored and recorded by Crisp Maltings Group and that from an external laboratory. The PPC permit sets limits and monitors the effluent discharge at discharge point W1 (the weir). The parameters monitored within the treated effluent are BOD, Suspended Solids, Ammonia, Total Phosphorus as P, Flow and pH.

In Section 3 of the document entitled '*Responses and Additional information Regarding the Draft Habitats Regulations Assessment*' (Dr Hopkins, 1st June 2021), Dr Hopkins presents a summary of the effluent discharges for the existing maltings and seeks to relate this to aspects of the River Wensum ecology, specifically how the discharge interacts with other factors and PPC permit levels with particular focus on phosphate inputs.

The 'Shadow HRA' and the ES both acknowledge that phosphate is a significant pollutant for the River Wensum and that the orthophosphate level targets are exceeded at most monitoring sites, however, the Shadow HRA states that industrial sources only contribute to 1% of the apportioned phosphate sources, with agriculture and sewage treatment works contributing approximately 70% between them. These assumptions have been made based on data that has been extracted from the *River Wensum SSSI Exemplar Diffuse Water Pollution Plan (DWPP) and Action Plan* (Natural England, 2015), and relates to the percentages as averaged for the overall river catchment. The DWPP provides a further breakdown of the apportionment of phosphate over different sections along the length of the whole river and there are significant differences for how much phosphate pollution can be attributed to industry in the section of the river around Great Ryburgh (see Figure 2.2 of DWPP). This is acknowledged by Dr Hopkins in his response of the 1st June 2021, in that the length of river from ~ 15 to 21km (and the point at which Fakenham WWTW discharges into the river and is the greatest contributor to phosphate levels) the phosphate concentrations apportioned to industry is greater than that attributed to agriculture, and it is considered that this is largely attributable to Crisp Maltings. Also that the management target for the concentration of phosphorus (CSM target) is shown to be exceeded at the point of the river where Crisp Maltings discharges.

Phosphate pollution, together with increases in other nutrients, has been identified as a particular concern for the River Wensum SAC, with elevated nutrient levels leading to dominance by attached forms of algae and a loss of characteristic plant species, which in turn may alter the balance of species that live in the river or supporting habitats.

Monitoring data (2007 to 2013) collected for the River Wensum at Great Ryburgh Bridge demonstrates that the river is not complying with the 2014 SSSI phosphate targets and the SSSI river units nearest to the development site are in *unfavourable* condition due to, *inter alia*, elevated phosphate levels.

The conservation objective target for *water quality* is to restore the natural nutrient regime of the river, with any anthropogenic enrichment above natural background levels limited to levels at which

	adverse effects on characteristic biodiversity are unlikely. Although phosphate from industry accounts for a smaller proportion of the overall total phosphate input into the whole river, without mitigation (i.e. treatment) the process water from the maltings process is likely to contain sufficient levels of phosphorus that are likely to alter the characteristic vegetation communities of the Annex 1 habitat (H3260) and undermine the ability to meet conservation objectives of the SAC. The most recent monitoring date for the river highlights that current phosphate targets are not being met, therefore without mitigation any untreated discharges from Crisp Maltings is likely to contribute, either alone or in combination with other sources, to the existing unfavourable condition status of the River Wensum. Failure to meet the conservation objectives will result in an adverse effect on the integrity of the designated site.
4	**Increase in airborne particles or harmful chemical compounds (air pollution) due to operational combustion activities leading to a reduction in air quality**
	The HRA screening stage has identified that releases to air from the operational phase of the development could result in potential impacts on the River Wensum SAC. Furthermore, that the River Wensum is sensitive to elevated levels of air pollutants and exceeding critical values could modify the chemical status of the substrate, accelerating or damaging plant growth, altering vegetation structure and composition and causing the loss of sensitive typical species associated with it. The Shadow HRA does not consider that the release of dusts and other material from the operation of the development would impact the integrity of the River Wensum SAC. It is not clear whether the Shadow HRA has taken into consideration the effects of nitrogen oxides in this assessment, even though the River Wensum SAC is sensitive to elevated levels of nitrogen, as the Shadow HRA does not specifically reference the specific pollutant components within the emissions to air arising from the combustion processes. The Ecology chapter in the ES states that "*the level of emissions* [to air] *is not thought sufficient to be included within the scoping, either for nature conservation or adjacent and nearby residential areas as receptors. It is not, therefore, thought that the impact of emissions to air will be significant and they are assessed as being of negligible magnitude and of negligible significance*". In addition, the Air Quality, Odour and Dust chapter of the ES has also not considered the impact of the combustion emissions arising from the operation phase of the development (expansion of the output of the maltings process) on the River Wensum although the Scoping Report did identify the River Wensum as a sensitive receptor for air quality. The Scoping Report stated that the air quality section of the ES would "*assess the potential effects of the proposed development on local air quality due to... NOx and particulate matter (PM_{10} and $PM_{2.5}$) emissions from additional vehicle movements associated with the proposed development once operational and any energy generation plant included within the proposals; and the potential impact of the proposed development on traffic using the local road network, and consequently on ambient concentrations of NOx and nutrient nitrogen deposition, and subsequent effects on the River Wensum (SSSI/SPA*[SAC]*) will be considered in the assessment should the changes in traffic flows along the local road network be significant*". Consequently, although at the Scoping stage of the EIA process the potential air quality impacts arising from the combustion emissions of the development on the River Wensum were scoped in, neither the Ecology chapter nor the Air Quality, Odour and Dust chapter of the ES have included this in the assessment. This means that the potential effects on the River Wensum have not been properly assessed as part of the EIA process, which subsequently should, in a co-ordinated manner, inform the HRA. As a result of the omission of any assessment within the Shadow HRA and the ES of the operational effects of the development and the for potential reductions in air quality and subsequent impacts on the River Wensum; together with the identified sensitivities of the River Wensum to elevated levels of air pollutants; the following assessment will take a precautionary approach in reaching a conclusion and decision.

This HRA has screened out likely significant effects on the River Wensum SAC due to nutrient nitrogen deposition arising as a result of changes/increases to traffic flows arising from the development. However, changes in local air quality arising from releases of nitrogen oxides from the operational energy generation requirements of the development (expansion of the Maltings facility to increase the maximum output tonnage from 115,000 tonnes to 175,000 tonnes) have not been screened out and the LPA considers that an appropriate assessment is required to assess the need for, and efficacy of, any avoidance and/or reduction measures.

The operational aspects of the development include the malting and roasting of grains, including in the speciality malting plant (SMP) and requires the generation of hot water and hot air/steam from combustion plants. Releases from the two combustion plants (the natural gas fired thermal fluid boiler and gas oil fired CHP) include products of combustion and particulate matter and the increase in the maltings process output is likely to result in increases in these emissions, although the full details are currently unknown. It is not clear whether an additional combustion plant will be required to increase the output of the maltings plant. The 'Shadow HRA' identifies that measures to reduce releases include cyclones and filters and general best available technology and that proposed future operations would operate with similar technology.

The Conservation Objectives Supplementary Advice (COSA) for the River Wensum SAC identifies *air quality* as a supporting process attribute of the Annex 1 H3260 feature, the S1016 feature and the S1092 feature, with a target of restoring the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for the feature on the Air Pollution Information System (www.apis.ac.uk). The COSA states that elevated nutrient levels interfere with competitive interactions between higher plant species and between higher plants and algae, leading to dominance by attached forms of algae and a loss of characteristic plant species (which may include lower plants such as mosses and liverworts). In addition, through changes to plant growth and plant community composition and structure they also affect the wider food web, altering the balance between species with different feeding and behavioural strategies. The respiration of artificially large growths of benthic or floating algae may generate large diurnal sags in dissolved oxygen and poor substrate conditions (increased siltation) for fish and invertebrate species. The COSA recognises that while the management focus is typically on phosphorus in rivers, on the assumption that it can be more easily controlled at levels that limit the growth of plant species, nitrogen may also be important in river eutrophication and ideally co-limitation would be the management aim.

In addition it is noted in the COSA that acid deposition can cause major changes to flora, fauna and ecosystem functioning and affects organisms as diverse as diatoms, invertebrates and fish. Acidification lowers dissolved organic carbon in these waters, reducing the buffering capacity and altering ecosystem functioning. For the S1016 feature (Desmoulin's whorl snail) the COSA identifies that at the time of writing, the fen, marsh and swamp habitats have an atmospheric Nitrogen deposition exceedance of 6-11 $kgNha^{-1}$ yr^{-1}. And for the S1092 feature (white-clawed crayfish) the COSA identifies the maximum and average NOx and SO_2 deposition are below critical levels for river supporting habitat. Average nitrogen deposition is 14.3kg/ha/yr and acid deposition Nitrogen|Sulphur 1.02|0.29 keq/ha/yr. No critical loads have been established for the site for nitrogen or acid deposition. Although there no critical loads for acid deposition this remains a concern due to the increased solubility of toxic Al^{3+} ions with reduced pH having the potential to harm crayfish and other aquatic animals.

The Air Pollution Information System (APIS) states that the H3260 habitat feature is sensitive to nitrogen deposition, however no comparable habitat with established critical load estimates are available. Therefore no Critical Load has been assigned to the EUNIS classes for meso/eutrophic systems. APIS does state that these systems are often P limited (or N/P co-limiting), therefore

	decisions should be taken at a site level. In addition, consideration should also be given to other sources of N i.e. discharges to water, diffuse agricultural pollution etc. These values are also equally applicable to the species features of the SAC that are dependent on the broad habitat type of the SAC. With respect to H3260 habitat sensitivity to nitrogen oxides, APIS states that site specific advice should be sought however the Critical Level set for all vegetation is 30 µg NOx/m^3 annual mean and the Critical Level set for all vegetation is 75 µg NOx/m^3 24-hour mean. No data has been submitted with the planning applications as to what the background levels for nutrient nitrogen, acidity or nitrogen oxides are for the river (or local area) and supporting habitats or how these relate to the Critical Loads or Levels and site specific advice has not been sought. The Site Improvement Plan for the River Wensum SAC does not list air pollution as a priority issue for the site, however it is evident from the information within the COSA that air pollution is a contributory factor to the nutrient levels within the river but that phosphate pollution arising from water pollution is the main concern. However, nitrogen has been cited as important in river eutrophication and co-limitation is the management aim, therefore it is considered that significant levels of nitrogen deposition could be considered as having an adverse effect on the integrity of the River Wensum, either alone or in combination with other pollutant sources. The 2010 condition assessment for Units 48 and 49 of the River Wensum SSSI state that the water quality is *favourable* and the chemical status is *good*, however the units remain in *unfavourable* condition with targets for phosphates, turbidity and siltation not being met. Given the lack of up to date monitoring data on the water quality status of the river and the potential impact that air pollutants would have on habitat integrity, the precautionary principle is applied and it is anticipated that emissions to air arising from the development, alone or in combination, could contain levels of nitrogen oxides that will contribute to the nutrient loading of the river and undermine the conservation objectives of the SAC. Based on the above assessment and without mitigation, the emissions to air arising from the day to day operation and combustion processes of the development, could undermine the ability to achieve the conservation objectives of the qualifying features of the SAC by adversely affecting the supporting processes on which the features rely. Failure to meet the conservation objectives will result in an adverse effect on the integrity of the designated site.
5	**Increase in demand for water leading to increased abstraction volumes resulting in changes to the natural hydrological regime of the river**
	The HRA screening stage has identified that the control of the abstraction volume under the existing permit is considered to constitute mitigation and an appropriate assessment is required. The day to day operational requirements of the development (expansion of the Maltings facility to increase the maximum output tonnage from 115,000 tonnes to 175,000 tonnes) will require additional water consumption. Washing, steeping and other operational requirements of the maltings process requires water and it is considered that the expansion of the facility will increase water consumption, although the specific amount of additional water required to enable the expansion is not "*fully known*" (Dr Hopkins, June 2021). However, Dr Hopkins asserts that greater levels of water re-use and efficiency technologies can be employed in the maltings process which will result in a reduction in per unit requirements. Crisp Maltings Group Limited currently abstracts water from two boreholes, within the development site, under an Environment Agency Licence (ref. Great Ryburgh Maltings 7/34/11/*G/0319). The licence limits abstraction to 455,000 cubic meters per year, 1591 cubic meters per day, 64.80 cubic meters per hour and 18 litres per second. The Conservation Objectives Supplementary Advice (COSA) for the River Wensum SAC lists the *Water Course Flow* as a structure and function attribute of the Annex 1 H3260 feature, and has a target of restoring the natural flow regime of the river, with daily flows as close to what would be

	expected in the absence of abstractions and discharges (the 'naturalised flow'). Targets are set and agreed as part of the Environment Agency's River Basin Management Plan (RBMP). The natural flow regime both shapes and sustains characteristic biotope mosaics, affecting factors such as current velocities and bed hydraulics, water levels and depths, wetted area, temperature regime and dissolved oxygen regime. Abstraction can also affect the natural thermal regime of the river (exacerbated by climate change), which is a structure and function attribute, and also the resilience of the river and ability to adapt to wider environmental change (a supporting process attribute). Temperature fluctuations in the river can impact on the species features of the SAC. In addition, abstraction can affect water tables which in turn can impact on the supporting habitat of the S1016 feature, Desmoulin's whorl snail, which relies on a water table at, or slightly above or below, ground surface level throughout the year. The COSA identifies that the overall water resource management for the river is guided by the Broadland Rivers Catchment Abstraction Management Strategy (CAMS) and the Environment Agency's Review of Consents (RoC), and that the Environment Agency's River Basin Management Plan (RBMP) describes the approach to meeting SAC standards for river flows which are to be delivered through subsequent Asset Management Plans (AMP). Water quantity targets (supporting process) for the S1016 feature are to restore the quantity to a standard which provides the necessary conditions to support the feature. The COSA and the Site Improvement Plan (SIP) (Natural England, 2014) identifies that abstraction is adversely impacting the flow regime of the river and as a result changes to abstraction licences to relieve pressure on the river were identified through the Review of Consents process. The actions identified in the SIP applied to abstraction by Anglian Water, with reductions secured through the Water Industry Asset Management Plan (AMP) between 2014 and 2021, and commitments to implement measures identified in the Restoring Sustainable Abstraction Programme (which has a timescale to 2027). A further action to investigate or identify actions to meet the conservation objectives for flow is highlighted for the third round of the RBMP from 2021. This action could affect abstraction limits for existing and/or proposed licences. River units 51 to 54 of the SSSI, downstream of the development site, were in unfavourable condition at the last assessment (2010) due to abstraction (in addition to other reasons). Based on the above assessment and without mitigation the additional water consumption requirements for the day to day operation of the development, could undermine the ability to achieve the conservation objectives of the qualifying features of the SAC by affecting the structure and function of the feature and the supporting processes on which the features rely. Failure to meet the conservation objectives will result in an adverse effect on the integrity of the designated site.
6	**In combination effects of emissions to water and air, and effects of abstraction leading to a reduction in water and air quality and natural flow regimes.**
	The HRA has identified that the Appropriate Assessment carried out by the Environment Agency for the various discharge consents and for the abstraction licence for the River Wensum identified an in combination effect on the SAC, based on levels of phosphorus exceeding targets as determined via modelling and the river being 'over-licenced'. Furthermore, the River Wensum is sensitive to nitrogen deposition and acidification and the development contributes oxides of nitrogen to the atmosphere which are monitored as part of the PPC Permit. The potential for in combination effects arise from: • Water pollution – diffuse pollution from farming (nutrients/suspended solids), other industry, water recycling centres (increasing phosphates and nitrogen), as well as other pollution from

	urban run-off (suspended solids, metals and hydrocarbons), leading to a reduction in water quality of the River Wensum; • Air pollution – from nearby poultry farming and other licenced bodies that result in a reduction in air quality and increased nutrient nitrogen deposition and acidification, which could result in changes to the vegetation composition and structure of the river and supporting habitats; and • Abstraction – other licenced abstraction points, which could adversely affect the natural flow regime of the river. Based on the previous assessment (Issues 1 to 5 above) and without mitigation, the releases to water and air arising from the construction activities and the day to day operation of the development, together with the water abstraction requirements for the maltings, could undermine the ability to achieve the conservation objectives of the qualifying features of the SAC by adversely affecting the extent, distribution, structure and function of the features and the supporting processes on which the features rely, either alone or in combination. Failure to meet the conservation objectives will result in an adverse effect on the integrity of the designated site.

Based on the best scientific knowledge available, will the plan or project adversely effect the integrity of the European Site?

Yes	**Proceed with next stage to assess mitigation measures**
~~No~~	~~Proceed with application as normal~~
~~Unsure/Unclear~~	~~Ask for additional information from application and return to stage 2~~

Are there any mitigation measures proposed or embedded within the project that will avoid adverse effects on the integrity of the European site?

Case law from the Court of Justice of the European Union (CJEU), the *Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg* (C-293/17 & C-294/17) [2019] Env LR 27 (otherwise known as the Dutch Nitrogen cases), on the interpretation of the Habitats Directive with respect to the impacts of agricultural nitrogen pollution on European sites is relevant to this HRA. The Dutch Nitrogen cases relate to strategic approaches to dealing with nitrogen and considers the approach to take when new plans/projects may adversely affect the ecological situation where a European site is already in unfavourable conservation status and the case considers the acceptability of mitigation measures whose benefits are not certain at the time of the assessment. The CJEU gave guidance in relation to mitigation at the appropriate assessment stage and made it clear that, if the expected benefits or mitigations are "uncertain" at the time of the appropriate assessment, either because the procedures needed to accomplish them have not yet been carried out or because the level of scientific knowledge does not allow them to be identified and quantified with certainty, then they cannot be taken into account (see [130]).

The High Court recently considered the Dutch Nitrogen cases in *Abbotskerswell Parish Council v SSHCLG* [2021] EWHC 555 (Admin) and *R(Wyatt) v Fareham Borough Council & Others* [2021] EWHC 1434 (Admin). The *Abbotskerswell* case confirmed that when an outline permission is being sought, the level of detail required is not the same as for a full permission, but the competent authority must make a judgment as to whether the information available is sufficient to dispel all reasonable scientific doubt as to avoidance of adverse effects to the integrity of the site (see [152]-[155]). The *Wyatt* case confirmed that the competent authority must, prior to authorisation, be satisfied that there is no reasonable scientific doubt as to the absence of adverse effects of each plan or project on the integrity of the site concerned and in practice this requires a case-specific assessment by the competent authority applying rigorous scientific principles to the endeavour (see [34]).

The documents/report to which reference has been had in conducting that assessment are set out in Table 1. In order to obtain further detailed information, NNDC provided the applicant with a draft HRA to which the applicant was invited to respond; a conference call was held with the applicant on 25/6/21 and the applicant's environmental consultant, Dr Graham Hopkins, provided a further document on 5/7/21 which included additional comments from the applicant's drainage consultant.

With respect to the EA environmental permitting process, the Council acknowledge that an existing Environmental Permit can be considered as mitigation. However, it is considered that the existing PPC Permit for the Maltings is not mitigation for the proposed development because it does not cover the development or the site and a varied or new permit would be required. In light of the *Dutch Nitrogen* cases and the earlier domestic case of *R(Preston) v Cumbria County Council* [2019] EWHC 1362 (Admin), the existence and powers of the EA permitting process, cannot, without more, be regarded as being objective information which is sufficiently certain to establish that there would not be a potential significant effect. The HRA addresses in various places how the applicant has sought to rely on the potential new/varied permit as mitigation.

Mitigation measures required to avoid an adverse effect on integrity – The River Wensum SAC and the River Wensum SSSI	
1	**Pollution of soil, groundwater and/or surface water due to run-off from construction activities leading to a reduction in ground and surface water quality and soil quality**
	The 'Shadow HRA' considers that an integral part of the construction activities would involve mitigation measures to prevent pollution and to minimise impacts on surface water, by adhering to appropriate good practice working methods and recommendations such as those within '*Works and Maintenance In or Near Water: GPP 5*'. Furthermore, the 'Shadow HRA' suggests that across the River Wensum catchment, agriculture and bank erosion are the main sources for soil entering the run-off, and urban areas are also recognised as sources of diffuse pollution for a range of other compounds, therefore in the context of the development, any such inputs during construction are likely to be relatively minor at a catchment scale and an impact on site integrity would not occur subject to adhering to the best practice working methods. The construction requirements are considered to be of a nature and scale that can be completed using standardised methods and procedures for construction and do not present any unexpected elements of risk either from materials, transportation or site specific requirements. While the receiving environment is highly sensitive with its connectivity with the River Wensum, given that standard good practice construction measures can be employed (which will be secured via a condition of planning), which can be identified and quantified with certainty and are likely to be effective at preventing and reducing the effects of any accidental releases during construction, it is considered that an effect on the integrity of the River Wensum will not occur. Best practice construction methodologies required: to be secured through appropriate conditions including a Construction Environment Management Plan.
2	**Pollution of surface water arising from the day to day operation of the project either through accidental releases and/or from surface water drainage discharge leading to a reduction in water quality**

In order to meet the conservation objectives of the SAC and to avoid an adverse effect on the integrity of the river from pollution events arising from accidental releases and/or through the day to day operation of the surface water drainage system, mitigation measures will need to be implemented. These mitigation measures will need to be identified and quantified with certainty and ensure that adequate safeguards and systems are in place to prevent accidental discharges from entering the surface water drainage system and, if this is not possible, allow for their attenuation and safe removal following an event. In addition, the surface water drainage system i.e. the Drainage Strategy, itself is a mitigation measure for the day to day operation of the development, and in order to be deemed *mitigation* must be fit for purpose and be designed to meet water quality and quantity (discharge rate) standards based on the level of the hazard occurring from the specific land use (Woods Ballard, B *et al* CIRIA 2015).

The site is subject to an Environmental PPC Permit (ref. EPR/FP3037PA/V009), with the point source emissions to water (other than sewer) and land, together with emission limits and monitoring requirements, set out in Table S3.2 in the permit. This identifies one discharge point relating to the effluent treatment plant and two discharge points (W2 and W3) relating to the site drainage, all of which drain into tributaries of the River Wensum. Both site drainage emission points (W2 and W3) have no limits set for any parameters and have no monitoring. Conditions are stipulated within the PPC permit that cover emissions of substances not controlled by emission limits (such as the site drainage). The conditions state that emissions should not cause pollution and in the event of a pollution incident, the operator must, if notified by the EA, implement an approved emissions management plan. If a pollution event occurs that significantly affects the environment then the PPC permit stipulates that the operator must inform the EA and take measures to limit the consequences of the incident or accident.

With respect to accidental releases, the 'Shadow HRA' states that measures to reduce the effects of accidental releases from the operation of the existing Maltings plant include protection measures such as bunding and double skins, as appropriate, on storage tanks for oil and reagents, and as part of the existing PPC permit, an accident management plan is maintained and reviewed. The 'Shadow HRA' states that current operations at the Maltings are expected to adhere to the PPC permit requirements and follow appropriate best practice with respect to accident management and avoidance of pollution incidents.

Crisp Maltings Group currently operate under an 'Emergency Preparedness and Response Plan' (27th March 2019), the purpose of which is to "*formalise the response of the Great Ryburgh site to any major environmental emergency e.g. fire, explosion or a major release of material that occurs to land, water or air*" and to ensure compliance with the various environmental and health and safety regulations under which the Maltings operate. The applicant has provided a Hazardous Substances Inventory that lists all of the potential pollutants that occur on the existing site, the type of containment and storage location for them. Substances include up to 75,000ltrs of fuel oil, 600ltrs of Gibberrillic acid, 2000ltrs of Sodium Hypochlorite, 4000ltrs of Poly Aluminium Chloride, oils and greases and various laboratory chemicals. The 'Shadow HRA' proposes that the range of potential pollutants is unlikely to increase or change for the proposed future operations associated with the expansion of the maltings and that best practice is anticipated to be followed. Dr Hopkins (June 21) states that the *Emergency Preparedness and Response Plan* retains flexibility over relevant actions to different scenarios and that the locations of activities that might generate pollutants would be established once the outline scheme was designed in greater detail and the Plan updated.

As detailed previously, in terms of the detailed elements of the development, i.e. the access road, warehouse and silos, the three main pollutants that could occur via accidental releases are established as suspended solids, metals and hydrocarbons, such as oil and diesel and spilled grains. The applicant states that accidental releases from these areas of the development would

be covered by the *Emergency Preparedness and Response Plan*, which seeks to prevent spills from entering the surface drains. Furthermore, although the drainage system for the access road does not seek to provide for accidental large spills, there is no direct run-off to watercourses, which would mean that any spills would be contained within either the swales and/or the attenuation lagoons providing opportunity to remove concentrated spills prior to onward transmission to the watercourse. This would limit the risk of impacts on the SAC (Hopkins, June 21).

Dr Hopkins (June 21) considers, based on the existing uses, that the proposed development does not represent any significant issues or resultant risks considering the '*type and frequency of use*', and suggests mitigation measures such as trapped gullies, cut off valves to high risk areas, localised "spill volume" attenuation can intercept any spill prior to discharge. For example the current site has penstock isolation valves to isolate the site if required.

The information accompanying the application states that the Drainage Strategy for the project has been design to include capacity for treatment and conveyance for all elements of the development subject to the detailed and outline planning applications. However, the applicant acknowledges that further assessment will need to be undertaken for the content of the outline aspects to ensure that pollutants do not exceed the treatment level provided by the strategy design, for example if HGV parking areas were required further treatment/containment measures would be required. These measures could be targeted towards the areas of greater risk and prior to connection to the main drainage network and include measures such as oil interceptors and/or localised mechanical or filtration devices installed in manholes.

With respect to the day to day operation of the development, the surface water drainage strategy is the mitigation measure required to ensure that all the surface water draining into the River Wensum from the maltings facility and the HGV haul road is of sufficient quality and discharged at the correct rates to protect the features of the SAC/SSSI. In order for the mitigation measure to be deemed effective and reliable, the surface water drainage strategy should be designed to meet with stringent water quality and quantity standards set by industry good practice, which includes Sustainable Drainage System (SuDS) principles as set out in the CIRIA C753, The SuDS Manual (Woods Ballard, B *et al* CIRIA 2015).

Information relating to the Surface Water Drainage Strategy is included in Chapter 10 of the Environmental Statement (and relevant updates) and accompanying appendices, which include a *Flood Risk Assessment and Drainage Strategy* (ref. 1152 FRA Rev B), *Surface Water Drainage Calculations* document (Ref. 1152 DC Rev A) and a *Surface Water Maintenance Plan* (Ref. 1152 Rev A) all which have been prepared by BMF Consulting. The Environmental Statement advises that the Surface Water Drainage Strategy has been designed to align with the CIRIA C753 SuDS Manual and the Sewers for Adoption and Building Regulations (ES, 10.49, page 108).

The Flood Risk Assessment (FRA) (section 5.1.5) states that the Drainage Strategy has been designed to provide a better than sufficient level of treatment to remove pollutants to flows being discharged to watercourses which lead to the River Wensum, which is acknowledged as a receptor of high sensitivity. The FRA states that the risk presented by the HGV access road and the warehouse and silos (i.e. the detailed part of the planning applications) will be *low* and that the minor levels of traffic and HGV traffic can be accommodated in treatments such as swales, detention basins, filter drains and bio-retention features, but that any HGV parking (which could potentially be part of the outline application) would require an oil interceptor to be installed.

As stated in the FRA, the Surface Water Drainage Strategy comprises the following elements:
Network 1

1) *This network consists of the initial section of access road. The predicted traffic numbers using the access are less than 300 movements a day, classing it as a* low *pollution hazard in table 26.2 of The SuDS Manual.*
2) *For this network it is considered appropriate to collect runoff in vegetated swales with check dams to slow velocities and aid treatment with the main treatment being provided in permanent treatment storage at the base of the attenuation detention basin.*
3) *The correct use of gradients and check dams will enable the interception volume to be held. It is proposed that the road will mainly be un-kerbed allowing direct runoff to the swales.*
4) *The use of vegetated swales check dams and treatment storage in the detention basin will provide a level of treatment in excess of the recommended minimum.*

Network 2

1) *This is approximately 550m of access road classified as* low *pollution hazard in accordance with table 26.2 of the SuDS Manual, in an area where infiltration is viable.*
2) *An effective means to collect runoff would be the use of swales, potentially with check dams to reduce velocities and permit interception volumes to be held. The SuDS Manual states that vegetated swales with a suitable soil beneath would provide a higher than required treatment level, subject to meeting design requirements.*
3) *If required, additional treatment could be provided in lined treatment detention basins located at intervals along the road.*

Network 3

1) *The drainage network will serve the expansion of the Maltings facility, potentially including storage and warehouse facilities, silos and HGV parking. The main weighbridge and lorry activities are located within the existing site and it is considered most of the activity in this area of the site will be low traffic generating.*
2) *The risk of the proposed activities will have to be considered further as part of the detailed design as the use is identified, but initially it is considered that the area will consist of roof runoff, the road, small external areas accessing the warehouses, a concrete slab under the silos and a small amount of car parking. In accordance with table 26.2 of the SuDS Manual, these intended uses will be* low *risk, with a possible* medium *risk if a more intense use of the external areas is apparent. The exception to this is the potential to provide HGV parking. Due to the limited numbers, the risk is unlikely to be* high*, but the use of an oil interceptor within the system should be considered.*
3) *The discharge from this network will be to the watercourse via a detention basin, which could include a permanent treatment storage which would provide a high level of treatment. Close to the watercourse, ground water levels are higher and it is proposed the detention basin will be lined.*
4) *In line with guidance, prevention of pollution is an important stage of the system and sealed downpipes and trapped gullies should be considered to address potential contamination from spills or similar concentrated pollution.*
5) *The size of the buildings offer potential to collect roof water in swales or filter drains with shallow gradients enabling treatment. The same principle can also be applied around the perimeter of the silo's slab, again providing treatment and interception storage.*
6) *It is proposed the external areas will be collected by trapped gullies, transferred to a swale or the detention basin for further treatment. Small car parking areas could be in permeable paving subject to gradients.*

The 'Shadow HRA' states that the overall surface water management strategy will follow industry best practice as contained within the CIRIA SuDS Manual and will feature an appropriate mitigation train which acknowledges the highly sensitive receiving water of the River Wensum SAC. Furthermore that the proposed surface water strategy will not increase run-off rates in comparison to existing rates, with any increase in run-off volume mitigated through local infiltration or contained (attenuated) within the SuDS features. It goes on to state that the SuDS will be integral to the

development proposals and although it will be subject to detailed design there is sufficient confidence to conclude that that the surface water discharge will be at a level, in terms of both quality and quantity, that there will not be an adverse impact on the site integrity of the River Wensum SAC.

It should be noted that the current PPC permit would need to be varied/modified to include the additional elements of the proposed development and the extended land of the proposed Maltings expansion including the indicative surface water drainage strategy areas and discharge points. As the current PPC permit has no limits set or monitoring requirements for site drainage, it is unclear whether any future PPC permit or variation would include any limits or a requirement for monitoring.

The assumption within the Shadow HRA that an adverse impact on the site integrity of the River Wensum SAC will not occur is based on the supposition that as long as the development implements a drainage strategy that has been designed in compliance with the industry's best practice SuDS guidance, that this would be effective mitigation for the potential impacts on water quality arising from the day to day operation of the facilities. Therefore in order to have confidence in the Shadow HRA conclusions and to assess the appropriateness of the mitigation measures, the proposed surface water drainage strategy has to be critically appraised to ensure that it does actually meet with the CIRIA SuDS Manual guidance. If, for example, the assumptions and figures used in the drainage strategy calculations and the use of the *Simple Index Approach* are incorrect/over simplified then there is the possibility that the mitigation in the SuDS treatment train would not be sufficient and further treatment measures may be required to ensure effective mitigation.

The CIRA SuDS Manual (Section 4.3.2.) states, with respect to water quality standards, that the "*extent of treatment required will depend on the land use, the level of pollution prevention in the catchment and for groundwater the natural protection afforded by underlying soil layers...land use will also dictate the likely significance of different types of contaminants in the runoff, and this may influence the treatment processes that need inclusion within the treatment system*". The Manual goes on further to state that most sites will be relatively low risk and that the risk can be mitigated by implementing SuDS components close to the source of the runoff and in sequence. However, the Manual stipulates that in England and Wales, reference should be made to local planning documents to identify if any further protection is required for sites due to habitat conservation and that the implications of development on or in close proximity to such sites, e.g. SSSIs, should be considered via consultation with Natural England. In addition, the Manual states that "*discharges from some land uses (e.g. industrial sites) may be considered particularly high risk, in which case the drainage system will need to be designed to meet the requirements established by a site-specific risk assessment and agreed with the environmental regulator*".

In light of the above advice provided in the SuDS Manual and as part of the Council's appropriate assessment, a series of questions were raised and further clarification sought regarding the drainage strategy from the applicant. These were stated in an email to Dr Hopkins from Kerys Witton (NNDC, Landscape Officer) on 17th June 2021 and discussed further in a telephone conference call between the two parties and also Jake Lambert (Bidwells, planning agent for the applicant) on 25th June 2021. A follow up response and additional documents were subsequently received, including comments specifically on the drainage strategy from the applicant's consulting drainage engineer (BMF Consulting) which are presented in Appendix 1 of the document entitled '*Additional Information Regarding the Draft Habitats Regulations Assessment Following the 'Conference Call' of 25 June 2021*' dated 2nd July 2021.

With respect to the design of the drainage strategy and the question as to whether the surface water drainage strategy is appropriate to the risk presented by the day to day operation of the HGV haul road and the expected run-off from the service yards, warehouse roof and silos associated with the expansion of the maltings, the applicant's consulting drainage engineer has stated that "*the SW*

design provides treatment to surface water runoff from rainfall which will include pollutants that are present on the drained surfaces. An example of this is hydrocarbons on roads deposited by vehicles or debris/dust/soil wash off" ... "the ethos of the SuDS Manual is about treating these known pollutants using tried and tested features to avoid downstream impacts and hence it is not necessary to undertake detailed assessments or impacts unless there is a potential contaminant that is not covered". In the response to the queries raised by the Council, the drainage engineer has sought to clarify why the Drainage Strategy is acceptable and complies with the CIRIA SuDS Manual. For example, with respect of justifying the use of the Simple Index Approach in determining the hazard posed by the development, the drainage engineer states that "*the land uses are appropriate, e.g. roads, commercial roofs, service yards parking etc. The review as identified* low *risk areas discharging to ground water and* low *to* medium *areas discharging to water courses, and the method is therefore valid. It is noted that other uses may increase the risk index, but this can be mitigated by additional features. The reference to a risk assessment is unquantified, mainly, as included in the reports, higher risks could occur and can be mitigated... Any assessment has to be appropriate to the scale and risk, this development, in terms of SW drainage is small with comparable low pollutant levels of known characteristics"*. The approach taken by the drainage engineer in designing the drainage strategy therefore suggests that the type and level of pollutants expected from the drained surfaces are not considered to be either unusual or excessive in quantity to such a degree as to warrant a detailed assessment as prescribed in the CIRIA SuDS Manual.

The engineer does acknowledge that the "*only potential unknown hazards are from the commercial processes, which should be covered by the EA and PPC permit as even accidental discharge to the SW system should be considered as part of that scope*". This suggests that there are potential hazards arising from the proposed land use (the commercial processes) that have not been accounted for in the surface water drainage design, but that these will be considered as part of the PPC permitting process. In the response from the drainage engineer, it is not clear whether the potential unknown hazards relate solely to accidental discharges or to the day to day operation of the maltings, or both, and whether these have been accounted for in the drainage strategy? Although the drainage engineer does indicate that the use of shut off valves can be employed in the drainage system to prevent pollutants entering the system or water course and that higher treatment values and additional measures can be provided without requiring significant additional land.

The EA (letter dated 16/03/21) have suggested that in addition to the SuDS proposals, physical and management measures recently implemented to the existing surface water drainage system to address phosphate pollution arising from the operational activities at the site should be employed in the proposed drainage system, but it is unclear whether these measures have been included as part of the drainage strategy. In addition, the current PPC permit does not place any restrictions on the quality of the water arising from the surface water drainage system and subsequently discharged into the tributaries of the River Wensum, and only requires the operator to take action after a pollution event occurs. The applicant has placed substantial weight on the PPC permitting process to ensure that the surface water drainage is of a sufficient quality to prevent adverse impacts on the river, but this does not take into consideration that the PPC permit does not monitor the levels of pollutants entering the river (or the contribution this may have to phosphate levels in the river or overall levels of phosphate arising from the Maltings Plant) and can only require the operator to take action after a pollution event has occurred.

The CIRIA SuDS Manual provides guidance in the form of a Table on how to determine the minimum water quality management requirements for discharges to receiving surface waters and groundwater (Table 4.3 of the CIRIA Manual, replicated in Figure 3 below). It is evident that the applicant is placing the proposed development in either the *low* or *medium* land use pollution hazard level categories which would appear to justify the *Simple Index Approach* in the design of surface water drainage strategy. However, while it is acknowledged that the CIRIA Manual states that most

sites will fall into the low risk categories, the guidance in Table 4.3 does list sites with heavy pollution such as haulage yards, lorry parks and highly frequented lorry approaches to industrial estates as a land use with a *high* pollution hazard, and that these discharges may require an environmental licence or permit and that risk assessment is likely to be required. The development does fall into the category that an environmental permit is required, therefore it is questionable that the applicant has not sought pre-permitting advice of the environmental regulator or undertaken a detailed risk assessment for the drainage strategy design.

TABLE 4.3 Minimum water quality management requirements for discharges to receiving surface waters and groundwater

Land use	Pollution hazard level	Requirements for discharge to surface waters, including coasts and estuaries[2]	Requirements for discharge to groundwater
Residential roofs	Very low	Removal of gross solids and sediments only	
Individual property driveways, roofs (excluding residential), residential car parks, low traffic roads (eg cul de sacs, home zones, general access roads), non-residential car parking with infrequent change (eg schools, offices)	Low	Simple index approach[3] *Note: extra measures may be required for discharges to protected resources[1]*	
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	Simple index approach[3] *Note: extra measures may be required for discharges to protected resources[1]*	Simple index approach[3] *Note: extra measures may be required for discharges to protected resources1* In England and Wales, Risk Screening[4] must be undertaken first to determine whether consultation with the environmental regulator is required. In Northern Ireland, the need for risk screening should be agreed with the environmental regulator.
Trunk roads and motorways	High	Follow the guidance and risk assessment process set out in HA (2009)	
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured, industrial sites	High	Discharges may require an environmental licence or permit[3]. Obtain pre-permitting advice from the environmental regulator. Risk assessment is likely to be required[5].	

Figure 3 Table 4.3 extracted from CIRIA C753, The SuDS Manual (Woods Ballard, B et al *CIRIA 2015)*

The drainage engineer has stated that the potential unknown hazards arising from the commercial processes will be covered by the EA/PPC permitting process, therefore it is clear that a new or modified PPC will be required for the development (this has been confirmed by the EA but not made clear within the planning application/Shadow HRA). As noted previously, the current PPC permit is restricted to activities contained within the land as shown on Schedule 7 of the permit, which does not extend to the development site area being considered as part of the two planning applications. The current PPC permit identifies two emission points: W2 – site drainage from site via an interceptor

and W3 – site drainage, these emission points are to tributaries of the River Wensum. No limits or parameters are set for the discharge points on the current PPC permit therefore the PPC does not monitor the quality or quality of the discharge from the current surface water drainage system. Therefore, if the PPC is modified or renewed to include the development proposals, it is not clear if the water being emitted will be of sufficient quality as to avoid any adverse effects on the river or how or if this will be monitored by the EA because the current permit does not monitor the surface water drainage emission points.

It is noted that both the Environment Agency (EA) and Natural England (NE) have provided comment on the planning applications. The EA have "*no objections in principle to the proposals*" however, have stated that the proposals will involve substantial changes to the current [PPC] permit and that any new activities associated with the proposals should not take place until the permit variations have been considered and approved "*when and if they are deemed acceptable*". This response suggests that there are no assurances that the EA would permit the proposed activities. Again, NE stated no objection to the proposals subject to securing "*appropriate*" mitigation measures without which they consider that the development proposals would have an adverse effect on the integrity of River Wensum Special Area of Conservation and damage or destroy the interest features for which River Wensum Site of Special Scientific Interest has been notified. The 'no objection' response from NE relies heavily on securing mitigation measures which are effective (i.e. appropriate) and which they considered to be those stipulated in the Shadow HRA. However, it is not conclusive that the surface water drainage system has been designed in accordance with the CIRIA SuDS Manual guidance and therefore could be considered an 'appropriate' mitigation measure. As part of the HRA process, NE will be sent a copy of this appropriate assessment for comment. If it cannot be comprehensively and conclusively demonstrated in the appropriate assessment that any discharges or emissions arising from the development proposals will not enter or adversely effect the River Wensum SAC or SSSI then the precautionary principle should be applied and the proposals should be considered under a worst case scenario, which in respect of the surface water drainage strategy could mean requiring a detailed risk assessment to inform the mitigation requirements.

In addition, concerns have been raised regarding the effectiveness of the drainage strategy to deal with flood events. Surface water flooding is shown to occur in the location of the proposed attenuation basin (Network 3) and during extreme rainfall events the proposed drainage infrastructure will exceed capacity and excess surface water will surface flow towards the receiving water course (Section 5.10.1 Appendix 10.1 ES). This could potentially lead to contaminated and polluted water (such as from HGVs) entering into the River Wensum SAC. The Flood Risk Assessment (FRA) and surface water drainage strategy states that this will not present an enhanced risk to the wider catchment. However, as the full details of the development are unknown at this stage and if the development includes high risk activities, such as HGV parking, this could result in contaminated surface water entering the river in extreme rainfall events.

In response to this concern, the applicant's drainage engineer provided a response (dated 13th August 2020), which states that the drainage strategy has been designed for events with a probability of occurring up to 1 in 100 years (plus climate allowance) and that during such extreme events there would be significant flooding in the catchment. This would result in any contaminants on the site being significantly diluted by the high run-off volumes and are "*very unlikely to result in any lasting elevated pollutant values even if they are not retained by the design features*".

The Lead Local Flood Authority (LLFA) have provided comment on the Flood Risk Assessment (FRA) and surface water drainage strategy. Although initially objecting to the development proposals, the LLFA subsequently withdrew the objection as the applicant provided an amended FRA and Drainage Strategy which took account of the local flood risk issues and surface water

drainage at the location, together with the submission of a Surface Water Maintenance Plan that sets out measures to maintain the proposed surface water drainage system to ensure its functionality and operation (Appendix 10.3A of ES Addendum). While it is acknowledged that the removal of an objection from the LLFA is reassuring with respect to the flood amelioration aspects of the strategy, it is not clear in the LLFA response whether they have considered water quality, and any potential effects on receiving water bodies, as part of the assessment of the surface water drainage strategy.

Furthermore, the Council have raised concerns over the adequacy of the IDB drainage network outside of the development site (downstream of the discharge points) and the ability of the network to accommodate additional flows that may arise from the development proposals. Previous concerns have been highlighted by the IDB about the capacity of the network, and as part of a 2015 planning application at the site (ref. PF/15/0837), an issue arose over an IDB culvert that takes the receiving water from development site as being unfit for purpose and without capacity to take additional flows. The IDB stipulated that additional flows generated by development at Crisp Maltings should be attenuated on site and released at greenfield run-off rates. The surface water drainage strategy for the development proposals have accounted for this and the IDB have subsequently provided a *Notice of Intention to Grant Consent* (dated 14th May 2021), subject to conditions, for an application by Crisp Malting Group Ltd to discharge surface water run-off from their site based on the indicative surface water drainage strategy and a discharge rate of 10.69 l/s. However, the applicant has not formally accepted the conditions therefore the *Notice* is no longer valid. The letter from the IDB does state that the *Notice* should provide assurances that, at the time of the submission, the IDB considered that the catchment had capacity for the proposals. The *Notice* also stipulates that the IDB would not have ongoing maintenance responsibilities for the drainage system served by the connection point from Crisp Maltings (the outfall) and that it would be the responsibility of Crisp Maltings to ensure that the responsibility for ownership, maintenance and operation of each and every element of the drainage system served by the outfall is clearly defined.

The outline elements of the development proposals retain a level of uncertainty about the precise nature and quantity of the potential pollutants and level of risk. However the applicant has suggested that effective mitigation measures can be put in place to deal with the specific risks associated with accidental releases, but that these will need to be assessed at the detailed reserved matters stage. The applicant's drainage consultant has stated that all potential contaminants have been considered as part of the Drainage Strategy and although the final mitigation measures will be dependent on the final processes and use on the site, the mitigation measures can be designed accordingly to "*fully mitigate against such impacts once the final processes and uses are agreed*" (Appendix 1, Hopkins, July 21). However the drainage consultant has also indicated that there are potential unknown hazards associated with the commercial processes but that these will be covered by the EA/PPC permitting process.

The 'Shadow HRA' considers that the accident management measures are sufficient to conclude that accidental releases can be contained to a level where it can be reasonably concluded with sufficient confidence, that accidental releases will not impact the site integrity of the River Wensum SAC.

Relevant guidance suggests that in order to avoid an adverse effect on integrity, the conservation status of a habitat must, if favourable, be preserved and, if unfavourable, must not be further harmed or rendered more difficult to restore to a favourable status (Tyldesley, D. and Chapman, C., 2021). Furthermore, '*integrity*' is defined as the coherent sum of the site's ecological structure, function and ecological processes across it's whole area, therefore the effects of the development on site integrity must be considered across the whole site. Although the SSSI units for River Wensum near to the Maltings site (48 and 49) are currently in *unfavourable-no change* condition, a large proportion of

the SSSI is either in *unfavourable-recovering* or in *favourable* condition (48% in *unfavourable-recovering* and 11% in *favourable* condition). In addition, in 2015 the conservation condition of the River Wensum SAC was recorded as *good* according to the Natura 2000 Standard Data Form. This suggests that there has been some success in the conservation efforts aimed at restoring the river to favourable conservation status and that any subsequent consents should not undermine these efforts.

The conservation objectives for the Annex 1 feature H3260 of the River Wensum are to ensure that the in-channel vegetation is dominated by named species; that flows are sufficient to sustain natural river processes; that spring flows should be maintained; and that the river substrate should continue to be clean gravels. This HRA has determined that polluted water discharging from the development into the River Wensum would undermine these conservation objectives through changes in the vegetation structure and the river substrate, affecting the extent and distribution and the supporting processes of the feature. Although, elements of the mitigation proposed for the project (such as the Emergency Preparedness and Response Plan and aspects of the drainage strategy as outlined above) should, in normal circumstances, prevent accidental releases of pollutants from entering the river and undermining the conservation objectives, there remains an element of uncertainty regarding the potential pollutants and level of pollutants that could arise as part of the outline aspects of the development and also regarding the efficacy of the surface water drainage system or reliance on the Environmental Permitting process to prevent adverse effects occurring.

In light of the *Dutch Nitrogen* cases and the earlier domestic case of *R(Preston) v Cumbria County Council* [2019] EWHC 1362 (Admin), the existence and powers of the Environment Agency, cannot, without more, be regarded as being objective information which is sufficiently certain to establish that there would not be a potential significant effect. Also, the *Dutch Nitrogen* cases establish generally that mitigation cannot be taken into account if it is “uncertain” at the time of the appropriate assessment, including where the mitigation measures have not been identified and quantified with certainty.

In light of *Wyatt*, the Council must, prior to authorisation, be satisfied that there is no reasonable scientific doubt as to the absence of adverse effects of each plan or project on the integrity of the site concerned, which requires application of rigorous scientific principles to the endeavour. To summarise, the Council requires the following questions to be adequately addressed in order to have sufficient information to appropriately assess the impact of the development and the effect on the integrity of the River Wensum:

1) Is there a clear understanding as to what type of pollutants, and the quantity of these pollutants, that could be expected to occur and enter the surface water drainage system, either accidentally, during extreme weather events, or under normal circumstances, as a result of project?
    a. In the main, the applicant has demonstrated the type and quantity of pollutants that are likely to occur as a result of the development, however, there remains some uncertainty over the outline aspects of the development in terms of potentially high risk activities such as HGV parking and unknown hazards from the proposed commercial processes.
2) Is there a clear understanding of how the surface water drainage system will contain and treat any pollutants that may enter the surface water drainage system?
    a. Although the Drainage Strategy submitted by the applicant is indicative at this stage, the Drainage Strategy is reasonably clear as to how it will function for the detailed elements of the application. There remains some uncertainty over the outline aspects of the development, although the applicant has indicated that additional treatment measures can be incorporated into the strategy if necessary.

	3) Does the surface water drainage system meet with industry best practice (i.e. CIRIA SuDS principles)? a. There remains some uncertainty that the water quality management requirements and land use and pollution hazard levels, as specified in the SuDS Manual, have been correctly applied in the methodology/design of the Drainage Strategy. 4) In the case of accidental spills, can these be prevented from entering the river? a. The evidence suggests that under normal circumstances accidental spill events can be controlled, attenuated and cleared in accordance with an Emergency Preparedness and Response Plan and prevented from entering the river system. However, there remains some uncertainty over the outline aspects of the development in terms of potentially high risk activities such as HGV parking and unknown hazards from the proposed commercial processes. 5) Do the expected pollutants arising from the development present such a high degree of risk that should the mechanisms to prevent those pollutants entering the river fail, cause significant harm and affect the ability to meet the conservation objectives for the river? a. The type of pollutants that could occur from the development are such that should they enter the water course would undermine the ability to meet the conservation objectives for the River Wensum SAC. Case law has established that all 'mitigation measures' should be effective, reliable, timely, guaranteed to be delivered and as long term as they need to be to achieve their objectives, in order to be taken into consideration as part of the appropriate assessment and integrity test. Because of the level of uncertainty that remains regarding the proposed mitigation measures, i.e. the effectiveness of the surface water drainage system, and the outline elements of the development and because of the sensitivity/status of the receiving water body, the precautionary principle should be applied. Based on the best available evidence, there is the potential that the surface water discharges arising from the development (either accidentally or through the normal day to day operation) could contain pollutants that could further harm, or make it more difficult to restore, the river to favourable status and would result in an adverse effect on the integrity of the River Wensum SAC. It has not been demonstrated comprehensively or conclusively at this stage in the process that the proposed measures to prevent this happening will be adequate to mitigate the potential impacts.
3	**Increase in waste water quantity requiring treatment and subsequent discharge into surface water leading to a reduction in water quality**
	The effluent treatment process is designed to reduce the potential pollutants within the process water to acceptable levels to ensure that when discharged into the River Wensum an adverse effect on the integrity of the river is avoided. The effluent treatment process therefore acts as a mitigation measure for the proposed increase in output capacity for the day to day operation of the development. As stated previously, in order to be deemed *mitigation* and applied in the integrity test, the measure must be effective, reliable, timely, guaranteed to be delivered and as long term as it needs to be to achieve the objective. With regard to the impact of the development on the River Wensum, Section 9.93 of the ES Addendum concludes that the magnitude of impact is *negligible* with *negligible* significance. This conclusion appears to be based on the assumption that the future operations of the Maltings will operate under the current PPC permit, which has been assessed by the Environment Agency (EA) and concluded to have no adverse effect on the integrity of the River Wensum. However, the ES does not state specifically that the expansion of the Maltings facility will be able to be undertaken under the current PPC permit.

As part of the appropriate assessment section of the 'Shadow HRA', the assessment states that effluent from the development will be treated within the current licencing regime and the PPC permit which has already been subject to an appropriate assessment within the *River Wensum Site Action Plan*. The 'Shadow HRA' therefore concludes an impact on the integrity of the River Wensum would not occur subject to adhering to the PPC permit.

The LPA does not concur with the conclusions of the both the ES and the Shadow HRA as the increase in the output of the maltings process will require either a modified or a new PPC permit therefore additional assessment under the Habitats Regulations is required and previous assessments cannot be relied upon. Previously when additional development occurred on the site, it appears that the changed process operated for nearly two and a half years before the permit was updated. The permitting body, the EA, in their letter (May, 2020) confirm that the extensive expansion proposals would involve substantial changes to the current permit and that any new activities should not commence until the permit variations have been considered and approved "*when and if they are deemed acceptable*". This introduces uncertainty as (a) the requisite permit is not in place; (b) it is clear any variation of the existing permit would be extensive; (c) the timeframe in which such a variation could realistically be obtained is unclear and (d) it is therefore unclear whether it would be reasonable to impose a condition preventing commencement of development or commencement of activities until the permit variations have been considered and approved.

During a previous review of the PPC permit by the EA, the EA stipulated that is was not possible to rule out adverse impacts on the River Wensum, due to elevated phosphate levels in the river, which resulted in a reduction in the permitted phosphate concentrations on the PPC permit. Any changes required to the PPC permit (or application for a new PPC permit) due to the expansion of the Maltings would require further assessment under the Habitats Regulations by the permitting body (the EA) but it is unknown at this stage whether a new/modified PPC permit would be based on existing permitted phosphate concentrations or changes to the permitted levels (because of the lack of up to date data provided on the current nutrient levels within the river) due to the concern regarding phosphate and other nutrient levels in the River Wensum. It therefore follows that it is unclear what mitigation measures would be required to meet future required permit levels as the permit levels are also unknown.

In the additional information provided by the applicant via Dr Hopkins (June and July 2021) much emphasis is placed on the implementation of additional plant, new technologies and efficiencies in the malting process and effluent treatment process that will improve the quality, and limit the quantity, of the treated effluent to be discharged into the river. Mitigation measures to regulate effluent volumes and nutrient levels include: additional buffer tanks to regulate discharge volumes to 1400m^3 per day; phosphate removal via various dosing and settlement technologies to reduce concentrations; water recovery technologies; and centrifuge technologies to reduce particulate levels and for the dewatering of sludge. Examples of such technologies have been provided in the submitted information including references to the Water Industry Journal website and GEA Environmental decanter lines. Dr Hopkins asserts that "more malt can be processed with the same effluent volumes and concentrations" (July 2021).

Based on the submitted information it is apparent that there is no certainty at this stage of the consenting process what the quantity of treated effluent will be as a result of the increase in maltings output or what the nutrient levels will be within that treated effluent. However, it is considered that the quantity of treated effluent will increase, although the applicant suggests that this increase can be stored in holding tanks and discharged at existing permitted levels. With respect to the quality of the treated effluent, while improved phosphate stripping technologies are available to reduce phosphates in the effluent and reduce particulate levels, the applicant has not provided any certainty

that the phosphate concentrations or suspended solids can be reduced to within the existing permitted levels.

Furthermore, the applicant suggests that it is the permitting body (the EA) that will decide what volume of treated effluent, and the concentrations of different compounds within the treated effluent, is acceptable through the permitting process. And, as part of that process, the EA will undertake an appropriate assessment which will include both in isolation and in combination impacts, and include the use of modelling and take into consideration other activities in the wider catchment (July 2021). The applicant has sought to satisfy the LPA that they consider that any future requirements of a new or modified PPC permit can be met through the use of water efficiency measures and improved technologies. The applicant states that "*there is a very high degree of certainty, with proven technology available, that the Crisp Maltings operations can be made more efficient with respect to water use and effluent management, and that this increased efficiency constitutes mitigation*" (July 2021). Furthermore, the applicant has stressed that there is currently some headroom in the existing PPC permit levels with respect to phosphorus levels and the quantity of treated effluent discharged. In addition, Dr Hopkins states that Crisp Maltings is not the major source of nutrient enrichment in the river and that waste water treatment works, agriculture and urban sources are major contributors and that as part of any future PPC permit application, the regulator (the EA) would undertake catchment-wide modelling to determine appropriate PPC levels.

This HRA has established that without mitigation, emissions to water arising from the maltings process is likely to have an adverse effect on the integrity of the River Wensum SAC.

This development will result in an increase in the maltings process and the output capacity of the plant, however:

- It has not been conclusively established how much the volume of effluent will increase by or what the quality (components) of that treated effluent will be;
- It has been established that new plant and structures will need to be installed as part of an improved effluent treatment system, and it is possible that a new discharge point may be required;
- It has not been conclusively established that an improved effluent treatment system can restrict the daily volumes of treated effluent discharge to within the existing permit level, or achieve the quality of treated effluent to within existing permit levels;
- It has been established that a new or modified PPC permit will be required;
- It has not been established that the existing permit levels for volume and quality will apply to a new permit or modified permit;
- In light of the *Dutch Nitrogen* cases and the earlier domestic case of *R(Preston) v Cumbria County Council* [2019] EWHC 1362 (Admin), the existence and powers of the Environment Agency, cannot, without more, be regarded as being objective information which is sufficiently certain to establish that there would not be a potential significant effect. Even with the information from Dr Hopkins based on the current PPC permit and potential future action by the Environment Agency, there is insufficient certainty to amount to an adequate mitigation measure;
- It is acknowledged that holding tanks and improved technologies can restrict discharge rates and improve the treatment process, but it has not been established that the proposed increase in the maltings output capacity can be realistically achieved if the maltings process has to be halted to allow discharge at existing permitted levels;
- It has been established that the existing maltings process and emissions to water are, in the main, operating within the existing permitted levels.

The amount of uncertainty raised in the above points brings into doubt the effectiveness and reliability of the mitigation measures. The LPA is therefore unable to take into account these

	mitigation measures in the integrity test until the uncertainties are addressed. It is not considered that Outline planning permission can be granted (either by reason of conditions and limitations to which outline planning permission can be made subject) as it is not possible to conclude that the development would not adversely affect the integrity of the River Wensum SAC.
4	**Increase in airborne particles or harmful chemical compounds (air pollution) due to operational combustion activities leading to a reduction in air quality**
	As a result of the lack of detail contained within the Shadow HRA and the ES regarding the impact of combustion emissions on the River Wensum, the LPA requested further information to help inform the HRA (email from Geoff Lyon, dated 30th April 2021, and copy of Draft HRA, dated May 2021, provided to applicant). The applicant, through their ecological consultant Dr Hopkins, subsequently provided additional information dated 1st June 2021. Dr Hopkins asserts that the expansion of the maltings plant to increase the output of the malting product would use the best available technology which would equal or improve levels of emissions to the current plant. Dr Hopkins states that the PPC Permit outlines the existing measures to minimise dust releases, which include cyclones and fabric filters, and that any changes in releases as a result of the expansion would be negligible. This information would infer that dust emissions can be controlled and limited by existing technology and that impacts on the River Wensum from dust particles are not considered to be sufficient to have an adverse effect on the integrity of the river. In addition, Dr Hopkins states that the monitoring standards for emissions to air are set by the PPC permit and should adhere to Environment Agency's MCerts Certification Scheme, and a copy of the most recent PPC permit was provided. The current PPC permit lists nineteen point source emissions to air, of which six are combustion emissions and the remaining are dust emissions. Two of the combustion emission sources have parameter limit levels set for oxides of nitrogen (as NO_2), whereas only one dust emission source (A42) has limits set for total particulate matter during high and sometimes low temperature production (set at 100mg/m^3 to be monitored annually). The two combustion source emissions that have parameter limits set are the CHP generation plant (emission point A3/A4 of the PPC permit) and the Wanson Thermal Fluid Boiler (operating on natural gas) (emission point A8 of the PPC permit). The limits set are 190mg/m^3 for the CHP plant and 100mg/m^3 for the Wanson Boiler, to be monitored annually. Dr Hopkins suggests that as part of the expansion of the maltings a new PPC permit would be required and that the "*best available technology*" would be installed to "*provide equal or improved emission levels*". Although the information from Dr Hopkins (dated 1st June 2021) suggests that the APIS guidance was used during the screening of the impacts on the River Wensum in the ES, the LPA considered that this was based on the impacts arising from road traffic emissions and not those for emissions arising from the combustion processes. Further questions were raised in an email from Kerys Witton (NNDC Landscape Officer) dated 17th June 2021, and discussed in a telephone conference call (25th June 2021), which were considered necessary to be addressed in order to complete the HRA. These are summarised below: 1. APIS states that specific advice should be sought as to whether the habitat (H3260) is sensitive to nitrogen oxides - this does not appear to have been undertaken for combustion emissions. The ES screens out impacts on the River Wensum on the basis that the threshold criteria identified in the NE guidance document for assessing road traffic emissions is not exceeded. Yet

this is not relevant with respect to emissions from other sources (e.g. the Maltings combustion processes) and does not address the site specific advice required for Critical Loads and Levels as stated in APIS website. There is no understanding as to whether the River Wensum is sensitive to elevated nitrogen oxides or any potential increases in nitrogen oxides arising from the combustion process?

2. Recent monitoring data is required to identify the level of emissions from the existing Maltings operations to establish if the existing limits are being met and what available headroom there is within the PPC target.

3. In Point No.15 (in the table) in Appendix 1 you state that the best available technology will be installed as part of the proposed Maltings expansion that will provide equal or improved emission levels. Can you confirm that there will be no increases in the levels of point source emissions to air arising from the proposed Maltings expansion (from 110,000 tonnes to 175,000 tonnes per annum and included as part of the hybrid planning application)?

In response to this and the telephone conference, another additional document, dated 2nd July 2021, was also submitted by Dr Hopkins.

In this document, *Additional Information Regarding the Draft Habitats Regulations Assessment Following the 'Conference Call' of 25 June 2021'* (2nd July 2021) Dr Hopkins provides the following information:

- *The PPC Permit provides a level of 100 mg/m^3 of oxides of nitrogen (expressed as NO_2). The accompanying report shows the levels to be an average of 79.2mg/m^3 and in the range 62.3 - 87.92 mg/m^3*
- *A concentration value for the CHP plant was not set in the original PPC permit, but only in the amendment of 09 March 2021 as once per year frequency at a level of 190 mg/m^3 of oxides of nitrogen (expressed as NO2). Monitoring has been commissioned but the data are not available.*

An independent MCerts certificate (dated 28/3/2020) for emissions testing of the Wanson Thermal Fluid Boiler stack was also provided (email from Jake Lambert, 5th July 2021). This illustrates that the level of oxides of nitrogen (as NO_2) emitted was within the permitted PPC level of 100mg/m^3 (the actual figure was 62.3 mg/m^3). No data or MCerts certificate has been provided for the CHP generation plant, which according to the information by Dr Hopkins is because the requirement to monitor has only recently been introduced as a result of the latest permit variation.

However, no additional information or confirmation was provided to address the questions raised in points 1 and 3 above.

The LPA has therefore no understanding as to:

• What the level of oxides of nitrogen are predicted to be emitted and released to the air as a result of the increase in the output of the Maltings facility (together with the existing operations, including the unmonitored sources of combustion listed on the PPC permit). In relation to the unmonitored sources of combustion, it is not known what pollutants these sources contribute to air quality issues, and if so how much pollution is caused, nor is it clear why these sources should be assumed to be mitigated by any future permit when they are not currently subject to any parameters or limits.

• What, if any, additional measures will be required to reduce levels of oxides of nitrogen being emitted to the air.

• What the implications are of any potential increases in emissions of oxides of nitrogen on the habitats and species features of the River Wensum SAC and what effect, if any, this would have on meeting the conservation objectives for the river, both alone and in combination with other

	sources of pollutants. Taking into account any specific advice provided regarding the current site relevant Critical Loads and Levels for the river. As above, in light of the *Dutch Nitrogen* cases and the earlier domestic case of *Preston,* the information from Dr Hopkins based on the current PPC permit and potential future action by the Environment Agency is not sufficiently certain to amount to an adequate mitigation measure, particularly as a significant number of point sources of emissions to air are not subject to any parameters or limitations in the current permit. The information required by the LPA to adequately assess the implications of the development on the River Wensum SAC, in view of the site's conservation objectives, is currently incomplete. The LPA cannot therefore determine without reasonable scientific doubt that airborne emissions from the proposed development will, either alone or in combination, have an adverse effect on the integrity of the River Wensum SAC.
5	**Increase in demand for water leading to increased abstraction volumes resulting in changes to the natural hydrological regime of the river**
	The 'Shadow HRA' states that any increases required in the quantity of water to be abstracted as a result of the proposed development will be under the current abstraction permit. The 'Shadow HRA' concludes that the control of the abstraction volume under the existing permit is considered to constitute mitigation. It is currently unclear how much additional water will be required for the expansion of the maltings output or if any additional water requirements will be able to be met under the existing water abstraction licence or if additional water sources will be investigated (e.g. mains water). The LPA requested further information to help inform the HRA (email from Geoff Lyon, dated 30th April 2021, and copy of Draft HRA, dated May 2021, provided to applicant). Dr Hopkins, subsequently provided additional information, this included the document entitled '*Responses and Additional Information Regarding the Draft Habitats Regulations Assessment*' dated 1st June 2021, a summary of the *Environmental Water Management Strategy* for the maltings, an extract of the Abstraction Licence (taken from the *Gov.uk* website) and borehole abstraction data (monthly abstraction rates from January 2019 to April 2021). Dr Hopkins states that the abstraction volume for 2018 was 414,392m^3, for 2019 it was 415,302m^3 and for 2020 the figure was 338,730m^3 (June 2021). The borehole abstraction data provided (excel spreadsheet) illustrates that the maltings is currently operating within its existing annual abstraction limit, at appropriately 90% capacity of the abstraction licence limit. Dr Hopkins (June 2021) suggests that the typical water requirements per metric tonne (MT) of finished malt product is 3.7m^3 and indicates that a simple extrapolation of this requirement would suggest that an additional 222,000m^3 of water is required to meet the maltings expansion requirements. This would clearly not be possible within the remaining headroom of the existing permit. However, Dr Hopkins states that this additional water requirement does not take into consideration the water efficiency technologies that could be employed in the new plant to reduce the water requirements. Furthermore that world leading new malting plants can achieve a water ratio in the range of 2.0 to 2.5m^3/MT of finished malt (although this is dependent on a number of variables such as the type of finished malt required, barley variety and/or harvest and ambient conditions). A number of water efficiency/re-use technologies are provided as examples of what is currently available in the industry and as such Dr Hopkins indicates that there is a high degree of confidence that substantial water use efficiency measures can be implemented for the development. The LPA considers that this would constitute mitigation. It is not clear whether these technologies can be retrofitted to the existing plant or whether they can only be implemented as part of the infrastructure required for the expansion of the maltings facility. Therefore a definitive figure on water consumption

requirements for increasing the output of the maltings facility from 115,000 tonnes to 175,000 tonnes per annum has not been provided.

Dr Hopkins states (June 2021) that any requirement for an increase in abstraction will be assessed by the permitting body (the Environment Agency) as part of any future modification to the existing abstraction licence, thereby suggesting that the current abstraction licence will need to be modified and the development cannot be undertaken within the existing licence (as stated in the Shadow HRA). Dr Hopkins further states that the current abstraction licence was subject to an Appropriate Assessment by the Environment Agency and that potential impacts on the River Wensum SAC were identified in combination with other abstraction licences (over 70) but not in isolation and cites the document '*River Wensum SAC – Site Action Plan, Version 5'* by R. Rees and I. Pearson (Environment Agency, 2010) as the source of this information. The *River Wensum SAC - Site Action Plan* is an unpublished document and this LPA has not been provided with the document to verify the information or assess the detail of the abstraction licence's appropriate assessment. As above, in light of the *Dutch Nitrogen* cases and the earlier domestic case of *Preston,* the information provided and the potential for future action by the Environment Agency is not sufficiently certain to amount to an adequate mitigation measure.

Dr Hopkins asserts that ecological data suggest that the development site is not in a "*disproportionally sensitive location with respect to abstraction in the catchment*", with SSSI flow indicators for units downstream of Great Ryburgh compliant and macroinvertebrate assemblages in *good condition* in respect of any sensitivities towards low flows. Furthermore, that there are no SAC land parcels identified as being at *medium* risk from water abstraction and relevant for Desmoulin's whorl snail within 3km of the maltings extraction point, although it is within 2km of *low* risk land parcels (again citing Rees & Pearson as the source of this information).

With respect to the effects of any increase in water abstraction (as part of the existing or a modified Crisp Maltings Licence) on the ability to meet the conservation objectives of the SAC, Dr Hopkins states that the existing licence was previously [appropriately] assessed and any subsequent abstraction licence application would also undergo a similar assessment. Furthermore, that this assessment would take into consideration water efficiency measures in operation at the existing and/or proposed plant and also additional factors such as the "*current level of abstraction versus current licencing*". Dr Hopkins cites the Diffuse Water Pollution Plan, stating that the modelling undertaken by the Environment Agency for the Review of Consents concluded that "*in relation to the Fakenham and Swanton Morley gauging stations, although the river is* 'over-licensed' *at the present time, it is not* 'over-abstracted'" (Paragraph 6.3.2).

However, the LPA notes that the DWPP goes on further to state that the over-licensed issue "*could be addressed through a policy of 'claw back' as licenses come up for renewal*". So while it is acknowledged that the Maltings is currently operating below its current abstraction licence limit and that the Maltings industry is continuing to make advances in reducing water consumption and improving water efficiencies in its processes, the potential water requirements of the Maltings expansion is likely to exceed any remaining abstraction headroom in the current licence. Furthermore, that on review, there is no guarantee that additional abstraction capacity will be granted given the in combination effect of abstraction on the river and the 'over-licenced' status of the river.

As a result of these concerns expressed by the LPA (in an email from Kerys Witton (NNDC) to Dr Hopkins dated 17th June 2021), and during the telephone conference call of the 25th June 2021, Dr Hopkins notes that in theory Crisp Maltings Group could use mains water to ensure abstraction from Crisp's own boreholes is not increased. However, the LPA consider that this is not a long-term feasible mitigation option given the cost of sourcing mains water for the maltings process.

	In the document, *Additional Information Regarding the Draft Habitats Regulations Assessment Following the 'Conference Call' of 25 June 2021'* (2nd July 2021) Dr Hopkins states that the technology exists to both reduce the volume of water required during processing and also re-use water within the operational processes so that more malt can be produced with less water. Furthermore, that the permitting regime will be decided by the Environment Agency, who will decide what level of abstraction is suitable and will undertake an Appropriate Assessment (utilising a range of modelling methods and including other abstraction activities in the wider catchment) to consider both in isolation and in combination impacts. Dr Hopkins concludes that "*there is a very high degree of certainty, with proven technology available, that the Crisp Maltings operations can be made more efficient with respect to water use ... and that this increased efficiency constitutes mitigation. This means that they could process more malt within the current PPC and abstraction regimes*". Based on the information submitted by the applicant to inform the HRA, there is currently no certainty as to what the water consumption requirements will be for the development (increase in maltings output by 60,000 tonnes per annum), however it is acknowledged that water efficiency and re-use technologies exist that can reduce the amount of water required per unit of processed malt. It is not clear however if these measures can be retro-fitted to existing production measures or if these apply only to the expansion of the maltings process, which will affect how much water will be required and whether there is sufficient headroom in the current abstraction permit to meet the demands, or if not how much additional water will be required as part of a future abstraction licence application. It is not clear what the implications are of increasing the abstraction quantity/rate on the habitats and species features of the River Wensum SAC and what effect, if any, this would have on meeting the conservation objectives for the river, both alone and in combination with other abstraction requirements. The LPA has no understanding as to whether any additional abstraction requirements for the development will affect the flow targets required to attain high ecological status, which are required to be met to avoid deterioration and for restoration, in accordance with the River Basin Management Plan. The LPA cannot therefore determine without reasonable scientific doubt that any additional water abstraction requirements to serve the proposed development will, either alone or in combination, have an adverse effect on the integrity of the River Wensum SAC.
6	**In combination effects of emissions to water and air, and effects of abstraction leading to a reduction in water and air quality and natural flow regimes.**
	The Shadow HRA references the last condition assessment of the River Wensum SSSI (those units within the SAC) by Natural England (data from the '*River Wensum SSSI – Exemplar Diffuse Water Pollution Plan and Action Plan*' 2015), stating that the river was at the time of the assessment in '*Unfavourable Condition*'. The reasons stated for this included: inappropriate water levels; inappropriate weirs and dams and other structures; invasive species; siltation; water abstraction; water pollution (agricultural run-off); and water pollution (discharges). The Shadow HRA further cites the '*River Wensum SAC Site Action Plan*' report by Rees and Pearson (2010) which provides the details of the water discharges to, and abstractions from, the River Wensum SAC from various sources and summarises the appropriate assessments for the various pathways of potential impact that result from these discharge/abstraction points. As noted previously, the LPA has not had access to or seen this document. However, the Shadow HRA states that this document suggests that the appropriate assessment for the Crisp Maltings PPC permit did not identify an adverse effect on [SAC] site integrity alone but did in combination, based on levels of phosphorous exceeding targets as determined via modelling. In addition, the Crisp

	Maltings Abstraction Licence is one of 71 abstraction licences '*for which there may be an in-combination impact*". In addition, it is established that the H3260 habitat feature of the River Wensum SAC is sensitive to airborne nitrogen deposition, which together with other sources of phosphate and nitrogen pollution could result in river eutrophication. With respect to water pollution, air pollution and abstraction, this HRA has been unable to determine that an adverse effect on the integrity of the River Wensum will not occur as a result of the development alone. The Shadow HRA references documentation which would indicate that in combination effects could arise from other consented discharge and abstraction points. Furthermore, it is acknowledged phosphate pollution derived from agriculture is a significant pollutant for the River Wensum and that the orthophosphate level targets are exceeded at most monitoring sites. Mitigation measures such as catchment and land management initiatives are required to meet the conservation objectives for the site. The Shadow HRA suggests that an adverse effect on the integrity of the River Wensum will not occur as a result of the development alone due to the cited mitigation measures and does not therefore assess the in combination effects of the development with other plans or projects. The LPA does not therefore have sufficient information to determine without reasonable scientific doubt that the proposed development will not, in combination with other plans or projects, have an adverse effect on the integrity of the River Wensum SAC.

Will the mitigation measures listed above reduce the effect of the plan or project so that the integrity of the European Site is not adversely affected?

~~Yes~~	~~Proceed with application ensuring that mitigation measures are embedded with any planning consent granted~~
~~No~~	~~Seek legal advice before proceeding further~~
No/Unsure/Unclear	**1. Consult Natural England (under Regulation 63(3)); then** **2. Ask for additional information/clarification from the applicant, having had regard to any representations made by Natural England; then** **3. Return to stage 2 to repeat the assessment.**