

Place Shaping Policy Development Panel

Agenda

Members of the Panel:

Cllr S Lawn (Chairman)
Cllr N Brennan
Cllr S Clancy
Cllr N Harpley
Cllr D Harrison
Cllr L Laming

Cllr J Ward (Vice Chairman)
Cllr K Leggett MBE
Cllr R Potter
Cllr D Thomas
Cllr J Thomas

Cllr I Moncur (ex officio)

Date & Time:

Monday 11 July 2022 at 6.00pm

Place:

Council Chamber Thorpe Lodge, 1 Yarmouth Road, Thorpe St Andrew, Norwich, NR7 0DU

Contact:

Dawn Matthews tel (01508) 533633

Email: dawn.matthews@southnorfolkandbroadland.gov.uk

Website: www.southnorfolkandbroadland.gov.uk

PUBLIC ATTENDANCE:

If a member of the public would like to attend to speak on an agenda item, please email your request to committee.bdc@broadland.gov.uk, no later than 5.00pm on Wednesday 6 July 2022.

Large print version can be made available

If you have any special requirements in order to attend this meeting, please let us know in advance.

AGENDA

- 1. To receive declarations of interest under Procedural Rule no 8
(flow chart attached – page 3)**
- 2. Apologies for absence**
- 3. Minutes of the meeting held on 13 June 2022 (minutes attached – page 5)**
- 4. Matters arising**
- 5. Greater Norwich Local Plan Gypsy and Traveller Focused Consultation
(report attached – page 8)**

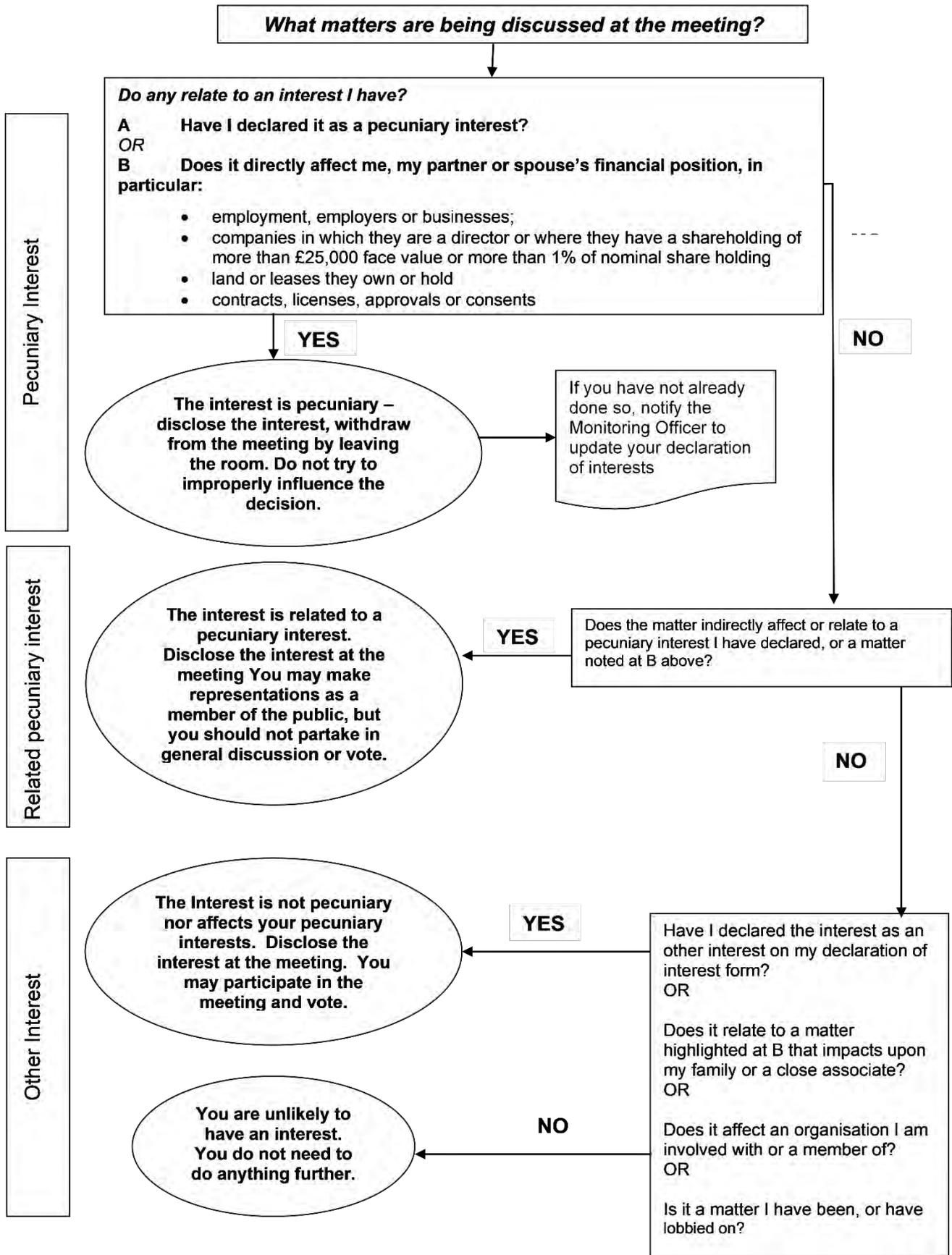
DECLARATIONS OF INTEREST AT MEETINGS

When declaring an interest at a meeting Members are asked to indicate whether their interest in the matter is pecuniary, or if the matter relates to, or affects a pecuniary interest they have, or if it is another type of interest. Members are required to identify the nature of the interest and the agenda item to which it relates. In the case of other interests, the member may speak and vote. If it is a pecuniary interest, the member must withdraw from the meeting when it is discussed. If it affects or relates to a pecuniary interest the member has, they have the right to make representations to the meeting as a member of the public but must then withdraw from the meeting. Members are also requested when appropriate to make any declarations under the Code of Practice on Planning and Judicial matters.

<p>Have you declared the interest in the register of interests as a pecuniary interest? If Yes, you will need to withdraw from the room when it is discussed.</p>
<p>Does the interest directly:</p> <ol style="list-style-type: none">1. affect yours, or your spouse / partner's financial position?2. relate to the determining of any approval, consent, licence, permission or registration in relation to you or your spouse / partner?3. Relate to a contract you, or your spouse / partner have with the Council4. Affect land you or your spouse / partner own5. Affect a company that you or your partner own, or have a shareholding in <p>If the answer is "yes" to any of the above, it is likely to be pecuniary.</p> <p>Please refer to the guidance given on declaring pecuniary interests in the register of interest forms. If you have a pecuniary interest, you will need to inform the meeting and then withdraw from the room when it is discussed. If it has not been previously declared, you will also need to notify the Monitoring Officer within 28 days.</p>
<p>Does the interest indirectly affect or relate any pecuniary interest you have already declared, or an interest you have identified at 1-5 above?</p> <p>If yes, you need to inform the meeting. When it is discussed, you will have the right to make representations to the meeting as a member of the public, but you should not partake in general discussion or vote.</p>
<p>Is the interest not related to any of the above? If so, it is likely to be an other interest. You will need to declare the interest, but may participate in discussion and voting on the item.</p>
<p>Have you made any statements or undertaken any actions that would indicate that you have a closed mind on a matter under discussion? If so, you may be predetermined on the issue; you will need to inform the meeting, and when it is discussed, you will have the right to make representations to the meeting as a member of the public, but must then withdraw from the meeting.</p>

**FOR GUIDANCE REFER TO THE FLOWCHART OVERLEAF.
PLEASE REFER ANY QUERIES TO THE MONITORING OFFICER IN THE FIRST
INSTANCE**

DECLARING INTERESTS FLOWCHART – QUESTIONS TO ASK YOURSELF



PLACE SHAPING POLICY DEVELOPMENT PANEL

Minutes of a meeting of the Place Shaping Policy Development Panel of Broadland District Council, held at Thorpe Lodge, 1 Yarmouth Road, Thorpe St Andrew, Norwich on Monday 13 June 2022 at 6pm.

Committee Members Present: Councillors: J M Ward (Chairman), N Brennan, E Laming, R Potter

Officers in Attendance: The Director of Place and the Democratic Services Officer (DM)

1 APOLOGIES FOR ABSENCE

Apologies for absence were received from Cllr Harrison, Cllr Lawn, Cllr D Thomas and Cllr J Thomas.

2 MINUTES

The minutes of the meeting held on 24 January 2022 were agreed as a correct record and signed by the Chairman.

3 CITY DEAL BORROWING AND THE ESTABLISHMENT OF THE GREATER NORWICH STRATEGIC INVESTMENT FUND

The Director of Planning introduced the report which provided the background to the City Deal borrowing and gave details of the governance, legal and administrative arrangements that would be required to support the proposed new fund.

The Director of Planning gave a high level overview of the purpose of the proposals which were essentially to create a borrowing facility so that the Greater Norwich Growth Board (GNGB) partners had the opportunity to drawdown funding to enable them to provide financial support to infrastructure projects within their jurisdiction. Repayments for the funding provided would then be taken from the pooled CIL funds (Infrastructure Investment Fund (IIF)) to which all partners contributed and so repayments to the Treasury would be from the shared "pot". The proposals needed support of all partners of the GNGB and also needed an accountable body which would be Norfolk County Council. Ultimately, when a developer/landowner repaid the funding provided to them via this facility, their repayments would be made to the newly established Strategic Investment Fund (SIF), thereby creating a recyclable pot of funding for future projects.

With regard to risks, at the stage of securing the borrowing facility there was no risk. The need to consider risk would occur at the point of drawdown from the Treasury via Norfolk County Council and would be for the particular partner authority to evaluate when considering whether or not to support a particular project. Any Broadland supported project would be subject to the normal Council decision making process.

A member raised a question as to what sort of projects would be able to access support from the newly created SIF which would not have been eligible for CIL money. The Director of Planning explained that the existing pooled CIL fund was bound by CIL regulations to be used for statutory infrastructure which was of a communal nature, i.e. projects that did not benefit a single landowner or developer. The new proposals would allow for support to be given to projects not meeting this criteria but which still had a wider benefit. An example was the potential project to provide a link road from the A47 to the Food Enterprise Park which, was considered to be important infrastructure but could not utilise CIL funds as it was seen to be benefitting one landowner/developer.

The member raised concerns that the new fund would be used for roads to open up development sites. The Director of Planning commented that the pooled CIL had been used for road projects but also for other projects including green infrastructure and community facilities. The member also asked if the £39m in the LIF was less than expected. The Director of Planning explained that £39m had gone into the fund to date, the majority of which had been allocated. The fund was likely to hold circa £22m by the end of the next financial year which would be the highest amount to date. It had been envisaged at the outset that CIL would generate a higher level of income than it had. In practice CIL had also been used as a tool to support government policy and achieve other ambitions such as neighbourhood plans and self-build projects which had an impact on the level of CIL funds.

The member asked whether the projected £74m forecast to be received in the IIF by March 2026 was realistic mindful of issues such as rising construction costs and nutrient neutrality. The Director of Planning stated that it was difficult to predict the likely fund value but the housing market was still buoyant, there were no signs of a downturn in the building industry and, with a degree of continued home working, there were still people moving to the area. The member raised concerns about the risks of a landowner/developer not being able to repay the loan and liability falling to the districts. The Director of Planning commented that any project coming forward would firstly have to be considered by the relevant partner council to examine the risk and would then be subject to approval by the GNGB. Provision would also be made in the legal agreement for the loan for safeguards such as the option to secure land in the event of a default on the agreement. The member also asked if, in the longer term, it was envisaged that the funds in the IIF would reduce as the SIF grew. The Director of Planning commented that CIL funds would continue to be added to the IIF as well as repayments made from it to the Treasury, effectively there would be a switch out of the IIF to the SIF.

In response to a question as to whether the funds were equally apportioned between partners, the Director of Planning confirmed that there was no apportionment of the fund, and that each partner authority could apply for any level of funding from the fund depending on the project. Any call on the funds

would need the approval of all partners of the GNGB. With regard to a question about potential overspend, the Director of Place commented that, depending on the project and who was delivering it, there was likely to be contingencies built in as was normal practice to deal with any overspend or unforeseen expenses.

It was then, with three members voting for, one abstention,

RESOLVED to RECOMMENDED

That Cabinet agrees and recommends that Council

1. Gives authority to Norfolk County Council, as the Greater Norwich Growth Board's Accountable Body, to drawdown up to £20m from the Public Work Loans Board to create a recyclable fund to support local infrastructure projects as agreed in the Greater Norwich City Deal, subject to the following conditions:
 - The loan is used to create a fund, which will accelerate the delivery of infrastructure projects within the parameters defined within Community Infrastructure Levy legislation.
 - Repayment to be made from the Infrastructure Investment Fund pooled CIL.
 - The fund will be available to any of the Greater Norwich partners acting as lead authority and secured in a borrowing agreement with Norfolk County Council, which will include an agreed repayment schedule and back stop date.
 - Repayments from the lead authority would be made into a new recyclable Strategic Investment Fund.
 - Due diligence and legal arrangements regarding the beneficiary project will be the responsibility of the lead authority.
2. Agrees the draft legal agreement that will commit future pooled Community Infrastructure Levy income as repayment against the drawdown of up to £20m through the Greater Norwich City Deal (amounts will be drawn in stages see Appendix E and F)
3. Subject to recommendation 2, upon each staged draw down totalling no more than £20m, the GNGB to be granted delegated authority to sign the legal agreement together with their s151 officers, under the direction of Norfolk County Council as the Accountable Body and in accordance with their signed Joint Working Agreement
4. Agrees that the GNGB be given delegated authority to manage the allocation of the City Deal borrowing and later, governance of the Strategic Investment Fund in line with the draft Terms of Reference - Appendix A and B.

(The meeting concluded at 6.25pm)

Greater Norwich Local Plan Gypsy and Traveller Focused Consultation

Report Author: Adam Banham
Principal Planning Policy Officer
01603 223229
adam.banham@norfolk.gov.uk

Portfolio: Planning

Ward(s) Affected: All

Purpose of the Report:

This report seeks Cabinet approval to undertake a public consultation about the possible allocation of Gypsy and Traveller sites in the Greater Norwich Local Plan (GNLP). The Gypsy and Traveller Focused Consultation contains three possible sites for allocation and creates another opportunity for landowners to put forward land that they want to promote – but only land for use as Gypsy and Traveller pitches. The proposed consultation would run between 25th July and 7th September and the results would then be considered by the independent inspectors who are running the examination of the GNLP.

Recommendations:

It is proposed that Place Shaping Policy Development Panel advises Cabinet to recommend to Council that it:

- approves a Focused Consultation on the Greater Norwich Local Plan (GNLP) proposed Gypsy and Traveller sites; and
- agrees to delegate authority to the Assistant Director of Planning, in consultation with the Leader and Portfolio Holder for Planning, to agree consultation materials prior to the public consultation.

1. Summary

- 1.1 In resolving to submit the Greater Norwich Local Plan for independent examination, Council agreed to “proactively identify and bring forward sufficient Gypsy and Traveller sites to meet identified needs in accordance with the criteria-based policies of the current and emerging Development Plans”.
- 1.2 During the examination of the GNLP, the appointed inspectors have indicated that they would require Gypsy and Traveller accommodation needs to be addressed through the allocation of sites. The allocated sites would need to appropriately provide specific deliverable sites for the 5 years between April 2022 and March 2027; and provide developable sites for the 5 years from April 2027 to March 2032; and, if possible, the 5 years from April 2032 to March 2037. Thereby bringing the GNLP in accordance with the expectations set out in paragraph 68 of the National Planning Policy Framework (NPPF).
- 1.3 No potential Gypsy and Traveller sites were proactively submitted to the GNLP for consideration prior to its submission for independent examination. Subsequently officers have undertaken a process of extensive proactive engagement and site assessment to identify suitable allocation sites.
- 1.4 This report seeks Cabinet’s agreement to undertake a Focused Consultation on three potential Gypsy and Traveller allocation sites that have been identified from this work. Furthermore, to ensure that the best and most appropriate sites are being chosen, the consultation gives landowners another chance to submit land for inclusion in the GNLP but this would be strictly limited to the promotion of Gypsy and Traveller sites.
- 1.5 The results of the Focused Consultation will be submitted to the independent inspectors who will take decisions about which Gypsy and Traveller sites to include in the GNLP. Based on discussions that have taken place at the GNLP examination hearing sessions so far, officers conclude that the appointed independent inspectors are highly likely to allocate Gypsy and Traveller sites in their consultation on the Main Modifications. This Main Modifications consultation is due to happen later in 2022 and represents one of the final steps in getting the GNLP to adoption.

2. Background

- 2.1 No sites for Gypsies and Travellers were submitted for consideration through the GNLP plan-making process between 2016 and its submission in July 2021. Three sites were submitted via the consultation for the South Norfolk Village Clusters Housing Allocations Plan in September 2021 but are not considered suitable allocation sites due to their past planning history.
- 2.2 When Council considered the possible submission of the GNLP in July 2021 it resolved specifically to “commit to proactively identify and bring forward

sufficient Gypsy and Traveller site to meet identified needs in accordance with the criteria-based policies of the current and emerging Development Plans”. This allowed the Gypsy and Traveller accommodation issue to be addressed through the examination hearings without adding undue additional delay to plan adoption.

- 2.3 The Greater Norwich Local Plan (GNLP) was submitted for independent examination on 30 July 2021. Mike Worden BA (Hons) Dip TP MRTPI and Thomas Hatfield BA (Hons) MA MRTPI are the inspectors appointed to carry out the examination of the GNLP. The role of the inspectors is to undertake an independent assessment of the overall “soundness” of the Local Plan and to verify that it satisfies the relevant statutory and regulatory requirements for its preparation. “Soundness” being the tests under paragraph 35 of the NPPF that the plan is positively prepared, justified, effective, and consistent with national policy.
- 2.4 As part of the submission of the plan, the councils formally requested that the appointed inspectors recommend such modifications to the plan as may be necessary to ensure legal compliance and soundness, in accordance with Section 20 (7C) of the Planning and Compulsory Purchase Act 2004 (as amended). Public hearings into matters arising from the Inspectors’ review took place during February and March 2022 and further sessions are being reconvened. For the Gypsy and Traveller site allocations public hearings are scheduled for the autumn.

3. Current position/findings

- 3.1 During the GNLP hearing sessions held so far, the inspectors indicated that they would require Gypsy and Traveller accommodation needs to be addressed through site allocations. In accordance with the expectations set out in paragraph 68 of the National Planning Policy Framework, the allocated sites should be able to deliver the required number of pitches for Gypsies and Travellers between April 2022 and March 2027; provide land with a reasonable prospect that it can be viably developed within the next 5-year timeframe from April 2027 to March 2032; and, if possible, the 5 years from April 2032 to March 2037.
- 3.2 Deciding how many Gypsy and Traveller pitches are required is a matter for the councils by gathering evidence. This evidence is then tested as part of the independent examination of the plan. Recently updated evidence has now been produced by RRR Consultancy on behalf of the councils. This evidence is being shared with the interested stakeholder. The evidence will then be submitted to the inspectors along with any further representations on it. As necessary, this evidence may then be the subject of discussion at the forthcoming reconvened autumn hearing sessions.
- 3.3 The new Gypsy and Traveller Accommodation Assessment (GTAA) shows that the Greater Norwich area requires a total of 50 residential Gypsy and Traveller pitches between 2022/23 and 2037/38, in addition to 27 pitches that already have planning permission but are yet to be constructed. Of the 50

pitches required between 2022/23 and 2037/38, it is anticipated at least 18 pitches should be identified through the local plan to satisfy the inspectors that plan-making guidance is being met as per the [Planning Policy for Traveller Sites](#) ('PPTS').

- 3.4 The definition used in the PPTS concentrates on Gypsies and Travellers who continue to travel and it is for those families that the 18 pitches would be allocated through the GNLP. The remaining 32 pitches identified relate to persons who ethnically identify as Gypsies and Travellers but who have ceased to travel. The PPTS does not specifically require local authorities to meet the needs of Gypsy and Travellers who have permanently ceased to travel. However, the criteria-based policy set out with Policy 5 of the GNLP allows for further windfall sites to come forward in suitable locations and those pitches could accommodate Gypsies and Travellers of ethnic background who have ceased to travel, as appropriate.

4. Proposed action

- 4.1 Three possible sites have been identified for inclusion in the Gypsy and Traveller Focused Consultation from 25th July and 7th September. A permutation of these sites is needed to fulfil the requirement of providing 18 pitches as site allocations; or all three sites could be allocated in full to provide 24 pitches which could count towards the overall need of 50 pitches. The three sites are:
- 4.2 **Cawston: GNLP5004, Land off Buxton Road, Eastgate, for approximately 4 pitches.** This is the only privately owned site promoted. The landowner put the site forward in winter 2021/22 when they became aware sites were still being sought for inclusion in the GNLP. The landowner has also stated their willingness to make the land available and as a relatively unconstrained greenfield site there is no reason why development could not come forward quickly.
- 4.3 **Costessey: GNLP5007, Land off Bawburgh Lane, north of New Road and east of A47. Incorporation of a Gypsy and Traveller Site into the Costessey Contingency Site, for approximately 18 pitches.** This site is a variation of the contingency site GNLP0581/2043, which measures 62 ha, and is being promoted as a residential-led urban extension of approximately 800 homes. Norwich City Council is a part owner in the land promoted as GNLP0581/2043 and would enable a Gypsy and Traveller site to be developed as part of the urban extension. However, a key issue is timing, as every effort will be necessary to accelerate this site's delivery, in terms of planning, finance, construction and its management arrangements. This is so the site can help provide the 10 pitches required by March 2027 to meet the 5-year PPTS need, and the further 8 pitches required for the PPTS need over years 6-10 up to March 2032.
- 4.4 **Wymondham: GNLP5005 Wymondham Recycling Centre, Strayground Lane, for approximately 2 pitches.** This site is owned by Norfolk County Council and is currently used as Wymondham Recycling Centre. Norfolk

County Council has announced its intention to move the recycling centre to another location and when this happens GNLP5005 could become available for redevelopment as a Gypsy and Traveller site.

- 4.5 The Focused Consultation on possible sites to provide residential pitches for Gypsies and Travellers is currently planned to take place between 25th July and 7th September 2022. It will give the opportunity for all interested groups and individuals to have their say on the proposed sites. The comments made will then be available for the inspectors to consider when deciding on which sites to go forward as allocations within the GNLP.
- 4.6 The three sites listed as part of the consultation represent the best and only alternatives that are currently known about, but this might change if landowners use the opportunity of the forthcoming consultation to put forward new land for Gypsy and Traveller sites. Giving this opportunity is important for demonstrating that all available sites have been considered throughout the plan-making process.
- 4.7 The full content of the Focused Consultation is provided in the five appendices that accompany this report. These documents are:
 - Appendix A: Gypsy and Traveller Focused Consultation Document
 - Appendix B: Gypsy and Traveller Site Assessment Booklet
 - Appendix C: Sustainability Appraisal of the Greater Norwich Local Plan Gypsy and Traveller Sites and Policies, by Lepus Consulting
 - Appendix D: Habitats Regulations Assessment of published Proposed Submission Greater Norwich Local Plan – Gypsy and Traveller Sites Addendum, by The Landscape Partnership
 - Appendix E: Housing and Economic Land Availability Assessment (HELAA) Addendum IV (June) 2022
- 4.8 The GNLP has been prepared with regard to the Public Sector Equality Duty, as defined by the Equality Act 2010, and this consultation represents a further positive step in meeting the Public Sector Equality Duty. Gypsies and Travellers are a key ethnic minority in the area and making specific site allocations will give added assurance that this group's housing needs are addressed in line with the requirements of the PPTS (Planning Policy for Travellers Sites).
- 4.9 Publicity relating to the consultation will be undertaken where appropriate in line with the Communications Protocol agreed by the Greater Norwich Development Partnership (GNDP) Board in 2017, updated in 2019. Cllr Shaun Vincent, as chair of the GNDP, will be the nominated spokesperson for all media. All media responses will be co-ordinated by the communications lead for the project, Broadland & South Norfolk Joint Marketing and Communications team, in liaison with other partners.
- 4.10 In the interests of efficiency, and continuing the successful approach taken at previous consultations, respondents will be encouraged to respond online, although written responses will also be accepted either by post or via

email. The GNLP team will facilitate anonymous comments in line with its previous approach, which was for them to be made via district councillors.

- 4.11 After the consultation closes in September, it is anticipated that the inspectors will hold a further hearing session. This will likely be in October during which time the inspectors will decide which sites are included in the Main Modifications consultation, and, subject to the outcome of consultation, are likely to be required to form part of the GNLP if adopted.
- 4.12 The consultation on Main Modifications arising from the examination is expected to be held over the winter 2022/23. Following this, the inspectors will produce a report including the main modifications required to make the plan sound. The councils will then have the choice to adopt the GNLP with the inclusion of inspectors' main modifications.
- 4.13 Given the time that has elapsed, the addition of the Focussed Consultation on Gypsy and Traveller sites, and the deferral of some hearing sessions means that adoption of the plan is likely to be at the end of April 2023, rather than September 2022 as previously anticipated.

5. Other options

- 5.1 If consultation is not undertaken on the potential allocations sites it will prevent the inspectors from undertaking a subsequent consultation on modifications likely to be necessary for the soundness of the GNLP. Therefore, choosing not to agree to undertake the proposed consultation carries a strong likelihood of the GNLP being found unsound. Officers do not consider that there is evidence to justify this option as reasonable.
- 5.2 Rather than seeking to enable the inspectors to modify the plan, and to allocate sites to meet the needs of Gypsy and Travellers, the GNLP could propose that a single-issue review is undertaken. However, it is not certain that the inspectors would accept this approach.
- 5.3 Moreover, even if it were to be acceptable in principle, officers have undertaken an extensive investigation into potential site for Gypsy and Travellers and it is considered unlikely that the site options to be contained within any single-issue plan would differ significantly from those proposed here. The production of a single-issue plan would also entail further time, cost and risk. The failure to allocate sites for Gypsies and Travellers in the GNLP would also continue the current absence of a 5-year land supply for Gypsy and Traveller Sites, which will impact on the Council's decision-making process. Therefore, officers would caution against this approach.

6. Issues and risks

- 6.1 Failure to consult on, and enable the allocation of, sufficient sites for Gypsy and Traveller accommodation is likely to carry a significant risk that the GNLP will be found unsound.

- 6.2 The timely adoption of the GNLP is an important element in ensuring that the councils continue to maintain an up-to-date development plan. Maintaining an up-to-date development plan is important to ensure that the identified development needs of Greater Norwich are effectively met and so that the councils can continue to give full weight to their planning policies in the determination of planning applications.
- 6.3 **Resource Implications** – The Focussed Consultation will be undertaken within the current GNLP officer resource and covered by the existing GNLP budget.
- 6.4 **Legal Implications** – The Council is obligated by the Planning and Compulsory Purchase Act 2007, as amended by the Town and Country Planning (Local Planning) (England) Regulations 2012, to produce a local plan. In preparing its local plan, the Council must be consistent with policies in the National Planning Policy Framework, and take into account government’s Planning Policy for Traveller Sites (PPTS). The consultation is required by the GNLP inspectors and consequently relates to the regulatory framework associated to plan-making. Associated to plan-making are statutory requirements for Sustainability Appraisal and Habitat Regulations Assessment which are also being followed as part of this focused consultation.
- 6.5 **Equality Implications** – The GNLP has been prepared with regard to the Public Sector Equality Duty, as defined by the Equality Act 2010. This consultation represents a positive step in meeting the Public Sector Equality Duty.
- 6.6 **Environmental Impact** – A Sustainability Appraisal and Habitat Regulations Assessment has been undertaken alongside the site assessment process to ensure that the environmental impacts of proposed site allocations are fully understood.
- 6.7 **Crime and Disorder** – This report does not have any direct implications for the Council’s crime and disorder considerations.
- 6.8 **Risks** – See paragraph 4.3 above. For the Costessey Contingency Site particularly it is important that sites can be delivered quickly enough to meet the requirement for 10 pitches by March 2027 and a further 8 pitches by March 2032. It should be noted that concerns have been raised that the delivery of GNLP5007 may be contingent on wider highway improvement to New Road beyond that which might typically be expected for a site of this size.

7. Conclusion

- 7.1 It is recommended that Cabinet gives approval for the Gypsy and Traveller Focused Consultation to go ahead, as it forms an important part in the examination of the GNLP. Allocating sites for Gypsies and Travellers through

the Main Modifications of the GNLP is necessary for addressing identified accommodation needs and forms part of getting a sound plan for adoption.

8. Recommendations

- 8.1 It is proposed that Place Shaping Policy Development Panel advises Cabinet to recommend to Council that it:
- approves a Focused Consultation on the Greater Norwich Local Plan (GNLP) proposed Gypsy and Traveller sites; and
 - delegate authority to the Assistant Director of Planning, in consultation with the Leader and Portfolio Holder for Planning, to agree consultation materials prior to the public consultation.

Background papers

The document for the Greater Norwich Local Plan Gypsy and Traveller Focused consultation will be provided for Cabinet.

Supporting documents to the consultation are:

- Appendix A Gypsy and Traveller Focused Consultation Document
- Appendix B Gypsy and Traveller Site Assessment Booklet
- Appendix C Sustainability Appraisal of the Greater Norwich Local Plan Gypsy and Traveller Sites and Policies, by Lepus Consulting
- Appendix D Habitats Regulations Assessment of published Proposed Submission Greater Norwich Local Plan – Gypsy and Traveller Sites Addendum, by The Landscape Partnership
- Appendix E Housing and Economic Land Availability Assessment (HELAA) Addendum IV (June) 2022

Of relevance, but not part of the consultation, is the Gypsy and Traveller Accommodation Assessment (GTAA) that has been provided to stakeholders and is going to the inspectors in early July. A draft of the GTAA is available, [B8.3](#).

Finalised documents that are part of the GNLP's examination evidence library that relate to Gypsies and Travellers are:

- [B8.1](#) Caravans and Houseboats Study (October 2017), October 2017, RRR Consultancy Ltd
- [B8.2](#) Gypsy and Travellers Addendum, January 2021, RRR Consultancy Ltd
- [D3.6](#) Topic Paper - Policy 5 Homes, September 2021
- [D3.7](#) Topic Paper - Policy 5 Homes - Appendices A to D, September 2021
- [D5.4](#) Inspectors' Matters Issues and Questions (Part 1) - GNLP letter on Matter 6 (Homes) Issue 3: Gypsies and Travellers, Travelling, 4 January 2022
- [D5.4A](#) Inspectors' response letter regarding sites for Gypsies and Travellers, 19 January 2022

The Greater Norwich Local Plan

Gypsy and Traveller Focused Consultation

25 July - 7 September 2022

ENVIRONMENT



HOMES



INFRASTRUCTURE



COMMUNITIES



DELIVERY



ECONOMY



www.gnlp.org.uk

Site Policies for Gypsy and Traveller Permanent Residential Pitches Focused Consultation

Contents

Introduction	2
Context	2
Calculating the Need for Pitches.....	2
Meeting the Need for Pitches	3
Finding Sites to Allocate	3
Consideration of Equalities Issues.....	4
Responding to this Consultation	4
Future Work in Allocating Gypsy and Traveller Sites.....	4
Cawston	5
Policy GNLP5004 Land off Buxton Road, Cawston	5
Costessey	7
Policy GNLP5007 Land off Bawburgh Lane, north of New Road and east of A47 Incorporation of a Gypsy and Traveller Site into the Costessey Contingency Site Allocation	7
Wymondham	9
Policy GNLP5005 Wymondham Recycling Centre, Strayground Lane, Wymondham.....	9

Introduction

1. In July 2021 the Greater Norwich Development Partnership (the 'Partnership') submitted the Greater Norwich Local Plan ('GNLP') for independent examination. During this examination process, which included hearing sessions in February and March 2022, the two inspectors appointed on behalf of the Secretary of State, Mike Worden and Thomas Hatfield, indicated that more should be done to address Gypsy and Traveller accommodation needs.
2. This document responds by considering 3 possible sites to provide residential pitches for Gypsies and Travellers. This consultation also creates a further opportunity for landowners to propose more sites for Gypsies and Travellers.

Context

3. In February 2022, there were 139 permanent authorised Gypsy and Traveller pitches in Greater Norwich, consisting of 85 authorised private pitches (including 27 potential with planning permission and 4 vacant), 44 local authority owned pitches, and 10 transit pitches (although the latter are currently not occupied). Also, the 2011 Census shows there were 354 Gypsies and Travellers living in the area, representing 0.09% of the total population.
4. The July 2021 submission of the GNLP to the Secretary of State says that across the Greater Norwich area, a further 64 pitches for Gypsies and Travellers will be required by the end of the plan period in 2038.
5. Since then, the Partnership has kept its requirement under review and has continued working with RRR Consultancy ('RRR') to produce a new Gypsy and Traveller Accommodation Assessment ('GTAA'), which was finished in June 2022. This new evidence, coupled with recent planning permissions, means that the Greater Norwich area now requires 50 pitches by the end of the plan period in 2038.

Calculating the Need for Pitches

6. The latest GTAA from RRR summarises the need for Gypsies and Travellers in Table 1 below. It includes all accommodation need as of 2022, including any which may have been identified by previous GTAA's but remained unfulfilled by May 2022. Table 1 divides the pitch requirement between two groupings, firstly reflecting those that identify as ethnic Gypsies and Travellers; and, secondly, identifying those Gypsies and Travellers that lead a nomadic lifestyle which fits the Government's definition under the Planning Policy for Traveller Sites ('PPTS'), August 2015.¹

¹ Ministry of Housing, Communities & Local Government, Planning Policy for Traveller Sites, August 2015 <https://www.gov.uk/government/publications/planning-policy-for-traveller-sites>

Table 1: Gypsies and Travellers Pitch Requirement

Years	Plan Years	Ethnic Gypsy and Travellers	Planning Policy for Travellers Sites ('PPTS'), August 2015
1-5	22/23 – 26/27	28	10
6-10	27/28 – 31/32	10	8
11-15	32/33 – 36/37	10	9
16-16	37/38	2	2
Years 1-16		50	29

Meeting the Need for Pitches

7. The Partnership can use its land-use planning functions to find pitches by both granting planning permissions and allocating sites in the GNLP. The Partnership has a strong track-record in granting planning permission for Gypsy and Traveller sites, and to bolster this supply, the intention is to allocate at least 18 pitches in the GNLP as well. Doing so also satisfies national planning policy guidance, which says at paragraph 10 of the PPTS that local plans should identify a 5-year supply of deliverable sites, as well as developable sites or broad locations for growth over the next 6-10 years.
8. Allocating sites complements Policy 5 of the GNLP which contains a criteria-based approach that will enable the approval of suitably located “windfall” sites to continue. Taking such an approach is evidenced-based because data from the ‘Greater Norwich 5 Year Gypsy and Traveller Land Supply Note’ shows that on average 4 new pitches are permitted per annum. The continued delivery of windfall sites coupled to allocating at least 18 pitches via the GNLP will ensure the delivery of the 50 new pitches needed by 2037/38, even if rates of windfall were to fall below past trends.

Finding Sites to Allocate

9. The reason the submitted GNLP did not allocate sites for Gypsies and Travellers was because landowners did not promote any, despite the Partnership’s efforts to seek sites at previous stages of plan-making. This work included the ‘Call for Sites’ in 2016 when the GNLP began, followed by Regulation 18 consultations in 2018 and 2020, but none were proposed. Hence why the GNLP was submitted in July 2021 without specific sites for Gypsies and Travellers.
10. The Partnership has kept searching for sites and during late 2021 and early 2022 3 sites were identified as reasonable alternatives for public consultation. Two are in public ownership and the other one was put forward by a private landowner who became aware in early 2022 that a further opportunity existed to promote Gypsy and Traveller sites for inclusion in the local plan.

Consideration of Equalities Issues

11. The GNLP has been prepared with regard to the Public Sector Equality Duty, as defined by the Equality Act 2010, and an Equalities Impact Assessment (EqIA) accompanies the submission draft of the plan (A10). This latest work, through this Focused Consultation, represents a further positive step in meeting the Public Sector Equality Duty, because Gypsies and Travellers are a key ethnic minority in the area and making specific site allocations will give added assurance that this group's housing needs are addressed.

Responding to this Consultation

12. Each of the 3 sites is accompanied by consultation questions to allow respondents to express their support or objection to sites, as well as giving the opportunity to make comments. These comments will be published on the GNLP website and will be used in assessing which sites are progressed as allocations.

13. Ideally, consultation responses should be submitted online at www.gnlp.org.uk. However, written responses can also be made on a response form that can be requested by telephoning 01603 306603 or emailing gnlp@norfolk.gov.uk.

14. Consultees are also encouraged to read the supporting documents to this consultation prior to responding, which are the:

- Gypsy and Traveller Site Assessment Booklet
- Sustainability Appraisal of the Greater Norwich Local Plan Gypsy and Traveller Sites and Policies, by Lepus Consulting
- Habitats Regulations Assessment of published Proposed Submission Greater Norwich Local Plan – Gypsy and Traveller Sites Addendum, by The Landscape Partnership
- Housing and Economic Land Availability Assessment (HELAA) Addendum IV (June) 2022

15. These supporting documents, which are also available for respondents to comment upon, consider the constraints of the 3 proposed Gypsy and Traveller sites – such as access to local facilities, landscape impact, and ecological impact, amongst other things. This public consultation is therefore an opportunity to better understand the constraints of the 3 sites, to find out if there are other issues, and to learn what can be done to address these constraints.

Future Work in Allocating Gypsy and Traveller Sites

16. Once this Focused Consultation closes on 7th September 2022 the comments received will be considered as part of the ongoing examination of the GNLP. If during the consultation new Gypsy and Traveller sites are proposed they too will be given due consideration and a decision made about their inclusion in the GNLP. The Gypsy and Traveller sites that are selected will then be combined with a further public consultation – known as the 'Main Modifications' – which will proceed the adoption of the GNLP that is anticipated to be in 2023.

Cawston

Policy GNLP5004 Land off Buxton Road, Cawston

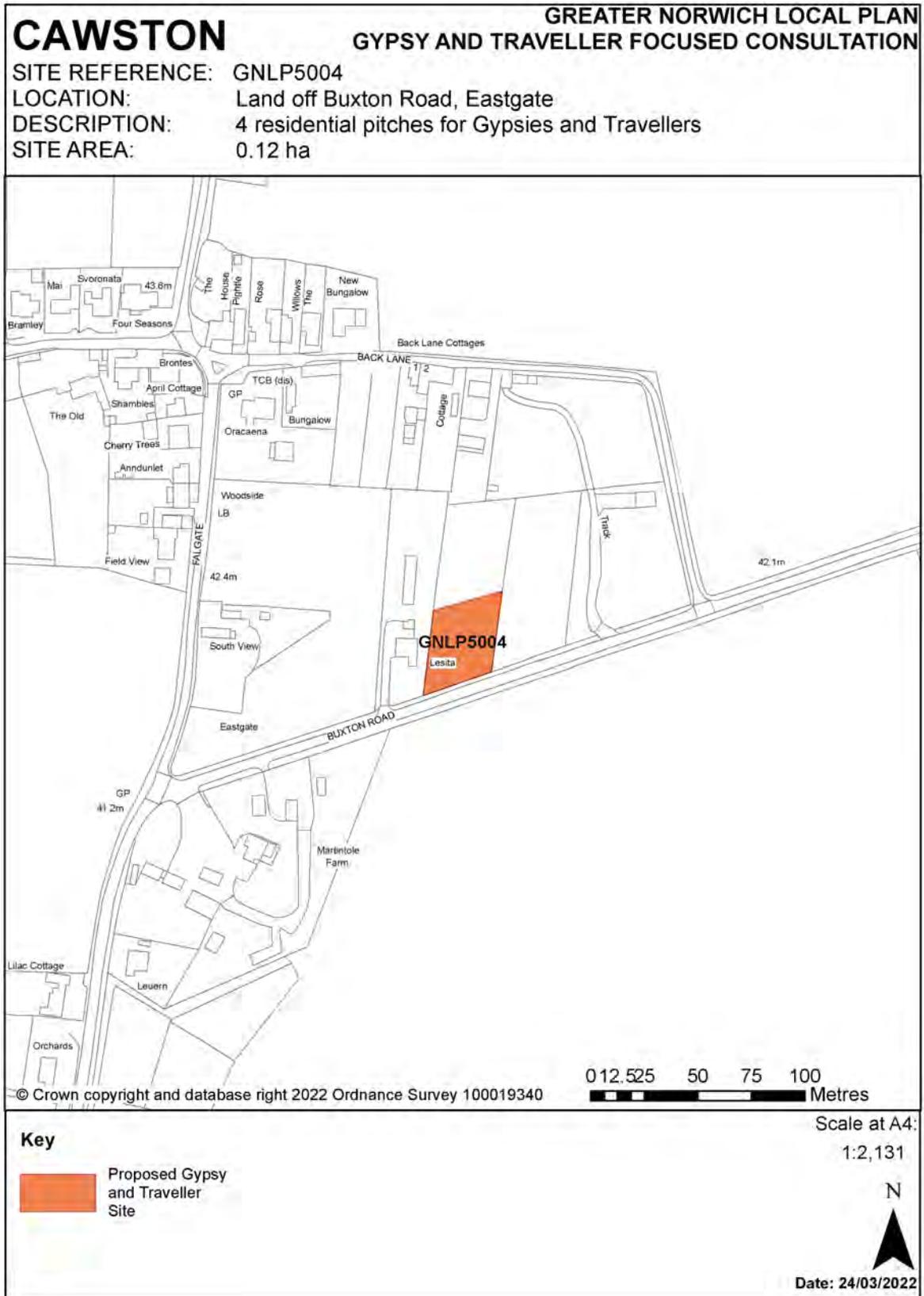
This site is located in the hamlet of Eastgate, to the south-east of Cawston, along the Buxton Road. There are relatively few properties nearby, although there is one property next to the western boundary. Along the frontage is a mature tree, a hedgerow, and a gateway wide enough for a vehicular access, with fencing to mark the side and rear boundaries. The site is greenfield land.

Policy GNLP5004

Land off Buxton Road, Cawston (0.12 ha) is allocated for a permanent residential Gypsy and Travellers Site. The site will accommodate approximately 4 residential Gypsy and Traveller pitches.

The development will be expected to address the following site-specific matters:

1. Access via Buxton Road. Any trees or hedgerow lost to form the access or visibility splay should be compensated for with new planting within the development.
2. Additional landscaping and hedgerow should be provided to enhance screening and to create separation to adjoining properties.
3. Archaeological investigations should be undertaken prior to development.



Costessey

Policy GNLP5007 Land off Bawburgh Lane, north of New Road and east of A47 Incorporation of a Gypsy and Traveller Site into the Costessey Contingency Site Allocation

62 ha of land off Bawburgh Lane (north of New Road and east of the A47 at Costessey) is a contingency option for developing an urban extension of approximately 800 homes in the submitted GNLP. Part of the site is publicly owned, and it is proposed that if development of the urban extension comes forward, approximately 1 ha of this area could be made available for a residential Gypsy and Traveller site.

The policy text for the Costessey Contingency Site can be found in the Regulation 19 Publication Stage of the GNLP ([8. Costessey Contingency Site | GNLP](#)). The proposal here is to modify the proposed contingency allocation by adding an additional criterion to include: "Provision of a 1 ha Gypsy and Traveller site, providing approximately 18 pitches." If included, the precise location of the Gypsy and Traveller site within the Contingency Site will be determined as part of the overall design and master-planning of the urban extension.

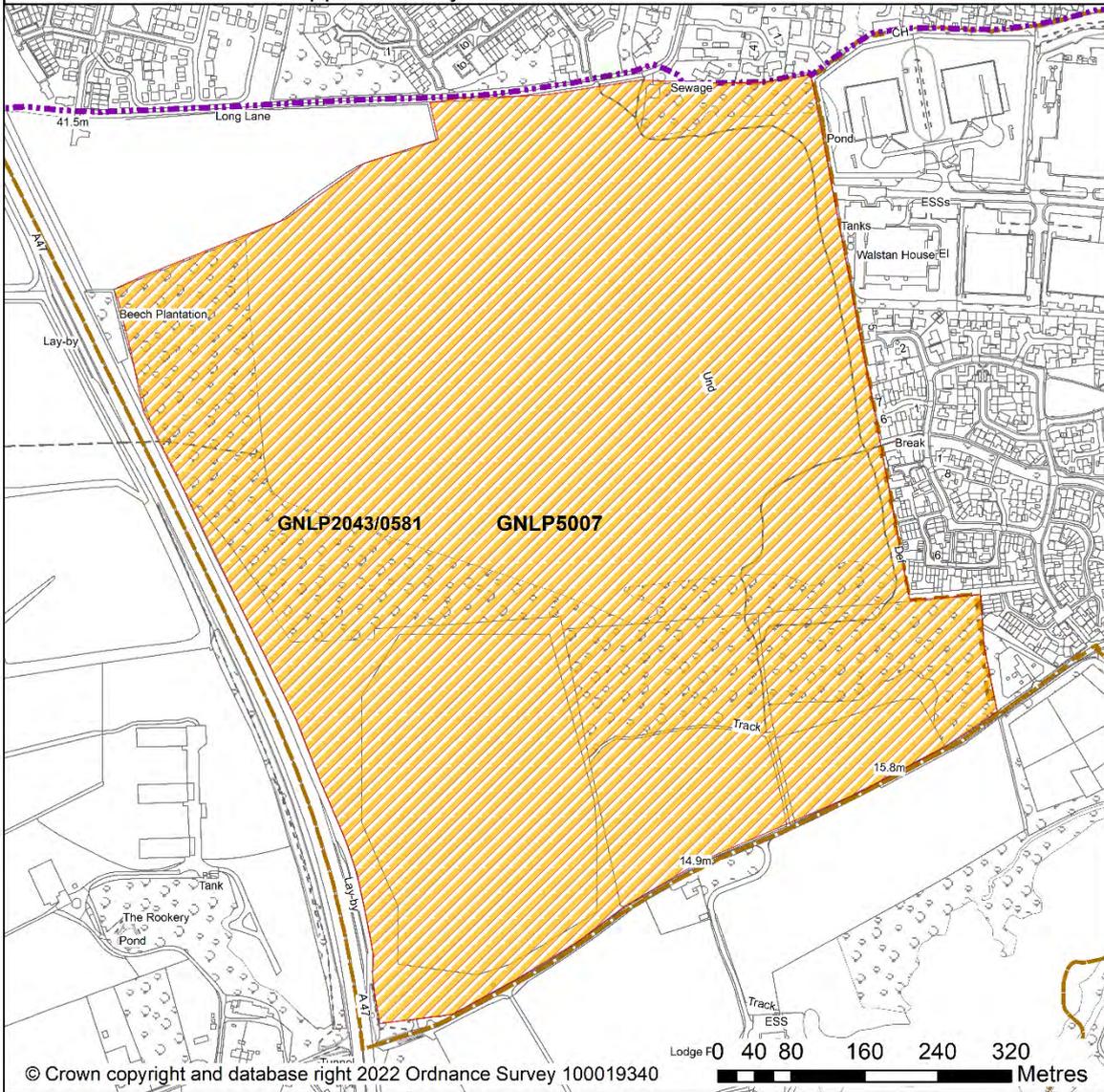
Policy GNLP5007

Land off Bawburgh Lane, north of New Road and east of A47

If the Costessey Contingency Site is allocated for housing development, approximately 1 ha of land at this site will be allocated for a Gypsy and Traveller Site providing approximately 18 pitches.

COSTESSEY GREATER NORWICH LOCAL PLAN GYPSY AND TRAVELLER FOCUSED CONSULTATION

SITE REFERENCE: GNL5007
LOCATION: Land off Bawburgh Lane, north of New Road and east of the A47
DESCRIPTION: 18 residential pitches for Gypsies and Travellers as part of a residential-led urban extension of approximately 800 homes. Development of GNL5007 is dependent on the allocation of the entire site, which has been previously consulted upon as contingency site GNL5081/2043.
SITE AREA: Approximately 1 ha within the entire 62 ha site



 Parish Boundary	 Contingency Site Proposed Gypsy and Traveller Site	Scale at A4: 1:6,000  Date: 09/06/2022
 Settlement Boundary		

Wymondham

Policy GNLP5005 Wymondham Recycling Centre, Strayground Lane, Wymondham

This is a publicly owned piece of land that is expected to become vacant due to the decision to close Wymondham Recycling Centre. Strayground Lane is a quiet country lane that connects to the built edge of Wymondham to the north via Whartons Lane. To the south Strayground Lane provides access to a small number of properties. There is mineral extraction activity along Strayground Lane and the Recycling Centre site is located next to an established business – Gary Cooper Paving. Therefore, redevelopment will require consideration of these present neighbouring activities, as well land adjacent as historic landfill.

Policy GNLP5005

Land off Strayground Lane, currently the Wymondham Recycling Centre, Wymondham (0.07 ha), is allocated for a residential Gypsy and Traveller site. The site will accommodate approximately 2 residential Gypsy and Traveller pitches.

The development will address the following specific site matters:

1. Access should be via Strayground Lane and should use the existing vehicular access for the waste recycling facility. Improvements should be made to the passing bays along Strayground Lane, and an adequate visibility splay should be ensured at the junction of Whartons Lane with London Road (B1172).
2. A contaminated land assessment is required, and any mitigation must be completed prior to development.
3. An ecological survey is required.
4. Pollution mitigation measures with respect to water quality is required as within the catchment of groundwater source protection zone (III)



Greater Norwich Local Plan (GNLP) Gypsy and Traveller Focused Consultation:

Gypsy and Traveller Site Assessment Booklet

June 2022

Contents

Introduction	2
PART 1	3
Stage 1: List of Sites	3
Stage 2: HELAA Comparison Table.....	4
Stage 3: Summary of Informal Consultee Comments.....	6
Stage 4: Discussion of Submitted Sites	16
Stage 5: Shortlist of Reasonable Alternative Sites for Full Consultation	18
Part 2.....	19

Introduction

This document outlines the methodology undertaken to assess the Gypsy and Traveller sites submitted for consideration into the Greater Norwich Local Plan ('GNLP') during late 2021 and early 2022. It forms part of the background evidence to the 'Gypsy and Traveller Focused Consultation', which is set to take place during summer 2022.

The purpose of this booklet is to explain the assessment work behind the 3 sites that are proposed as Gypsy and Traveller sites. The process here is much like the other settlement-based booklets for the site allocations in the Part 2 'Sites Plan' of the GNLP, but there are differences this time around. Due to how the focus is upon a handful of Gypsy and Traveller sites only, and because this booklet is being prepared in spring 2022 whilst the GNLP is going through examination.

Work on this booklet began in spring 2022 and its completion is not anticipated until autumn 2022, when decisions get made on which Gypsy and Traveller sites to incorporate into the GNLP as allocations. Table 1 below shows how the process for completing this booklet is divided into 2 parts and will be split into what is expected to be 10 stages.

Table 1: Stages in Completing the Gypsy and Traveller Site Assessment Booklet

Part 1: Spring 2022
Stage 1: List of Sites
Stage 2: HELAA Comparison Table
Stage 3: Summary of Informal Consultee Comments
Stage 4: Discussion of Submitted Sites
Stage 5: Shortlist of Reasonable Alternative Sites for Full Consultation
Part 2: Autumn 2022
Stage 6: Summary of Comments from the Gypsy and Traveller Focused Consultation
Stage 7: List of New and Revised Gypsy and Traveller Sites Proposed
Stage 8: HELAA Comparison Table of New and Revised Gypsy and Traveller Sites Proposed
Stage 9: Discussion of Alternative New and Revised Gypsy and Traveller Sites Proposed
Stage 10: Conclusions on the Gypsy and Traveller Sites for Allocation

PART 1

Stage 1: List of Sites

Stage 1 is a list of the Gypsy and Traveller sites being considered and includes basic information such as address and site size. Having this list serves to make it clear what land is being considered.

Site Reference	Site Area (ha)	Address	Parish	Number of Pitches
GNLP5004	0.12	Land off Buxton Road, Eastgate	Cawston	4
GNLP5005	0.07	Wymondham Recycling Centre, Strayground Lane	Wymondham	2
GNLP5007	1	Land off Bawburgh Lane, north of New Road and east of the A47, Costessey (Contingency Site)	Costessey	18
Total	1.19			24

Stage 2: HELAA Comparison Table

Stage 2 incorporates into the site assessment the findings of the Housing and Economic Land Availability Assessment (HELAA). This work is a screening process that determines if a site is so constrained as to rule out further assessment and can help too in identifying constraints that will need addressing further. Those sites deemed suitable through the HELAA process are automatically put forward for inclusion in the Sustainability Appraisal. The Sustainability Appraisal (which incorporates the requirements of Strategic Environmental Assessment) helps to guide and influence the plan-making process. To complete the Sustainability Appraisal the Partnership works with Lepus Consulting, and their findings on each of the Gypsy and Traveller sites will be published alongside this booklet as part of the summer 2022 public consultation.

	Categories													
Site Reference	Site access	Access to services	Utilities Capacity	Utilities Infrastructure	Contamination/ ground stability	Flood Risk	Market attractiveness	Significant landscapes	Sensitive townscapes	Biodiversity & Geodiversity	Historic environment	Open Space and GI	Transport & Roads	Compatibility with neighbouring
Gypsy and Traveller Sites – Permanent Residential Pitches														
GNLP5004	Green	Amber	Green	Green	Green	Green	Green	Amber	Green	Amber	Green	Green	Green	Green
GNLP5005	Amber	Amber	Green	Green	Amber	Green	Green	Amber	Green	Amber	Green	Green	Green	Amber
GNLP5007	Amber	Amber	Amber	Green	Green	Amber	Green	Amber	Amber	Amber	Green	Green	Green	Green

Stage 3: Summary of Informal Consultee Comments

Stage 3 is a summary of informal comments received from professionals working for Anglia Water, Norfolk County Council Ecology, Highways, Lead Local Flood Authority, and South Norfolk/Broadland Council Planning Department, Environmental Health, Natural England. Undertaking this work has provided an initial basis on which to undertake assessment of the sites.

Site Reference:	GNLP5004
Address:	Land off Buxton Road, Cawston
Ha:	Approx. 0.12 Ha
Proposal:	Permanent residential Gypsy and Traveller Site. The site is to accommodate approximately 4 residential Gypsy and Traveller pitches.

CURRENT USE OF SITE:	BROWNFIELD/GREENFIELD:
Vacant	greenfield site

CONSTRAINTS IDENTIFIED IN THE HELAA:

Amber Constraints in HELAA
Access to services, Significant landscapes, Biodiversity and Geodiversity

HELAA Conclusion

This greenfield site off Buxton Road in the hamlet of Eastgate, south-east of Cawston, is 0.12 ha in size, and could likely accommodate 4 permanent residential Gypsy and Traveller pitches.

The initial highways advice is that a suitable vehicular access is likely to be achievable, subject to demonstrating an acceptable visibility splay but that this might require the removal of hedgerow. Locationally, GNLP5004 is slightly disconnected to local services. As for example, the distance to Cawston Primary School is 1.7 km. However, as this is a relatively small development proposal it will not lead to a significant increase in traffic on local roads or a significant increase in unsustainable travel patterns.

There are no known constraints relating to utilities capacity, contamination or ground stability issues. Anglian Water has stated water supply and water recycling connections will be addressed at the time a site comes forward because it is a development for fewer than 10 dwellings. The site is within Flood Zone 1, so is at low risk of fluvial flooding, and no surface water flooding risk has been identified.

In terms of sensitive landscape and biodiversity, Cawston and Marsham Heaths SSSI is located approximately 1 km from the site, and there are a further four SSSIs within a 5 km radius -- Booton Common SSSI, Buxton Heath SSSI, Alderford Common SSSI and Swannington Ugate Common SSSI and it is in a 'green' impact risk zone for Great Crested Newts. However, Natural England has not raised an objection to this site.

Whilst only measuring 0.12 ha it is noted that GNLP5004 is Grade 2 agricultural land which would result in a minor loss of high value agricultural land. Furthermore, developing GNLP5004 would not mean a loss of open space, and neither is the site situated along a strategic green infrastructure corridor.

Cawston Conservation Area, which includes a number of Grade I and II listed buildings, is approximately 1.6 km west of the site, and so no adverse impact is expected on heritage assets. But initial advice from the Historic Environment Team is that the site is close to an area of Roman Settlement. Therefore, further archaeological investigation will be necessary.

As to neighbouring and adjoining uses, there are residential properties to the north of the site along Back Lane, a field to the east, agricultural land on the south side of Buxton Road, and a home to the west. So how GNLP5004 could be developed to fit within its surroundings most appropriately will need consideration, but nevertheless the principle of development is considered acceptable.

Overall, GNLP5004 is considered suitable for the land availability assessment, subject to achieving an acceptable visibility splay and undertaking site investigations. But also, as with many locations, recent announcements about nutrient levels in river basin catchments will have to be addressed if GNLP5004 is developed.

The exact process for how GNLP5004 could be developed as a Gypsy and Traveller site is yet to be decided, but it is considered that options exist for bringing the site forward, and there is no reason to doubt that GNLP5004 is in a location that would be attractive to the Gypsy and Traveller community as a suitable site.

CONSULTEE COMMENTS:

Highways

Subject to demonstrating acceptable visibility, incl. removal of hedges. Remote from local community, no walking route to catchment school.

Development Management

This site is located next to an existing bungalow with other scattered dwellings around, agricultural land, narrow road with no footpaths, trees and hedgerows to the frontage which will probably need to go. Grade 2 agricultural land. Really poor connectively to any services. This one I feel would have an impact on the form and character of the area/landscape impact associated with 4 pitches, unsustainable location.

Environmental Health

(Green) The site is unlikely to be contaminated.

Lead local Flood Authority

Few or no constraints. Standard information required at a planning stage.

Environment Services – Ecology

GNLP5004: Cawston and Marsham Heaths SSSI is located approximately 1 km from the site. The site is within an a SSSI Impact Risk Zone. Within a 5 km radius there are a further four SSSIs - Booton Common SSSI, Buxton Heath SSSI, Alderford Common SSSI and Swannington Upgate Common SSSI. The site comprises an area of rough grassland and scrub (Street view). Located on grade 2 agricultural land. It is not on a Strategic GI corridor and green impact risk zone for great crested newts. Nutrient Neutrality will need to be considered and an HRA is likely to be required (11/04/22).

Natural England

Acceptable – This is subject to the caveat that we have only assessed these proposed sites against statutory designated sites and protected landscape.

Historic Environment Services

The site is close to area of Roman settlement.

Anglian Water

For sites of less than 100 homes and certainly less than 50 units Anglian Water would address water supply and water recycling connections at the time those sites came forward.

PLANNING HISTORY:

20191685 -- Erection of Dwelling with Associated Works (Outline) (Appeal Dismissed)

Site Reference:	GNLP5005
Address:	Land off Strayground Lane, known as the Wymondham Recycling Centre, Wymondham
Ha:	Approx. 0.07 ha
Proposal:	Permanent residential Gypsy and Traveller site. The site is to accommodate approximately 2 residential Gypsy and Traveller pitches.

CURRENT USE OF SITE:	BROWNFIELD/GREENFIELD:
Land used as Recycling centre	Brownfield

CONSTRAINTS IDENTIFIED IN THE HELAA:

Amber Constraints in HELAA
Site Access, Access to services, Contamination/ground stability, Significant landscapes, Biodiversity and Geodiversity, Compatibility with neighbouring uses.

HELAA Conclusion

Site GNLP5005 measures 0.07 ha and is currently used as Wymondham Recycling Centre. The landowner intends to close this facility, and thus an opportunity exists to redevelop it for approximately 2 residential Gypsy and Traveller pitches. However, the site is not likely to become available until 2025 at the earliest.

GNLP5005 has a vehicular access onto Strayground Lane that serves the existing recycling centre. Strayground Lane is not to a good standard, there is no footpath, and the passing bays may require improvement; but the proposed use will generate less traffic than the existing recycling centre. Strayground Lane is a quiet lane in character and so opportunity exists for pedestrians and cyclists to use this route to access facilities in Wymondham.

The lack of footpath provision along Strayground Lane is a constraint in accessibility terms, but GNLP5005 is close to some facilities in Wymondham. There is a local shop approximately 700 m away, the closest GP surgery is approximately 900 m, and Browick Road Primary School is approximately 1 km. This means that GNLP5005 has adequate access to schools and facilities for people to meet their daily needs.

In respect to heritage constraints GNLP5005 presents no substantive concerns, as the nearest listed building (Grade II 'Ivy Green Villa') is 300 m away and separated by the industrial area along Chestnut Drive. Environmental considerations will need further assessment such as an ecological survey, as GNLP5005 is approximately

50 m from undeveloped areas along the Bays River, which is lowland fens priority habitat, and GNLP5005 partly overlaps the Bays River Meadows North County Wildlife Site. GNLP5005 is at low risk of flooding as within Flood Zone 1, and within the catchment of a groundwater Source Protection Zone (Zone III) as such pollution mitigation measures with respect to water quality will be required but none of these factors rules out development potential.

Whilst not prohibiting possible development there are other points to consider due to past and present neighbouring uses. Immediately adjoining GNLP5005 to the west and south is the Gary Cooper Paving company that will pose considerations in terms of vehicle movements, noise, and possibly dust. The site abuts sections which overlap with a historic landfill site that will need investigation for possible further contamination. Immediately to the north-east, east, and south are various planning consents dating back to the 1990s for a gravel quarry, stockpiling aggregates, and landfilling of inert waste (references include C/92/7023 and C/94/7016).

Overall, GNLP5005 is considered suitable for the land availability assessment, subject to achieving mitigation measures, and provided the site can be appropriately converted from a recycling centre to a permanent residential site. But also, as with many locations, recent announcements about nutrient levels in river basin catchments will have to be addressed if GNLP5005 is developed.

The exact process for how GNLP5005 could be developed as a Gypsy and Traveller site is yet to be decided, but it is considered that options exist for bringing the site forward, and there is no reason to doubt that GNLP5005 is in a location that would be attractive to the Gypsy and Traveller community as a suitable site.

CONSULTEE COMMENTS:

Highways

Strayground Lane is not a good standard, however proposed use will generate less traffic, passing bays may require improvement. No walking route to local facilities.

Development Management

Existing recycling centre and Gary Cooper's Paving Business – The site has an existing use for storage of vehicles plant and equipment for a paving business and there is existing hard standing, buildings and storage bays on site given change of use in 2005 from scrapyards. CWS encroaches into top part of site and bound to the west, B2 – Tiffey Tributary Farmland,

With Nutrient Neutrality in mind under 2021/0607 the EA advised: This site is located above Principal, Secondary A and Secondary (undifferentiated) Aquifers (Chalk, Alluvium and Lowestoft Formations respectively) and the application overlies WFD groundwater body and is also in a WFD drinking water protected area and is adjacent to Bays River which leads to the River Tiffey. The site is considered to be of moderate to high environmental sensitivity.

In terms of landscape impact, the current uses need to be considered, and probably not significantly harmful when taking that into account, equally the uses close to the site. Poor connectivity.

Environmental Health

(Amber) Unable to confirm that contamination matters can be mitigated without site investigation.

Lead local Flood Authority

Few or no constraints. Standard information required at a planning stage. There is an EA Main River near the western site boundary.

Environment Services- Ecology

GNLP5005: There are no designated sites within 1 km radius. The only designated site within a 5 km radius is Lower Ashwellthorpe Woods SSSI some 3.7 km away, beyond the A11. The Bays River Meadow North CWS appears to be located within the proposed boundaries of the site. It is recommended the site avoid the CWS and provides a minimum 10 m buffer between the site and CWS. The proposed Gypsy and Traveller site comprises Wymondham Recycling Centre (hardstanding) surrounded by mature trees/hedges. It is partly within the amber risk zone for Great Crested Newts. It is on a Strategic GI corridor. Nutrient Neutrality will need to be considered and an HRA is likely to be required (11/04/22).

Natural England

Acceptable – This is subject to the caveat that we have only assessed these proposed sites against statutory designated sites and protected landscape.

Anglian Water

For sites of less than 100 homes and certainly less than 50 units Anglian Water would address water supply and water recycling connections at the time those sites came forward.

PLANNING HISTORY:

Adjacent Land -- C/92/7023 – Gravel Extraction

Adjacent Land -- C/94/7016 – Restoration of Gravel Pit

C/7/1993/7014 -- Household Waste Centre

Adjacent Land -- 2005/1121 -- Change of use from scrapyards to paving contractors yard & replacement of existing portacabins

Adjacent Land -- 2021/0607 -- Erection of steel building 18.3m x 13.7m x 5.8m for maintenance and storage in relation to existing site use

Site Reference:	GNLP5007
Address:	Land off Bawburgh Lane, north of New Road and east of A47 (within contingency site GNLP0581/2143)
Ha:	Approximately 1 ha (within a 62ha urban extension site)
Proposal:	Provision of a 1 ha Gypsy and Traveller site, providing approximately 18 pitches

CURRENT USE OF SITE:	BROWNFIELD/GREENFIELD:
Vacant	greenfield site

CONSTRAINTS IDENTIFIED IN THE HELAA:

Amber Constraints in HELAA
 Site access, Access to services, Utilities Capacity, Flood Risk, Significant landscapes, Sensitive townscapes, Biodiversity & Geodiversity

HELAA Conclusion

Site GNLP5007 is a variation of the contingency site GNLP0581/2043, which measures 62 ha, and is being promoted as a residential-led urban extension of approximately 800 homes. The variation as proposed by GNLP5007 is to incorporate approximately 1 ha for Gypsies and Travellers accommodation into the urban extension. The exact location of the Gypsy and Traveller site within GNLP0581/2043 is yet to be determined and will be considered as part of master-planning the overall urban extension.

The inclusion of a Gypsy and Traveller site represents a small-scale change in the context of an entire urban extension. Varying GNLP0581/2043 with the incorporation of a 1 ha Gypsy and Traveller site into the overall 62 ha site has little effect on the land availability assessment scoring, and all the constraints previously identified continue to apply. Given the size of GNLP0581/2043 some constraints are to be expected, but it is considered that these issues can be mitigated through a comprehensive master-planning exercise.

There is a band of land that has surface water flood risk through the middle and a northern part of GNLP0581/2041. GNLP0581/2041 is also in the Norwich Southern Bypass Protection Zone and adjacent to the A47 there could be amenity concerns from disturbance caused by traffic. Other constraints include overhead power lines, an adjacent contaminated site, landscape impacts, townscape impacts, and the potential for protected species being on-site.

Site GNLP0581/2041 was considered suitable for inclusion in the land supply assessment, and that conclusion remains the same with inclusion of a Gypsy and Traveller site into the overall proposal for an urban extension. But also, as with

many locations, recent announcements about nutrient levels in river basin catchments will have to be addressed if GNLP5007 is developed.

The exact process for how GNLP5007 could be developed as a Gypsy and Traveller site is yet to be decided, but it is considered that options exist for bringing the site forward, and there is no reason to doubt that GNLP5007 is in a location that would be attractive to the Gypsy and Traveller community as a suitable site.

CONSULTEE COMMENTS

Highways

Subject to detail regarding access

Development Management

Don't feel we need to comment on this as it forms part of the residential-led urban extension of approximately 800 dwellings and policy are fully aware of the ins and outs of that site.

Environmental Health

(Green) may be localised areas of contamination – would expect to see SI with any application.

Lead local Flood Authority

Few or no constraints. Standard information required at a planning stage. There is an onsite flow path in the 3.33%, 1.0% and 0.1% AEP events, ranging from minor through to moderate/major. The flow path is located in the east of the site. Comparative to the site size, the flow path affects only a small area and a large percentage of the site still remains developable. We advise this is considered in your site assessment.

Environment Services – Ecology

GNLP5007: Within a 1 km radius of the site there are no designated sites. The River Wensum SSSI and SAC is circa 1.7 km north of the site at Costessey. It is located within a SSSI Impact Risk Zone. Sweetbriar Road Meadows SSSI is circa 3.7 km away, beyond the inner ring road of Norwich. The site comprises of several agricultural fields, woodland and hedges. It is bounded to the west of the A47, and to the east and north by Cringleford. It is on a Strategic GI corridor and is identified as grade 3 agricultural land. Nutrient Neutrality will need to be considered and an HRA is likely to be required (11/04/22).

Natural England

Acceptable – This is subject to the caveat that we have only assessed these proposed sites against statutory designated sites and protected landscape.

Anglian Water

For sites of less than 100 homes and certainly less than 50 units Anglian Water would address water supply and water recycling connections at the time those sites came forward.

PLANNING HISTORY:

2015/1275 -- Screening opinion for proposed development of ground mounted solar photovoltaic panels and associated works.

Stage 4: Discussion of Submitted Sites

Stage 4 provides opportunity for a comparative discussion of the sites, and to bring together the information from both the Land Availability Assessment and the Sustainability Appraisal to understand if any sites stand out as more or less favourable than others. Comparing the sites will help too in understanding if any combinations work better or not, such as by providing a geographical spread of Gypsy and Traveller sites across the Greater Norwich area.

Overall, there is nothing about the 3 sites that should rule out for further consultation. Neither is there anything about the 3 sites in combination that present difficulty, as they are well spread geographically, with 1 in Broadland district and 2 in South Norfolk district. The one Broadland site, GNLP5004 at Eastgate, is the most rural of the three sites. Whereas by contrast, GNLP5007 at Costessessy is well-connected to the urban fringe of Norwich; and, GNLP5005 is situated on the edge of Wymondham.

The three sites range distinctly too in their size with GNLP5007 having the potential to make the biggest contribution of 18 pitches, but having smaller sites is helpful too. It provides an element of choice for Gypsy and Traveller families, both in the size and location of sites, and could facilitate sites coming forward as a mixture of pitches for rent or for private sale.

As individual sites the following points are drawn from the first 3 stages of this assessment booklet:

GNLP5004 (Buxton Road, Eastgate) performed relatively well against the HELAA criteria, scoring 11 'greens' and 3 'ambers'. The consultee comments point out that the site is remote from services, that it could have a negative impact on the form and character of the area, and that there could be some archaeological interest. Whilst nothing can be done to address the distance to facilities in a rural location, other constraints are manageable by requiring extra trees and hedgerow for landscaping, and to undertake archaeological investigations prior to development beginning.

GNLP5005 (Wymondham Recycling Centre) performed less well than GNLP5004, scoring 8 'greens' and 6 'ambers'. The consultee comments highlighted the various constraints, which include highways constraints along Strayground Lane, flood risk, the ecological constraints of partly overlapping the Bays River Meadow County Wildlife Site, the contaminated land issue from the former landfill site, the compatibility of neighbouring uses from the adjacent business (Gary Cooper Paving), and the quarry uses further along Strayground Lane. Whilst GNLP5005 faces several constraints mitigations appear to be available, such as by requiring a contaminated land assessment, ecological assessment, and pollution mitigation measures with respect to water quality prior to the site's redevelopment.

GNLP5007 (Costessey Contingency Site) performed comparatively well, scoring 7 'greens' and 7 'ambers'. The consultee comments point out some constraints to do with surface water flood risk, and there are woodland areas and hedgerows across

the site. Such constraints are to be expected of such a large-scale greenfield site, but there is ample opportunity to understand and mitigate against the constraints. Because if GNLP5007 is allocated for Gypsies and Travellers it will be as part of the Contingency Site GNLP0581/2043, and all the challenges of the site will be addressed as part of master-planning this urban extension.

Stage 5: Shortlist of Reasonable Alternative Sites for Full Consultation

Stage 5 is the culmination of the first part of this booklet up to spring 2022 and is to document the sites going forward for full public consultation.

All 3 sites identified at Stage 1 are considered suitable to go forward for public consultation in summer 2022, having been assessed through Stages 1 to 4 of this booklet, and considering the findings of the Land Availability Assessment, the Sustainability Appraisal, and the Habitats Regulation Assessment. Sites GNLP5004, GNLP5005, and GNLP5007 are considered suitable for allocation, subject to public consultation and further assessment.

Part 2

To be completed from autumn 2022.

Sustainability Appraisal of the Greater Norwich Local Plan Gypsy and Traveller Sites and Policies

Addendum to the Regulation 19 SA Report

June 2022



LEPUS CONSULTING
LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Sustainability Appraisal of the Greater Norwich Local Plan Gypsy and Traveller Sites and Policies

Addendum to the Regulation 19 SA Report

LC-806	Document Control Box
Client	Greater Norwich Development Partnership
Report Title	Sustainability Appraisal of the Greater Norwich Local Plan Gypsy and Traveller Sites and Policies: Addendum to the Regulation 19 SA Report
Filename	LC-806_GNLP_G&T_SA_8_230622LB.docx
Date	June 2022
Author	RI
Reviewed	LB
Approved	ND

About this report & notes for readers

Lepus Consulting Ltd (Lepus) has prepared this report for the use of Greater Norwich Development Partnership. There are a number of limitations that should be borne in mind when considering the conclusions of this report. No party should alter or change this report whatsoever without written permission from Lepus.

© Lepus Consulting Ltd

This SA Report is based on the best available information, including that provided to Lepus by the Council and information that is publicly available. No attempt to verify these secondary data sources has been made and they have been assumed to be accurate as published. This report was prepared between April and June 2022 and is subject to and limited by the information available during this time. This report has been produced to assess the sustainability effects of the Gypsy and Traveller Site Allocations and

Policies and meets the requirements of the SEA Directive. It is not intended to be a substitute for an Environmental Impact Assessment (EIA) or Appropriate Assessment (AA).

Client comments can be sent to Lepus using the following address.

Eagle Tower,
Montpellier Drive
Cheltenham
Gloucestershire
GL50 1TA

Telephone: 01242 525222

E-mail: enquiries@lepusconsulting.com

www.lepusconsulting.com

Contents

1	Introduction	1
1.1	Context	1
1.2	Greater Norwich	2
1.3	Gypsy and Traveller Accommodation Needs Assessment	4
1.4	Integrated approach to SA and SEA	4
1.5	Best Practice Guidance	5
1.6	Sustainability Appraisal	6
1.7	GNLGP Gypsy and Traveller Sites and Policies	7
1.8	Signposting for this report	8
2	Methodology	9
2.1	Assessment of Reasonable Alternatives	9
2.2	Significance	11
2.3	Impact sensitivity	11
2.4	Impact magnitude	11
2.5	Distances	12
2.6	Limitations of predicting effects	12
2.7	Assessment assumptions	13
3	Pre-mitigation site assessments	25
3.1	Introduction	25
3.2	Site GNLGP5004 – Land off Buxton Road, Eastgate	26
3.3	Site GNLGP5005 – Wymondham Recycling Centre, Strayground Lane	31
3.4	Site GNLGP5007 – Land off Bawburgh Lane, north of New Road and east of the A47, Costessey (Contingency Site)	37
4	Assessment of site policies	43
4.1	Preface	43
4.2	Site Policy GNLGP5004	43
4.3	Site Policy GNLGP5005	44
4.4	Site Policy GNLGP5007	45
5	Mitigation and residual effects	47
5.1	Overview	47
5.2	SA Objective 1 – Air Quality and Noise	48
5.3	SA Objective 2 – Climate Change Mitigation and Adaptation	48
5.4	SA Objective 3 – Biodiversity, Geodiversity and Green Infrastructure	49
5.5	SA Objective 4 – Landscape	50
5.6	SA Objective 5 – Housing	51
5.7	SA Objective 6 – Population and Communities	51
5.8	SA Objective 7 – Deprivation	51
5.9	SA Objective 8 – Health	52
5.10	SA Objective 9 – Crime	53
5.11	SA Objective 10 – Education	54
5.12	SA Objective 11 – Economy	55
5.13	SA Objective 12 – Transport and Access to Services	56
5.14	SA Objective 13 – Historic Environment	57
5.15	SA Objective 14 – Natural Resources, Waste and Contaminated Land	57
5.16	SA Objective 15 – Water	58
5.17	Post-mitigation site assessments	59
5.18	Recommendations	60
6	Preferred Options	61
6.1	Reasonable alternatives	61
6.2	Site identification and screening	61

6.3	Selection and rejection of reasonable alternative sites	61
6.4	Reasonable alternative policies.....	62
7	Next steps.....	63
7.1	Consultation	63
Appendix A: SA Framework.....		64

Figures

Figure 1.1:	District boundaries within Greater Norwich and location of proposed three Gypsy and Traveller sites.	3
Figure 3.4:	Location of proposed Gypsy and Traveller Site GNLP5004.	26
Figure 3.5:	Location of proposed Gypsy and Traveller Site GNLP5005.	31
Figure 3.7:	Location of proposed Gypsy and Traveller Site GNLP5007.	37

Tables

Table 1.1:	Timeline of SA documents in relation to the GNLP stages of preparation.....	6
Table 1.2:	Reasonable alternative sites considered within this SA report	7
Table 2.1:	Guide to scoring significant effects.....	10
Table 2.2:	Geographic scales of receptors	11
Table 2.3:	Impact magnitude.....	12
Table 2.4:	Assumptions for each SA objective.	13
Table 3.1:	Pre-mitigation impacts of each site identified in the SA Report	25
Table 6.1:	Reasons for selection of each reasonable alternative Gypsy and Traveller site	62

Abbreviations

ALC	Agricultural Land Classification
AQMA	Air Quality Management Area
DEFRA	Department for Environment, Food and Rural Affairs
DLUHC	Department for Levelling Up, Housing and Communities
EA	Environment Agency
GNDP	Greater Norwich Development Partnership
GNLP	Greater Norwich Local Plan
GP	General Practice
GTAA	Gypsy and Traveller Accommodation Assessment
ha	Hectare
HRA	Habitats Regulations Assessment
IRZ	Impact Risk Zone
km	Kilometre
LCA	Landscape Character Area
LCT	Landscape Character Type
LVIA	Landscape and Visual Impact Assessment
m	Metre
MHCLG	Ministry for Housing, Communities and Local Government
MSA	Mineral Safeguarding Area
NHS	National Health Service
NPPF	National Planning Policy Framework
ODPM	Office of the Deputy Prime Minister
PPG	Planning Policy Guidance
PPP	Plan, Policy and Programme
PRoW	Public Right of Way
SA	Sustainability Appraisal
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest

Executive Summary

About this report

- E1 The Greater Norwich Development Partnership (GNDP) are in the process of preparing the Greater Norwich Local Plan (GNLP), which will include allocations and policies to meet the accommodation needs of Gypsies and Travellers.
- E2 As part of the GNLP process, a Sustainability Appraisal (SA) is being undertaken that incorporates the requirements of Strategic Environmental Assessment (SEA). The purpose of SA/SEA is to help guide and influence the Plan making process for the GNDP by identifying the likely sustainability effects of various reasonable alternative options.
- E3 The Greater Norwich Gypsy and Traveller Accommodation Assessment (GTAA) Report (June 2022)¹ has been prepared to assess the accommodation needs of Gypsies and Travellers and Travelling Showpeople within the Plan area, through a review of secondary information, surveys and interviews. The GTAA found that 50 Gypsy and Traveller pitches are required over the Plan period to 2038.
- E4 The GNLP was submitted to the Secretary of State for independent examination on 30th July 2021, with examination hearings held between February and March 2022. The Inspectors stated that a focussed consultation on proposed Gypsy and Traveller sites and policies within the GNLP is required. This SA report therefore comprises an appraisal of the three reasonable alternative sites and related policies proposed within the GNLP for Gypsies and Travellers within the Plan area.
- E5 SA is the process of informing and influencing the preparation of a Local Plan to optimise its sustainability performance. SA considers the social, economic and environmental performance of the Plan.

¹ RRR Consultancy Ltd (2022) Greater Norwich Gypsy and Traveller Accommodation Assessment Report, June 2022. Available at: <https://www.gnlp.org.uk/sites/gnlp/files/2022-06/Greater%20Norwich%20GTAA%20Final%20Report%20June%202022.pdf> [Date Accessed: 21/06/22]

Summary findings

- E6 A total of three reasonable alternative sites proposed for permanent Gypsy and Traveller pitches have been identified across Greater Norwich. These three sites have been assessed within this SA report, based on the same methodology that has been used throughout the SA process for the assessment of housing, employment and mixed-use sites.
- E7 The SA has identified a range of positive and negative potential impacts of the reasonable alternative sites on the objectives within the SA Framework. Negative impacts were mainly related to issues associated with the development being situated outside of sustainable target distances to services such as schools and healthcare facilities, and the potential for threats or pressures to environmental assets including biodiversity features, watercourses and the loss of ecologically or agriculturally valuable soil associated with development on previously undeveloped land. Positive impacts were identified relating to the provision of pitches to contribute towards meeting accommodation needs for Gypsies and Travellers, and the location of the sites away from areas of fluvial flood risk.
- E8 Some (but not all) of these negative impacts may be mitigated through policy and site design.
- E9 The GNLP has proposed all three sites for allocation within the emerging GNLP 'Site Policies for Gypsy and Traveller Permanent Residential Pitches Focused Consultation' document. Each site has an accompanying site policy which has been prepared to address site-specific issues alongside the proposed allocation.
- E10 The three reasonable alternative Gypsy and Traveller sites perform similarly overall in the SA. Following consideration of policy mitigation, the SA has identified residual positive, negligible and negative effects against some SA Objectives.
- E11 The best performing option could be identified as Site GNLP5005, because after the potential mitigating influence of the GNLP policies is taken into account, it scores positively overall for the most SA Objectives. However, the assessment of this site has also identified the potential for minor negative impacts across several SA Objectives.
- E12 There is a degree of uncertainty regarding the impacts of all sites on biodiversity (SA Objective 3) owing to the emerging mitigation strategy regarding nutrient neutrality issues within Norfolk. Furthermore, at this stage, the impacts that could arise at Site GNLP5007 are uncertain for some SA Objectives as the exact location of the Gypsy and Traveller pitches within the wider Costessey Contingency Site are unknown at the time of writing.
- E13 Where relevant, the SA has identified some recommendations to enhance or strengthen the proposed site allocation policies.

Next steps

- E14 This SA Report has been prepared as an addendum to the Regulation 19 SA Report, and will undergo a 6-week public consultation period between July and September 2022.
- E15 This SA Report is subject to a focused consultation alongside the 'Site Policies for Gypsy and Traveller Permanent Residential Pitches Focused Consultation' document, the Gypsy and Traveller Site Assessment Booklet, HELAA Addendum and the HRA.
- E16 Following the consultation period, responses will be considered by the Councils to inform the emerging GNLP as the examination stage progresses.

This page is deliberately blank.

1 Introduction

1.1 Context

1.1.1 Lepus Consulting is conducting the Sustainability Appraisal (SA) process for the Greater Norwich Local Plan (GNLP), including Gypsy and Traveller sites and policies, on behalf of Greater Norwich Development Partnership (GNDP) which includes Broadland District Council, Norwich City Council and South Norfolk Council.

1.1.2 The Submission Version of the GNLP was submitted to the Secretary of State for independent examination on 30th July 2021. Between 1st February and 22nd March 2021, the GNDP underwent public consultation on the Regulation 19 Pre-Submission Draft Version of the GNLP², with examination hearings held between February and March 2022. This version of the GNLP was supported by a Sustainability Appraisal/Strategic Environmental Assessment (SA/SEA) report³, which satisfied the requirements of an 'Environmental Report' as per the SEA Regulations⁴ (from here on referred to as the Regulation 19 SA Report).

1.1.3 SA is the process of informing and influencing the preparation of a Local Plan to maximise sustainability value. SA is integrated with the SEA process so that the requirements of both assessments are prepared simultaneously. The purpose of SA/SEA is to help guide and influence the plan-making process for GNDP by identifying the likely environmental, social and economic effects of various reasonable alternative sites and policies.

1.1.4 This document comprises an Addendum to the Regulation 19 SA Report⁵, focusing on the assessment of proposed Gypsy and Traveller sites, which has been prepared in order to address a request made by the Planning Inspectors during the examination.

1.1.5 The GNDP have identified three reasonable alternative Gypsy and Traveller sites within South Norfolk and Broadland Districts, with potential pitch delivery ranging from two to 18 pitches per site. Additionally, the Councils have prepared site allocation policies which seek to facilitate the allocation of the three identified Gypsy and Traveller sites and their development management within the emerging GNLP, as follows:

- Policy GNLP5004;
- Policy GNLP5005; and
- Policy GNLP5007.

² GNLP (2021) Regulation 19 Publication Information. Available at: <https://www.gnlp.org.uk/regulation-19-publication-part-1-strategy/regulation-19-publication-information-not-part-plan> [Date Accessed: 06/08/21]

³ Lepus Consulting (2021) Sustainability Appraisal and Strategic Environmental Assessment of the Greater Norwich Local Plan (Volumes 1-3) January 2021. Available at: <https://www.gnlp.org.uk/regulation-19-publication/evidence-base> [Date Accessed: 06/08/21]

⁴ The Environmental Assessment of Plans and Programmes Regulations 2004. Available at: <https://www.legislation.gov.uk/uksi/2004/1633/contents/made> [Date Accessed: 20/06/22]

⁵ Lepus Consulting (2021) Sustainability Appraisal and Strategic Environmental Assessment of the Greater Norwich Local Plan. Volume 2 of 3: Regulation 19 SA Report. Available at: https://www.gnlp.org.uk/sites/gnlp/files/2021-01/LC-663_Vol_2of3_GNLP_SA_Reg19_20_250121LB_compressed%20Jan%202021.pdf [Date Accessed: 14/04/22]

1.1.6 This SA report has appraised these three reasonable alternative sites and the accompanying site policies in terms of sustainability performance using the SA Framework as set out in **Appendix A**. This will help the GNDP to identify potential mitigation or improvements which could be made to the policies at this stage, in order to help ensure the GNDP have chosen the most sustainable options.

1.2 Greater Norwich

1.2.1 Lepus Consulting has been commissioned by the GNDP to review the GNLP Gypsy and Traveller sites and policies, through the SA process. The GNDP are working with Norfolk County Council and consist of the following:

- Broadland District Council;
- Norwich City Council; and
- South Norfolk District Council.

1.2.2 Greater Norwich comprises the three districts of Norwich, Broadland and South Norfolk (see **Figure 1.1**). The districts of Broadland and South Norfolk are predominantly rural in nature, with isolated towns and villages separated by large areas of open farmland. The Broads National Park, a nationally important landscape, is located to the east of the Greater Norwich Local Plan area. The Broads is a visually and culturally distinctive part of Norfolk. The River Yare, River Bure and River Waveney form the district boundaries between Broadland and South Norfolk.

1.2.3 The city of Norwich is a major regional centre for employment, tourism and culture and is Norfolk's highest-ranking retail centre. Within the district there are numerous primary and secondary educational facilities. Besides schools, there are a number of higher and further education centres, including the University of East Anglia, Norwich University College of the Arts, City College and Easton College.

1.2.4 The GNLP will guide development across the three districts up to 2038, providing both strategic policies and site allocations to meet demand for housing and employment, Gypsy and Traveller pitches, as well as other land use matters. It is being produced by the three councils of Broadland, Norwich and South Norfolk, supported by Norfolk County Council. It takes the adopted Joint Core Strategy (JCS) for Broadland, Norwich and South Norfolk, which covers all three districts from 2008 up to 2026, as its starting point.

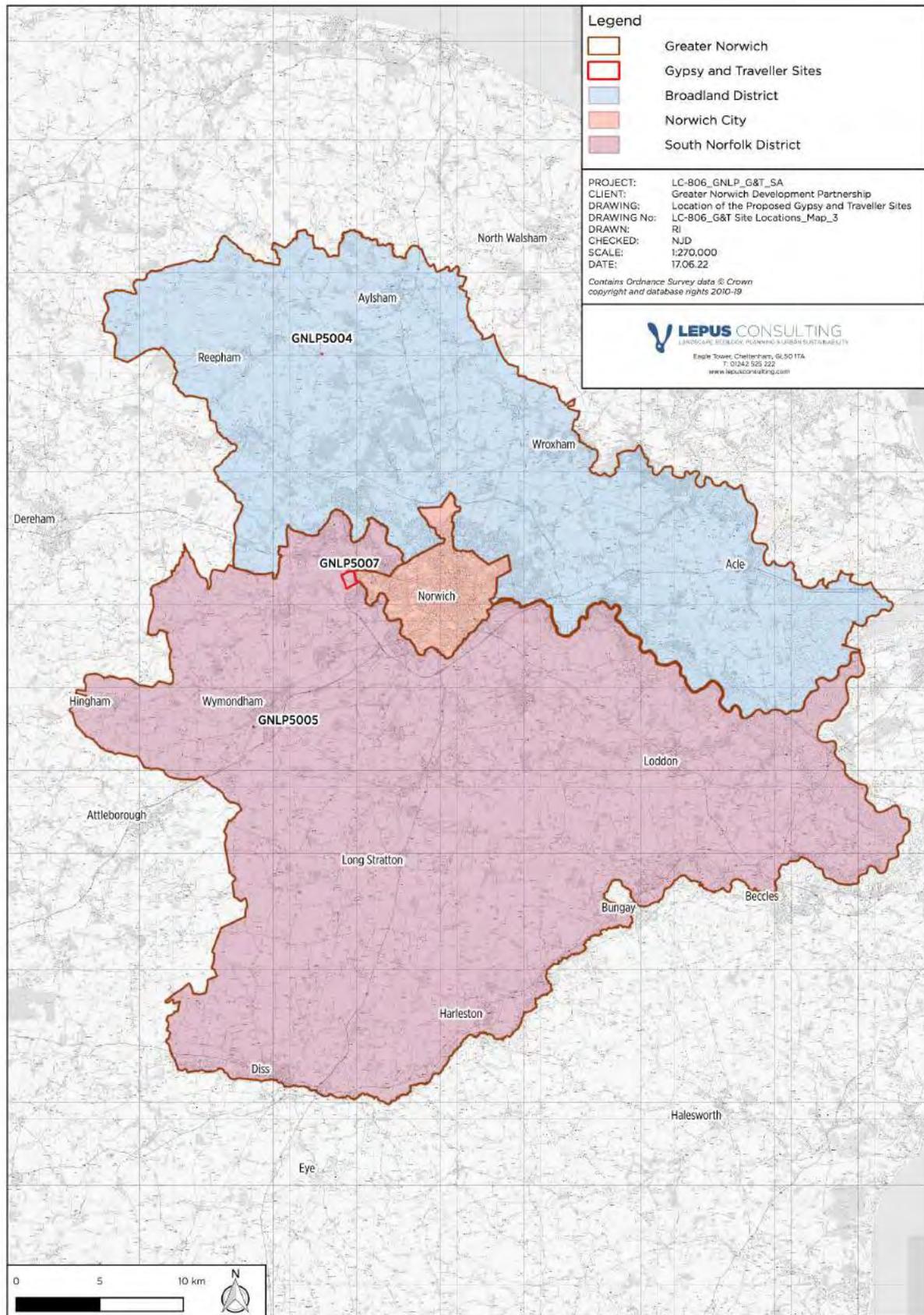


Figure 1.1: District boundaries within Greater Norwich and location of proposed three Gypsy and Traveller sites.

1.3 Gypsy and Traveller Accommodation Needs Assessment

- 1.3.1 The Greater Norwich Gypsy and Traveller Accommodation Assessment (GTAA) Report (June 2022)⁶ has been prepared to assess the accommodation needs of Gypsies and Travellers and Travelling Showpeople within the Plan area, through a review of secondary information, surveys and interviews.
- 1.3.2 In accordance with planning policy for traveller sites⁷, Gypsies and Travellers are defined as *“persons of nomadic habit of life whatever their race or origin, including such persons who on grounds only of their own or their family’s or dependants’ educational or health needs or old age have ceased to travel temporarily, but excluding members of an organised group of travelling showpeople or circus people travelling together as such”*.
- 1.3.3 Travelling Showpeople are defined as *“members of a group organised for the purposes of holding fairs, circuses or shows (whether or not travelling together as such). This includes such persons who on the grounds of their own or their family’s or dependants’ more localised pattern of trading, educational or health needs or old age have ceased to travel temporarily, but excludes Gypsies and Travellers as defined above”*⁸.
- 1.3.4 When taking into account this new evidence alongside recent planning permissions, the GTAA found that 50 Gypsy and Traveller pitches are required by the end of the Plan period in 2038.

1.4 Integrated approach to SA and SEA

- 1.4.1 The requirements to carry out SA and SEA are distinct, although it is possible to satisfy both obligations using a single appraisal process.
- 1.4.2 The European Union Directive 2001/42/EC⁹ (SEA Directive) applies to a wide range of public plans and programmes on land use, energy, waste, agriculture, transport and more (see Article 3(2) of the Directive for other plan or programme types).
- 1.4.3 The objective of the SEA procedure can be summarised as follows: *“the objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development”*.

⁶ RRR Consultancy Ltd (2022) Greater Norwich Gypsy and Traveller Accommodation Assessment Report, June 2022. Available at: <https://www.gnlp.org.uk/sites/gnlp/files/2022-06/Greater%20Norwich%20GTAA%20Final%20Report%20June%202022.pdf> [Date Accessed: 21/06/22]

⁷ MHCLG (2015) Planning policy for traveller sites. Available at: <https://www.gov.uk/government/publications/planning-policy-for-traveller-sites> [Date Accessed: 22/04/22]

⁸ Ibid

⁹ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 (SEA Directive). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042&from=EN> [Date Accessed: 22/04/22]

- 1.4.4 The Directive has been transposed into English law by the SEA Regulations (SI no. 1633). Under the requirements of the SEA Directive and SEA Regulations, specific types of plans that set the framework for the future development consent of projects must be subject to an environmental assessment. Therefore, it is a legal requirement for the GNLP to be subject to SEA throughout its preparation.
- 1.4.5 SA is a UK-specific procedure used to appraise the impacts and effects of development plans in the UK. It is a legal requirement as specified by s19(5) of the planning and Compulsory Purchase Act 2004¹⁰ and should be an appraisal of the economic, social and environmental sustainability of development plans.
- 1.4.6 The present statutory requirement for SA lies in The Town and Country Planning (Local Planning) (England) Regulations 2012¹¹. SA is a systematic process for evaluating the environmental consequences of proposed plans or programmes to ensure environmental issues are fully integrated and addressed at the earliest appropriate stage of decision-making.

1.5 Best Practice Guidance

- 1.5.1 Government policy recommends that both SA and SEA are undertaken under a single sustainability appraisal process, which incorporates the requirements of the SEA Directive. This can be achieved through integrating the requirements of SEA into the SA process. The approach for carrying out an integrated SA and SEA is based on best practice guidance:

- European Commission (2004) Implementation of Directive 2001/42 on the assessment of the effects of certain plan and programmes on the environment¹²;
- Office of Deputy Prime Minister (2005) A Practical Guide to the SEA Directive¹³;
- Ministry of Housing, Communities and Local Government (2018) National Planning Policy Framework (NPPF)¹⁴;
- Ministry of Housing, Communities and Local Government (2018) Planning Practice Guidance (PPG)¹⁵; and

¹⁰ Planning and Compulsory Purchase Act 2004. Available at: <https://www.legislation.gov.uk/ukpga/2004/5/contents> [Date Accessed: 22/04/22]

¹¹ The Town and Country Planning (Local Planning) (England) Regulations 2012. Available at: <http://www.legislation.gov.uk/ukxi/2012/767/contents/made> [Date Accessed: 22/04/22]

¹² European Commission (2004) Implementation of Directive 2001/42 on the assessment of the effects of certain plan and programmes on the environment. Available at: http://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf [Date Accessed: 22/04/22]

¹³ Office of Deputy Prime Minister (2005) A Practical Guide to the SEA Directive. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf [Date Accessed: 22/04/22]

¹⁴ Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 22/04/22]

¹⁵ Ministry of Housing, Communities and Local Government (2019) Planning practice guidance. Available at: <https://www.gov.uk/government/collections/planning-practice-guidance> [Date Accessed: 22/04/22]

- Royal Town Planning Institute (2018) Strategic Environmental Assessment, Improving the effectiveness and efficiency of SEA/SA for land use plans¹⁶.

1.6 Sustainability Appraisal

- 1.6.1 The preparation of the GNLP has been supported by a sustainability appraisal process. This document is a component of the SA of the GNLP, comprising the SA of Gypsy and Traveller sites and policies.
- 1.6.2 SA is the process of informing local development plans to maximise their sustainability value and is a statutory requirement when preparing development plan documents. The SA process provides a soundness test for development plan documents, the key objective of which is to promote sustainable development.
- 1.6.3 The SA process has followed the Local Plan making process on an iterative basis. Consequently, there are several SA documents that have been prepared. The Regulation 19 SA Report meets the requirements of the SEA Regulations and all earlier work is clearly referenced in the Regulation 19 SA Report and is available on the GNLP website¹⁷. **Table 1.1** sets out the iterative timeline of the Local Plan and SA/SEA processes.

Table 1.1: Timeline of SA documents in relation to the GNLP stages of preparation

Date	Local Plan Stage	Sustainability Appraisal
March 2017		SA Scoping Report (GNDP) Identified the scope for the SA, set out the context, 15 SA Objectives and approach of the assessment.
January to March 2018	Stage A Regulation 18 Consultation of Site Proposals, Growth Options and the Interim Sustainability Appraisal	Interim Sustainability Appraisal (GNDP) This report assessed the GNLP options for growth, which included six options for the spatial strategy and policy options.
October to December 2018	Stage B Regulation 18 Site Proposals Addendum and HELAA Addendum	No SA report prepared.
January to March 2020	Stage C Regulation 18 Draft Strategy consultation Draft strategy including vision, objectives and strategic policies, a sites document and supporting evidence documents.	Regulation 18C SA Report (Lepus) This report assessed 285 reasonable alternative sites and eleven draft strategic policies.
February to March 2021	Publication Draft Plan The GNLP is split into two documents: The Strategy and Site Allocations. The Strategy Document sets out the profile of Greater Norwich, the Plan vision and objectives, and the strategic policies. The Site Allocations	Regulation 19 SA Report (Lepus) The Regulation 19 SA Report summarised the SA process to date and helped inform the examination stage of the preparation of the GNLP. The Regulation 19 SA presented the findings of the sustainability appraisal of the GNLP, which is composed principally of twelve

¹⁶ Royal Town Planning Institute (2018) Strategic Environmental Assessment, Improving the effectiveness and efficiency of SEA/SA for land use plans. Available at: <http://www.rtpi.org.uk/media/2668152/sea-sapracticeadvicefull2018c.pdf> [Date Accessed: 22/04/22]

¹⁷ Greater Norwich Local Plan. Available at: <https://www.gnlp.org.uk/growing-stronger-communities-together> [Date Accessed: 20/06/22]

Date	Local Plan Stage	Sustainability Appraisal
	Document sets out the site allocations of the GNLP.	strategic policies and 138 site policies. This report also contained an assessment of an additional 107 reasonable alternative sites.
September 2021		Consultation response: Addendum to the Regulation 19 SA/SEA Report (Lepus) The Addendum sought to address consultation responses related to the SA/SEA received by the GNLP during the Regulation 19 consultation, specifically in relation to the testing of reasonable alternatives and selection process for the chosen spatial strategy and distribution of growth in the Plan area.
December 2021		Inspectors' Initial Questions: Reasonable Alternatives for Housing Number Options. Addendum to the Regulation 19 SA/SEA Report (Lepus) Prepared in response to the Inspectors' Initial Question 7 which asked for an addendum to the SA to be produced, relating to the housing growth numbers, and addressing "both smaller and minimal supply buffers as 'reasonable alternatives'".
June 2022		Note in response to Inspectors' questions relating to the Sustainability Appraisal of potential development Sites (Lepus) An SA note has been prepared to address site specific issues raised in representations made in writing or in person at the EiP Part 1 Hearings.
July to September 2022	Site Policies for Gypsy and Traveller Permanent Residential Pitches Focused Consultation The consultation document sets out three possible sites to provide residential pitches for Gypsies and Travellers.	SA of the GNLP Gypsy and Traveller Sites and Policies: Addendum to the Regulation 19 SA/SEA Report (Lepus) This SA Addendum presents the assessment of three Gypsy and Traveller sites and site allocation policies.

1.7 GNLP Gypsy and Traveller Sites and Policies

1.7.1 The GNLP have identified three reasonable alternative Gypsy and Traveller sites, listed in **Table 1.2**.

Table 1.2: Reasonable alternative sites considered within this SA report

Site Reference	Site Name	Area (ha)	Proposed No. of Pitches
GNLP5004	Land off Buxton Road, Eastgate	0.12	4
GNLP5005	Wymondham Recycling Centre, Strayground Lane	0.07	2
GNLP5007	Land off Bawburgh Lane, north of New Road and east of the A47, Costessey (Contingency Site)	1ha of the 62.33ha larger site at Costessey	18

1.7.2 All three reasonable alternative sites are allocated for development within the GNLP. Three Gypsy and Traveller Site policies have been prepared by the Councils which set out requirements for the development proposals: Policies GNLP5004; GNLP5005; and GNLP5007. These site-specific policies have been assessed within **Chapter 4** of this report.

1.8 Signposting for this report

1.8.1 **Chapter 2** of this report sets out the methodology used to present and assess the findings of the SA process.

1.8.2 **Chapter 3** of this report presents the findings of the appraisal of the three reasonable alternative Gypsy and Traveller sites, pre-mitigation.

1.8.3 **Chapter 4** of this report presents the assessment of Gypsy and Traveller site policies.

1.8.4 **Chapter 5** of this report outlines the potential mitigating influence of GNLP policies and post-mitigation assessment of the three reasonable alternative Gypsy and Traveller sites.

1.8.5 **Chapter 6** sets out the site identification process that has been undertaken and the reasons for rejection and selection of each reasonable alternative site.

1.8.6 **Chapter 7** outlines the next steps of the SA process.

2 Methodology

2.1 Assessment of Reasonable Alternatives

- 2.1.1 The purpose of this document is to provide an appraisal of the GNLP development proposals and policies prepared by GNPD in line with the SEA Regulations.
- 2.1.2 Regulation 12 of the SEA Regulations¹⁸ states that the Environmental Report “*shall identify, describe and evaluate the likely significant effects of the environment of – (a) implementing the plan or programme; and (b) reasonable alternatives taking into account the objectives and geographical scope of the plan or programme*”.
- 2.1.3 Each of the sites and policies appraised in this report has been assessed for their likely impacts on each SA Objective of the SA Framework. The SA Framework is presented in its entirety in **Appendix A**.
- 2.1.4 The SA Framework is comprised of SA Objectives and decision-making criteria. Acting as yardsticks of sustainability performance, the SA Objectives are designed to represent the topics identified in Schedule 2 of the SEA Regulations¹⁹. Including the SEA topics in the SA Objectives helps ensure that all environmental criteria of the SEA Regulations are represented. Consequently, the SA Objectives reflect all subject areas to ensure the assessment process is transparent, robust and thorough.
- 2.1.5 It is important to note that the order of SA Objectives in the SA Framework does not infer prioritisation. The SA Objectives are at a strategic level and can potentially be open-ended. In order to focus each objective, decision-making criteria are presented in the SA Framework to be used during the appraisal of policies and sites.
- 2.1.6 A single value from **Table 2.1** is allocated to each SA Objective for each site and policy. Justification for the score is presented in an accompanying narrative assessment text. The assessment of a significant effect is in accordance with the SEA Regulations which states that, where feasible, effects considered should include “*short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects*”.

¹⁸ The Environmental Assessment of Plans and Programmes Regulations 2004. Regulation 12. Available at: <https://www.legislation.gov.uk/uksi/2004/1633/regulation/12/made> [Date Accessed: 16/05/22]

¹⁹ Biodiversity flora and fauna; Population; Human health; Soil; Water; Air; Climatic factors; Material assets; Cultural heritage (including architectural and archaeological heritage); and Landscape.

Table 2.1: Guide to scoring significant effects

Significance	Definition (not necessarily exhaustive)
Major Negative --	The size, nature and location of a reasonable alternative would be likely to: <ul style="list-style-type: none"> • Permanently degrade, diminish or destroy the integrity of a quality receptor, such as a feature of international, national or regional importance; • Cause a very high-quality receptor to be permanently diminished; • Be unable to be entirely mitigated; • Be discordant with the existing setting; and/or • Contribute to a cumulative significant effect.
Minor Negative -	The size, nature and location of a reasonable alternative would be likely to: <ul style="list-style-type: none"> • Not quite fit into the existing location or with existing receptor qualities; and/or • Affect undesignated yet recognised local receptors.
Negligible 0	Either no impacts are anticipated, or any impacts are anticipated to be negligible.
Uncertain +/-	It is entirely uncertain whether impacts would be positive or adverse.
Minor Positive +	The size, nature and location of a reasonable alternative would be likely to: <ul style="list-style-type: none"> • Improve undesignated yet recognised receptor qualities at the local scale; • Fit into, or with, the existing location and existing receptor qualities; and/or • Enable the restoration of valued characteristic features.
Major Positive ++	The size, nature and location of a reasonable alternative would be likely to: <ul style="list-style-type: none"> • Enhance and redefine the location in a positive manner, making a contribution at a national or international scale; • Restore valued receptors which were degraded through previous uses; and/or • Improve one or more key elements/features/characteristics of a receptor with recognised quality such as a specific international, national or regional designation.

2.1.7 When selecting a single value to best represent the environmental performance of the relevant SA Objective, the precautionary principle is used. This is a worst-case scenario approach. If a positive effect is identified in relation to one criterion within the SA Framework (see the second column of the SA Framework in **Appendix A**) and a negative effect is identified in relation to another criterion within the same SA Objective, the overall score will be negative for that objective.

2.1.8 The assessment considers, on a strategic basis, the degree to which a location can accommodate change without detrimental effects on known receptors (identified in the baseline).

2.2 Significance

- 2.2.1 Where an environmental impact has been identified, the significance of effect has been categorised as minor or major. **Table 2.1** lists the significance matrix and explains the terms used. The nature of the significant effect can be either beneficial or adverse depending on the type of development and the design and mitigation measures proposed.
- 2.2.2 Each reasonable alternative site that has been identified in this report has been assessed for its likely significant effect against each SA Objective in the Framework, as per **Table 2.1**. Scores are not intended to be summed.
- 2.2.3 It is important to note that the scores are high level indicators. The narrative assessment text which details the key decision-making criteria behind each awarded score should always read alongside the score. Assumptions and limitations in **Table 2.4** and **section 2.7** offer further insight into how each score was arrived at.
- 2.2.4 Significance of effect is a combination of impact sensitivity and magnitude.

2.3 Impact sensitivity

- 2.3.1 Impact sensitivity is measured through consideration as to how the receiving environment will be impacted by a plan proposal. This includes assessment of the value and vulnerability of the area, whether or not environmental quality standards will be exceeded, and if impacts will affect designated areas or landscapes.
- 2.3.2 A guide to the range of scales used in the impact significance matrix is presented in **Table 2.2**. For most receptors, sensitivity increases with geographic scale.

Table 2.2: Geographic scales of receptors

Scale	Typical criteria
International/ national	Designations that have an international aspect or consideration of transboundary effects beyond national boundaries. This applies to effects and designations/receptors that have a national or international dimension.
Regional	This includes the regional and sub-regional scale, including county-wide level and regional areas.
Local	This is the district and neighbourhood scale.

2.4 Impact magnitude

- 2.4.1 Impact magnitude relates to the degree of change the receptor will experience, including the probability, duration, frequency and reversibility of the impact. Impact magnitude is determined based on the susceptibility of a receptor to the type of change that will arise, as well as the value of the affected receptor (see **Table 2.3**).

Table 2.3: Impact magnitude

Impact magnitude	Typical criteria
High	Likely total loss of or major alteration to the receptor in question; <ul style="list-style-type: none"> • Provision of a new receptor/feature; or • The impact is permanent and frequent.
Medium	Partial loss/alteration/improvement to one or more key features; or The impact is one of the following: <ul style="list-style-type: none"> • Frequent and short-term; • Frequent and reversible; • Long-term (and frequent) and reversible; • Long-term and occasional; or • Permanent and occasional.
Low	Minor loss/alteration/improvement to one or more key features of the receptor; or The impact is one of the following: <ul style="list-style-type: none"> • Reversible and short-term; • Reversible and occasional; or • Short-term and occasional.

2.5 Distances

2.5.1 Where distances have been measured, these are ‘as the crow flies’ from the furthest edge of the site unless specified otherwise. Site end users require access to a range of facilities and amenities. Some distances that are considered to be sustainable in this regard are based on Barton, Grant and Guise (2010) *Shaping Neighbourhoods for Local Health and Global Sustainability*²⁰.

2.6 Limitations of predicting effects

2.6.1 SA is a tool for predicting potential significant effects. Predicting effects relies on an evidence-based approach and incorporates professional judgement. It is often not possible to state with absolute certainty whether effects will occur, as many impacts are influenced by a range of factors such as the design and the success of mitigation measures.

2.6.2 The assessments in this report are based on the best available information, including that provided to us by GNDP and information that is publicly available. The assessment of reasonable alternatives is somewhat limited in terms of available data resources. For example, up to date ecological surveys and/or landscape and visual impact assessments have not been available. Every attempt has been made to predict effects as accurately as possible.

²⁰ Barton, H., Grant. M. & Guise. R. (2010) *Shaping Neighbourhoods: For local health and global sustainability*, January 2010.

2.6.3 SA operates at a strategic level which uses available secondary data for the relevant SA Objective. Sometimes, in the absence of more detailed information, forecasting the potential impacts of development can require making reasonable assumptions based on the best available data and trends. However, all reasonable alternatives must be assessed in the same way.

2.7 Assessment assumptions

2.7.1 A number of assumptions are inherent to the appraisal process for specific SA Objectives (see **Table 2.4**). These should be borne in mind when considering the assessment findings.

Table 2.4: Assumptions for each SA objective.

SA Objective	Assessment Assumptions/Methodology
<p>1. Air Quality and Noise: Minimise air, noise and light pollution to improve wellbeing.</p>	<p>Exposure of new residents to air pollution has been considered in the context of development proposal location in relation to established Air Quality Management Areas (AQMAs) and main roads. It is widely accepted that the effects of air pollution from road transport decreases with distance from the source of pollution i.e. the road carriageway. The Department for Transport (DfT) in their Transport Analysis Guidance (TAG) consider that, “beyond 200m from the link centre, the contribution of vehicle emissions to local pollution levels is not significant”²¹. This statement is supported by Highways England and Natural England based on evidence presented in a number of research papers^{22 23}. A buffer distance of 200m has therefore been applied in this assessment.</p> <p>The proximity of a development proposal in relation to a main road (defined as a motorway or A-road) determines the exposure level of site end users to road related air and noise emissions²⁴. In line with the DMRB guidance, it is assumed that site end users would be most vulnerable to these impacts within 200m of a main road. This distance has therefore been applied throughout this assessment to both existing road and rail sources.</p> <p>Development proposals located within 200m of a main road would be expected to have a minor negative impact on local residents’ exposure to air and noise pollution.</p> <p>Development proposals located over 200m from a main road would be expected to have a negligible impact on local residents’ exposure to air and noise pollution.</p> <p>Development proposals located within 200m of a railway line would be expected to have a minor negative impact on local residents’ exposure to noise pollution and vibrations.</p> <p>Development proposals located over 200m from a railway line would be expected to have a negligible impact on local residents’ exposure to noise pollution and vibrations.</p>

²¹ Department for Transport (2022) TAG unit A3 Environmental Impact Appraisal. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/825064/tag-unit-a3-environmental-impact-appraisal.pdf [Date Accessed: 22/06/22]

²² Bignal, K., Ashmore, M & Power, S. (2004) The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough.

²³ Ricardo-AEA (2016) The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report No. 199.

²⁴ Design Manual for Roads and Bridges (2019) Sustainability & Environment Appraisal: LA 105 Air quality. Available at: <https://www.standardsforhighways.co.uk/dmrb/search/10191621-07df-44a3-892e-c1d5c7a28d90> [Date Accessed: 22/06/22]

SA Objective	Assessment Assumptions/Methodology
	<p>Due to the extent and nature of the development (Gypsy & Traveller pitches) it is assumed that development proposals would have a negligible impact on the generation of air pollution in the Plan area.</p>
<p>2. Climate Change Mitigation and Adaptation: Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change.</p>	<p>Carbon Emissions</p> <p>At this stage, the nature and design of Gypsy and Traveller pitches which could be developed at each site is unknown. Therefore, increases in greenhouse gas (GHG) emissions as a result of the construction and occupation of dwellings is unknown.</p> <p>Due to the extent and nature of the development (pitches for Gypsies & Travellers) it is assumed that development proposals would have a negligible impact on Greater Norwich’s contributions to climate change.</p> <p>Fluvial Flooding</p> <p>The level of fluvial flood risk present across the Plan area is based on the Environment Agency’s flood risk data²⁵, such that:</p> <ul style="list-style-type: none"> • Flood Zone 3: 1%+ chance of flooding each year; • Flood Zone 2: 0.1% - 1% chance of flooding each year; and • Flood Zone 1: Less than 0.1% chance of flooding each year. <p>It is assumed that development proposals will be in perpetuity and it is therefore likely that development will be subject to the impacts of flooding at some point in the future, should it be situated on land at risk of fluvial flooding.</p> <p>Where development proposals coincide with Flood Zone 2, a minor negative impact would be expected. Where development proposals coincide with Flood Zone 3 (either Flood Zone 3a or 3b), a major negative impact would be expected. Where development proposals are located within Flood Zone 1, a minor positive impact would be expected for climate change adaptation.</p> <p>Surface Water Flooding</p> <p>Areas determined to be at high risk of surface water (pluvial) flooding have more than a 3.3% chance of flooding each year, medium risk between 1% and 3.3%, and low risk between 0.1% and 1% chance.</p> <p>Development proposals located in areas at low and medium risk of surface water flooding would be expected to have a minor negative impact on pluvial flooding. Development proposals located within areas at high risk of surface water flooding would be expected to have a major negative impact on pluvial flooding.</p> <p>Where development proposals are not located in areas determined to be at risk of pluvial flooding, a negligible impact would be expected for climate change adaptation.</p> <p>It is assumed that development proposals will be in perpetuity and it is therefore likely that development would be subject to the impacts of flooding at some point in the future, should it be situated on land at risk of surface water flooding.</p>
<p>3. Biodiversity, Geodiversity and Green Infrastructure: Protect and enhance</p>	<p>Where a development proposal is coincident with, adjacent to or located in proximity to an ecological or geological receptor, it is assumed that negative effects associated with development will arise to some extent. These negative effects include those that occur during the construction phase and are associated with the construction process and construction vehicles (e.g. habitat loss, habitat fragmentation, habitat degradation, noise,</p>

²⁵ Environment Agency (2013) Flood Map for Planning Risk. Available at: <http://apps.environment-agency.gov.uk/wiyby/cv/151263.aspx>
 [Date Accessed: 22/06/22]

SA Objective	Assessment Assumptions/Methodology
<p>the area's biodiversity and geodiversity assets and expand the provision of green infrastructure.</p>	<p>air, water and light pollution) and those that are associated with the operation/occupation phases of development (e.g. public access associated disturbances, increases in local congestion resulting in a reduction in air quality, changes in noise levels, visual disturbance, light pollution, impacts on water levels and quality etc.).</p> <p>Negative impacts would be expected where the ecological or geological designations listed above may be harmed or lost as a result of proposals. The assessment is largely based on a consideration of the proximity of a site and the attributes and qualities of the receptor in question.</p> <p>For the purposes of this assessment, impacts on priority habitats protected under the 2006 NERC Act²⁶ have been considered in the context of Natural England's publicly available Priority Habitat Inventory database²⁷. It is acknowledged this may not reflect current local site conditions in all instances.</p> <p>It is assumed that construction and occupation of previously undeveloped greenfield land would result in a net reduction in vegetation cover and Green Infrastructure in the Plan area. Development proposals which would be likely to result in the loss of greenfield land are therefore expected to contribute towards a cumulative loss in vegetation cover. This would also be expected to lead to greater levels of fragmentation and isolation across the wider ecological network, such as the loss of habitat stepping-stones and corridors. This can restrict the ability of ecological receptors to adapt to the effects of climate change. The loss of greenfield land is considered under the Natural Resources objective (SA Objective 14) in this assessment.</p> <p>It should be noted that no detailed ecological surveys have been completed by Lepus to inform the assessments made in this report.</p> <p>Protected species survey information is not generally available for the sites within the Plan area. It is acknowledged that data is available from the local biological records centre. However, it is noted that this data may be under-recorded in certain areas. This under-recording does not imply species absence. As a consequence, consideration of this data on a site-by-site basis within this assessment would have the potential to skew results – favouring well recorded areas of the Plan area. As such, it has not been possible to assess impacts on protected species in a fair and consistent basis at the site level using primary survey data.</p> <p>It is anticipated that the GNDP will require detailed ecological surveys and assessments to accompany future planning applications. Such surveys will determine on a site-by-site basis the presence of Priority Species and Priority Habitats protected under the NERC Act.</p> <p>It is assumed that the loss of biodiversity assets, such as ancient woodland or an area of priority habitat, are permanent effects.</p> <p>It is assumed that mature trees and hedgerows will be retained where possible.</p> <p>Natural England has developed Impact Risk Zones (IRZs) for each SSSI unit in the country. IRZs are a Geographical Information System (GIS) tool which allow a rapid initial assessment of the potential risks posed by development proposals to: SSSIs, SACs, SPAs and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development</p>

²⁶ Natural Environment and Rural Communities Act 2006. Available at: <http://www.legislation.gov.uk/ukpga/2006/16/contents> [Date Accessed: 22/06/22]

²⁷ Natural England (2021) Priority Habitat Inventory (England). Available at: <https://data.gov.uk/dataset/4b6ddb7-6c0f-4407-946e-d6499f19fcd/priority-habitat-inventory-england> [Date Accessed: 22/06/22]

SA Objective	Assessment Assumptions/Methodology
	<p>proposal which could potentially have adverse impacts²⁸. It should be noted that IRZ classifications are regularly updated by Natural England, and although were correct at the time of writing, may have since been amended.</p> <p>Where development proposals coincide with a Habitats site, a SSSI, NNR, LNR, CWS, CGS or ancient woodland, or are adjacent to a Habitats site, SSSI or NNR, it is assumed that development would have a permanent impact on these nationally important biodiversity and geodiversity assets, and a major negative impact would be expected.</p> <p>Where development proposals coincide with priority habitats, are adjacent to an ancient woodland, LNR, CWS or CGS, are located within a SSSI IRZ which states to “consult Natural England” or are located in close proximity to a Habitats site, SSSI, NNR, LNR or stand of ancient woodland, it is assumed that development would have an impact on these biodiversity and geodiversity assets, and a minor negative impact would be expected.</p> <p>There are numerous Habitats sites located within and in close proximity to the Plan area and various Zones of Influence, primarily relating to nutrient impacts, coincide with the Gypsy and Traveller sites. Advice relating to nutrient neutrality issues has been published in March 2022 by Natural England²⁹ and DLUHC³⁰, which affects a large proportion of the GNLG area, for which a mitigation strategy is currently being developed. The emerging HRA³¹ has assessed the potential effects of the Gypsy and Traveller sites in further detail.</p> <p>Where a development proposal would not be anticipated to impact a biodiversity or geodiversity asset, a negligible impact would be expected for this objective.</p>
<p>4. Landscape: Promote efficient use of land, while respecting the variety of landscape types in the area.</p>	<p>Impacts on landscape will be largely determined by the specific layout and design of development proposals, as well as the site-specific landscape circumstances. Detailed proposals for each development are uncertain at this stage of the assessment.</p> <p>Furthermore, this assessment comprises a desk-based exercise which has not been verified in the field. Therefore, the nature of the potential impacts on the landscape are, to an extent, uncertain. However, there is a risk of negative effects occurring, some of which may be unavoidable. As such, this risk has been reflected in the assessment as a negative impact where a development proposal is located in close proximity to sensitive landscape receptors. The level of impact has been assessed based on the nature and value of, and proximity to, the landscape receptor in question.</p> <p>Where a development proposal would not be anticipated to impact a local or designated landscape, a negligible impact would be expected for this objective.</p> <p>The Norfolk Coast and Suffolk Coast and Heaths AONBs:</p>

²⁸ Natural England (2022) Natural England’s Impact Risk Zones for Sites of Special Scientific Interest, 08 June 2022. Available at: <https://data.gov.uk/dataset/5ae2af0c-1363-4d40-9d1a-e5a1381449f8/ssi-impact-risk-zones> [Date Accessed: 22/06/22]

²⁹ Letter from Natural England to LPA Chief Executives & Heads of Planning, County Council Chief Executives and Heads of Planning, EA Area and National Team Directors, Planning Inspectorate, Natural Resources Wales (Cross border sites only) & Secretary of State for Department for Levelling Up Housing & Communities (DLUHC). Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites. 16 March 2022.

³⁰ Letter from DLUHC to Chief Planning Officers and Local Planning Authorities affected by nutrient pollution. NUTRIENT POLLUTION: NEUTRALITY, SUPPORT AND FUNDING. 16 March 2022. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061531/Chief_Planner_Letter_about_nutrient_pollution_March_2022.pdf [Date Accessed: 17/06/22]

³¹ The Landscape Partnership (2022) Habitats Regulations Assessment of published Proposed Submission Greater Norwich Local Plan – Gypsy and Traveller sites Addendum for Greater Norwich Development Partnership, June 2022.

SA Objective	Assessment Assumptions/Methodology
	<p>The Suffolk Coast and Heaths AONB is located, at its closest point, approximately 3km south east of the Greater Norwich boundary. Parts of the Norfolk Coast AONB are located approximately 8km to the north and east of Greater Norwich. It is not anticipated that the proposed development of Gypsy and Traveller Sites at any of the identified sites would impact either of these AONBs, and as such, they have not been considered further in this report.</p> <p>Discordant with LCA:</p> <p>Baseline data on Landscape Character Areas (LCAs) within the Plan area are derived from the Broadland Character Assessment Supplementary Planning Document (SPD)³² and South Norfolk Landscape Character Assessment³³. Key characteristics of each LCA have informed the appraisal of each development proposal against the landscape objective. Given that the detailed nature of the landscape in relation to each development proposal is unknown, the assessment of impact is based on the overall landscape character guidelines and key characteristics. Development proposals which are considered to be potentially discordant with the guidelines and characteristics provided in the published landscape character assessment would be expected to have a minor negative impact on the landscape objective.</p> <p>The Broads National Park:</p> <p>The Broads is an area covering approximately 303km² of low-lying wetland with National Park status. It is located to the east of Greater Norwich and follows the River Yare into Norwich City. None of the proposed Gypsy and Traveller sites are located within, or within close proximity to, the Broads and as such a negligible impact would be anticipated at all sites.</p> <p>Views:</p> <p>Development proposals which may alter views of a predominantly rural or countryside landscape experienced by users of the Public Rights of Way (PRoW) network and/ or local residents would be expected to have minor negative impacts on the landscape objective.</p> <p>Potential views from residential properties are identified through reference to aerial mapping and the use of Google Maps³⁴.</p> <p>It is anticipated that the GNDP will require developers to undertake Landscape and Visual Impact Assessments (LVIAs) to accompany any future proposals, where relevant. The LVIAs should seek to provide greater detail in relation to the landscape character of the development proposals and its surroundings, the views available towards the development, the character of those views and the sensitivity and value of the relevant landscape and visual receptors.</p> <p>Urbanisation of the Countryside:</p> <p>Development proposals which are considered to increase the risk of future development spreading further into the wider landscape would be expected to have a minor negative impact on the landscape objective.</p>

³² Broadland District Council (2013) Landscape Character Assessment Supplementary Planning Document (SPD). Available at: https://www.broadland.gov.uk/downloads/download/167/landscape_character_assessment_supplementary_planning_document_spd [Date Accessed: 22/06/22]

³³ Land Use Consultants (2001) South Norfolk Landscape Assessment. Available at: <https://www.south-norfolk.gov.uk/residents/planning/planning-policy/landscape-character-assessments> [Date Accessed: 22/06/22]

³⁴ Google Maps (2022). Available at: <https://www.google.co.uk/maps> [Date Accessed: 22/06/22]

SA Objective	Assessment Assumptions/Methodology
<p>5. Housing: Ensure that everyone has good quality housing of the right size and tenure to meet their needs.</p>	<p>It is assumed that there will be no net loss of existing lawful Gypsy and Traveller pitches. Sites put forward for the development of additional pitches for Gypsies and Travellers are expected to make a minor positive contribution to fulfilling the identified accommodation needs.</p>
<p>6. Population and Communities: Maintain and improve the quality of life of residents.</p>	<p>Local Services: In accordance with Barton et al.'s sustainable distances³⁵, proposed development which is located within 600m of a local service, such as a post office or a convenience store, would be expected to provide site end users with access to essential services. Development proposals located within this target distance would be expected to have a minor positive impact on this objective. Development proposals located outside this target distance would be expected to have a minor negative impact on this objective.</p> <p>Local Landscape Designations: The local landscape designations dataset has been provided by the GNDP. This includes areas of multi-functional green infrastructure and community buildings such as playing fields, allotments and other communal spaces which would be expected to help improve the quality of life for local residents.</p> <p>Development proposals which would situate site end users within 600m of a local landscape designation would be likely to have a minor positive impact on this objective.</p> <p>Overall: Development proposals which would locate site end users within 600m of both an open greenspace and a local landscape designation would be expected to have a major positive impact for this objective.</p>
<p>7. Deprivation: To reduce deprivation.</p>	<p>The purpose of this objective is to help redress deprivation issues across the Plan area. None of the site proposals assessed in this report will be expected to redress these issues. At this stage, it is assumed that development proposals at all of the reasonable alternative sites would have a negligible impact for this objective.</p>
<p>8. Health: To promote access to health facilities and promote healthy lifestyles.</p>	<p>Green Network: Development proposals have been assessed in terms of their access to the local PRoW networks and public greenspace. In line with Barton et al.³⁶, a sustainable distance of 600m has been used for the assessments. Development proposals that are located within 600m of a PRoW/public greenspace would be expected to have a minor positive impact on residents' access to a diverse range of natural habitats. Development proposals located over 600m from a PRoW/public greenspace could potentially have a minor negative impact on residents' access to natural habitats, and therefore have an adverse impact on the physical and mental health of local residents.</p> <p>Air Quality: It is assumed that development proposals located in close proximity to main roads would expose site end users to transport associated noise and air pollution. In line with the DMRB guidance, it is assumed that receptors would be most vulnerable to these impacts</p>

³⁵ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability.

³⁶ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010

SA Objective	Assessment Assumptions/Methodology
	<p>located within 200m of a main road³⁷. Negative impacts on the long-term health of residents would be anticipated where residents would be exposed to air pollution.</p> <p>Development proposals located within 200m of a main road would be expected to have a minor negative impact on local residents' exposure to air pollution. Development proposals located over 200m from a main road would be expected to have a minor positive impact on local residents' exposure to air pollution.</p> <p>Air Quality Management Areas (AQMAs) are considered to be an area where the national air quality objective will not be met. No proposed Gypsy and Traveller sites are located within, or within 200m of, an AQMA.</p> <p>Health Facilities:</p> <p>In order to facilitate healthy and active lifestyles for existing and new residents, it is expected that the GNDP should seek to ensure that residents have access to NHS hospitals, GP surgeries, leisure centres and a diverse range of accessible natural habitats and the surrounding PRoW network. Sustainable distances to each of these necessary services are derived from Barton et al.³⁸.</p> <p>Adverse impacts are anticipated where the proposed development would not be expected to facilitate active and healthy lifestyles for current or future residents.</p> <p>For the purposes of this assessment, accessibility to a hospital has been taken as proximity to an NHS hospital with an A&E service. Distances of development proposals to other NHS facilities (e.g. community hospitals and treatment centres) or private hospitals has not been taken into consideration in this assessment. The two NHS hospitals with an A&E department in close proximity Greater Norwich are Norfolk and Norwich University Hospital and James Paget University Hospital.</p> <p>Development proposals located within 5km of one of these hospitals would be expected to have a minor positive impact on the access of site end users to emergency health services. Development proposals located over 5km from one of these hospitals would be likely to have a minor negative impact on the access of site end users to emergency health care.</p> <p>There are numerous GP surgeries located across the Plan area. Development proposals located within 800m of a GP surgery would be expected to have a minor positive impact on the access of site end users to this essential health service. Development proposals located over 800m from a GP surgery would be likely to have a minor negative impact on the access of site end users to essential health care.</p> <p>Access to leisure centres can provide local residents with opportunities to facilitate healthy lifestyles through exercise. Development proposals located within 1.5km of a leisure centre would be expected to have a minor positive impact on the access of site end users to these facilities. Development proposal located over 1.5km from a leisure centre would be likely to have a minor negative impact on the access of site end users to these facilities.</p> <p>Overall</p> <p>Development proposals which would locate site end users in close proximity to one of the listed NHS hospitals, a GP surgery and a leisure centre would be expected to have a major positive impact for this objective.</p>

³⁷ Design Manual for Roads and Bridges (2019) Sustainability & Environment Appraisal: LA 105 Air quality. Available at: <https://www.standardsforhighways.co.uk/dmrb/search/10191621-07df-44a3-892e-c1d5c7a28d90> [Date Accessed: 22/04/22]

³⁸ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010

SA Objective	Assessment Assumptions/Methodology
	<p>Development proposals which would locate site end users away from the listed NHS hospitals, a GP surgery and a leisure centre would be expected to have a major negative impact for this objective.</p>
<p>9. Crime: To reduce crime and the fear of crime.</p>	<p>The purpose of this objective is to help reduce crime rates in the local area. It is not possible to assess the impacts of residential site proposals on local crime prevention or crime rates. At this stage, it is assumed that development proposals at all of the reasonable alternative sites would have a negligible impact for this objective.</p>
<p>10. Education: To improve skills and education.</p>	<p>It is assumed that new residents in the Plan area require access to primary and secondary education services to help facilitate good levels of education, skills and qualifications of residents.</p> <p>In line with Barton et al.'s sustainable distances³⁹, for the purpose of this assessment, 800m is assumed to be the target distance for travelling to a primary school and 1.5km to secondary schools. All schools identified are publicly accessible state schools.</p> <p>It is recognised that not all schools within Greater Norwich are accessible to all pupils. For instance, independent and academically selective schools may not be accessible to all. Local primary schools may only be Infant or Junior schools and therefore not provide education for all children of primary school age. Some secondary schools may only be for girls or boys and therefore would not provide education for all. This has been considered within the assessment.</p> <p>At this stage, there is not sufficient information available to be able to accurately predict the effect of new development on the capacity of local schools, or to incorporate local education attainment rates into the assessment.</p> <p>Development proposals which would locate site end users within the target distances of a primary school or secondary school would be expected to have a minor positive impact for this objective.</p> <p>Development proposals which would locate site end users outside of the target distances of a primary or secondary school would be expected to have a minor negative impact for this objective.</p> <p>Development proposals which would locate new residents within the target distance to both a primary and secondary school would be expected to have a major positive impact on the education objective.</p> <p>Development proposals which would locate new residents outside of the target distance to both a primary and secondary school would be likely to have a major negative impact on the education objective.</p>
<p>11. Economy: Encourage economic development covering a range of sectors and skill levels to improve employment</p>	<p>Employment Opportunities:</p> <p>It is assumed that, in line with Barton et al.'s sustainable distances⁴⁰, new residents should be situated within 5km of key employment areas to ensure they have access to a range of employment opportunities capable of meeting their needs. Key employment areas are defined as locations which would provide a range of employment opportunities from a variety of employment sectors, including retail parks, industrial estates and major local employers. No further study has been undertaken to identify all employment areas.</p>

³⁹ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010.

⁴⁰ Barton, H., Grant. M. & Guise. R. (2010) Shaping Neighbourhoods: For local health and global sustainability, January 2010

SA Objective	Assessment Assumptions/Methodology
<p>opportunities for residents and maintain and enhance town centres.</p>	<p>Development proposals which would locate site end users within the target distances of a key employment area would be expected to have a minor positive impact for this objective. Development proposals which would locate site end users outside the target distances to a key employment area would be expected to have a minor negative impact for this objective.</p> <p>Employment Floorspace:</p> <p>An assessment of current land use at all sites has been made through reference to aerial mapping and the use of Google Maps⁴¹.</p> <p>Development proposals which could result in a net decrease in employment floorspace would be expected to have a negative impact on the local economy.</p>
<p>12. Transport and Access to Services: Reduce the need to travel and promote the use of sustainable transport modes.</p>	<p>Public Transport:</p> <p>In line with Barton et al.'s sustainable distances, site end users should be situated within 2km of a railway station and 400m of a bus stop offering a frequent service. Bus service frequency and destination information was obtained from Google Maps^{42 43}.</p> <p>In order for a positive impact to be anticipated with regard to access to public transport, consideration has been given to the proportion of a development proposal within the target distance of these key transport services. To be sustainable, the bus stop should provide users with hourly services.</p> <p>Development proposals located within the target distance to a railway station or bus stop would be expected to have a minor positive impact on local transport and accessibility. Development proposals located outside of the target distance to a railway station or a bus stop would be expected to have a minor negative impact on transport and accessibility.</p> <p>Pedestrian Access:</p> <p>Development proposals have been assessed in terms of their access to the surrounding footpath network. In order for a positive impact to be anticipated with regard to pedestrian access, consideration has been given to safe access to and from the development e.g. footpath. Safe access is determined to be that which is suitable for wheelchair users and pushchairs.</p> <p>Development proposals which would be expected to provide site end users with adequate access to the surrounding footpath network would be expected to have a minor positive impact on pedestrian access. Development proposals which would not be anticipated to provide adequate access would be expected to result in a minor negative impact on pedestrian access.</p> <p>Road Access:</p> <p>Development proposals have been assessed in terms of their access to the surrounding road network. Development proposals which would be likely to provide site end users with adequate access to the surrounding road network would be expected to have a minor positive impact on road access. Development proposals which would not be anticipated to provide adequate access would be expected to have a minor negative impact on road access.</p>

⁴¹ Google Maps (2022). Available at: <https://www.google.co.uk/maps> [Date Accessed: 14/04/22]

⁴² Google Maps (2022). Available at: <https://www.google.co.uk/maps> [Date Accessed: 14/04/22]

⁴³ Live departure boards available from Google Maps have been used to assess the frequency of services at bus stops within the Plan area. These are obtained from local bus timetables.

SA Objective	Assessment Assumptions/Methodology
	<p>Overall:</p> <p>Development proposals which would locate site end users in close proximity to all the above receptors would be expected to have a major positive impact for this objective.</p> <p>Development proposals which would locate site end users away from all the above receptors would be expected to have a major negative impact for this objective.</p>
<p>13. Historic Environment: Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment.</p>	<p>Impacts on heritage assets will be largely determined by the specific layout and design of development proposals, as well as the nature and significance of the heritage asset. There is a risk of adverse effects occurring, some of which may be unavoidable. As such, this risk has been reflected in the assessment as a negative impact where a site is in close proximity to heritage assets.</p> <p>Adverse impacts are recorded for options which have the potential to have an adverse impact on sensitive heritage designations, including Listed Buildings, Scheduled Monuments (SM), Registered Parks and Gardens (RPG), and Conservation Areas.</p> <p>It is assumed that where a designated heritage asset coincides with a site proposal, the heritage asset will not be lost as a result of development (unless otherwise specified by the GNDP). Adverse impacts on heritage assets are predominantly associated with impacts on the existing setting of the asset and the character of the local area, as well as adverse impacts on views of, or from, the asset.</p> <p>Setting:</p> <p>Development which could potentially be discordant with the local character or setting, for example, due to design, layout, scale or type, would be expected to adversely impact the setting of nearby heritage assets that are important components of the local area. Views of, or from, the heritage asset are considered as part of the assessment of potential impacts on the setting of the asset.</p> <p>Designated Features:</p> <p>No proposed Gypsy and Traveller sites coincide with a designated heritage asset.</p> <p>Where the development proposal lies adjacent to, or in close proximity to, a Listed Building, Conservation Area, SM, or a RPG, an adverse impact on the setting of the asset would be likely, to some extent, and a minor negative impact may therefore be expected.</p> <p>Where development proposals are not located in close proximity to any heritage asset, or the nature of development is determined not to affect the setting or character of the nearby heritage asset, a negligible impact would be expected for this objective.</p> <p>It is anticipated that the GNDP will require a Heritage Statement to be prepared to accompany future planning applications, where appropriate. The Heritage Statement should describe the significance of any heritage assets affected by the proposals, including any contribution made by their settings.</p> <p>It is assumed that desk-based assessments will be required on a site-by-site basis for planning proposals which could potentially impact archaeological features. At this stage of the Plan preparation process there is no data available to indicate areas of archaeological potential within Greater Norwich, and as such no assessment has been carried out with regard to archaeology at present.</p>

SA Objective	Assessment Assumptions/Methodology
<p>14. Natural Resources, Waste and Contaminated Land: Minimise waste generation, promote recycling and avoid the sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.</p>	<p>Previously Developed Land:</p> <p>In accordance with the core planning principles of the NPPF⁴⁴, development on previously developed land will be recognised as an efficient use of land. Development of previously undeveloped land and greenfield sites is not considered to be an efficient use of land.</p> <p>Development of an existing brownfield site would be expected to contribute positively to safeguarding greenfield land in Greater Norwich and have a minor positive impact on this objective.</p> <p>Development proposals situated on previously undeveloped land would be expected to pose a threat to soil within the site perimeter due to excavation, soil compaction, erosion and an increased risk of soil pollution and contamination during construction.</p> <p>In addition, development proposals which would result in the loss of greenfield land would be expected to contribute towards a cumulative loss of ecological habitat. This would be expected to lead to greater levels of habitat fragmentation and isolation for the local ecological network restricting the ability of ecological receptors to adapt to the effects of climate change. The loss of greenfield land has therefore been considered to have an adverse effect under this objective.</p> <p>For the purpose of this report, a 20ha threshold has been used based on available guidance⁴⁵. Development proposals which would result in the loss of less than 20ha of greenfield land would be expected to have a minor negative impact on this objective. Development proposals which would result in the loss of 20ha or more of greenfield land would be expected to have a major negative impact on this objective.</p> <p>Agricultural Land Classification:</p> <p>The Agricultural Land Classification (ALC) system classifies land into five categories according to versatility and suitability for growing crops. The top three grades, Grades 1, 2 and 3a, are referred to as the Best and Most Versatile (BMV) land⁴⁶.</p> <p>Adverse impacts are expected for options which would result in a net loss of agriculturally valuable soils. Development proposals which are situated on Grade 1, 2 or 3 ALC land, and would therefore risk the loss of some of the Plan areas BMV land, would be expected to have a minor negative impact for this objective.</p> <p>Development proposals which are situated on Grade 4 and 5 ALC land, or land classified as 'urban' or 'non-agricultural' and would therefore help prevent the loss of the Plan areas BMV land, would be expected to have a minor positive impact for this objective.</p> <p>Household Waste:</p> <p>At this stage, the nature and design of pitches or plots at each site is unknown. Therefore, increases in waste and consumption of resources as a result of the construction and occupation of dwellings is unknown.</p>

⁴⁴ Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Date Accessed: 22/04/22]

⁴⁵ Natural England (2009) Agricultural Land Classification: protecting the best and most versatile agricultural land. Available at: <http://publications.naturalengland.org.uk/publication/35012> [Date Accessed: 22/04/22]

⁴⁶ Natural England (1988) Agricultural Land Classification of England and Wales: Revised criteria for grading the quality of agricultural land (ALC011). Available at: <http://publications.naturalengland.org.uk/publication/6257050620264448?category=5954148537204736> [Date Accessed: 14/04/22]

SA Objective	Assessment Assumptions/Methodology
	<p>Due to the extent and nature of the development (pitches for Gypsies & Travellers) it is assumed that development proposals would have a negligible impact on Greater Norwich's waste and resources.</p>
<p>15. Water: Maintain and enhance water quality and ensure the most efficient use of water.</p>	<p>Groundwater:</p> <p>The vulnerability of groundwater to pollution is determined by the physical, chemical and biological properties of the soil and rocks, which control the ease with which an unprotected hazard can affect groundwater. Groundwater Source Protection Zones (SPZs) indicate the risk to groundwater supplies from potentially polluting activities and accidental releases of pollutants. As such, any development proposal that is located within a groundwater SPZ could potentially have an adverse impact on groundwater quality.</p> <p>Watercourses:</p> <p>Construction activities in or near watercourses have the potential to cause pollution, impact upon the bed and banks of watercourses and impact on the quality of the water⁴⁷. An approximate 10m buffer zone from a watercourse should be used in which no works, clearance, storage or run-off should be permitted⁴⁸. In this assessment, a 200m buffer zone was deemed appropriate.</p> <p>Development proposals located within 200m of a watercourse would be expected to have a minor negative impact on local water quality.</p> <p>Water Consumption:</p> <p>It is assumed that development proposals will be in accordance with the national mandatory water efficiency standard of 125 litres per person per day, as set out in the Building Regulations 2010⁴⁹.</p> <p>It is assumed that all Gypsy and Traveller site proposals in the GNLP will be subject to appropriate approvals and licensing for sustainable water supply from the Environment Agency.</p>

⁴⁷ World Health Organisation (1996) Water Quality Monitoring - A Practical Guide to the Design and Implementation of Freshwater Quality Studies and Monitoring Programmes: Chapter 2 – Water Quality. Available at: <https://apps.who.int/iris/handle/10665/41851> [Date Accessed: 14/04/22]

⁴⁸ Department of Agriculture, Environment and Rural Affairs (no date) Advice and Information for planning approval on land which is of nature conservation value. Available at: <https://www.daera-ni.gov.uk/articles/advice-and-information-planning-approval-land-which-nature-conservation-value> [Date Accessed: 22/04/22]

⁴⁹ The Building Regulations 2010. Available at: <http://www.legislation.gov.uk/uksi/2010/2214/contents/made> [Date Accessed: 22/04/22]

3 Pre-mitigation site assessments

3.1 Introduction

3.1.1 The process which has been used to appraise reasonable alternative sites is sequenced through two stages. Firstly, sites are assessed in terms of impacts on the baseline without consideration of mitigation. Secondly, the appraisal findings are further assessed in light of any relevant mitigation that is available through for example, emergent local plan policies.

3.1.2 The pre-mitigation assessment provides a baseline assessment of each site and identifies any local constraints. The pre-mitigation assessment does not consider mitigating factors such as local plan policy. The purpose of this stage is to identify the impacts that would need to be overcome for development to optimise sustainability performance.

3.1.3 **Table 3.1** presents a summary of the pre-mitigation impacts identified for each of the three Traveller and Gypsy sites. The pre-mitigation assessments of the three reasonable alternative sites proposed for Gypsy and Traveller pitches are presented in full in **sections 3.2 to 3.5** and should be read in conjunction with **Table 3.1**.

Table 3.1: Pre-mitigation impacts of each site identified in the SA Report

Site Reference	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
GNLP5004	0	+	-	0	+	-	0	--	0	--	-	-	0	-	-
GNLP5005	-	+	--	0	+	-	0	-	0	--	-	-	0	-	-
GNLP5007	+/-	--	-	-	+	+/-	0	-	0	+/-	+	-	-	-	-

3.1.4 The SA assessments of these three reasonable alternative sites identified positive, negligible, minor negative and major negative impacts for the SA objectives (pre-mitigation). The SA found that the proposed development at the majority of the sites would be expected to have minor negative or negligible impacts.

3.2 Site GNL P5004 – Land off Buxton Road, Eastgate

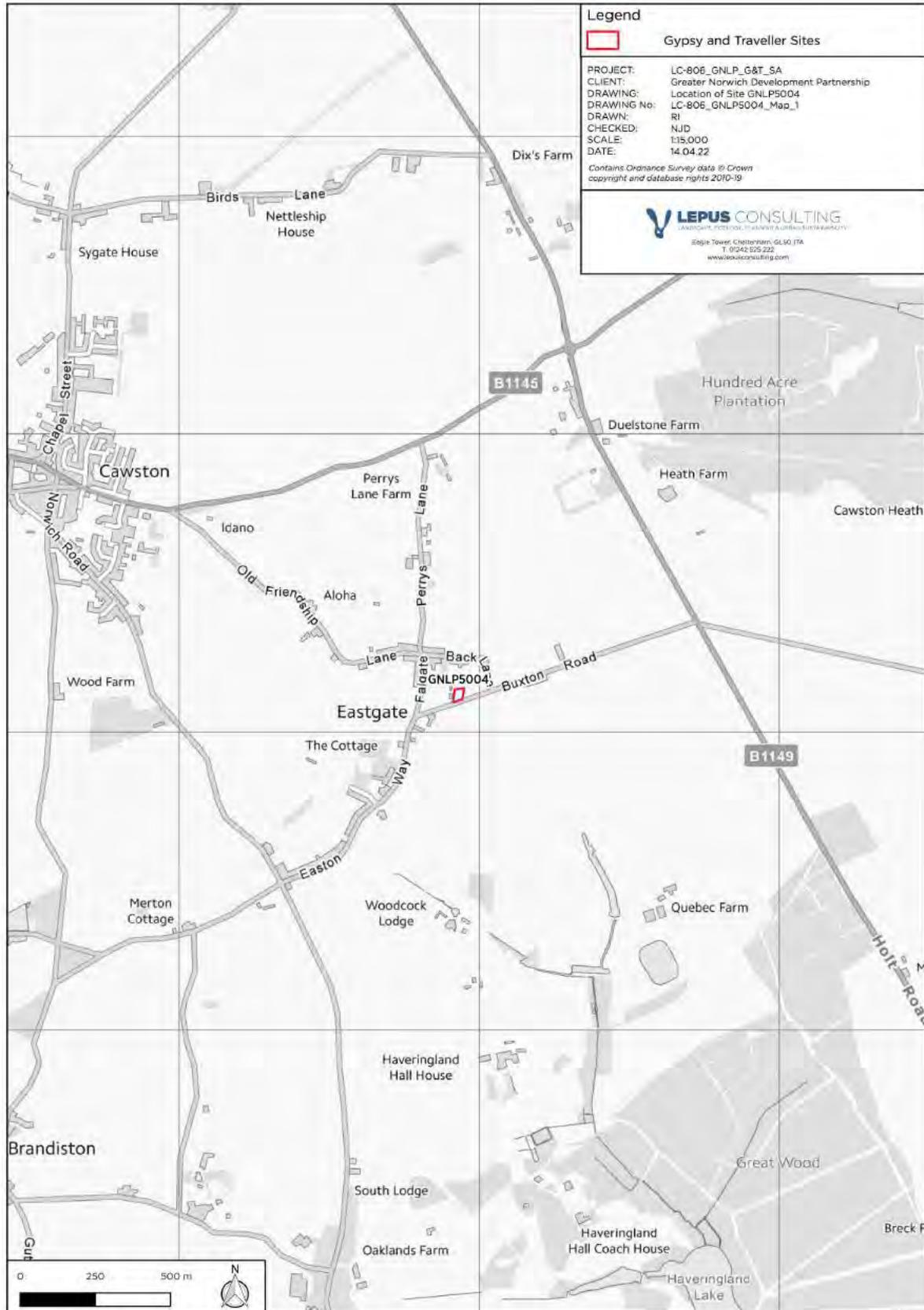


Figure 3.1: Location of proposed Gypsy and Traveller Site GNL P5004.

Site GNLP5004: Site information and overall scores per SA Objective (pre-mitigation)

Site Name		Area (ha)		Proposed No. of Pitches										
Land off Buxton Road, Eastgate		0.12		4										
SA Objective														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
0	+	-	0	+	-	0	--	0	--	-	-	0	-	-

SA1: Air Quality and Noise

3.2.1 **Air and Noise Pollution:** Site GNLP5004 is proposed for small-scale development (four Gypsy and Traveller pitches), and is situated away from major sources of air and noise pollution. A negligible impact on local air quality and noise would be expected.

SA2: Climate Change Mitigation and Adaptation

3.2.2 **Fluvial flooding:** Site GNLP5004 is located wholly within Flood Zone 1. Therefore, a minor positive impact would be expected at this site, as the proposed development would be likely to locate site end users away from areas at risk of fluvial flooding.

SA3: Biodiversity, Geodiversity and Green Infrastructure

3.2.3 **Habitats sites:** Site GNLP5004 is located approximately 2.3km from ‘Norfolk Valley Fens’ SAC and 12.8km from ‘Broadland’ SPA and Ramsar. It is uncertain at this stage whether development of the site would be likely to impact these Habitats sites, and any potential impacts will be identified within the upcoming HRA for the proposed Gypsy and Traveller sites. This includes the potential for nutrient impacts related to waste water discharge from new developments, which may contribute towards worsening of water quality of rivers or wetland habitats associated with the Broads SAC and Ramsar which are in an unfavourable condition due to elevated and exceeded nutrient thresholds.

- 3.2.4 **SSSI IRZ:** Site GNLP5004 is located within a Nutrient Impact Area, within an IRZ which states that “*for new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required. LPA to refer to Natural England’s Nutrient Neutrality advice*”. A minor negative impact on the features for which nearby SSSIs have been designated could potentially occur as a result of the proposed development at this site.

SA4: Landscape

- 3.2.5 **Landscape Character:** Site GNLP5004 is located within the LCA ‘Cawston Tributary Farmland’. Some key characteristics of this LCA include the mosaic of arable fields, woodland and parkland, and landscape setting of villages and notable buildings. Due to the expected small-scale development (four Gypsy and Traveller pitches) situated in a small enclosed field, it is not anticipated that development proposals would be discordant with this LCA. Therefore, a negligible impact on the landscape character would be expected.

SA5: Housing

- 3.2.6 **Provision of Pitches:** Site GNLP5004 is proposed for the development of four Gypsy and Traveller pitches. Therefore, the proposed development at this site would be expected to have a minor positive impact by helping to satisfy the identified accommodation needs in the Plan area.

SA6: Population and Communities

- 3.2.7 **Local Services:** The nearest local shop to Site GNLP5004 is Cawston Post Office and Store, located approximately 1.4km from the site, outside of the sustainable target distance. Therefore, the proposed development at this site could potentially have a minor negative impact on the access of site end users to local services.

SA7: Deprivation

- 3.2.8 See **Table 2.4**, ‘SA7: Deprivation’.

SA8: Health

- 3.2.9 **NHS Hospital:** The closest hospital with an A&E department to Site GNLP5004 is Norfolk and Norwich University Hospital, located approximately 16.3km from the site. The proposed development at Site GNLP5004 could potentially restrict the access of site end users to this facility. Therefore, a minor negative impact on access to healthcare could be expected.
- 3.2.10 **GP Surgery:** Site GNLP5004 is located approximately 1.2km from the closest GP surgery, ‘Dr Harrison K & Partners’, outside of the sustainable target distance. The proposed development at this site could potentially restrict the access of site end users to healthcare facilities and therefore a minor negative impact could be expected.

- 3.2.11 **Leisure Facilities:** The closest leisure centre to Site GNLP5004 is 'Victory Swim and Fitness Leisure Centre', located approximately 14.8km from the site. Site GNLP5004 is located outside of the target distance to this leisure facility, and therefore a minor negative impact on the health and wellbeing of site end users would be expected.
- 3.2.12 **Main Road:** Site GNLP5004 is located over 200m from a main road. The proposed development at this site would be expected to have a minor positive impact on health, as site end users would be located away from main roads and associated air pollution.
- 3.2.13 **Green Network:** Site GNLP5004 is located within 600m from the PRoW network. Therefore, a minor positive impact would be expected at this site as the proposed development would be likely to provide site end users good access to outdoor space and a diverse range of natural and semi-natural habitats, which is known to have physical and mental health benefits.
- 3.2.14 As Site GNLP5004 is located outside the target distance to an NHS hospital, GP surgery and leisure centre, the proposed development at this site would be expected to have a major negative impact on the health and wellbeing of site end users.

SA9: Crime

- 3.2.15 See **Table 2.4**, 'SA9: Crime'.

SA10: Education

- 3.2.16 **Primary/Secondary School:** Site GNLP5004 is located approximately 1.1km from the closest primary school, Cawston CE Primary School. The site is also located approximately 5.3km from the closest secondary school, Reepham High School and College. Therefore, as the site is located outside the sustainable target distance to both primary and secondary schools, a major negative impact on the access of site end users to education would be expected.

SA11: Economy

- 3.2.17 **Primary Employment Location:** Site GNLP5004 is located in a rural area, with the closest primary employment locations being the market towns of Reepham and Aylsham, over 5km from the site and outside of the sustainable target distance. Therefore, the proposed development at this site could potentially have a minor negative impact on the access of site end users to employment.

SA12: Transport and Access to Services

- 3.2.18 **Bus Stop:** Site GNLP5004 is located within the target distance to bus service '42', Reepham to Norwich route; however, this only provides two services per day. Therefore, the proposed development at this site could potentially have a minor negative impact on the access of site end users to bus services.

- 3.2.19 **Railway Station:** Site GNLP5004 is located outside the target distance to a railway station, with the nearest being North Walsham Railway Station situated over 14km to the north east. The proposed development at this site would be likely to have a minor negative impact on the access of site end users to rail services.
- 3.2.20 **Pedestrian Access:** Site GNLP5004 currently has poor access to the surrounding footpath network and therefore the proposed development at this site could potentially have a minor negative impact on local accessibility.
- 3.2.21 **Road Network:** Site GNLP5004 is well connected to the existing road network. The proposed development would therefore be expected to provide site end users with good access to existing roads, resulting in a minor positive impact on accessibility.

SA13: Historic Environment

- 3.2.22 **Heritage Assets:** The development proposed at Site GNLP5004 would be unlikely to significantly impact any surrounding heritage assets, and therefore, would be expected to have a negligible impact on the local historic environment.

SA14: Natural Resources, Waste and Contaminated Land

- 3.2.23 **Previously Developed Land:** Site GNLP5004 is located upon 0.12ha of previously undeveloped land. Therefore, the development of this site could have a minor negative impact on natural resources due to the loss of less than 20ha of previously undeveloped land. This negative impact would be associated with an inefficient use of land and the permanent and irreversible loss of ecologically valuable soils.
- 3.2.24 **ALC:** Site GNLP5004 is situated upon ALC Grade 2 land which represents some of Greater Norwich's BMV land. Therefore, a minor negative impact would be expected as a result of the proposed development at this site, due to the loss of this important natural resource.

SA15: Water

- 3.2.25 **SPZ:** Site GNLP5004 coincides with the catchment (Zone III) of a groundwater SPZ. The proposed development at this site could potentially increase water contamination within this SPZ, resulting in a potential minor negative impact on local groundwater resources.

3.3 Site GNL5005 – Wymondham Recycling Centre, Strayground Lane

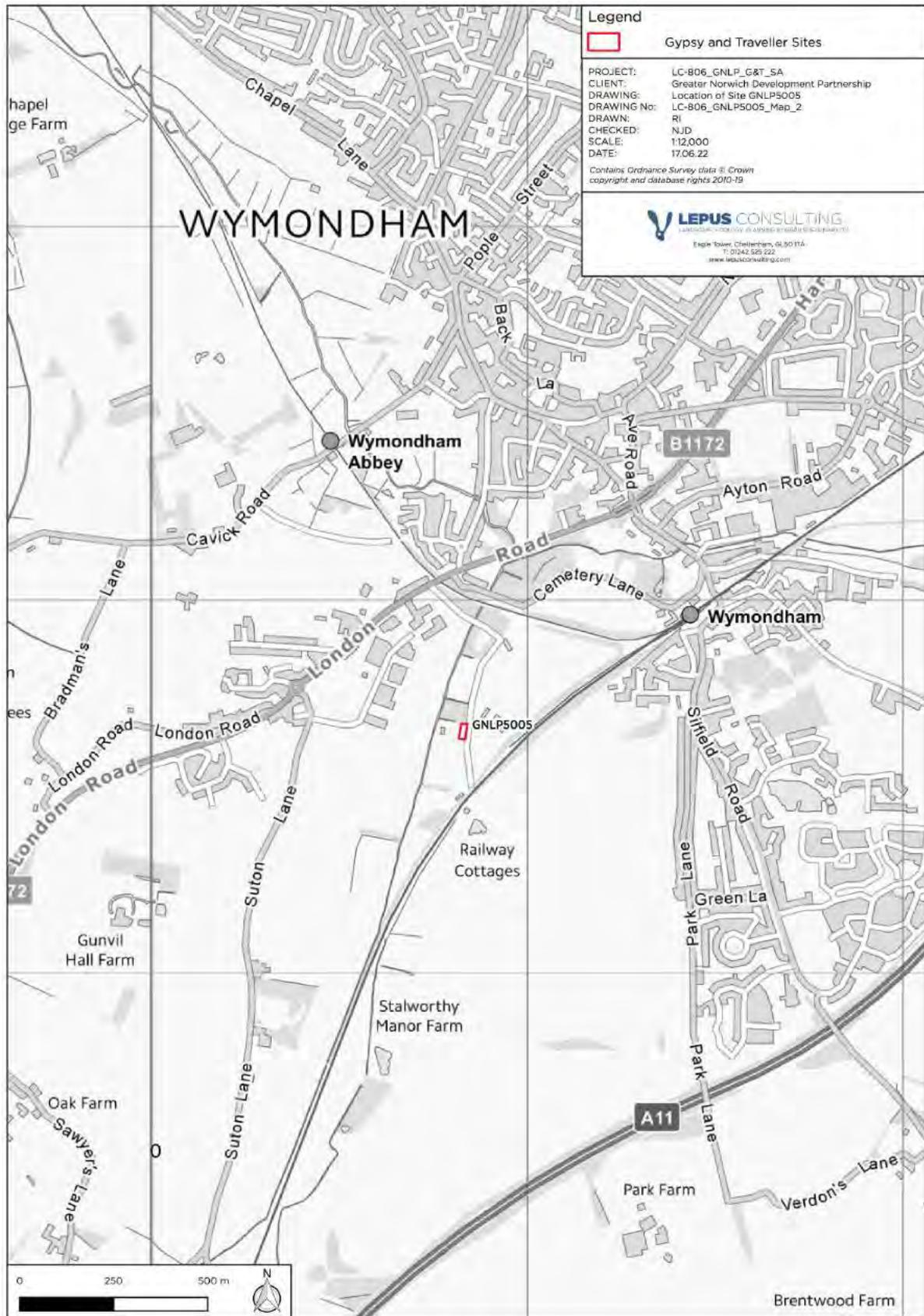


Figure 3.2: Location of proposed Gypsy and Traveller Site GNL5005.

Site GNL P5005: Site information and overall scores per SA Objective (pre-mitigation)

Site Name		Area (ha)		Proposed No. of Pitches										
Wymondham Recycling Centre, Strayground Lane		0.07		2										
SA Objective														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
-	+	--	0	+	-	0	-	0	--	-	-	0	-	-

SA1: Air Quality and Noise

3.3.1 **Railway Line:** Site GNL P5005 is located within 200m of a railway line, therefore the proposed development at this site could potentially expose site end users to higher levels of noise pollution and vibrations associated with this railway. A minor negative impact would be expected.

SA2: Climate Change Mitigation and Adaptation

3.3.2 **Fluvial flooding:** Site GNL P5005 is located wholly within Flood Zone 1. Therefore, a minor positive impact would be expected at this site, as the proposed development would be likely to locate site end users away from areas at risk of fluvial flooding.

SA3: Biodiversity, Geodiversity and Green Infrastructure

3.3.3 **Habitats sites:** Site GNL P5005 is located approximately 7.8km from ‘Norfolk Valley Fens’ SAC, 17.6km from ‘Breckland’ SPA and 20km from ‘Broadland’ Ramsar. It is uncertain at this stage whether development of the site would be likely to impact these Habitats sites, and any potential impacts will be identified within the upcoming HRA for the proposed Gypsy and Traveller sites. This includes the potential for nutrient impacts related to waste water discharge from new developments, which may contribute towards worsening of water quality of rivers or wetland habitats associated with the Broads SAC and Ramsar which are in an unfavourable condition due to elevated and exceeded nutrient thresholds.

- 3.3.4 **SSSI IRZ:** Site GNLP5005 is located within a Nutrient Impact Area, within an IRZ which states that “*for new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required. LPA to refer to Natural England’s Nutrient Neutrality advice*”. A minor negative impact on the features for which nearby SSSIs have been designated could potentially occur as a result of the proposed development at this site.
- 3.3.5 **County Wildlife Site:** The north of Site GNLP5005 coincides with a section of ‘Bays River Meadows North’ CWS. It is noted that part of this section of the CWS within the boundary of Site GNLP5005 comprises hardstanding associated with Wymondham Recycling Centre; however, a section along the northern site boundary remains undeveloped. The proposed development at this site could potentially result in direct adverse impacts on this CWS, and therefore a major negative impact on biodiversity could be expected.
- 3.3.6 **Priority Habitats:** The north of Site GNLP5005 coincides with approximately 0.01ha of lowland fens priority habitat. Therefore, the proposed development at this site could potentially result in the partial loss or degradation of this habitat, and therefore, have a minor negative impact on the overall presence of priority habitats in the Plan area.

SA4: Landscape

- 3.3.7 **Landscape Character:** Site GNLP5005 is located within the LCA ‘Tiffey Tributary Farmland’. Some key characteristics of this LCA include large scale arable farmland, water bodies, sparse settlements and long views. Due to the expected small-scale development (two Gypsy and Traveller pitches) situated on a partially developed site, it is not anticipated that development proposals would be discordant with this LCA. Therefore, a negligible impact on the landscape character would be expected.

SA5: Housing

- 3.3.8 **Provision of Pitches:** Site GNLP5005 is proposed for the development of two Gypsy and Traveller pitches. Therefore, the proposed development at this site would be expected to have a minor positive impact by helping to satisfy the identified accommodation needs in the Plan area.

SA6: Population and Communities

- 3.3.9 **Local Services:** The nearest local shop to Site GNLP5005 is Co-op, located just over 600m from the site, outside of the sustainable target distance. Therefore, the proposed development at this site could potentially have a minor negative impact on the access of site end users to local services.
- 3.3.10 **Local Landscape Designations:** Site GNLP5005 is located within 600m from natural and semi-natural greenspace at Tolls Meadow. The proposed development at this site would therefore be likely to provide site end users with good access to this asset, and as such, result in a minor positive impact on opportunities for integration with the local community.

SA7: Deprivation

3.3.11 See **Table 2.4**, 'SA7: Deprivation'.

SA8: Health

3.3.12 **NHS Hospital:** The closest hospital with an A&E department to Site GNLP5005 is Norfolk and Norwich University Hospital, located approximately 9.7km from the site. The proposed development at Site GNLP5005 could potentially restrict the access of site end users to this facility. Therefore, a minor negative impact on access to healthcare could be expected.

3.3.13 **GP Surgery:** Site GNLP5005 is located approximately 840m from the closest GP surgery, 'Dr Watts', outside of the sustainable target distance. The proposed development at this site could potentially restrict the access of site end users to healthcare facilities and therefore a minor negative impact could be expected.

3.3.14 **Leisure Facilities:** The closest leisure centre to Site GNLP5005 is 'Wymondham Leisure Centre', located approximately 1.3km from the site. Site GNLP5005 is located within the target distance to this leisure facility, and therefore a minor positive impact on the health and wellbeing of site end users would be expected.

3.3.15 **Main Road:** Site GNLP5005 is located over 200m from a main road. The proposed development at this site would be expected to have a minor positive impact on health, as site end users would be located away from main roads and associated air pollution.

3.3.16 **Green Network:** Site GNLP5005 is located within 600m from the PRow network and open greenspaces, including play space and a cemetery. Therefore, a minor positive impact would be expected at this site, as the proposed development would be likely to provide site end users good access to outdoor space and a diverse range of natural and semi-natural habitats, which is known to have physical and mental health benefits.

SA9: Crime

3.3.17 See **Table 2.4**, 'SA9: Crime'.

SA10: Education

3.3.18 **Primary/Secondary School:** Site GNLP5005 is located approximately 960m from the closest primary school, Browick Road Primary School. The majority of Site GNLP5005 is located outside of the sustainable distance to the closest secondary school, Wymondham High Academy. Therefore, as the site is located outside the sustainable target distance to both primary and secondary schools, a major negative impact on the access of site end users to education would be expected.

SA11: Economy

- 3.3.19 **Primary Employment Location:** Site GNLG5005 is located approximately 300m from Wymondham Business Park with many potential employment opportunities for site end users, including businesses 'Express Equine', 'Supreme Bathroom and Kitchen Centre' and 'Abbeygate Accident and Repair', in addition to those expected in Wymondham Town Centre. Therefore, a minor positive impact on the local economy would be expected.
- 3.3.20 **Employment Floorspace:** Site GNLG5005 coincides with 'Wymondham Recycling Centre'. The proposed development of this site could potentially result in the loss of any employment opportunities currently associated with this site. Therefore, a minor negative impact could be expected following development at this site.

SA12: Transport and Access to Services

- 3.3.21 **Bus Stop:** Site GNLG5005 is located outside the target distance to a bus stop. The closest bus stop is located approximately 410m from the site on London Road and provides regular services '13', '13A', '13B' and '805', including routes to Norwich and the surrounding area. Therefore, a minor negative impact on site end users' access to these services would be expected upon development of the site.
- 3.3.22 **Railway Station:** Site GNLG5005 is located within the target distance to Wymondham Railway Station. The proposed development at this site would be likely to have a minor positive impact on the access of site end users to rail services.
- 3.3.23 **Pedestrian Access:** Site GNLG5005 currently has poor access to the surrounding footpath network and therefore the proposed development at this site could potentially have a minor negative impact on local accessibility.
- 3.3.24 **Road Network:** Site GNLG5005 is well connected to the existing road network. The proposed development would therefore be expected to provide site end users with good access to existing roads, resulting in a minor positive impact on accessibility.

SA13: Historic Environment

- 3.3.25 **Grade II Listed Building:** Site GNLG5005 is located approximately 350m from the Grade II Listed Building 'Ivy Green Villa'. Due to this distance and intervening development (Wymondham Business Park), and the expected small number of pitches at this site, it is not anticipated that it would affect the setting of this Listed Building. Therefore, the proposed development at this site would be expected to result in a negligible impact on the historic environment.

SA14: Natural Resources, Waste and Contaminated Land

3.3.26 **Previously Developed Land:** Site GNLP5005 is located upon 0.07ha of primarily previously developed land; however, the site also contains an undeveloped area along the Bays River. Therefore, the development of this site could have a minor negative impact on natural resources due to the loss of less than 20ha of previously undeveloped land. This negative impact would be associated with an inefficient use of land and the permanent and irreversible loss of ecologically valuable soils.

3.3.27 **ALC:** Site GNLP5005 is situated upon ALC Grade 2 land which represents some of Greater Norwich's BMV land. Therefore, a minor negative impact would be expected as a result of the proposed development at this site, due to the loss of this important natural resource.

SA15: Water

3.3.28 **SPZ:** Site GNLP5005 coincides with the catchment (Zone III) of a groundwater SPZ. The proposed development at this site could potentially increase water contamination within this SPZ, resulting in a potential minor negative impact on local groundwater resources.

3.3.29 **Watercourse:** Site GNLP5005 is located approximately 70m from the Bays River. The proposed development at this site could potentially increase the risk of contamination of this watercourse, and therefore, a minor negative impact would be expected.

Site GNLP5007: Site information and overall scores per SA Objective (pre-mitigation)

Site Name		Area (ha)		Proposed No. of Pitches										
Land off Bawburgh Lane, north of New Road and east of the A47, Costessey (Contingency Site)		1ha of the 62.33ha larger site at Costessey		18										
SA Objective														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
+/-	--	-	-	+	+/-	0	-	0	+/-	+	-	-	-	-

SA1: Air Quality and Noise

3.4.1 **Main Road:** The A47 is located adjacent to the western boundary of Site GNLP5007, with a proportion of the site located within 200m of this main road. The proposed development at this site could potentially expose site end users to higher levels of transport associated air and noise pollution. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within 200m of this road, and consequently whether they would be exposed to associated air pollution.

SA2: Climate Change Mitigation and Adaptation

3.4.2 **Fluvial flooding:** Site GNLP5007 is located wholly within Flood Zone 1. Therefore, a minor positive impact would be expected at this site, as the proposed development would be likely to locate site end users away from areas at risk of fluvial flooding.

3.4.3 **Surface Water Flooding:** A large proportion of Site GNLP5007 coincides with an area determined to be at low, medium and high risk of surface water flooding. The proposed development at this site could potentially have a major negative impact on pluvial flood risk, as development could potentially locate some site end users in areas at high risk of surface water flooding, as well as exacerbate pluvial flood risk in surrounding locations.

SA3: Biodiversity, Geodiversity and Green Infrastructure

- 3.4.4 **Habitats sites:** Site GNL P5007 is located approximately 1.7km from 'River Wensum' SAC and 11.1km from 'Broadland' SPA and Ramsar. It is uncertain at this stage whether development of the site would be likely to impact these Habitats sites, and any potential impacts will be identified within the upcoming HRA for the proposed Gypsy and Traveller sites. This includes the potential for nutrient impacts related to waste water discharge from new developments, which may contribute towards worsening of water quality of rivers or wetland habitats associated with the Broads SAC and Ramsar which are in an unfavourable condition due to elevated and exceeded nutrient thresholds.
- 3.4.5 **SSSI IRZ:** Site GNL P5007 is located within a Nutrient Impact Area, within an IRZ which states that *"for new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required. LPA to refer to Natural England's Nutrient Neutrality advice"*. A minor negative impact on the features for which nearby SSSIs have been designated could potentially occur as a result of the proposed development at this site.
- 3.4.6 **Priority Habitats:** Site GNL P5007 coincides with approximately 7ha of deciduous woodland priority habitat. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether the proposed development would result in the loss of any priority habitat.

SA4: Landscape

- 3.4.7 **Landscape Character:** Site GNL P5007 is located within the LCA 'Yare Valley Urban Fringe'. Some key characteristics of this LCA include the wide, flat floodplain, recreational landscape and green buffer between the river valley and Norwich City. The proposed development at this site could potentially result in a small-scale erosion of this green buffer and may alter wide views, and therefore, have a minor negative impact on the local landscape character.
- 3.4.8 **Views for Local Residents:** Site GNL P5007 extends outside the outskirts of Norwich City, adjacent to Bowthorpe and Chapel Break, and the proposed development at this site has the potential to alter views experienced by local residents of surrounding dwellings to some extent. Therefore, a minor negative impact on the local landscape would be expected.
- 3.4.9 **Urbanisation of the Countryside:** Site GNL P5007 comprises previously undeveloped land and is located outside of Bowthorpe on the outskirts of the city of Norwich. Therefore, the proposed development at this site could potentially contribute towards the urbanisation of the countryside. A minor negative impact on the local landscape would be expected.

SA5: Housing

- 3.4.10 **Provision of Pitches:** Site GNL P5007 is proposed for the development of 18 Gypsy and Traveller pitches. Therefore, the proposed development at this site would be expected to have a minor positive impact by helping to satisfy the identified accommodation needs in the Plan area.

SA6: Population and Communities

- 3.4.11 **Local Services:** The nearest local shop to Site GNLP5007 is Co-op, located approximately 600m from the site at its closest point; however, the majority of the site is located outside of the sustainable target distance to this shop. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within the sustainable target distance to local services.
- 3.4.12 **Local Landscape Designations:** A proportion of Site GNLP5007 is located within 600m of local landscape designations including amenity open space at Harts Lane and New Road, and informal open spaces in Chapel Break. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located in areas with good access to these assets, and consequently the opportunities for integration with the local community that they may provide.

SA7: Deprivation

- 3.4.13 See **Table 2.4**, 'SA7: Deprivation'.

SA8: Health

- 3.4.14 **NHS Hospital:** The closest hospital with an A&E department to Site GNLP5007 is Norfolk and Norwich University Hospital, located approximately 2.5km from the site, within the sustainable target distance. The proposed development at Site GNLP5007 would be expected to provide site end users with good access to this healthcare facility and therefore a minor positive impact would be expected.
- 3.4.15 **GP Surgery:** The closest GP surgeries to Site GNLP5007 are 'Dr Lockett and Partners', 'Roundwell Medical Centre' and 'Bowthorpe Health Centre'. A proportion of the site, to the east, is located within the target distance to one or more of these GP surgeries however the majority of the site lies outside of this target distance. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within the sustainable target distance to GP surgeries.
- 3.4.16 **Leisure Facilities:** The closest leisure centre to Site GNLP5007 is 'Riverside Leisure Centre', located approximately 6.8km from the site. Site GNLP5007 is located outside of the target distance to this leisure facility, and therefore a minor negative impact on the health and wellbeing of site end users would be expected.
- 3.4.17 **Main Road:** Site GNLP5007 is located partially within 200m of a main road, the A47. The proposed development at this site could potentially expose site end users to higher levels of transport associated air pollution. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within 200m of this road, and consequently whether they would be exposed to associated air pollution.

3.4.18 **Green Network:** Site GNLP5007 is located partially within 600m of various open greenspaces, including play spaces and playing fields. However, a proportion of the site lies outside of this sustainable target distance. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within 600m of outdoor spaces for recreation and exercise and consequently the health benefits they provide.

SA9: Crime

3.4.19 See **Table 2.4**, 'SA9: Crime'.

SA10: Education

3.4.20 **Primary School:** Site GNLP5007 is located approximately 500m from Chapel Break Infant School and approximately 720m from the The Bawburgh School (primary school), at its closest point. However, the majority of the site is located outside of the target distance to these facilities. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within the sustainable target distance to primary schools.

3.4.21 **Secondary School:** The majority of Site GNLP5007 is located within 1.5km of Ormiston Victory Academy, however, a proportion of the site in the south west is situated outside of this sustainable target distance. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within the sustainable target distance to secondary schools.

SA11: Economy

3.4.22 **Primary Employment Location:** Site GNLP5007 is located approximately 740m from Bowthorpe Employment Area in the outskirts of Norwich City, which would be expected to provide a range of employment opportunities for site end users and is within the sustainable target distance. Therefore, a minor positive impact on the local economy would be expected.

SA12: Transport and Access to Services

3.4.23 **Bus Stop:** The majority of Site GNLP5007 is located outside the target distance to a bus stop that provides a regular service. A small proportion of the site, in the east, is located within 400m of bus stops in Chapel Break providing regular services. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located within the sustainable target distance to bus services.

3.4.24 **Railway Station:** Site GNLP5007 is located outside the target distance to a railway station, with the nearest being Norwich Railway Station situated over 7km to the east. The proposed development at this site would be likely to have a minor negative impact on the access of site end users to rail services.

3.4.25 **Pedestrian Access:** Site GNLP5007 currently has good access to the surrounding footpath network in some locations (namely to the east and northern edges); however, the remainder of the site has poor connectivity for pedestrians. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located in areas with good local accessibility.

3.4.26 **Road Network:** Site GNLP5007 is well connected to the existing road network at the site edges. However, the location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether site end users would be located in areas with good connectivity to the surrounding road network.

SA13: Historic Environment

3.4.27 **Grade II* Listed Building:** At its closest point, Site GNLP5007 is located approximately 270m from Grade II* Listed Building 'Lodge Farmhouse'. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether the development would be situated in an area with potential to affect the setting of the Listed Building.

SA14: Natural Resources, Waste and Contaminated Land

3.4.28 **Previously Developed Land:** Site GNLP5007 is located upon 62.33ha of previously undeveloped land, with the net area for the proposed Gypsy and Traveller pitches comprising approximately 1ha. Therefore, the development of this site could have a minor negative impact on natural resources due to the loss of less than 20ha of previously undeveloped land. This negative impact would be associated with an inefficient use of land and the permanent and irreversible loss of ecologically valuable soils.

3.4.29 **ALC:** The majority of Site GNLP5007 is situated upon ALC Grade 3 land which could potentially be some of Greater Norwich's BMV land. A small proportion in the south of the site is situated upon ALC Grade 4 land, which is considered to be poor quality agricultural land. The location of the Gypsy and Traveller pitches within the wider site boundary is unknown at the time of writing, and as such, it is uncertain whether the development would be situated on Grade 3 or 4 land and consequently whether the development would have positive or negative effects on the conservation of BMV land.

SA15: Water

3.4.30 **SPZ:** Site GNLP5007 coincides with the outer zone (Zone II) and catchment (Zone III) of a groundwater SPZ. The proposed development at this site could potentially increase water contamination within this SPZ, resulting in a potential minor negative impact on local groundwater resources.

4 Assessment of site policies

4.1 Preface

4.1.1 The following sections of this chapter provide an appraisal of the three site policies which have been prepared by the GNDP alongside each of the proposed Gypsy and Traveller sites. Each of the policies appraised in this report have been assessed for their likely impacts on each SA Objective of the SA Framework. The SA Framework is presented in its entirety in **Appendix A**.

4.1.2 Each appraisal includes a SA impact matrix that provides an indication of the nature and magnitude of effects. Assessment narratives follow the impact matrices for each site policy, within which the findings of the appraisal and the rationale for the recorded impacts are described.

4.1.3 The assessment of the site policies presented within **sections 4.2 to 4.5** has drawn on the relevant site assessment findings as presented in **Chapter 3**.

4.2 Site Policy GNLG5004

Box 4.1: Policy GNLG5004

Land off Buxton Road, Cawston (0.12 Ha) is allocated for a permanent residential Gypsy and Travellers Site. The site will accommodate approximately 4 residential Gypsy and Traveller pitches.

The development will be expected to address the following site-specific matters:

1. Access via Buxton Road. Any trees or hedgerow lost to form the access or visibility splay should be compensated for with new planting within the development.
2. Additional landscaping and hedgerow should be provided to enhance screening and to create separation to adjoining properties.
3. Archaeological investigations should be undertaken prior to development.

Site Policy GNLG5004														
SA Objective														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
0	+	-	0	+	-	0	--	0	--	-	-	0	-	-

- 4.2.1 Policy GNLP5004 sets out three site-specific requirements for the development of Gypsy and Traveller Site GNLP5004. The policy seeks to ensure separation of the site from adjoining properties (i.e. those on Buxton Road) through the use of hedgerows and landscaping, and that new hedgerows replace those that may be lost through the development of access to the site. Additionally, development of the site must ensure prior appropriate archaeological investigations are undertaken.
- 4.2.2 Through seeking to screen the site from nearby properties using hedgerows and landscaping, the policy would help to provide privacy for existing local residents and conserve the surrounding landscape to an extent. Additionally, archaeological investigations prior to the development of the site would help to identify below ground assets that have not yet been discovered.
- 4.2.3 It is deemed that although there are potential benefits regarding Site Policy GNLP5004, such as regarding the biodiversity, landscape and historic environment SA Objectives, the site policy is unlikely to have any significant effect on identified impacts for the site overall (outlined within **Chapter 3**).
- 4.2.4 It is recommended that Site Policy GNLP5004 provides further details regarding landscaping methods which could be used to enhance the site, as well as whether archaeological investigations will include desk or field studies.

4.3 Site Policy GNLP5005

Box 4.1: Policy GNLP5005

Policy GNLP5005

Land off Strayground Lane, currently the Wymondham Recycling Centre, Wymondham (0.07 ha), is allocated for a residential Gypsy and Traveller site. The site will accommodate approximately 2 residential Gypsy and Traveller pitches.

The development will address the following specific site matters:

1. Access should be via Strayground Lane and should use the existing vehicular access for the waste recycling facility. Improvements should be made to the passing bays along Strayground Lane, and an adequate visibility splay should be ensured at the junction of Whartons Lane with London Road (B1172).
2. A contaminated land assessment is required, and any mitigation must be completed prior to development.
3. An ecological assessment is required.
4. A flood risk assessment or drainage strategy is required.

Site Policy GNLG5005														
SA Objective														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
-	+	--	0	+	-	0	-	0	--	-	-	0	-	-

4.3.1 Policy GNLG5005 sets out site-specific requirements for the development of Gypsy and Traveller Site GNLG5005 which regard the provision of access to the site, as well as the various assessments to be undertaken prior to the development of the site.

4.3.2 The site policy seeks to prepare the development of the site through requiring a contaminated land assessment, which would help to ensure that site-end users would not be exposed to harmful contaminants which may be potentially present at the site. Additionally, flood and drainage assessments would help to ensure the appropriate drainage of storm water from the site to avoid any exacerbation of surface water flooding. An ecological assessment of the site could help to further identify potential impacts and required mitigation related to the ‘Bays River Meadows North’ CWS and lowland fens priority habitat which coincides with the site.

4.3.3 It is deemed that although there are potential benefits regarding Site Policy GNLG5005, such as regarding the climate change mitigation and adaptation, health and biodiversity SA Objectives, the site policy is unlikely to have any significant effect on identified impacts for the site overall (outlined within **Chapter 3**).

4.3.4 It is recommended that Site Policy GNLG5005 provides specific wording in relation to the protection of the CWS and retention of priority habitat within the site, as well as protection of the Bays River from construction/end use related pollution. The policy could also include the use of vegetation to help reduce exposure to noise pollution impacts related to the railway line located within 200m of the site.

4.4 Site Policy GNLG5007

Box 4.1: Policy GNLG5007

Policy GNLG5007

Land off Bawburgh Lane, north of New Road and east of A47

If the Costessey Contingency Site is allocated for housing development, approximately 1 ha of land at this site will be allocated for a Gypsy and Traveller Site providing approximately 18 pitches.

Site Policy GNL P5007														
SA Objective														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
+/-	-	-	-	+	+/-	0	-	0	+/-	+	-	-	-	-

4.4.1 Policy GNL P5007 sets out details of Gypsy and Traveller Site GNL P5007 which regard the number of pitches and overall area to be allocated to the site within the Costessey Contingency Site.

4.4.2 The policy at present contains no specific site requirements for the development of the site, regarding issues such as flood risk, biodiversity and landscape, as the specific location of the site has not been confirmed. Therefore, Policy GNL P5007 at present is unlikely to result in any significant difference compared to the identified impacts for the site overall (outlined within **Chapter 3**).

4.4.3 It is recommended that, once the specific site location has been agreed, the policy reflects the potential impacts of developing the site and ways to mitigate these issues.

5 Mitigation and residual effects

5.1 Overview

- 5.1.1 The sustainability appraisal of the three reasonable alternative Gypsy and Traveller sites against baseline sustainability information has identified a number of adverse effects associated with the SA Objectives in the SA Framework (see **Appendix A**). The purpose of this chapter is to consider if and how these effects can be mitigated by applying the mitigation hierarchy.
- 5.1.2 The first stage of the mitigation hierarchy is to consider if the adverse effect can be avoided. This may be possible by withdrawing the potential site allocation.
- 5.1.3 For allocations which are likely to remain on the basis that the plan makers consider their inclusion to be necessary, mitigation measures should be explored to reduce the overall significance of effect. If it is not possible to mitigate identified adverse effects, these will remain as 'residual effects' at the end of the SA process.
- 5.1.4 One way to reduce adverse impacts identified against baseline receptors is to consider the potential mitigating effects of planning policies. **Tables 5.1 – 5.14** list the identified adverse impacts according to SA Objective, as discussed within **Chapter 3**, and list development management policies from lower tier plans (i.e. which have already been adopted) that might reasonably be expected to help mitigate identified adverse effects. The plans in question have been prepared by Broadland District Council⁵⁰ and South Norfolk Council⁵¹.
- 5.1.5 Attributes of Site Policies GNLG5004, GNLG5005 and GNLG5007 as discussed in **Chapter 4**, alongside other emerging GNLG Strategic Policies, could also potentially help to mitigate some of the minor negative impacts that have been identified as a result of some of the development proposals.
- 5.1.6 Each table has three columns. Column one lists the adverse effect, column two lists relevant policies and the final column indicates the extent to which these policies would be expected to mitigate each identified adverse effect.
- 5.1.7 It is important to demonstrate the amount of mitigation that may be required to ensure a site can optimise sustainability performance. The level of intervention that may be required to facilitate effective mitigation varies and can help determine the eventual choice of preferred option in the plan. Sites which require low levels of intervention are likely to be preferable to sites that require complex and potentially unviable strategies.

⁵⁰ Broadland District Council (2015) Development Management DPD. Available at: https://www.broadland.gov.uk/downloads/file/1118/development_management_dpd_adopted [Date Accessed: 22/04/22]

⁵¹ South Norfolk Council (2015) South Norfolk Local Plan, Development Management Policies Document. Available at: <https://www.south-norfolk.gov.uk/residents/planning/planning-policy/adopted-south-norfolk-local-plan/development-management-policies> [Date Accessed: 22/04/22]

5.2 SA Objective 1 – Air Quality and Noise

5.2.1 **Table 5.1** presents the identified adverse impacts on air quality and noise and the likely impacts post-mitigation.

Table 5.1: Identified adverse impacts and potential mitigation for SA Objective 1 - Air Quality and Noise

Identified adverse impact	Potential mitigating influence of GNLG strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Exposure to air and noise pollution from main roads	<p>GNLG Policy 2 seeks to protect air quality and minimise pollution, which includes the provision of electric vehicle infrastructure.</p> <p>Policies EN4 (Broadland) and DM3.14 (South Norfolk) seek to ensure that development proposals do not result in an unacceptable impact on air quality or noise pollution.</p> <p>Policy DM3.3 (South Norfolk) seeks to ensure that proposals for new Gypsy and Traveller sites are not approved where there are unsafe localised pollution levels.</p>	<p>These policies would not be expected to fully mitigate the impacts of transport associated emissions from new development on health for development proposals located in close proximity to main roads.</p>
Exposure to noise pollution and vibrations from railway lines	<p>Not addressed within GNLG strategic policies or district DM policies.</p>	<p>These policies would not be anticipated to mitigate potential adverse impacts on noise pollution and vibrations at development proposals located in close proximity to railway lines.</p>

5.3 SA Objective 2 – Climate Change Mitigation and Adaptation

5.3.1 **Table 5.2** presents the identified adverse impacts on climate change mitigation and adaptation, and the likely impacts post-mitigation.

Table 5.2: Identified adverse impacts and potential mitigation for SA Objective 2 – Climate Change Mitigation and Adaptation

Identified adverse impact	Potential mitigating influence of GNLG strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Risk of surface water flooding	<p>GNLG Policy 2 would be anticipated to mitigate the risk of surface water flooding that may arise as a result of development, through the requirement for development to incorporate sustainable drainage measures and contribute to the green infrastructure cover.</p> <p>Policies CSU5, EN1, EN3 (Broadland), DM1.4, DM4.2 and DM4.4 (South Norfolk) would be expected to ensure development proposals alleviate the risk of surface water flooding.</p> <p>Policy DM3.3 (South Norfolk) would ensure that Gypsy and Traveller sites include the provision of satisfactory foul and surface drainage.</p>	<p>Overall, these policies would be expected to mitigate the risk of surface water flooding and would seek to prevent the exacerbation of surface water flood risk in surrounding areas.</p>

5.4 SA Objective 3 – Biodiversity, Geodiversity and Green Infrastructure

5.4.1 **Table 5.3** presents the identified adverse impacts on biodiversity, geodiversity and green infrastructure and the likely impacts post-mitigation.

Table 5.3: Identified adverse impacts and potential mitigation for SA Objective 3 – Biodiversity, Geodiversity and Green Infrastructure

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
<p>Threats or pressures to Habitats sites (SAC, SPA, Ramsar sites)</p>	<p>GNLP Policy 3 seeks to address impacts of visitor pressure caused by residents of new development on Habitats sites. The policy would be expected to ensure that developments provide, or provide funding for, significantly higher amounts of appropriate amenity green infrastructure to protect Habitats sites identified within the HRA.</p> <p>Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2 and DM4.4 (South Norfolk) could potentially help to safeguard and enhance biodiversity including at internationally designated sites.</p> <p>Policy DM3.3 (South Norfolk) would ensure that Gypsy and Traveller developments are not permitted where sites designated at international or national levels will be unacceptably harmed.</p>	<p>These policies alone would not be expected to mitigate potential adverse impacts on Habitats sites.</p> <p>The emerging HRA found that, subject to satisfactory policy modification with respect to nutrient neutrality, the Gypsy and Traveller sites will have no adverse effect upon the integrity of Habitats sites alone or in combination. As this policy wording has not yet been finalised, the impacts on these Habitats sites remain uncertain for the purpose of this SA report at the time of writing</p>
<p>Threats or pressures to SSSIs</p>	<p>GNLP Policy 2 would seek to ensure that development proposals contribute towards green infrastructure network, and GNLP Policy 3 aims to ensure development does not result in harm to designated assets of the natural environment.</p> <p>Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2 and DM4.4 (South Norfolk) could potentially help to safeguard and enhance biodiversity including at SSSIs.</p> <p>Policy DM3.3 (South Norfolk) would ensure that Gypsy and Traveller developments are not permitted where sites designated at national levels will be unacceptably harmed.</p>	<p>At the time of writing, it is uncertain whether the policies would be expected to mitigate potential adverse impacts on SSSIs associated with Nutrient Impact Zones.</p>
<p>Threats or pressures to other designated and non-designated biodiversity sites and habitats (CWS and Priority Habitats)</p>	<p>GNLP Policy 2 would contribute towards the protection and enhancement of the green infrastructure network.</p> <p>GNLP Policy 3 aims to conserve and enhance the natural environment, including priority habitats, networks and species, ancient trees and woodlands, geodiversity, avoid harm to designated or non-designated assets and ensure development proposals result in biodiversity net gain.</p> <p>Policies EN1, EN3 (Broadland), DM1.4, DM3.8, DM4.2 and DM4.4 (South Norfolk) could potentially help to safeguard and enhance biodiversity including at designated and non-designated biodiversity sites.</p>	<p>These policies would be expected to mitigate adverse impacts of development proposals on designated and non-designated biodiversity assets.</p>

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	Policy DM3.3 (South Norfolk) would ensure that Gypsy and Traveller developments are not permitted where sites designated at national or county levels will be unacceptably harmed.	

5.5 SA Objective 4 – Landscape

5.5.1 **Table 5.4** presents the identified adverse impacts on landscape and the likely impacts post-mitigation.

Table 5.4: Identified adverse impacts and potential mitigation for SA Objective 4 - Landscape

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Threaten or result in the loss of rural and locally distinctive landscape character	<p>GNLP Policies 2 and 3 would be expected to contribute towards mitigating negative impacts associated with development on Greater Norwich’s locally distinctive landscape character and seek to conserve and enhance the special qualities of the built, historic and natural environment.</p> <p>Policies EN2, GC4 (Broadland), DM1.4, DM2.1, DM2.3, DM2.6, DM2.7, DM2.8, DM2.9, DM3.3, DM3.4, DM3.5, DM3.8, DM3.9, DM4.5, DM4.6 and DM4.9 (South Norfolk) seek to protect and enhance the local landscape character and distinctiveness of the surrounding environment.</p> <p>Policy DM3.3 (South Norfolk) sets out various criteria to help ensure that proposed Gypsy and Traveller sites integrate with existing settlements and do not have significant adverse impacts on the local landscape.</p>	These policies would be anticipated to mitigate adverse impacts on the landscape character at all of the potential development sites.
Change in views experienced by existing local residents	<p>GNLP Policies 2 and 3 would be expected to mitigate impacts on views experienced by local residents, to some extent, through ensuring that development takes account of the setting and character of the local area.</p> <p>Policies EN2, GC4 (Broadland), DM2.8, DM3.8 and DM4.6 (South Norfolk) would be expected to protect visual amenity and ensure development proposals incorporate designs which enhance appearance and retain important views.</p> <p>Policy DM3.3 (South Norfolk) would be expected to ensure that Gypsy and Traveller development is sited and designed to integrate into the local landscape including screening by vegetation or landform, and that development has regard to the amenity of nearby properties.</p>	These policies would be expected to mitigate the impact of development on views experienced by local residents.
Increase risk of urbanisation of the countryside	GNLP Policy 3 seeks to conserve and enhance the natural environment, by ensuring that new development is located and designed to enhance local character and sense of place, taking account of local design guidance. GNLP Policy 2 would be expected to help reduce the likelihood of urbanisation of the countryside and coalescence by maintaining strategic gaps.	These policies may help to reduce some of the negative impacts associated with transition of new development into the countryside.

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	<p>Policies EN2 (Broadland) and DM4.7 (South Norfolk) seek to protect strategic gaps between settlements.</p> <p>Policies GC4 (Broadland), DM1.3, DM3.13, DM4.4 and DM4.6 (South Norfolk) would be expected to ensure that new development is of an appropriate scale and form to retain the character of the surrounding area.</p> <p>Policy DM3.3 (South Norfolk) seeks to ensure that the scale of Gypsy and Traveller sites does not dominate the nearest settled community.</p>	<p>However, due to the rural and undeveloped context in which affected proposed Gypsy and Traveller sites are situated, aforementioned policies would not be expected to fully mitigate these impacts.</p>

5.6 SA Objective 5 – Housing

5.6.1 No adverse impacts on housing anticipated.

5.7 SA Objective 6 – Population and Communities

5.7.1 **Table 5.5** presents the identified adverse impacts on population and communities and the likely impacts post-mitigation.

Table 5.5: Identified adverse impacts and potential mitigation for SA Objective 6 – Population and Communities

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
<p>Limited access to local services and facilities</p>	<p>GNLP Policy 2 seeks to provide safe and sustainable access to on-site and local services including schools, healthcare, shops, leisure/community facilities and libraries. This policy also would be expected to help promote inclusive and safe communities, through providing access to these services and opportunities for social interaction.</p> <p>GNLP Policy 4 would be expected to provide transport improvements including improved bus, cycling and walking networks through the Transport for Norwich Strategy.</p> <p>Policies CSU2, CSU3, R1 (Broadland), DM1.2, DM2.4, DM2.5 and DM3.16 (South Norfolk) seek to protect existing community facilities from loss and encourage the development of new shops and facilities in local centres.</p> <p>Policies DM3.3 (South Norfolk) and H6 (Broadland) would be expected to ensure future residents of the proposed Gypsy and Traveller sites are not overly isolated from settlements and can access facilities to meet their daily needs.</p>	<p>These policies would be expected to mitigate the adverse impact on restricted access to local services and facilities and would help to promote community cohesion.</p>

5.8 SA Objective 7 – Deprivation

5.8.1 The SA process has not identified any significant adverse impacts on deprivation as a result of the development of reasonable alternative sites. However, measures outlined in policies could potentially enhance the sustainability performance under this objective (see **Table 5.6**).

Table 5.6: Identified adverse impacts and potential mitigation for SA Objective 7 – Deprivation

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
No significant adverse impacts on deprivation anticipated	<p>GNLP Policy 2 promotes the development of inclusive, resilient and safe communities.</p> <p>Policy GC4 (Broadland) seeks to create sustainable, inclusive and mixed communities, and Policy DM3.8 (South Norfolk) promotes inclusive design.</p> <p>Policies DM3.3 (South Norfolk) and H6 (Broadland) seek to ensure that Gypsy and Traveller sites are not overly isolated from existing settlements and Policy DM3.3 promotes integration with the surrounding community.</p>	<p>These policies would be anticipated to have a minor positive impact on deprivation across Greater Norwich.</p>

5.9 SA Objective 8 – Health

5.9.1 **Table 5.7** presents the identified adverse impacts on health and the likely impacts post-mitigation.

Table 5.7: Identified adverse impacts and potential mitigation for SA Objective 8 – Health

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Limited access to NHS hospital	<p>GNLP Policy 2 would be expected to ensure that development provides safe and sustainable access to existing healthcare facilities.</p> <p>GNLP Policy 4 seeks to deliver improvements to healthcare infrastructure and improved public transport, which could potentially improve site end users’ access to NHS hospitals.</p> <p>Policies TS1, TS2, CG4, H5 (Broadland), DM3.8 and DM3.10 (South Norfolk) would be expected to improve connections to public transport and incorporate travel plans where required. These policies could potentially provide improved bus links to NHS hospitals.</p>	<p>These policies would not be expected to fully mitigate the existing restricted access to these services, especially in terms of providing sustainable connections for rural areas of Greater Norwich to NHS hospitals.</p>
Limited access to GP surgery	<p>GNLP Policy 2 would be expected to ensure that development provides safe and sustainable access to existing healthcare facilities.</p> <p>GNLP Policy 4 seeks to deliver improvements to healthcare infrastructure and improved public transport, which could potentially improve site end users’ access to GP surgeries.</p> <p>Policies CSU2, CSU3 (Broadland), DM1.2 and DM3.16 (South Norfolk) seek to ensure community facilities including healthcare are provided and avoid the loss of existing facilities.</p> <p>Policies TS1, TS2, CG4, H5 (Broadland), DM3.8 and DM3.10 (South Norfolk) would be expected to improve connections to public transport and incorporate travel plans where required. These policies could potentially provide improved bus links to healthcare facilities.</p>	<p>These policies would not be expected to fully mitigate the restricted access to GP surgeries in the smaller, more rural settlements in South Norfolk and Broadland.</p>

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	Policies DM3.3 (South Norfolk) and H6 (Broadland) would be expected to ensure future residents of the proposed Gypsy and Traveller sites are not overly isolated from settlements and can access facilities to meet their daily needs, which could potentially include GP surgeries.	
Limited access to leisure facilities and services	<p>GNLP Policies 2 and 4 would be expected to improve access to existing leisure services through provision of safe and sustainable transport links.</p> <p>GNLP Policy 6 seeks to promote leisure industries including through the green infrastructure network, sustainable tourism initiatives, and additional leisure facility provision in Norwich city centre outlined in GNLP Policy 7.1.</p> <p>GNLP Policy 3 would be expected to provide additional opportunities for leisure and recreation through the provision of amenity green infrastructure.</p> <p>Policy RL1 (Broadland), DM2.4, DM2.5, DM2.9 and DM3.15 (South Norfolk) would be expected to provide recreational space and support the development of leisure proposals in appropriate locations.</p> <p>Policies TS1, TS2, CG4, H5 (Broadland), DM3.8 and DM3.10 (South Norfolk) would be expected to improve connections to public transport and incorporate travel plans where required. These policies could potentially provide improved bus links to leisure facilities.</p>	These policies would not be expected to fully mitigate the existing restricted access to these services within more rural areas.
Exposure to air pollution from main road	<p>GNLP Policy 2 seeks to protect air quality, which includes the provision of electric vehicle infrastructure.</p> <p>Policy EN4 (Broadland) and DM3.14 (South Norfolk) seek to ensure that development proposals do not result in an unacceptable impact on air quality or noise pollution.</p> <p>Policy DM3.3 (South Norfolk) seeks to ensure that proposals for new Gypsy and Traveller sites are not approved where there are unsafe localised pollution levels.</p>	These policies would not be expected to fully mitigate the impacts of transport associated emissions from new development on health for development proposals located in close proximity to main roads.

5.10 SA Objective 9 – Crime

5.10.1 The SA process has not identified any significant adverse impacts on crime as a result of the development of reasonable alternative sites. However, measures outlined in policies could potentially enhance the sustainability performance under this objective (see **Table 5.8**).

Table 5.8: Identified adverse impacts and potential mitigation for SA Objective 9 - Crime

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
No significant adverse impacts on deprivation anticipated	<p>GNLP Policy 2 promotes the development of inclusive, resilient and safe communities.</p> <p>Policies GC4 (Broadland), DM3.8 and DM4.9 (South Norfolk) seek to create safe environments by using designs</p>	These policies would be anticipated to have a minor positive impact on crime across Greater Norwich.

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	which address crime prevention and the safety of communities.	

5.11 SA Objective 10 – Education

5.11.1 **Table 5.9** presents the identified adverse impacts on education and the likely impacts post-mitigation.

Table 5.9: Identified adverse impacts and potential mitigation for SA Objective 10 - Education

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Limited access to primary schools	<p>GNLP Policy 7.1 would support the development of a new primary school in Norwich and would be expected to ensure school capacity is increased throughout the Plan area in order to meet the identified needs.</p> <p>GNLP Policy 2 would be expected to provide improved safe and sustainable access to local schools across the Plan area.</p> <p>GNLP Policy 7.4 seeks to ensure that safe routes to schools are provided in rural communities, and along with GNLP Policy 7.5, seeks to ensure that any windfall development will be limited by the capacity of local primary schools.</p> <p>Policies CSU2, CSU3 (Broadland) and DM3.16 (South Norfolk) would also be expected to encourage the siting of new residential development in areas with good access to primary education, and the provision of new community facilities which could potentially include new primary schools.</p> <p>Policy DM3.3 seeks to ensure Gypsy and Traveller sites are located in areas with convenient access to schools, and seeks to ensure that consideration is given to the capacity of local infrastructure and that measures are put in place to address any lack of capacity.</p>	<p>These policies would be expected to improve access to primary schools, to some extent. However, detail about new primary schools and the capacity of existing primary schools is unknown. Until further detail is available, adverse impacts on sustainable access to primary education cannot be ruled out, particularly for development in rural settlements in Broadland and South Norfolk. Therefore, these policies would not be expected to fully mitigate this impact at this stage of the Plan preparation.</p>
Limited access to secondary schools	<p>GNLP Policy 4 provides a new high school in the North East growth area and would be expected to ensure school capacity is increased throughout the Plan area in order to meet the identified needs.</p> <p>GNLP Policy 2 would be expected to provide improved safe and sustainable access to local schools across the Plan area, and GNLP Policy 7.4 seeks to ensure that safe routes to schools are provided in rural communities.</p> <p>Policy CSU3 (Broadland) would be expected to help ensure development proposals have good access to secondary education.</p> <p>Policies TS1, TS2, CG4, H5 (Broadland), DM3.8 and DM3.10 (South Norfolk) would be expected to improve connections to public transport and incorporate travel plans where</p>	<p>These policies would be expected to mitigate poor access to secondary schools through delivering a new secondary school in Norwich and improving public transport across the Plan area.</p>

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	<p>required. These policies could potentially provide improved bus links to secondary schools.</p> <p>GNLP Policy 4 would also be expected to improve access to higher education, through the implementation of a cross valley bus link between University of East Anglia and Norwich Research Park.</p> <p>Policy DM3.3 seeks to ensure Gypsy and Traveller sites are located in areas with convenient access to schools, and seeks to ensure that consideration is given to the capacity of local infrastructure and that measures are put in place to address any lack of capacity.</p>	

5.12 SA Objective 11 – Economy

5.12.1 **Table 5.10** presents the identified adverse impacts on the economy and the likely impacts post-mitigation.

Table 5.10: Identified adverse impacts and potential mitigation for SA Objective 11 - Economy

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Net loss of employment floorspace	<p>GNLP Policy 6 seeks to improve employment opportunities across the Plan area in order to meet the identified need. It would be anticipated that this would mitigate any loss of employment floorspace as a result of residential development proposed with the GNLP, through the retention of a range of existing small and medium scale employment sites and encouraging provision of small-scale business opportunities in residential and commercial developments.</p> <p>GNLP Policy 2 could help to provide opportunities for working at home through allowing the delivery of broadband and fibre optic networks.</p> <p>Policies E1, E2, H4 (Broadland), DM2.1, DM2.2 and DM2.3 (South Norfolk) would be expected to ensure that existing employment sites are protected and that new employment opportunities are provided in line with local needs, including the promotion of home working.</p>	<p>These policies would be expected to ensure that any loss of active employment floorspace would be mitigated.</p>
Limited access to primary employment location	<p>GNLP Policy 4 would be expected to provide improved safe accessibility and infrastructure links to key employment areas including the Cambridge Norwich Tech Corridor and town centres and promote the growth of Norwich International Airport.</p> <p>GNLP Policy 6 seeks to meet the identified employment need and provide a range of small, medium and start-up business opportunities, as well as encourage the provision of local working opportunities within new and existing developments.</p> <p>Policy DM2.1 (South Norfolk) would be anticipated to ensure accessible employment opportunities are provided alongside new</p>	<p>Overall, these policies would be expected to mitigate restricted access to employment opportunities throughout the Plan area.</p>

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	development. Furthermore, through seeking to encourage home working (Policy H4 in Broadland and DM2.3 in South Norfolk) this would contribute towards a reduced need to travel to work.	

5.13 SA Objective 12 – Transport and Access to Services

5.13.1 **Table 5.11** presents the identified adverse impacts on transport and access to services and the likely impacts post-mitigation.

Table 5.11: Identified adverse impacts and potential mitigation for SA Objective 12 – Transport and Access to Services

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Limited access to bus stops	GNLP Policy 4 would be expected to improve access to bus stops through the implementation of the Transport for Norwich Strategy, including improvements to the bus network, developing the Park and Ride system, and providing a new cross valley bus link to the University of East Anglia. Policies TS1, TS2, CG4, H5 (Broadland), DM3.8 and DM3.10 (South Norfolk) would be expected to improve connections to public transport and incorporate travel plans where required.	These policies would be expected to mitigate restricted access to bus services and ensure that all residents have adequate public transport accessibility.
Limited access to train stations	GNLP Policy 4 promotes the enhancement of rail services, including improved journey times to London and Cambridge, and the East-West Rail Link. Improved bus links could potentially provide better connections to railway stations. Policies TS1, TS2, CG4, H5 (Broadland), DM3.8 and DM3.10 (South Norfolk) would be expected to improve connections to public transport and incorporate travel plans where required.	These policies would be expected to improve access to railway stations for development proposals within or in the outskirts of settlements which contain an existing railway station. However, these policies would not be anticipated to fully mitigate the restricted access to railway stations in many of the smaller, more rural settlements in Broadland and South Norfolk.
Lack of safe pedestrian access / access to road network	GNLP Policy 2 promotes safe and sustainable access to on-site and local services and facilities, and GNLP Policy 4 would be expected to improve the cycling and walking network, within the Transport for Norwich Strategy. Policies TS2, TS3, TS6 (Broadland), DM1.2, DM3.8, DM3.10 and DM3.11 (South Norfolk) would be likely to provide safe pedestrian access for all new development and promote highway safety and accessibility. Policy DM3.3 (South Norfolk) would ensure that proposed Gypsy and Traveller sites meet suitable access requirements to the site.	These policies would be expected to mitigate adverse impacts on accessibility, as they would provide improved access to the road, PRow and cycle networks and facilitate pedestrian access to local facilities.

5.14 SA Objective 13 – Historic Environment

5.14.1 **Table 5.12** presents the identified adverse impacts on the historic environment and the likely impacts post-mitigation.

Table 5.12: Identified adverse impacts and potential mitigation for SA Objective 13 – Historic Environment

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Alteration of character or setting of a Listed Building	<p>GNLP Policy 3 seeks to ensure that development proposals do not result in harm to designated and non-designated heritage assets or their historic character and continued or new uses are provided for heritage assets which retain their historic significance. GNLP Policy 2 would be expected to ensure that landscaping measures are incorporated within new developments which consider local characteristics and enhance local landscape, including that of heritage assets.</p> <p>Policies EN2, GC4 (Broadland), DM1.4, DM2.10 and DM4.10 (South Norfolk) would also be expected to ensure that heritage assets including Listed Buildings and their settings are preserved and enhanced in line with their significance. These policies would also help to ensure that development proposals have regard to the character and appearance of the surrounding historic environment within Conservation Areas.</p> <p>Policy DM3.3 (South Norfolk) would help to ensure that proposed developments for Gypsy and Traveller sites do not have a significant impact on heritage assets and their settings and promotes good screening using vegetation and/or landform.</p>	<p>These policies would be expected to mitigate negative impacts on the character and setting of Grade I, Grade II* and Grade II Listed buildings.</p>

5.15 SA Objective 14 – Natural Resources, Waste and Contaminated Land

5.15.1 **Table 5.13** presents the identified adverse impacts on natural resources, waste and contaminated land and the likely impacts post-mitigation.

Table 5.13: Identified adverse impacts and potential mitigation for SA Objective 14 – Natural Resources, Waste and Contaminated Land

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Loss of greenfield sites, land with an ecological or landscape value	<p>GNLP Policy 2 promotes resource efficiency, and GNLP Policy 3 seeks to protect high quality agricultural land.</p> <p>Policies GC4 (Broadland, DM1.4 and DM3.3 (South Norfolk) seek to encourage the efficient use of land and environmental resources, including prioritising development on previously developed land.</p> <p>Policy DM3.3 (South Norfolk) states that there is a preference for Gypsy and Traveller sites located on previously developed land or previously occupied agricultural yards and hard-standings.</p>	<p>All proposed sites for development of Gypsy and Traveller pitches in Greater Norwich comprise (wholly or partially) previously undeveloped land. These policies would not be expected to fully mitigate the loss of greenfield land.</p>

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Loss of best and most versatile soils	GNLP Policy 2 promotes resource efficiency, and GNLP Policy 3 seeks to protect high quality agricultural land. Policies DM2.8, DM2.9 and DM2.12 (South Norfolk) seek to ensure that high quality agricultural land is protected.	These policies would not be expected to mitigate the loss of ALC Grades 2 and 3 land in Greater Norwich.

5.16 SA Objective 15 – Water

5.16.1 **Table 5.14** presents the identified adverse impacts on water and the likely impacts post-mitigation.

Table 5.14: Identified adverse impacts and potential mitigation for SA Objective 15 - Water

Identified adverse impact	Potential mitigating influence of GNLP strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
Risk of contamination of groundwater Source Protection Zones	GNLP Policy 2 seeks to protect water quality and support a catchment approach to water management, including the use of sustainable drainage in order to meet high water efficiency requirements. GNLP Policy 3 seeks to conserve and enhance the natural environments, including increasing the provision of green infrastructure, which could potentially help to protect the quality of groundwater. Policies EN4, CSU5 (Broadland) and DM3.14 (South Norfolk), would be expected to ensure that all new developments include sustainable drainage, and that groundwater quality and aquifers are protected from pollution. Policy DM3.3 (South Norfolk) would ensure that Gypsy and Traveller sites include the provision of satisfactory foul and surface drainage, water supply and utilities.	Together, these policies would be expected to mitigate negative impacts associated with development on nearby groundwater SPZs.
Risk of contamination of watercourses	GNLP Policy 2 seeks to protect water quality and support a catchment approach to water management, including the use of sustainable drainage in order to meet high water efficiency requirements. GNLP Policy 3 seeks to conserve and enhance the natural environments, including increasing the provision of green infrastructure, which could potentially help to protect the quality of watercourses, and reduce the likelihood of pollutants entering watercourses. Policy 7.1 seeks to ensure development near the River Wensum is in accordance with the River Wensum Strategy which would be expected to prevent the worsening of water quality at this river. Policies EN1, EN4, CSU5 (Broadland) and DM1.4, DM2.9, DM3.14, DM4.2 (South Norfolk) would be anticipated to ensure that development proposals do not result in a deterioration of water quality.	These policies would not be expected to fully mitigate the potential adverse impacts on the contamination of some watercourses.

Identified adverse impact	Potential mitigating influence of GNLG strategic policies and adopted Local Plan DM policies	Commentary: Will the policies mitigate the identified adverse effects?
	Policy DM3.3 (South Norfolk) would ensure that Gypsy and Traveller sites include the provision of satisfactory foul and surface drainage, water supply and utilities.	

5.17 Post-mitigation site assessments

5.17.1 Following careful consideration of the mitigating effects of the GNLG strategic policies, Gypsy and Traveller site policies and adopted Local Plan DM policies on the assessment findings, the post-mitigation assessment findings for the three reasonable alternative Gypsy and Traveller sites considered in this report have been presented in **Table 5.15**.

5.17.2 The post-mitigation impacts indicate the optimal sustainability performance of each Gypsy and Traveller site, based on information available at the time of writing.

Table 5.15: Post-mitigation impacts of each site identified in the SA Report

Site Reference	SA Objective														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Air Quality & Noise	Climate Change Mitigation & Adaptation	Biodiversity	Landscape	Housing	Population & Communities	Deprivation	Health	Crime	Education	Economy	Transport	Historic Environment	Natural Resources	Water
GNLP5004	0	+	+/-	0	+	0	+	--	+	-	0	-	0	-	0
GNLP5005	-	+	+/-	0	+	+	+	-	+	-	+	+	0	-	-
GNLP5007	+/-	+	+/-	-	+	0	+	-	+	+/-	+	-	0	-	0

5.17.3 The three reasonable alternative Gypsy and Traveller sites perform similarly overall in the SA. All options have been identified as resulting in negative impacts on some SA objectives, although the majority of these are considered to be minor.

5.17.4 The best performing option could be identified as Site GNLP5005, because after the potential mitigating influence of the GNLG policies is taken into account, it scores positively overall for the most SA Objectives. However, the assessment of this site has also identified the potential for minor negative impacts across several SA Objectives.

5.17.5 A major negative impact has been identified for Site GNLP5004 under SA Objective 8, owing to its rural location outside of sustainable target distances to healthcare facilities. As such, this site could be identified as the worst performing out of the three, as it is the only site with a major negative impact post-mitigation; although, the majority of SA Objectives have been identified as negligible or minor positive for this site.

5.17.6 There is a degree of uncertainty regarding the impacts of all sites on biodiversity (SA Objective 3) owing to the emerging mitigation strategy regarding nutrient neutrality issues within Norfolk. Furthermore, at this stage, the impacts that could arise at Site GNLP5007 are uncertain for some SA Objectives as the exact location of the Gypsy and Traveller pitches within the wider Costessey Contingency Site are unknown at the time of writing.

5.18 Recommendations

5.18.1 The proposed site allocation policies currently provide an overview of requirements to be taken into account upon development of the site. **Paragraphs 4.2.4** and **4.3.4** outline recommendations to enhance and strengthen Site Policies GNLP5004 and GNLP5005. No such details have been made available for GNLP5007 at this stage; the SA recommendations for this site can be found at **paragraph 4.4.3**.

6 Preferred Options

6.1 Reasonable alternatives

- 6.1.1 The SEA Regulations require that the SEA process considers “*reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme*” (Regulation 12) and gives “*an outline of the reasons for selecting the alternatives dealt with*” (Schedule 2).
- 6.1.2 The SEA process must record how reasonable alternatives were identified, described, and evaluated. The plan makers must identify all reasonable alternatives, providing an explanation as to their provenance and qualities that qualify them as reasonable.
- 6.1.3 The findings of the SEA can help with refining and further developing these options in an iterative and on-going way. The SEA findings do not form the sole basis for decision-making; other studies, the feasibility of the option and consultation feedback will also contribute to the decision of identifying a preferred option.

6.2 Site identification and screening

- 6.2.1 GNLP’s identification of reasonable alternative sites for Gypsy and Traveller sites has been carried out through a ‘Call for Sites’ exercise in 2016 and various Regulation 18 consultations carried out during the plan making process. However, prior to submitting the GNLP for independent examination in July 2021 no Gypsy and Traveller sites had been submitted for consideration.
- 6.2.2 Of the three sites now identified for consideration, two are in public ownership and the other was put forward by a private landowner who became aware in early 2022 that a further opportunity existed to promote Gypsy and Traveller sites for inclusion in the local plan.

6.3 Selection and rejection of reasonable alternative sites

- 6.3.1 Following consideration of the SA information, in addition to other evidence base documents, all three reasonable alternative Gypsy and Traveller sites have been selected for allocation in the emerging GNLP.
- 6.3.2 **Table 6.1** presents an outline of the reasons for selecting each of the sites, provided by the Councils, in accordance with the requirements of the SEA Regulations.

Table 6.1: Reasons for selection of each reasonable alternative Gypsy and Traveller site

Site Reference & Name	Selected/rejected	Outline reason (provided by the Councils)
GNLP5004 – Land off Buxton Road, Eastgate	Selected	This is a greenfield site which could provide 4 pitches for Gypsies and Travellers and does not have any major constraints to make the site unsuitable for development, therefore subject to achieving an acceptable visibility splay and undertaking site investigations as per the findings of the site assessment process GNLP5004 is considered suitable for allocation, subject to public consultation and further assessment.
GNLP5005 - Wymondham Recycling Centre, Strayground Lane	Selected	This site is a brownfield site currently used as Wymondham recycling centre. The landowner intends to close this facility, and thus an opportunity exists to redevelop it for 2 residential Gypsy and Traveller pitches, therefore subject to achieving mitigation measures with respect to water quality and possible contamination as per the findings of the site assessment process GNLP5005 is considered suitable for allocation, subject to public consultation and further assessment.
GNLP5007 - Land off Bawburgh Lane, north of New Road and east of the A47, Costessey (Contingency Site)	Selected	This is a greenfield site being promoted as part of a residential led urban extension of approximately 800 homes site (ref: GNLP0581/2043). GNLP5007 is a variation of the contingency site which would provide 18 pitches for Gypsies and Travellers. The exact location of the Gypsy and Traveller site within the contingency site is yet to be determined and will be considered as part of master-planning exercise for the overall urban extension.

6.4 Reasonable alternative policies

- 6.4.1 The Councils have confirmed that they do not believe there to be any reasonable policy alternatives.
- 6.4.2 Each of the three proposed site policies within the ‘Site Policies for Gypsy and Traveller Permanent Residential Pitches Focused Consultation’ document are deemed necessary in order to ensure that the proposed meeting of identified needs is addressed in the most sustainable way and that sites are deliverable, with policy criteria to address site-specific requirements. The Councils believe that a ‘do nothing’ approach for assessing these proposed site policies would not reflect the objective evidence.

7 Next steps

7.1 Consultation

- 7.1.1 This SA Report is subject to a six-week focused consultation alongside the GNLP 'Site Policies for Gypsy and Traveller Permanent Residential Pitches Focused Consultation' document, the Gypsy and Traveller Site Assessment Booklet, HELAA Addendum and the HRA.
- 7.1.2 Following the consultation period, responses will be considered by the Councils to inform the emerging GNLP as the examination stage progresses.

Appendix A: SA Framework

Appendix A: SA Framework

Theme	Over-arching Objective	Decision making criteria for site allocations and general polices	Suggested indicators	Suggested targets
Air Quality and Noise (ref: SA1)	Minimise air, noise and light pollution to improve wellbeing.	<ul style="list-style-type: none"> Will it have a significant impact on AQMAs in Norwich city central and Hoveton? Will it minimise impact on air quality? Will it minimise the impact of light and noise pollution? 	Concentration of selected air pollutants: <ol style="list-style-type: none"> NO₂ PM₁₀ (particulate matter) 	Decrease
Climate Change Mitigation and Adaptation (ref: SA2)	Continue to reduce carbon emissions, adapting to and mitigating against the effects of climate change.	<ul style="list-style-type: none"> Will it minimise CO₂ emissions? Will it support decentralised and renewable energy generation? Will it minimise the risk of fluvial or surface water flooding? 	CO ₂ emissions per capita	Reduction in emissions
			Sustainable and renewable energy capacity permitted by type	Year on year permitted capacity increase
			Number of planning permissions granted contrary to the advice of the Environment Agency on either flood defence or water quality grounds	Zero
Biodiversity, Geodiversity and Green Infrastructure (ref: SA3)	Protect and enhance the area's biodiversity and geodiversity assets and expand the provision of green infrastructure.	<ul style="list-style-type: none"> Will it minimise impact on designated sites and important species and habitats? Could it provide opportunities for bio- or geo-diversity enhancement? Could it contribute to green infrastructure networks? Will it help minimise the impact on air quality at designated sites? Will it ensure that current ecological networks are not compromised and future improvements in habitat connectivity are not prejudiced? 	Net change in Local Sites in "Positive Conservation Management"	Year on year improvements
			Percentage of SSSIs in: <ol style="list-style-type: none"> favourable condition; unfavourable recovering; unfavourable no change; unfavourable declining; or destroyed/ part destroyed. 	95% of SSSIs in 'favourable' or 'unfavourable recovering' condition
			Number of Planning Approvals granted contrary to the advice of Natural England or Norfolk Wildlife Trust (on behalf of the County Wildlife Partnership) or the Broads Authority on the basis of adverse impact on site of acknowledged biodiversity importance.	None
			Percentage of allocated residential development sites, or sites permitted for	Minimise

Theme	Over-arching Objective	Decision making criteria for site allocations and general policies	Suggested indicators	Suggested targets
			development of 10 or more homes, that have access to a semi-natural green space of at least 2ha within 400m.	
			Length of new greenway (defined as a shared use, car-free off-road route for a range of users and journey purposes) provided as a consequence of a planning condition, S106 obligation or CIL investment.	Increase
			Total hectares of accessible public open space (cumulative) provided as a consequence of a planning condition, S106 obligation or CIL investment within the plan period	Equal to or above current local plan requirements.
Landscape (ref: SA4)	Promote efficient use of land, while respecting the variety of landscape types in the area.	<ul style="list-style-type: none"> Will it minimise impact on the landscape character of the area, including the setting of the Broads? Will it enable development of previously developed land? Will it make efficient use of land? 	Percentage of new and converted dwellings on Previously Developed Land	18% to 2026 (based on JCS housing allocations, update in line with GNLP)
			Number of Planning Approvals granted contrary to the advice of the Broads Authority on the basis of adverse impact on the Broads Landscape	None
Housing (ref: SA5)	Ensure that everyone has good quality housing of the right size and tenure to meet their needs.	<ul style="list-style-type: none"> Will it ensure delivery of housing to meet needs in appropriate locations? Will it deliver affordable housing and other tenures to meet needs? Will it ensure a variety in the size and design of dwellings, to meet a range of circumstances and needs? 	Net housing completions	Meet or exceed annual trajectory requirements
			Affordable housing completions	tbc
			House completions by bedroom number, based on the proportions set out in the most recent Sub-regional Housing Market Assessment	Figures within 10% tolerance of the Housing Market Assessment Requirements
			Starter Homes completions	20% of homes delivered are starter homes
Population and Communities (ref: SA6)	Maintain and improve the quality of life of residents.	<ul style="list-style-type: none"> Will it enhance existing, or provide new community facilities? 	No indicators for provision of community facilities have been identified	

Theme	Over-arching Objective	Decision making criteria for site allocations and general polices	Suggested indicators	Suggested targets
		<ul style="list-style-type: none"> Will promote integration with existing communities? 		
Deprivation (ref: SA7)	To reduce deprivation.	<ul style="list-style-type: none"> Will it help to reduce deprivation? 	Indicator and targets from IMD to be identified	
Health (ref: SA8)	To promote access to health facilities and promote healthy lifestyles.	<ul style="list-style-type: none"> Will it maximise access to health services, taking into account the needs of an ageing population? Will it promote healthy lifestyles? Will it avoid impact on the quality and extent of existing assets, such as formal and informal footpaths? 	Percentage of physically active adults	Increase percentage annually or achieve percentage above England average
			Indicator and target for access to health facilities to be identified	
Crime (ref: SA9)	To reduce crime and the fear of crime.	<ul style="list-style-type: none"> Will it help design out crime from new development? 	Indicator and target for crime reduction to be identified	
Education (ref: SA10)	To improve skills and education.	<ul style="list-style-type: none"> Will it enable access to education and skills training? 	Indicator and target for access to education facilities to be identified	
Economy (ref: SA11)	Encourage economic development covering a range of sectors and skill levels to improve employment opportunities for residents and maintain and enhance town centres.	<ul style="list-style-type: none"> Will it promote Greater Norwich as a regional economic centre? Will it promote employment land provision to support existing and future growth sectors? Will it promote a range of employment opportunities? Will it promote vibrant town centres? Will it promote the rural economy? 	Amount of land developed for employment by type	118ha B1 & 111ha B2 / B8 2007 to 2026 (split into five-year tranches, based on JCS targets - update in line with GNLP targets)
			Annual count of jobs by BRES across the Plan area	Measure against GNLP annualised jobs targets (2,222 p.a in JCS.)
			Employment rate of economically active population	Increase
			Percentage of workforce employed in higher occupations	Annual increase of 1%
Transport and Access to Services (ref: SA12)	Reduce the need to travel and promote the use of sustainable transport modes.	<ul style="list-style-type: none"> Does it reduce the need to travel? Does it promote sustainable transport use? Does it promote access to local services? Does it promote road safety? 	Percentage of residents who travel to work: <ul style="list-style-type: none"> a) By private motor vehicle; b) By public transport; c) By foot or cycle; or d) Work at, or mainly at, home. 	Decrease in a), increase in b), c) and d).

Theme	Over-arching Objective	Decision making criteria for site allocations and general polices	Suggested indicators	Suggested targets
		<ul style="list-style-type: none"> Does it promote strategic access to and within the area? 	IMD Access to services and housing	Increase the number of LSOAs in the least deprived 50% on the IMD for access to housing and services
Historic Environment (ref: SA13)	Conserve and enhance the historic environment, heritage assets and their setting, other local examples of cultural heritage, preserving the character and diversity of the area's historic built environment.	<ul style="list-style-type: none"> Does it enable the protection and enhancement of heritage assets, including their setting? Does it provide opportunities to reveal and conserve archaeological assets? Could it benefit heritage assets currently 'at risk'? 	Percentage of Conservation Areas with appraisals	Year on year increase
			Heritage at risk – number and percentage of <ul style="list-style-type: none"> a) Listed buildings; and b) Scheduled Ancient Monuments. on Buildings at Risk register	Year on year reduction
Natural Resources, Waste and Contaminated Land (ref: SA14)	Minimise waste generation, promote recycling and avoid the sterilisation of mineral resources. Remediate contaminated land and minimise the use of the best and most versatile agricultural land.	<ul style="list-style-type: none"> Does it contribute to the minimisation of waste production and to recycling? Does it safeguard existing and planned mineral and waste operations? Will it help to remediate contaminated land? Does it avoid loss of the best and most versatile agricultural land (grades 1-3a)? Will there be adequate provision for waste and recycling facilities? 	Number of planning permissions granted on non-allocated sites on class 1, 2 or 3a agricultural land	Zero
			Percentage of land allocated for development, or subject to an extant planning permission of 5 or more dwellings that is identified as Grade I or II agricultural land value.	Minimise
			Minerals and waste indicators and targets tbc	
			No indicators for contaminated land have been identified	
Water (ref: SA15)	Maintain and enhance water quality and ensure the most efficient use of water.	<ul style="list-style-type: none"> Will it maximise water efficiency? Will it minimise impact on water quality? Will it impact on water discharges that affect designated sites? Will it contribute to achieving the River Basin Management Plan actions and objectives? 	Water efficiency in new homes	All new housing schemes to achieve water efficiency standard of 110 litres/person/day (lpd) No indicators for water infrastructure have been identified.
			See also flood section (Number of planning permissions contrary to the advice of the Environment Agency on either flood defence or water quality grounds)	

Habitat Regulations Assessments

Sustainability Appraisals

Strategic Environmental Assessments

Landscape Character Assessments

Landscape and Visual Impact Assessments

Green Belt Reviews

Expert Witness

Ecological Impact Assessments

Habitat and Ecology Surveys



© Lepus Consulting Ltd

Eagle Tower

Montpellier Drive

Cheltenham

GL50 1TA

T: 01242 525222

E: enquiries@lepusconsulting.com

www.lepusconsulting.com

CHELTENHAM



Lepus Consulting
Eagle Tower
Montpellier Drive
Cheltenham
Gloucestershire GL50 1TA

t: 01242 525222
w: www.lepusconsulting.com
e: enquiries@lepusconsulting.com

**Habitats Regulations Assessment of
published Proposed Submission Greater
Norwich Local Plan – Gypsy and
Traveller sites Addendum**

for

Greater Norwich Development Partnership

June 2022

Status: Issue

The Landscape Partnership Ltd is a practice of Chartered Landscape Architects, Chartered Town Planners and Chartered Environmentalists, registered with the Landscape Institute and a member of the Institute of Environmental Management & Assessment & the Arboricultural Association.

The Landscape Partnership Limited
Registered Office:
Greenwood House
15a St Cuthberts Street
Bedford
MK40 3JG.
01234 261315
Registered in England No 2709001

Quality Management	
Project:	Greater Norwich Local Plan HRA
Project No:	E16845
Report title:	Habitats Regulations Assessment of published Proposed Submission Greater Norwich Local Plan
Status:	Issue
Date of last revision:	21 st June 2022

	Report Author:	Reviewed by:	Approved by:
Author:	Nick Sibbett CEcol CEnv CMLI MCIEEM	Dr Jo Parmenter CEcol CEnv MCIEEM MIEMA	Dr Jo Parmenter CEcol CEnv MCIEEM MIEMA
Job title:	Associate	Director	Director

Client Details	
Client:	Greater Norwich Development Partnership
Client Address:	County Hall Martineau Lane Norwich NR1 2DH

Contact Details
<p>The Landscape Partnership Ltd</p> <p>Greenwood House 15a St Cuthberts Street Bedford MK40 3JG Tel: 01234 261315</p> <p>92 St Faith's Lane Norwich NR1 4NE Tel: 01603 230777</p> <p>The Granary Sun Wharf Deben Road Woodbridge IP12 1AZ Tel: 01394 380509</p> <p>Ensign House (E&F) Tavern Quay Sweden Gate Surrey Quays London SE16 7TX Tel: 020 3092 4141</p> <p>The Landscape Partnership Ltd is a practice of Chartered Landscape Architects, Chartered Ecologists and Chartered Environmentalists, registered with the Landscape Institute and a member of the Institute of Environmental Management & Assessment & the Arboricultural Association.</p> <p>Registered Office: Greenwood House 15a St Cuthberts Street Bedford MK40 3JG Registered in England No 2709001</p>

Quality standards
<p>This report is certified BS 42020 compliant and has been prepared in accordance with The Chartered Institute of Ecology and Environmental Management's (CIEEM) Technical Guidance Series '<i>Ecological Report Writing</i>' and Code of Professional Conduct.</p> <p>The copyright of this document rests with The Landscape Partnership. All rights reserved.</p>

Contents

Non-technical summary	1
1 Introduction	3
1.1 The plan being considered and context	3
1.2 The Greater Norwich Local Plan (GNLP)	3
1.3 What are the Habitats Regulations?	4
1.4 Habitats Regulations Assessment process	4
1.5 Why is Appropriate Assessment required?	5
1.6 European sites	6
1.7 Iteration and consultation	7
2 European sites potentially affected	8
2.1 European sites	8
2.2 Other relevant Plans or Projects potentially affecting these sites	18
3 Likely significant effects of Greater Norwich Local Plan proposed allocations for Gypsy and traveller sites on European sites	20
3.1 The sites being assessed	20
3.2 Necessary or connected with management of European sites?	20
3.3 Likely significant effects which might arise from policies and allocations within Greater Norwich Local Plan	20
3.4 Conclusion of assessment of likely significant effect ('screening' stage)	21
3.5 Introduction to the Appropriate Assessment	21
4 Appropriate Assessment of proposed Gypsy and Traveller sites	22
4.1 Assessment of construction impacts on any European site	22
4.2 Increased recreational pressure: potential impacts.	22
4.3 European sites unlikely to be affected by recreational impacts	23
4.4 European sites potentially affected by recreational impacts	24
4.5 Increased pressure on water resources	27
4.6 Pollution impacts: Waste water discharge	29
4.7 Pollution impacts: Additional traffic movements increasing emissions to air	29
4.8 Increased urbanisation of the countryside	33
4.9 Avoidance and mitigation for potential impacts of the proposed Gypsy and traveller sites	35
4.10 Assessment of proposed allocations for Gypsy and traveller sites	38
5 Conclusions	39
5.1 The Greater Norwich Local Plan with the proposed Gypsy and Traveller site allocations, acting alone	39
5.2 The Greater Norwich Local Plan in combination with other plans or projects	39
5.3 Overall conclusion	39

Figures

1. European site locations

Appendices

1. Conservation Objectives for European sites
2. Gypsy and traveller sites being assessed
3. Nutrient Neutrality information relevant to all affected European sites
4. Nutrient Neutrality information for The Broads SAC / Ramsar
5. Nutrient Neutrality information for River Wensum SAC

Non-technical summary

The Landscape Partnership was commissioned by the Greater Norwich Development Partnership to undertake a Habitat Regulations Assessment (HRA) of proposed allocations for Gypsy and Traveller sites, as an addition to the Greater Norwich Local Plan (GNLP). This report is a Habitats Regulations Assessment of that addition to the GNLP. There are two proposed site allocations for Gypsy and Traveller pitches, with two and four pitches respectively and a contingency allocation of 18 pitches at the Costessey contingency housing allocation site.

Impacts considered for the proposed distribution of pitches include water cycles (use and disposal); air pollution, especially from new roads and an increase or change in the pattern of distribution of road users; water pollution or enrichment resulting from discharge to water; and the impacts of increased visitors to European sites. In addition to considering the potential impacts of the growth proposed by the Gypsy and Travellers sites, other development in the GNLP area and the wider area was also considered for in-combination impacts.

No allocations will be within or close to any European site such that there would be construction impacts such as land-take or disturbance from the construction activities, and there will be no allocations within 1.5km of a European site so there would be no direct recreational impacts.

Natural England has advised all Local Planning Authorities in Norfolk that large developments (defined as fifty houses or more) include green space which is proportionate to its scale to minimise any predicted increase in recreational pressure to designated sites, by containing the majority of recreation within and around the developed site. No evidence has been provided to support the threshold of 50 or more dwellings, and it is assumed that each and every new home could potentially have an identical impact. Greater Norwich Local Plan requires all residential development to provide green infrastructure. If a development site is too small to provide green infrastructure on site, a contribution secured by S106 to green infrastructure elsewhere will be required. This requirement applies to Gypsy and Traveller sites as well as to standard housing.

The Green Infrastructure and Recreational Impact Avoidance Strategy (GIRAMS) proposes a tariff based payment taken from residential, and other relevant accommodation e.g. tourist accommodation, that will be used to fund packages of avoidance and mitigation measures to be delivered at Habitat Sites. Mitigation comprises a team of Rangers to influence visitor behaviour, signage, monitoring, a dog project, delivery of strategic mitigation projects, and various other measures. A tariff payment of £185.93 per dwelling (Gypsy and Traveller Pitch) has been set. The GIRAMS measures will be sufficient that the assessment is able to ascertain no adverse effect upon the integrity of any European site from the in-combination effects of residential developments across the plan area and beyond.

A new Country Park has been created by Broadland District Council between Felthorpe and Horstead, which is being designed and managed to attract a larger number of recreational visitors. It will also act to reduce visitor pressure on European sites by providing an attractive alternative destination for countryside visits.

There would be no impact on European sites from water abstraction as there would be no additional abstraction to meet water needs in the Local Plan area, including the Gypsy and Traveller sites.

On 16th March 2022, Natural England advised that Wensum SAC and The Broads SAC were being harmed by excess nitrate and phosphate in the water. New residential development would need to demonstrate that it would not exacerbate the existing problem by adding further nitrate and phosphate from sewage and run-off to these SAC sites. This requirement applies to Gypsy and Traveller pitches as well as to standard dwellings. The proposed pitch allocations are therefore in the same situation as housing allocations with respect to Nutrient Neutrality; all pitch allocations are within the catchments of either the River Wensum SAC or The Broads SAC / Ramsar. At the time of writing, it is anticipated that modification to the strategic policies of the GNLP will be made to be available for an Examination hearing. Policy amendments are expected to tie the delivery of housing growth more tightly to nutrient levels impacting on internationally protected habitats, including, as appropriate, a county-wide mitigation strategy. The availability of a mitigation strategy will affect the timing of the delivery of housing sites and Gypsy and Traveller pitches as opposed to the principle of their development.

Subject to satisfactory policy modification with respect to Nutrient Neutrality, it is ascertained that the proposed allocations for Gypsy and Traveller sites will have no adverse effect upon the integrity of any European site acting alone, in combination with other development in the GNLP or any other plan or project.

1 Introduction

1.1 The plan being considered and context

- 1.1.1 Broadland District Council, Norwich City Council and South Norfolk Council, working with Norfolk County Council and Broads Authority, are working together to prepare the Greater Norwich Local Plan (GNLP). This will replace the Joint Core Strategy for Broadland, Norwich and South Norfolk (JCS), which was adopted in March 2011, and other more recently adopted 'lower tier' Development Plan Documents. The three local Planning Authorities have come together to form the Greater Norwich Development Partnership to deliver the GNLP.
- 1.1.2 The submission draft Greater Norwich Local Plan, and its Habitats Regulations Assessment, were Examined by Inspectors in February and March 2022. The Examination hearings were carried out virtually using internet video calls and the recordings of the hearing can be found at <https://www.youtube.com/channel/UCdRKsvFkvWzVLWhEQwY0x0w/videos> (accessed on 7th May 2022).
- 1.1.3 The Inspectors have not yet reported on the Examination. However, various questions have been asked by them of the Greater Norwich Development Partnership, including a question about recent issues regarding Nutrient Neutrality. The question, and the Greater Norwich development Partnership's response, is available on the Examination website¹.
- 1.1.4 This document is an Addendum to the Greater Norwich Local Plan Habitats Regulations Assessment dated July 2021. Since the Examination hearings, the Greater Norwich Development Partnership has proposed sites to be allocated for Gypsy and Traveller pitches, and a potential allocation for Gypsy and Traveller pitches within the contingency housing allocation at Costessey. **This addendum assesses the impact on European sites of the proposed allocations for Gypsy and Traveller pitches.** The methodology of the assessment is similar to that in the July 2021 HRA, with the exception of assessment of waste water impacts. It is assumed that the impact of one Gypsy and Traveller site is similar to that of one house used by the settled community; there is no evidence to the contrary.
- 1.1.5 It is considered that there is a need for 50 Gypsy and Traveller pitches within the Plan period². Windfall sites may arise in addition to allocations, to meet demand.

1.2 The Greater Norwich Local Plan (GNLP)

- 1.2.1 The Submission Draft Greater Norwich Local Plan (GNLP) Strategy document follows previous iterations of the emerging Greater Norwich Local Plan. It provides the broad strategy for growth in Greater Norwich from 2018 to 2038 and supporting thematic policies.
- 1.2.2 The draft plan identifies where growth needed to 2038 should be built. There are plans in place already which identify locations for around 80% of the new homes, along with new jobs, green spaces and additional infrastructure (Section 1.2 above). The main locations include brownfield sites in Norwich, the major urban extension to its north-east, expanded strategic employment sites such as the Norwich Research Park and growth at most of our towns and larger villages. This plan provides additional sites in these areas to create new communities and support growth of the economy, as well as sites in villages to support rural services.
- 1.2.3 When adopted, the GNLP will supersede the current Joint Core Strategy and the Site Allocations documents in each of the three districts except for the smaller villages in South Norfolk that will be addressed through a new South Norfolk Village Clusters Housing Allocations Local Plan; and the Diss, Scole and Burston area, for which a Neighbourhood Plan is being produced which will allocate sites in these locations. The GNLP will not replace existing adopted Area Action Plans for Long Stratton, Wymondham and the Growth Triangle (NEGT) or Neighbourhood Plans, though in some cases additional allocations are made through the GNLP in these areas. The GNLP will also not amend existing adopted Development Management policies for the three districts except in

¹ <https://www.gnlp.org.uk/local-plan-examination-local-plan-examination-document-library-d-post-submission-examination/d5> accessed on 7th May 2022

² RRR Consultancy Ltd (June 2022) Greater Norwich Gypsy and Traveller Accommodation Assessment.

circumstances where limited policy changes, identified in this plan, are required to implement the strategy.

1.3 What are the Habitats Regulations?

- 1.3.1 The Conservation of Habitats and Species Regulations 2017 (as amended) generally follow the Birds Directive and Habitats Directive but unlike the Directives there is no role for the European Union; the UK Government has taken that role following the end of the Brexit transition period on 31st December 2020. The following paragraphs consider the case in England only, with Natural England given as the appropriate nature conservation body.
- 1.3.2 Special Protection Areas and Special Areas of Conservation are defined in the regulations as forming a national network of 'European sites'. The Regulations regulate the management of land within European sites, requiring land managers to have the consent of Natural England before carrying out management. Byelaws may also be made to prevent damaging activities and if necessary land can be compulsorily purchased to achieve satisfactory management.
- 1.3.3 The Regulations define competent authorities as public bodies or statutory undertakers. Competent authorities are required to make an appropriate assessment of any plan or project they intend to permit or carry out, if the plan or project is likely to have a significant effect upon a European site. The permission may only be given if the plan or project is ascertained to have no adverse effect upon the integrity of the European site. If the competent authority wishes to permit a plan or project despite a negative assessment, imperative reasons of over-riding public interest must be demonstrated, and there should be no alternatives to the scheme. The permissions process would involve the Secretary of State and the option of consulting the European Commission. In practice, there will be very few cases where a plan or project is permitted despite a negative assessment. This means that a plan such as the Greater Norwich Local Plan has to be assessed, and the assessment must either decide that it is likely to have no significant effect on a European site or ascertain that there is no adverse effect upon the integrity of the European site.

1.4 Habitats Regulations Assessment process

- 1.4.1 A Habitats Regulations Assessment is a step-by-step process which is undertaken in order to determine whether a project or plan will have a likely significant effect (LSE) upon a European site. Before a competent authority can authorise a proposal, they must carry out an Appropriate Assessment of a plan or project in line with procedure detailed in the Habitats Regulations. The whole procedure is called a Habitats Regulations Assessment, with the Appropriate Assessment being part of one of four stages necessary to complete an HRA. The results of the HRA are intended to influence the decision of the competent authority when considering whether or not to authorise a proposal.

Stages of Habitats Regulations Assessment

- 1.4.2 *Stage One of the HRA is 'Screening'*. Plans or projects will be investigated for their potential to have a likely significant effect upon a European site. If the plan is likely to have a significant effect, and is not connected to the management of the site, an Appropriate Assessment is required. Proposals that are found not likely to have a significant effect upon a European site will be 'screened out' at this stage and no further investigation will be required.
- 1.4.3 *Stage Two of the HRA is the 'Appropriate Assessment and the Integrity Test'*. The plan-making authority must undertake an Appropriate Assessment which seeks to provide an objective and scientific assessment of how the proposed Local Plan may affect the qualifying features and conservation strategies of European sites. The whole plan must be assessed, but a 'scoping' exercise helps decide which parts of the plan have potential to give rise to significant effects and therefore where assessment should be prioritised. Natural England is an important consultee in this process and the public may also be consulted.
- 1.4.4 The UK Government accepts the definition for the 'integrity' of a site as *'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 the species for which the site is (or will*

be) designated. Other factors may also be used to describe the 'integrity' of a site. The plan-making authority must ascertain, using scientific evidence and a precautionary approach, that the plan will not adversely affect the integrity of a European site, prior to adopting the plan. Information provided in the Appropriate Assessment will be used when considering the Integrity test.

- 1.4.5 *Stage Three of the HRA is 'Imperative reasons of overriding public interest and compensatory measures'.* If the Competent Authority determines that there are imperative reasons of overriding public interest notwithstanding adverse impacts upon the integrity of the European site, and there are no alternatives, the plan may be given effect. In this case, the plan-making authority must notify the Secretary of State at least 21 days before authorisation; the Secretary of State may give a direction prohibiting the plan from being given effect. It is unlikely that this stage would be reached.

Consultations

- 1.4.6 Natural England is a statutory consultee, and so should be consulted at the draft and final plan stage. The public may also be consulted if it is considered appropriate, for example if the appropriate assessment is likely to result in significant changes to the plan. In practice, Natural England has been consulted upon previous stages of the Local Plan and HRA, and the HRA has been included in previous public consultations of the emerging Local Plan.

Iterations and revision

- 1.4.7 The process is iterative; the conclusions of an earlier assessment may result in changes to the plan, and so a revision of the assessment would be required. If the revised assessment suggests further plan changes, the iteration will continue.
- 1.4.8 Iterative revisions typically continue until it can be ascertained that the plan will not have an adverse effect on the integrity of any European site.
- 1.4.9 There are further provisions for rare cases where over-riding public interest may mean that a land-use plan may be put into effect, notwithstanding a negative assessment, where there are no alternatives to development, but these provisions are not expected to be routinely used.

Guidance and good practice

- 1.4.10 This report has taken account of published guidance and good practice. A key source of information which summaries of legislative requirements, good practice guidance and case law (Tyldesley and Chapman 2013, regularly updated)³ has been used during the writing of this report.

1.5 Why is Appropriate Assessment required?

- 1.5.1 The appropriate assessment process is required under the Conservation of Habitats and Species Regulations 2017 (as amended). Regulation 105 states that
- (1) Where a land use plan—
 - (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and
 - (b) is not directly connected with or necessary to the management of the site,the plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives.
 - (2) The plan-making authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specify.

³ Tyldesley, D., & Chapman, C. (2013). *The Habitats Regulations Assessment Handbook*. DTA Publications Ltd

(3) The plan-making authority must also, if it considers it appropriate, take the opinion of the general public, and if it does so, it must take such steps for that purpose as it considers appropriate.

(4) In the light of the conclusions of the assessment, and subject to regulation 107, the plan-making authority must give effect to the land use plan only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).

(5) A plan-making authority must provide such information as the appropriate authority may reasonably require for the purposes of the discharge by the appropriate authority of the obligations under this chapter.

(6) This regulation does not apply in relation to a site which is—

(a) a European site by reason of regulation 8(1)(c); or

(b) a European offshore marine site by reason of regulation 18(c) of the Offshore Marine Conservation Regulations (site protected in accordance with Article 5(4) of the Habitats Directive.

1.5.2 The plan-making authorities, as defined under the Regulations, are Broadland District Council, Norwich City Council and South Norfolk District Council and the appropriate nature conservation body is Natural England.

1.5.3 This report is the assessment carried out on behalf of these three local authorities under Regulation 105. At Regulation 19 Submission Draft stage, this report determines any changes required so that the GNLP may progress to being adopted in due course.

1.6 European sites

1.6.1 European sites (also known as Natura 2000/N2K sites) are sites that have been classified or designated by Defra/Welsh Ministers or Natural England/Natural Resources Wales, as Special Protection Areas (SPA) for those sites where birds are the special interest feature, and Special Areas of Conservation (SAC) where the habitats or species (other than birds) are the reason for designation.

1.6.2 Wetlands of International Importance, designated under the Ramsar Convention, are not European sites. There may often be considerable overlap between the special interest features and boundaries of Ramsar sites, with European sites. However, for the purposes of planning and development, Government policy in the National Planning Policy Framework states that Ramsar sites should be treated equally/in the same way as European sites. The same applies for sites under consideration for designation including potential Special Protection Area (pSPA), Site of Community Importance (SCI), Candidate Special Area of Conservation (cSAC) and proposed Ramsar sites. In summary, although Appropriate Assessment only legally applies to European sites, National Planning Policy provides further obligations to ensure that all those sites previously mentioned are subject to assessment. Therefore, for the purposes of this report, the term 'European site(s)' refers to all sites under assessment.

1.6.3 As the interest features of the Ramsar sites are usually very similar to the interest features of the SPA and / or SAC designations, both geographically and ecologically, the assessment below, for clarity does not always repeat Ramsar site names. The assessment does however consider Ramsar sites fully, and if an assessment for a Ramsar site was found to differ from that for the respective SPA / SAC, this would be clearly identified.

1.6.4 European Marine Site (EMS) is a term that is often used for a SPA or SAC that includes marine components (i.e. land/habitats up to 12 nautical miles out to sea and below the Mean High Water Mark). A European Marine Site does not have a statutory designation of its own but is designated for the same reasons as the relevant SPA or SAC, and because of this they are not always listed as a site in their own right, to save duplication. For the purpose of this document, an EMS is referred to as an Inshore SPA (or SAC) with Marine Components and it will be made clear if an SPA/SAC has marine components.

1.7 Iteration and consultation

- 1.7.1 An interim Habitats Regulations Assessment (HRA)⁴ was published in January 2018. It is available on Greater Norwich Development Partnership's website⁵. It identifies in detail how internationally designated ecological habitats and wildlife sites in the wider area, including the Broads and the Norfolk coast, would be potentially impacted by recreational pressures likely to be generated by growth in Greater Norwich. It looked at 22 strategic growth options.
- 1.7.2 This report was issued to stakeholders, and a meeting was held with stakeholders on 3rd April 2018. Attendees were John Hiskett (Norfolk Wildlife Trust) and Andrea Kelly (Broads Authority) with Nick Sibbett (The Landscape Partnership (TLP)) and Paul Harris (Broadland District Council) representing Greater Norwich Development Partnership.
- 1.7.3 A second stakeholder meeting was held on 28th March 2019. Attendees were Nick Sibbett (TLP, for Greater Norwich Development Partnership), Paul Harris (Broadland District Council, for Greater Norwich Development Partnership), Mike Jones (Norfolk Wildlife Trust), Kate Warwick (Environment Agency), Louise Oliver (Natural England), and Philip Pearson (RSPB).
- 1.7.4 Anglian Water representatives were unable to attend the stakeholder meetings but provided advice by email.
- 1.7.5 A Habitats Regulations Assessment for the Regulation 18 Draft Plan dated December 2019 was published in January 2020. It was open for public consultation with the draft Local Plan from 29 January - 16 March 2020. Comments on the HRA were received from Natural England and Norfolk Wildlife Trust. Comments on the Local Plan relating to HRA issues were also received from RSPB. Concerns were expressed on a number of topics such as whether the Local Plan policies were strong enough to prevent harm to European sites, over-reliance on studies not yet completed including Water Cycle Study and Green Infrastructure Recreation Avoidance Strategy, and impact of the Norwich Western Link Road.
- 1.7.6 A Habitats Regulations Assessment for the Regulation 19 Submission Draft Plan dated December 2020 was published in February 2021. It was open for public consultation with the Proposed Submission Draft Local Plan from 1st February 2021 – 22nd March 2021. At that time the Habitats Regulations identified that the Water Cycle Study and GIRAMS were in draft stage. The Regulation 19 version (July 2021) of the HRA was amended following completion of the Water Cycle Study and updating the position of the GIRAMS for adoption by the local planning authorities.

⁴ Interim Habitats Regulations Assessment of Greater Norwich Local Plan Issues and Options stage, The Landscape Partnership, December 2017

⁵ https://gnlp.jdi-consult.net/documents/pdfs_14/reg.18_gnlp_interim_hra.pdf

2 European sites potentially affected

2.1 European sites

2.1.1 A search using Natural England's Interactive 'Magic Map'⁶ revealed that a number of European sites lie within, near or partially within the Greater Norwich area, i.e. the land within Broadland District Council (outside the Broads Authority area), South Norfolk District Council or Norwich City Council areas. Each European site is listed below with a brief description of its qualifying features and is shown on Figure 01. Because some of the European sites cross Local Planning Authority boundaries and because some of the European Sites are made up of component Sites of Special Scientific Interest (SSSI) which are located in different Planning Authority areas, no attempt has been made to differentiate those European sites and Ramsar sites which lie within the plan area, which lie within the boundaries of Broadland District, South Norfolk District and Norwich City Council areas and which are within Local Authority Districts beyond these.

2.1.2 Component Sites of Special Scientific Interest forming the European sites, and the European site Conservation Objectives, are presented in Appendix 1.

River Wensum SAC		
Site description summary	Qualifying features⁷	
<p>A calcareous lowland river considered one of the best areas in the UK for <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation. Also significant for the presence of Brook Lamprey, Bullhead and Desmoulin's whorl snail. One of the best areas in the UK for the native White-clawed Crayfish.</p> <p>At the upper reaches, run-off from calcareous soils rich in plant nutrients feeds beds of submerged and emerged vegetation characteristic of chalk streams. Lower, the chalk is overlain by boulder clay, resulting in aquatic plant communities more characteristic of rivers with mixed substrates.</p>	3260	Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation
	7210	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>
	91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)
	1092	<i>Austropotamobius pallipes</i> (White-clawed (or Atlantic steam) Crayfish)
	1163	<i>Cottus gobio</i> (Bullhead)
	1096	<i>Lampetra planeri</i> (Brook Lamprey)
	1016	<i>Vertigo moulinsiana</i> (Desmoulin's whorl snail)

Norfolk Valley Fens SAC		
Site description summary	Qualifying features⁸	
<p>A series of valley-head spring-fed fens, typified by black-bog-rush - blunt-flowered rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> mire. There are also transitions to reedswamp, other fen and wet grassland types, and gradations from calcareous fens into acidic flush communities. Plant species present include marsh helleborine <i>Epipactis palustris</i>, narrow-leaved marsh-orchid <i>Dactylorhiza traunsteineri</i>, and alder <i>Alnus glutinosa</i> which forms carr woodland in places</p>	4010	North Atlantic wet heaths with <i>Erica tetralix</i>
	4030	European dry heaths
	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites)
	6410	<i>Molinia</i> meadows on calcareous, peaty, or clayey-silt-laden soils (<i>Molinion caeruleae</i>)

⁶ <http://magic.defra.gov.uk/home.htm>

⁷ Taken from the Natura 2000 Standard data form for site UK0012647 River Wensum SAC dated 25-01-16.

⁸ Taken from the Natura 2000 Standard data form for site UK0012892 Norfolk Valley Fens SAC dated 25-01-16.

by streams. Marginal fens associated with pingos-pools originating from the thawing of large blocks of ice at the end of the last Ice Age support several large populations of Desmoulin's whorl snail <i>Vertigo moulinsiana</i> .	7150	Depressions on peat substrates of the Rhynchosporion
	7210	Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae
	7230	Alkaline fens
	91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)
	1355	<i>Lutra lutra</i> (Eurasian Otter)
	1166	<i>Triturus cristatus</i> (Great Crested Newt)
	1014	<i>Vertigo angustior</i> (Narrow-mouthed whorl snail)
	1016	<i>Vertigo moulinsiana</i> (Desmoulin's whorl snail)

<i>The Broads SAC/ Broadland SPA, Ramsar</i>		
Site description summary	SAC qualifying features⁹	
<p>A low-lying wetland complex connecting the Bure, Yare, Thurne, and Waveney River systems. Wetland habitats form a mosaic of open water, reedbeds, carr woodland, grazing marsh, and fen meadow, with an extensive network of medieval peat excavations. The Site boasts a rich array of flora and fauna.</p> <p>The SPA is designated for supporting a number of rare or vulnerable (Article 4.1) Annex I bird species during the breeding season. In addition, the SPA is designated for supporting regularly occurring migratory (Article 4.2) species during the breeding season and over winter.</p>	3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.
	3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
	6410	<i>Molinia</i> meadows on calcareous, peaty, or clayey-silt-laden soils (<i>Molinion caeruleae</i>)
	7140	Transition mires and quaking bogs
	7210	Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae
	7230	Alkaline fens
	91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)
	4056	<i>Anisus vorticulus</i> (Little whorlpool ram's-horn snail)
	1903	<i>Liparis loeselii</i> (Fen Orchid)
	1355	<i>Lutra lutra</i> (Eurasian Otter)
	1166	<i>Triturus cristatus</i> (Great Crested Newt)

⁹ Taken from the Natura 2000 Standard data form for site UK0013577 The Broads SAC dated 25-01-16.

	1016	Vertigo moulinsiana (Desmoulin's whorl snail)
	SPA qualifying features¹⁰	
	A056	Anas clypeata (Shoveler) (over winter)
	A050	Anas penelope (Wigeon) (over winter)
	A051	Anas strepera (Gadwall) (over winter)
	A021	Botaurus stellaris (Bittern) (breeding)
	A081	Circus aeruginosus (Marsh Harrier) (breeding)
	A082	Circus cyaneus (Hen Harrier) (over winter)
	A037	Cygnus columbianus bewickii (Bewick's Swan) (over winter)
	A038	Cygnus cygnus (Whooper Swan) (over winter)
	A151	Philomachus pugnax (Ruff) (over winter)
	Ramsar qualifying features¹¹	
	H7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae Calcium-rich fen dominated by great fen sedge (saw sedge).
	H7230	Alkaline fens Calcium-rich springwater-fed fens.
	H91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) Alder woodland on floodplains, and the Annex II species
	S1016	Vertigo moulinsiana (Desmoulin's whorl snail)
	S1355	Lutra lutra (Eurasian Otter)
	S1903	Liparis loeselii Fen Orchid
		Cygnus columbianus bewickii, NW Europe (Tundra (Bewick's) Swan)
		Anas penelope (Eurasian Wigeon)
		Anas strepera strepera (Gadwall)
		Anas clypeata (Shoveler)

Breydon Water SPA/Ramsar/SPA (Marine)		
Site description summary	SPA qualifying features¹²	
An inland tidal estuary at the mouth of the River Yare and its confluence with the Rivers Bure and Waveney. Extensive areas of mud-flats form the only tidal flats on the east Norfolk coast. The Site also features much	A037	Cygnus columbianus bewickii (Bewick's (Tundra) Swan) (over winter)
	A151	Philomachus pugnax (Ruff) (concentration)

¹⁰ Taken from the Natura 2000 Standard data form for site UK9009253 Broadland SPA dated 25-01-16.

¹¹ Taken from the Ramsar Information Sheet for Broadland dated 21-09-94.

¹² Taken from the Natura 2000 Standard data form for site UK9009181 Breydon Water SPA dated 25-01-16.

<p>floodplain grassland, which lies adjacent to the intertidal areas. It is internationally important for wintering waterbirds, some of which feed in the Broadland Ramsar that adjoins this site at Halvergate Marshes.</p> <p>This SPA is part of the Breydon Water European Marine Site.</p>	A140	Pluvialis apricaria (Golden Plover) (over winter)
	A132	Recurvirostra avosetta (Avocet) (over winter)
	A193	Sterna hirundo (Common Tern) (breeding)
	A142	Vanellus vanellus (Northern Lapwing) (over winter)
		Waterbird assemblage
Ramsar qualifying features¹³		
Internationally important waterfowl assemblage (greater than 20000 birds)		
Over winter the site regularly supports internationally important numbers of: Bewick's Swan <i>Cygnus columbianus bewickii</i> and Lapwing <i>Vanellus vanellus</i>		

Great Yarmouth North Denes SPA	
Site description summary	Qualifying features¹⁴
<p>Low dunes stabilised by marram grass <i>Ammophila arenaria</i> with extensive areas of grey hair-grass <i>Corynephorus canescens</i>. The Site supports important numbers of little tern <i>Sterna albifrons</i> that feed in waters close to the SPA.</p> <p>This SPA is part of the Great Yarmouth North Denes European Marine Site (EMS).</p>	<p>A195 <i>Sterna albifrons</i> (Little Tern) (breeding)</p>

Winterton – Horsey Dunes SAC	
Site description summary	Qualifying features¹⁵
<p>The only significant area of dune heath on the east coast of England, which occur over an extremely base-poor dune system, and include areas of acidic dune grassland as an associated acidic habitat. These acidic soils support swamp and mire communities, in addition to common dune slack vegetation, including creeping willow <i>Salix repens</i> subsp. <i>argentea</i> and Yorkshire fog <i>Holcus lanatus</i>. The drought resistant grey hair-grass <i>Corynephorus canescens</i> is characteristic of open areas.</p>	2110 Embryonic shifting dunes
	2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")
	2150 Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)
	2160 Dunes with <i>Hippophae rhamnoides</i>
	2190 Humid dune slacks
	1166 <i>Triturus cristatus</i> (Great Crested Newt)

¹³ Taken from the Ramsar Information Sheet for Breydon Water dated Feb 2000.

¹⁴ Taken from the Natura 2000 Standard data form for site UK9009271 Great Yarmouth North Denes SPA dated 25-01-16.

¹⁵ Taken from the Natura 2000 Standard data form for site UK0013043 Winterton – Horsey Dunes SAC dated 25-01-16.

Paston Great Barn SAC	
Site description summary	Qualifying features¹⁶
Nationally, this is an extremely rare example of a maternity roost of barbastelle bats <i>Barbastella barbastellus</i> in a building. A 16th century thatched barn with associated outbuildings. The maternity colony inhabits many crevices and cracks in the roof timbers.	1308 Barbastella barbastellus (Barbastelle bat) (permanent population)

Overstrand Cliffs SAC	
Site description summary	Qualifying features¹⁷
Vegetated soft cliffs composed of Pleistocene clays and sands, subject to common cliff-falls and landslips. Vegetation undergoes cycles whereby ruderal-dominated communities develop on the newly exposed sands and mud, succeeded by more stable grassland and scrub vegetation. In areas where freshwater seepages occur there are fen communities and occasional perched reedbeds. The diverse range of habitats support a large number of invertebrate species.	1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts

Waveney & Little Ouse Valley Fens SAC	
Site description summary	Qualifying features¹⁸
Calcareous fen containing extensive beds of great fen-sedge <i>Cladium mariscus</i> . Purple moor-grass – meadow thistle <i>Molinia caerulea</i> – <i>Cirsium dissectum</i> fen-meadows, associated with the spring-fed valley fen systems, occur in conjunction with black bog-rush – blunt-flowered rush <i>Schoenus nigricans</i> – <i>Juncus subnodulosus</i> mire and calcareous fens with great fen-sedge. Grazed areas of fen-meadow are more species-rich, and frequently support southern marsh-orchid <i>Dactylorhiza praetermissa</i> .	6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
	7210 Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae
	1016 Vertigo moulinsiana (Desmoulin's whorl snail)

¹⁶ Taken from the Natura 2000 Standard data form for site UK0030235 Paston Great Barn SAC dated December 2015.

¹⁷ Taken from the Natura 2000 Standard data form for site UK0030232 Overstrand Cliffs SAC dated December 2015.

¹⁸ Taken from the Natura 2000 Standard data form for site UK0012882 Waveney and Little Ouse Valley Fens SAC dated December 2015.

Redgrave and South Lopham Fens Ramsar	
Site description summary	Qualifying features¹⁹
<p>An extensive area of spring-fed valley fen at the headwaters of the River Waveney which supports a variety of fen plant community types, including <i>Molinia</i>-based grasslands, mixed sedge-fen, and reed-dominated fen. Small areas of wet heath, willow carr, and birch woodland also occur, and the Site is known to support the fen raft spider <i>Dolomedes plantarius</i>.</p>	<p>The site is an extensive example of spring-fed lowland base-rich valley, remarkable for its lack of fragmentation.</p>
	<p>The site supports many rare and scarce invertebrates, including a population of the fen raft spider <i>Dolomedes plantarius</i>. This spider is also considered vulnerable by the IUCN Red List.</p>
	<p>The site supports many rare and scarce invertebrates, including a population of the fen raft spider <i>Dolomedes plantarius</i>. The diversity of the site is due to the lateral and longitudinal zonation of the vegetation types characteristic of valley mires.</p>

Breckland SPA/SAC	
Site description summary	SPA qualifying features²⁰
<p>A gently rolling plateau underlain by cretaceous chalk bedrock covered with thin deposits of sand and flint. The climate and free-draining soils has produced dry heath and grassland communities. Pingos with biological interest occur in some areas. The highly variable soils of Breckland, with underlying chalk being largely covered with wind-blown sands, have resulted in mosaics of heather-dominated heathland, acidic grassland and calcareous grassland that are unlike those of any other site. Breckland is the most extensive surviving area of the rare sheep's fescue – mouse-ear hawkweed – wild thyme <i>Festuca ovina</i> – <i>Hieracium pilosella</i> – <i>Thymus praecox</i> grassland type. A number of the water bodies within the site support populations of amphibians, including great crested newts <i>Triturus cristatus</i>.</p>	<p>A133 Burhinus oedicnemus (Stone Curlew) (breeding)</p>
	<p>A224 Caprimulgus europaeus (Nightjar) (breeding)</p>
	<p>A246 Lullula arborea (Woodlark) (breeding)</p>
	SAC qualifying features²¹
	<p>2330 Inland dunes with open Corynephorus and Agrostis grasslands</p>
	<p>3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation</p>
	<p>4030 European dry heaths</p>

¹⁹ Taken from the Ramsar Information Sheet for Redgrave and South Lopham Fen Ramsar dated May 2005.

²⁰ Taken from the Natura 2000 Standard data form for site UK9009201 Breckland SPA dated December 2015.

²¹ Taken from the Natura 2000 Standard data form for site UK0019865 Breckland SAC dated December 2015.

	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
	91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)
	1308	Barbastella barbastellus (Barbastelle bat)
	1166	Triturus cristatus (Great Crested Newt)

Benacre to Easton Bavents Lagoons SAC/Benacre to Easton Bavents SPA	
Site description summary	SAC qualifying features²²
<p>Situated on the east coast of Suffolk, this site includes semi-natural broadleaved woodland, tall fen vegetation, shingle, dunes and grassland, saltmarsh and coastal lagoons. The habitats are important for breeding, wintering and passage birds.</p> <p>There are a series of percolating lagoons that have formed behind shingle barriers and are a feature of a geomorphologically dynamic system. The site supports a number of specialist lagoonal species.</p> <p>The SPA is part of the Benacre to Easton Bavents European Marine Site.</p>	1150 Coastal lagoons
	91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)
	SPA qualifying features²³
	A021 Botaurus stellaris (Bittern) (breeding)
	A081 Circus aeruginosus (Marsh Harrier) (breeding)
A195 Sterna albifrons (Little Tern) (breeding)	
Component SSSI/s²⁴	
Pakefield to Easton Bavents SSSI	Covers 735.45ha and contains 51 units. 48.73% of area in Favourable condition, 38.98% of area in Unfavourable-Recovering condition, 8.73% of area in Unfavourable-No change condition, 3.11% Unfavourable-Declining condition, 0.45% of area Partially destroyed.
SAC Conservation Objectives²⁵	
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;	<ul style="list-style-type: none"> The extent and distribution of qualifying natural habitats The structure and function (including typical species) of qualifying natural habitats, and The supporting processes on which qualifying natural habitats rely.
SPA Conservation Objectives²⁶	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving	<ul style="list-style-type: none"> The extent and distribution of the habitats of the qualifying features

²² Taken from the Natura 2000 Standard data form for site UK0013104 Benacre to Easton Bavents Lagoons SAC dated December 2015.

²³ Taken from the Natura 2000 Standard data form for site UK9009291 Benacre to Easton Bavents SPA dated December 2015.

²⁴ Condition status taken from Natural England data on 17th June 2019.

²⁵ Taken from Natural England's European Site Conservation Objectives for Benacre to Easton Bavents Lagoons SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

²⁶ Taken from Natural England's European Site Conservation Objectives for Benacre to Easton Bavents SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
--	--

Dew's Ponds SAC	
Site description summary	Qualifying features²⁷
A series of 12 ponds located in rural East Suffolk, in formerly predominantly arable land. Great Crested Newt has been found in all ponds. Some of the arable land has been converted to grassland and there are also hedgerows and ditches.	1166 Triturus cristatus (Great Crested Newt)

The Wash and North Norfolk Coast SAC (inshore)	
Site description summary	Qualifying features²⁸
The Wash is the largest embayment in the UK and is connected to the North Norfolk Coast via sediment transfer systems. Together The Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and include extensive areas of varying, but predominantly sandy, sediments subject to a range of conditions. Communities in the intertidal include those characterised by large numbers of polychaetes, bivalve and crustaceans. Subtidal communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building worm ('ross worm') Sabellaria spinulosa. The embayment supports a variety of mobile species, including a range of fish, otter Lutra lutra and common seal Phoca vitulina. The extensive intertidal flats provide ideal conditions for common seal breeding and hauling-out.	1110 Sandbanks which are slightly covered by sea water all the time
	1140 Mudflats and sandflats not covered by seawater at low tide
	1150 Coastal lagoons
	1160 Large shallow inlets and bays
	1170 Reefs
	1310 Salicornia and other annuals colonizing mud and sand
	1320 Spartina swards (Spartinion maritimae)
	1330 Atlantic salt meadows (Glaucopuccinellietalia maritimae)
	1420 Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)
	1364 Halichoerus grypus (Grey Seal)
1355 Lutra lutra (Eurasian Otter)	
This SAC is part of The Wash and North Norfolk Coast European Marine Site.	1365 Phoca vitulina (Harbour/Common Seal)

North Norfolk Coast SPA (marine)/SAC (inshore)/Ramsar	
Site description summary	SAC qualifying features²⁹
Important within Europe as one of the largest areas of undeveloped coastal habitat of its	1150 Coastal lagoons

²⁷ Taken from the Natura 2000 Standard data form for site UK0030133 Dew's Ponds SAC dated December 2015.

²⁸ Taken from the Natura 2000 Standard data form for site UK0017075 The Wash and North Norfolk Coast SAC dated December 2015.

²⁹ Taken from the Natura 2000 Standard data form for site UK0019838 North Norfolk Coast SAC dated December 2015.

<p>type, supporting intertidal mudflats and sandflats, coastal waters, saltmarshes, shingle, sand dunes, freshwater grazing marshes, and reedbeds. Large numbers of waterbirds use the Site throughout the year. In Summer, the Site and surrounding area are important for breeding populations of four species of tern, waders, bittern <i>Botaurus stellaris</i>, and wetland raptors including marsh harrier <i>Circus aeruginosus</i>. In Winter, the Site supports large numbers of geese, sea ducks, other ducks and waders using the Site for roosting and feeding. The Site is also important for migratory species during the Spring and Autumn.</p> <p>This SAC is part of the North Norfolk Coast European Marine Site.</p> <p>The SPA is designated for supporting a number of rare or vulnerable (Article 4.1) Annex I bird species during the breeding season. In addition, the SPA is designated for supporting regularly occurring migratory (Article 4.2) species during the breeding season and over winter.</p>	1220	Perennial vegetation of stony banks	
	1420	Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)	
	2110	Embryonic shifting dunes	
	2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")	
	2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	
	2160	Dunes with <i>Hippophae rhamnoides</i>	
	2190	Humid dune slacks	
	1355	<i>Lutra lutra</i> (Eurasian Otter)	
	1395	<i>Petallophyllum ralfsii</i> (Petalwort)	
	1166	<i>Triturus cristatus</i> (Great Crested Newt)	
	SPA qualifying features³⁰		
	<p>This SPA is part of The Wash and North Norfolk Coast European Marine Site (EMS).</p>	A040	<i>Anser brachyrhynchus</i> (Pink-footed Goose) (over winter)
		A050	<i>Anas penelope</i> (Wigeon) (over winter)
A021		<i>Botaurus stellaris</i> (Bittern) (breeding)	
A675		<i>Branta bernicla bernicla</i> (Dark-bellied Brent Goose) (over winter)	
A143		<i>Calidris canutus</i> (Red Knot) (over winter)	
A081		<i>Circus aeruginosus</i> (Marsh Harrier) (breeding)	
A132		<i>Recurvirostra avosetta</i> (Avocet) (breeding and over winter)	
A195		<i>Sterna albifrons</i> (Little Tern) (breeding)	
A193		<i>Sterna hirundo</i> (Common tern) (breeding)	
A191		<i>Sterna sandvicensis</i> (Sandwich Tern) (breeding)	
WATR		Waterfowl assemblage	
Ramsar qualifying features³¹			
	<p>The site is one of the largest expanses of undeveloped coastal habitat of its type in Europe. It is a particularly good example of a marshland coast with intertidal sand and mud, saltmarshes, shingle banks and sand dunes. There are a series of brackish-water lagoons and extensive areas of freshwater grazing marsh and reed beds.</p>		

³⁰ Taken from the Natura 2000 Standard data form for site UK9009031 North Norfolk Coast SPA dated December 2015.

³¹ Taken from the Ramsar Information Sheet for North Norfolk Coast dated 13-06-08.

	Supports at least three British Red Data Book and nine nationally scarce vascular plants, one British Red Data Book lichen and 38 British Red Data Book invertebrates.
	98462 waterfowl peak count in winter (assemblages of international importance)
	<i>Sterna sandvicensis</i> (Sandwich Tern) (breeding)
	<i>Sterna hirundo</i> (Common Tern) (breeding)
	<i>Sterna albifrons</i> (Little Tern) (breeding)
	<i>Calidris canutus</i> (Red Knot) (over winter)
	<i>Anser brachyrhynchus</i> (Pink-footed Goose) (over winter)
	<i>Branta bernicla bernicla</i> (Dark-bellied Brent goose) (over winter)
	<i>Anas penelope</i> (Wigeon) (over winter)
<i>Anas acuta</i> (Pintail) (over winter)	

<i>Southern North Sea cSAC (offshore and inshore)</i>			
Site description summary	Qualifying features³²		
<p>The Southern North Sea site has been recognised as ‘an area of predicted persistent high densities of harbour porpoise’. Therefore, the Southern North Sea site has been submitted to the EU and is a candidate for designation as an Inshore and Offshore SAC for the Annex II species, Harbour Porpoise.</p> <p>The Southern North Sea site extends down the North Sea from the River Tyne, south to the River Thames. The aim of the SAC is to support the maintenance of harbour porpoise populations throughout UK waters (the Southern North Sea supports higher number of porpoises compared to many other parts of their UK range). Seasonal differences in the use of the site by harbour porpoises which show the elevated densities of the species in some parts of the site compared to others during the summer and winter, have been identified. The main threats to harbour porpoise are from incidental catch, pollution and noise/physical disturbance.</p>	<table border="1"> <tr> <td>1351</td> <td><i>Phocoena phocoena</i> (Harbour Porpoise)</td> </tr> </table>	1351	<i>Phocoena phocoena</i> (Harbour Porpoise)
1351	<i>Phocoena phocoena</i> (Harbour Porpoise)		

<i>Outer Thames Estuary SPA (marine)/Outer Thames Estuary Extension pSAC (marine)</i>			
Site description summary	Qualifying features³³		
<p>This SPA is entirely marine and is designated because its habitats support 38% of the Great British population of over-wintering Red-throated Diver <i>Gavia stellata</i>, a qualifying species under Article 4.1 of the Birds</p>	<table border="1"> <tr> <td>A001</td> <td><i>Gavia stellata</i> (Red-throated Diver) (over winter)</td> </tr> </table>	A001	<i>Gavia stellata</i> (Red-throated Diver) (over winter)
A001	<i>Gavia stellata</i> (Red-throated Diver) (over winter)		

³² Taken from the Natura 2000 Standard Data Form for Site UK0030395 Southern North Sea SCI dated January 2017.

³³ Taken from the Natura 2000 Standard Data Form for Site UK9020309 Outer Thames Estuary SPA dated December 2015.

<p>Directive. The Outer Thames Estuary SPA covers vast areas of marine habitat off the east coast between Caister-on-Sea, Norfolk in the north, down to Margate, Kent in the south. The habitats covered by the SPA include marine areas and sea inlets where Red-throated Diver is particularly susceptible to noise and visual disturbance e.g. from wind farms and coastal recreation activities. Threats from effluent discharge, oil spillages and entanglement/drowning in fishing nets are significant.</p> <p>The addition of two new protected features and associated boundary amendments was consulted on in January to July 2016. The proposed extension would afford protection for Little tern and Common tern foraging areas, enhancing protection already afforded to their feeding and nesting areas in the adjacent coastal SPAs (Foulness SPA, Breydon Water SPA and Minsmere to Walberswick SPA).</p>	
---	--

Haisborough, Hammond and Winterton SAC	
Site description summary	Qualifying features³⁴
The site lies off the north east coast of Norfolk and contains a series of sandbanks as well as Sabellaria spinulosa reefs. Small numbers of Harbour Porpoise are regularly observed within the site boundary and a large colony of breeding Grey Seal is known adjacent to the site.	1110 Sandbanks which are slightly covered by sea water all the time
	1170 Reefs
	1364 Halichoerus grypus (Grey Seal)
	1351 Phocoena phocoena (Harbour Porpoise)

2.2 Other relevant Plans or Projects potentially affecting these sites

2.2.1 In addition to the potential impact that Greater Norwich Local Plan may have upon the nearby European sites described above, other plans/documents/guidance may also impact upon these sites, in particular the plans of the neighbouring local planning authorities. The most relevant documents are likely to be those concerned with planning policy and infrastructure provision.

2.2.2 The neighbouring local authorities as well as those that contain European sites within the Zone of Influence of the Greater Norwich Growth Area are listed below. Their planning policy documents, including adopted and emerging Local Plans are likely to be the most relevant when considering potential for cumulative impacts upon European sites.

- Broads Authority
- Breckland Council
- Borough Council of King's Lynn & West Norfolk
- North Norfolk District Council
- Great Yarmouth Borough Council
- East Suffolk Council
- Mid Suffolk District Council

³⁴ Taken from the Natura 2000 Standard data form for site UK0030369 Haisborough, Hammond and Winterton SAC dated December 2015.

- West Suffolk Council
- South Holland District Council
- Boston Borough Council
- East Lindsey District Council
- Norfolk County Council – Minerals site specific allocations DPD
- South Norfolk Village Clusters Housing Site Allocations Local Plan in progress. This plan will include sites for a minimum of 1,200 homes in addition to the 1,392 already committed in the village clusters.

2.2.3 Plans or projects connected with infrastructure planning and management also have potential to impact European sites, whether alone or in combination. Such plans are listed below and will need to be considered further in the report.

- Greater Norwich Water Cycle Study
- Green Infrastructure Strategy (2007) and Green Infrastructure Delivery Plan (2009)
- River Basin Management Plan for the Anglian Water Basin District (2015)
- North East Norwich Growth Triangle Green Infrastructure Delivery Plan (2016)
- East Broadland Green Infrastructure Delivery Plan (2015)
- West Broadland Green Infrastructure Project Plan (2018)
- Norwich River Wensum Green Infrastructure Strategy (not currently available)
- Green Infrastructure sections of the Wymondham Area Action Plan (2015)
- Green Infrastructure sections of the Long Stratton Area Action Plan (2016)

2.2.4 A proposed Norwich Western Link Road is proposed by Norfolk County Council which is working towards a planning application and subsequent construction. Greater Norwich Local Plan recognises the existence of the proposed road but does not promote the road or take part in decision-making regarding the road's construction. See <https://www.norfolk.gov.uk/roads-and-transport/major-projects-and-improvement-plans/norwich/norwich-western-link/> for further details.

2.2.5 Anglian Water's 2019 Water Resource Management Plan outlines how Anglian Water will maintain a sustainable balance between water supplies and demand over the next 25 years. It describes how it proposes to maintain that balance by investing in demand management – metering and water efficiency for example – and developing new water resources. No new boreholes or increase in abstraction from existing boreholes are explicitly proposed.

2.2.6 Anglian Water's Long Term Water Recycling Plan (September 2018) sets out a long term strategy to identify the need for further investment by Anglian Water at existing water recycling centres or within foul sewerage catchments to accommodate the anticipated scale and timing of growth. Growth in Greater Norwich as well as in the remainder of the area served by Anglian Water is included in this plan.

3 Likely significant effects of Greater Norwich Local Plan proposed allocations for Gypsy and traveller sites on European sites

3.1 The sites being assessed

3.1.1 The proposed allocations for Gypsy and Traveller sites are included in Appendix 2. The allocations are listed in the table below.

Reference	Address	Parish	Number of proposed pitches
GMLP5004	Land off Buxton Road	Eastgate Cawston	4
GMLP5005	Wymondham Recycling Centre	Wymondham	2
GMLP5007	Costessey Contingency Site	Costessey	18

3.2 Necessary or connected with management of European sites?

3.2.1 It is considered that the Gypsy and Traveller site proposed allocations are not necessary for, or connected with, the nature conservation management of any European sites.

3.3 Likely significant effects which might arise from policies and allocations within Greater Norwich Local Plan

3.3.1 There are a number of potential impacts arising from policies and allocations within the Local Plan. These include

- Increased recreational pressure: trampling of vegetation or disturbance to birds, or providing difficulties in site management for example.
- Increased pressure on water resources: The new homes and businesses would require a reliable source of drinking water which could affect wetlands from increased abstraction.
- Pollution impacts: Waste water discharge from new developments, including foul water discharges may reduce the water quality of rivers or wetlands.
- Pollution impacts: Additional traffic movements increasing emissions to air such as Nitrogen oxides NO_x and Sulphur dioxide SO₂ which have the potential to result in adverse impact upon vegetation or water quality.
- Increased urbanisation of the countryside: predation by cats, fly-tipping, increase in arson, vandalism of European site infrastructure such as fences, disturbance of livestock, etc.

3.3.2 There are no direct land-take impacts on any European site in the allocations.

3.3.3 Impacts arising from any of the above factors upon a designated European site could occur result from development of a single large housing site, for example in the immediate vicinity of Norwich; or through a combination of dispersed developments including the Gypsy and Traveller sites elsewhere in the Growth Area. Some European sites would be more vulnerable to recreational pressure whilst others might be more sensitive to other types of impacts. In isolated incidences, a European designated site may be sensitive to several different types of impact, for example both recreational pressure and an impact upon water resources.

3.3.4 There may be cumulative effects of a large number of smaller developments. For example, the recreational impact on European sites of a small residential development may in itself have imperceptible impact, but the total recreational impact of a number of residential developments could be significant.

3.4 Conclusion of assessment of likely significant effect ('screening' stage)

- 3.4.1 It is concluded that the proposed allocations for Gypsy and Traveller sites, as part of the Regulation 19 Submission Draft Local Plan, may be likely to have a significant effect upon one or more European sites. The Local Plan is not necessary for, or connected with, nature conservation management of European sites. It is concluded that an appropriate assessment of impacts is necessary.

3.5 Introduction to the Appropriate Assessment

- 3.5.1 This appropriate assessment considers impacts of the Gypsy and Traveller sites individually and collectively, and in the context of the whole plan. Cumulative impacts with other plans or projects are then considered.

4 Appropriate Assessment of proposed Gypsy and Traveller sites

4.1 Assessment of construction impacts on any European site

4.1.1 No allocations are within or close to any European site, so there would not be any construction impacts such as land-take or disturbance from the construction activities.

4.2 Increased recreational pressure: potential impacts.

4.2.1 Recreational use of a European site has the potential to:

- Cause damage to soils and vegetation through trampling and erosion;
- Cause disturbance to sensitive species, particularly ground-nesting birds and wintering wildfowl.
- Cause eutrophication as a result of dog fouling;
- Cause littering, giving rise to potential animal mortality, nutrient enrichment and small-scale pollution
- Prevent appropriate management or exacerbate existing management difficulties, for example grazing being restricted.

4.2.2 Different types of European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. Recreational pressure is likely to be generated by an increase in residents associated with the new housing but less so for employment development.

Trampling pressure and mechanical/abrasive damage

4.2.3 Most types of terrestrial European site can be affected by trampling, which in turn causes soil compaction and erosion, depending upon soil conditions, or changes to the vegetation. Motorcycle scrambling and off-road vehicle use can cause serious erosion, as well as disturbance to sensitive species but significant impacts can also arise from walkers, cyclists and horses, resulting in reduction in vegetation cover.

4.2.4 Studies in a variety of vegetation types have shown that low-growing, mat-forming grasses appear most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. Cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks of trampling pressure, but had recovered well after one year and as such these were considered to have resilience in respect of trampling pressure. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling.

4.2.5 In practice this can mean changes to the vegetation community compromising the viability of taller growing fragile plant species in favour of species which have a leaf rosette which lies flat to the ground and often leading to a loss of rarer, more vulnerable plant species in favour of more robust, common species.

4.2.6 Dune habitat and other coastal ecosystems, heathlands and wetlands are amongst the most sensitive to trampling and erosion, whereas woodlands and meadowlands are more robust.

Eutrophication

4.2.7 Walkers with dogs contribute to pressure on sites through nutrient enrichment via dog fouling and the total volume of dog faeces deposited on sites can be surprisingly large. For example, at Burnham Beeches National Nature Reserve over one year, Barnard³⁵ estimated the total amounts of urine and faeces from dogs as 30,000 litres and 60 tonnes respectively. Nutrient-poor habitats such as heathland, chalk grassland and certain types of fen vegetation are particularly sensitive

³⁵ Barnard, A. (2003) Getting the Facts - Dog Walking and Visitor Number Surveys at Burnham Beeches and their Implications for the Management Process. *Countryside Recreation*, 11, 16 - 19

to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces. Most impacts occur close to paths.

Disturbance

- 4.2.8 The deleterious effect of disturbance on birds stems from the fact that the birds are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding. This can adversely affect the 'condition' and ultimately survival of the birds. In addition, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds. Disturbance of ground-nesting birds may result in the bird leaving the nest and exposing the eggs or chicks to predators or bad weather. Disturbed areas become unavailable for nesting even though the habitat may otherwise be suitable.
- 4.2.9 Walkers with dogs have potential to cause greater disturbance to fauna as dogs are less likely to keep to marked footpaths and move more erratically and this has been shown by number of studies, with birds flushing more readily, more frequently, at greater distances and for longer periods of time when dogs are present, particularly off-lead.
- 4.2.10 Where increased recreational use is predicted to cause adverse impacts on a site, avoidance and mitigation should be considered. Avoidance of recreational impacts at European sites involves location of new development away from such sites or provision of an alternative recreational resource.

Site management

- 4.2.11 Public access can cause conflict between people and habitats in terms of compromising effective site management. Dogs, rather than people, tend to be the cause of many management difficulties, notably by worrying grazing animals or necessitating moving cattle away from footpaths.

4.3 European sites unlikely to be affected by recreational impacts

- 4.3.1 It is not likely that there would be a significant effect from recreational impacts on seven European sites. These sites are tabulated below, and the reasons why recreational impact is considered unlikely are given in the second column.

European site	Reason for no recreational impact
Paston Great Barn SAC	Small site with no public access
Overstrand Cliffs SAC	More-or-less vertical cliff which, although open to the public, in practice is rarely walked upon
Dews Pond SAC	Small site with no public access
Southern North Sea cSAC	Offshore site with no pedestrian access and low levels of dispersed recreational boating activity
Outer Thames Estuary SPA / pSAC extension	Offshore site with no pedestrian access and low levels of dispersed boating activity
Haisborough, Hammond and Winterton SAC	Offshore site with no pedestrian access and low levels of dispersed boating activity
River Wensum SAC	Aquatic interest is not affected by bankside recreation and public access to the river is in any case very limited. Boating is very limited in the SAC but encouraged downstream beyond the SAC in Norwich

4.4 European sites potentially affected by recreational impacts

4.4.1 European sites potentially affected by recreational impacts are tabulated below. Distances from development at which recreational impacts might occur are summarised from Panter and Liley's 2016 visitor study in Norfolk³⁶. Most visits are for dog walking or walking with no dog.

European site	Potential recreational impact
Norfolk Valley Fens SAC	<p>These are a group of small scattered fens, some with limited value for walking / dog walking except for very local users, and varied access arrangements and parking facilities. Those fens with public access but no car park are likely to be visited by those within 1km only.</p> <p>Buxton Heath, Holt Lowes and Marsham Heath all have car parks, and some other sites might have informal roadside parking even if no car park exists. The median distance travelled by car to these sites is 3 – 6km although few people resident in the area travel further than 2km.</p>
The Broads SAC / Broadland SPA/Ramsar	<p>Many of the habitats present in the designated sites of the broads are wet or very wet and unlikely to be favoured for recreation, with public usage almost entirely restricted to well managed nature reserves which feature boat-trails, footpaths and boardwalks. Most car parks serving the Broads / Broadland are located in villages, where walking is not the prime attraction, or associated with nature reserves where visitors are well managed. Recreational impact might occur where there is a large car park providing access to habitat used by SPA birds where a nature conservation organisation is not managing the land as a nature reserve, but these locations are rare. Such localised examples might, for example include minor disturbance to bird species on Halvergate by people walking out from public car parks in Yarmouth (anecdotal evidence), but such usage is restricted for the most part to long-distance walkers along the footpath and there is no access to habitats at marsh level. Although few people may walk along the riverside adjacent to Halvergate Marshes, each walker could create significant disturbance (Andrea Kelly, meeting on 3rd April 2018). Other recreational impact would occur where development is within walking distance of a Broadland site, such as in adjacent or close-by villages, with, again, access being restricted to floodbank footpaths.</p> <p>Where people drive from home to a car park on the Broads, the median distance travelled is up to 28km although few people resident in the area travel further than 5km.</p> <p>The number of boats on the Broads is controlled by Broads Authority, a Competent Authority under the Habitats Regulations. Boat numbers are out of the control of the Greater Norwich Development Partnership. Currently the Broads Authority does not limit the number of boat licences it issues, and the number of licences is declining.</p>
Breydon Water SPA / Ramsar	Although a 'coastal' site, this is not an attractive site for family recreational purposes as access requires either a

³⁶ Panter, C., & Liley, D. (2016). Visitor Surveys at European Protected Sites across Norfolk during 2015 and 2016. Footprint Ecology

European site	Potential recreational impact
	boat trip or a walk from Great Yarmouth Railway Station or from public parking within the town in order to gain access it. There are very limited circular walk opportunities, the only option including crossing and then walking alongside the busy A47 for a short distance. There are few visitors, who almost all come by car, and the median distance travelled is 12km although few people resident in the area travel further than 5km.
Great Yarmouth North Denes SPA	This site has an attractive beach in association with other coastal amenities. Car parks, including free beach-front parking, are readily available but appear to be used by holiday-makers because the median distance travelled by those who come from home is just 1km.
Winterton – Horsey Dunes SAC	The site has an attractive beach and circular walk options including a long-distance trail taking in the fragile dune system, with other major attractions including the seal colony. Car parks are readily available. Visitors do not keep to paths and can walk anywhere on or behind the dunes. The median distance to various parts of this site is up to 44km at Horsey Gap although visitor numbers are very low above a distance of 5km from home.
Waveney and Little Ouse Valley Fens SAC	<p>The Redgrave and South Lopham Fen component of the SAC is attractive to many visitors, and visitors are actively encouraged by the landowner and site manager, Suffolk Wildlife Trust. A modest increase in visitors would be acceptable as paths through the site are routed so as to avoid vulnerable habitats. Sensitive vegetation away from the path network is in any case avoided by visitors as usually wet or uncomfortable to walk on.</p> <p>Other component fens are small, and scattered fens, with limited value for walking / dog walking except for very local users, and varied access arrangements and parking facilities. Where parking exists, there is usually a managed access scheme in place. Those fens with public access are likely to be regularly visited by those living within 2km, similar to the Norfolk Valley Fens. There is no visitor data.</p>
Redgrave and South Lopham Fen Ramsar	The Redgrave and South Lopham Fen component of the SAC is attractive to many visitors, and visitors are actively encouraged by the landowner and site manager, Suffolk Wildlife Trust. A modest increase in visitors would be acceptable as paths through the site are routed so as to avoid vulnerable habitats. Sensitive vegetation away from the path network is in any case avoided by visitors as usually wet and uncomfortable to walk on. As above, the fen with public access is likely to be regularly visited by those within 2km only, similar to the Norfolk Valley Fens. There is no visitor data.
Breckland SPA / SAC	Research has shown that even at honeypot sites, nesting of woodlark and nightjar continues. Modest increases in recreation are unlikely to affect these species. Nesting sites for stone-curlew are either closed for public access (heathland sites) in the nesting season, or are on farmland

European site	Potential recreational impact
	<p>with no public access so disturbance would not occur. No likely recreational effect except in circumstances where a large increase in visitors to a little-disturbed part of the SPA would occur such as a large allocation adjacent to Breckland.</p> <p>Trampling of SAC vegetation is generally low, with visitors from distance often visiting a few honeypot visitor centres outside the SAC e.g. High Lodge visitor centre, West Stow Heath Country Park.</p> <p>Median distances travelled by people coming from home vary from 23 – 47km but visitor rates are low above 10km distant.</p>
Benacre to Easton Bavents SAC / SPA	<p>Despite being remote from towns and villages, and with limited parking, this site is (in the experience of the report authors) already very popular with, and vulnerable to disturbance effects from visitors travelling from Norwich and Broadland towns and villages. The visitors then use several local circular walking routes, including a long-distance trail, which take in sections of coastal reedbed, heathland and dune systems. Some increase in recreational effect could occur as a consequence of major development in the southern Broads area or from site allocations in close proximity.</p> <p>There is no data on distance travelled but it could be reasonably similar to other eastern coastal sites with a 10km threshold distance.</p>
The Wash and North Norfolk Coast SAC	<p>The site is an attractive and accessible coast designated for marine and intertidal habitats / species. Car parks are readily available. The median distance travelled from home varies from 2km to 30km for most parts of this site, with Morston (S) having a median distance of 41km; but visitor rates are lower for residents living over 14km distant.</p>
North Norfolk Coast SPA / SAC / Ramsar	<p>The site is a very attractive and accessible coast with a range of habitats and landscapes, and including a variety of circular walk options and a long-distance path. Car parks are readily available. Car parks are readily available. The median distance travelled from home varies from 2km to 29km for most parts of this site, with Morston (S) having a median distance of 41km but visitor rates are very low for residents beyond 14km.</p>

4.4.2 The Green Infrastructure and Recreational Impact Avoidance Strategy (GIRAMS) uses this data to set impact risk zones for each European site.

4.4.3 Using the Local Plan documents available at the time, Panter and Liley (2016) estimated the increase in visitor numbers from the housing allocated at that time. The Local Plan documents used were

- Broadland District Council Site Allocations DPD (Adopted 2016)
- Broadland District Council Growth Triangle Area Action Plan (Adoption Imminent at that time)
- Norwich City Site Allocations Plan (Adopted 2014)
- South Norfolk Council Site Allocations and Policies Document (Adopted 2015)
- South Norfolk Council Wymondham Area Action Plan (Adopted 2015)
- Breckland Site Specific policies and Proposals (Adopted 2012)
- North Norfolk Site Allocations (Adopted 2011)
- Great Yarmouth Borough Council, Awaiting Development Policies and Site Allocations DPD, Previous allocations used (2001)
- Borough Council of King's Lynn and West Norfolk Preferred Options for Detailed Policies and Sites 2013, not yet adopted at that time

4.4.4 Key findings relating to housing change, links to allocated new housing at that time and implications included:

- A 14% increase in access by Norfolk residents to the sites surveyed (in the absence of any mitigation), as a result of new housing during the current plan period.
- The increase will be most marked in the Brecks, where an increase of around 30% was predicted. For the Broads the figure is 14%; 11% for the East Coast; 9% for North Norfolk; 15% for Roydon & Dersingham; 28% for the Valley Fens and 6% for the Wash (note these figures relate to the surveyed access points only and to visits by Norfolk residents).

4.4.5 With a median dog walk length of around 3km, it is considered that a housing allocation within 1km of a European site access point (i.e. a site freely available for public entry / use) is likely to result in an increased visitor use of that European site, especially for regular dog walking, by people walking to the European site. Housing allocations greater than 1km distant are less likely to generate increased visitor use from people walking to that site, and above 1.5km distance there is likely to be little or no increased visitor use by people walking to the entry point. European sites with car parking provision would be likely to experience impacts resulting from development within a larger radius as described in the table above.

4.4.6 For parts of the North Coast, the Broads, and parts of the East Coast, the links between an increase in local housing and recreation impacts are less clear as these sites attract a high number of visitors coming from a wide geographical area, both inside and outside Norfolk. There are therefore likely to be pressures from overall population growth both from within the county and further afield.

4.4.7 Visitor access to European sites by the Greater Norwich Local Plan allocations compared to the 2016 study would be an increase in visitors because of the additional allocations in the GNLP and also bearing in mind completed housing development since the study. The distribution of the allocations in Greater Norwich are such that the European sites likely to have the larger increases in visitor numbers would be The Broads / Broadland, Winterton – Horsey Dunes, Norfolk Valley Fens (Marsham Heath), and North Norfolk Coast SPA / SACs / Ramsar.

4.5 Increased pressure on water resources

4.5.1 The new homes would require a reliable source of drinking water. Proposed employment facilities would need a source of water for the domestic needs of the employees, and might also need water for manufacturing or other industrial processes such as washing.

4.5.2 The east and southeast of England have been identified by Environment Agency in 2013 as a region which is currently experiencing considerable pressure on water resources with the deficit situation within both the Essex and Suffolk Water and the Anglian Water areas being considered to be 'serious' at the present time due to limited water resources and high levels of demand. This

situation is unchanged across 4 different future growth and climatic scenarios³⁷ and the study concluded that both the Anglian Water area and Essex and Suffolk Water areas are currently experiencing 'Serious Stress', this being the highest level.

- 4.5.3 The Environment Agency has advised the Secretary of State that the areas classified as under 'Serious Stress' should be designated as 'Areas of serious water stress' for the purposes of Regulation 4 of the Water Industry (Prescribed Condition) Regulation 1999 (as amended).
- 4.5.4 Anglian Water (AW), in its 2019 Water Resources Management Plan has identified the relevant Resource Zones (RZ) to this Greater Norwich Local Plan area as being Norwich and the Broads, Norfolk Rural, and the North Norfolk Coast. The AW assessment takes into account planned and predicted growth and climate change. All Resource Zones are forecast to be in deficit (i.e. not enough water being available) to 2045 prior to measures in the plan intended to prevent the deficit being implemented.
- 4.5.5 Pressure on water resources resulting in reduction in water levels or flow in groundwater-fed wetlands, and in streams, rivers and waterbodies would be a likely consequence of increased water demand requiring greater water abstraction from groundwater or surface water. Surface water abstraction could have a direct impact upon water levels and stream flow; groundwater abstraction would potentially lead to reduced flows in any watercourses which derive a significant proportion of their water from spring flow and also reduced surface and sub-surface flow through fen and mire habitats. Wetland European sites which are dependent upon a groundwater source may become too dry to support special interest features.
- 4.5.6 Water resources in the region are already under considerable pressure. For example, Environment Agency's Review of Consents work in 2009 resulted in the closure of a Public Water supply borehole in the vicinity of Sheringham and Beeston Regis Commons SSSI (part of the Norfolk Valley Fens SAC). A Public Water Supply borehole at Ludham in the vicinity of Catfield Fen (part of the Broads SAC) was closed in March 2021 to prevent further negative impact upon the flora and fauna of this groundwater-fed site³⁸.
- 4.5.7 Abstraction at a future major water supply borehole, could potentially give rise to an impact upon designated groundwater dependant wetland sites more than 10km away, depending upon the depth of the borehole, the nature of the strata from which abstraction is taking place and its relationship with local wetland sites. It is assumed that any future borehole might be as much as 10km from any proposed development location.
- 4.5.8 Depleted riverine flows may also result in an increased number, and severity of, saline incursion events and will also increase the concentration of pollutants and nutrients possibly to above set targets. Ground water abstraction from near-surface aquifers can also lead to saline incursion into the aquifer resulting in damage to coastal wetland sites, which receive a proportion of their irrigating water from groundwater.
- 4.5.9 A new body, Water Resources East (WRE) has been set up to address water demand deficit. It brings together partners from a wide range of industries including: water, energy, retail, the environment, land management and agriculture, to work in collaboration to manage these challenges, building on the area's unique opportunities for sustainable future growth, and pioneering a new approach to managing water resources.
- 4.5.10 Anglian Water's 2019 Water Resource Management Plan outlines how Anglian Water will maintain a sustainable balance between water supplies and demand over the next 25 years. It describes how it proposes to maintain that balance by investing in demand management – metering and water efficiency for example – and developing new water resources. Anglian Water's 2019 Water Resources Management Plan indicates that it will manage water resources by 'managing demand' from existing and proposed customers (ie supplying less water per customer) and by transferring water from other areas, with no increase in abstraction and no new abstractions. No new

³⁷ Environment Agency and Natural Resources Wales. 2013. Water Stressed Areas Final Classification
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressedclassification-2013.pdf

³⁸ <https://www.anglianwater.co.uk/news/anglian-water-completes-scheme-to-protect-unique-norfolk-environment/>

boreholes or increase in abstraction from existing boreholes are explicitly proposed and so there would be no impact on the water resources available to European sites.

4.6 Pollution impacts: Waste water discharge

- 4.6.1 Reduction of water quality, from increased discharges of sewage and surface water drainage, or from pollution incidents, either during, or after, construction has potential to impact upon riparian and wetland European sites downstream of a settlement. The types of habitat which might be sensitive to that change would depend very much upon the nature and scale of the impact.
- 4.6.2 It is assumed that waste water discharge from developments, including foul water discharges, would be treated, however may give rise to elevated levels of nitrates, and, depending upon whether phosphate stripping equipment is in place, phosphate, downstream of the discharge point. There is also potential for chemical spillages, or STW failure, to lead to discharge of untreated effluent.
- 4.6.3 Anglian Water is currently in the process of finalising a Long Term Water Recycling Plan which will set out a long term strategy to identify the need for further investment by Anglian Water at existing water recycling centres or within foul sewerage catchments to accommodate the anticipated scale and timing of growth. Anglian Water has a statutory duty to prevent pollution from sewage, so whilst there is a theoretical risk from water recycling centres there is also a mechanism in place to prevent the risk. Permits issued by Environment Agency are set for each water recycling centre and are specific to ensure sufficient water quality at the discharge point.
- 4.6.4 The impacts of water pollution would depend entirely on the nature of the effluent or chemicals being released and whether the release is slow or sudden, but may potentially result in consequences such as fish kill, extinction of invertebrate taxa, which are more sensitive to pollution or changes in Biological Oxygen Demand (BOD), loss of taxa of water plants which require low nutrient levels or eutrophication of floodplain fen habitats. These impacts could potentially affect Annex II European designated species such as white clawed crayfish, Desmoulins whorl snail, brook lamprey or bullhead, directly or indirectly and may also result in the loss of Annex I habitats such as *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation.

4.7 Pollution impacts: Additional traffic movements increasing emissions to air

- 4.7.1 The main airborne pollutants of concern in the context of their potential to give rise to adverse impacts upon European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂).
- 4.7.2 The primary pollutants SO₂, NO and NO₂ are oxidised in the atmosphere to form SO₄²⁻ and NO₃⁻ respectively, while NH₃ reacts with these oxidised components to form NH₄⁺ (ammonium). These pollutants known as aerosols can travel long distances, and together with primary pollutants can be deposited in the form of wet or dry deposition³⁹.
- 4.7.3 The Air Pollution Information System (APIS) provides a useful summary of the main pollutants, the effects they have on vegetation and other features for which European sites might be designated. Concentrations and deposition of air pollutants are assessed against a range of criteria to protect both human health and the environment. Environmental criteria include critical loads⁴⁰ for nitrogen deposition (kg Nitrogen ha⁻¹ year⁻¹) and acid deposition and critical levels for ammonia (µg m⁻³), sulphur dioxide (µg m⁻³), nitrogen dioxide (µg m⁻³), and ozone (ppb hours). There are some critical loads for heavy metals but these are not currently used to assess impacts. There are no critical levels or loads for other pollutants but in some cases there are other assessment criteria such as environmental quality standards (EQS) and environmental assessment levels (EAL) which are not relevant to the present study.
- 4.7.4 NO_x can have a directly toxic effect upon vegetation, but in addition to this, higher concentrations of NO_x or ammonia within the atmosphere will lead to greater rates of nitrogen deposition to

³⁹ <http://www.apis.ac.uk/starters-guide-air-pollution-and-pollution-sources>

⁴⁰ http://www.apis.ac.uk/overview/issues/overview_Cloadslevels.htm

soils, leading to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats. Most SAC sites are designated for the vegetation they support, and this is generally vegetation which would respond adversely to nutrient input, including increased input of Total Nitrogen. Both SO₂ and NO_x can lead to acid deposition and acidification of vegetation.

4.7.5 Housing development would be likely to give rise to increased levels of NO_x arising from increased vehicle movements. Ammonia release is generally associated with increased numbers of agricultural livestock and certain industrial processes, including the production of energy from waste, and is unlikely to arise as a direct consequence of the Great Norwich Growth Plan.

4.7.6 The table below summarises the main airborne pollutants and discusses the mechanisms by which these might potentially impact upon European sites.

Pollutant	Source	Potential effects on European sites	Significance
Sulphur Dioxide SO ₂	SO ₂ emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil, and to a lesser extent, motor vehicles.	Both wet and dry deposition of SO ₂ acidifies soils and freshwater, and consequently alters the species composition of vegetation and hence associated animal communities. Some habitats will be more at risk than others depending on soil type and buffering capacity. The significance of impacts depends on levels of deposition and the sensitivity of the habitat.	It is not anticipated that the development of the Growth Area would necessitate construction of new power-producing facilities and the demographic of local industry is unlikely to shift towards the types of processes which would result in high levels of combustion. Total SO ₂ emissions have decreased substantially in the UK since the 1980s and SO ₂ deposition is not considered to have potential to give rise to significant effects on vegetation and is not considered to be a significant factor in the context of this study
Ammonia (NH ₃)	Ammonia is released following decomposition of animal wastes. Levels will increase with expansion in numbers of livestock and certain specific industrial processes, including the production of energy from waste	Ammonia can give rise to an adverse effect on vegetation through deposition and the consequent eutrophication of vegetation, leading to changes in the species composition of vegetation and hence associated animal communities. Some habitats will be more at risk than others depending on the ability of the vegetation type to 'absorb' nutrients without adverse change taking place.	The nature of the industries associated with employment allocations in the Greater Norwich Growth Area are as yet uncertain, do not provide a clear source of ammonia emissions. Significant release of NH ₃ is unlikely to arise as a direct consequence of the Great Norwich Growth Plan and is not considered to be a significant factor in the context of this study.
Nitrogen oxides (NO _x)	Nitrogen oxides (nitrates (NO ₃), nitrogen dioxide (NO ₂) and nitric acid (HNO ₃)) are produced through combustion processes. About one quarter of the UK's emissions are from power	Deposition of nitrogen oxides can lead to both soil and freshwater acidification. Some habitats will be more at risk than others depending on soil type and buffering capacity. Mosses, liverworts and lichens, which received their	It is not anticipated that the development of the Growth Area would necessitate construction of new power-producing facilities, but domestic and commercial heating and vehicle emissions could potentially

Pollutant	Source	Potential effects on European sites	Significance
	stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes.	nutrients directly from the atmosphere are particularly vulnerable to elevated NOx levels and grey dune and heathland ecosystems are perhaps the most sensitive. In addition, NOx can cause eutrophication of soils and water. This alters the species composition of plant communities and hence associated animal communities. Some habitats will be more at risk than others depending on ability of the vegetation type to 'absorb' nutrients without adverse change taking place.	be substantial given the number of proposed homes. The significance of impacts will depend on the background level, levels of deposition and the sensitivity of the habitat. NOx contributes to total N deposition – see below. Traffic-generated air pollution operates close to roads but falls off to almost nothing at a distance of 200m from the road ⁴¹ .
Total Nitrogen (N)	The pollutants that contribute to nitrogen deposition derive mainly from NOx and NH3 emissions.	Species-rich plant communities with relatively high proportions of slow-growing perennial species, bryophytes and lichens are most at risk from N eutrophication, due to its promotion of competitive and invasive species which can respond readily to elevated levels of N at the expenses of slow-growing species. The eventual impacts include changes in species composition, reduction of plant diversity, loss of sensitive species and an increased rate of succession in wetland ecosystems.	The significance of impacts will depend on levels of deposition and the sensitivity of the habitat, however background levels of Total N deposition across east Norfolk and north Suffolk is typically already within the critical load range for many of the sensitive habitats in the area ⁴² and in some instances exceed the upper end of the range ⁴³ . Total N is considered to be a potential significant factor in the context of this study for developments in close proximity to European sites with nutrient sensitive vegetation. Across the UK there has been a continued decline in Nitrogen Oxides since 1974, with emissions in 2017 being around half those in 2000 ⁴⁴ .
Ozone (O ₃)	A secondary pollutant generated by photochemical reactions from NOx and volatile organic compounds (VOCs). These are mainly	Concentrations of O3 above 40 ppb can be toxic to wildlife. Increased ozone concentrations may lead to a reduction in growth and altered species composition in	Background levels in the region are typically below 30ppb ⁴⁵ . Significant combustion of oil and coal is unlikely to arise as a direct consequence of the Great

⁴¹ <http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf>

⁴² <http://www.pollutantdeposition.ceh.ac.uk/content/nitrogen-compounds>

⁴³ <http://www.apis.ac.uk/search-location>

⁴⁴

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/778483/Emissions_of_air_pollutants_1990_2017.pdf

⁴⁵ <https://uk-air.defra.gov.uk/assets/documents/reports/aqeg/aqeg-ozone-report.pdf>

Pollutant	Source	Potential effects on European sites	Significance
	released by the combustion of fossil fuels. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	seminatural plant communities.	Norwich Growth Plan and O ₃ is not considered to be a significant factor in the context of this study.

4.7.7 The distance over which additional traffic movements might give rise to emissions to air such as Nitrogen oxides NO_x which have the potential to result in adverse impact upon vegetation or water quality is closest to the road network and that, for NO_x, levels have fallen to the background level within 200m of the road.

4.7.8 A Natural England literature search study⁴⁶ into the effects of specific road transport pollutants, found that, combining evidence from two fumigation experiments and a transect study suggests that NO_x is the key phytotoxic component of exhaust emissions. While no new papers relating to roadside buffer zones were identified from recent literature, one group of researchers noted that based on their data and the literature, new road building and road expansion should avoid a buffer zone of up to 100–200m from sensitive sites, particularly those where bryophytes are an important component of habitats.

4.7.9 It is therefore surmised that the area affected by traffic emissions to air can be assumed to closely follow existing road corridors within the Growth Area and it is also assumed that any future road construction would be largely within the Growth Area.

4.7.10 The vegetation communities occurring within the study area and potentially at risk from atmospheric nitrogen deposition are as follows. It can be seen that dune systems are particularly vulnerable.

Habitat type (EUNIS code)	Critical load (CL) range (kgN/ha/yr)
Marine habitats	
Mid-upper saltmarshes (A2.53)	20-30
Pioneer & low-mid saltmarshes (A2.54 and A2.55)	20-30
Coastal habitats	
Shifting coastal dunes (B1.3)	10-20
Coastal stable dune grasslands (grey dunes) (B1.4)	8-15
Coastal dune heaths (B1.5)	10-20
Moist to wet dune slacks (B1.8)	10-20
Inland surface waters	
Dune slack pools (permanent oligotrophic waters) (C1.16)	10-20

⁴⁶ <https://publications.naturalengland.org.uk/file/5064684469223424>

Habitat type (EUNIS code)	Critical load (CL) range (kgN/ha/yr)
Permanent dystrophic lakes, ponds and pools (C1.4)	3-10
Mire, bog and fen habitats	
Valley mires, poor fens and transition mires (D2)	10-15
Rich fens (D4.1)	15-30
Grasslands and tall forb habitats	
Non-Mediterranean dry acid and neutral closed grassland (E1.7)	10-15
Low and medium altitude hay meadows (E2.2) (includes floodplain grazing marsh)	20-30
<i>Molinia caerulea</i> meadows (E3.51)	15-25
Heathland, scrub & tundra	
<i>Erica tetralix</i> dominated wet heath (lowland)	10-20
Dry heaths (F4.2)	10-20
Forest habitats (general):	
Broadleaved woodland (G1)	10-20

4.7.11 Nitrogen oxide pollution could affect European sites within 200m of new roads, existing roads where daily traffic flows will change by 1,000 AADT or more; or Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more; or daily average speed will change by 10 km/hr or more; or peak hour speed will change by 20 km/hr or more.

4.8 Increased urbanisation of the countryside

4.8.1 This class of impacts is closely related to recreational pressure in the sense that both types of impact arise from having an increased human population close to protected wildlife sites. The list of such impacts is extensive, but some of the more significant ones include the following:

Predation impacts from domestic pets

4.8.2 Predation by domestic cats can potentially affect small mammals, birds, amphibians and reptiles and results in injury, mortality and elevated levels of disturbance.

4.8.3 A survey undertaken in 1997 found that nine million British cats brought home 92 million prey items over a five-month period⁴⁷.

4.8.4 A large proportion of domestic cats are found in urban situations, and thus increasing urbanisation is likely to lead to increased cat predation. Domestic cats will potentially range up to 5km from home, although 60% of forays are over a distance of less than 400m⁴⁸ and the typical average distance for hunting excursions is around 375m⁴⁹ according to 20th century studies.

⁴⁷ Woods, M. et al. 2003. Predation of wildlife by domestic cats *Felis catus* in Great Britain. *Mammal Review* 33, 2 174- 188

⁴⁸ Barratt, D.G. (1997). Home range size, habitat utilisation and movement patterns of suburban and farm cats *Felis catus*. *Ecography* 20 271-280

⁴⁹ Turner, D.C. & Meister, O. (1988). Hunting behaviour of the domestic cat. In: *The Domestic Cat: The Biology of Its Behaviour*. Ed. Turner, D.C. and Bateson, P. Cambridge University Press.

- 4.8.5 There have been two studies of cat ranging behaviour published in more recent years. These used GPS collars on cats in a village⁵⁰ and in Reading⁵¹. Both studies found that cats within the village and in urban / suburban areas of Reading has smaller home ranges than expected, with most cats in the village featured in the BBC study rarely leaving the village. The cat which roamed furthest in the BBC study went no more than 186m from its home.
- 4.8.6 The Reading study found that cats in dense urban areas travelled up to 79m, in suburban areas up to 141m and in town edge areas up to 148m. The suppression of cat travelling distances in areas of higher housing density suggests that as urban development progresses into the countryside, the cats on the former development edge would reduce their range in response to expansion of development into the area of countryside they formerly visited.
- 4.8.7 The predation impact of cats is therefore not cumulative as the introduction of 'new' cats because new development generally results in a reduction of 'existing' cats' range. The recent research suggests that even a 400m buffer zone from European in relation to cat predation may be over-precautionary and the 1km separation from allocations is adequate to prevent cat predation on qualifying features of European sites.

Fly-tipping

- 4.8.8 Fly-tipping tends to take place only a short distance from development and affects land alongside or close to highways⁵²; often the terminus of a minor dead-end road, or adjacent to laybys on busier routes. The distance travelled will vary, but is likely to be usually less than 10km from source. Material dumped in this way is typically either household waste, including 'white goods' and green waste, tyres, or small-scale commercial waste. Depending upon the locality and nature of tipping, there may be harm to watercourses through pollution, damage to sensitive vegetation and in the case of green waste tipping in a woodland or wetland near to home, the release of alien invasive plant species into the wild; the species being dumped often being the more vigorous and hence potentially more invasive garden plants.
- 4.8.9 A 2016 report by Yorkshire Wildlife Trust⁵³ found that the greatest amount of fly-tipping and anti-social behaviour on its nature reserves, and theft from their nature reserves, were greatest when there were settlements within 100m. Where there were nature reserves 1km+ distant from the nearest settlement, these activities were still recorded but much less often.

Lighting

- 4.8.10 Light pollution can affect the foraging and commuting activities of bat species, although there may be minor impacts upon bird behaviour.
- The slower flying broad winged species, which include Barbastelle (a European site designated feature of Paston Great Barn SAC) generally avoid street lights⁵⁴ and well-lit areas.
 - It is thought that insects are attracted to lit areas from further afield and this may result in adjacent habitats supporting reduced numbers of insects. This is a further impact on the ability of the light avoiding bats to be able to feed.
 - Artificial lighting is thought to increase the chances of bats being preyed upon⁵⁵. Many avian predators will hunt bats which may be one reason why bats avoid flying in the day. Observations have been made of kestrels (diurnal raptors) hunting at night under the artificial light along motorways. Lighting can be particularly harmful if used along commuting corridors such as river corridors, tree lines and hedgerows used by bats.

⁵⁰ BBC 'The Secret Life of Cats' at <https://www.bbc.co.uk/news/science-environment-22567526> and <https://www.bbc.co.uk/news/science-environment-22821639> both accessed on 16th December 2020

⁵¹ Hugh J. Hanmer, Rebecca L. Thomas and Mark Fellowes (2017) Urbanisation influences range size of the domestic cat (*Felis catus*): consequences for conservation. *Journal of Urban Ecology*, 2017, 1-11

⁵² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595773/Flytipping_201516_statistical_release.pdf

⁵³ Rylatt, Garside and Robin (2017) Human Impacts on Nature Reserves – The Influence of Nearby Settlements. Yorkshire Wildlife Trust.

⁵⁴ http://www.bats.org.uk/data/files/bats_and_lighting_in_the_uk__final_version_version_3_may_09.pdf

⁵⁵ http://www.bats.org.uk/data/files/bats_and_lighting_in_the_uk__final_version_version_3_may_09.pdf

- 4.8.11 These urbanisation impacts are most likely to occur when a European site is within 1km of a settlement and therefore an allocation within 1km of a European site might increase urbanisation effects.

4.9 Avoidance and mitigation for potential impacts of the proposed Gypsy and traveller sites

Locational mitigation

- 4.9.1 Proposed Gypsy and Traveller sites allocations are all over 1km from any European site. This avoids for any potential land-take impacts during construction, cat predation, air pollution (no polluting factories are allocated but in any case if they arise would be subject to project-level HRA), urbanisation of the countryside, and recreational impacts of people walking to a European site to start a greenspace walk.
- 4.9.2 With a median dog walk length of around 3km, it is considered that a Gypsy and Traveller allocation within 1km of a European site access point (i.e freely available for public entry / use) is likely to result in an increased visitor use of that European site, especially for regular dog walking, by people walking to the European site. Allocations greater than 1km distant are less likely to generate increased visitor use from people walking to that site, and above 1.5km distance there is likely to be little or no increased visitor use by people walking to the entry point. The size of an allocation is also related to potential impact, with an allocation of, say, 100 dwellings likely to generate more visitor use of a European site than an allocation of 10 dwellings at the same distance.
- 4.9.3 The proposed Gypsy and Traveller sites are all over 1.5km from the nearest European sites, and most are significantly further. This avoids the likelihood of direct recreational impact arising from walks from the pitches to a European site.

Recreational impacts. Provision of green infrastructure

- 4.9.4 Natural England has advised all Local Planning Authorities in Norfolk (letter of 2019 within the GIRAMS report) that large developments (defined as fifty houses or more) include green space which is proportionate to its scale to minimise any predicted increase in recreational pressure to designated sites, by containing the majority of recreation within and around the developed site. This advice applies across the whole of Norfolk because Natural England considers that development of this scale anywhere in the county could have a likely significant effect on a European site.
- 4.9.5 No evidence has been provided to support the threshold of 50 or more dwellings, and it is considered that each and every new home may have an identical impact. Greater Norwich Local Plan requires all residential development to provide green infrastructure, in Policy 3. The requirement is not restricted to 50 or more dwellings as advised by Natural England. If a development site is too small to provide green infrastructure on site, a contribution secured by S106 to green infrastructure elsewhere will be required.
- 4.9.6 Policy 3 applies to Gypsy and Traveller pitches in the same way as it does to standard dwellings.

Recreational impacts. In-combination effects of all housing developments

- 4.9.7 The Green Infrastructure and Recreational Impact Avoidance Strategy (GIRAMS) proposes a tariff based payment taken from residential, and other relevant accommodation e.g. tourist accommodation, that will be used to fund package of avoidance and mitigation measures to be delivered at Habitat Sites. This consists of a team of Rangers to influence visitor behaviour, signage, monitoring, a dog project, providing strategic mitigation projects, and various other tasks. A tariff payment of £185.93 per household in place across Norfolk to provide enough money to pay for the mitigation works. The GIRAMS has been finalised for adoption by the local planning authorities and contributions are currently being collected by Norwich City Council⁵⁶,

⁵⁶ https://www.norwich.gov.uk/info/20017/planning_applications/1181/supporting_plans_and_documentation accessed on 7th May 2022

Broadland District Council⁵⁷ and South Norfolk Council⁵⁸. This applies to Gypsy and Traveller pitches in the same way as it does to standard dwellings

- 4.9.8 It is considered that the GIRAMS measures described above would be sufficient that the assessment is able to ascertain no adverse effect upon the integrity of any European site, subject to the adoption of the GIRAMS and its implementation by the local planning authorities.

Provision of new Country Park

- 4.9.9 Broadland Country Park was created by Broadland District Council between Felthorpe and Horstead and opened in March 2021⁵⁹. This location is close to the Norwich Growth Triangle, and the site is being designed and managed to attract a larger number of recreational visitors. The Country Park will reduce visitor pressure on European sites by providing an attractive alternative.

Air pollution

- 4.9.10 No new roads are proposed in the Plan within 200m of any European site, and the siting of proposed allocations further than 1km from any European site indicates that road traffic associated with the developments would be sufficiently distant from European sites that there would be no pollution impacts.

Water resource use

- 4.9.11 A water cycle study by AECOM (March 2021) as evidence for the Greater Norwich Local Plan looked in detail into how new development can be supplied with water.
- 4.9.12 Anglian Water Services plans for the long term provision of water supplies through a five yearly planning cycle, through the production of statutory Water Resource Management Plans (WRMP). The WRMP sets out how changes in demand for water and changes in available water in the environment will be managed, including measures to manage how much water customers use (demand management) and measures to provide new sources of supply to current and future customers. The Anglian Water WRMP (2019) indicates that through the introduction of strategic demand management options and supply side schemes within the supply areas serving Greater Norwich Authorities, adequate water supplies will be available up to 2045 and will cater for the proposed levels of growth. No new abstraction from the environment is proposed
- 4.9.13 The Water Cycle Study confirms that Anglian Water's measures to improve efficiency of existing homes and businesses, reducing leakage by mending leaky watermains, and new homes being designed to be water-efficient, will mean that no new abstractions are required. Local Plan Policy 2 'Sustainable Communities' includes a requirement for housing development to meet the 'Building Regulations part G (amended 2016) water efficiency higher optional standard' which requires a calculated use of 110l per day.
- 4.9.14 Consequently it is clear that there would be no impact on European sites from water abstraction as there would be no additional abstraction to meet water needs.

Waste water discharge – 2021 GNLP HRA information, now superseded

- 4.9.15 The Water Cycle Study which forms part of the evidence base for the Local Plan (AECOM March 2021 Greater Norwich Water Cycle Study) looked in detail at discharge issues, including any risk of European sites having an increased nutrient loading. The report's summary states that

The WCS has identified that there are several WRCs within the study area that do not have sufficient capacity to treat all additional wastewater flows from the proposed level of growth within their catchments (Acle, Aylsham, Barnham Broom, Beccles, Ditchingham, Freethorpe, Long Stratton, Whitlingham Trowse, and Wymondham). The study also identified that some WRCs have capacity but using that capacity may impact significantly on the water quality and ecology of watercourses receiving the treated discharge (Cantley, Saxlingham and Woodton). Finally, future discharge volumes from Reepham and Foulsham WRC were also assessed,

⁵⁷ <https://www.southnorfolkandbroadland.gov.uk/planning-applications/apply/3> accessed on 7 May 2022

⁵⁸ <https://www.southnorfolkandbroadland.gov.uk/planning-applications/apply/4> accessed on 7 May 2022

⁵⁹ <https://www.southnorfolkandbroadland.gov.uk/broadlandcountrypark> accessed on 7th May 2022

irrespective of capacity, due to their discharge within the River Wensum Special Area of Conservation (SAC). Water quality and ecological assessments have been undertaken for these future discharges focusing on demonstrating what is required to ensure no increase in pollution load as a result of growth.

The assessment has shown that subject to the revision of discharge permits and the implementation of the necessary treatment process upgrades (using conventional treatment technologies), changes in water quality as a result of additional discharge can be managed to ensure there is no overall increase in pollutant load, and no adverse change in water quality or connected water dependent ecologically protected sites as a result of growth.

However, the analysis has demonstrated that treatment upgrades required to deliver this outcome will be significant for several of the WRCs and this will require substantial investment from AWS over the longer term. This may affect phasing of development (up to 2025) in some locations of the study area, and longer term to 2030 in some cases. Key locations where this has been considered in the development of policy include Long Stratton, Wymondham and Whitlingham. It will be a requirement in these locations for development to demonstrate that there is sufficient capacity at WRC before that development can proceed.

Through their Water Recycling Long-term Plan, AWS have already identified a potential need for planned investment to upgrade WRC capacity at Aylsham, Long Stratton and Woodton in the plan period as well as increased drainage capacity at Whitlingham and Wymondham.

4.9.16 The July 2021 Habitats Regulations Assessment of the Greater Norwich Local Plan said that it was necessary to make improvements to Water Recycling Centres at Foulsham WRC and Reepham WRC to avoid an increase in nutrient discharge into River Wensum SAC, together with revised discharge permits from Environment Agency. This is not immediately necessary but would be required by 2025.

4.9.17 It is necessary to make improvements to Water Recycling Centres at Aylsham WRC (which are already programmed) and at Whitlingham Trowse WRC to avoid an increase in nutrient discharge into Broadland SAC/Ramsar, together with revised discharge permits from Environment Agency for those WRCs. This is not immediately necessary but would be required by 2025. Beyond 2025, if the improvements are not made, a moratorium on growth would be needed until the measures are in place.

4.9.18 Policy 4 of the Greater Norwich Local Plan committed the Greater Norwich planning authorities to working with utilities providers, to improve waste-water management including at Whitlingham Trowse WRC. This gave confidence in 2021 that the need for the improvements will be progressed.

Waste water discharge – 2022 update for Nutrient Neutrality

4.9.19 On 16th March 2022, Natural England wrote to partner Councils within Greater Norwich Development Partnership to advise that River Wensum SAC and The Broads SAC were being harmed by excess nitrate and phosphate in the water. The origin of these plant nutrients is from agricultural run-off, urban run-off (e.g. from fertilised gardens and dog fouling), treated water from Water Recycling Centres, and others. New residential development would need to demonstrate that it would not exacerbate the existing problem by adding further nitrate and phosphate from its sewage and run-off. Advice on the principles relevant to all affected European sites is included in Appendix 3, detailed advice is provided in Appendix 4 for The Broads SAC / Ramsar and in Appendix 5 for River Wensum SAC. A calculator spreadsheet was also provided by Natural England to facilitate calculation of nutrient change from the current land use.

4.9.20 This advice applies to Gypsy and Traveller pitches as well as to standard dwellings. The proposed pitch allocations are therefore in the same situation as housing allocations with respect to Nutrient Neutrality; all pitch allocations are within the catchments of either the River Wensum SAC or The Broads SAC / Ramsar. Site-specific assessments and solutions may be proposed, and a strategic solution is being sought by partner Councils within Greater Norwich Development Partnership. At the time of writing, it is anticipated that modification to the strategic policies of the GNLP will be

made by 1st June 2022, to be available for an Examination hearing⁶⁰. Policy amendments are expected to tie the delivery of housing growth more tightly to nutrient levels impacting on internationally protected habitats, including as appropriate, a county-wide mitigation strategy. The availability of a mitigation strategy will affect the timing of the delivery of housing sites and Gypsy and Traveller pitches as opposed to the principle of their development.

4.10 Assessment of proposed allocations for Gypsy and traveller sites

- 4.10.1 Subject to satisfactory policy modification with respect to Nutrient Neutrality, it is ascertained that the proposed allocations for Gypsy and Traveller sites will have no adverse effect upon the integrity of any European site.
- 4.10.2 This conclusion is made for the proposed allocations individually and collectively, including the contingency allocation in Costessey.

⁶⁰ <https://www.gnlp.org.uk/local-plan-examination-local-plan-examination-document-library-d-post-submission-examination/d5>
accessed on 7th May 2022

5 Conclusions

5.1 The Greater Norwich Local Plan with the proposed Gypsy and Traveller site allocations, acting alone

- 5.1.1 It is ascertained that the published Greater Norwich Local Plan regulation 19 Proposed Submission Draft together with additional allocations for Gypsy and Traveller sites would have no adverse affect upon the integrity of any European site acting alone, subject to satisfactory policy modification with respect to Nutrient Neutrality.

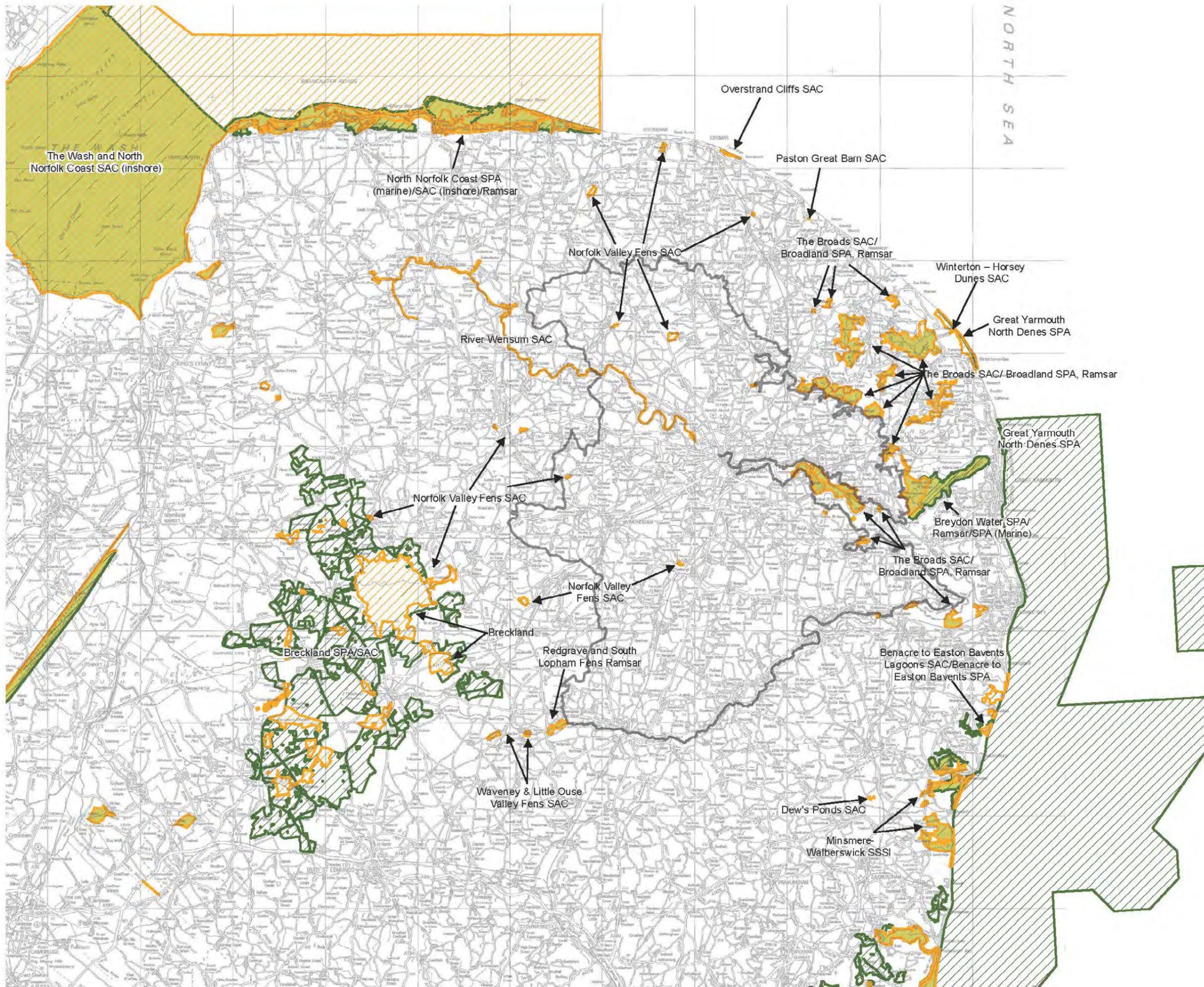
5.2 The Greater Norwich Local Plan in combination with other plans or projects

- 5.2.1 It is ascertained that the published Greater Norwich Local Plan regulation 19 Proposed Submission Draft together with additional allocations for Gypsy and Traveller sites would have no adverse affect upon the integrity of any European site, subject to satisfactory policy modification with respect to Nutrient Neutrality, in combination with any other Local Plan or other projects.

5.3 Overall conclusion

- 5.3.1 It is concluded that **subject to policy modification with respect to Nutrient Neutrality** there would be no adverse affect upon the integrity of any European site.

Figure 01



Key

-  Greater Norwich Boundary
-  Special Areas of Conservation
-  Special Protection Areas
-  RAMSAR

E16845 Greater Norwich Local Plan

European site locations

Figure 01

Scale 1:400,000 @ A3

August 2017



Appendix 1

European sites

River Wensum SAC		
Site description summary	Qualifying features⁶¹	
<p>A calcareous lowland river considered one of the best areas in the UK for Ranunculion fluitantis and Callitriche-Batrachion vegetation. Also significant for the presence of Brook Lamprey, Bullhead and Desmoulin's whorl snail. One of the best areas in the UK for the native White-clawed Crayfish.</p> <p>At the upper reaches, run-off from calcareous soils rich in plant nutrients feeds beds of submerged and emerged vegetation characteristic of chalk streams. Lower, the chalk is overlain by boulder clay, resulting in aquatic plant communities more characteristic of rivers with mixed substrates.</p>	3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation
	7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae
	91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
	1092	Austropotamobius pallipes (White-clawed (or Atlantic steam) Crayfish)
	1163	Cottus gobio (Bullhead)
	1096	Lampetra planeri (Brook Lamprey)
	1016	Vertigo moulinsiana (Desmoulin's whorl snail)
Component SSSI/s⁶²		
River Wensum SSSI	Covers 385.96ha and contains 55 units. 11.05% of area in Favourable condition, 47.70% of area in Unfavourable-Recovering condition, 41.25% of area in Unfavourable-No change condition.	
Conservation Objectives⁶³		
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;	<ul style="list-style-type: none"> • 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. 	

Norfolk Valley Fens SAC		
Site description summary	Qualifying features⁶⁴	
A series of valley-head spring-fed fens, typified by black-bog-rush - blunt-flowered	4010	North Atlantic wet heaths with Erica tetralix

⁶¹ Taken from the Natura 2000 Standard data form for site UK0012647 River Wensum SAC dated 25-01-16.

⁶² Condition status taken from Natural England data on 3 December 2019.

⁶³ Taken from Natural England's European Site Conservation Objectives for River Wensum SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁶⁴ Taken from the Natura 2000 Standard data form for site UK0012892 Norfolk Valley Fens SAC dated 25-01-16.

<p>rush <i>Schoenus nigricans</i> - <i>Juncus subnodulosus</i> mire. There are also transitions to reedswamp, other fen and wet grassland types, and gradations from calcareous fens into acidic flush communities. Plant species present include marsh helleborine <i>Epipactis palustris</i>, narrow-leaved marsh-orchid <i>Dactylorhiza traunsteineri</i>, and alder <i>Alnus glutinosa</i> which forms carr woodland in places by streams. Marginal fens associated with pingos-pools originating from the thawing of large blocks of ice at the end of the last Ice Age support several large populations of Desmoulin's whorl snail <i>Vertigo moulinsiana</i>.</p>	4030	European dry heaths
	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites)
	6410	Molinia meadows on calcareous, peaty, or clayey-silt-laden soils (Molinion caeruleae)
	7150	Depressions on peat substrates of the Rhynchosporion
	7210	Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae
	7230	Alkaline fens
	91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)
	1355	<i>Lutra Lutra</i> (Eurasian Otter)
	1166	<i>Triturus cristatus</i> (Great Crested Newt)
	1014	<i>Vertigo angustior</i> (Narrow-mouthed whorl snail)
1016	<i>Vertigo moulinsiana</i> (Desmoulin's whorl snail)	
Component SSSI/s⁶⁵		
Badley Moor SSSI	Covers 18.33ha and contains 4 units. 100% of area in Favourable condition	
Booton Common SSSI	Covers 8.19ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.	
Buxton Heath SSSI	Covers 67.32ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.	
Coston Fen, Runhall SSSI	Covers 7.11ha and contains 1 unit. 100% of area in Unfavourable-No change condition.	
East Walton and Adcock's Common SSSI	Covers 62.41ha and contains 3 units. 100% of area in Unfavourable-Recovering condition.	
Flordon Common SSSI	Covers 9.91ha and contains 2 units. 19.57% of area in Favourable condition, 80.43% of area in Unfavourable-Recovering condition.	
Foulden Common SSSI	Covers 139ha and contains 7 units. 24.74% of area in Favourable condition, 61.51% of area in Unfavourable-Recovering condition, 13.75% of area in Unfavourable-Declining condition.	
Great Cressingham Fen SSSI	Covers 14.33ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.	
Holt Lowes SSSI	Covers 49.91ha and contains 2 units. 30.07% of area in Favourable condition, 69.93% of area in Unfavourable-Recovering condition.	

⁶⁵ Condition status taken from Natural England data on 3rd December 2019.

Potter & Scarning Fens, East Dereham SSSI	Covers 6.20ha and contains 2 units. 100% of area in Unfavourable-Recovering condition.
Sheringham and Beeston Regis Commons SSSI	Covers 24.94ha and contains 2 units. 100% of area in Unfavourable-Recovering condition.
Southrepps Common SSSI	Covers 5.57ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.
Swangey Fen, Attleborough SSSI	Covers 48.39ha and contains 6 units. 44.44% of area in Favourable condition, 55.56% of area in Unfavourable-Recovering condition.
Thompson Water, Carr and Common SSSI	Covers 154.74ha and contains 11 units. 73.05% of area in Favourable condition, 22.72% of area in Unfavourable-Recovering condition, 4.24% of area in Unfavourable-Declining condition.
Conservation Objectives⁶⁶	
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;	<ul style="list-style-type: none"> • 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.

<i>The Broads SAC/ Broadland SPA, Ramsar</i>		
Site description summary	SAC qualifying features⁶⁷	
<p>A low-lying wetland complex connecting the Bure, Yare, Thurne, and Waveney River systems. Wetland habitats form a mosaic of open water, reedbeds, carr woodland, grazing marsh, and fen meadow, with an extensive network of medieval peat excavations. The Site boasts a rich array of flora and fauna.</p> <p>The SPA is designated for supporting a number of rare or vulnerable (Article 4.1) Annex I bird species during the breeding season. In addition, the SPA is designated for supporting regularly occurring migratory (Article 4.2) species during the breeding season and over winter.</p>	3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.
	3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
	6410	Molinia meadows on calcareous, peaty, or clayey-silt-laden soils (Molinion caeruleae)
	7140	Transition mires and quaking bogs
	7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae
	7230	Alkaline fens
	91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

⁶⁶ Taken from Natural England's European Site Conservation Objectives for Norfolk Valley Fens SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁶⁷ Taken from the Natura 2000 Standard data form for site UK0013577 The Broads SAC dated 25-01-16.

	4056	Anisus vorticulus (Little whorlpool ram's-horn snail)
	1903	Liparis loeselii (Fen Orchid)
	1355	Lutra Lutra (Eurasian Otter)
	1166	Triturus cristatus (Great Crested Newt)
	1016	Vertigo moulinsiana (Desmoulin's whorl snail)
SPA qualifying features⁶⁸		
	A056	Anas clypeata (Shoveler) (over winter)
	A050	Anas penelope (Wigeon) (over winter)
	A051	Anas strepera (Gadwall) (over winter)
	A021	Botaurus stellaris (Bittern) (breeding)
	A081	Circus aeruginosus (Marsh Harrier) (breeding)
	A082	Circus cyaneus (Hen Harrier) (over winter)
	A037	Cygnus columbianus bewickii (Bewick's Swan) (over winter)
	A038	Cygnus cygnus (Whooper Swan) (over winter)
	A151	Philomachus pugnax (Ruff) (over winter)
Ramsar qualifying features⁶⁹		
	H7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae Calcium-rich fen dominated by great fen sedge (saw sedge).
	H7230	Alkaline fens Calcium-rich springwater-fed fens.
	H91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) Alder woodland on floodplains, and the Annex II species
	S1016	Vertigo moulinsiana (Desmoulin's whorl snail)
	S1355	Lutra lutra (Eurasian Otter)
	S1903	Liparis loeselii Fen Orchid
		Cygnus columbianus bewickii, NW Europe (Tundra (Bewick's) Swan)
		Anas penelope (Eurasian Wigeon)
		Anas strepera strepera (Gadwall)
		Anas clypeata (Shoveler)

⁶⁸ Taken from the Natura 2000 Standard data form for site UK9009253 Broadland SPA dated 25-01-16.

⁶⁹ Taken from the Ramsar Information Sheet for Broadland dated 21-09-94.

Component SSSI/s ⁷⁰	
Alderfen Broad SSSI	Covers 21.34ha and contains 3 units. 8.65% of area in Favourable condition, 91.35% of area in Unfavourable-Recovering condition.
Ant Broads and Marshes SSSI	Covers 745.27ha and contains 35 units. 54.39% of area in Favourable condition, 39.18% of area in Unfavourable-Recovering condition.
Barnby Broad & Marshes SSSI	Covers 192.69ha and contains 24 units. 59.93% of area in Favourable condition, 40.07% of area in Unfavourable-Recovering condition.
Broad Fen, Dilham SSSI	Covers 38.43ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.
Bure Broads and Marshes SSSI	Covers 741.15ha and contains 14 units. 43.08% in Favourable condition, 46.85% in Unfavourable-Recovering condition, 10.07% in Unfavourable-No change condition.
Burgh Common and Muckfleet Marshes SSSI	Covers 121.54ha and contains 9 units. 27.72% of area in Favourable condition, 68.76% of area in Unfavourable-Recovering condition, 3.52% of area in Unfavourable-No change condition.
Calthorpe Broad SSSI	Covers 43.54ha and contains 3 units. 97.68% of area in Favourable condition, 2.32% of area in Unfavourable-Recovering condition.
Cantley Marshes SSSI	Covers 272.11ha and contains 3 units. 100% of area in Favourable condition.
Crostwick Marsh SSSI	Covers 11.57ha and contains 1 unit. 100% of area in Unfavourable-No change condition.
Damgate Marshes, Acle SSSI	Covers 64.68ha and contains 10 units. 74.73% of area in Favourable condition, 25.27% of area in Unfavourable-Recovering condition.
Decoy Carr, Acle SSSI	Covers 56.01ha and contains 6 units. 70.21% of area in Favourable condition, 29.79% of area in Unfavourable-Recovering condition.
Ducan's Marsh, Claxton SSSI	Covers 3.58ha and contains 2 units. 100% of area in Unfavourable-Recovering condition.
Geldeston Meadows SSSI	Covers 13.98ha and contains 2 units. 97.18% of area in Unfavourable-No change condition, 2.82% of area in Unfavourable-Declining condition.
Hall Farm Fen, Hemsby SSSI	Covers 9.15ha and contains 1 unit. 100% of area in Favourable condition.
Halvergate Marshes SSSI	Covers 1432.72ha and contains 42 units. 72.75% of area in Favourable condition, 23.71% of area in Unfavourable-Declining condition, 3.54% of area in Unfavourable-No change condition.
Hardley Flood SSSI	Covers 49.79ha and contains 2 units. 100% of area in Favourable condition.
Limpenhoe Meadows SSSI	Covers 11.95ha and contains 1 unit. 100% of unit in Unfavourable-Recovering condition.

⁷⁰ Condition status taken from Natural England data on 17th June 2019.

Ludham – Potter Heigham Marshes SSSI	Covers 101.51ha and contains 6 units. 100% of area in Favourable condition.
Poplar Farm Meadows, Langley SSSI	Covers 7.55ha and contains 1 unit. 100% of area in Favourable condition.
Priory Meadows, Hickling SSSI	Covers 23.94ha and contains 2 units. 29.79% of area in Favourable condition, 70.21% of area in Unfavourable-Recovering condition.
Shallam Dyke Marshes, Thurne SSSI	Covers 69.80ha and contains 8 units. 4.44% of area in Favourable condition, 95.56% of area in Unfavourable-No change condition.
Smallburgh Fen SSSI	Covers 7.63ha and contains 1 unit. 100% of area in Favourable condition.
Sprat's Water and Marshes, Carlton Colville SSSI	Covers 57.14ha and contains 11 units. 80.48% of area in Favourable condition, 19.19% of area in Unfavourable-Recovering condition, 0.33% of area in Unfavourable-No change condition.
Stanley and Alder Carrs, Aldeby SSSI	Covers 42.68ha and contains 3 units. 100% of area in Unfavourable-Recovering condition.
Trinity Broads SSSI	Covers 316.83ha and contains 23 units. 45.48% of area in Favourable condition, 41.98% of area in Unfavourable-Recovering condition, 12.54% of area in Unfavourable-No change condition.
Upper Thurne Broads and Marshes SSSI	Covers 1185.93ha and contains 19 units. 63.97% of area in Favourable condition, 16.65% of area in Unfavourable-Recovering condition, 4.82% of area in Unfavourable-No change condition, 14.57% of area in Unfavourable-Declining condition.
Upton Broad & Marshes SSSI	Covers 195.44ha and contains 18 units. 7.43% of area in Favourable condition, 91.84% of Unfavourable-Recovering condition, 0.72% of area in Unfavourable-No change condition.
Yare Broads and Marshes SSSI	Covers 744.46ha and contains 28 units. 39.22% of area in Favourable condition, 11.30% of area in Unfavourable-Recovering condition, 47.27% of area in Unfavourable-No change condition, 2.20% of area in Unfavourable-Declining condition.
SAC Conservation Objectives⁷¹	
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;	<ul style="list-style-type: none"> • 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.

⁷¹ Taken from Natural England's European Site Conservation Objectives for The Broads SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

SPA Conservation Objectives⁷²	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.

Breydon Water SPA/Ramsar/SPA (Marine)		
Site description summary	SPA qualifying features⁷³	
<p>An inland tidal estuary at the mouth of the River Yare and its confluence with the Rivers Bure and Waveney. Extensive areas of mud-flats form the only tidal flats on the east Norfolk coast. The Site also features much floodplain grassland, which lies adjacent to the intertidal areas. It is internationally important for wintering waterbirds, some of which feed in the Broadland Ramsar that adjoins this site at Halvergate Marshes.</p> <p>This SPA is part of the Breydon Water European Marine Site.</p>	A037	Cygnus columbianus bewickii (Bewick's (Tundra) Swan) (over winter)
	A151	Philomachus pugnax (Ruff) (concentration)
	A140	Pluvialis apricaria (Golden Plover) (over winter)
	A132	Recurvirostra avosetta (Avocet) (over winter)
	A193	Sterna hirundo (Common Tern) (breeding)
	A142	Vanellus vanellus (Northern Lapwing) (over winter)
		Waterbird assemblage
	Ramsar qualifying features⁷⁴	
	Internationally important waterfowl assemblage (greater than 20000 birds)	
	Over winter the site regularly supports internationally important numbers of: Bewick's Swan <i>Cygnus columbianus bewickii</i> and Lapwing <i>Vanellus vanellus</i>	
Component SSSI/s⁷⁵		
Breydon Water SSSI	Covers 514.40ha and contains 15 units. 100% of area in Favourable condition.	
Halvergate Marshes SSSI	Covers 1432.72ha and contains 42 units. 72.75% of area in Favourable condition, 23.71% of area in Unfavourable-Declining condition, 3.54% of area in Unfavourable-No change condition.	

⁷² Taken from Natural England's European Site Conservation Objectives for Broadland SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁷³ Taken from the Natura 2000 Standard data form for site UK9009181 Breydon Water SPA dated 25-01-16.

⁷⁴ Taken from the Ramsar Information Sheet for Breydon Water dated Feb 2000.

⁷⁵ Condition status taken from Natural England data on 17th June 2019.

Conservation Objectives⁷⁶	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.

Great Yarmouth North Denes SPA	
Site description summary	Qualifying features⁷⁷
<p>Low dunes stabilised by marram grass <i>Ammophila arenaria</i> with extensive areas of grey hair-grass <i>Corynephorus canescens</i>. The Site supports important numbers of little tern <i>Sterna albifrons</i> that feed in waters close to the SPA.</p> <p>This SPA is part of the Great Yarmouth North Denes European Marine Site (EMS).</p>	A195 Sterna albifrons (Little Tern) (breeding)
Component SSSI/s⁷⁸	
Great Yarmouth North Denes SSSI	Covers 100.75ha and contains 2 units. 100% of area in Favourable condition.
Winterton – Horsey Dunes SSSI	Covers 426.95ha and contains 12 units. 67.92% of area in Favourable condition, 9.88% of area in Unfavourable-Recovering condition, 22.20% of area in Unfavourable-No change condition.
Conservation Objectives⁷⁹	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.

Winterton – Horsey Dunes SAC

⁷⁶ Taken from Natural England's European Site Conservation Objectives for Breydon Water SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

⁷⁷ Taken from the Natura 2000 Standard data form for site UK9009271 Great Yarmouth North Denes SPA dated 25-01-16.

⁷⁸ Condition status taken from Natural England data on 17th June 2019.

⁷⁹ Taken from Natural England's European Site Conservation Objectives for Great Yarmouth North Denes SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

Site description summary	Qualifying features ⁸⁰
The only significant area of dune heath on the east coast of England, which occur over an extremely base-poor dune system, and include areas of acidic dune grassland as an associated acidic habitat. These acidic soils support swamp and mire communities, in addition to common dune slack vegetation, including creeping willow <i>Salix repens</i> subsp. <i>argentea</i> and Yorkshire fog <i>Holcus lanatus</i> . The drought resistant grey hair-grass <i>Corynephorus canescens</i> is characteristic of open areas.	2110 Embryonic shifting dunes
	2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")
	2150 Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)
	2160 Dunes with <i>Hippophae rhamnoides</i>
	2190 Humid dune slacks
	1166 <i>Triturus cristatus</i> (Great Crested Newt)
Component SSSI/s ⁸¹	
Winterton – Horsey Dunes SSSI	Covers 426.95ha and contains 12 units. 67.92% of area in Favourable condition, 9.88% of area in Unfavourable-Recovering condition, 22.20% of area in Unfavourable-No change condition.
Conservation Objectives ⁸²	
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;	<ul style="list-style-type: none"> • The extent and distribution of the qualifying natural habitats • The structure and function (including typical species) of the qualifying natural habitats, and, • The supporting processes on which the qualifying natural habitats rely.

Paston Great Barn SAC	
Site description summary	Qualifying features ⁸³
Nationally, this is an extremely rare example of a maternity roost of barbastelle bats <i>Barbastella barbastellus</i> in a building. A 16th century thatched barn with associated outbuildings. The maternity colony inhabits many crevices and cracks in the roof timbers.	1308 <i>Barbastella barbastellus</i> (Barbastelle bat) (permanent population)
Component SSSI/s ⁸⁴	
Paston Great Barn SSSI	Covers 0.96ha and contains 1 unit. 100% of area in Favourable condition.

⁸⁰ Taken from the Natura 2000 Standard data form for site UK0013043 Winterton – Horsey Dunes SAC dated 25-01-16.

⁸¹ Condition status taken from Natural England data via Magic Map on 7th March 2017.

⁸² Taken from Natural England's European Site Conservation Objectives for Winterton-Horsey Dunes SAC dated 30th June 2014-version

2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁸³ Taken from the Natura 2000 Standard data form for site UK0030235 Paston Great Barn SAC dated December 2015.

⁸⁴ Condition status taken from Natural England data on 17th June 2019.

Conservation Objectives⁸⁵	
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;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.

Overstrand Cliffs SAC	
Site description summary	Qualifying features⁸⁶
Vegetated soft cliffs composed of Pleistocene clays and sands, subject to common cliff-falls and landslips. Vegetation undergoes cycles whereby ruderal-dominated communities develop on the newly exposed sands and mud, succeeded by more stable grassland and scrub vegetation. In areas where freshwater seepages occur there are fen communities and occasional perched reedbeds. The diverse range of habitats support a large number of invertebrate species.	1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts
Component SSSI/s⁸⁷	
Overstrand Cliffs SSSI	Covers 57.75ha and contains 2 units. 100% of area in Favourable condition.
Conservation Objectives⁸⁸	
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;	<ul style="list-style-type: none"> • The extent and distribution of the qualifying natural habitats • The structure and function (including typical species) of the qualifying natural habitats, and • The supporting processes on which the qualifying natural habitats rely.

Waveney & Little Ouse Valley Fens SAC	
Site description summary	Qualifying features⁸⁹
Calcareous fen containing extensive beds of great fen-sedge <i>Cladium mariscus</i> . Purple moor-grass – meadow thistle <i>Molinia caerulea</i> – <i>Cirsium dissectum</i> fen-meadows, associated with the spring-fed valley fen systems, occur	6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)

⁸⁵ Taken from Natural England's European Site Conservation Objectives for Paston Great Barn SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁸⁶ Taken from the Natura 2000 Standard data form for site UK0030232 Overstrand Cliffs SAC dated December 2015.

⁸⁷ Condition status taken from Natural England data on 17th June 2019.

⁸⁸ Taken from Natural England's European Site Conservation Objectives for Overstrand Cliffs SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁸⁹ Taken from the Natura 2000 Standard data form for site UK0012882 Waveney and Little Ouse Valley Fens SAC dated December 2015.

in conjunction with black bog-rush – blunt-flowered rush <i>Schoenus nigricans</i> – <i>Juncus subnodulosus</i> mire and calcareous fens with great fen-sedge. Grazed areas of fen-meadow are more species-rich, and frequently support southern marsh-orchid <i>Dactylorhiza praetermissa</i> .	7210	Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion <i>davallianae</i>
	1016	<i>Vertigo moulinsiana</i> (Desmoulin's whorl snail)
Component SSSI/s⁹⁰		
Blo' Norton and Thelneham Fen SSSI	Covers 21.32ha and contains 6 units. 35.08% of area in Favourable condition, 64.92% of area in Unfavourable-Recovering condition.	
Redgrave and Lopham Fens SSSI	Covers 127.03ha and contains 4 units. 100% of area in Unfavourable-Recovering condition.	
Weston Fen SSSI	Covers 49.73ha and contains 10 units. 49.79% of area in Favourable condition, 33.02% of area in Unfavourable-Recovering condition, 17.19% of area in Unfavourable-No change condition.	
Conservation Objectives⁹¹		
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;	<ul style="list-style-type: none"> • 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. 	

Redgrave and South Lopham Fens Ramsar	
Site description summary	Qualifying features⁹²
An extensive area of spring-fed valley fen at the headwaters of the River Waveney which supports a variety of fen plant community types, including <i>Molinia</i> -based grasslands, mixed sedge-fen, and reed-dominated fen. Small areas of wet heath, sallow carr, and birch woodland also occur, and the Site is known to support the fen raft spider <i>Dolomedes plantarius</i> .	<p>The site is an extensive example of spring-fed lowland base-rich valley, remarkable for its lack of fragmentation.</p> <p>The site supports many rare and scarce invertebrates, including a population of the fen raft spider <i>Dolomedes plantarius</i>. This spider is also considered vulnerable by the IUCN Red List.</p>

⁹⁰ Condition status taken from Natural England data on 17th June 2019.

⁹¹ Taken from Natural England's European Site Conservation Objectives for Waveney and Little Ouse Valley Fens SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁹² Taken from the Ramsar Information Sheet for Redgrave and South Lopham Fen Ramsar dated May 2005.

	The site supports many rare and scarce invertebrates, including a population of the fen raft spider <i>Dolomedes plantarius</i> . The diversity of the site is due to the lateral and longitudinal zonation of the vegetation types characteristic of valley mires.
Component SSSI/s⁹³	
Redgrave and Lopham Fens SSSI	Covers 127.03ha and contains 4 units. 100% of area in Unfavourable-Recovering condition.
Conservation Objectives	
n/a	

Breckland SPA/SAC		
Site description summary	SPA qualifying features⁹⁴	
<p>A gently rolling plateau underlain by cretaceous chalk bedrock covered with thin deposits of sand and flint. The climate and free-draining soils has produced dry heath and grassland communities. Pingos with biological interest occur in some areas. The highly variable soils of Breckland, with underlying chalk being largely covered with wind-blown sands, have resulted in mosaics of heather-dominated heathland, acidic grassland and calcareous grassland that are unlike those of any other site. Breckland is the most extensive surviving area of the rare sheep's fescue – mouse-ear hawkweed – wild thyme <i>Festuca ovina</i> – <i>Hieracium pilosella</i> – <i>Thymus praecox</i> grassland type. A number of the water bodies within the site support populations of amphibians, including great crested newts <i>Triturus cristatus</i>.</p>	A133	Burhinus oedicnemus (Stone Curlew) (breeding)
	A224	Caprimulgus europaeus (Nightjar) (breeding)
	A246	Lullula arborea (Woodlark) (breeding)
	SAC qualifying features⁹⁵	
	2330	Inland dunes with open Corynephorus and Agrostis grasslands
	3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation
	4030	European dry heaths
	6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
	91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
	1308	Barbastella barbastellus (Barbastelle bat)
1166	Triturus cristatus (Great Crested Newt)	

⁹³ Condition status taken from Natural England data on 17th June 2019.

⁹⁴ Taken from the Natura 2000 Standard data form for site UK9009201 Breckland SPA dated December 2015.

⁹⁵ Taken from the Natura 2000 Standard data form for site UK0019865 Breckland SAC dated December 2015.

Component SSSI/s ⁹⁶ (within SPA, SAC or both)	
Barnham Heath SSSI	Covers 78.62ha and contains 2 units. 89.45% of area in Favourable condition, 10.55% of area in Unfavourable-Recovering condition.
Barnhamcross Common SSSI	Covers 69.08ha and contains 2 units. 100% of area in Unfavourable-Recovering condition.
Berner's Heath, Icklingham SSSI	Covers 235.86ha and contains 3 units. 97.09% of area in Favourable condition, 2.91% of area destroyed.
Breckland Farmland SSSI	Covers 13392.36ha and contains 70 units. 100% of area in Favourable condition.
Breckland Forest SSSI	Covers 18125.99ha and contains 7 units. 0.09% of area in Favourable condition, 99.91% of area in Unfavourable-Recovering condition.
Bridgham & Brettenham Heaths SSSI	Covers 439.91ha and contains 6 units. 12.75% of area in Favourable condition, 87.25% of area in Unfavourable-Recovering condition.
Cavenham – Icklingham Heaths SSSI	Covers 419.01ha and contains 27 units. 30.59% of area in Favourable condition, 65.03% of area in Unfavourable-Recovering condition, 1.78% of area in Unfavourable-No change condition. 2.59% destroyed.
Cranberry Rough, Hockham SSSI	Covers 81.13ha and contains 4 units. 21.62% of area in Favourable condition, 78.38% of area in Unfavourable-Recovering condition.
Cranwich Camp SSSI	Covers 13.10ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.
Deadman's Grave, Icklingham SSSI	Covers 127.33ha and contains 6 units. 14.17% of area in Favourable condition, 83.80% of area in Unfavourable-Recovering condition, 2.03% of area in Unfavourable-Declining condition.
East Wretham Heath SSSI	Covers 141.05ha and contains 6 units. 7% of area in Favourable condition, 89.08% of area in Unfavourable-Recovering condition, 3.92% of area in Unfavourable-Declining condition.
Eriswell Low Warren SSSI	Covers 7.42ha and contains 1 unit. 100% of area in Favourable condition.
Field Barn Heaths, Hilborough SSSI	Covers 17.86ha and contains 1 unit. 100% of area in Unfavourable-Recovering condition.
Foxhole Heath, Eriswell SSSI	Covers 85.17ha and contains 1 unit. 100% of area in Favourable condition.
Gooderstone Warren SSSI	Covers 21.63ha and contains 4 units. 100% of area in Unfavourable-Recovering condition.
Grime's Graves SSSI	Covers 66.12ha and contains 3 units. 26.79% of area in Favourable condition, 73.21% of area in Unfavourable-Recovering condition.
How Hill Track SSSI	Covers 3.11ha and contains 1 unit. 100% of area in Favourable condition.
Lakenheath Warren SSSI	Covers 588.33ha and contains 11 units. 1.62% of area in Favourable condition, 63.40% of area in

⁹⁶ Condition status taken from Natural England data via Magic Map on 3 December 2019.

	Unfavourable-Recovering condition, 34.99% of area in Unfavourable-No change condition.
RAF Lakenheath SSSI	Covers 111ha and contains 4 units. 100% of area in Favourable condition.
Little Heath, Barnham SSSI	Covers 46.25ha and contains 3 units. 13.52% of area in Favourable condition, 2.59% of area in Unfavourable-Recovering condition, 83.89% of area in Unfavourable-Declining condition.
Old Bodney Camp SSSI	Covers 32.76ha and contains 2 units. 100% of area in Favourable condition.
Rex Graham Reserve SSSI	Covers 2.76ha and contains 1 unit. 100% of area in Favourable condition.
Stanford Training Area SSSI	Covers 4677.96ha and contains 81 units. 42.12% of area in Favourable condition, 54.71% of area in Unfavourable-Recovering condition, 3.12% of area in Unfavourable-No change condition, 0.05% of area in Unfavourable-Declining condition.
Thetford Golf Course & Marsh SSSI	Covers 122.30ha and contains 8 units. 3.12% of area in Favourable condition, 67.83% of area in Unfavourable-Recovering condition, 29.05% of area in Unfavourable-No change condition.
Thetford Heaths SSSI	Covers 270.58ha and contains 4 units. 36.32% of area in Favourable condition, 57.06% of area in Unfavourable-Recovering condition, 6.62% of area in Unfavourable-No change condition.
Wangford Warren and Carr SSSI	Covers 67.79ha and contains 5 units. 22.65% of area in Favourable condition, 77.35% of area in Unfavourable-Recovering condition.
Weather and Horn Heaths, Eriswell SSSI	Covers 133.32ha and contains 3 units. 97.77% of area in Unfavourable-Declining condition, 2.23% of area Partially destroyed.
Weeting Heath SSSI	Covers 141.75ha and contains 6 units. 40.15% of area in Favourable condition, 38.97% of area in Unfavourable-Recovering condition, 20.88% of area in Unfavourable-No change condition.
West Stow Heath SSSI	Covers 44.30ha and contains 5 units. 14.51% of area in Favourable condition, 85.49% of area in Unfavourable-Recovering condition.
SPA Conservation Objectives⁹⁷	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and,

⁹⁷ Taken from Natural England's European Site Conservation Objectives for Breckland SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

	<ul style="list-style-type: none"> The distribution of the qualifying features within the site
SAC Conservation Objectives⁹⁸	
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;	<ul style="list-style-type: none"> 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.

Benacre to Easton Bavents Lagoons SAC/Benacre to Easton Bavents SPA	
Site description summary	SAC qualifying features⁹⁹
<p>Situated on the east coast of Suffolk, this site includes semi-natural broadleaved woodland, tall fen vegetation, shingle, dunes and grassland, saltmarsh and coastal lagoons. The habitats are important for breeding, wintering and passage birds.</p> <p>There are a series of percolating lagoons that have formed behind shingle barriers and are a feature of a geomorphologically dynamic system. The site supports a number of specialist lagoonal species.</p> <p>The SPA is part of the Benacre to Easton Bavents European Marine Site.</p>	1150 Coastal lagoons
	91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)
	SPA qualifying features¹⁰⁰
	A021 <i>Botaurus stellaris</i> (Bittern) (breeding)
A081 <i>Circus aeruginosus</i> (Marsh Harrier) (breeding)	
A195 <i>Sterna albifrons</i> (Little Tern) (breeding)	
Component SSSI/s¹⁰¹	
Pakefield to Easton Bavents SSSI	Covers 735.45ha and contains 51 units. 48.73% of area in Favourable condition, 38.98% of area in Unfavourable-Recovering condition, 8.73% of area in Unfavourable-No change condition, 3.11% Unfavourable-Declining condition, 0.45% of area Partially destroyed.
SAC Conservation Objectives¹⁰²	
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	<ul style="list-style-type: none"> The extent and distribution of qualifying natural habitats The structure and function (including typical species) of qualifying natural habitats, and

⁹⁸ Taken from Natural England's European Site Conservation Objectives for Breckland SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

⁹⁹ Taken from the Natura 2000 Standard data form for site UK0013104 Benacre to Easton Bavents Lagoons SAC dated December 2015.

¹⁰⁰ Taken from the Natura 2000 Standard data form for site UK9009291 Benacre to Easton Bavents SPA dated December 2015.

¹⁰¹ Condition status taken from Natural England data on 17th June 2019.

¹⁰² Taken from Natural England's European Site Conservation Objectives for Benacre to Easton Bavents Lagoons SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

Qualifying Features, by maintaining or restoring;	<ul style="list-style-type: none"> The supporting processes on which qualifying natural habitats rely.
SPA Conservation Objectives¹⁰³	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> The extent and distribution of the habitats of the qualifying features The structure and function of the habitats of the qualifying features The supporting processes on which the habitats of the qualifying features rely The population of each of the qualifying features, and, The distribution of the qualifying features within the site.

Dew's Ponds SAC	
Site description summary	Qualifying features¹⁰⁴
A series of 12 ponds located in rural East Suffolk, in formerly predominantly arable land. Great Crested Newt has been found in all ponds. Some of the arable land has been converted to grassland and there are also hedgerows and ditches.	1166 Triturus cristatus (Great Crested Newt)
Component SSSI/s¹⁰⁵	
Dew's Ponds SSSI	Covers 6.72ha and contains 4 units. 100% of area in Favourable condition.
Conservation Objectives¹⁰⁶	
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;	<ul style="list-style-type: none"> The extent and distribution of the habitats of qualifying species The structure and function of the habitats of qualifying species The supporting processes on which the habitats of qualifying species rely The populations of qualifying species, and, The distribution of qualifying species within the site.

The Wash and North Norfolk Coast SAC (inshore)	
Site description summary	Qualifying features¹⁰⁷
The Wash is the largest embayment in the UK and is connected to the North Norfolk Coast	1110 Sandbanks which are slightly covered by sea water all the time

¹⁰³ Taken from Natural England's European Site Conservation Objectives for Benacre to Easton Bavents SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

¹⁰⁴ Taken from the Natura 2000 Standard data form for site UK0030133 Dew's Ponds SAC dated December 2015.

¹⁰⁵ Condition status taken from Natural England data on 17th June 2019.

¹⁰⁶ Taken from Natural England's European Site Conservation Objectives for Dew's Ponds SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice.

¹⁰⁷ Taken from the Natura 2000 Standard data form for site UK0017075 The Wash and North Norfolk Coast SAC dated December 2015.

<p>via sediment transfer systems. Together The Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and include extensive areas of varying, but predominantly sandy, sediments subject to a range of conditions. Communities in the intertidal include those characterised by large numbers of polychaetes, bivalve and crustaceans. Subtidal communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building worm ('ross worm') <i>Sabellaria spinulosa</i>. The embayment supports a variety of mobile species, including a range of fish, otter <i>Lutra lutra</i> and common seal <i>Phoca vitulina</i>. The extensive intertidal flats provide ideal conditions for common seal breeding and hauling-out.</p> <p>This SAC is part of The Wash and North Norfolk Coast European Marine Site.</p>	1140	Mudflats and sandflats not covered by seawater at low tide
	1150	Coastal lagoons
	1160	Large shallow inlets and bays
	1170	Reefs
	1310	Salicornia and other annuals colonizing mud and sand
	1320	Spartina swards (<i>Spartinion maritimae</i>)
	1330	Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)
	1420	Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)
	1364	<i>Halichoerus grypus</i> (Grey Seal)
	1355	<i>Lutra lutra</i> (Eurasian Otter)
1365	<i>Phoca vitulina</i> (Harbour/Common Seal)	
Component SSSI/s		
The Wash SSSI	62045.64ha of which 67.98 is favourable, and 31.61% is unfavourable recovering. 0.41% of the area is unfavourable declining.	
Conservation Objectives¹⁰⁸		
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;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site. 	

North Norfolk Coast SPA (marine)/SAC (inshore)/Ramsar		
Site description summary	SAC qualifying features¹⁰⁹	
<p>Important within Europe as one of the largest areas of undeveloped coastal habitat of its type, supporting intertidal mudflats and sandflats, coastal waters, saltmarshes, shingle, sand dunes, freshwater grazing marshes, and reedbeds. Large numbers of waterbirds use the Site throughout the year. In Summer, the Site and surrounding area are important for breeding populations of four species of tern, waders, bittern <i>Botaurus stellaris</i>, and wetland raptors including marsh harrier <i>Circus aeruginosus</i>. In Winter, the Site</p>	1150	Coastal lagoons
	1220	Perennial vegetation of stony banks
	1420	Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)
	2110	Embryonic shifting dunes
	2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")

¹⁰⁸ Taken from Natural England's European Site Conservation Objectives for The Wash and North Norfolk SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

¹⁰⁹ Taken from the Natura 2000 Standard data form for site UK0019838 North Norfolk Coast SAC dated December 2015.

<p>supports large numbers of geese, sea ducks, other ducks and waders using the Site for roosting and feeding. The Site is also important for migratory species during the Spring and Autumn.</p> <p>This SAC is part of the North Norfolk Coast European Marine Site.</p> <p>The SPA is designated for supporting a number of rare or vulnerable (Article 4.1) Annex I bird species during the breeding season. In addition, the SPA is designated for supporting regularly occurring migratory (Article 4.2) species during the breeding season and over winter.</p>	2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	
	2160	Dunes with Hippophae rhamnoides	
	2190	Humid dune slacks	
	1355	Lutra Lutra (Eurasian Otter)	
	1395	Petallophyllum ralfsii (Petalwort)	
	1166	Triturus cristatus (Great Crested Newt)	
	SPA qualifying features¹¹⁰		
	<p>This SPA is part of The Wash and North Norfolk Coast European Marine Site (EMS).</p>	A040	Anser brachyrhynchus (Pink-footed Goose) (over winter)
		A050	Anas penelope (Wigeon) (over winter)
		A021	Botaurus stellaris (Bittern) (breeding)
		A675	Branta bernicla bernicla (Dark-bellied Brent Goose) (over winter)
		A143	Callidris canutus (Red Knot) (over winter)
		A081	Circus aeruginosus (Marsh Harrier) (breeding)
A132		Recurvirostra avosetta (Avocet) (breeding and over winter)	
A195		Sterna albifrons (Little Tern) (breeding)	
A193		Sterna hirundo (Common tern) (breeding)	
A191		Sterna sandvicensis (Sandwich Tern) (breeding)	
WATR	Waterfowl assemblage		
Ramsar qualifying features¹¹¹			
	The site is one of the largest expanses of undeveloped coastal habitat of its type in Europe. It is a particularly good example of a marshland coast with intertidal sand and mud, saltmarshes, shingle banks and sand dunes. There are a series of brackish-water lagoons and extensive areas of freshwater grazing marsh and reed beds.		
	Supports at least three British Red Data Book and nine nationally scarce vascular plants, one British Red Data Book lichen and 38 British Red Data Book invertebrates.		
	98462 waterfowl peak count in winter (assemblages of international importance)		
	Sterna sandvicensis (Sandwich Tern) (breeding)		
	Sterna hirundo (Common Tern) (breeding)		
	Sterna albifrons (Little Tern) (breeding)		

¹¹⁰ Taken from the Natura 2000 Standard data form for site UK9009031 North Norfolk Coast SPA dated December 2015.

¹¹¹ Taken from the Ramsar Information Sheet for North Norfolk Coast dated 13-06-08.

	Calidris canutus (Red Knot) (over winter)
	Anser brachyrhynchus (Pink-footed Goose) (over winter)
	Branta bernicla bernicla (Dark-bellied Brent goose) (over winter)
	Anas penelope (Wigeon) (over winter)
	Anas acuta (Pintail) (over winter)
Component SSSI/s¹¹²	
North Norfolk Coast SSSI	Covers 7862.29ha and contains 70 units. 97.82% of area in Favourable condition, 2.18% of area in Unfavourable-Recovering condition.
SAC Conservation Objectives¹¹³	
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;	<ul style="list-style-type: none"> • 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.
SPA Conservation Objectives¹¹⁴	
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;	<ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.

<i>Southern North Sea cSAC (offshore and inshore)</i>	
Site description summary	Qualifying features¹¹⁵
The Southern North Sea site has been recognised as 'an area of predicted persistent high densities of harbour porpoise'. Therefore, the Southern North Sea site has been submitted to the EU and is a candidate for designation as an Inshore and	1351 Phocoena phocoena (Harbour Porpoise)

¹¹² Condition status taken from Natural England data on 17th June 2019.

¹¹³ Taken from Natural England's European Site Conservation Objectives for North Norfolk Coast SAC dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

¹¹⁴ Taken from Natural England's European Site Conservation Objectives for North Norfolk Coast SPA dated 30th June 2014-version 2. Should be read in conjunction with the accompanying Supplementary Advice document which provides more detailed advice, and should be used in conjunction with the Regulation 35 Conservation Advice Package for the EMS.

¹¹⁵ Taken from the Natura 2000 Standard Data Form for Site UK0030395 Southern North Sea SCI dated January 2017.

Offshore SAC for the Annex II species, Harbour Porpoise.	
The Southern North Sea site extends down the North Sea from the River Tyne, south to the River Thames. The aim of the SAC is to support the maintenance of harbour porpoise populations throughout UK waters (the Southern North Sea supports higher number of porpoises compared to many other parts of their UK range). Seasonal differences in the use of the site by harbour porpoises which show the elevated densities of the species in some parts of the site compared to others during the summer and winter, have been identified. The main threats to harbour porpoise are from incidental catch, pollution and noise/physical disturbance.	
Component SSSI/s	
n/a	
Conservation Objectives¹¹⁶	
The focus of the Conservation Objectives for harbour porpoise sites is on addressing pressures that affect site integrity and would include:	<ul style="list-style-type: none"> • killing or injuring significant numbers of harbour porpoise (directly or indirectly); • preventing their use of significant parts of the site (disturbance / displacement); • significantly damaging relevant habitats; or • significantly reducing the prey base.
The Conservation Objectives document also contains the following guidance:	The seasonality in porpoise distribution should be considered in the assessment of impacts and proposed management.

<i>Outer Thames Estuary SPA (marine)/Outer Thames Estuary Extension pSAC (marine)</i>	
Site description summary	Qualifying features¹¹⁷
This SPA is entirely marine and is designated because its habitats support 38% of the Great British population of over-wintering Red-throated Diver <i>Gavia stellata</i> , a qualifying species under Article 4.1 of the Birds Directive. The Outer Thames Estuary SPA covers vast areas of marine habitat off the east coast between Caister-on-Sea, Norfolk in the north, down to Margate, Kent in the south. The habitats covered by the SPA include marine areas and sea inlets where Red-throated Diver is particularly susceptible to noise and visual disturbance e.g. from wind farms and coastal recreation activities. Threats from effluent discharge, oil spillages and entanglement/drowning in fishing nets are significant.	A001 Gavia stellata (Red-throated Diver) (over winter)

¹¹⁶ Taken from Natural England's Harbour Porpoise (*Phocoena phocoena*) possible Special Area of Conservation: Southern North Sea Draft Conservation Objectives and Advice on Activities dated January 2016.

¹¹⁷ Taken from the Natura 2000 Standard Data Form for Site UK9020309 Outer Thames Estuary SPA dated December 2015.

The addition of two new protected features and associated boundary amendments was consulted on in January to July 2016. The proposed extension would afford protection for Little tern and Common tern foraging areas, enhancing protection already afforded to their feeding and nesting areas in the adjacent coastal SPAs (Foulness SPA, Breydon Water SPA and Minsmere to Walberswick SPA).	
Component SSSI/s	
n/a	
Conservation Objectives¹¹⁸	
Subject to natural change, maintain or enhance the red-throated diver population and its supporting habitats in favourable condition.	

<i>Haisborough, Hammond and Winterton SAC</i>	
Site description summary	Qualifying features¹¹⁹
The site lies off the north east coast of Norfolk and contains a series of sandbanks as well as Sabellaria spinulosa reefs. Small numbers of Harbour Porpoise are regularly observed within the site boundary and a large colony of breeding Grey Seal is known adjacent to the site.	1110 Sandbanks which are slightly covered by sea water all the time
	1170 Reefs
	1364 Halichoerus grypus (Grey Seal)
	1351 Phocoena phocoena (Harbour Porpoise)
Component SSSI/s	
n/a	
Conservation Objectives¹²⁰	
For Annex 1 sandbanks which are slightly covered by seawater all the time:	Subject to natural change maintain the sandbanks in favourable condition, in particular the sub-features: <ul style="list-style-type: none"> • Low diversity dynamic sand communities • Gravelly muddy sand communities
For Annex 1 Sabellaria spinulosa reefs:	Subject to natural change maintain or restore the reefs in favourable condition

¹¹⁸ Taken from Natural England's Draft advice under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended) and Regulation 18 of The Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 (as amended) for Outer Thames Estuary SPA Version 3.7 March 2013.

¹¹⁹ Taken from the Natura 2000 Standard data form for site UK0030369 Haisborough, Hammond and Winterton SAC dated December 2015.

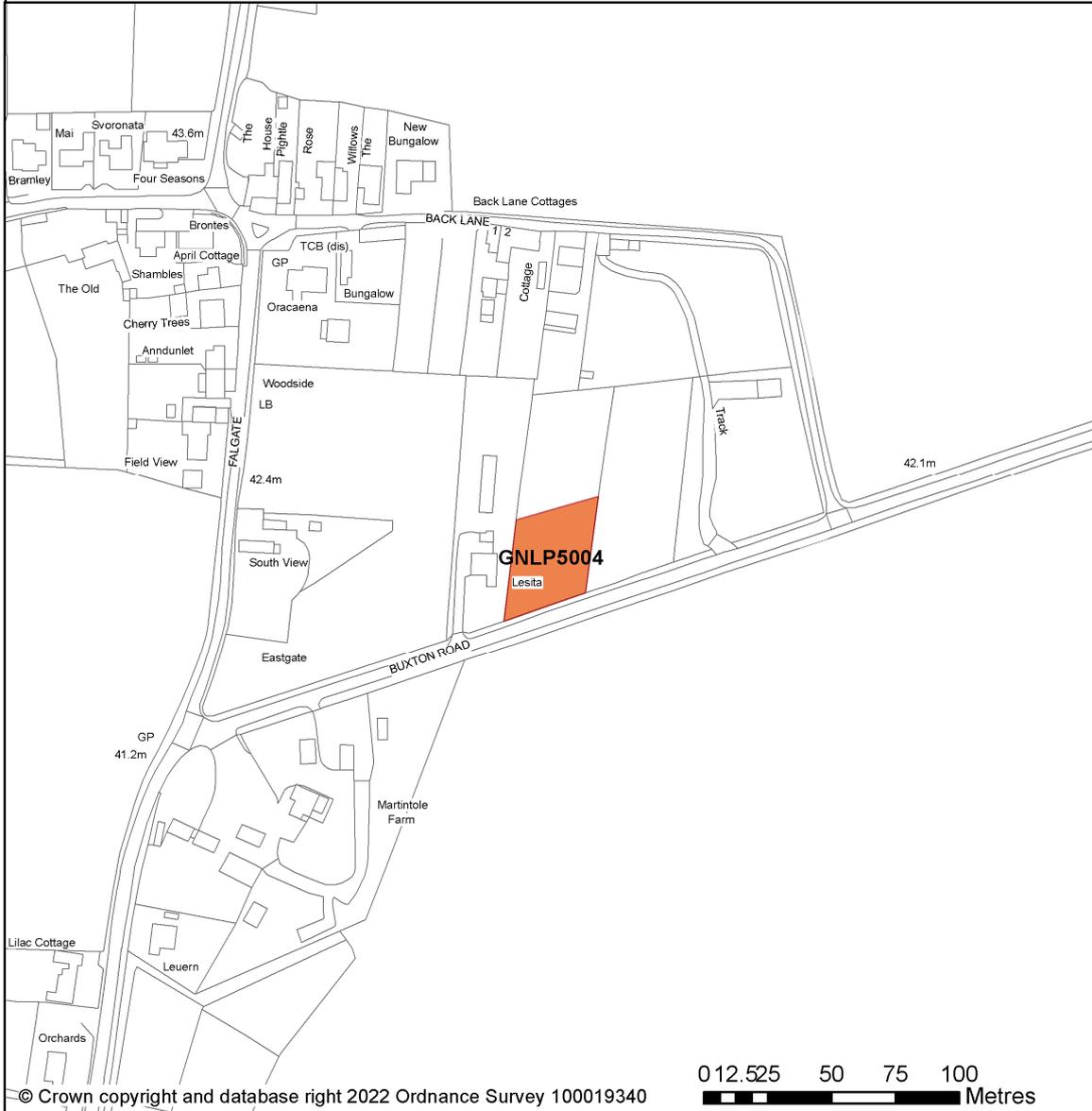
¹²⁰ Taken from JNCC and Natural England's Haisborough, Hammond and Winterton candidate Special Area of Conservation Formal advice under Regulation 35(3) of The Conservation of Natural Habitats and Species Regulations 2010 (as amended), and Regulation 18 of The Offshore Marine Conservation Regulations (Natural Habitats,&c.) Regulations 2007 (as amended). Version 6.0 (March 2013).

Appendix 2

CAWSTON

GREATER NORWICH LOCAL PLAN GYPSY AND TRAVELLER FOCUSED CONSULTATION

SITE REFERENCE: GNLP5004
LOCATION: Land off Buxton Road, Eastgate
DESCRIPTION: 4 residential pitches for Gypsies and Travellers
SITE AREA: 0.12 ha



Key

 Proposed Gypsy and Traveller Site

Scale at A4:
1:2,131



Date: 24/03/2022

WYMONDHAM

GREATER NORWICH LOCAL PLAN GYPSY AND TRAVELLER FOCUSED CONSULTATION

SITE REFERENCE: GNL5005
LOCATION: Wymondham Recycling Centre - off Strayground Lane
DESCRIPTION: 2 Residential pitches for Gypsies and Travellers
SITE AREA: 0.07 ha



-  Proposed Gypsy and Traveller Site
-  Settlement Boundary

Scale at A4:
1:2,000



Date: 09/06/2022

COSTESSEY

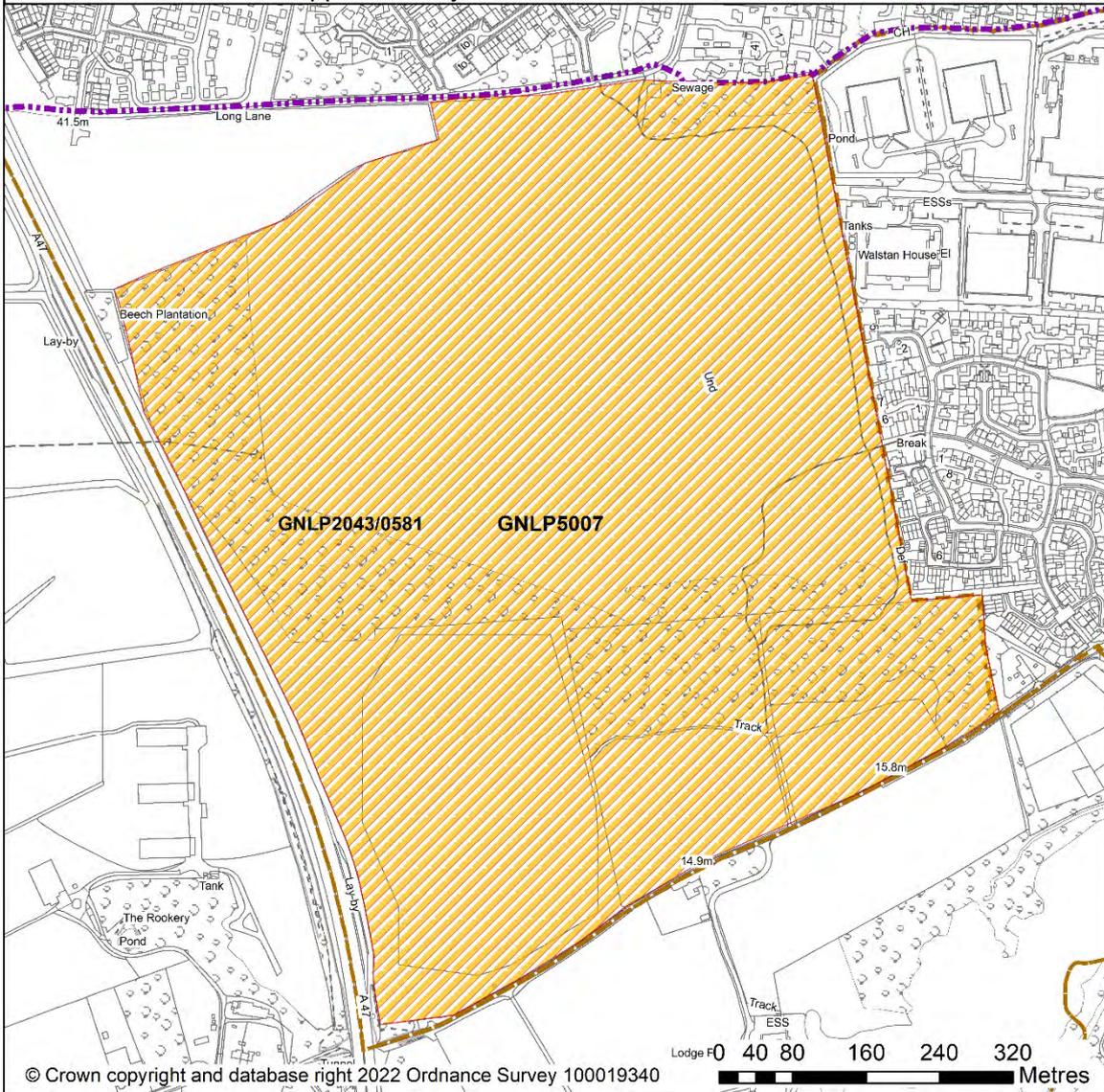
GREATER NORWICH LOCAL PLAN GYPSY AND TRAVELLER FOCUSED CONSULTATION

SITE REFERENCE: GNL5007

LOCATION: Land off Bawburgh Lane, north of New Road and east of the A47

DESCRIPTION: 18 residential pitches for Gypsies and Travellers as part of a residential-led urban extension of approximately 800 homes. Development of GNL5007 is dependent on the allocation of the entire site, which has been previously consulted upon as contingency site GNL5081/2043.

SITE AREA: Approximately 1 ha within the entire 62 ha site



	Parish Boundary		Contingency Site Proposed Gypsy and Traveller Site	<p>N</p>  <p>Scale at A4: 1:6,000</p> <p>Date: 09/06/2022</p>
	Settlement Boundary			

Appendix 3



Nutrient Neutrality Generic Methodology

Issue 1: February 2022

Introduction

Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Ramsar sites are some of the most important areas for wildlife in the United Kingdom. They are internationally important for their habitats and wildlife and are protected under the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations). At some of these sites, there are high levels of nitrogen and phosphorus input to the protected water environment with sound evidence that these nutrients are causing eutrophication at these designated sites. These nutrient inputs currently mostly come either from agricultural sources or from wastewater from existing housing and other development. The resulting effects on ecology from an excessive presence of nutrients are impacting on protected habitats and species.

There is uncertainty as to whether new growth will further deteriorate designated sites, and/or make them appreciably more difficult to restore. The potential for future housing developments to exacerbate these impacts creates a risk to their potential future conservation status.

One way to address this uncertainty is for new development to achieve nutrient neutrality. Nutrient neutrality is a means of ensuring that development does not add to existing nutrient burdens and this provides certainty that the whole of the scheme is deliverable in line with the requirements of the Habitats Regulations.

This practical methodology sets out an approach to calculating how nutrient neutrality can be achieved. This methodology is based on best available scientific knowledge and will be subject to revision as further evidence becomes available. It is our advice to local planning authorities to take a precautionary approach in line with existing legislation and case law when addressing uncertainty and calculating nutrient budgets.

The information accompanying this methodology includes a brief summary of the environmental context for this nutrient neutral approach, a nutrient budget calculator, and advice on mitigation.

Key Principles

The principles underpinning Habitats Regulations assessments are well established¹. At the screening stage, plans and projects should only be granted consent where it is possible to exclude, on the basis of objective information, that the plan or project will have significant effects on the sites concerned². Where it is not possible to rule out likely significant effects, plans and projects should be subject to an appropriate assessment. That appropriate assessment must contain complete, precise and definitive findings which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the site³.

Natural England has been reviewing the available evidence on Habitats sites which are in unfavourable condition due to elevated nutrient levels. Where plans or projects will contribute additional nutrients to Habitats sites which are close to or already in unfavourable condition for nutrients, then a robust approach to the Habitats Regulations assessment of the effects of plans and projects is required.

Where sites are close to or already in unfavourable condition for nutrients, it may be difficult to grant consent for new plans and projects that will increase nutrient levels at the Habitats site. Nutrient

¹ See, amongst others Case C-127/02 *Waddenvereniging and Vogelsbeschermingvereniging* (Waddenzee); *R (Champion) v North Norfolk DC* [2015] E.K.S.C. 52 (Champion); C-323/17 *People Over Wind, Peter Sweetman v Coillte Teoranta* (People Over Wind); C-461/17 *Brian Holohan and Others v An Bord Pleanála* (Holohan); Joined Cases C-293/17 and C-294/17 *Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Other* (the Dutch Nitrogen cases);

² Case C-127/02 *Waddenvereniging and Vogelsbeschermingvereniging* (Waddenzee)

³ Case 164/17 *Grace & Sweetman v An Bord Pleanála* (Grace & Sweetman)

neutrality provides a means of effectively mitigating the adverse effects associated with increased nutrients from new plans and projects, by counter-balancing any additional nutrient inputs to ensure that there is no net change in the amount of nutrients reaching the features which led to a Habitats site being designated.

Where new residential development is proposed, the additional nutrient load from the increase in wastewater and/or the change in the land use of the development land created by a new residential development can create an impact pathway for potential adverse effects on Habitats sites that are already suffering from problems related to nutrient loading. This impact pathway is shown diagrammatically in Figure 1. Habitats Regulations Assessments (HRAs) of new residential developments therefore need to consider whether nutrient loading will result in 'Likely Significant Effects' (LSE) on a Habitats site. If an HRA cannot exclude a LSE due to nutrient loading, the Appropriate Assessment will need to consider whether this nutrient load needs to be mitigated in order to remove adverse effects on the Habitats site.

For those developments that wish to pursue neutrality, Natural England advises that a nutrient budget is calculated for new developments that have the potential to result in increases of nitrogen/phosphorus entering the Habitats sites. A nutrient budget calculated according to this methodology and demonstrating nutrient neutrality is, in our view, able to provide sufficient and reasonable certainty that the development does not adversely affect the integrity, by means of impacts from nutrients, on the relevant Habitats sites. This approach must be tested through the 'appropriate assessment' stage of the Habitats Regulations assessment. The information provided by the applicant on the nutrient budget and any mitigation proposed will be used by the local planning authority, as competent authority, to make an appropriate assessment of the implications of the plan or project on the Habitats sites in question.

The nutrient neutrality calculation includes key inputs and assumptions that are based on the best available scientific evidence and research. It has been developed as a pragmatic tool. However, for each input there is a degree of uncertainty. For example, there is uncertainty associated with predicting occupancy levels and water use for each household in perpetuity. Also, identifying current land / farm types and the associated nutrient inputs is based on best available evidence, research and professional judgement and is again subject to a degree of uncertainty.

It is our advice to local planning authorities to take a precautionary approach in line with existing legislation and case law when addressing uncertainty and calculating nutrient budgets. This should be achieved by ensuring nutrient budget calculations apply precautionary rates to variables and adding a buffer to the Total Nitrogen/Total Phosphorus figure calculated for developments. A precautionary approach to the calculations and solutions helps the local planning authority and applicants to demonstrate the certainty needed for their assessments.

By applying the nutrient neutrality methodology, with the buffer, to new development, the competent authority may be satisfied that, while margins of error will inevitably vary for each development, this approach will ensure that new development in combination will avoid significant increases of nitrogen/phosphorus load from entering the Habitats sites.⁴

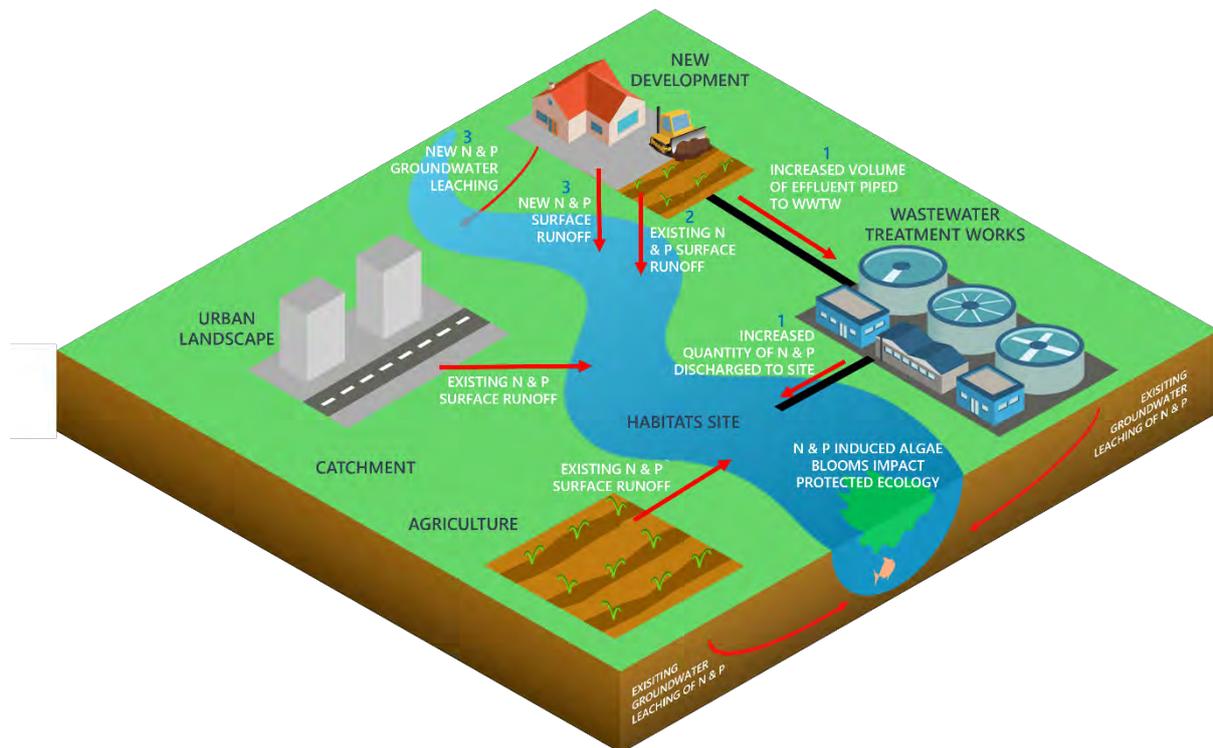
A Habitats Regulations assessment must be capable of removing all reasonable scientific doubt as to the absence of adverse effects on a Habitats site. Absolute certainty is not required, but the

⁴ This approach was expressly endorsed in *R (Wyatt) v Fareham BC* [2021] EWHC 1434 (Admin)

methodology used to evaluate potential adverse effects (and the measures intended to mitigate them) must effectively address any reasonable scientific doubt to achieve the required degree of certainty.

Note: A Nutrient Budget Calculator has been issued alongside this methodology. This calculator has been pre-populated with catchment data and undertakes the calculations for each of the stages set out in this methodology on the user's behalf. It is recommended that the calculator is used to generate nutrient budgets for new development.

Figure 1: Schematic of a water catchment system (river or coastal) showing the pathway for impact (black line) from new residential development, as well as the current sources of nutrient pollution within catchments.



Overview of the stages of the generic nutrient budget methodology

A nutrient budget is calculated in four stages:

1. [The increase in nutrient loading to a Habitats site that results from the increase in wastewater from a new development.](#)
2. [The nutrient loading from the past/present land use of the development site.](#)
3. [The nutrient loading from the future mix of land use on the development site.](#)
4. [Calculation of the net change in nutrient loading to a Habitats site with the addition of a buffer. The net change in nutrient loading + the buffer is the nutrient budget.](#)

A brief description of the steps required within each stage of the nutrient budget follows.

Overview of the steps in Stage 1

The Stage 1 steps and the calculation and output for each step are described in the table below.

Step	Description	Calculation	Output
Step 1: Calculate increase in population due to the development	Calculates the additional population that will result from the development.	No. of new dwellings/units x residents per dwelling value(number of people)	Total additional population (number of people)
Step 2: Calculate the increase in wastewater production due to the development.	The additional population results in additional water usage and therefore additional production of wastewater with its associated nutrient load.	Additional population (number of people) x daily per person water usage (litres/person/day)	Total daily water use (litres/day)
Step 3: Determine the concentration of nutrients in wastewater and calculate additional wastewater nutrient load.	Combine the daily rate of additional wastewater by the development with the concentration of nutrients (nitrogen or phosphorus) after wastewater treatment to get the additional nutrient load that will discharge to the Habitats site.	Daily water use (litres/day) x wastewater nutrient concentration (mg/l)	Nutrient load (kg/day)

Overview of the steps in Stage 2

The Stage 2 steps and the calculation and output for each step are described in the table below.

Step	Description	Calculation	Output
Step 1: Obtain nutrient export values from current land use(s)	The current land use or land uses on a development site have associated levels of nutrient export that will currently impact the Habitats site. This step provides details on how to obtain nutrient export coefficients to calculate the level of nutrient export from a development site pre-development.	Various calculations depending on the land uses	Nutrient export coefficient (kg/ha/year)
Step 2: Calculate the annual nutrient export from current land use(s)	The nutrient export coefficients obtained in Step 1 of Stage 2 are used along with areas of land under each land use to calculate the total export of nutrients from the development site pre-development.	Nutrient export coefficient (kg/ha/year) x area of land (ha)	Nutrient load (kg/year)

Overview of the steps in Stage 3

The Stage 3 steps and the calculation and output for each step are described in the table below.

Step	Description	Calculation	Output
Step 1: Calculate the annual export from future land use(s)	This step accounts for the nutrient export from land use on the development site after the development has been built. It uses nutrient export coefficient for land uses that were determined in Stage 2.	Nutrient export coefficient (kg/ha/year) x area of land (ha)	Nutrient load (kg/year)

Overview of the steps in Stage 4

The Stage 4 steps and the calculation and output for each step are described in the table below.

Step	Description	Calculation	Output
Step 1: Calculate the nutrient budget	The outputs from Stages 1-3 are combined to calculate the nutrient budget for the development.	Final Stage 1 output - Final Stage 2 output + Final Stage 3 output	Nutrient load (kg/yr) – this is the nutrient budget
Step 2: Add the buffer to the nutrient budget	The nutrient budget calculated in Step 1 of Stage 4 is increased by a 20% “buffer”. to account for any residual uncertainties in the methods used to derive the various inputs to Stages 1-4 of the nutrient budget.	Nutrient budget (kg/yr) x 1.2	Nutrient load (kg/yr) – this is the final output of the methodology

Note: the following sections contain the stages and associated methodology required to calculate the nutrient budget.

Stage 1: Calculate nutrient loading from additional wastewater

Step 1: Calculate increase in population due to the development

What:

This input determines the additional population that will result from a new residential development.

Why:

The people living in a new residential development will generate waste-water. Wastewater is enriched in nutrients and, following treatment, if the additional wastewater discharges to a Habitats site it will increase nutrient loadings, posing risks to the ecology of the site.

How:

Selecting a robust occupancy figure

The increase in population is calculated using a residents per dwelling/unit value that is multiplied by the number of dwellings within the development.

Competent authorities must satisfy themselves that the residents per dwelling/unit value used in this step of the calculation reflects local conditions in their area. The residents per dwelling value can be derived from national data providing it reflects local conditions. However, if national data does not

yield a residents per dwelling/unit value that reflects local occupancy levels then locally relevant data should be used instead. Whichever figure is used, it is important to ensure it is sufficiently robust and appropriate for the project being assessed. **It is therefore recommended that project level Appropriate Assessments specifically include justification for why the competent authority has decided upon the occupancy rate that has been used.**

Further guidance is provided below.

National occupancy data

When using national occupancy data, the Office of National Statistics (ONS) national average value for the number of residents per dwelling of 2.4 is recommended. This value is derived from 2011 census data and is subject to change when the 2021 Census becomes available. This value can be used if the Local Planning Authority is satisfied that:

- It is appropriate for the level and type of housing development that is expected to come forward in the Local Planning Authority's area (a strategic assessment should be made of the development anticipated to come forward over the Local Plan period to ensure the use of average figures will not under/over estimate the level of impact)
- It corresponds to the local average in the area (it is not likely to overestimate or underestimate occupancy)
- It is based on data that is robust and doesn't underestimate the level of impact over time.

It may not be appropriate to use the national average occupancy rate for development types which are not included in the ONS data, such as student accommodation or houses in multiple occupation. For such developments, the Local Planning Authority should specify an appropriate occupancy rate in the project level Appropriate Assessment and explain how this figure was derived.

Locally relevant occupancy data

If the national average occupancy rate does not correspond with local conditions, then a locally relevant average residents per dwelling value may be more appropriate. If a Local Planning Authority decides to use a locally relevant value, that value needs to be supported by robust and sufficient evidence which should be included in the project level Appropriate Assessment. Key sources of evidence include:

- The average occupancy rate from the census for the relevant local administrative area, e.g. the county.
- The average occupation figures used by the Local Planning Authority to calculate population growth due to Local Plan development.
- The average occupation figures used by the local water company to plan for population growth and the impact on water resources and sewage treatment.

A local / regional average occupancy rate can be used provided that it is from a robust source which can show trends over a protracted period of time— such as from ONS derived data or from the annual English Housing Survey. Figures derived from data collected over short periods of time will not be acceptable as short-term data is unlikely to provide the required degree of certainty. The Local Planning Authority should ensure that any trend in occupancy rates or estimates of the average number of persons per household used will continue for perpetuity and would not underestimate the

level of impact over time. A local / regional average occupancy rate would therefore need to be based on figures over at least a 5 year period⁵.

Local Planning Authorities will also need to satisfy themselves that a locally derived occupancy figure is appropriate for the level and type of housing development that is expected (a strategic assessment should be made of the development anticipated to come forward over the Local Plan period to ensure the use of average figures will not under/overestimate the level of impact).

Occupancy rates based on dwelling type

Should the nature or scale of development associated with a particular project proposal suggest that the use of an average occupancy rate is not appropriate, then the Local Planning Authority may decide to adopt an occupancy rate based on the dwelling types proposed for that particular project, provided it meets the criteria outlined above. This may be appropriate where a project proposer seeks consent for a development comprising certain dwelling types (e.g. flats and small 1 and 2 bed dwellings). If the Local Planning Authority decides to adopt a local approach based on determining occupancy rate by dwelling type, that approach should be used for all planning applications, rather than reverting back to the use of an average occupancy rate. This will ensure that the Local Planning Authority doesn't inadvertently underestimate total occupancy levels (and consequently water quality impacts) across its area by applying a lower residents per dwelling/unit value for developments comprising smaller units but failing to adopt a higher residents per dwelling/unit value for developments comprising larger units or a mix of units.

Consistency in applying occupancy rates

The same occupancy rate should be used where there are several different impacts on Habitats sites which require strategic mitigation. The strategic approaches developed with local planning authorities to deal with in combination impacts on international sites elsewhere typically calculate mitigation requirements and contribution requirements based on current national average occupancy rates. Local Planning Authorities may decide to use a locally derived average occupancy rate instead, but this local occupancy rate must be used consistently across each type of impact and each Habitats site affected. Local Planning Authorities should not use different occupancy rates in their HRAs for the same dwelling types / size of units. Whilst the impacts will be different, occupancy rates will have been used to estimate the scale of impact and subsequently the scale of mitigation required on the protected sites. The types of impact will typically last in perpetuity. Care is therefore needed to ensure the adoption of an alternative occupancy rate based on an assessment of net population additions to a locality for nutrient budgeting does not undermine other existing strategic approaches, particularly where there are overlapping impacts within the locality.

Advice on occupancy rates applied at Plan level

It is not recommended to base occupancy rates on the dwelling type for strategic HRAs of plans or for identifying mitigation at a strategic scale unless the Local Planning Authority can be sufficiently certain about the exact dwelling types that will come forward for each allocation. A more precautionary approach is required which considers the overall average occupancy rate which effectively smooths out any discrepancies which are based on dwelling type.

⁵ The figure of 5 years has been chosen as the minimum period of time over which occupancy rates can be calculated from as local plans and WRMPs are reviewed every 5 years, so represents a long enough period of time to capture any trends or changes.

Whichever value a Local Planning Authority ultimately decides to use for 'residents per dwelling/unit value', the Local Planning Authority must be satisfied that it:

- Reflects local circumstances and conditions, both across its local authority area and within the catchment of the particular Habitats site that may be adversely affected by the plan or project under consideration.
- Is based on robust data.
- Reflects trends in occupancy rates in its area over the long-term.
- Does not underestimate the scale of impact and subsequently the scale of mitigation required.

Ultimately, this can only be determined through the Local Planning Authority's appropriate assessment of the specific plan or project for which consent is sought. It is for Competent authorities to satisfy themselves that the residents per dwelling/unit value used reflects the local conditions in their area.

Note: When 2021 Census data is available, the 2.4 value will be updated.

The input value:

- A locally relevant persons per dwelling figure

Or

- 2.4 persons per dwelling

Example – calculating additional population:

The required calculation:

Number of dwellings x relevant persons per dwelling figure = *additional population*

Example scenario - A new development of 500 new homes is being constructed that contains a mix of:

- 100 one-bedroom flats
- 200 two-bedroom flats
- 100 three-bedroom semidetached houses
- 50 three-bedroom terraced affordable homes
- 50 four-bedroom detached houses

Calculate additional population due to the development:

500 dwellings x 2.4 persons per dwelling = **1200 persons**

Note: the above example assumes robust strategic assessment of likely housing delivery has been undertaken, therefore given the mix of housing types an average occupancy rate has been applied.

Step 2: Calculate the increase in wastewater production due to the development

What:

The increase in wastewater production is determined using the estimated average water use per additional head of population due to the development. The average daily water use per person is determined in accordance with water efficiency standards that are stipulated in building regulations and, subsequently, in planning permission.

Why:

The water use per person is used to calculate the additional annual wastewater production due to the new development. Wastewater contains nutrients and when it is discharged from a wastewater treatment system, these nutrients are released into the environment. This release of nutrients to the environment within the catchment of a Habitats site creates a pathway for new residential development to impact the Habitats site.

How:

Water efficiency standards detailed in the Buildings Regulations provide a water efficiency standard for maximum water consumption per person that needs to be achieved for a new residential development. The Building Regulations also state an optional higher water efficiency standard. This higher optional standard needs to be adopted through a Local Plan policy, which in turn requires this higher water efficiency standard to be secured through a planning condition. Some local authorities have gone further than the optional higher efficiency standard in the Building Regulations by committing an even higher water efficiency standard to Local Plan policy. This means there are three potential categories of water efficiency standard from which the water use per person can be determined depending on what planning conditions are imposed:

- The Building Regulations legal maximum water use per person standard of 125 litres/person/day should be used where no higher standard is secured through a planning condition
- The optional higher Building Regulations water use per person standard of 110 litres/person/day should be used where this is secured through a planning condition.
- A water use per person standard that is even higher than the optional higher Building Regulations water efficiency standard where this is secured through a planning condition.

Whichever water efficiency standard is selected, water usage is increased by an additional 10 litres per person per day to account for changes to less water efficient fittings throughout the lifetime of the development.

This water usage value in litres per person per day is multiplied by 365.25 in order to calculate the annual water use per person. The annual water use per person can then be multiplied by the additional population as calculated in Step 1.

The input values:

- Building Regulations minimum standard: 125 litres/person/day (l/p/d) + 10 l/p/d = 135 l/p/d
- Or
- Building Regulations optional higher standard: 110 l/p/d + 10 l/p/d = 120 l/p/d
- Or
- Local Plan policy secured higher water efficiency standard < 110 l/p/d = water efficiency standard in Local Plan policy + 10 l/p/d = TBC
- Days in a year: 365.25 (this accounts for a leap year every four years).
- Total population: [input from Step 1](#).

Example – calculating additional water use:

The required calculations:

Water efficiency standard (l/p/d) x days in a year = *annual water use per person (l/person/year)*
Additional population x annual water use per person (l/person/year) = *increase in water use (l/year)*

Example scenario

- Planning permission has been granted with a condition that the development uses the Building Regulations optional higher water efficiency standard. Therefore, the water usage to be used in the budget calculations is 120 litres/person/day (110 + 10 litres/person/day = 120 litres/person/day).
- A new development results in an [increase of 1200 persons](#).
- 120 litres/person/day x 365.25 days = 43,830 litres/person/year
- 1200 persons x 43,830 litres/person/year = **52,596,000 litres/year**

Step 3: Determine the concentration of nutrients in wastewater and calculate additional wastewater nutrient load.

What:

This input is the estimated nutrient concentration in the treated wastewater generated by the new development. It is used to calculate the total annual loading of nutrients to a designated site.

Wastewater from a new development is preferably discharged to a mains sewer for subsequent treatment at a wastewater treatment works (WwTWs). In a WwTWs, nutrients are removed by treatment processes. For some WwTWs, the removal of nutrients from wastewater is achieved by a dedicated process to comply with a permitted concentration of nitrogen or phosphorus in the treated wastewater that leaves a WwTW, ensuring that the nutrient levels will not exceed the permit limit. Other WwTWs will not have permitted limits on the concentration of nutrients in their final discharges and thus the nutrient concentrations in their discharges can be variable and may increase.

New developments in rural areas that cannot reasonably be expected to connect to a mains sewer will need to be connected to an onsite wastewater treatment system, e.g. a package treatment plant

(PTP) or septic tank. The concentration of nutrients in the treated wastewater discharged from an onsite system is variable and dependent on the type of system.

Whatever the type of sewage treatment system a new development connects to, the concentration of nitrogen or phosphorus in its treated wastewater discharge is required as the input for this step of the nutrient budget calculations.

Why:

The higher the concentration of nutrients in the treated wastewater discharging to a Habitats site, the greater the increase in nutrient loading and, subsequently, the greater the eutrophication risk.

How:

Note: This depends on the treatment facility being used to treat the wastewater from the new development.



What water treatment facility is being used?



Wastewater discharge to a WwTW:

If the new development is connecting to mains sewerage, there is a need to first determine which WwTW the development is going to discharge to. This information can be obtained on request from the local sewerage undertaker.

The WwTW that a development is connecting to may or may not have a permit limiting the concentration of nitrogen or phosphorus in its discharge. There are four WwTWs permit scenarios that will determine the concentration of nitrogen and/or phosphorus in a WwTW discharge:

1. The WwTW has a permit controlling the concentration of nitrogen and/or phosphorus in its discharge.
2. The WwTW has a permit controlling the concentration of nitrogen and/or phosphorus in its discharge *and* this is being tightened, e.g. its allowable nitrogen and/or phosphorus concentration is being lowered between now and 2025.
3. The WwTW does not have a permit which controls the concentration of nitrogen and/or phosphorus in its discharge.
4. The WwTW does not have a permit which controls the concentration of nitrogen and/or phosphorus in its discharge *but* it is getting a permit on the allowable nitrogen and/or phosphorus concentration in its discharge between now and 2025.

Note: the accompanying nutrient budget calculator is pre-populated with WwTW permit values. If you are completing this methodology to determine the inputs for the site-specific nutrient budget methodology for a Habitats site without a nutrient budget calculator, you will need to engage with the water company or companies within the Habitats site catchment to obtain details of WwTWs with permits, that have permits that are being tightened or that do not have permits but are getting them by 2025.

Table 1: Lookup table for current and future nitrogen and phosphorus WwTW permit limits to use as input to Step 3 of Stage 1. This table should be completed when the nutrient budget methodology for a Habitats site is set up.

Name of WwTW	Current permit limit for total nitrogen (mg TN/l)	Current permit limit for total phosphorus (mg TP/l)	Future (2025) permit limit for total nitrogen (mg TN/l)	Future (2025) permit limit for total phosphorus (mg TP/l)

To determine the input value required for this step:

- If the WwTW that your development site is connecting to has *only* a current nitrogen/phosphorus concentration permit, go to [Part 1.3.A](#).
- If the WwTW that your development site is connecting to has a current *and* a future nitrogen/phosphorus concentration permit, go to [Part 1.3.B](#).
- If the WwTW that your development site is connecting to *has no* current nitrogen/phosphorus concentration permit, go to [Part 1.3.C](#).
- If the WwTW that your development site is connecting to has no current nitrogen/phosphorus concentration permit *but does have* a future nitrogen/phosphorus concentration permit, go to [Part 1.3.D](#).

Wastewater discharge to onsite wastewater treatment

If the new development cannot connect to a WwTW and is therefore using an onsite wastewater treatment system, go to [Part 1.3.E](#).

Part 1.3.A: Where a development is discharging to a WwTW with a permit

WwTWs with permits on their nitrogen and/or phosphorus discharge concentrations are operated so that there is some headroom between the concentration in the discharge and the level that has to be met for compliance with the permit, to ensure that there will be compliance with the permit. Where there is a permit limit for Total Nitrogen or Total Phosphorus, the load calculation will use a worst case scenario that the WwTW operates at 90% of its permitted limit. A water company has the option of operating the works as close to the consent limit as practicable without breaching the consent limit. Natural England and the Environment Agency have agreed that 90% of the consent concentration limit is the closest the water company can reasonably operate the works without risk of breaching the consent limit.

Therefore, the input value for this step is the permit level multiplied by a factor of 0.9. This input value is multiplied by the annual volume of wastewater produced by the development (see [Step 2](#) in Stage 1) to determine the additional nutrient load from the new development’s wastewater, which is the final output from Stage 1 of the nutrient budget methodology.

The input value:

- Find the value of the permit limit concentration for the relevant WwTW detailed in Note: the accompanying nutrient budget calculator is pre-populated with WwTW permit values. If you are completing this methodology to determine the inputs for the site-specific nutrient budget methodology for a Habitats site without a nutrient budget calculator, you will need to engage with the water company or companies within the Habitats site catchment to obtain details of WwTWs with permits, that have permits that are being tightened or that do not have permits but are getting them by 2025.
- Table 1.
- Multiply this value by 0.9 to get the input value.
- Multiply the input value by the output from Step 2 to determine the final output from Stage 1.

Example – nutrient loading from a WwTW with a permit

The required calculations:

$$\text{Permit limit (mg/l)} \times 0.9 = \text{permit limit with headroom (mg/l)}$$

$$\text{Permit limit with headroom (mg/l)} \times \text{annual water use from development (l/year)} = \text{nutrient load (mg/year)}$$

$$\text{Nutrient load (mg per year)} / 1,000,000 = \text{nutrient load (kg/year)}$$

Example scenario:

- A new development will discharge to a WwTW with a permit limit of 8 mg TN/l.
- The additional total annual wastewater associated with this new development is 52,596,000 litres/year (see example in [Step 2](#)).

Calculate the annual nitrogen load from the new development:

- Reduce the permit limit to 90% of 8 mg TN/l = $8 \text{ mg TN/l} \times 0.9 = \mathbf{7.2 \text{ mg TN/l}}$
- Multiply the reduced permit limit by the annual wastewater produced by the development: $52,596,000 \text{ litres/year} \times 7.2 \text{ mg TN/l} = \mathbf{378,691,200 \text{ mg TN/year}}$
- Divide by 1,000,000 to convert to kg per year: $378,691,200 \text{ mg TN/year} / 1,000,000 = \mathbf{378.7 \text{ kg TN/year}}$

Part 1.3.B: Where a development is being discharged to a WwTW with a changing permit level

Some WwTWs are scheduled for upgrades to nitrogen and/or phosphorus treatment capacity. For Water Company discharges, the upgrades are secured through the Water Companies Price Review (PR) process and set out within the Water Industry National Environment Programme (WINEP). The WINEP for PR19 requires these upgrades to be completed by 2025, although they may be programmed to be completed sooner. Therefore, there is a potential scenario where a new development begins discharging to a WwTW before the date when upgrade will be completed (which could be between now and 2025). This will generate a certain amount of additional nutrient loading to a Habitats site for a short period, followed by long period after the WwTW has been upgraded when the new development's additional nutrient load from wastewater will be lower. In this scenario, two nutrient budgets are required as follows:

1. Calculate a nutrient budget based on the wastewater nutrient loading per year over the lifetime⁶ of the development using the *future* nitrogen and/or phosphorus permit limit.
2. Calculate a nutrient budget based on the wastewater nutrient loading per year for the period up to and including 2025 (or when the upgrade will come online) using the *current* nitrogen and/or phosphorus permit limit).

The output from the first nutrient budget can be used as the basis for the amount of nutrients that need to be removed using long-term mitigation measures. The difference between the output for the first nutrient budget per year and the higher output for the second nutrient budget per year is the amount of additional nutrients per year that need to be mitigated in the short-term, until the WwTW upgrade comes online, which can be achieved using temporary mitigation measures.

WwTWs with permits on their nitrogen and/or phosphorus discharge concentrations are operated so that there is some headroom between the concentration in the discharge and the level that has to be met for compliance with the permit, to ensure that there will be compliance with the permit. It is assumed in the calculation that the nitrogen and/or phosphorus concentration of the final effluent being discharged from a WwTW is at 90% of the permitted limit for both the current and future permit limits. Therefore, the input values for this step are the permit limits multiplied by a factor of 0.9. These input values are multiplied by the annual volume of wastewater produced by the development (see [Step 2](#) in Stage 1) to determine the additional nutrient load from the new development's wastewater, which is the final output from Stage 1 of the nutrient budget methodology.

The input value:

- Find the current and future values of the permit limit concentrations for the relevant WwTW.
- Multiply these values by 0.9 to get the input values.
- Multiply the input values by the output from [Step 2](#) to determine the wastewater nutrient loads for the current and future permit limits at the relevant WwTW.
- Use the wastewater nutrient loads for current and future permit limits to determine the long-term nutrient budget for mitigation and the additional nutrient load that will require short-term mitigation.

Example – nutrient loading from a WwTW with changing permit limits

The required calculations:

$$\begin{aligned} \text{Permit limit (mg/l)} \times 0.9 &= \text{permit limit with headroom (mg/l)} \\ \text{Permit limit with headroom (mg/l)} \times \text{annual water use from development (l/year)} &= \text{nutrient load (mg/year)} \\ \text{Nutrient load (mg per year)} / 1,000,000 &= \text{nutrient load (kg/year)} \end{aligned}$$

Example scenario

- A new development is completed on the 01/01/2022 and will discharge to a WwTW with a current permit limit of 8 mg TN/l.

⁶ For practical purposes, development's lifetime is treated as 80-125 years. The exact period of time within this window that a nutrient budget is required for will be set by the local authority.

- This permit limit is changing to 5 mg TN/l in 2025.
- The additional total annual wastewater produced by the new development is 52,596,000 litres/year.

Two nutrient budgets are completed:

1. A budget for the lifetime of a development using the lower limit of 5 mg TN/l, with long-term mitigation measures applied to achieve nutrient neutrality for this nutrient load in perpetuity.
2. A 4-year nutrient budget covering 2022-2025 using the N permit of 8 mg TN/l. Short-term measures can be used to mitigate the additional nutrient load created whilst the WwTW has a higher permit limit.

A worked example of this scenario is as follows:

1. Long-term annual load:

Reduce the future permit limit to 90% of 5 mg TN/l = $5 \text{ mg TN/l} \times 0.9 = 4.5 \text{ mg TN/l}$

$4.5 \text{ mg TN/l} \times 52,596,000 \text{ litres/year} = 236,682,000 \text{ mg TN/year}$

$236,682,000 \text{ mg TN/year} / 1,000,000 = 236.7 \text{ kg TN/year}$

2. 4-year annual load:

Reduce the current permit limit to 90% of 8 mg TN/l = $8 \text{ mg TN/l} \times 0.9 = 7.2 \text{ mg TN/l}$

$7.2 \text{ mg TN/l} \times 52,596,000 \text{ litres/year} = 378,691,200 \text{ mg TN/year}$

$378,691,200 \text{ mg TN/year} / 1,000,000 = 378.7 \text{ kg TN/year}$

3. Calculate the difference between the 4-year annual load the long-term annual load

$378.7 \text{ kg TN/year} - 236.7 \text{ kg TN/year} = 142 \text{ kg TN/year}$

Note: The outputs from the long-term annual load (1.) and the difference between the short-term (4-years in this example) annual load (3.) will be needed in [Stage 4](#) of this methodology.

Part 1.3.C: Where a development is being discharged to a WwTW *without* a permit

The sewerage undertaker should have been consulted in order to try and obtain an estimate for nutrient concentrations in WwTW discharges that not controlled by permit limits. These estimates should be ideally based on monitoring of the final effluent.

If a reliable estimate of the nutrient concentration in the final effluent cannot be provided, the following values should be used for total nitrogen and total phosphorus:

- Total nitrogen: 27 mg TN/l
- Total phosphorus: 8 mg TP/l

Where local WwTW data exists for a specific catchment which would suggest a lower default value, then this can be used to justify and set a more locally relevant default value.

These values should be multiplied by the total annual wastewater volume produced by the new development as identified in [Step 2](#).

The input value:

- If values are available for the specific WwTW effluent concentration, these should be used.
- If there is no data on the WwTW effluent concentration, use standard default of **27 mg TN/l** or nitrogen and/or **8 mg TP/l** for phosphorus or a local catchment default if there is the evidence to support one.

Example – nutrient loading from a WwTW with no permit limit

The required calculations:

Default nutrient concentration value (mg/l) x annual water use from development (l/year) =
nutrient load (mg/year)

Nutrient load (mg per year) / 1,000,000 = *nutrient load (kg/year)*

Example scenario:

- A new development will discharge to a WwTW with no permit limit and there is no data on the WwTW effluent concentration.
- The additional total annual wastewater produced by the new development is 52,596,000 litres/year.

Annual load of nitrogen:

27 mg N/l x 52,596,000 litres/year = **1,420,092,000 mg N/year** or
1,420,092,000 mg N/year / 1,000,000 = **1420.1 kg N/year**

Annual load of phosphorus:

8 mg P/l x 52,596,000 litres/year = **420,768,000 mg P/year**
420,768,000 mg P/year / 1,000,000 = **420.8 kg P/year**

Part 1.3.D: Where a development is being discharged to a WwTW that is currently without a permit limit but that is being upgraded to have a permit limit in the future

In this situation the approach set out under [Part 1.3.B](#) should be followed. To determine the current WwTW effluent concentration to use for the second, short-term nutrient budget (until the WwTW permit limit comes into force), the approach set out in [Part 1.3.C](#) for discharges without a current permit limit should be followed.

The input value:

For the period up to 2025 (or when the permit will come into force if this is earlier than 2025):

- If a value is available for the specific WwTW effluent nitrogen or phosphorus concentration, this should be used.
- If there is no data on the WwTW effluent concentration, use the standard default of **27 mg TN/l** for nitrogen and/or **8 mg TP/l** for phosphorus, or a local catchment default if there is the evidence to support one.

For the period after 2025 (or when the permit will come into force if this is earlier than 2025):

- Use the permit limit concentration nitrogen and/or phosphorus for the relevant WwTW.
- Multiply this value by 0.9 to get the input value.

Example – nutrient loading from a WwTW with no current permit limit but that is getting a permit limit in the future

The required calculations:

For the period before the permit comes into force:

$$\begin{aligned} \text{Default nutrient concentration value (mg/l)} \times \text{annual water use from development (l/year)} &= \\ \text{nutrient load (mg/year)} & \\ \text{Nutrient load (mg per year)} / 1,000,000 &= \text{nutrient load (kg/year)} \end{aligned}$$

For the period after the permit comes into force:

$$\begin{aligned} \text{Permit limit} \times 0.9 &= \text{permit limit with headroom} \\ \text{Permit limit with headroom} \times \text{annual water use from development} &= \text{nutrient load (mg/year)} \\ \text{Nutrient load (mg per year)} / 1,000,000 &= \text{nutrient load (kg/year)} \end{aligned}$$

Example scenario:

- A new development is completed on the 01/01/2022 and will discharge to a WwTW with no current permit.
- There is no data on the WwTW effluent concentration and so the default value of 27 mg TN/l is used.
- The WwTW is getting a permit limit of 8 mg N/l in 2025.
- The additional total annual wastewater produced by the new development is 52,596,000 litres/year.

Two nutrient budgets are completed:

1. A long-term budget using the lower limit of 8 mg TN/l should be calculated, with long-term mitigation measures applied to achieve nutrient neutrality for this nutrient load in perpetuity.

2. A 4-year nutrient budget covering 2022-2025 using the default “No permit concentration” for nitrogen of 27 mg TN/l is calculated and short-term measures can be used to mitigate the additional nutrient load created whilst the WwTW has no permit limit.

A worked example of this scenario is as follows:

1. long-term annual load:

Reduce the future permit limit to 90% of 8 mg TN/l = $8 \text{ mg TN/l} \times 0.9 = \mathbf{7.2 \text{ mg TN/l}}$

$7.2 \text{ mg TN/l} \times 52,596,000 \text{ litres/year} = \mathbf{378,691,200 \text{ mg TN/year}}$

$378,691,200 \text{ mg TN/year} / 1,000,000 = \mathbf{378.7 \text{ kg TN/year}}$

2. 4-year annual load:

$27 \text{ mg TN/l} \times 52,596,000 \text{ litres/year} = \mathbf{1,420,092,000 \text{ mg TN/year}}$

$1,420,092,000 \text{ mg TN/year} / 1,000,000 = \mathbf{1,420.1 \text{ kg TN/year}}$

3. Calculate the difference between the 4-year annual load the long-term annual load

$1,420.1 \text{ kg TN/year} - 378.7 \text{ kg TN/year} = \mathbf{1041.4 \text{ kg TN/year}}$

Note: The outputs from the long-term annual load (1.) and the difference between the short-term (4-years in this example) annual load (3.) will be needed in [Stage 4](#) of this methodology.

Part 1.3.E: Where the development is connecting to an onsite wastewater treatment system

The nutrient concentration in the final effluent should be identified through the manufacturer of the wastewater treatment technology being used.

If data on the phosphorus concentration in effluent from a treatment system is not available, a value of 9.7 mg P/l should be used for PTPs and 11.6 mg P/l for septic tanks. These figures are derived from the available literature⁷ and represent the average of reported mean TP values stated.

If data on the nitrogen concentration in effluent from a treatment system is not available, a value of 72.9 mg TN/l should be used for PTPs and 96.3 mg TN/l for septic tanks. These figures are derived from the available literature⁸, and represent the average of reported mean TN values stated.

The relevant nutrient concentration value should be multiplied by the total annual wastewater volume associated with the new development as identified in [Step 2](#).

For sustained and adequate nutrient removal, on-site treatment technology needs to be regularly maintained. The LPA should therefore take steps to secure maintenance of the technology in perpetuity to ensure that the nutrient levels used in this step of the calculation are achieved. The treatment technology used should be appropriately sized in order to account for the wastewater arising from the new development and should follow the relevant building regulation standards and any EA permitting requirements.

⁷ May & Woods (2016); O'Keeffe, et al., 2015

⁸ Lusk et al. (2017); Gill & Mockler (2016); Richards, et al., 2016; Humphrey Jr, et al., 2013; Withers, et al., 2011

PTPs or septic tanks that discharge to ground may be able to achieve further reductions in phosphorus export from a development as a large proportion of phosphorus is retained in soil. If evidence can be provided that shows the reductions in phosphorus that are likely to be achieved by a drainage field, along with a suitable maintenance plan to ensure phosphorus reductions are maintained for the lifetime of a development, it is likely that mitigation requirements could be reduced significantly. The level of phosphorus reductions that a drainage field can achieve will be dealt with on a case-by-case basis as it depends on local soil conditions and the choice of filter media if one is used.

The input value:

- This input should ideally be a verified concentration of total phosphorus or total nitrogen as detailed in manufacturer specifications for a septic tank or package treatment plant.
- If a verified total phosphorus or total nitrogen concentration is not provided, the following default values should be used.
- Septic tanks
 - Total Phosphorus = 11.6 mg TP/l
 - Total Nitrogen = 96.3 mg TN/l
- Package treatment plants
 - Total Phosphorus = 9.7 mg TP/l
 - Total Nitrogen = 72.9 mg TN/l

Example – nitrogen loading from a PTP

The required calculations:

PTP effluent nutrient concentration value (mg/l) x annual water use from development (l/year) = *nutrient load (mg/year)*

Nutrient load (mg per year) / 1,000,000 = *nutrient load (kg/year)*

Example scenario:

- A new development of two houses will discharge to a PTP.
- The houses are built to a water efficiency standard of 120 l/person/day (see [Step 2](#)).
- The PTP has a verified TN concentration in its final effluent of 25 mg TN/l.
- The concentration of phosphorus is not provided and so the default value of 9.7 mg TP/l is used.
- The additional total annual wastewater associated with this new development is 4.8 ([the additional population](#)) x 120 l/person/day x 365.25 (days in a year) = 210,384 l/year.

Annual load of nitrogen:

25 mg TN/l x 210,384 litres/year = 5,259,600 mg N/year

5,259,600 mg N/year = 5.3 kg N/year

Annual load of phosphorus:

9.7 mg TP/l x 210,384 l/year = 2,040,725 mg P/year

2,040,725 mg P/year / 1,000,000 = 2.04 kg P/year

Full worked example of Stage 1 calculations

Table 2 presents a full worked example of the steps required for the Stage 1 nutrient budget calculations. The example presented in this table shows how the Stage 1 output is generated when a development connects to WwTW with a permit limit that is not changing, with the numbers in the table taken from the examples shown above. For Step 4, the inputs and calculations are taken from the example in [Part 1.3.A](#). For developments where the calculations detailed in one of Parts 1.3.B-E apply, those calculations would substitute the calculations shown in Step 4 of Table 2.

Table 2: Full worked example of the calculations required to determine the output from Stage 1 of a nutrient budget. In this example, the nutrient budget is being calculated for nitrogen.

Step	Calculations	Explanation
Step 1	500 dwellings x 2.4 persons per dwelling = 1200 persons	Calculate additional population
Step 2	120 litres/person/day x 365.25 days = 43,830 litres/person/year	Calculate the increase in wastewater production
	1200 persons x 43,830 litres/person/year = 52,596,000 litres/year	
Step 3	8 mg TN/l x 0.9 = 7.2 mg TN/l	Reduce the adjusted permit limit to 90% of 6 mg TN/l
	52,596,000 litres/year x 7.2 mg TN/l = 378,691,200 mg TN/year	Multiply the reduced adjusted permit limit by the annual wastewater produced by the development
	378,691,200 mg TN/year / 1,000,000 = 378.7 kg TN/year	Divide by 1,000,000 to convert to kg per year – this is the final output from Stage 1.

Stage 2: Nutrient loading from current land use(s)

Step 1: Obtain nutrient export values from current land use(s)

What:

This input determines the amount of nutrients that are currently exported from your development site. These nutrients will be offset against the new nutrient load generated by your development in wastewater.

Why:

Not accounting for the current export of nutrients from your site would result in double counting of nutrients that were generated by previous land use *and* nutrients that will be generated by land use post-development. This will result in the nutrient budget output being an overestimate.

How:

Note: This depends on the current land use on your development site.



What is the land use on your development site?

**Development in non-urban areas:**

If your development site is on agricultural land, [go to Part 2.1.A](#).

If your development site is on greenfield, greenspace or community food growing (e.g. allotments) land use(s), [go to Part 2.1.B](#).

Development in urban areas:

If your development is in an urban area and the mix of land uses is changing, [go to Part 2.1.C](#).

Note: If your development site is in an urban area and the ratio of land uses is not changing, both Stage 2 and Stage 3 of the methodology can be skipped. This is because the only net increase in nutrients comes from the new wastewater generated by the development.

Example – no change in ratio of urban land use:

Your development site is 10 ha.

The mix of current land uses pre-development are:

- 8 ha urban, e.g. houses, roads etc.
- 2 ha greenspace.

The post-development mix of land uses is:

- 8 ha urban, e.g. houses, roads etc.
- 2 ha greenspace.

The ratio of land uses remains unchanged and thus the associated nutrient export from the site also does not change.

Hence, this stage as outlined in Part 2.1.C is not required and the subsequent calculations in Stage 3 can also be omitted.

Part 2.1.A: Obtaining nutrient export values for agricultural land use

Estimates of the nitrogen and phosphorus export from agricultural land have been derived using Farmscoper, an industry standard tool for assessing the pollution risks posed by agriculture. Farmscoper outputs values for kilograms of nitrate and total phosphorus export per hectare of farmland. These values are termed export coefficients. Using an add-on to Farmscoper called the Farmscoper Upscale tool, nitrate and total phosphorus export coefficients can be generated without requiring additional data.

Note: The Farmscopers export coefficients are pre-populated in the accompanying nutrient budget calculator. If a nutrient budget is being undertaken without a calculator, then Farmscopers export coefficients will need to be generated for river catchments at a specific scale termed the “Operational Catchment” scale. Guidance on running Farmscopers to generate export coefficients can be provided by Natural England upon request.

To select an export coefficient or coefficients for the agricultural land uses on your development site, you will need to collate the following information:

1. The farm type or farm types that are currently on your development site.
2. The area of the farm in hectares that is used by each farm type.
3. The Operational Catchment that your development site is located in.
4. The soil characteristics for your development site.
5. The average annual rainfall for your development site.
6. Whether your development site is in Nitrate Vulnerable Zone (NVZ).

With the exception of farm type and area for each farm type, the above information can be found online. Please see the instructions below for how to find the information listed in points 3-5. For farm type(s) and area(s), you will need to ascertain this information from the current farmer.

For farm types, Farmscopers has set categories. You need to select the farm type(s) that most accurately represents the type(s) of farming on your development site from the following list:

- Cereals
- General
- Horticulture
- Pig
- Poultry
- Dairy
- Mixed
- Less Favoured Area (LFA) Grazing
- Lowland Grazing

Finding your Operational Catchment:

- Go to: <https://environment.data.gov.uk/catchment-planning/>
- Change the “Search by” option to “Postcode” or “Coordinates” and search your sites postcode or coordinates.
- The map will show a regional view with highlighted areas.
- On the left of the page, various names will be listed under the headings “River Basin District”, “Management Catchment”, “Operational Catchment” and “Water Body”. You need to ascertain your development site’s Operational Catchment.
- If there is more than one name under the Operational Catchment heading, zoom in on the map to your development site’s location, which should be shaded blue.
- Hover the cursor over the map at your development site’s location. A name should be shown that will match one of the Operational Catchments on listed on the left of the screen. Make a note of this Operational Catchment name.

Finding the soil characteristics for your site:

- Go to: <http://www.landis.org.uk/soilscapes/index.cfm#>
- Select the “Search” tab to the right of the map.

- Search using postcode or coordinates.
- Click on the “Soil information” tab beneath “Search”.
- Make a note of the Soilscape number and description.
- Look up the farmscoper soil drainage type using the soilscape number in [Table A1](#) in Appendix 1.

Finding the average annual rainfall for your site:

- Go to: <https://nrfa.ceh.ac.uk/data/search>
- Click on any number in the “Station number” column. This will open a new tab in your browser.
- On this page, click the “Catchment info” tab.
- Change the “Select spatial data type to view” drop down to “Rainfall”.
- On the tabs beneath this drop down, select “Legend”.
- Use the interactive map to locate your development site.
- Record the annual rainfall band for your development site by comparing the colour on the map with the legend.
- Look up the farmscoper equivalent rainfall band using the site specific annual average rainfall band number in [Table A2](#) in Appendix 1.

Finding out whether your development is within an NVZ:

- Go to: <https://magic.defra.gov.uk/MagicMap.aspx>
- In the “Table of Contents” on the left of the screen, expand the entry called “Designations” by clicking on the “+” icon.
- Scroll to the bottom of the list that will appear when you expand “Designations”, “Land-Based designations” and “statutory” and check the box next to “Nitrate Vulnerable Zones”. This should colour various areas of the map.
- Using the search bar next to the “MAGIC” label, search for your development site location. You can search by postcode, or by clicking on the black arrow in the search bar, you can change to searching by grid reference or coordinates.
- If your development site is within the coloured area on the map, it is in an NVZ.

Use the information above to find your nitrate or total phosphorus export coefficients in [Table A3](#) in appendix 1.

If there is good evidence, such as the output from farm-specific Farmscoper modelling or a detailed monitoring exercise, this can be used to support a different export efficient.

Part 2.1.B: Obtaining nutrient export values from non-agricultural greenfield, greenspace and community food growing land uses

If your development site is on land that is currently under non-agricultural greenfield or greenspace land use, default values for nitrogen and phosphorus export from these land uses are provided in Table 3. Greenfield or greenspace should be interpreted as more natural greenspace, i.e. semi-natural habitats where fertilisers will not be applied and dog waste is managed. It does not include sports fields/pitches or parks where fertiliser is likely to be applied and thus should be classed as urban. As such, the values for greenspace represent the estimated background export of nitrogen and phosphorus from areas of land that do not have additional inputs of nitrogen or phosphorus from sources such as agriculture, use of fertilisers and/or pet waste. You will also need to know the area of land in hectares that is covered by greenfield or greenspace land uses.

Table 3: Use the values in this table as the export coefficients for nitrogen and phosphorus if your development site is currently under greenfield or greenspace land use.

Default export coefficients for nitrogen and phosphorus from greenfield or greenspace	
Nitrogen	3.00 kg/ha/year
Phosphorus	0.02 kg/ha/year

If there are areas of community food growing land, e.g. allotments or similar land uses, that are being removed by the development, then an agricultural land export coefficient has been determined as the most representative input to represent the nitrogen or phosphorus export from this land use. To determine this value, you need to follow the instructions in [Part 2.1.A](#) to find the Operational Catchment and annual average rainfall for your site. Then go to [Appendix 1](#) and use the Operational Catchment and annual average rainfall value to find the nitrogen or phosphorus export coefficient for the:

- “FreeDrain” (freely draining) soil characteristic
- The “General” farm type.

You will also need to know the area of your development site that is covered by community food growing land use.

Part 2.1.C: Obtaining nutrient export values from urban land uses

If your development site is on brownfield land, you will need to obtain nitrogen or phosphorus export coefficients for the types of pre-existing urban land use on the site. In this methodology, export coefficients have been defined for the three types of urban land use:

- Residential – urban land used for housing. This includes gardens, roadside verges, and small areas of greenspace (<0.1 hectares), as well as driveways, roads and any other hardstanding.
- Open urban – urban land that is primarily hardstanding but is not primarily used for housing or industry. This may include but, not limited to, roads, small greenspace areas, and buildings.
- Commercial/industrial – an area of land developed as a site for office space, retail parks, factories, and other industrial businesses.

You will need to classify the urban land use(s) on your development site into one of these three types and also determine the area in hectares that is covered by each type of urban land use.

Once you know the different types of urban land use on your site, the nitrogen and phosphorus export coefficients for each land use type can be obtained. To obtain these coefficients, you will need to look up the average annual rainfall for your development site. This can be found by following the instructions under the “Finding the average annual rainfall for your site” heading in [Part 2.1.A](#). Once you have the urban land use type(s) and average annual rainfall for your site, look up the corresponding urban nitrogen or phosphorus export coefficient(s) in Table 4.

Note: an explanation of how these coefficients were calculated is provided in Appendix 2

Where specific measures are incorporated in a development (such as permeable paving in the urban realm) with sufficient evidence to support a different nutrient event mean concentration and/or percentage of land that is impervious, then the approach set out in appendix 2 can be used to calculate a more locally specific urban export coefficient.

Table 4: Nitrogen and Phosphorus export coefficients for urban land use types.

Average annual rainfall (mm)	Residential N export coefficient (kg/ha/yr)	Commercial / industrial N export coefficient (kg/ha/yr)	Open urban N export coefficient (kg/ha/yr)	Residential P export coefficient (kg/ha/yr)	Commercial / industrial P export coefficient (kg/ha/yr)	Open urban P export coefficient (kg/ha/yr)
508 - 525	9.41	5.02	5.55	1.00	0.73	0.54
525.1 - 550	9.83	5.24	5.80	1.05	0.77	0.56
550.1 - 575	10.33	5.51	6.09	1.10	0.81	0.59
575.1 - 600	10.83	5.77	6.38	1.16	0.85	0.62
600.1 - 625	11.32	6.04	6.67	1.21	0.89	0.65
625.1 - 650	11.82	6.30	6.97	1.27	0.93	0.68
650.1 - 675	12.30	6.56	7.25	1.32	0.97	0.71
675.1 - 700	12.79	6.82	7.54	1.37	1.00	0.74
700.1 - 750	13.51	7.20	7.96	1.45	1.06	0.78
750.1 - 800	14.44	7.70	8.51	1.55	1.14	0.83
800.1 - 850	15.38	8.20	9.06	1.65	1.21	0.89
850.1 - 900	16.31	8.70	9.61	1.75	1.28	0.94
900.1 - 950	17.24	9.19	10.16	1.85	1.35	0.99
950.1 - 1,000	18.17	9.69	10.71	1.95	1.43	1.05
1,000.1 - 1,100	19.57	10.44	11.54	2.10	1.54	1.13
1,100.1 - 1,200	21.43	11.43	12.63	2.30	1.68	1.24
1,200.1 - 1,400	24.23	12.92	14.28	2.60	1.90	1.40
1,400.1 - 1,600	27.96	14.91	16.48	3.00	2.20	1.61
1,600.1 - 2,000	33.55	17.89	19.78	3.60	2.64	1.93
2,000.1 - 2,400	41.00	21.87	24.17	4.40	3.22	2.36
2,400.1 - 3,000	50.32	26.84	29.66	5.40	3.95	2.90
3,000.1 - 4,000	65.23	34.79	38.45	7.01	5.13	3.76
4,000.1 - 5,500	88.53	47.22	52.19	9.51	6.96	5.10

Step 2: Calculate the annual nutrient export from the current land use(s) on your development site

What:

The total annual nutrient loading from pre-existing land uses on your development site is calculated using the nutrient export coefficients determined in [Stage 2, Step 1](#).

Why:

As stated above, not accounting for the current export of nutrients from your site would result in double counting of nutrients that were generated by previous land use *and* nutrients that will be generated by land use post-development.

How:

The export coefficients identified in [Stage 2, Step 1](#) are multiplied by the corresponding land area (in hectares) for each land use. This will provide annual nutrient loading values in kg per year for each land types found within the site's boundary. If there is more than one land use within your site's boundary, the sum of these values will give the total current site's land use annual nutrient loading.

The input value:

- The export coefficient(s) obtained for each land use in Parts 2.1.A-C.
- The area in hectares of each land use an export coefficient has been obtained for.

Example – annual nutrient export from current land use(s) on your development siteThe required calculation:

Land use area (ha) x land use nutrient export coefficient (kg/ha/yr) = *nutrient export (kg/yr)*

Example scenario:

A new development is to be constructed on a 10-ha site that contains:

- 2 ha of dairy farming with a nitrogen export coefficient of 25 kg/ha/yr and a phosphorus export coefficient of 0.42 kg/ha/yr
- 4 ha of cereal farming with a nitrogen export coefficient of 20 kg/ha/yr and a phosphorus export coefficient of 0.32 kg/ha/yr
- 4 ha of urban open urban land with a nitrogen export coefficient of 6.67 kg/ha/yr and a phosphorus export coefficient of 0.89 kg/ha/yr

To calculate the annual nutrient export from the area of dairy farming:

- 2 ha x 25 kg N/ha/year = 50 kg N/year
- 2 ha x 0.42 kg P/ha/year = 0.84 kg P/year

To calculate the annual nutrient export from the area of cereals farming:

- 4 ha x 20 kg N/ha/year = 80 kg N/year
- 4 ha x 0.32 kg P/ha/year = 1.28 kg P/year

Four hectares of open urban land

- 4 ha x 6.67 kg N/ha/year = 26.68 kg N/year
- 4 ha x 0.89 kg P/ha/year = 3.56 kg P/year

Total annual nutrient loading from current land uses:

Nitrogen:

- 50 kg N/year + 80 kg N/year + 26.68 kg N/year = **156.68 kg N/year**

Phosphorus:

- 0.84 kg P/year + 1.28 kg P/year + 3.56 kg P/year = **5.68 kg P/year**

Stage 3: Nutrient loading from future land use(s)

Step 1: Calculate the annual export from future land use(s)

What:

Once a development site has been built, the land uses on the site will have an associated nutrient export. Stage 3 of the nutrient budget accounts for the export of nutrients from the new land use(s) on your development site.

Why:

If you were to only account for the nutrients that were exported by the previous land use(s) on your development site (using the steps in [Stage 2](#)), the final nutrient budget would be an underestimate of the total nutrient export from the development site and as shown in [Stage 2](#), different land uses have different associated export of nutrients. This means the final mix of land uses on a development site needs to be accounted for to provide the most accurate estimate of future nutrient export once the development is built.

How:

The same approaches shown in [Stage 2](#) are applied in Stage 3. Each land use on the post-development site will need to be categorised to find the relevant nitrogen or phosphorus export coefficient. As in [Stage 2](#), these export coefficients are then multiplied by the area for each land use to get an annual nutrient export for that land use. The sum of the nutrient exports for each land use is the total nutrient export from land uses on your development site. This total is the output from Stage 3 that is used in the nutrient budget calculations in Stage 4.

If your development site is incorporating greenspace or community food growing areas, please see [Part 2.1.B](#) to determine the export coefficients required for these land uses.

For the urban land uses on your development site, please see [Part 2.1.C](#) to determine the export coefficients for the relevant types of urban land use.

The input value:

- The export coefficient(s) for each land use.
- The area in hectares of each land use an export coefficient has been obtained for.

Example – annual nutrient export from future land use(s) on your development site

The required calculation:

Land use area (ha) x land use nutrient export coefficient (kg/ha/yr) = *nutrient export (kg/yr)*

Example scenario:

A new development is to be constructed on a 10-ha site that contains:

- 8 ha of residential land with nitrogen export coefficient of 11.32 kg/ha/yr and a phosphorus export coefficient of 1.21 kg/ha/yr
- 2 ha of greenspace with a nitrogen export coefficient of 3 kg/ha/yr and a phosphorus export coefficient of 0.02 kg/ha/yr

To calculate the annual nutrient export from the residential area:

- 8 ha x 11.32 kg N/ha/year = 90.56 kg N/year
- 8 ha x 1.21 kg P/ha/year = 9.68 kg P/year

To calculate the annual nutrient export from the area of greenspace:

- 2 ha x 3 kg N/ha/year = 6 kg N/year
- 2 ha x 0.02 kg P/ha/year = 0.04 kg P/year

Total annual nutrient loading from current land uses:

Nitrogen:

- 90.56 kg N/year + 6 kg N/year = **96.56 kg N/year**

Phosphorus:

- 9.68 kg P/year + 0.04 kg P/year = **9.72 kg P/year**

Stage 4: Calculating the nutrient budget, including the buffer

What:

Stage 1-3 have calculated the nutrient export from the different sources of nutrients from your development, both pre- and post-development and occupation. Each of Stages 1-3 has output an amount of nitrogen or phosphorus in kg per year. The balance, or net change, in the amount of nitrogen or phosphorus that will come from your development once built and occupied is the nutrient budget for your development.

The methodology adopts a precautionary approach to the nutrient budget calculation. To ensure robustness an additional 20% buffer is added to the final figure.

Why:

This final Stage of the nutrient budget methodology calculates whether your new development will result in a surplus of nitrogen or phosphorus being exported to a Habitats site. If the output of the nutrient budget calculations, including the 20% buffer, shows that the development will result in a surplus of nutrients being exported to a Habitats site, this is the amount of nutrient mitigation needed for the development to be “nutrient neutral”.

How:

The development’s nutrient budget = *Stage 1 output* - *Stage 2 output* + *Stage 3 output*.

The addition of the 20% buffer = *nutrient budget* x 1.2

If the outcome of the nutrient budget is zero or a negative figure, there is no need to add the precautionary buffer and no nutrient mitigation is needed.

The input value:

- The outputs from Stages 1-3.

Example – Calculation of the nutrient budget and addition of the buffer.

This example calculates a nitrogen budget using the outputs from the examples in:

- [Stage 1, Part 1.3.A](#) – **378.7 kg N/year**
- [Stage 2, Step 2](#) – **156.68 kg N/year**
- [Stage 3, Step 1](#) – **96.56 kg N/year**

The nutrient budget calculated as:

$$378.7 \text{ kg TN/year} - 156.68 \text{ kg N/year} + 96.56 \text{ kg N/year} = \mathbf{318.58 \text{ kg N/year}}$$

The addition of the precautionary buffer is calculated as:

$$318.58 \text{ kg N/year} \times 1.2 = \mathbf{382.3 \text{ kg N/year}}$$

The final output from the nutrient budget and the amount of nitrogen to be mitigated in this example is:

$$\mathbf{382.3 \text{ kg N/year}}$$

Appendix 1: Lookup tables for selecting Farmscoper nitrogen or phosphorus export coefficients

The following three lookup tables should be used to determine the export coefficient for the farm type or farm types on your development site.

First, use the information for “soil characteristics” as outlined in part 2.1.A to select the Farmscoper soil drainage type from Table A.1.

Table A.1: Determine the Farmscoper equivalent soil drainage type by finding the development specific Soilscape number in the table below.

Farmscoper soil drainage type				
Soilscape number	Drainage	Free draining (FreeDrain)	Drained for arable (DrainedAR)	Drained for arable and grazing (DrainedArGr)
1	Naturally wet			X
2	Variable			X
3	Freely draining	X		
4	Freely draining	X		
5	Freely draining	X		
6	Freely draining	X		
7	Freely draining	X		
8	Slightly impeded drainage		X	
9	Slightly impeded drainage		X	
10	Freely draining	X		
11	Freely draining	X		
12	Freely draining	X		
13	Freely draining	X		
14	Freely draining	X		
15	Naturally wet			X
16	Surface wetness			X
17	Impeded drainage			X
18	Impeded drainage			X
19	Impeded drainage			X
20	Naturally wet			X
21	Naturally wet			X
22	Naturally wet			X
23	Naturally wet			X
24	Variable			X
25	Naturally wet			X
26	Naturally wet			X
27	Naturally wet			X

Using the information collated for “average annual rainfall” as outlined in [Part 2.1.A](#), select the relevant “Farmscoper rainfall volume equivalent” value from Table A.2.

Table A.2: Determine the Farmscoper equivalent rainfall band by using your site-specific average annual rainfall band in the table below.

Average annual rainfall (mm)	Farmscoper rainfall volume equivalent (mm)
508 - 525	Under600
525.1 - 550	Under600
550.1 - 575	Under600
575.1 - 600	Under600
600.1 - 625	600to700
625.1 - 650	600to700
650.1 - 675	600to700
675.1 - 700	600to700
700.1 - 750	700to900
750.1 - 800	700to900
800.1 - 850	700to900
850.1 - 900	700to900
900.1 - 950	900to1200
950.1 - 1,000	900to1200
1,000.1 - 1,100	900to1200
1,100.1 - 1,200	900to1200
1,200.1 - 1,400	1200to1500
1,400.1 - 1,600	1200to1500
1,600.1 - 2,000	Over1500
2,000.1 - 2,400	Over1500
2,400.1 - 3,000	Over1500
3,000.1 - 4,000	Over1500
4,000.1 - 5,500	Over1500

Using the Farmscoper soil drainage type and the Farmscoper rainfall volume equivalent, along with other values as outlined in [Part 2.1.A](#), select relevant export coefficient values from Table A.3.

Table A.3: Farmscoper export coefficients for the Operational Catchments within the Habitats site catchment. This table will need to be completed when this methodology is initially set up for a Habitats site.

Catchment	Farmscoper Farm Type	NVZ	Climate	Farmscoper Soil Drainage Term	Nitrogen export coefficient	Phosphorus export coefficient

Appendix 2: derivation of urban nitrogen and phosphorus runoff coefficients

Research into diffuse pollution in urban environments has produced values called event mean concentrations (EMCs) that describe the average concentration of nitrogen and phosphorus in urban runoff during rainfall events. For the purposes of this methodology, the EMCs⁹ detailed in Table A.3 were used. See [Part 2.1.C](#) for a definition of the land use types in Table A.3.

Table A.3: EMCs for nitrogen and phosphorus for three key types of urban land use.

Land use	Nitrogen event mean concentration (mg N/l)	Phosphorus event mean concentration (mg P/l)
Residential	2.85	0.41
Commercial/industrial	1.52	0.30
Open urban land	1.68	0.22

The EMCs were combined with a standard method for calculating urban runoff which requires only rainfall as an input. The HR Wallingford Modified Rational Method was used, as shown in equation 1.

Equation 1

$$L = R * Pr$$

Where:

L = annual average runoff (mm)

R = annual average rainfall (mm)

Pr = percentage runoff (%)

$$Pr = 0.829 * PIMP + 0.078 * U - 20.7$$

$PIMP$ = the percentage of land that is impervious (whole number)

U = catchment wetness index. Calculated by (use 41 if rainfall over 760 mm):

$$U = -129.5 + (0.424 * R) - (2.28 * 10^{-4} * R^2) - (4.56 * 10^{-8} * R^3)$$

For phosphorus, the value for PIMP was set as 80%, as this has been suggested as the proportion of impervious surfaces once urban creep (the paving over of pervious surfaces) reaches a maximum. The use of an 80% PIMP value, while high, accounts for the potential increases in impervious surfaces that may occur over the lifetime of a development. Research has also suggested that non-paved gardens account for between 19-27% of the entire urban area. As gardens are the primary type of permeable surface within residential areas, the use of an 80% PIMP value is considered to be precautionary as an area with 19% coverage by non-paved gardens would indicate that around 80% of the remaining urban residential area would be impermeable surfaces.

⁹ Mitchell, G., 2005. Mapping hazard from urban non-point pollution: A screening model to support sustainable urban drainage planning. *Journal of Environmental Management*, 74(1), pp. 1-9.

For nitrogen, a value of 100% was used for PIMP. Whilst this is an unrealistic assumption in most urban environments, the use 100% for PIMP was deemed appropriate as a notable proportion of the nitrogen from pervious land within an urban environment may still leach to a Habitats site via subsurface or groundwater pathways. This is because nitrogen is much more readily transported than phosphorus, especially in dissolved form. A 100% value is deemed to be a precautionary input given the uncertainties surrounding the amount of nitrogen that is likely to leach from an urban environment via subsurface and groundwater pathways.

Date: 16 March 2022



To: LPA Chief Executives & Heads of Planning,
County Council Chief Executives and Heads of Planning,
EA Area and National Team Directors,
Planning Inspectorate,
Natural Resources Wales (Cross border sites only) &
Secretary of State for Department for Levelling Up Housing & Communities
(DLUHC)

BY EMAIL ONLY

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Dear Sir / Madam

Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites.

1.0 Summary

This letter sets out Natural England's advice for development proposals that have the potential to affect water quality in such a way that adverse nutrient impacts on designated habitats sites¹ cannot be ruled out.

It also provides an update to those Local Planning Authorities (LPAs) whose areas include catchments where Natural England has already advised on how to assess the nutrient impacts of new development and mitigate any adverse effects, including through application of the nutrient neutrality methodology. It includes:

- Supporting Information (Annex A) which summarises the key tools and guidance documents available and how to take account of certain issues in any Habitats Regulations Assessment (HRA)
- a national map showing the affected catchments (Annex B)
- a list of habitats sites in unfavourable condition due to nutrients, where new development may have an adverse effect by contributing additional nutrients and therefore where nutrient neutrality is a potential solution to enable development to proceed (Annex C)
- a national generic Nutrient Neutrality Methodology (attached in covering email with this letter)
- a nutrient assessment methodology decision tree (Annex D)
- a flow diagram of the HRA process (Annex E)
- guidance on thresholds for insignificant effects for phosphorus discharges to ground (Annex F)
- Natural England Area Team contacts for each habitats site and catchment (Annex G)
- Catchment Specific Nutrient Neutrality Calculators and associated Calculator Guidance (attached in covering email with this letter)
- Site specific catchment maps (attached in covering email with this letter)
- Site specific evidence documents (new catchments only - attached in covering email with this letter)
- Nutrient Neutrality Principles (attached in covering email with this letter)

¹ Habitat sites are sites which are protected by the Habitats Regulations and includes Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Any proposals that could affect them require a Habitats Regulations Assessment (HRA). Ramsar sites are also included as these are protected as a matter of government policy and also require a HRA where proposals may affect them.

- Nutrient Neutrality – A Summary Guide to Nutrient Neutrality (attached in covering email with this letter)

Natural England advises you, as the Competent Authority under the Habitats Regulations, to carefully consider the nutrients impacts of any new plans and projects (including new development proposals) on habitats sites and whether those impacts may have an adverse effect on the integrity of a habitats site that requires mitigation, including through nutrient neutrality.

This letter provides advice on the assessment of new plans and projects under Regulation 63 of the Habitats Regulations. The purpose of that assessment is to avoid adverse effects occurring on habitats sites as a result of the nutrients released by those plans and projects. This advice does not address the positive measures that will need to be implemented to reduce nutrient impacts from existing sources, such as existing developments, agriculture, and the treatment and disposal of wastewater. It proposes that nutrient neutrality might be an approach that planning authorities wish to explore.

This letter is being sent to the Environment Agency (EA) and all Heads of Planning and Chief Executives for the Local Planning Authorities (LPAs) which are affected by this advice as well as the following:

- The Planning Inspectorate as the Competent Authority for appeals and local plan examinations.
- Secretary of State for the Department of Levelling Up, Housing and Communities (DLUHC) as Competent Authority for called in decisions/appeals.
- County Councils where there is a 2-tier authority.
- Natural Resources Wales (for cross border sites).

NE will also be writing to Ofwat and water companies to inform them of our advice.

2.0 Background

In freshwater habitats and estuaries, poor water quality due to nutrient enrichment from elevated nitrogen and phosphorus levels is one of the primary reasons for habitats sites being in unfavourable condition. Excessive levels of nutrients can cause the rapid growth of certain plants through the process of eutrophication. The effects of this look different depending on the habitat, however in each case, there is a loss of biodiversity, leading to sites being in 'unfavourable condition'. To achieve the necessary improvements in water quality, it is becoming increasingly evident that in many cases substantial reductions in nutrients are needed. In addition, for habitats sites that are unfavourable due to nutrients, and where there is considerable development pressure, mitigation solutions are likely to be needed to enable new development to proceed without causing further harm.

In light of this serious nutrient issue, Natural England has recently reviewed its advice on the impact of nutrients on habitats sites which are already in unfavourable condition. Natural England is now advising that there is a risk of significant effects in more cases where habitats sites are in unfavourable condition due to exceeded nutrient thresholds. More plans and projects are therefore likely to proceed to appropriate assessment.

The principles underpinning HRAs are well established². At the screening stage, plans and projects should only be granted consent where it is possible to exclude, on the basis of objective information, that the plan or project will have significant effects on the sites concerned. Where it is not possible to rule out likely significant effects, plans and projects should be subject to an appropriate assessment. That appropriate assessment must contain complete, precise and definitive findings which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the site.

² See, amongst others Case C-127/02 *Waddenvereniging and Vogelsbeschermingvereniging (Waddenzee)*; *R (Champion) v North Norfolk DC* [2015] EKSC 52 (Champion); C-323/17 *People Over Wind, Peter Sweetman v Coillte Teoranta (People Over Wind)*; C-461/17 *Brian Holohan and Others v An Bord Pleanála (Holohan)*; Joined Cases C-293/17 and C-294/17 *Coöperatie Mobilisatie for the Environment UA and Others v College van gedeputeerde staten van Limburg and Other (the Dutch Nitrogen cases)*.

Appropriate assessments should be made in light of the characteristics and specific environmental conditions of the habitats site. Where sites are already in unfavourable condition due to elevated nutrient levels, Natural England considers that competent authorities will need to carefully justify how further inputs from new plans or projects, either alone or in combination, will not adversely affect the integrity of the site in view of the conservation objectives. This should be assessed on a case-by-case basis through appropriate assessment of the effects of the plan or project. In Natural England's view, the circumstances in which a Competent Authority can allow such plans or projects may be limited. Developments that contribute water quality effects at habitats sites may not meet the no adverse effect on site integrity test without mitigation.

Mitigation through nutrient neutrality offers a potential solution. Nutrient neutrality is an approach which enables decision makers to assess and quantify mitigation requirements of new developments. It allows new developments to be approved with no net increase in nutrient loading within the catchments of the affected habitats site.

Where properly applied, Natural England considers that nutrient neutrality is an acceptable means of counterbalancing nutrient impacts from development to demonstrate no adverse effect on the integrity of habitats sites and we have provided guidance and tools to enable you to do this.

3.0 Natural England's Role and Advice

Natural England is the government's adviser for the natural environment in England. As a statutory consultee in the planning and environmental assessment processes we provide advice to planning authorities to support them in making plans and decisions that conserve and enhance the natural environment and contribute to sustainable development.

In reviewing our advice on water quality effects on habitats sites Natural England has:

- Undertaken an internal evidence review to identify an initial list of water dependent habitats sites (which includes their underpinning Sites of Special Scientific Interest) that are in unfavourable condition due to elevated nutrient levels (phosphorus or nitrogen or both). These sites are listed in Annex C. Development which will add nutrients to these sites may not meet the site integrity test without mitigation. This will need to be explored as part of the HRA. Nutrient neutrality is an approach which could be used as suitable mitigation for water quality impacts for development within the catchments of these sites (please refer to the Nutrient Neutrality – A Summary Guide for an explanation of nutrient neutrality).
- Revised our internal guidance for planning, permitting and other HRA consultations which have the potential to have water quality and in particular nutrient effects on a habitats site.

This advice applies to the following types of habitats sites:

- Special Protection Areas (SPA) designated under the Habitat Regulations 2017.
- Special Areas of Conservation (SAC) designated under the Habitat Regulations 2017.
- Sites designated under the Ramsar Convention, which as a matter of national policy are afforded the same protection as if they were designated under the Habitat Regulations 2017.
- Sites identified or required as compensatory measures for adverse effects on SPAs, SACs and Ramsar sites.

A plan or project will be relevant and have the potential to affect the water quality of the designated site where:

- It creates a source of water pollution (e.g. discharge, surface run off, leaching to groundwater etc) of either a continuous or intermittent nature or has an impact on water quality (e.g. reduces dilution).

AND

- There is hydrological connectivity with the designated site i.e. it is within the relevant surface and/or groundwater catchment.

AND

- The designated sites interest features are sensitive to the water quality pollutant/impact from the plan/project.

For LPAs where Natural England has already provided advice on this matter: Natural England has already provided advice to some local authorities on how to address the impacts of development which has the potential to increase nutrient emissions and adversely affect the integrity of habitats protected sites. The sites subject to this previous advice are listed in Annex C Table 1. There is an agreed approach between Natural England and these authorities on applying nutrient neutrality as a mitigation measure to enable development to proceed without causing harm to the integrity of those habitats sites (which are in unfavourable condition due to elevated nutrient levels). We have advised that a likely significant effect from development that increases these nutrients cannot be ruled out³. In the absence of evidence to the contrary, our advice has been and continues to be that all new housing development proposals (including any other additional locally specific advice which has been issued), will need to consider, via an appropriate assessment, the impact of adding to the existing nutrients levels / loads where water quality targets are not being achieved for these habitats sites. Having carried out that assessment, permission for the plan or project may only be given if the assessment allows you to be certain that it will not have an adverse impact on the integrity of the site i.e. where no reasonable scientific doubt remains as to the absence of effects⁴.

We are writing to your authority now to keep you updated on the development of the approach including the availability of an updated package of tools and guidance. We recommend that your authority moves to using the updated generic Nutrient Neutrality Methodology (attached) and the updated catchment calculators (attached) in preference to existing methodologies whether produced by Natural England or your own authority. Your authority will be best placed to consider how it transitions to the new tools and guidance. Natural England recognises that for some existing catchments where nutrient neutrality is being implemented and mitigation is being actively progressed, authorities may need to consider the associated practicalities of moving to the new guidance whilst recognising their role as Competent Authority. The updated generic Nutrient Neutrality Methodology and associated catchment calculators incorporates new information and evidence, which is explained in Annex A.

For local authorities where this advice is new: Natural England advises you, as the Competent Authority under the Habitats Regulations, to fully consider the nutrients implications on the sites identified in Annex C Table 2 when determining relevant plans or projects and to secure appropriate mitigation measures (see Annex A, para 6 for mitigation options).

When considering a plan or project that may give rise to additional nutrients within the affected catchments, you should undertake a HRA. An Appropriate Assessment will be needed where a likely significant effect (alone or in-combination) cannot be ruled out, even where the proposal contains mitigation provisions. The need for an Appropriate Assessment of proposals that includes mitigation measures intended to avoid or reduce the harmful effects of a plan or project is well established in case law⁵. The Competent Authority should only grant permission if they have made certain at the time of Appropriate Assessment that the plan or project will not adversely affect the integrity of a habitats site i.e. where no reasonable scientific doubt remains as to the absence of effects⁶.

The application of nutrient neutrality as mitigation for water quality effects from development has been tested in *Wyatt v Fareham case*⁷. The High Court dismissed an application for judicial review that planning permission which applied nutrient neutrality as mitigation did not satisfy the Habitats

³ Natural England has agreed that for some sites it is appropriate to screen out insignificant discharges to ground of phosphorus where certain criteria are met. See Annex E for further details

⁴ Unless the further conditions in regs. 64 and 68 apply.

⁵ *Gladman Developments Limited v S of S for Housing, Communities and Local Government and another* [2019] EWHC 2001 (Admin)

⁶ Unless the further conditions in regs. 64 and 68 apply.

⁷ *Wyatt v Fareham BC* [2021] EWHC 1434 (Admin)

Regulations. The case has now been appealed. Where properly applied Natural England considers that 'nutrient neutrality' can be a robust way to mitigate nutrient impacts from development.

Your authority may wish to consider a nutrient neutrality approach as a potential solution to enable developments to proceed in the catchment(s) where an adverse effect on site integrity cannot be ruled out. For such an approach to be appropriate, the measures used to mitigate nutrients impacts should not compromise the ability to restore the designated site to favourable condition and achieve the conservation objectives (Further guidance is provided on what this means in practice in the Nutrient Neutrality Principles document, attached).

4.0 Plans and Projects Affected

Development

The Nutrient Neutrality Methodology enables a nutrient budget to be calculated for all types of development that would result in a net increase in population served by a wastewater system.

It covers all types of overnight accommodation including new homes, student accommodation, care homes, tourism attractions and tourist accommodation and permitted development⁸ (which gives rise to new overnight accommodation) under the Town and Country Planning (General Permitted Development) (England) Order 2015⁹.

For authorities where Natural England's advice is already being applied the development types affected remain as previously advised but are summarised in Table 1 Annex C.

This advice also applies to planning applications at the reserved matters approval stage of the planning application process, and to applications for grants of prior approval and/or certificates of lawfulness for a proposed use or operation.

Tourism attractions and tourism accommodation are included in the methodology as these land uses attract people into the catchment and generate additional wastewater and consequential nutrient loading on the designated sites. This includes self-service and serviced tourist accommodation such as hotels, guest houses, bed and breakfasts, self-catering holiday chalets and static caravan sites. Other types of proposal should be considered on their individual merits, for example conference facilities that generate overnight stays.

Other types of business or commercial development, not involving overnight accommodation, will generally not need to be included in the assessment unless they have other (non-sewerage) water quality implications. For the purposes of the Methodology, it is assumed that anyone living in the catchment also works and uses facilities in the catchment, and therefore wastewater generated can be calculated using the population increase from new homes and other accommodation. This removes the potential for double counting of human wastewater arising from different planning uses.

Permitting

Activities that require an environmental permit (such as waste operations, water discharge activities and groundwater activities) should be subject to an HRA where they are carried out within the catchment of a habitats site and there is a risk that they may affect water quality within that catchment.

Where a likely significant effect on the habitats site cannot be ruled out, they should be subject to an appropriate assessment. Mitigation will be required if an adverse effect on the integrity of the site cannot be ruled out, although depending on the type of permit being considered it may not be appropriate, to apply the standard nutrient neutrality methodology to such plans and projects. This would need to be considered on a case by case basis.

⁸ Please note the condition on permitted development relating to European sites is set out in Regulation 75 of the Habitats Regulations 2017. The statutory condition on permitted development in regulation 75 only applies the HRA procedure (via regulations 76 and 77) to statutory European Sites. It therefore only applies to Special Areas of Conservation (SAC's) and Special Protection Areas (SPA's) it does not apply to Ramsar sites, proposed SAC's or potential SPA's or to sites identified, or required, as compensatory measures for adverse effects on habitats sites.

⁹ Planning permission granted for permitted development is subject to regs. 75-78 of the Habitats Regulations.

Other Plans and Projects

Whilst nutrient neutrality is only currently being applied to development that would result in a net increase in population served by a wastewater system, the HRA requirements will apply to any plans or projects, including agricultural or industrial plans and projects that have the potential to release additional nitrogen and / or phosphorus into the system and that require an LPA's or the EA's consent, permission or approval.

A case-by-case approach will need to be adopted for these. Early discussions with Natural England via our chargeable Discretionary Advice Service (DAS) are recommended [Natural England Discretionary Advice Service](#).

Competent Authorities must be cognisant of their duties under the Habitats Regulations when performing any of their functions. Competent Authorities may reasonably conclude that a HRA is required whenever they receive an application for any consent, approval, licence or permission for plans and projects not expressly referenced in this advice that may affect a habitats site. Natural England would welcome further discussion with you on any other types of plans and projects that you consider may have nutrients impacts.

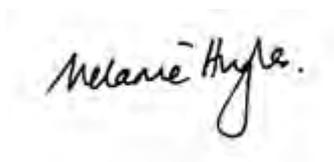
5.0 Supporting Information

Annex A of this letter outlines the tools and guidance documents that will support LPAs in implementing this advice. There are also a suite of documents appended to this email including the generic Nutrient Neutrality Methodology, catchment specific calculators and associated guidance, catchment maps, Nutrient Neutrality Principles, Nutrient Neutrality – A Summary Guide and site specific evidence documents. We recommend reading the Nutrient Neutrality – A Summary Guide to help your understanding of what is a complex issue. Natural England has been working closely across government departments (Defra and DLUHC) in the preparation of this support package and will continue to do so in the development of longer term solutions.

The Planning Advisory Service will be hosting detailed teach ins and Q&A sessions on nutrient neutrality and we therefore strongly advise joining these as a first step to understanding the issue and as an opportunity to raise questions. Please follow the link for further details: [Nutrient neutrality and the planning system | Local Government Association](#)

Area Team contacts have been provided in Annex G as an initial point of contact for informal discussions. However, should you have any detailed or technical questions concerning this advice, please contact consultations@naturalengland.org.uk marked for the attention of the relevant Area Team. Please ensure that any formal consultations are also sent to consultations@naturalengland.org.uk.

Yours faithfully,



Melanie Hughes

Sustainable Development Programme Director

ANNEX A: Supporting Information

This Annex summarises the key information and tools that are available to enable LPAs to implement Natural England's advice contained in this letter. It also explains how to take account of the following issues in any HRA:

- Habitats sites which are in unfavourable condition due to nutrients
- Use of permitted Wastewater Treatment Works (WwTW) headroom
- Summary of the updated generic Nutrient Neutrality Methodology
- Status of the National Nutrient Methodology and Calculators
- Mitigation options
- Forthcoming tools and guidance

1.0 Available Tools and Guidance

To help competent authorities take account of these water quality issues and develop strategic solutions, Natural England has provisionally developed the following tools and guidance:

1. A national generic Nutrient Neutrality Methodology (attached)
2. A national map showing the affected catchments (Annex B)
3. Table 1 listing the habitats sites that Natural England has previously advised are in unfavourable condition due to excessive nutrients and will require a HRA and where nutrient neutrality is a potential solution to enable development to proceed (Annex C).
4. Table 2 listing the additional habitats sites which are in unfavourable condition due to excessive nutrients which will require a HRA and where nutrient neutrality is a potential solution to enable development to proceed (Annex C).
5. A nutrient assessment methodology decision tree (Annex D)
6. A HRA Flow chart (Annex E)
7. Thresholds for insignificant levels of phosphorus discharges to ground (Annex F)
8. Area Team contacts for each habitats site and catchment (Annex G)
9. Catchment specific Nutrient Neutrality Calculators and associated Calculator Guidance
10. Detailed catchment specific maps (attached)
11. Evidence summary for each habitats site (new catchments only) including, brief site description, habitats site designated water dependent features, names of component SSSIs where relevant and summary of water quality data including targets and exceedances (attached).
12. Nutrient Neutrality Principles (attached)
13. Nutrient Neutrality – A Summary Guide to Nutrient Neutrality

The Nutrient Neutrality Methodology is a national generic methodology which can be used for all affected catchments and sites (as listed in Annex C). The methodology can be used for both phosphorus and nitrogen. It provides a framework and a set of agreed "input values" to enable a nutrient budget to be determined for any development draining into a habitats site. These values are based on updated information and evidence; Natural England considers that they are suitably precautionary¹⁰ and address impacts in perpetuity to remove risks to site integrity beyond reasonable scientific doubt. The nutrient budget calculated should form part of the Appropriate Assessment (AA) of any HRA produced to address nutrient impacts on affected habitats sites.

The HRA Flow Chart summarises the key stages in the HRA process and the questions which need to be answered in relation to the habitats site and the proposed development at the screening and the appropriate assessment stages.

Guidance on Thresholds for Insignificant Effects from Phosphorus Only. This identifies the conditions which must be met to enable the effects of phosphorus, where it discharges to ground, to be considered as being insignificant. Where best available evidence indicates that these

¹⁰ Precautionary values are used for key variables and an additional buffer is applied in stage 4 of the methodology.

conditions are met, Natural England's advice is that a conclusion of no LSE, either alone or in combination, for phosphorus can be reached. Note this does not apply to nitrogen.

The Catchment Calculators have been developed for each designated habitats site and its catchment. They enable nutrient budgets to be calculated for phosphorus and nitrogen. The calculators will be in an Excel spreadsheet format. There will be an associated guidance document for each calculator.

Site Specific Catchment Maps show the extent of the affected catchment. Natural England advises that a HRA of water quality impacts on the habitats sites is undertaken for developments that are within, or discharge to, Wastewater Treatment Works (WwTW) that are within these catchments.

Evidence Summary for each habitats site. This document includes the site name and site details including reasons for designation, nutrient pressure (i.e. whether it is nitrogen, phosphorus or both), water quality evidence and information on the underpinning Sites of Special Scientific Interest (SSSIs) for the habitats site.

Nutrient Neutrality Principles. These set out the key principles which must be met for nutrient neutrality to be an effective mitigation measure which can be relied upon to enable development to proceed that would otherwise adversely affect the integrity of habitats sites.

2.0 Where a Habitats Site is Currently Unfavourable Due to Nutrients

Where a site is considered unfavourable due to exceeded nutrient levels and there is the possibility of further nutrient loading from a new plan or project, Natural England advises that Competent Authorities need to carefully consider the circumstances where plans or projects can be authorised. In many cases, an Appropriate Assessment (AA) is likely to be the appropriate stage to consider these matters more thoroughly.

Where the plan or project will (or it cannot be ascertained that it will not) contribute additional significant nutrients, alone or in-combination directly to, or upstream of, any unfavourable location which is important for maintaining or restoring the sensitive designated interest features, then Natural England advises that either there is a Likely Significant Effect (LSE) or a LSE cannot be ruled out and therefore, an Appropriate Assessment should be undertaken. We advise that as the Competent Authority you should consider the implications of relevant case law in any HRA. Annex F identifies "Thresholds for Insignificant Effects" for phosphorus discharges to ground.

3.0 Use of Permitted Wastewater Treatment Works (WwTW) Headroom

Headroom (flow or quality) in WwTW discharge permits has largely come about due to decisions being made by the Competent Authority based on taking a 'fair share' approach that relies on proportionality (i.e. relying on action by each sector to achieve favourable conservation status) and/or through water companies significantly over-performing on their permits. In many situations, headroom has been eroded as the habitats site water quality objectives have become more stringent, or there is new available information since the last AA of the permit.

Competent Authorities who wish to rely on the reasoning or conclusions in previous AA should consider the age of the AA, its robustness and whether evidence or circumstances have changed and therefore whether additional consideration is needed. Careful consideration will be needed where the habitats site feature is unfavourable due to elevated nutrient levels and plans or projects contribute further loading. Competent Authorities should consider:

- Any changes to the habitats site nutrient objectives or related ecological objectives since the AA was undertaken.
- Any new relevant information since the AA e.g. change to site condition, information on how measures relied on in the AA have performed.

- Whether the previous AA complies with current legal requirements as a result of any changes to Case law.
- Whether any measures taken into account in the AA can be still be safely relied on to deliver the anticipated effects so that no reasonable scientific doubt remains as to their efficacy and delivery. For example, if a decision on a permit was based on another sector (such as agriculture) also delivering reductions to enable the site to achieve the water quality objectives, those measures to be taken on other sectors should be sufficiently certain so that they can lawfully be considered in an AA.

The preferred approach is to have a strategic plan which considers what is required from all sources (e.g. Diffuse Water Pollution Plan /Nutrient Management Plan) based on the latest evidence, is sufficiently certain and can therefore be used to identify and enable the development of WwTW headroom that can be used for growth, which competent authorities can then rely on to inform their AA. However due to the difficulties with providing sufficient certainty in these plans this may not be possible in the short to medium term for some habitats sites and may remain a longer term aim.

4.0 Updated Nutrient Neutrality Methodology

This new methodology incorporates updated information as detailed below. For those authorities which are currently implementing nutrient neutrality Natural England recommends that they move to applying the updated methodology (attached) and the catchment calculators (attached) in preference to any existing methodologies whether produced by Natural England or your own authority.

- The Generic Methodology includes the latest version of Farmscoper (version 5) which includes more up to date values for the various variables. The updated approach also uses the actual outputs rather than averaged values from Farmscoper for detailed farm types broken down by rainfall, drainage and Nitrate Vulnerable Zones. The benefit of taking the detailed farm types approach is that it offers a more specific budget calculation for the actual nutrient losses from the development or mitigation land to be taken into account.
- The Generic Methodology covers all potential different situations on water usage that might occur across the full range of catchments.
- It provides a more consistent approach for dealing with onsite wastewater treatment systems.
- Pet waste is not considered in the greenspace export coefficient as this type of waste is taken into account in the urban surface water run off element of the calculator.
- The new methodology uses a different approach for calculating the urban export co-efficient so that it is applicable across the country. The values take into account the type of urban land and development site specific rainfall. This results in export values that will be specific to the rainfall at the location within the catchment.

5.0 Status of the National Nutrient Methodology and Calculators

Natural England is issuing the National Generic Methodology (and the associated catchment calculators) to provide Local Planning Authorities with the tools to progress nutrient neutrality as a potential mitigation solution to enable development that would otherwise adversely affect the integrity of habitats sites to proceed. However, at present this guidance **should be considered as provisional** due to the outstanding appeal to the Court of Appeal in **Wyatt v Fareham BC** [2021] EWHC 1434 (Admin), which although not concerned with the National Generic Nutrient Neutrality Methodology, could impact on certain elements contained within the Methodology because that case considers a similar (but not identical) earlier methodology for the Solent region. The Court of Appeal has granted permission for the appeal to be heard. The dates of the hearing are 5th and 6th April 2022. The outcome of the appeal hearing is not known. Nevertheless, Natural England is encouraged that the Judge in the High Court upheld Natural England's nutrient neutrality approach in principle and has responded to the Judge's comments in the Methodology. Natural England

intends to review this Methodology following judgement in the appeal in **Wyatt** which may require amendments to be made to the Methodology.

6.0. Mitigation Options

Mitigation to enable development to proceed within the affected catchments of the designated sites listed in Annex C can include nutrient neutrality as an option to avoid either permanent, or temporary increases in nutrients on the affected sites. Suitable mitigation measures might include constructed wetlands, land use change or retrofitting of Sustainable Urban Drainage systems (SUDs). Such measures must be effective for the duration of the impacts. In the case of new housing the duration of the impact is typically taken as in perpetuity, with the costs of maintaining, monitoring and enforcing mitigation calculated for a minimum of 80 – 125 years. It does not, however, follow that mitigation is not needed after that period, but rather the expectation is the mitigation will continue indefinitely (e.g. through securing appropriate permanent land use change).

There may be circumstances in which it is possible to define the 'lifetime of the development' more precisely, for example where consent is sought for the construction and use of a temporary structure that will be removed after a fixed period. In those circumstances, a Competent Authority may require mitigation to be maintained for a shorter period providing the Competent Authority is certain that adverse impacts on the integrity of a habitats site will not occur after the mitigation is removed. In those circumstances, a bespoke nutrient budget will be required, and early discussions with Natural England via our chargeable DAS are recommended [Natural England Discretionary Advice Service](#).

Natural England has identified that nutrient neutrality is an option which can be used to mitigate the impacts of excess nutrients from development for the majority of sites listed in Annex C. However, there may be instances where due to the nature of the habitats site and/ or the location and scale of development it may not be appropriate to apply nutrient neutrality, as doing so would compromise the ability to restore the site to favourable conservation status in the long term, or it may not be possible to identify mitigation which will enable the development to be nutrient neutral. Situations where this is more likely to apply are explained in Annex C.

The extent of these nutrient neutrality constraints will be site and often development specific so will need to be considered on a case-by-case basis. Natural England recommends that Competent Authorities should carefully consider whether it is possible to allocate development in catchments or parts of catchments of sites which are likely to have significant constraints in being able to apply nutrient neutrality. Where nutrient neutrality cannot effectively mitigate the nutrient impacts of new developments, then consent should only be granted where other mitigation can effectively prevent an adverse effect on the integrity of site.

When consulting Natural England on proposals with the potential to affect water quality resulting in nutrient impacts on habitats sites, please ensure that a Habitats Regulations Assessment is included which has been informed by the Nutrient Neutrality Methodology (attached). Further guidance on the process is provided by the Decision Tree (Annex D) and HRA flow Diagram (Annex E) Without this information Natural England will not be in a position to comment on the significance of the impacts or the scope of any mitigation which may be required. For large scale developments, Natural England may provide advice on a cost recovery basis through our Discretionary Advice Service

All queries in relation to the application of this methodology to specific applications or development of strategic solutions will be treated as pre-application advice and therefore subject to chargeable services.

7.0 Forthcoming Tools and Guidance

Natural England's SSSI Impact Risk Zones will also be updated to include the affected catchments.

Annex B: National Map of Catchments



European protected sites requiring nutrient neutrality strategic solutions Nutrient neutrality SSSI catchments

- SSSI subject to nutrient neutrality strategy
- Nutrient neutrality SSSI catchment

Produced by Defra Spatial Data Science
 © Defra 2021, reproduced with the permission of Natural England, <http://www.naturalengland.org.uk/copyright>.
 © Crown Copyright and database rights 2021. Ordnance Survey licence number 100022021.



Annex C: Habitats sites in unfavourable condition and where nutrient neutrality has been identified as a potential mitigation solution to enable development to proceed.

Table 1: Existing sites in unfavourable condition due to excessive nutrients which require a Habitats Regulations Assessment (HRA) and where nutrient neutrality is being deployed as mitigation.

Habitats Site & Catchment	LPA Affected	Nutrient	Summary of Development Types Affected	Nutrient Neutrality Methodology and Calculator produced by Natural England or LPA*.
Poole Harbour SPA / Ramsar	Dorset Council Bournemouth, Christchurch and Poole Council	Nitrogen and Phosphorus	Additional development that will result in a net increase in population served by a wastewater system, including new homes, student and tourist accommodation	Nitrogen Reduction in Poole Harbour Supplementary Planning Document (SPD)
The Solent	Basingstoke and Deane Borough Council Chichester District Council East Hampshire District Council Eastleigh Borough Council Fareham Borough Council Gosport Borough Council Havant Borough Council Isle of Wight Council New Forest District Council New Forest National Park Authority Portsmouth City Council South Downs National Park Authority Southampton City Council Test Valley Borough Council Wiltshire Council Winchester City Council	Nitrogen for existing catchment (River Itchen includes Phosphorus and Nitrogen. See River Itchen in Table 2 for further details)	Additional development that will result in a net increase in population served by a wastewater system, including new homes, student and tourist accommodation	Methodology and Calculator developed and provided by Natural England.
River Avon SAC	Bournemouth Christchurch and Poole Council	Phosphorus	Additional development that will result in a net increase in population served by a	Interim Phosphate Calculator

	Dorset Council New Forest District Council New Forest National Park Authority Test Valley Borough Council Wiltshire Council		wastewater system, including new homes, student and tourist accommodation	
River Camel SAC	Cornwall Council	Phosphorus	<ul style="list-style-type: none"> Additional development that will result in a net increase in population served by a wastewater system, including new homes, student and tourist accommodation. Additional locally specific advice 	Phosphate Calculator developed by consultants on behalf of Local Planning Authority
Stodmarsh SAC/Ramsar	Ashford Borough Council Canterbury City Council Dover District Council Folkestone and Hythe District Council Maidstone Borough Council Swale Borough Council	Nitrogen and Phosphorus	Additional development that will result in a net increase in population served by a wastewater system, including new homes, student and tourist accommodation.	Methodology and Calculator developed and provided by Natural England.
River Wye SAC (only applies to the River Lugg component)	Herefordshire Council Malvern Hills District Council	Phosphorus	Additional development that will result in a net increase in population served by a wastewater system, including new homes, student and tourist accommodation.	Phosphate Calculator developed by consultants on behalf of Local Planning Authority
Somerset Levels and Moors Ramsar	Dorset Council Exmoor National Park Mendip District Council Mid Devon District Council Sedgemoor District Council Somerset West and Taunton District Council South Somerset District Wiltshire Council	Phosphorus	<ul style="list-style-type: none"> Additional residential and commercial development that will result in a net increase in population served by a wastewater system, including new homes, student and tourist accommodation. Additional locally specific advice 	Methodology and calculator developed by consultants on behalf of Local Planning Authority

*Note: Nutrient neutrality calculators have been provided for all the catchments listed above, even where there is an existing nutrient neutrality calculator .

Table 2: Additional habitats sites in unfavourable condition due to excessive nutrients which require a Habitats Regulations Assessment (HRA) and where nutrient neutrality is a potential solution to enable development to proceed.

Habitats site & Catchment	LPA Affected	Nutrient
Chesil and the Fleet SAC/SPA	Dorset Council	Nitrogen and Phosphorus
Esthwaite Water Ramsar	South Lakeland Council	Phosphorus
Hornsea Mere SPA	East Riding of Yorkshire Council	Nitrogen and Phosphorus
Lindisfarne SPA/Ramsar	Northumberland County Council	Nitrogen
Oak Mere SAC	Cheshire West and Chester Council	Phosphorus
Peak District Dales SAC	Derbyshire Dales District Council High Peak Borough Council Peak District National Park Authority	Phosphorus
River Axe SAC	Dorset Council East Devon District Council Somerset West & Taunton Council South Somerset District Council	Phosphorus
River Clun SAC	Herefordshire Council Shropshire Council	Nitrogen and Phosphorus
River Derwent & Bassenthwaite Lake SAC (only applies to catchments of Bassenthwaite Lake (River Derwent and Tributaries SSSI unit 1) and River Marron (unit 124 of River Derwent and Tributaries SSSI).	Allerdale Borough Council Copeland Borough Council Eden District Council Lake District National Park	Phosphorus
River Eden SAC	Allerdale Borough Council Carlisle City Council Durham County Council Eden District Council Lake District National Park Northumberland County Council Northumberland National Park Richmondshire District Council South Lakeland Council	Phosphorus
River Itchen SAC (part of Solent Catchment)	Basingstoke and Deane Borough Council East Hampshire District Council Eastleigh Borough Council Winchester City Council	Nitrogen and Phosphorus
River Kent SAC (only applies to catchments of units 104 and 111 of River Kent SSSI)	Eden District Council Lake District National Park South Lakeland Council	Phosphorus
River Lambourn SAC	Swindon Borough Council Vale of White Horse District Council West Berkshire Council Wiltshire Council	Phosphorus
River Mease SAC	East Staffordshire Borough Council Hinckley and Bosworth Borough Council Lichfield District Council North Warwickshire Borough Council	Phosphorus

	North West Leicestershire District Council South Derbyshire District Council	
River Wensum SAC	Borough Council of King's Lynn and West Norfolk Breckland Council Broadland & South Norfolk Council North Norfolk District Council Norwich City Council	Phosphorus
Roman Walls Loughs SAC	Northumberland County Council Northumberland National Park Authority	Phosphorus
Rostherne Mere Ramsar	Cheshire East Council	Nitrogen and Phosphorus
Teesmouth & Cleveland Coast SPA/Ramsar	Darlington Borough Council Durham County Council Eden District Council Hambleton District Council Hartlepool Borough Council Middlesbrough Council North York Moors National Park Redcar and Cleveland Borough Council Richmondshire District Council Stockton-on-Tees Borough Council	Nitrogen
The Broads SAC/Ramsar (only the following are included: <ul style="list-style-type: none"> • Bure Broads and Marshes SSSI • Trinity Broads SSSI • Yare Broads and Marshes SSSI • Ant Broads and Marshes SSSI • Upper Thurne Broads and Marshes SSSI 	Borough Council of King's Lynn and West Norfolk Breckland Council Broadland & South Norfolk Council Great Yarmouth Borough Council North Norfolk District Council Norwich City Council The Broads Authority	Nitrogen and Phosphorus and
West Midlands Mosses SAC (only catchments of Abbots Moss SSSI and Wynbunbury Moss SSSI are included)	Cheshire East Council (Wynbunbury) Cheshire West and Chester Council (Abbots)	Nitrogen and Phosphorus

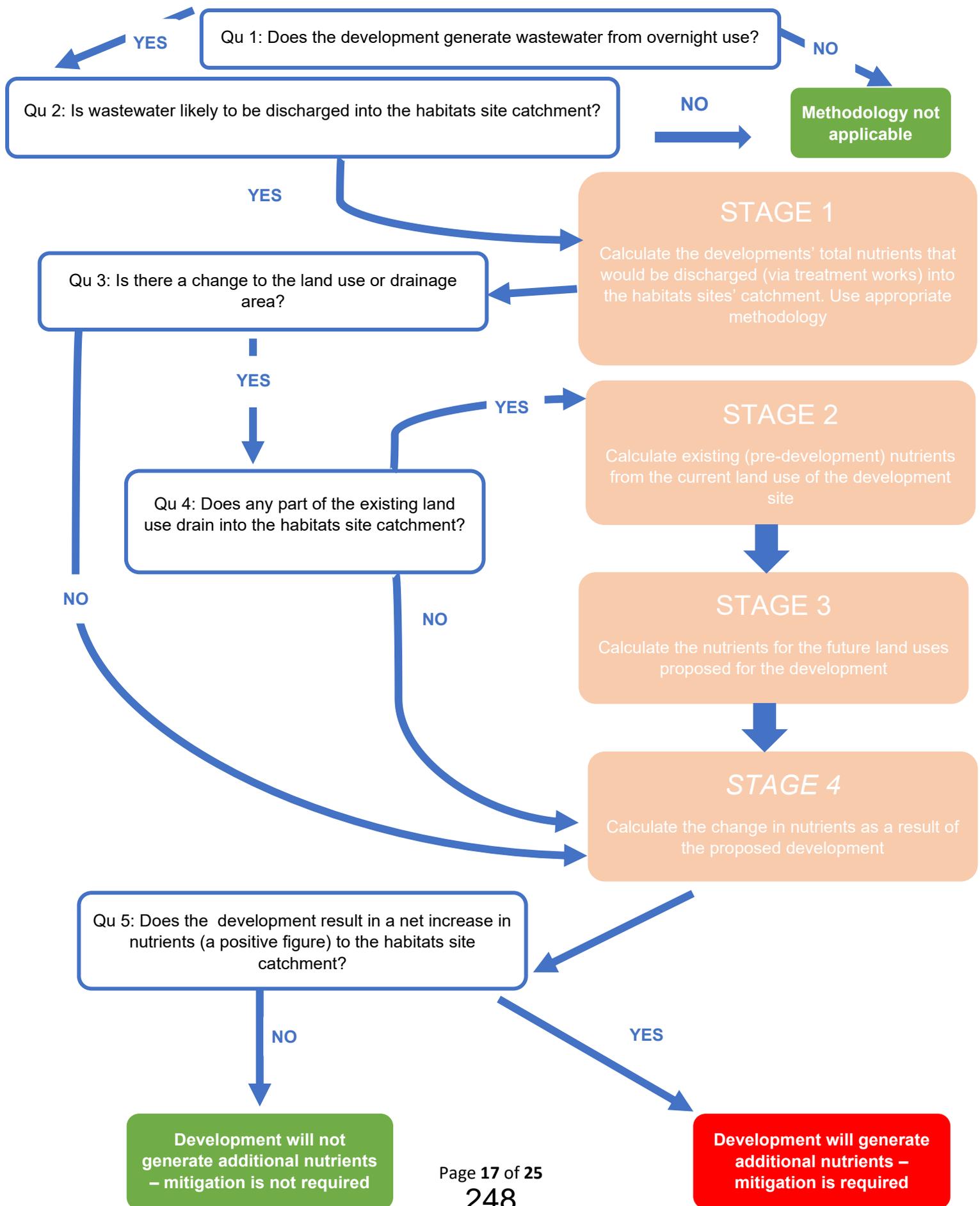
Situations where Nutrient Neutrality may not be an appropriate Mitigation Measure

- Lake or wetland sites and particularly those with long residence times or which have a limited or no outflow. For these types of sites nutrients will accumulate over time and therefore they are particularly vulnerable to even small increases in nutrients which will further hinder restoration. Where one of these sites is already unfavourable due to nutrient enrichment it is also likely that current sources of nutrients will need to be reduced to restore the site and therefore using these measures for nutrient neutrality would undermine the ability to restore the site.
- Where the development impact is direct to a habitats site terrestrial wetland habitat rather than to surface water. In these circumstances the mitigation would need to be

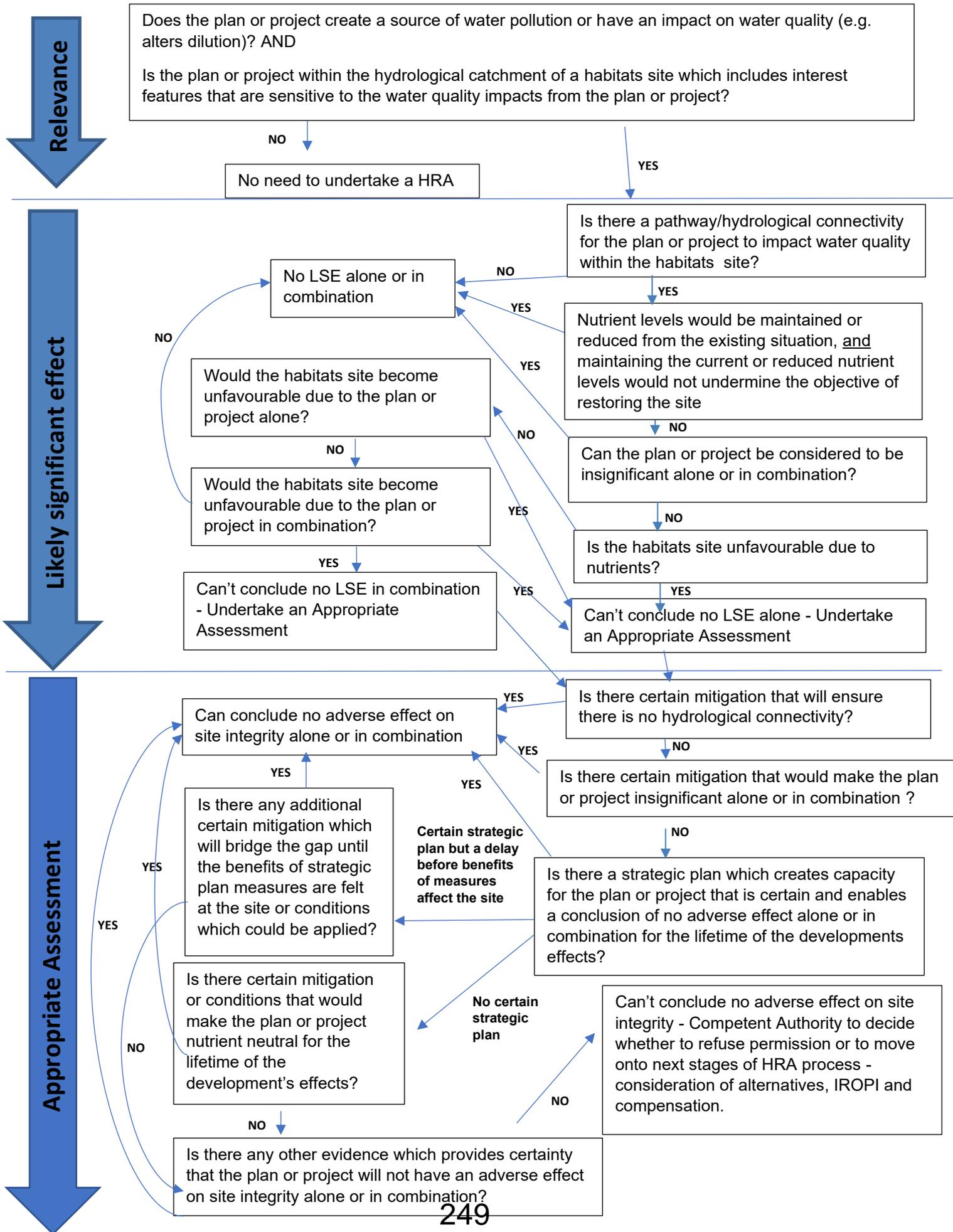
at the exact same location where the development is having its effect on the site, as reductions in nutrients in other locations of the wetland would not neutralise the effect of the development. Therefore, potential mitigation options will likely be very limited.

- Where the development impact is via groundwater discharging direct to a habitats site terrestrial wetland habitat rather than to groundwater discharging to surface water. In these circumstances there will be variation in the effectiveness of measures depending on their location within the groundwater catchment compared to development. This means measures may need to be located in the same part of the groundwater catchment to ensure that it would neutralise the nutrient increase from the development before it reaches the site, thereby constraining the area where mitigation could be targeted to a smaller area.
- Development (particularly larger developments) in the headwaters of a catchment. In these circumstances the area upstream of the development where nutrient neutrality mitigation can be located will be restricted to a small area, providing much more limited and perhaps in some cases no feasible opportunities for mitigation through nutrient neutrality, although other mitigation measures may be possible.
- Habitats sites with small catchments. Again, there will be a much more limited area where mitigation can be targeted thereby limiting potential nutrient neutrality mitigation opportunities.
- Where widespread and/or large-scale uptake of measures are needed to restore the habitats site or part of the site (e.g. identified in the DWPP or NMP) thereby significantly constraining the measures available for counterbalancing additional nutrient inputs in a way which will not undermine site restoration.

Annex D: Nutrient Assessment Methodology for Development which Generates Wastewater Decision Tree



Annex E: Flow Diagram of HRA Process for Consultations Contributing Nutrients



Annex F: Thresholds for Insignificant Effects – Phosphorus Discharges to Ground

Waddenzee established that an Appropriate Assessment (AA) is required where there is a “probability or a risk” of a significant effect on the site concerned. In light of the precautionary principle, a plan or project is likely to have a significant effect if the risk cannot be excluded on the basis of objective evidence. Any site specific rationale or thresholds to demonstrate the insignificance of effects would need to ensure that the risk of Likely Significant Effect (LSE) (alone or in combination) can be excluded. Where evidence is not currently available or it is uncertain, it would be more appropriate to take the plan or project through to AA for further consideration. It may still be possible to conclude no adverse effect on site integrity (alone or in combination) in the AA through further consideration as to the specific facts of the case in question and/or through consideration of appropriate mitigation.

Natural England currently considers that it is difficult to make robust arguments around generic standardised thresholds for levels of water quality impacts that exclude the risk of likely significant effects (alone or in combination) for all sites and situations. There are a number of different factors that are variable between sites which can influence the risk of cumulative effects and the sensitivity and vulnerability of the site and therefore what might be significant.

Thresholds for insignificant levels of phosphorus discharges to ground

Natural England considers that there is an exception to this position on generic thresholds in relation to discharges of phosphorus to ground.

Any plan or project which requires planning permission, Building Regulations approval or an environmental permit from the Environment Agency must comply with the requirements of those regulatory regimes as well as what is needed to meet the Habitat Regulations. For example, all of these regimes require that developments should be connected to the public foul sewerage network wherever this is reasonable. This includes areas where the Habitats Regulations apply and any need to reduce nutrient inputs in those areas should not lead to the installation of non-mains foul drainage systems in circumstances where connection to the public foul sewer would otherwise be considered reasonable. Any plan or project then connecting to mains would still need to also be compliant with Habitat Regulations.

Summary of evidence

Septic tank systems or package treatment plants that discharge to ground via a drainage field should pose little threat to the environment, because much of the P discharged is removed from the effluent as it percolates through the soil in the drainage field¹¹. The risk of water pollution by these types of discharges to ground depends on a range of factors that affect their success or failure and can be summarised by three key factors¹²:

1. improper location
2. poor design
3. incorrect management

¹¹ Robertson WD, Van Stempvoort ER & Schiff SL. 2019. Review of Phosphorus attenuation in groundwater plumes from 24 septic systems.

¹² MAY, L., PLACE, C., O'MALLEY, M. & SPEARS, B. 2015. *The impact of phosphorus inputs from small discharges on designated freshwater sites*. Natural England Commissioned Reports, [NECR 170](#).

Phosphorus is removed from the effluent within the drainage field through retention in the soil through sorption within the aerated soil zone and mineral precipitation. How much phosphorus is removed will depend on the soil type and phosphorus characteristics, mineral content, pH, texture, and the hydraulic loading rate. P sorption can be reversed and P desorption can occur in certain conditions e.g. change in redox conditions¹³. For the drainage field to work effectively the drainage field needs to have acceptable year round percolation rates which will be influenced by the soil type, as if they drain too quickly or too slowly effective phosphorus removal will not take place. In addition if infiltration rates are lower than the loading rate of the effluent into the drainage field then hydraulic failure can occur which results in the effluent being discharged over the soil surface. Therefore correct design of the system is important. The Building Regulations¹⁴ set out design and construction standards for septic tanks, package treatment plants and drainage fields. In relation to drainage fields they include the need for a percolation test, a method for how this should be undertaken and the minimum and maximum percolation values (V_p) which ensure that the drainage field effectively removes pollutants. This is then used to calculate the size of the drainage field required for the size of the household it will be serving.

Robertson et al (2019)⁸ found that the carbonate mineral content of the drainage field sediments can also affect the P retention within the drainage fields and therefore the distance any P plume extends. Calcareous sediments having very high P retention (average 97%), with plumes not extending beyond 10m and non-calcareous sediments showing greater variability and having a lower P retention (average 69%) with some of the P plumes extending beyond 15m up to 100m in one case.

The evidence has shown that it is the aerated drainage field sediments which provides a key function in terms of removing the phosphorus from the effluent before it enters a receiving water body (surface or groundwater). Any enhanced connectivity to a water body, which short circuits this process, is probably one of the main factors that causes pollution of habitats sites (and other water dependent sites) by these systems^{15 16}. Therefore it will be important that the drainage field is sited far enough away from any watercourse, ditch, drain etc. as well as that it is not in a location where the groundwater is high enough that comes into connection with this aerated zone. Fractured rock or fissured geology could also short circuit this process. In addition seasonal flooding can wash out the contents of the tanks. Slope also affects the way the drainage field functions, with steeper slopes having a higher risk of run off.

¹³ Mary G. Lusk, Gurpal S. Toor, Yun-Ya Yang, Sara Mechtensimer, Mriganka De

& Thomas A. Obreza. 2017. *A review of the fate and transport of nitrogen, phosphorus, pathogens, and trace organic chemicals in septic systems*, Critical Reviews in Environmental Science and Technology, 47:7, 455-541,

¹⁴ [Building Regulations, Drainage and Waste disposal](#) (2015), Document H, Section H2.

¹⁵ MAY, L., WITHERS, P.J., STRATFORD, C., BOWES, M., ROBINSON, D. & GOZZARD, E. 2015. *Development of a risk assessment tool to assess the significance of septic tanks around freshwater SSSIs: Phase 1 – Understanding better the retention of phosphorus in the drainage field*. Natural England Commissioned Reports, [NECR171](#)

¹⁶ MAY, L., DUDLEY, B.J., WOODS, H. & MILES, S. 2016. *Development of a Risk Assessment Tool to Evaluate the Significance of Septic Tanks Around Freshwater SSSIs*. [NECR 222](#)

There is also some evidence that density (i.e. number) of these types of systems in an area also has a bearing on the risk of pollution. In general, lower densities of tanks tend to cause less contamination of downstream water bodies than higher densities of tanks.

Proposed thresholds

Small discharges to ground i.e. less than 2m³/day¹⁷ that are within the surface or groundwater catchment of a designated site will present a low risk that the phosphorus will have a significant effect on the designated site where certain conditions are met:

- a) The drainage field is more than 50m from the designated site boundary (or sensitive interest feature)¹⁸ **and**;
- b) The drainage field is more than 40m from any surface water feature e.g. ditch, drain, watercourse¹⁹, **and**;
- c) The drainage field in an area with a slope no greater than 15%²⁰, **and**;
- d) The drainage field is in an area where the high water table groundwater depth is at least 2m below the surface at all times²¹ **and**;
- e) The drainage field will not be subject to significant flooding, e.g. it is not in flood zone 2 or 3 **and**;
- f) There are no other known factors which would expedite the transport of phosphorus⁹ for example fissured geology, insufficient soil below the drainage pipes, known sewer flooding, soil/geology type and its ability for P sorption/mineralisation or presence of conditions would cause remobilisation phosphorus, presence of mineshafts, etc **and**;
- g) To ensure that there is no significant in combination effect, the discharge to ground should be at least 200m from any other discharge to ground²².

¹⁷ A limit of 2m³/day is used based on this being the size used for discharges to ground in the General Binding Rules and is representative of the size of the majority of the septic tanks investigated within [NECR171](#), from which most of the criteria are based.

¹⁸ 50m is the distance as which no measurable phosphorus signal was detected at this distance (NECR171 and NECR222). Robertson *et al* (2019) also found that the majority (although not all) of plumes did not extend further than this distance

¹⁹ 40m is the distance that represents a low risk, based on there was a weak phosphorus signal this distance for some of the small discharges (NECR171 and NECR222) This is a slightly less precautionary value than the 50m distance to the Habitats site as there will be the capacity for further attenuation and dilution before the site.

²⁰ 15% is the slope that represents a low risk based on the methodology outlined in NECR222.

²¹ 2m is the groundwater depth that represents a low risk, based on very low levels being detected in soil at depth below this (NECR171 and NECR222)

²² The 200m is based on the 50m distance where no measurable phosphorus signal was detected (NECR171) for each septic tank. So for two drainage field areas not to overlap they need to be at least 100m apart. A safety factor of two is then applied to ensure that in the long term there will be the certainty that the effective drainage field phosphorus retention areas don't overlap. This then also takes account of the greatest distance that Robertson *et al* (2019) found a plume to extend which was 100m to ensure there would be no overlap. It also ensures that the maximum density of these systems is no more than one for every 4ha (or 25 per km²), as identified in NECR170.

A GIS layer is available from NE²³ which looks at conditions b, c and d above only, for the whole of England. Where this layer indicates that there is a low risk, then the three conditions (b, c & d) above can be considered to be met. Where there is a high or medium risk identified, then one or more of the three conditions (b, c & d) will not be met. This GIS layer can be shared with the EA and Local Authorities with the relevant data licence via our GI team, but not with developers due to the terms in the data licence. If site specific monitoring/modelled data is presented for conditions b, c or d which provides greater certainty than the national dataset used to produce the risk map, then this can override the risk map. It may be time consuming and/or costly to undertake site-specific monitoring that provides certainty for some of the conditions such as groundwater depth, due to the inherent variability over time and therefore the need for any monitoring to cover a long enough time period (several years) and to a sufficient frequency to determine the highest groundwater depth. So it is acceptable to rely on modelled or national dataset where these are the best available data and scientifically robust.

To consider the other three conditions (a, e and f) other data sources will need to be considered. Condition a can be looked at through using the designated site data layer²⁴ and calculating the distance from the site boundary. Condition e can use the EA flood risk maps (<https://flood-map-for-planning.service.gov.uk/>). Condition f should make use of any sewer flood data, information on local geology and soils, groundwater phosphorus concentration monitoring within the catchment or other local information which it is readily available. Elevated concentrations of phosphorus in groundwater would indicate phosphorus transport being short circuited e.g. through fissures, that it is not being effectively retained within the drainage field or it is being remobilised. It can be assumed that phosphorus is being effectively retained and not remobilised unless there is existing evidence at the discharge location or within the wider catchment which suggest that this may be occurring in the same conditions to those present at the location of the proposed discharge. Such evidence could include investigations, known soil or geological conditions or groundwater water quality (P) data from similar soil/geological conditions.

As not all of the phosphorus will be retained by the soil, condition g is to ensure that there is no in combination or cumulative effect from a number of these discharges in an area which together could add up to have a significant effect.

If conditions a to g are all met this represents a low risk that phosphate will reach the site, and not zero risk (i.e. not that no phosphorus from the discharge will ever reach the site in all cases). There will be further processes of dilution and attenuation between the drainage field and the site, which will provide further reduction and the current evidence would suggest that the scale of any inputs from these sources would not be significant.

Where best available evidence indicates that these conditions are met, Natural England advice is a conclusion of no LSE alone or in combination for phosphorus can be reached in these circumstances. Where uncertainty remains so LSE cannot be ruled out or evidence exists that there is a risk of phosphate from small discharges to ground causing a significant effect to a designated site (e.g. from SAGIS modelling or monitoring investigations), then Natural England advice is that there is a LSE or LSE cannot be ruled out and an AA should

²³. The dataset LPAs can [request the GIS layer](#) for the England sewage discharge risk map from Natural England. The dataset is called - Small_Sewage_Discharge_Risk_Zone_Map_For_England (Dissolved).

²⁴ The Special Protection Area (England), Potential Special Protection Area (England), Special Areas of Conservation (England), Possible Special Areas of Conservation (England), Ramsar (England) and Proposed Ramsar (England) data layers can be download from [Natural England Open Geodata portal](#)

be undertaken. Where evidence is presented which provides certainty that there will be no LSE even though these conditions are not met e.g. better local information, then Natural England's advice may be no LSE, but would be determined on a case by case basis.

The Competent Authority, as the decision maker, will need to determine whether it agrees with NEs advice.

For developments which allow for increases in the number of people that will be served by an existing discharge to a drainage field, it will be important to consider whether the existing system has sufficient capacity in its design to accommodate the increase, without increasing the risk of pollution.

The evidence underpinning these thresholds will be periodically reviewed and the thresholds will be amended as necessary to take account of any new evidence.

This approach does not apply to nitrogen as it does not get taken up by the soil like phosphorus.

Further work is necessary to review the evidence and determine if it is possible to establish any other generic insignificance thresholds for other development or discharge types. It may also be possible to develop site specific insignificance thresholds.

Annex G: Natural England Area Team Contacts

Habitat Site	Area Team	Area Team Manager	Additional Area Team contact
Oak Mere SAC	Cheshire and Lancashire	Ginny Hinton ginny.hinton@naturalengland.org.uk	Petula Neilson Bond
Rostherne Mere RAMSAR			
West Midlands Mosses SAC			
Estwaite Water Ramsar	Cumbria	Helen Kirkby helen.kirkby@naturalengland.org.uk	Helen Smith
River Derwent & Bassenthwaite Lake SAC			
River Eden SAC			
River Kent SAC			
River Axe SAC	Devon, Cornwall and Isles of Scilly	Wesley Smyth wesley.smyth@naturalengland.org.uk	Denise Ramsay for LPAs in Devon and Simon Stonehouse for LPAs in Somerset
River Camel SAC			Denise Ramsay
Peak District Dales SAC	East Midlands	Vicky Manton victoria.manton@naturalengland.org.uk	Ian Butterfield
River Mease SAC			
River Wensum SAC	Norfolk and Suffolk	Helen Dixon helen.dixon@naturalengland.org.uk	Jack Haynes
The Broads SAC/Ramsar			
Lindisfarne SPA/Ramsar	Northumbria	Christine Venus christine.venus@naturalengland.org.uk	Lewis Pemberton Andrew Whitehead
Roman Walls Loughs SAC			

Teesmouth & Cleveland Coast SPA/Ramsar			
Stodmarsh SAC/Ramsar	Sussex and Kent	James Seymour james.seymour@naturalengland.org.uk	Sue Beale
Solent	Thames Solent	Allison Potts allison.potts@naturalengland.org.uk	Becky Aziz
River Itchen SAC		Please contact the Thames Solent Team for developments in Hampshire and Isle of Wight and the Kent and Sussex Team for developments in Chichester and Wessex Team for developments in Wiltshire.	Becky Aziz
River Lambourn SAC			Amy Kitching
River Avon SAC	Wessex	Rachel Williams rachel.williams@naturalengland.org.uk	Tom Lord
Somerset Levels & Moors Ramsar			
Chesil and the Fleet SAC/SPA			
Poole Harbour SPA Ramsar			
River Clun SAC	West Midlands	Emma Johnson emma.johnson@naturalengland.org.uk	Hayley Fleming
River Lugg (part of River Wye SAC)			
West Midland Mosses SAC			
Hornsea Mere SPA	Yorkshire and Lincolnshire	Paul Duncan paul.duncan@naturalengland.org.uk	Hannah Gooch



Nutrient neutrality principles and use of Diffuse Water Pollution Plans (DWPPs) and Nutrient Management Plans (NMPs)

Nutrient Neutrality Principles

Nutrient neutrality is a means of ensuring that a plan or project does not add to existing nutrient burdens so there is no net increase in nutrients as a result of the plan or project (i.e. it “consumes its own smoke”). Where nutrient neutrality is properly applied and the existing land use does not undermine the conservation objectives¹, Natural England considers that an adverse effect on integrity alone and in combination can be ruled out.

Where neutrality measures are needed, the purpose of these mitigation measures is to avoid impacts to the designated sites, rather than compensating for the impacts once they have occurred.

There are a number of principles that any nutrient neutrality mitigation would need to meet in order for it to meet the requirements of the Habitat Regulations. Natural England’s advice is that any neutrality measures relied on in an Appropriate Assessment (AA) should:

1. Have scientific certainty that the measures at the time of the AA will deliver the required reduction to make the plan or project ‘neutral’.
 - The competent authority should explain in its AA how any measures relied upon are certain at the time of assessment. Natural England considers that references to ‘certainty’ in the context of a HRA means that **“no reasonable scientific doubt remains as to the absence of such effects”**. Absolute certainty is not required; a competent authority could be certain that there would be no adverse effects even though, objectively, absolute certainty is not proven.
 - For some types of mitigation, particularly those that are more novel or complex, there will be uncertainty as to the exact effectiveness the mitigation may deliver. One approach to ensure sufficient certainty may be to apply a precautionary efficacy value based on the evidence and/or providing greater mitigation than is required. Were a precautionary figure is used, monitoring of the mitigation measure may provide evidence and therefore certainty in a higher efficacy at a point in the future, which at that point could then be relied upon in an AA for future development. There may be instances where reasonable scientific doubt remains around the effectiveness of a mitigation measure (e.g. an extremely novel form of mitigation) In such instances it

¹ See Annex 1.

may not be possible to use this type of mitigation until further evidence is collected to provide the sufficient level of certainty e.g. the measure is put in place and the efficacy monitored before it is relied upon in an AA.

2. Have practical certainty that the measures will be implemented and in place at the relevant time when the AA is undertaken, e.g. secured and funded for the lifetime of the development's effects.
 - The competent authority should explain in its AA how any measures relied upon are certain at the time of assessment. There may be different ways to achieve this certainty. One common method of ensuring full implementation of measures that are relied on in an AA would be for the measures to be secured through legally binding obligations that are enforceable.
 - Mitigation must be in place for the lifetime of the proposed development so in most cases this will be in perpetuity. We generally define in perpetuity between 80-125 years, however, it does not follow that mitigation is not needed after that period.
3. Be preventive in nature so as to avoid effects in the first place rather than offset or compensate for damage. This applies both temporally and spatially.
 - Temporally:
 - Consideration will need to be given as to (i) when the measures will come online and into effect and (ii) when the pollutants come online as the impact may be phased and take place over the lifetime of a development, rather than on day one. It may be that a range of measures may be needed to address impacts over time.
 - There may be cases where nutrient neutrality is not, at first, achieved because there is a time lag between the initial effects from the plan or project at the Habitats site compared to the benefits of neutrality measures (on-site or off-site) being felt at the Habitats site. One option is to consider whether bridging measures or reasonable restrictions on occupation or phasing could close that time lag so that neutrality can be achieved.
 - Spatially:
 - Consideration will need to be given as to the location of any mitigation relative to where the development will have its impact on the Habitats site to ensure that it avoids any increase in nutrients within the site. The mitigation measure will need to be upstream of the location where the development site run off and wastewater input will have its effect on the Habitats site. This means if the wastewater/run off is direct to (i.e. within) the Habitats site boundary the measures will need to be upstream of this location. If the discharge is indirect i.e. upstream in the catchment of the Habitats site, then the mitigation measures can be up or downstream within the catchment, as long as it will provide the offsetting before the point at which the development impacts the Habitats site.
 - There may be cases where it is not possible to provide mitigation on land outside of the development, because it will not actually remove the impact from the development. For example, a terrestrial wetland

(e.g. fen/bog) where there is a direct discharge to the wetland which is not to open water but to the wetland itself, then there may be no or very limited ability to avoid this localised impact, due to there being no or very limited other sources which contribute to this exact location.

4. Not undermine the objective of restoring the site to favourable condition by making the 'restore' objective appreciably more difficult or prejudicing the fulfilment of that objective.
 - For example, where there is only a limited pool of measures available for addressing an existing exceeded threshold and these are used to enable growth rather than bring the site into favourable condition, this may undermine the 'restore' objective. The key question would be whether, in fact, there is actually a limited pool of measures in the relevant circumstances.
 - Additionally, the implementation of mitigation measures through nutrient neutrality should not prevent the implementation of future measures under Articles 6(1) and 6(2) of the Habitats Directive (incorporated through Regulations 9(1) and 9(3) of the Habitats Regulations) aimed at restoring the site to favourable conservation status in the long term. This may be the case where, for example, proposed off-site mitigation land has been earmarked for the implementation of positive measures designed to improve the conservation status of the site and this opportunity for improvement in the quality of the site would be lost if the land were instead used for mitigation for a specific project.
5. Not directly use or double count measures that are already in place or must be put in place to protect, conserve or restore the site (to meet article 6(1) and (2) requirements) in order to justify new growth.
 - For example, those measures that have been identified in a Diffuse Water Pollution Plan (DWPP) or Nutrient Management Plan (NMP) as needed to restore the site (such as wastewater treatment work upgrades that do not take account of growth) cannot also be used as mitigation for development².
6. Be carefully justified together with calculations of the change in the nutrient contribution before and after the development taking account of any mitigation on land outside the development.
 - Over-estimating the existing nutrient contribution from development land or mitigation land outside the development site and/or under-estimating the nutrient contribution from the development to reduce the scale of nutrient reduction mitigation needed to meet 'nutrient neutrality' would not satisfy the precautionary requirements of the Habitats Regulations. The national generic nutrient neutrality methodology sets out how calculations can be undertaken.

² These improvements under article 6(1)(2) obligations (accessed through regulation 9 of the Habitats Regulations) may give context to the environmental condition of the site. At the time of AA, where these measures can be accurately and soundly established to change the baseline, Natural England considers that the impact of the plan or project can be considered against that changed baseline.

- To be able to take account of WwTW upgrades in any NN calculations, the upgrades need to have been agreed and funded through the water companies Periodic review process. Those that have already been agreed as part of the Water Industry National Environmental Program (WINEP) for PR19 and will therefore be implemented by end of 2024 can be taken into account and have been included within the NN calculators.
7. Ensure that there is no real risk that the existing land use, which may be maintained by neutrality (or an improvement), undermines the conservation objective to 'restore' the site to favourable condition. This applies to the existing land use at the development site and at any off-site mitigation land. See Annex 1 for further details.

Mitigation within the development site should ideally be considered first to minimise the contribution from the development itself, but where it is not possible to provide or secure the necessary mitigation in this way, then mitigation on land outside the development can be considered.

Use of Diffuse Water Pollution Plans and Nutrient management plans

Natural England's experience to date is that the current DWPPs/NMPs may not necessarily provide sufficient certainty to enable a conclusion of no adverse effect on site integrity where plans or projects contribute additional nutrient loading, particularly where there is a lack of clarity on:

- The efficacy of measures to deliver the required reductions in nutrient levels, including whether all necessary measures have been identified to bring the site into favourable condition with respect to water quality. Although a precautionary approach to the identification of the measures needed could enable there to be greater certainty e.g. by assuming worst case efficacy or adding a % increase or safety factor to address residual uncertainties; and/or
- Whether the plan creates sufficient environmental capacity below the water quality objectives for the new development; and/or
- The mechanisms for delivery, the required uptake and how their implementation is secured.

In such cases, it may be possible to further develop the DWPPs/NMPs to move them to a place where they do have sufficient certainty in the future to rely on them in an AA, as a longer term solution.

Whilst current DWPP/NMPs may not be sufficiently certain to rely on in a HRA so nutrient neutrality is not needed, they can still be important in informing adoption of nutrient neutrality for a given scheme. They will help to provide an understanding of the risk of the development undermining actions by others to deliver the restore target e.g. whether there are indeed only a limited pool of measures available and whether maintaining the current nutrient contribution of the development and any avoidance land will undermine site restoration.

Annex 1 - Ensuring Nutrient Neutrality does not sustain a nutrient contribution that will undermine the achievement of the restore objective.

The basis of nutrient neutrality is that there is no increase from the existing nutrient contribution at a Habitats site as a result of the plan or project. Where a Habitats site is already unfavourable, there is the potential that making a fresh decision under the HRA process to sustain the current nutrient contribution could mean that development may inadvertently undermine the achievement of the restore objective by others.

When determining whether nutrient neutrality is appropriate for certain types of plans or projects in a particular catchment, consideration should be given to the existing land use contribution which may be maintained under nutrient neutrality. This applies to the existing land use at the development site and at any off-site mitigation land. In some cases, there may be no real risk that the existing land use undermines the conservation objective to restore the site to favourable condition. Under the HRA authorisation regime (e.g. regulation 63), developers are not responsible for achieving the restore objectives of the site. Instead, competent authorities must ensure, prior to giving their authorisations, that their plans or projects do not undermine the achievement of the conservation objectives.

However, where there is a real risk that the existing land use would undermine the conservation objective to restore the site to favourable condition, then plans or projects which lock in high nutrient sources may need to do more to reduce the contribution from the existing land use to a level which is compatible with restoration (e.g. where reductions in existing land use from those types of plans or projects are needed across the catchment).

Before authorising a plan or project, competent authorities must be certain that an adverse effect on site integrity can be ruled out. Therefore, competent authorities should be considering in their AAs whether or not the plan or project will hinder achievement of the conservation objectives. In addition, Natural England will advise competent authorities where it considers that to be credible evidence that the existing land use contributions represent a real risk to compromising the restore objectives in a meaningful way. The DWPP/NMP may provide useful evidence for both the competent authority and Natural England to understand where this may be the case and what nutrient levels may be needed to achieve favourable condition from different sources e.g. agricultural land or existing private discharges etc.

Nutrient Neutrality

A summary guide

This document has been produced by Natural England, Defra and DLUHC to provide a non-technical summary of nutrient neutrality for water quality. This is supplementary to Natural England's formal advice and guidance.

Nutrient Pollution

Nutrient pollution is a big environmental issue for many of our most important places for nature in England. In freshwater habitats and estuaries, increased levels of nutrients (especially nitrogen and phosphorus) can speed up the growth of certain plants, disrupting natural processes and impacting wildlife. This process (called 'eutrophication') damages these water dependent sites and harms the plants and wildlife that are meant to be there. In technical terms it can put sites in 'unfavourable condition'*. The sources of excess nutrients are very site specific but include sewage treatment works, septic tanks, livestock, arable farming and industrial processes.

**What is unfavourable condition? In this context, a site in 'unfavourable condition' is not being adequately conserved and/or the results from monitoring show that important features of the site are not meeting all the mandatory site-specific targets*

Nutrient pollution and development

Where sites are already in unfavourable condition, extra wastewater from new housing developments can make matters worse and undermine ongoing efforts to recover these sites. However, when development is designed alongside suitable mitigation* measures, that additional damage can often be avoided.

**What is mitigation? In this context, we mean action taken to stop nutrient pollution impacting sites. This could be onsite – preventing nutrient pollution directly from the development in question, or offsite – reducing nutrients from other sources that affect the site overall.*

Nutrient pollution and the law

Many of our most internationally important water dependent places (lakes, rivers, estuaries, etc) are designated as protected under the [Conservation of Habitats and Species Regulations 2017 \(as amended\)](#). We call these 'Habitats Sites'.

When competent authorities* assess projects and planning applications, they must consider whether the plan or project is likely to have significant effects on the Habitats Sites. They do this using the Habitats Regulations Assessment (HRA), made up of several distinct stages of assessment which must be undertaken in accordance with this legislation.

**What is a competent authority? In this context, a competent authority includes planning decisions-makers such as Local Planning Authorities (LPAs), the Planning Inspectorate and the Secretary of State. It also includes all government departments, public bodies (such as the Environment Agency and Ofwat), Statutory Undertakers (such as water companies) and persons holding public office.*

When a planning application is submitted where significant environmental effects cannot be ruled out, a competent authority (usually the LPA or Environment Agency) must make an appropriate assessment of the implications of the plan or project for that site, taking account of the site's conservation objectives. If the appropriate assessment cannot rule out damage due to nutrient pollution, planning permission would be denied under this legislation unless mitigation to reduce or eliminate the impact can be put in place.

Natural England has reviewed the available evidence on Habitats Sites that are in unfavourable condition due to high nutrient levels. Where plans or projects will contribute additional nutrients to these sites, then a robust Habitats Regulations Assessment is required in accordance with well-established principles. This may highlight the need for new solutions to inform sustainable development to protect these sites.

Nutrient neutrality – a proposed approach

Natural England has issued advice highlighting the need to carefully consider the nutrients impacts of any new plans and projects on internationally protected Habitats Sites, and whether mitigation is needed to protect sites from additional nutrient pollution. This falls under Natural England's statutory duties and is part of a coordinated cross departmental response by government, supported by Defra and DLUCH.

Natural England's advice comes with tools and guidance to help developments demonstrate that they do no harm, so that they can go ahead. We call this approach 'nutrient neutrality'. The methods created by Natural England use the latest evidence and bespoke catchment calculators to assess the site's current nutrient status and the likely impact of any new development. This allows competent authorities and developers to identify the level of mitigation required to cancel out the additional nutrient pollution expected from a particular project.

Development plans can be considered 'nutrient neutral' where they can demonstrate that they will cause no overall increase in nutrient pollution affecting specified Habitats Sites.

With this vital information, developers can deliver projects that demonstrate zero net increase in nutrient levels within the catchments of these Habitats Sites (or "nutrient neutrality"), allowing competent authorities to make more informed planning decisions.

This approach is not mandatory and, if they prefer, competent authorities can determine their own solutions as appropriate. Nutrient neutrality is intended to be an interim solution whilst we return Habitats Sites to favourable condition.

Multiple benefits

Suitable mitigation measures might include constructed wetlands, changes in land management or retrofitting Sustainable Urban Drainage systems within the catchment of the impacted site(s). This means that nutrient damage to Habitats Sites will not be made worse through these developments, allowing nature recovery plans to start reversing existing damage. Importantly, development that can mitigate nutrient impacts and demonstrate nutrient neutrality will be permitted, assuming it passes all other planning requirements.

On top of this, many mitigation measures will involve a shift towards low nutrient loading practices such as creation of new wetlands, woodland or grasslands. This provides the additional benefit of creating new spaces for nature and recreation as well as offering potential new income streams for landowners.

Whilst nutrient neutrality will not solve all the challenges facing our freshwater systems, in areas where nutrient neutrality has already been implemented the method has been shown to help identify solutions for the joint pressures of meeting new housing demands, whilst protecting our most important sites for wildlife.

Natural England's role

Natural England's role in the planning process is an advisory one, to help LPAs make good and robust decisions.

One of Natural England's statutory roles is to provide advice about the environmental impacts of plans or projects on sites which are important for nature. This advice takes account of the relevant legislation and case law which seeks to protect, conserve and enhance the environment.

The LPA decides whether to grant or refuse planning permission; Natural England can advise on impacts and help identify solutions to nutrient pollution through tools like nutrient neutrality. The LPA must have regard to Natural England's advice.

For planning applications that directly or indirectly result in additional nutrient loading which would, alone or in combination, have a significant effect on sensitive sites (which are already unfavourable because of nutrients, or the development would make it unfavourable), an appropriate assessment is needed. 'Nutrient neutrality' is one approach which can be used to mitigate harmful impacts.

Implications for Local Planning Authorities

Natural England has advised LPAs in relevant catchments that they should undertake Habitats Regulations Assessments (HRA) of all development proposals which may give rise to additional nutrients entering their catchments, in line with the requirements of the Conservation of Habitats and Species Regulations 2017.

Where developments may fail the tests of an appropriate assessment based on nutrient pollution, LPAs may choose to use nutrient neutrality to counterbalance nutrient impacts.

Natural England understands there are challenges in securing necessary mitigation and is working with a range of stakeholders and partners to develop practical solutions. The Department for Levelling Up, Housing and Communities (DLUHC) and the Planning Advisory Service (PAS) have funded additional staff to support developers and LPAs with identifying and securing mitigation. There are also examples of successful mitigation projects from areas already using a nutrient neutrality approach, such as the government-backed nitrogen credit trading pilot project in the Solent. This pilot is testing whether creation of a more transparent and efficient catchment market can speed up the supply of nature-based mitigation to unlock housing development.

Implications for Developers

Under this updated advice, developments are more likely require Habitats Regulations Assessments. Where developments would fail the requirements of the appropriate assessment, developers may be asked to take action to mitigate impacts through nutrient neutrality such as:

- building additional mitigation into their plans onsite,
- working with the LPA to arrange for mitigation offsite, or
- purchasing nutrient credits via a nutrient trading scheme (where other landowners in the catchment have taken action to reduce their nutrient load)

Nutrient neutrality provides a mechanism by which development that would otherwise be prohibited on the grounds of nutrient pollution may be given consent if mitigation is put in place. Using nutrient neutrality, developers only pay for mitigation required to counteract nutrients generated by their development.

Further information and support

For developers – Please contact your Local planning Authority or access Natural England’s discretionary advice service (DAS) for further information

For Local Planning Authorities - Please refer to the formal advice and guidance sent to your planning team.

- The Planning Advisory Service (PAS) is running a series of introductory workshops for LPAs Please follow the link for further details: [Nutrient neutrality and the planning system | Local Government Association](#)
- Natural England is undertaking further research on the effectiveness of mitigation in different scenarios and developing additional tools to support implementation of nutrient neutrality mitigation

What actions is government taking?

(Information provided by Defra)

In the short term, nutrient neutrality will ensure that pollution at Habitats Sites is not made worse by development. However, the Government recognises the importance of going beyond this to tackle the underlying causes of nutrient pollution and is taking steps to improve the state of our Habitats Sites. This includes:

- Increasing compliance with regulations that protect the environment from agricultural pollution.
- Encouraging farmers to go above and beyond to reduce, prevent and reverse pollution via three new Environmental Land Management schemes
- Providing increased advice and support to farmers so that they can improve their nutrient management practices.
- Proposing legally binding targets under the Environment Act for reduced nutrient loads from both agriculture and wastewater.
- Making clear through the Strategic Policy Statement to Ofwat that water companies should “prioritise improvements to Habitats Sites” within the next price review period, focussing particularly on the need to “address nutrient pollution”.

Interventions such as these will help our Habitats Sites recover and flourish in the longer term, enabling nature recovery and sustainable development

Appendix 4



European protected sites requiring nutrient neutrality strategic solutions

Scale: 1:330,000

Component SSSIs of The Broads SAC

- Local Authorities
- SSSI subject to nutrient neutrality strategy
- Nutrient neutrality SSSI catchment





Nutrient Budget Calculator Guidance Document

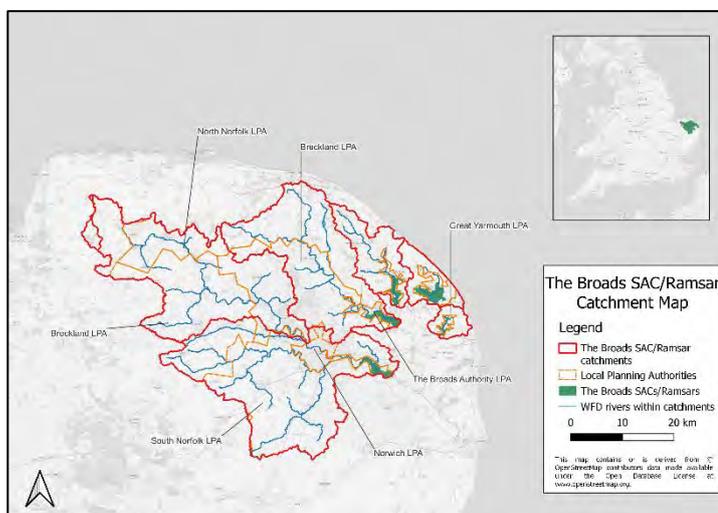
Guidance for completion of a nutrient budget using the nutrient budget calculator tool

Prepared by Ricardo Energy and Environment on behalf of Natural England

The Broads Special Area of Conservation (SAC) and Broadland Ramsar

The Broads SAC and Broadland Ramsar site are Habitats sites with water pollution and eutrophication considered a threat to its condition.

The fens of the Broads, located in East Anglia, contain several examples of naturally nutrient-rich lakes. Although artificial, having been created by peat digging in medieval times, these lakes and the ditches in areas of fen and drained marshlands support relict vegetation of the original Fenland flora, and collectively this site contains one of the richest assemblages of rare and local aquatic species in the UK.



The SAC and Ramsar are designated for several different significant habitats, including habitats made up of a range of important aquatic plant species from groups including stoneworts, pondweeds, water-milfoils and water-lillies. The sites are also a stronghold of little whirlpool ram's-horn snail and Desmoulin's whorl snail in East Anglia. The range of wetlands and associated habitats also provides suitable conditions for otters.

Increased levels of nitrogen and phosphorus entering aquatic environments via surface water and groundwater can severely threaten these sensitive habitats and species within the sites. The elevated levels of nutrients can cause eutrophication, leading to algal blooms which disrupt normal ecosystem function and cause major changes in the aquatic community. These algal blooms can result in reduced levels of oxygen within the water, which in turn can lead to the death of many aquatic organisms including invertebrates and fish.

The habitats and species within the site that result in designation as a SAC and Ramsar site are referred to as 'qualifying features.' Not all of these qualifying features will be sensitive to changes in nutrients within the sites. When completing an HRA involving nutrient neutrality, the Competent Authority (normally Local Planning Authority for developments) must identify and screen out qualifying features that are not sensitive to nutrients via a Habitats Regulations Assessment. Developers will be asked to submit information to support this process.

More detailed information on the qualifying features of the SAC and Ramsar and details of water quality data highlighting the current nutrient problems in the site are available in the Natural England The Broads SAC and Broadland Ramsar site evidence summary.

The requirement for Nutrient Neutrality

Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Ramsar sites are some of the most important areas for wildlife in the United Kingdom. They are internationally important for their habitats and wildlife and are protected under the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations). At some of these sites, there are high levels of nitrogen and phosphorus input to the protected water environment with sound evidence that these nutrients are causing eutrophication at these designated sites. These nutrient inputs currently mostly come either from agricultural sources or from wastewater from existing housing and other development. The resulting effects on ecology from an excessive presence of nutrients are impacting on protected habitats and species.

There is uncertainty as to whether new growth will further deteriorate designated sites, and/or make them appreciably more difficult to restore. The potential for future housing developments to exacerbate these impacts creates a risk to their potential future conservation status.

One way to address this uncertainty is for new development to achieve nutrient neutrality. Nutrient neutrality is a means of ensuring that development does not add to existing nutrient burdens and this provides certainty that the whole of the scheme is deliverable in line with the requirements of the Habitats Regulations.

Key Principles

The principles underpinning Habitats Regulations Assessments are well established¹. At the screening stage, plans and projects should only be granted consent where it is possible to exclude, on the basis of objective information, that the plan or project will have significant effects on the sites concerned². Where it is not possible to rule out likely significant effects, plans and projects should be subject to an appropriate assessment. That appropriate assessment must contain complete, precise and definitive findings which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the site³.

Natural England has been reviewing the available evidence on Habitats sites which are in unfavourable condition due to elevated nutrient levels. Where plans or projects will contribute additional nutrients to Habitats sites which are close to or already in unfavourable condition for nutrients, then a robust approach to the Habitats Regulations Assessment (HRA) of the effects of plans and projects is required.

Where sites are close to or already in unfavourable condition for nutrients, it may be difficult to grant consent for new plans and projects that will increase nutrient levels at the Habitats site. Nutrient neutrality provides a means of effectively mitigating the adverse effects associated with increased nutrients from new plans and projects, by counter-balancing any additional nutrient inputs to ensure that there is no net change in the amount of nutrients reaching the features which led to a Habitats site being designated.

Where new residential development is proposed, the additional nutrient load from the increase in wastewater and/or the change in the land use of the development land created by a new residential development can create an impact pathway for potential adverse effects on Habitats sites that are already suffering from problems related to nutrient loading. This impact pathway is shown diagrammatically in Figure 1. HRAs of new residential developments therefore need to consider whether nutrient loading will result in 'Likely Significant Effects' (LSE) on a Habitats site. If an HRA cannot exclude a LSE due to nutrient loading, the Appropriate Assessment (AA) will need to consider whether this nutrient load needs to be mitigated in order to remove adverse effects on the Habitats site.

¹ See, amongst others Case C-127/02 *Waddenvereniging and Vogelsbeschermingvereniging (Waddenzee)*; *R (Champion) v North Norfolk DC* [2015] E.K.S.C. 52 (Champion); C-323/17 *People Over Wind, Peter Sweetman v Coillte Teoranta (People Over Wind)*; C-461/17 *Brian Holohan and Others v An Bord Pleanála (Holohan)*; Joined Cases C-293/17 and C-294/17 *Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Other* (the Dutch Nitrogen cases);

² Case C-127/02 *Waddenvereniging and Vogelsbeschermingvereniging (Waddenzee)*

³ Case 164/17 *Grace & Sweetman v An Bord Pleanála (Grace & Sweetman)*

For those developments that wish to pursue neutrality, Natural England advises that a nutrient budget is calculated for new developments that have the potential to result in increases of nitrogen/phosphorus entering the international sites. A nutrient budget calculated according to this methodology and demonstrating nutrient neutrality is, in our view, able to provide sufficient and reasonable certainty that the development does not adversely affect the integrity, by means of impacts from nutrients, on the relevant internationally designated sites. This approach must be tested through the AA stage of the HRA. The information provided by the applicant on the nutrient budget and any mitigation proposed will be used by the local planning authority, as competent authority, to make an AA of the implications of the plan or project on the Habitats sites in question.

The nutrient neutrality calculation includes key inputs and assumptions that are based on the best available scientific evidence and research. It has been developed as a pragmatic tool. However, for each input there is a degree of uncertainty. For example, there is uncertainty associated with predicting occupancy levels and water use for each household in perpetuity. Also, identifying current land / farm types and the associated nutrient inputs is based on best available evidence, research and professional judgement and is again subject to a degree of uncertainty.

It is our advice to local planning authorities to take a precautionary approach in line with existing legislation and case law when addressing uncertainty and calculating nutrient budgets. This should be achieved by ensuring nutrient budget calculations apply precautionary rates to variables and adding a buffer to the Total Nitrogen/Total Phosphorus figure calculated for developments. A precautionary approach to the calculations and solutions helps the local planning authority and applicants to demonstrate the certainty needed for their assessments.

By applying the nutrient neutrality methodology, with the buffer, to new development, the competent authority may be satisfied that, while margins of error will inevitably vary for each development, this approach will ensure that new development in combination will avoid significant increases of nitrogen load from entering the internationally designated sites.⁴

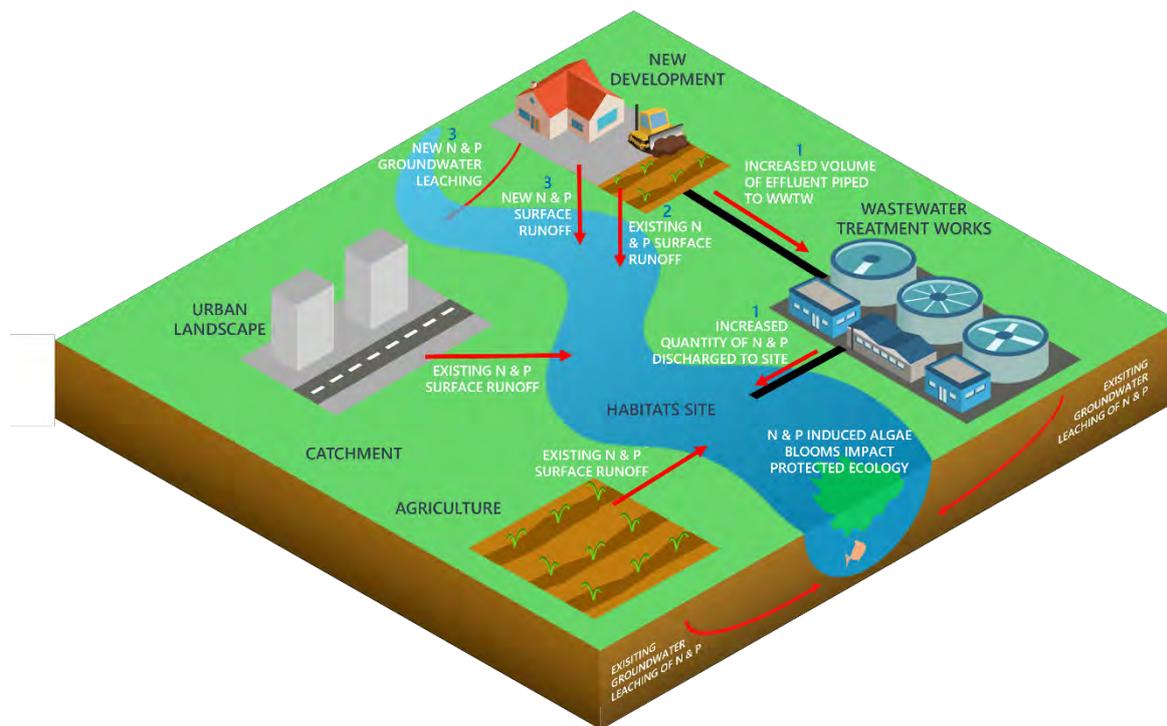
A HRA must be capable of removing all reasonable scientific doubt as to the absence of adverse effects on a Habitats site. Absolute certainty is not required, but the methodology used to evaluate potential adverse effects (and the measures intended to mitigate them) must effectively address any reasonable scientific doubt to achieve the required degree of certainty.

The first step in an AA that is applying nutrient neutrality is to understand whether a development will cause additional nutrient inputs to the Broads SAC and Broadland Ramsar site. This requires calculation of the amount of nutrients a new residential development will create, otherwise known as a nutrient budget.

If a nutrient budget shows that a new development will increase the nutrient input to the Broads SAC and Broadland Ramsar site and it is not possible to conclude no adverse effect on site integrity alone or in combination, then this is the amount of nutrients that require mitigating on an annual basis to achieve nutrient neutrality and therefore enable a conclusion of no adverse effect on site integrity to be reached.

⁴ This approach was expressly endorsed in *R (Wyatt) v Fareham BC* [2021] EWHC 1434 (Admin)

Figure 1: Diagram demonstrating the potential nutrient impact pathways from a new development to a Habitats site. An increase in nitrogen and phosphorus availability in aquatic ecosystems can lead to various problems, such as algae blooms, which can have detrimental impacts on the ecology of a Habitats site.



What is this guidance for?

This guidance document accompanies the Broads SAC and Broadland Ramsar site nutrient budget calculator. The nutrient budget calculator is used to calculate the change in nutrient input from a new residential development to the Broads SAC and Broadland Ramsar site. The calculator can be used to inform an AA which is looking to apply nutrient neutrality to show whether a new development will require nutrient mitigation and if so, the amount of nitrogen and phosphorus loading that requires counterbalancing through mitigation measures to enable a conclusion of no adverse effect on site integrity, alone or in combination.

The guidance document contains the following:

- Step-by-step instructions on how to collect the specific data required as inputs to the tool.
- Instructions on how to use the tool.

Who is the guidance for?

This guidance is for anyone who needs to complete a nutrient budget calculation to support an AA of residential development in the Broads SAC and Broadland Ramsar site catchment. The tool is primarily aimed at developers who need to complete a nutrient budget calculation to support a planning application and Local Planning Authorities who need to understand the mitigation requirements for future development or assess planning applications. It could also be used by communities or environmental groups wanting to understand the impacts of a local development on the nutrient inputs to the Broads SAC and Broadland Ramsar site.

Summary of how the calculator works.

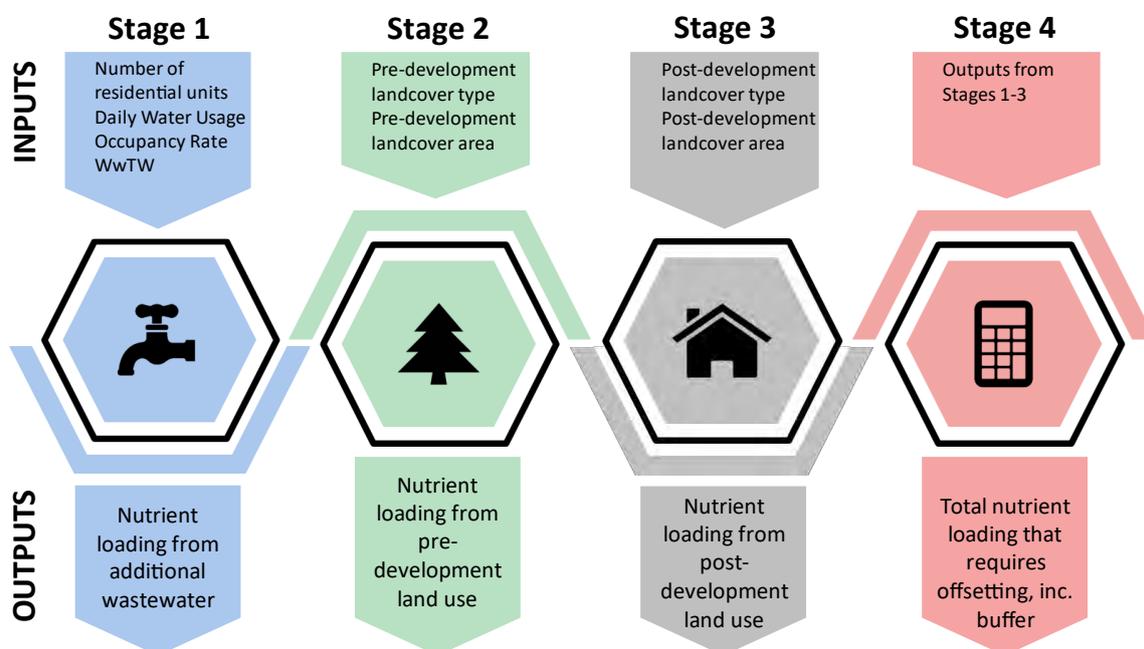
Overview

The nutrient budget calculator requires a set of inputs in order to calculate a new development's nutrient budget. The calculations are completed in four stages:

1. Calculate the increase in nutrient loading that comes from a development's wastewater.
2. Calculate the pre-existing nutrient load from current land use on the development site.
3. Calculate the future nutrient load from land use on the development site post-development.
4. Calculate the net change in nutrient loading from the development to the Broads SAC and Broadland Ramsar site with the addition of a buffer. The net change in nutrient loading + the buffer is the nutrient budget.

These key inputs and outputs for each stage can be shown schematically in Figure 2.

Figure 2: Schematic showing the key inputs and outputs associated with each stage of the nutrient budget calculation methodology



Note: the values that come pre-entered in this tool have been chosen based on research to select inputs that meet the HRA tests of beyond reasonable scientific doubt, best available evidence, in perpetuity and were chosen in accordance with the precautionary principle. It is highly inadvisable to edit the values in this tool without a sufficient evidence base to justify any changes.

Data Collection and preparation

The nutrient budget calculator requires a set of inputs as shown in Figure 2. This section does not provide instructions on how to gather development specific information, such as the number of properties being constructed, as this should be known by the developer and should be detailed in the planning application. The subsections below provide guidance on how to identify certain inputs that are needed to complete the calculations for each stage of the nutrient budget calculations. The information required is available from free to access data sources⁵. Most of the required inputs are for factors that are specific to the location of a development site or the hydrological catchment of the Broads SAC and Broadland Ramsar site.

The instructions below are divided by the stage where the data will be required. We advise that you collect and note down this data before starting to input information into each stage of the nutrient budget calculator.

Stage 2 & 3: Instructions for finding the Operational Catchment that the development is located within

- Go to this link: <http://environment.data.gov.uk/catchment-planning/>
- Search the location by place name, postcode etc. This will give a high-level view of the area. Use the zoom feature to find the exact location of the development.
- Click on the light blue area on the map in which the development is located. This will bring the user to the Operational Catchment page
- Make a note of the name of the Operational Catchment and select it from the dropdown list in the 'Catchment' cell when you get to this part of the calculator tool.

Stage 2: Instructions for finding the soil drainage type associated with the predominant soil type within the development site

- Go to this link: <http://www.landis.org.uk/soilscapes/#>
- Find your development site location on the map by using the search bar on the right side of the map in the 'Search' tab. Searching a location should generate a pop-up window in which you can view the soil information by clicking 'View soil information'. If this is not an option then click on the relevant soil type on the map and click on the 'Soil information' tab on the right-hand side of the map, below the 'Search' tab.
- The 'Soil drainage type' value can be found in the 'Soil information' under the title 'Drainage:'
- Make a note of this soil type and select the relevant soil drainage type from the drop-down list in the 'Soil drainage type' cell when you get to this part of the calculator tool.

Stage 2: Instructions for finding the annual average rainfall that the development site will receive

- Go to this link: <https://nrfa.ceh.ac.uk/data/station/spatial/34002>
- This link will bring the user to the Tas at Shotesham flow gauge catchment information page.
- Click on the dropdown list next to the title 'Select spatial data type to view:' on the left of the map and select 'Rainfall'.
- Select the Legend tab.
- Zoom in on the map to find the location of the development and find the corresponding rainfall range from the Legend. Note that you cannot search this map using location information and will need to 'surf' around the map to find your development site location.
- Make a note of the relevant rainfall band for your site and use it to select this rainfall band from the drop-down list in the 'Average annual rainfall' cell when you get to this part of the calculator tool.

⁵ Correct at the time of writing. These data sources are available from websites that currently have government funding but it should be noted that these datasets may become unavailable if funding is removed.

Stage 2: Instructions for finding out whether the development is in a Nitrate Vulnerable Zone (NVZ)

- Go to this link <http://mapapps2.bgs.ac.uk/ukso/home.html?layers=NVZEng>
- Enter the location of the development site in the search bar.
- Once the area has been located, click on the map where the development is located to find out if it is within an NVZ.
- Make a note of this information. It will be needed to select 'Yes' or 'No' from the 'Within Nitrate Vulnerable Zone (NVZ)' cell when you get to this part of the calculator tool.

Note: some of the values you select above will also be used in the Stage 3 calculations, however you only need to add the above details to the table in Stage 2 of the calculator and the required values for stage 3 will be carried through automatically.

How to use the calculator:

General tips

- The key below shows the colour coding used to highlight which cells need to be completed.
- When a cell is selected, instructions on how to fill out the cell that is selected are shown.
- Some cells will have values pre-populated, like the 'Water usage' input. The instructions for each cell will detail if an alternative value can be used.
- It is advisable to retain a default copy of this calculator tool workbook which has not had any development details added. "Save as" a new copy each time you calculate a budget for a new development in case any of the default values in the in the workbook get overwritten and are needed again.

Key:

	Values to be entered by the user
	Fixed or calculated values
	Lookup tables

...	Instructions	Site Information	Stage 1	Stage 2	Stage 3	Please enter the total number of dwellings that will be on the development site as of the completion date of the project.
			Water usage (litres/person/day):	120		
			Development Proposal (dwellings):	100		

Stage 1: calculate the new nutrient load associated with the additional wastewater

In this section the user will need to enter:

- The date of first occupancy. *This is because some wastewater treatment works may be due an upgrade in 2025 that will change the nitrogen or phosphorus output from this works, which will in turn change the output from this stage of the calculations. If this is the case, it will be apparent in the calculated values if there is an upgrade to a treatment works that affects the nutrient budget.*

- The average occupancy rate of the development will need to be entered in people per dwelling for residential dwellings or units for other types of overnight accommodation which would result in an increase in overnight accommodation. The default setting for residential dwellings is the national occupancy rate of 2.4 people per dwelling. **Only change this value if there is sufficient evidence that a different occupancy rate is appropriate** (see Occupancy Rate Guidance section below for when a local or regional occupancy rate is acceptable).
- The number of dwellings / units⁶ that will be within the development at the time of completion.
- The wastewater treatment works that the development will connect to. If required this information can be obtained from the sewerage undertaker for the development site. If it is not feasible to connect to mains sewerage and a septic tank (ST) or package treatment plant (PTP) is being used, please select this option. Please be aware that if the total nitrogen (TN) or total phosphorus (TP) final effluent concentrations (in mg/l) are specified by the manufacturer, please select 'Septic Tank user defined' or 'Package Treatment Plant user defined' and enter the specified value in the cell where prompted. If you do not have a TP or TN value provided by the manufacturer, select the 'Septic Tank default' or 'Package Treatment Plant default' option and a value will be provided automatically.

Occupancy Rate Guidance:

As set out in the guidance below, the Local Planning Authority/Competent Authority will need to ensure that the occupancy rate is appropriate to development within their Authority area. **It is therefore recommended that the occupancy rate is agreed with the Local Planning Authority before completing the nutrient budget calculation.**

Competent authorities must satisfy themselves that the residents per dwelling/unit value used in this step of the calculation reflects local conditions in their area. The residents per dwelling value can be derived from national data providing it reflects local conditions. However, if national data does not yield a residents per dwelling/unit value that reflects local occupancy levels then locally relevant data should be used instead. Whichever figure is used, it is important to ensure it is sufficiently robust and appropriate for the project being assessed. **It is therefore recommended that project level Appropriate Assessments specifically include justification for why the competent authority has decided upon the occupancy rate that has been used.**

Further guidance is provided below.

National occupancy data

When using national occupancy data, the Office of National Statistics (ONS) national average value for the number of residents per dwelling of 2.4 is recommended. This value is derived from 2011 census data and is subject to change when the 2021 Census becomes available. This value can be used if the Local Planning Authority is satisfied that:

- It is appropriate for the level and type of housing development that is expected to come forward in the Local Planning Authority's area (a strategic assessment should be made of the development anticipated to come forward over the Local Plan period to ensure the use of average figures will not under/overestimate the level of impact)
- It corresponds to the local average in the area (it is not likely to overestimate or underestimate occupancy)

⁶ The term 'dwellings' has a specific legal meaning derived from the use classes order. To ensure that all relevant forms of development which would result in an increase in overnight accommodation such as hotel rooms, short term holiday lets etc are considered in the HRA process the term units is used

- It is based on data that is robust and doesn't underestimate the level of impact over time.

It may not be appropriate to use the national average occupancy rate for development types which are not included in the ONS data, such as student accommodation or houses in multiple occupation. For such developments, the Local Planning Authority should specify an appropriate occupancy rate in the project level Appropriate Assessment and explain how this figure was derived.

Locally relevant occupancy data

If the national average occupancy rate does not correspond with local conditions, then a locally relevant average residents per dwelling value may be more appropriate. If a Local Planning Authority decides to use a locally relevant value, that value needs to be supported by robust and sufficient evidence which should be included in the project level Appropriate Assessment. Key sources of evidence include:

- The average occupancy rate from the census for the relevant local administrative area, e.g. the county.
- The average occupation figures used by the Local Planning Authority to calculate population growth due to Local Plan development.
- The average occupation figures used by the local water company to plan for population growth and the impact on water resources and sewage treatment.

A local / regional average occupancy rate can be used provided that it is from a robust source which can show trends over a protracted period of time— such as from ONS derived data or from the annual English Housing Survey. Figures derived from data collected over short periods of time will not be acceptable as short-term data is unlikely to provide the required degree of certainty. The Local Planning Authority should ensure that any trend in occupancy rates or estimates of the average number of persons per household used will continue for perpetuity and would not underestimate the level of impact over time. A local / regional average occupancy rate would therefore need to be based on figures over at least a 5-year period⁷.

Local Planning Authorities will also need to satisfy themselves that a locally derived occupancy figure is appropriate for the level and type of housing development that is expected (a strategic assessment should be made of the development anticipated to come forward over the Local Plan period to ensure the use of average figures will not under/overestimate the level of impact).

Occupancy rates based on dwelling type

Should the nature or scale of development associated with a particular project proposal suggest that the use of an average occupancy rate is not appropriate, then the Local Planning Authority may decide to adopt an occupancy rate based on the dwelling types proposed for that particular project, provided it meets the criteria outlined above. This may be appropriate where a project proposer seeks consent for a development comprising certain dwelling types (e.g. flats and small 1 and 2 bed dwellings). If the Local Planning Authority decides to adopt a local approach based on determining occupancy rate by dwelling type, that approach should be used for all planning applications, rather than reverting back to the use of an average occupancy rate. This will ensure that the Local Planning Authority doesn't inadvertently underestimate total occupancy levels (and consequently water quality impacts) across its area by applying a lower residents per dwelling/unit value for developments comprising smaller units but failing to adopt a higher residents per dwelling/unit value for developments comprising larger units or a mix of units.

⁷ The figure of 5 years has been chosen as the minimum period of time over which occupancy rates can be calculated from as local plans and WRMPs are reviewed every 5 years, so represents a long enough period of time to capture any trends or changes.

Consistency in applying occupancy rates

The same occupancy rate should be used where there are several different impacts on Habitat sites which require strategic mitigation. The strategic approaches developed with local planning authorities to deal with in combination impacts on international sites elsewhere typically calculate mitigation requirements and contribution requirements based on current national average occupancy rates. Local Planning Authorities may decide to use a locally derived average occupancy rate instead, but this local occupancy rate must be used consistently across each type of impact and each Habitats site affected. Local Planning Authorities should not use different occupancy rates in their HRAs for the same dwelling types / size of units. Whilst the impacts will be different, occupancy rates will have been used to estimate the scale of impact and subsequently the scale of mitigation required on the protected sites. The types of impact will typically last in perpetuity. Care is therefore needed to ensure the adoption of an alternative occupancy rate based on an assessment of net population additions to a locality for nutrient budgeting does not undermine other existing strategic approaches, particularly where there are overlapping impacts within the locality.

Note: When 2021 Census data is available, the 2.4 value will be updated.

Note: if an ST or PTP is being used then a comprehensive maintenance regime is required as part of the application process. Please consult your Local Planning Authority for further advice on how to specify this maintenance regime and demonstrate that it is appropriately secured. If the ST or PTP which is being used has phosphate stripping capabilities, chemical dosing may be required. If chemical dosing is required, a robust management plan that details how chemicals are stored, the dilution rates, dosing frequencies, that any chemicals used will not have an environmental impact etc. must also accompany the planning application. PTPs with chemical dosing may not be appropriate in all cases.

Stage 2 - calculate the annual nutrient load from existing (pre-development) land use on the development site

In this section some environmental information about the development will need to be entered as well as the type and area of landcover that is being developed. The environmental information required is [described above](#).

Only the types and areas of land that are being altered by the development should be entered. For example, if two hectares of agricultural land within a ten-hectare development site are being retained in the same agricultural use, this area should not be included in the calculations.

In the 'Existing land use type(s)' column of the main table in Stage 2 of the calculator, each cell has drop-down list of land use types. This list contains seven agricultural land cover types to choose from and eight different non-agricultural land cover types that may be present on a pre-development site. Please find out what land use types are within the development before completing this tool. If there is a land use within the development area that is not in the list, please select the most similar land use type. Table 1 provides a description of the different land use types available within the calculator tool.

Table 1: Table of land use types included within the tool and their descriptions.

Land use types used in the calculator tool	Description
Cereals	Agricultural areas on which cereals, combinable crops and set aside are farmed.
General	Agricultural areas on which arable crops (including field scale vegetables) are farmed.
Horticulture	Agricultural areas on which fruit (including vineyards), hardy nursery stock, glasshouse flowers and vegetables, market garden scale vegetables, outdoor bulbs and flowers, and mushrooms are farmed.
Pig	Agricultural areas on which pigs farmed.
Poultry	Agricultural areas on which poultry are farmed.
Dairy	Agricultural areas on which dairy cows are farmed.
LFA	Agricultural areas on which cattle, sheep and other grazing livestock are farmed in locations where agricultural production is difficult. An area is classified as a Less Favoured Area (LFA) holding if 50 per cent or more of its total area is classed as LFA.
Lowland	Agricultural areas on which cattle, sheep and other grazing livestock are farmed. A holding is classified as lowland if less than 50 per cent of its total area is classed as a lowland grazing area.
Mixed	Agricultural areas in which none of the above categories are farmed or where it is too difficult to select a single category to describe the farm type.
Greenspace	Natural and semi-natural outdoor spaces provided for recreational use where fertilisers will not be applied and dog waste is managed, e.g. semi-natural parks. This does not include green infrastructure within the built urban environment, such as sports fields, gardens, or grass verges, as these are included in the residential urban land category.
Woodland	Natural and semi-natural outdoor wooded areas.
Shrub	Natural and semi-natural outdoor shrubland area.
Water	Areas of surface water, including rivers, ponds and lakes.
Residential urban land	Areas of houses and associated infrastructure. This is inclusive of roads, driveways, grass verges and gardens.
Commercial/industrial urban land	Areas that are used for industry. These are businesses that typically manufacture, process or otherwise generate products. Included in the definition of industrial land are factories and storage facilities as well as mining and shipping operations.
Open urban land	Area of land in urban areas used for various purposes, e.g. leisure and recreation - may include open land, e.g. sports fields, playgrounds, public squares or built facilities such as sports centres.
Community food growing	Areas that are used for local food production, such as allotments.

Stage 3: calculate the annual nutrient load from new (post-development) land use on the development site

In this section the user will need to select the type and area of the landcover present on the development site after the development has been completed.

In the 'New land use type(s)' column of the main table in Stage 3 of the calculator, each cell has a drop-down list of land use types containing eight non-agricultural land use types that may be present on the post-development site. Please find out what land use types are within the development before completing this part of the tool. If there is a land use within the development area that is not in the list (see Table 1 for land use type descriptions), please select the most similar land use type.

Stage 4: calculate the net change in nutrient loading for the site and the final annual nutrient budget for the development site:

This final stage automatically uses the results from Stages 1-3 and calculates the nutrient budget using the equation shown in Figure 3.

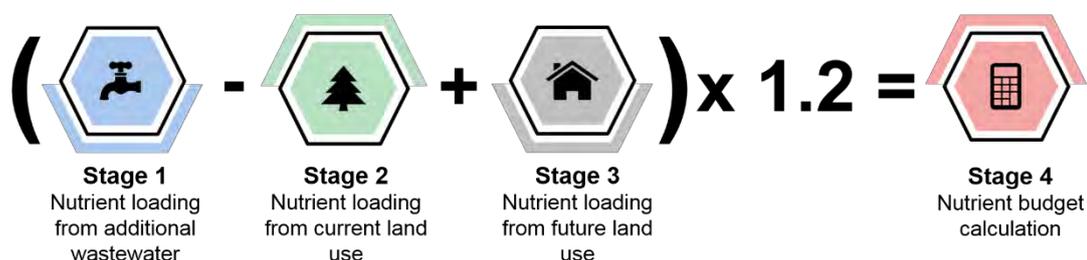
As Figure 3 shows, the output from Stage 4 of nutrient budget calculations is the balance of new sources of nitrogen and phosphorus from a development minus the existing sources of nitrogen and phosphorus from the pre-development site. To ensure the final figure is robust and suitably precautionary this balance is multiplied by 1.2, i.e. increased by a 20% 'buffer'.

The 20% buffer is applied to account for the uncertainties that underlie the inputs to Stages 1-3 of the nutrient budget calculations, as well as accounting for some potential nutrient sources associated with new development that cannot be readily quantified. To cover all possible inputs to a nutrient budget with a high enough certainty to remove the need for the buffer would require extensive site-specific investigations. The 20% buffer is a means of accounting for the uncertainties within the nutrient budget calculations and providing confidence that mitigation of the nutrient budget will remove the risk of adverse effects on site integrity in the Broads SAC and Broadland Ramsar site.

The output in Stage 4 shows how much nutrient mitigation is required in kilograms per year to achieve nutrient neutrality.

If there are two values due to an upgrade occurring at the wastewater treatment works the development is connecting to, the calculator will show the total amount of nutrient mitigation that is needed before and after the upgrade.

Figure 3: The equation used to calculate the nutrient budget.



Designated Site Name:	The Broads SAC / Broadland Ramsar
<p data-bbox="97 170 256 197">Site Details:</p> <p data-bbox="97 210 485 237">From The Broads SAC citation:</p> <p data-bbox="97 259 1481 398">The Broads in East Anglia contain several examples of naturally nutrient-rich lakes. Although artificial, having been created by peat digging in medieval times, these lakes and the ditches in areas of fen and drained marshlands support relict vegetation of the original Fenland flora, and collectively this site contains one of the richest assemblages of rare and local aquatic species in the UK.</p> <p data-bbox="97 421 1481 629">The stonewort – pondweed – water-milfoil – water-lily (<i>Characeae – Potamogeton – Myriophyllum – Nuphar</i>) associations are well-represented, as are club-rush – common reed <i>Scirpo – Phragmitetum</i> associations. The dyke (ditch) systems support vegetation characterised by water-soldier <i>Stratiotes aloides</i>, whorled water-milfoil <i>Myriophyllum verticillatum</i> and broad-leaved pondweed <i>Potamogeton natans</i> as well as being a stronghold of little whirlpool ram’s-horn snail <i>Anisus vorticulus</i> and Desmoulin’s whorl snail <i>Vertigo moulinsiana</i> in East Anglia. The range of wetlands and associated habitats also provides suitable conditions for otters <i>Lutra lutra</i>.</p> <p data-bbox="97 651 1481 824">The Broads is the richest area for stoneworts (charophytes) in Britain. The core of this interest is the Thur ne Broads and particularly Hickling Broad, a large shallow brackish lake. Within the Broads examples of <i>Chara</i> vegetation are also found within fen pools (turf ponds) and fen and marsh ditch systems. The Broads supports a number of rare and local charophyte species, including <i>Chara aspera</i>, <i>C. baltica</i>, <i>C. connivens</i>, <i>C. contraria</i>, <i>C. curta</i>, <i>C. intermedia</i>, <i>C. pedunculata</i>, <i>Nitella mucronata</i>, <i>Nitellopsis obtusa</i>, <i>Tolypella glomerata</i> and <i>T. intricata</i>.</p> <p data-bbox="97 846 1481 983">The complex of sites contains the largest blocks of alder <i>Alnus glutinosa</i> wood in England. Within the complex complete successional sequences occur from open water through reedswamp to alder woodland, which has developed on fen peat. There is a correspondingly wide range of flora, including uncommon species such as marsh fern <i>Thelypteris palustris</i>.</p> <p data-bbox="97 1005 1481 1214">This site contains the largest example of calcareous fens in the UK. The great fen-sedge <i>Cladium mariscus</i> habitat occurs in a diverse set of conditions that maintain its species richness, including small sedge mires, and areas where great fen-sedge occurs at the limits of its ecological range. The habitat type forms large-scale mosaics with other fen types, fen meadows (with purple moor-grass <i>Molinia caerulea</i>), open water and woodland, and contains important associated plants such as fen orchid <i>Liparis loeselii</i>, marsh helleborine <i>Epipactis palustris</i>, lesser tussock-sedge <i>Carex diandra</i>, slender sedge <i>C. lasiocarpa</i> and fibrous tussock-sedge <i>C. appropinquata</i>.</p> <p data-bbox="97 1236 1481 1408">There are also areas of short sedge fen (both black bog-rush – blunt-flowered rush <i>Schoenus nigricans – Juncus subnodulosus</i> mire and bottle sedge – moss <i>Carex rostrata – Calliargon cuspidatum/giganteum</i> mire), which in places form a mosaic with common reed – milk-parsley <i>Phragmites australis – Peucedanum palustris</i> fen. The Broads also contain examples of transition mire, that are relatively small, having developed in re-vegetated peat-cuttings as part of the complex habitat mosaic of fen, carr and open water.</p> <p data-bbox="97 1487 587 1514">Reason for European Site Designation:</p> <p data-bbox="97 1565 1086 1592">The Broads Special Area of Conservation is designated for the following features :</p> <ul data-bbox="156 1603 1059 2002" style="list-style-type: none"> • H3140 Hard oligo-mesotrophic waters with benthic veg of <i>Chara</i> spp. • H3150 Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> • H6410 <i>Molinia</i> meadows on calcareous, peat or clay-silt soil • H7140 Transition mires and quaking bogs • H7210 Calcareous fens with <i>C. mariscus</i> and species of <i>C. davallianae</i> • H7230 Alkaline fens • H91E0 Alluvial woods with <i>A. glutinosa</i>, <i>F. excelsior</i> • S1016 Desmoulin's whorl snail, <i>Vertigo moulinsiana</i> • S1355 Otter, <i>Lutra lutra</i> • S1903 Fen orchid, <i>Liparis loeselii</i> • S4056 Little ram's-horn whirlpool snail, <i>Anisus vorticulus</i> 	

The Broadland Ramsar is designated for the following features:

- Bewick's swan, *Cygnus columbianus bewickii* - Wintering
- Floodplain alder woodland
- Floodplain fen
- Gadwall, *Anas strepera* - Wintering
- Shoveler, *Anas clypeata* - Wintering
- Wetland invertebrate assemblage
- Wetland plant assemblage
- Wigeon, *Mareca penelope* – Wintering

Links to Conservation Advice:

[Conservation Objectives](#)

[Conservation Objectives Supplementary Advice](#)

[JNCC Ramsar Information Sheet](#)

Nutrient Pressure(s) for which the site is unfavourable:

Nitrogen
Phosphorus

Water Quality Evidence:

In the Conservation Objectives Supporting Advice for the Broads SAC it states for phosphorus to 'maintain and, where necessary, restore stable nutrient levels appropriate for lake type' and for nitrogen it states to 'maintain and restore a stable nitrogen concentration'.

Water Quality data is reported against the relevant SSSI units within the SAC for the five SSSIs within the Broads SAC where there is currently good evidence that they are unfavourable due to nutrients.

Ant Broads and Marshes

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ¹		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (ug/l)	TN (mg/l)	TP (ug/l)	TN (mg/l)	TP	TN
Barton Broad	33	BARTON BROAD (R.ANT) AN-ANT160	30	1.07	64	1.9	FAIL 53% reduction needed	FAIL 44% reduction needed
Instead Holmes	34	No monitoring	30	1.07			Unknown	Unknown
Catfield broad	35	No monitoring	30	1.07			Unknown	Unknown
Cromes Broad	36	CROMES BROAD EDGE SAMPLE FROM SHORE AN-ANT170E	30	1.07	44	1.7	FAIL 30% reduction needed	FAIL 58% reduction needed
Reedham Water	37	No monitoring	30	1.07			Unknown	Unknown

¹ Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

Bure Broads and Marshes

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ²		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (ug/l)	TN (mg/l)	TP (ug/l)	TN (mg/l)	TP	TN
Decoy Broad	4	DECOY BROAD R.BURE AN-BUR158	30	1.07	74	3.04	FAIL 60% reduction needed	FAIL 65% reduction needed
Hoveton Great Broad	10	HOVETON GREAT BROAD AN-BUR158	30	1.07	70	2.5	FAIL 57% reduction needed	FAIL 57% reduction needed
Hudson's Bay	11	HUDSON'S BAY, HOVETON GREAT BROAD, R.BURE AN-BUR158HB	30	1.07	104	1.79	FAIL 72% reduction needed	FAIL 40% reduction needed
Ranworth Broad	12	RANWORTH BROAD AN-BUR170A	30	1.07	94	2.99	FAIL 68% reduction needed	FAIL 64% reduction needed
Cockshoot Broad	13	COCKSHOOT BROAD AN-BUR160A	30	1.46	49	1.37	FAIL 39% reduction needed	PASS
Ranworth Flood	14	Ranworth Flood AN-BUR170RF	30	1.07	1017*	3.16*	FAIL 97% reduction needed	FAIL 68% reduction needed

² Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

*TP Data for Ranworth Flood is a mean of 7 samples for TP and 4 samples for TN taken in 2017

Trinity Broads SSSI

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ³		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (ug/l)	TN (mg/l)	TP (ug/l)	TN (mg/l)	TP	TN
Filby Broad	20	FILBY BROAD AN-FIL010	30	1.07	42	0.89	FAIL 29% reduction needed	PASS
Lily Broad	21	Lily Broad AN-LIL010	30	1.07	78**	1.19**	FAIL 62% reduction needed	FAIL 10% reduction needed
Ormesby Broad	22	ORMESBY BROAD AN-ORM010	30	1.07	52	1.24	FAIL 42% reduction needed	FAIL 14% reduction needed
Ormesby Little Broad	23	ORMESBY LITTLE BROAD AN-ROL020	30	1.07	50	0.94	FAIL 40% reduction needed	PASS
Rollesby Broad Sailing Club	24	ROLLESBY BROAD SAILING CLUB AN-ROL010	30	1.07	39	1.01	FAIL 23% reduction needed	PASS

³ Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

** Data for Lily Broad is the mean of 5 (TN) and 8 (TP) samples from 2017.

Upper Thurne Broads and Marshes

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ⁴		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (ug/l)	TN (mg/l)	TP (ug/l)	TN (mg/l)	TP	TN
Heigham Sound	15	HEIGHAM SOUND (R.THURNE) AN-THRO40	30	1.07	54	1.97***	FAIL 44% reduction needed	FAIL 45% reduction needed
Hickling Broad	16	HICKLING BROAD (R.THURNE) AN-THRO30A	30	1.07	52	1.6	FAIL 42% reduction needed	FAIL 33% reduction needed

Horsey Mere	17	HORSEY MERE (R.THURNE) AN-THR020	30	1.46	51	2.22	FAIL 41% reduction needed	FAIL 34% reduction needed
R. Thurne Martham Broad	18	R.THURNE MARTHAM BROAD AN-THR060	30	1.07	33	No data	FAIL 9% reduction needed	Unknown
Martham South Broad	19	MARTHAM SOUTH BROAD (R.THURNE) AN-THR061	30	1.07	33	1.11***	FAIL 9% reduction needed	FAIL 4% reduction needed

⁴Water Quality Monitoring data from EA WIMS database. Nutrient concentrations reported are the 2019 annual mean for Total Phosphorus (TP) and Total Nitrogen (TN).

*** TN data is the mean for May 2019- Mar 2020.

Yare Broads and Marshes

Unit name	SSSI Unit	Monitoring point ID	WQ Target		WQ Monitoring Data ⁵		Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target	
			TP (ug/l)	TN (mg/l)	TP (ug/l)	TN (mg/l)	TP	TN
Surlingham Broad	11	No monitoring point					Unknown	Unknown
Rockland Broad	15	ROCKLAND BROAD OUTFLOW (SHORT DIKE) AN-YAR31010	30	1.07	217 (Jan– Dec 2019)	7.65 (Jan– Dec 2019)	FAIL 86% reduction needed	FAIL 86% reduction needed
Bargate broad	24	No monitoring point					Unknown	Unknown
Wheatfen Broad	25	WHEATFEN BROAD AN-YAR305	30	1.07	326 Feb– Dec 2017)	2.68 May– Dec 2017)	FAIL 91% reduction needed	FAIL 60% reduction needed
Strumpshaw Broad	26	STRUMPSHAW BROAD AN-YAR225	30	1.07	353 Feb– Dec 2017)	2.47 May– Dec 2017)	FAIL 92% reduction needed	FAIL 57% reduction needed
Buckingham Broad	27	No monitoring point					Unknown	Unknown
Hassingham Broad	28	No monitoring point					Unknown	Unknown

⁵Water Quality Monitoring data from EA WIMS database.

The condition of the waterbody and the habitats which support the designated features is in part dependent on the water quality within them.

The condition of the waterbody and the habitats which support the designated features is in part dependent on the water quality within them. Where excessive nutrients are present in a system this can lead to the occurrence of eutrophication, impacting on aquatic macrophyte flora and changes in water chemistry.

Recent Water Quality data shows Ant Broads and Marshes, Bure Broads and Marshes, Trinity Broads SSSI, Upper Thurne Broads and Marshes and Yare Broads and Marshes are exceeding (overall) the targets for Total Phosphorus and Total Nitrogen. Within these areas four units are achieving the target for TN: Cockshoot Broad, Filby Broad, Ormesby Little Broad and Rollesby Broad Sailing Club.

The water quality targets for the water bodies are also required for the water input into the wetland habitats and dyke features to avoid changes in species composition and the loss of characteristic and sensitive species.

Additional Information:

Habitat type impacted by nutrients – Standing Water

The Broads SAC and Broadland Ramsar are underpinned by multiple SSSIs. The component SSSIs being considered here include;

- Ant Broads and Marshes
- Bure Broads and Marshes
- Trinity Broads
- Upper Thurne
- Yare Broads and Marshes

SSSI interest features include:

Ant Broads and Marshes SSSI

- Assemblages of breeding birds - Lowland open waters and their margins
- Ditches
- Eutrophic lakes
- Floodplain fen (lowland)
- Invert. assemblage W211 open water on disturbed sediments
- Invert. assemblage W313 moss & tussock fen
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Ponds
- Population of Schedule 8 plant - *Liparis loeselii*, Fen Orchid
- Vascular plant assemblage
- Wet woodland

Bure Broads and Marshes SSSI

- Assemblages of breeding birds - Lowland fen without open water
- Eutrophic lakes
- Floodplain fen (lowland)
- Invert. assemblage W126 seepage
- Invert. assemblage W211 open water on disturbed sediments
- Invert. assemblage W313 moss & tussock fen
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Vascular plant assemblage
- Wet woodland

Trinity Broads SSSI

- Aggregations of breeding birds - Marsh harrier, *Circus aeruginosus*
- Aggregations of breeding birds - Pochard, *Aythya ferina*
- Aggregations of breeding birds - Shoveler, *Anas clypeata*
- Aggregations of breeding birds - Tufted duck, *Aythya fuligula*
- Aggregations of non-breeding birds - Bittern, *Botaurus stellaris*
- Aggregations of non-breeding birds - Pochard, *Aythya ferina*
- Aggregations of non-breeding birds - Shoveler, *Anas clypeata*
- Aggregations of non-breeding birds - Tufted duck, *Aythya fuligula*
- Assemblages of breeding birds - Lowland open waters and their margins
- Floodplain fen (lowland)
- Lowland wetland including basin fen, valley fen, floodplain fen, waterfringe fen, spring/flush fen and raised bog lagg
- Mesotrophic lakes
- Otter, *Lutra lutra*
- Vascular plant assemblage
- Wet woodland

Upper Thurne Broads and Marshes SSSI

- Aggregations of breeding birds - Avocet, *Recurvirostra avosetta*
- Aggregations of breeding birds - Bearded tit, *Panurus biarmicus*
- Aggregations of breeding birds - Bittern, *Botaurus stellaris*
- Aggregations of breeding birds - Marsh harrier, *Circus aeruginosus*
- Aggregations of breeding birds - Pochard, *Aythya ferina*
- Aggregations of non-breeding birds - Bewick's swan, *Cygnus columbianus bewickii*
- Aggregations of non-breeding birds - Gadwall, *Anas strepera*
- Aggregations of non-breeding birds - Shoveler, *Anas clypeata*
- Aggregations of non-breeding birds - Teal, *Anas crecca*
- Assemblages of breeding birds - variety of species
- Charophyte assemblage
- Ditches
- Floodplain fen (lowland)
- Invert. assemblage W314 reed-fen & pools
- Lowland mire grassland and rush pasture
- Mesotrophic lakes
- Nationally scarce plant - *Potamogeton coloratus*, Fen Pondweed
- Nationally scarce plant - *Thelypteris palustris*, Marsh Fern
- Nationally scarce plant - *Thyselium palustre*, Milk-parsley
- Vascular plant assemblage
- Wet woodland

Yare Broads and Marshes SSSI

- Aggregations of breeding birds - Cetti's warbler, *Cettia cetti*
- Aggregations of breeding birds - Gadwall, *Anas strepera*
- Aggregations of breeding birds - Marsh harrier, *Circus aeruginosus*
- Aggregations of non-breeding birds - Bean goose, *Anser fabalis*
- Aggregations of non-breeding birds - Hen harrier, *Circus cyaneus*
- Aggregations of non-breeding birds - Wigeon, *Anas penelope*
- Assemblages of breeding birds - Lowland open waters and their margins
- Ditches
- Eutrophic lakes
- Floodplain fen (lowland)
- Invert. assemblage W313 moss & tussock fen
- Invert. assemblage W314 reed-fen & pools

- Lowland mire grassland and rush pasture
- Vascular plant assemblage
- Wet woodland

Appendix 5



Contains OS data © Crown Copyright and database right 2020

European protected sites requiring nutrient neutrality strategic solutions

Scale: 1:190,000

Component SSSIs of River Wensum SAC

- Local Authorities
- SSSI subject to nutrient neutrality strategy
- Nutrient neutrality SSSI catchment
- National Parks





Nutrient Budget Calculator Guidance Document

Guidance for completion of a nutrient budget using the nutrient budget calculator tool

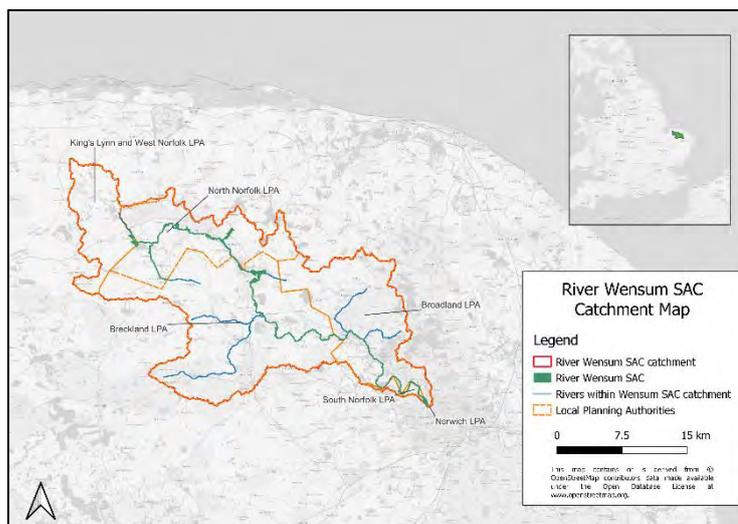
Prepared by Ricardo Energy and Environment on behalf of Natural England

River Wensum Special Area of Conservation (SAC)

The River Wensum SAC is a Habitats site with water pollution and eutrophication considered a threat to its condition.

The Wensum is a low gradient, groundwater dominated river originating in northwest Norfolk, flowing southeast to Norwich where it joins the River Yare.

Intensive arable land-use dominates the landscape on the higher plateaus and valley sides, and grazing marsh, fen, reedbed, scrub and scattered woodland characterise the floodplain.



The current river channel is the product of a long history of modification and management. Anthropogenic influences have had a dramatic effect on the ecology and hydrology of the River Wensum, in particular at sites up and downstream of mill structures, sites affected by excessive silt deposition, sites that are heavily maintained and sites that lack natural riparian vegetation.

Regardless of this, the river supports over 100 species of plants, including three species of water-crowfoot. The river also supports white-clawed crayfish and populations of Desmoulin's whorl snail, Brook lamprey and Bullhead.

Increased levels of nitrogen and phosphorus entering aquatic environments via surface water and groundwater can severely threaten these sensitive habitats and species within the SAC. The elevated levels of nutrients can cause eutrophication, leading to algal blooms which disrupt normal ecosystem function and cause major changes in the aquatic community. These algal blooms can result in reduced levels of oxygen within the water, which in turn can lead to the death of many aquatic organisms including invertebrates and fish.

The habitats and species within the Wensum that result in designation as a SAC are referred to a 'qualifying features.' Not all of these qualifying features will be sensitive to changes in nutrients within the River Wensum. When completing an HRA involving nutrient neutrality, the Competent Authority (normally Local Planning Authority for developments) must identify and screen out qualifying features that are not sensitive to nutrients via a Habitats Regulations Assessment. Developers will be asked to submit information to support this process.

More detailed information on the qualifying features of the SAC and details of water quality data highlighting the current nutrient problems in the river are available in the Natural England River Wensum SAC evidence summary.

The requirement for Nutrient Neutrality

Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Ramsar sites are some of the most important areas for wildlife in the United Kingdom. They are internationally important for their habitats and wildlife and are protected under the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations). At some of these sites, there are high levels of nitrogen and phosphorus input to the protected water environment with sound evidence that these nutrients are causing eutrophication at these designated sites. These nutrient inputs currently mostly come either from agricultural sources or from wastewater from existing housing and other development. The resulting effects on ecology from an excessive presence of nutrients are impacting on protected habitats and species.

There is uncertainty as to whether new growth will further deteriorate designated sites, and/or make them appreciably more difficult to restore. The potential for future housing developments to exacerbate these impacts creates a risk to their potential future conservation status.

One way to address this uncertainty is for new development to achieve nutrient neutrality. Nutrient neutrality is a means of ensuring that development does not add to existing nutrient burdens and this provides certainty that the whole of the scheme is deliverable in line with the requirements of the Habitats Regulations.

Key Principles

The principles underpinning Habitats Regulations Assessments are well established¹. At the screening stage, plans and projects should only be granted consent where it is possible to exclude, on the basis of objective information, that the plan or project will have significant effects on the sites concerned². Where it is not possible to rule out likely significant effects, plans and projects should be subject to an appropriate assessment. That appropriate assessment must contain complete, precise and definitive findings which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the site³.

Natural England has been reviewing the available evidence on Habitats sites which are in unfavourable condition due to elevated nutrient levels. Where plans or projects will contribute additional nutrients to Habitats sites which are close to or already in unfavourable condition for nutrients, then a robust approach to the Habitats Regulations Assessment (HRA) of the effects of plans and projects is required.

Where sites are close to or already in unfavourable condition for nutrients, it may be difficult to grant consent for new plans and projects that will increase nutrient levels at the Habitats site. Nutrient neutrality provides a means of effectively mitigating the adverse effects associated with increased nutrients from new plans and projects, by counter-balancing any additional nutrient inputs to ensure that there is no net change in the amount of nutrients reaching the features which led to a Habitats site being designated.

Where new residential development is proposed, the additional nutrient load from the increase in wastewater and/or the change in the land use of the development land created by a new residential development can create an impact pathway for potential adverse effects on Habitats sites that are already suffering from problems related to nutrient loading. This impact pathway is shown diagrammatically in Figure 1. HRAs of new residential developments therefore need to consider whether nutrient loading will result in 'Likely Significant Effects' (LSE) on a Habitats site. If an HRA cannot exclude a LSE due to nutrient loading, the Appropriate Assessment (AA) will need to consider whether this nutrient load needs to be mitigated in order to remove adverse effects on the Habitats site.

¹ See, amongst others Case C-127/02 *Waddenereniging and Vogelsbeschermingvereniging (Waddenzee)*; *R (Champion) v North Norfolk DC* [2015] E.K.S.C. 52 (Champion); C-323/17 *People Over Wind, Peter Sweetman v Coillte Teoranta (People Over Wind)*; C-461/17 *Brian Holohan and Others v An Bord Pleanála (Holohan)*; Joined Cases C-293/17 and C-294/17 *Coöperatie Mobilisatie for the Environment UA and Others v College van gedeputeerde staten van Limburg and Other* (the Dutch Nitrogen cases);

² Case C-127/02 *Waddenereniging and Vogelsbeschermingvereniging (Waddenzee)*

³ Case 164/17 *Grace & Sweetman v An Bord Pleanála (Grace & Sweetman)*

For those developments that wish to pursue neutrality, Natural England advises that a nutrient budget is calculated for new developments that have the potential to result in increases of nitrogen/phosphorus entering the international sites. A nutrient budget calculated according to this methodology and demonstrating nutrient neutrality is, in our view, able to provide sufficient and reasonable certainty that the development does not adversely affect the integrity, by means of impacts from nutrients, on the relevant internationally designated sites. This approach must be tested through the AA stage of the HRA. The information provided by the applicant on the nutrient budget and any mitigation proposed will be used by the local planning authority, as competent authority, to make an AA of the implications of the plan or project on the Habitats sites in question.

The nutrient neutrality calculation includes key inputs and assumptions that are based on the best available scientific evidence and research. It has been developed as a pragmatic tool. However, for each input there is a degree of uncertainty. For example, there is uncertainty associated with predicting occupancy levels and water use for each household in perpetuity. Also, identifying current land / farm types and the associated nutrient inputs is based on best available evidence, research and professional judgement and is again subject to a degree of uncertainty.

It is our advice to local planning authorities to take a precautionary approach in line with existing legislation and case law when addressing uncertainty and calculating nutrient budgets. This should be achieved by ensuring nutrient budget calculations apply precautionary rates to variables and adding a buffer to the Total Nitrogen/Total Phosphorus figure calculated for developments. A precautionary approach to the calculations and solutions helps the local planning authority and applicants to demonstrate the certainty needed for their assessments.

By applying the nutrient neutrality methodology, with the buffer, to new development, the competent authority may be satisfied that, while margins of error will inevitably vary for each development, this approach will ensure that new development in combination will avoid significant increases of nitrogen load from entering the internationally designated sites.⁴

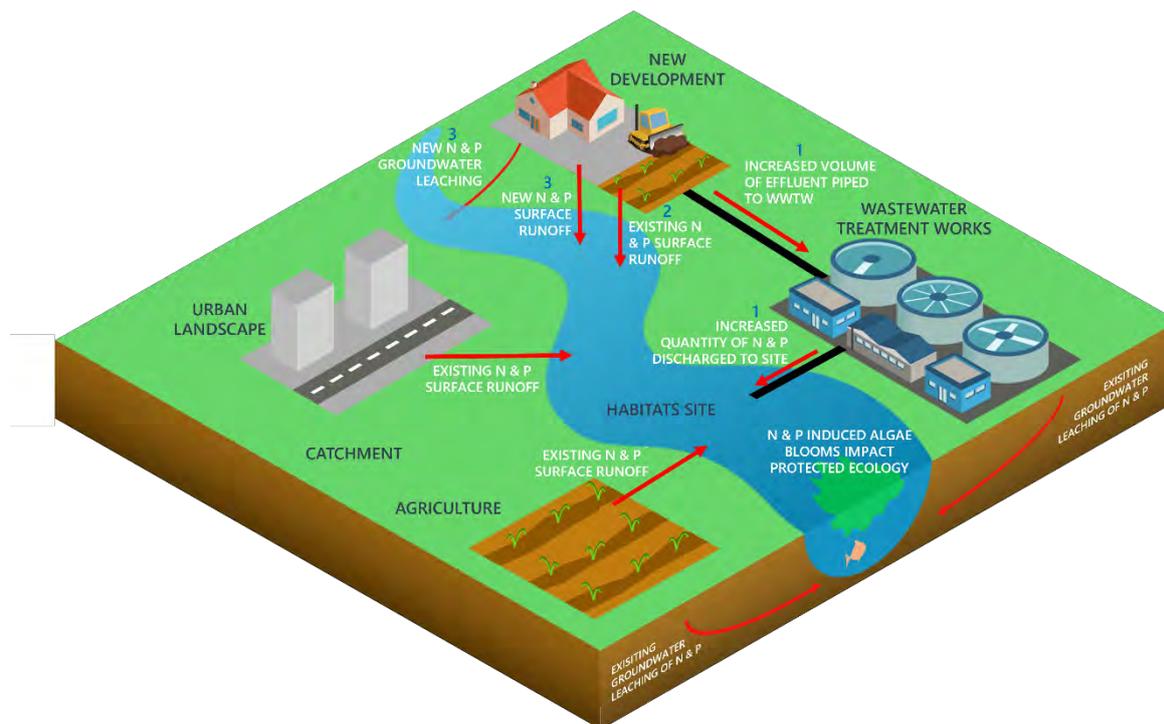
A HRA must be capable of removing all reasonable scientific doubt as to the absence of adverse effects on a Habitats site. Absolute certainty is not required, but the methodology used to evaluate potential adverse effects (and the measures intended to mitigate them) must effectively address any reasonable scientific doubt to achieve the required degree of certainty.

The first step in an AA that is applying nutrient neutrality is to understand whether a development will cause additional nutrient inputs to the River Wensum SAC. This requires calculation of the amount of nutrients a new residential development will create, otherwise known as a nutrient budget.

If a nutrient budget shows that a new development will increase the nutrient input to the River Wensum SAC and it is not possible to conclude no adverse effect on site integrity alone or in combination, then this is the amount of nutrients that require mitigating on an annual basis to achieve nutrient neutrality and therefore enable a conclusion of no adverse effect on site integrity to be reached.

⁴ This approach was expressly endorsed in *R (Wyatt) v Fareham BC* [2021] EWHC 1434 (Admin)

Figure 1: Diagram demonstrating the potential nutrient impact pathways from a new development to a Habitats site. An increase in nitrogen and phosphorus availability in aquatic ecosystems can lead to various problems, such as algae blooms, which can have detrimental impacts on the ecology of a Habitats site.



What is this guidance for?

This guidance document accompanies the River Wensum SAC nutrient budget calculator. The nutrient budget calculator is used to calculate the change in nutrient input from a new residential development to the River Wensum SAC. The calculator can be used to inform an AA which is looking to apply nutrient neutrality to show whether a new development will require nutrient mitigation and if so, the amount of phosphorus loading that requires counterbalancing through mitigation measures to enable a conclusion of no adverse effect on site integrity, alone or in combination.

The guidance document contains the following:

- Step-by-step instructions on how to collect the specific data required as inputs to the tool.
- Instructions on how to use the tool.

Who is the guidance for?

This guidance is for anyone who needs to complete a nutrient budget calculation to support an AA of residential development in the River Wensum SAC catchment. The tool is primarily aimed at developers who need to complete a nutrient budget calculation to support a planning application and Local Planning Authorities who need to understand the mitigation requirements for future development or assess planning applications. It could also be used by communities or environmental groups wanting to understand the impacts of a local development on the nutrient inputs to the River Wensum SAC.

Summary of how the calculator works.

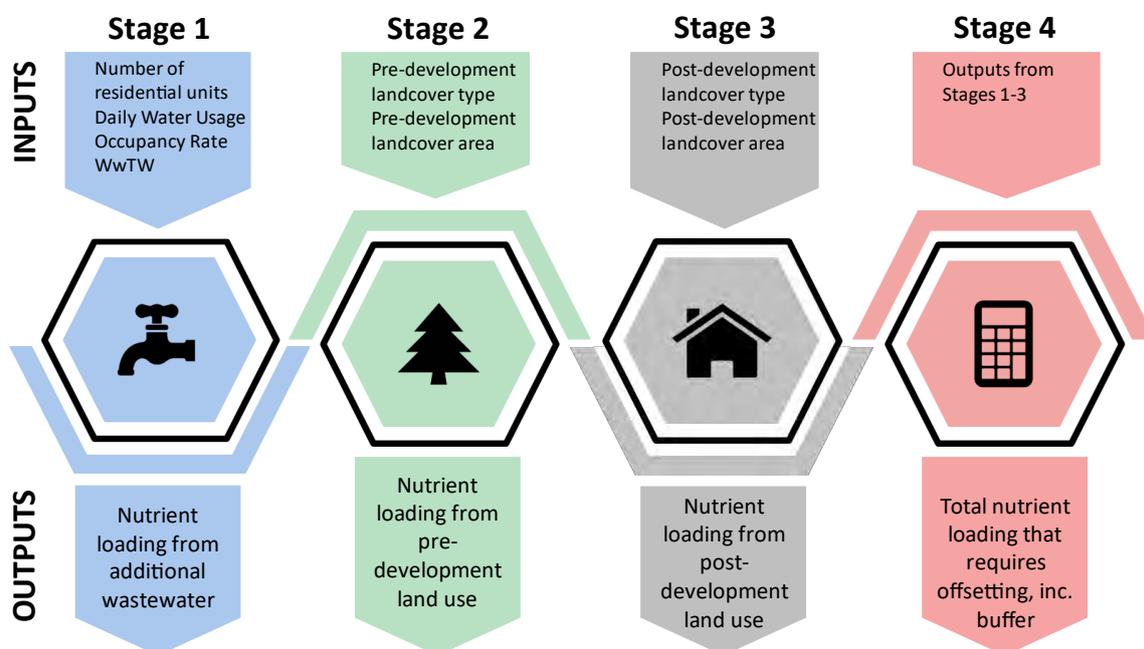
Overview

The nutrient budget calculator requires a set of inputs in order to calculate a new development's nutrient budget. The calculations are completed in four stages:

1. Calculate the increase in nutrient loading that comes from a development's wastewater.
2. Calculate the pre-existing nutrient load from current land use on the development site.
3. Calculate the future nutrient load from land use on the development site post-development.
4. Calculate the net change in nutrient loading from the development to the River Wensum SAC with the addition of a buffer. The net change in nutrient loading + the buffer is the nutrient budget.

These key inputs and outputs for each stage can be shown schematically in Figure 2.

Figure 2: Schematic showing the key inputs and outputs associated with each stage of the nutrient budget calculation methodology



Note: the values that come pre-entered in this tool have been chosen based on research to select inputs that meet the HRA tests of beyond reasonable scientific doubt, best available evidence, in perpetuity and were chosen in accordance with the precautionary principle. It is highly inadvisable to edit the values in this tool without a sufficient evidence base to justify any changes.

Data Collection and preparation

The nutrient budget calculator requires a set of inputs as shown in Figure 2. This section does not provide instructions on how to gather development specific information, such as the number of properties being constructed, as this should be known by the developer and should be detailed in the planning application. The subsections below provide guidance on how to identify certain inputs that are needed to complete the calculations for each stage of the nutrient budget calculations. The information required is available from free to access data sources⁵. Most of the required inputs are for factors that are specific to the location of a development site or the hydrological catchment of the River Wensum SAC.

The instructions below are divided by the stage where the data will be required. We advise that you collect and note down this data before starting to input information into each stage of the nutrient budget calculator.

Stage 2 & 3: Instructions for finding the Operational Catchment that the development is located within

- Go to this link: <http://environment.data.gov.uk/catchment-planning/>
- Search the location by place name, postcode etc. This will give a high-level view of the area. Use the zoom feature to find the exact location of the development.
- Click on the light blue area on the map in which the development is located. This will bring the user to the Operational Catchment page
- Make a note of the name of the Operational Catchment and select it from the dropdown list in the 'Catchment' cell when you get to this part of the calculator tool.

Note: the River Wensum SAC catchment is within a single Operational Catchment and so there is only one option that is pre-selected in the 'Catchment' cell of the calculator.

Stage 2: Instructions for finding the soil drainage type associated with the predominant soil type within the development site

- Go to this link: <http://www.landis.org.uk/soilscapes/#>
- Find your development site location on the map by using the search bar on the right side of the map in the 'Search' tab. Searching a location should generate a pop-up window in which you can view the soil information by clicking 'View soil information'. If this is not an option then click on the relevant soil type on the map and click on the 'Soil information' tab on the right-hand side of the map, below the 'Search' tab.
- The 'Soil drainage type' value can be found in the 'Soil information' under the title 'Drainage:'
- Make a note of this soil type and select the relevant soil drainage type from the drop-down list in the 'Soil drainage type' cell when you get to this part of the calculator tool.

Stage 2: Instructions for finding the annual average rainfall that the development site will receive

- Go to this link: <https://nrfa.ceh.ac.uk/data/station/spatial/34004>
- This link will bring the user to the Wensum at Costessey Mill flow gauge catchment information page.
- Click on the dropdown list next to the title 'Select spatial data type to view:' on the left of the map and select 'Rainfall'.
- Select the Legend tab.
- Zoom in on the map to find the location of the development and find the corresponding rainfall range from the Legend. Note that you cannot search this map using location information and will need to 'surf' around the map to find your development site location.

⁵ Correct at the time of writing. These data sources are available from websites that currently have government funding but it should be noted that these datasets may become unavailable if funding is removed.

- Make a note of the relevant rainfall band for your site and use it to select this rainfall band from the drop-down list in the 'Average annual rainfall' cell when you get to this part of the calculator tool.

Stage 2: Instructions for finding out whether the development is in a Nitrate Vulnerable Zone (NVZ)

- Go to this link <http://mapapps2.bgs.ac.uk/ukso/home.html?layers=NVZEng>
- Enter the location of the development site in the search bar.
- Once the area has been located, click on the map where the development is located to find out if it is within an NVZ.
- Make a note of this information. It will be needed to select 'Yes' or 'No' from the 'Within Nitrate Vulnerable Zone (NVZ)' cell when you get to this part of the calculator tool.

Note: some of the values you select above will also be used in the Stage 3 calculations, however you only need to add the above details to the table in Stage 2 of the calculator and the required values for stage 3 will be carried through automatically.

How to use the calculator:

General tips

- The key below shows the colour coding used to highlight which cells need to be completed.
- When a cell is selected, instructions on how to fill out the cell that is selected are shown.
- Some cells will have values pre-populated, like the 'Water usage' input. The instructions for each cell will detail if an alternative value can be used.
- It is advisable to retain a default copy of this calculator tool workbook which has not had any development details added. "Save as" a new copy each time you calculate a budget for a new development in case any of the default values in the in the workbook get overwritten and are needed again.

Key:

	Values to be entered by the user
	Fixed or calculated values
	Lookup tables

Water usage (litres/person/day):	120	
Development Proposal (dwellings):	100	Please enter the total number of dwellings that will be on the development site as of the completion date of the project.
...	Instructions	Site Information
	Stage 1	Stage 2
		Stage 3

Stage 1: calculate the new nutrient load associated with the additional wastewater

In this section the user will need to enter:

- The date of first occupancy. *This is because some wastewater treatment works may be due an upgrade in 2025 that will change the nitrogen or phosphorus output from this works, which will in turn change the output from this stage of the calculations. If this is the case, it will be apparent*

in the calculated values if there is an upgrade to a treatment works that affects the nutrient budget.

- The average occupancy rate of the development will need to be entered in people per dwelling for residential dwellings or units for other types of overnight accommodation which would result in an increase in overnight accommodation. The default setting for residential dwellings is the national occupancy rate of 2.4 people per dwelling. **Only change this value if there is sufficient evidence that a different occupancy rate is appropriate** (see Occupancy Rate Guidance section below for when a local or regional occupancy rate is acceptable).
- The number of dwellings / units⁶ that will be within the development at the time of completion.
- The wastewater treatment works that the development will connect to. If required this information can be obtained from the sewerage undertaker for the development site. If it is not feasible to connect to mains sewerage and a septic tank (ST) or package treatment plant (PTP) is being used, please select this option. Please be aware that if the total nitrogen (TN) or total phosphorus (TP) final effluent concentrations (in mg/l) are specified by the manufacturer, please select 'Septic Tank user defined' or 'Package Treatment Plant user defined' and enter the specified value in the cell where prompted. If you do not have a TP or TN value provided by the manufacturer, select the 'Septic Tank default' or 'Package Treatment Plant default' option and a value will be provided automatically.

Occupancy Rate Guidance:

As set out in the guidance below, the Local Planning Authority/Competent Authority will need to ensure that the occupancy rate is appropriate to development within their Authority area. **It is therefore recommended that the occupancy rate is agreed with the Local Planning Authority before completing the nutrient budget calculation.**

Competent authorities must satisfy themselves that the residents per dwelling/unit value used in this step of the calculation reflects local conditions in their area. The residents per dwelling value can be derived from national data providing it reflects local conditions. However, if national data does not yield a residents per dwelling/unit value that reflects local occupancy levels then locally relevant data should be used instead. Whichever figure is used, it is important to ensure it is sufficiently robust and appropriate for the project being assessed. **It is therefore recommended that project level Appropriate Assessments specifically include justification for why the competent authority has decided upon the occupancy rate that has been used.**

Further guidance is provided below.

National occupancy data

When using national occupancy data, the Office of National Statistics (ONS) national average value for the number of residents per dwelling of 2.4 is recommended. This value is derived from 2011 census data and is subject to change when the 2021 Census becomes available. This value can be used if the Local Planning Authority is satisfied that:

- It is appropriate for the level and type of housing development that is expected to come forward in the Local Planning Authority's area (a strategic assessment should be made of the development anticipated to come forward over the Local Plan period to ensure the use of average figures will not under/overestimate the level of impact)

⁶ The term 'dwellings' has a specific legal meaning derived from the use classes order. To ensure that all relevant forms of development which would result in an increase in overnight accommodation such as hotel rooms, short term holiday lets etc are considered in the HRA process the term units is used

- It corresponds to the local average in the area (it is not likely to overestimate or underestimate occupancy)
- It is based on data that is robust and doesn't underestimate the level of impact over time.

It may not be appropriate to use the national average occupancy rate for development types which are not included in the ONS data, such as student accommodation or houses in multiple occupation. For such developments, the Local Planning Authority should specify an appropriate occupancy rate in the project level Appropriate Assessment and explain how this figure was derived.

Locally relevant occupancy data

If the national average occupancy rate does not correspond with local conditions, then a locally relevant average residents per dwelling value may be more appropriate. If a Local Planning Authority decides to use a locally relevant value, that value needs to be supported by robust and sufficient evidence which should be included in the project level Appropriate Assessment. Key sources of evidence include:

- The average occupancy rate from the census for the relevant local administrative area, e.g. the county.
- The average occupation figures used by the Local Planning Authority to calculate population growth due to Local Plan development.
- The average occupation figures used by the local water company to plan for population growth and the impact on water resources and sewage treatment.

A local / regional average occupancy rate can be used provided that it is from a robust source which can show trends over a protracted period of time— such as from ONS derived data or from the annual English Housing Survey. Figures derived from data collected over short periods of time will not be acceptable as short-term data is unlikely to provide the required degree of certainty. The Local Planning Authority should ensure that any trend in occupancy rates or estimates of the average number of persons per household used will continue for perpetuity and would not underestimate the level of impact over time. A local / regional average occupancy rate would therefore need to be based on figures over at least a 5-year period⁷.

Local Planning Authorities will also need to satisfy themselves that a locally derived occupancy figure is appropriate for the level and type of housing development that is expected (a strategic assessment should be made of the development anticipated to come forward over the Local Plan period to ensure the use of average figures will not under/overestimate the level of impact).

Occupancy rates based on dwelling type

Should the nature or scale of development associated with a particular project proposal suggest that the use of an average occupancy rate is not appropriate, then the Local Planning Authority may decide to adopt an occupancy rate based on the dwelling types proposed for that particular project, provided it meets the criteria outlined above. This may be appropriate where a project proposer seeks consent for a development comprising certain dwelling types (e.g. flats and small 1 and 2 bed dwellings). If the Local Planning Authority decides to adopt a local approach based on determining occupancy rate by dwelling type, that approach should be used for all planning applications, rather than reverting back to the use of an average occupancy rate. This will ensure that the Local Planning Authority doesn't inadvertently underestimate total occupancy levels (and consequently water quality impacts) across its area by applying a lower residents per dwelling/unit value for developments comprising smaller units but failing to adopt a higher residents per dwelling/unit value for developments comprising larger units or a mix of units.

⁷ The figure of 5 years has been chosen as the minimum period of time over which occupancy rates can be calculated from as local plans and WRMPs are reviewed every 5 years, so represents a long enough period of time to capture any trends or changes.

Consistency in applying occupancy rates

The same occupancy rate should be used where there are several different impacts on Habitat sites which require strategic mitigation. The strategic approaches developed with local planning authorities to deal with in combination impacts on international sites elsewhere typically calculate mitigation requirements and contribution requirements based on current national average occupancy rates. Local Planning Authorities may decide to use a locally derived average occupancy rate instead, but this local occupancy rate must be used consistently across each type of impact and each Habitats site affected. Local Planning Authorities should not use different occupancy rates in their HRAs for the same dwelling types / size of units. Whilst the impacts will be different, occupancy rates will have been used to estimate the scale of impact and subsequently the scale of mitigation required on the protected sites. The types of impact will typically last in perpetuity. Care is therefore needed to ensure the adoption of an alternative occupancy rate based on an assessment of net population additions to a locality for nutrient budgeting does not undermine other existing strategic approaches, particularly where there are overlapping impacts within the locality.

Note: When 2021 Census data is available, the 2.4 value will be updated.

Note: if an ST or PTP is being used then a comprehensive maintenance regime is required as part of the application process. Please consult your Local Planning Authority for further advice on how to specify this maintenance regime and demonstrate that it is appropriately secured. If the ST or PTP which is being used has phosphate stripping capabilities, chemical dosing may be required. If chemical dosing is required, a robust management plan that details how chemicals are stored, the dilution rates, dosing frequencies, that any chemicals used will not have an environmental impact etc. must also accompany the planning application. PTPs with chemical dosing may not be appropriate in all cases.

Stage 2 - calculate the annual nutrient load from existing (pre-development) land use on the development site

In this section some environmental information about the development will need to be entered as well as the type and area of landcover that is being developed. The environmental information required is [described above](#).

Only the types and areas of land that are being altered by the development should be entered. For example, if two hectares of agricultural land within a ten-hectare development site are being retained in the same agricultural use, this area should not be included in the calculations.

In the 'Existing land use type(s)' column of the main table in Stage 2 of the calculator, each cell has drop-down list of land use types. This list contains seven agricultural land cover types to choose from and eight different non-agricultural land cover types that may be present on a pre-development site. Please find out what land use types are within the development before completing this tool. If there is a land use within the development area that is not in the list, please select the most similar land use type. Table 1 provides a description of the different land use types available within the calculator tool.

Table 1: Table of land use types included within the tool and their descriptions.

Land use types used in the calculator tool	Description
Cereals	Agricultural areas on which cereals, combinable crops and set aside are farmed.
General	Agricultural areas on which arable crops (including field scale vegetables) are farmed.
Horticulture	Agricultural areas on which fruit (including vineyards), hardy nursery stock, glasshouse flowers and vegetables, market garden scale vegetables, outdoor bulbs and flowers, and mushrooms are farmed.
Pig	Agricultural areas on which pigs farmed.
Poultry	Agricultural areas on which poultry are farmed.
Dairy	Agricultural areas on which dairy cows are farmed.
LFA	Agricultural areas on which cattle, sheep and other grazing livestock are farmed in locations where agricultural production is difficult. An area is classified as a Less Favoured Area (LFA) holding if 50 per cent or more of its total area is classed as LFA.
Lowland	Agricultural areas on which cattle, sheep and other grazing livestock are farmed. A holding is classified as lowland if less than 50 per cent of its total area is classed as a lowland grazing area.
Mixed	Agricultural areas in which none of the above categories are farmed or where it is too difficult to select a single category to describe the farm type.
Greenspace	Natural and semi-natural outdoor spaces provided for recreational use where fertilisers will not be applied and dog waste is managed, e.g. semi-natural parks. This does not include green infrastructure within the built urban environment, such as sports fields, gardens, or grass verges, as these are included in the residential urban land category.
Woodland	Natural and semi-natural outdoor wooded areas.
Shrub	Natural and semi-natural outdoor shrubland area.
Water	Areas of surface water, including rivers, ponds and lakes.
Residential urban land	Areas of houses and associated infrastructure. This is inclusive of roads, driveways, grass verges and gardens.
Commercial/industrial urban land	Areas that are used for industry. These are businesses that typically manufacture, process or otherwise generate products. Included in the definition of industrial land are factories and storage facilities as well as mining and shipping operations.
Open urban land	Area of land in urban areas used for various purposes, e.g. leisure and recreation - may include open land, e.g. sports fields, playgrounds, public squares or built facilities such as sports centres.
Community food growing	Areas that are used for local food production, such as allotments.

Stage 3: calculate the annual nutrient load from new (post-development) land use on the development site

In this section the user will need to select the type and area of the landcover present on the development site after the development has been completed.

In the 'New land use type(s)' column of the main table in Stage 3 of the calculator, each cell has a drop-down list of land use types containing eight non-agricultural land use types that may be present on the post-development site. Please find out what land use types are within the development before completing this part of the tool. If there is a land use within the development area that is not in the list (see Table 1 for land use type descriptions), please select the most similar land use type.

Stage 4: calculate the net change in nutrient loading for the site and the final annual nutrient budget for the development site:

This final stage automatically uses the results from Stages 1-3 and calculates the nutrient budget using the equation shown in Figure 3.

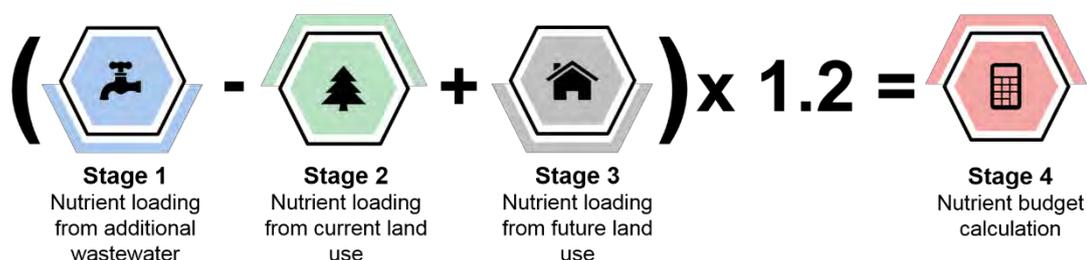
As Figure 3 shows, the output from Stage 4 of nutrient budget calculations is the balance of new sources of phosphorus from a development minus the existing sources of phosphorus from the pre-development site. To ensure the final figure is robust and suitably precautionary this balance is multiplied by 1.2, i.e. increased by a 20%, buffer'.

The 20% buffer is applied to account for the uncertainties that underlie the inputs to Stages 1-3 of the nutrient budget calculations, as well as accounting for some potential nutrient sources associated with new development that cannot be readily quantified. To cover all possible inputs to a nutrient budget with a high enough certainty to remove the need for the buffer would require extensive site-specific investigations. The 20% buffer is a means of accounting for the uncertainties within the nutrient budget calculations and providing confidence that mitigation of the nutrient budget will remove the risk of adverse effects on site integrity in the River Wensum SAC.

The output in Stage 4 shows how much nutrient mitigation is required in kilograms per year to achieve nutrient neutrality.

If there are two values due to an upgrade occurring at the wastewater treatment works the development is connecting to, the calculator will show the total amount of nutrient mitigation that is needed before and after the upgrade.

Figure 3: The equation used to calculate the nutrient budget.



Designated Site Name:	River Wensum SAC
Site Details:	
From the River Wensum SAC citation:	
<p>The Wensum is a naturally enriched, calcareous lowland river. 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 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.</p> <p>Much of the adjacent land is managed for hay crops and by grazing, and the resulting mosaic of meadow and marsh habitats, provides niches for a wide variety of specialised plants and animals. <i>Ranunculus</i> vegetation occurs throughout much of the river's length.</p> <p>Stream water-crowfoot <i>R. penicillatus</i> ssp. <i>pseudofluitans</i> is the dominant <i>Ranunculus</i> species but thread-leaved watercrowfoot <i>R. trichophyllus</i> and fan-leaved water-crowfoot <i>R. circinatus</i> also occur in association with the wide range of aquatic and emergent species that contribute to this vegetation type.</p> <p>The river should support an abundant and rich invertebrate fauna including the native freshwater crayfish <i>Austropotamobius pallipes</i> as well as a diverse fish community, including bullhead <i>Cottus gobio</i> and brook lamprey <i>Lampetra planeri</i>. The site has an abundant and diverse mollusc fauna which includes Desmoulin's whorl-snail <i>Vertigo moulinsiana</i>, which is associated with aquatic vegetation at the river edge and adjacent fens.</p>	
Reason for European Site Designation:	
<p>The River Wensum Special Area for Conservation is designated for the following features:</p> <ul style="list-style-type: none"> • H3260 Water courses of plain to montane levels with <i>R. fluitantis</i> • S1016 Desmoulin's whorl snail, <i>Vertigo moulinsiana</i> • S1092 Freshwater crayfish, <i>Austropotamobius pallipes</i> • S1096 Brook lamprey, <i>Lampetra planeri</i> • S1163 Bullhead, <i>Cottus gobio</i> <p>Links to Conservation Advice: Conservation Objectives Conservation Objectives Supplementary Advice</p>	
Nutrient Pressure(s) for which the site is unfavourable:	
Phosphorus	
Water Quality Evidence:	
<p>In the Conservation Objectives Supplementary Advice for the River Wensum SAC it states 'restore the natural nutrient regime of the river, with any anthropogenic enrichment above natural/background concentrations limited to levels at which adverse effects on characteristic biodiversity are unlikely'</p> <p>Water Quality data is reported against the respective SSSI units within the SAC. The data reported here are from the same monitoring points as those used in the River Wensum Diffuse Water Pollution Plan.</p>	

Unit name	SSSI Unit	Monitoring point ID	WQ Target	WQ Monitoring Data ¹	Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target
			Soluble Reactive Phosphorus (ug/l), annual mean	Orthophosphate, reactive as P (ug/l), mean	Compliance with target – Pass/Fail and % reduction needed to achieve the WQ Target
Wensum Above Confluence with Tat	45	R.Wensum Helhoughton Bridge An-Wen020	20	39.3 (Feb 2019 – Jan 2022)	FAIL 49% reduction needed
Tat Above Confluence with Wensum	46	R.Tat Tatterford Common (R.Wensum) An-Wen010	20	80.9 (Feb 2019 – Jan 2022)	FAIL 75% reduction needed
Confluence - Fakenham Mill	47	R.Wensum Sculthorpe Mill An-Wen040	30	45.2 (Feb 2019 – Jan 2022)	FAIL 34% reduction needed
		R.Wensum Goggs Mill Rd. Br. Hempton An-Wen045	30	46.1 (Jan 2019 – Dec 2021)	FAIL 35% reduction needed
Fakenham Mill - Great Ryburgh Mill	48	R.Wensum Great Ryburgh Bridge An-Wen070	30	59 (Oct 2011 – Sept 2014)	FAIL – older data 49% reduction needed
Great Ryburgh Mill - Bintree Mill	49	No Monitoring Point	30	-	Unknown
Bintree Mill - North Elmham Mill	50	R.Wensum County School Bridge An-Wen102	30	71.6 (May 2019 – Dec 2021)	58% reduction needed
North Elmham Mill - Elsing Mill	51	R.Wensum Swanton Morley Bridge An-Wen180	30	57.6 (Feb 2019 – Jan 2022)	FAIL 48% reduction needed
Elsing Mill - Lenwade Mill	52	R.Wensum Lyng Road Bridge An-Wen1905	30	64.9 (Jan 2019 – Dec 2021)	FAIL 54% reduction needed
Lenwade Mill - Taverham Mill	53	R.Wensum Great Witchingham Bridge An-Wen200	30	59.7 (Feb 2019 – Jan 2022)	FAIL 50% reduction needed
Taverham Mill - Hellesdon Mill	54	R.Wensum Taverham Bridge An-Wen235	30	63.8 April 2017 – March 2020)	FAIL 53% reduction needed

Langor Drain Above Conf. with Wensum	55	Kettlestone Str. Langer Br. (R. Wensum) An-Wen060	30	75 (Aug 2014 – Jul 2017)	FAIL 60% reduction needed
--------------------------------------	----	---	----	-----------------------------	------------------------------

¹Water Quality Monitoring data from EA WIMS database, the date range is in brackets. Any sample results below the level of detection (LOD) were taken at face values in the calculation of the mean. Following the rivers common standards monitoring guidance the mean of 3 years of data used where available.

The condition of the waterbody and the habitats which support the designated features is in part dependent on the water quality within them.

The occurrence of elevated nutrients in the waterbody can impact on the competitive interactions between high plant species and between higher plant species and algae, which can result in a loss of characteristic plant species. Changes in plant growth and community composition and structure can have implications for the wider food web, and the species present. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody and substrate condition, also impacting on biota within the river.

Recent water quality measurements for the River Wensum within the SAC show phosphorus concentrations to be exceeding the targets for all unit where there is monitoring data. Any nutrients entering the catchment upstream of the locations which are exceeding their nutrient targets, will make their way downstream and have the potential to further add to the current exceedance. Therefore, for the River Wensum, the whole upstream catchment is included within the catchment map.

Additional Information:

Habitat type impacted by nutrients - Riverine

The Special Area for Conservation is legally underpinned by the River Wensum SSSI

SSSI interest features include:

- River supporting habitat
- Rivers and Streams

The Greater Norwich Local Plan

Housing and Economic Land Availability Assessment (HELAA) Addendum IV June 2022

ENVIRONMENT



HOMES



INFRASTRUCTURE



COMMUNITIES



DELIVERY



ECONOMY



www.gnlp.org.uk

Housing and Economic Land Availability Assessment (HELAA) Addendum IV (2022) – Gypsy and Traveller Permanent Residential Pitches

Contents

Introduction	1
Background.....	1
Summary.....	1
Parish: Cawston	3
Site reference: GNLP5004	3
Parish: Costessey	6
Site reference: GNLP5007	6
Parish: Wymondham	9
Site reference: GNLP5005	9

HELAA Addendum IV (June 2022)

Important: The inclusion of a site as potentially suitable for development within the HELAA DOES NOT confer any planning status on that site, or any commitment that it will be brought forward for development. In addition, sites excluded from the HELAA assessment can still be subject to more detailed site assessment and be considered for allocation through the Local Plan process. For more info see Site Assessment Booklets.

Introduction

This fourth addendum to the Housing and Economic Land Availability Assessment (HELAA) should be read alongside the [HELAA December 2017](#). However, this document only considers Gypsy and Traveller sites, whereas previous iterations of the HELAA considered development proposals for employment, housing, or mix use developments.

Background

In July 2021, the Greater Norwich Development Partnership (hereafter referred to as the 'Partnership' which comprises Broadland, Norwich, and South Norfolk councils working with Norfolk County Council) submitted the Greater Norwich Local Plan ('GNLP') for independent examination. During this examination process, which included hearing sessions in February and March 2022, the two inspectors appointed on behalf of the Secretary of State, Mike Worden and Thomas Hatfield, indicated that more should be done to address Gypsy and Traveller accommodation needs. To do this the Partnership has identified 3 sites that could be considered as Gypsy and Traveller site allocations to provide residential pitches for caravans.

This latest iteration of the HELAA is limited in scope to the accommodation needs of Gypsies and Travellers, and only considers 3 sites. All 3 sites were identified during late 2021 and early 2022 when it became apparent that the inspectors examining the local plan expected to see specific sites for Gypsies and Travellers. 3 of the sites are in public ownership, and the other 1 site was put forward by a private landowner who became aware in early 2022 that more opportunity existed to promote Gypsy and Traveller sites for inclusion in the local plan.

Summary

For each of the 3 sites being considered in this land availability assessment the landowner has provided a redline plan and a judgement has been made about how many pitches could be accommodated. As a guideline, to avoid the risk of pitches becoming too small around 300 sqm is being allowed per pitch. This broadly accords with design guidance that suggests 320 sqm per pitch in order to provide space for an amenity block (kitchen, bathroom, living room) and touring caravan space for up to 2 caravans and 2 vehicles.¹

All 3 Gypsy and Traveller sites are compared against the 14 suitability criteria in the HELAA methodology to assess if they are reasonable for development. The purpose

¹ [https://www.leeds.gov.uk/docs/Gypsy and Traveller Site Design Guide.pdf](https://www.leeds.gov.uk/docs/Gypsy%20and%20Traveller%20Site%20Design%20Guide.pdf)
[designinggypsiesites.pdf](#) (publishing.service.gov.uk)

of which is to screen out sites with no development potential; and, for the remaining sites to identify issues that could need addressing for development to go ahead. For each of the 3 sites, a 'red', 'amber' or 'green' rating is awarded, and a conclusion on the findings is given; but, in summary all 3 sites are found to be reasonable alternatives that merit further consideration for allocation in the local plan.

The HELAA methodology used for this fourth addendum is the same as for previous versions, but there are slight differences in its application. Most particularly a slightly broader interpretation is being taken to access to services. This is because some Gypsies and Travellers may accept living in a slightly more remote location, and for the practical reason that finding land for Gypsies and Travellers is more difficult than general housing land.

As well as the scarcity of sites for Gypsies and Travellers, there is also an urgency to find sites that can be developed in the next 5 years. Therefore, in the 'Availability and Achievability' conclusion for each of the 3 sites emphasis is placed on when they could be delivered. Particularly as to whether development could happen in the current 5-year time period to March 2027 or whether due to site specific issues a longer timeframe to March 2032 is required.

Parish: Cawston Suitability Assessment

Site reference: GNLP5004
LOCATION:
Land off Buxton Road, Eastgate

Site area: 0.12 Ha
PROPOSED DEVELOPMENT:
A permanent residential Gypsy and Travellers site for 4 pitch

District: Broadland

CONSTRAINTS ANALYSIS

Site Access
Accessibility to Services
Utilities Capacity
Utilities Infrastructure
Contamination and Ground Stability
Flood Risk
Market Attractiveness

Green
Amber
Green
Green
Green
Green
Green

IMPACTS ANALYSIS

Significant Landscapes
Sensitive Townscapes
Biodiversity and Geodiversity
Historic Environment
Open Space and GI
Transport and Roads
Compatibility with neighbouring uses

Amber
Green
Amber
Green
Green
Green
Green

SITE SUITABILITY CONCLUSIONS

This greenfield site off Buxton Road in the hamlet of Eastgate, south-east of Cawston, is 0.12 ha in size, and could likely accommodate 4 permanent residential Gypsy and Traveller pitches.

The initial highways advice is that a suitable vehicular access is likely to be achievable, subject to demonstrating an acceptable visibility splay but that this might require the removal of hedgerow. Locationally, GNLP5004 is slightly disconnected to local services. As for example, the distance to Cawston Primary School is 1.7 km. However, as this is a relatively small development proposal it will not lead to a significant increase in traffic on local roads or a significant increase in unsustainable travel patterns.

There are no known constraints relating to utilities capacity, contamination or ground stability issues. Anglian Water has stated water supply and water recycling connections will be addressed at the time a site comes forward because it is a

development for fewer than 10 dwellings. The site is within Flood Zone 1, so is at low risk of fluvial flooding, and no surface water flooding risk has been identified.

In terms of sensitive landscape and biodiversity, Cawston and Marsham Heaths SSSI is located approximately 1 km from the site, and there are a further four SSSIs within a 5 km radius -- Booton Common SSSI, Buxton Heath SSSI, Alderford Common SSSI and Swannington Upgate Common SSSI and it is in a 'green' impact risk zone for Great Crested Newts. However, Natural England has not raised an objection to this site.

Whilst only measuring 0.12 ha it is noted that GNLP5004 is Grade 2 agricultural, which would result in a minor loss of high-quality agricultural land. Furthermore, developing GNLP5004 would not mean a loss of open space, and neither is the site situated along a strategic green infrastructure corridor.

Cawston Conservation Area, which includes a number of Grade I and II listed buildings, is approximately 1.6 km west of the site, and so no adverse impact is expected on heritage assets. But initial advice from the Historic Environment Team is that the site is close to an area of Roman Settlement. Therefore, further archaeological investigation will be necessary.

As to neighbouring and adjoining uses, there are residential properties to the north of the site along Back Lane, a field to the east, agricultural land on the south side of Buxton Road, and a home to the west. So how GNLP5004 could be developed to fit within its surroundings most appropriately will need consideration, but nevertheless the principle of development is considered acceptable.

Overall, GNLP5004 is considered suitable for the land availability assessment, subject to achieving an acceptable visibility splay and undertaking site investigations. But also, as with many locations, recent announcements about nutrient levels in river basin catchments will have to be addressed if GNLP5004 is developed.

The exact process for how GNLP5004 could be developed as a Gypsy and Traveller site is yet to be decided, but it is considered that options exist for bringing the site forward, and there is no reason to doubt that GNLP5004 is in a location that would be attractive to the Gypsy and Traveller community as a suitable site.

Parish: Cawston Availability and Achievability

Availability and Achievability Conclusions

GNLP5004 is in private ownership but the landowner has stated a willingness to make the land available as a Gypsy and Traveller site. As a relatively unconstrained greenfield site there is no reason why development could not come forward quickly. 4 to 5 years is considered ample time to market the land, gain planning permission, and to develop GNLP5004.

Overall Conclusions for Site

Subject to caveats, GNLP5004 is considered suitable for inclusion in the land availability assessment. If allocated in the local plan, GNLP5008 would be deliverable within 5 years and could be completed by March 2027.

Parish: Costessey Suitability Assessment

Site reference: GNLP5007

LOCATION:

Land off Bawburgh Lane, north of New Road and east of the A47 (Costessey contingency site ref GNLP0581/2043)

Site area: 1 ha

PROPOSED DEVELOPMENT:

A permanent residential Gypsy and Travellers site for 18 pitches

District: South Norfolk

CONSTRAINTS ANALYSIS

Site Access	Amber
Accessibility to Services	Amber
Utilities Capacity	Amber
Utilities Infrastructure	Green
Contamination and Ground Stability	Green
Flood Risk	Amber
Market Attractiveness	Green

IMPACTS ANALYSIS

Significant Landscapes	Amber
Sensitive Townscapes	Amber
Biodiversity and Geodiversity	Amber
Historic Environment	Green
Open Space and GI	Green
Transport and Roads	Green
Compatibility with neighbouring uses	Green

SITE SUITABILITY CONCLUSIONS

Site GNLP5007 is a variation of the contingency site GNLP0581/2043, which measures 62 ha, and is being promoted as a residential-led urban extension of approximately 800 homes. The variation as proposed by GNLP5007 is to incorporate approximately 1 ha for Gypsies and Travellers accommodation into the urban extension. The exact location of the Gypsy and Traveller site within GNLP0581/2043 is yet to be determined and will be considered as part of master-planning the overall urban extension.

The inclusion of a Gypsy and Traveller site represents a small-scale change in the context of an entire urban extension. Varying GNLP0581/2043 with the incorporation of a 1 ha Gypsy and Traveller site into the overall 62 ha site has little effect on the land availability assessment scoring, and all the constraints previously identified continue to apply. Given the size of GNLP0581/2043 some constraints are expected, but it is considered that these issues can be mitigated through a comprehensive master-planning exercise.

There is a band of land that has surface water flood risk through the middle and a northern part of GNLP0581/2041. GNLP0581/2041 is also in the Norwich Southern Bypass Protection Zone and adjacent to the A47 there could be amenity concerns from disturbance caused by traffic. Other constraints include overhead power lines, an adjacent contaminated site, landscape impacts, townscape impacts, and the potential for protected species being on-site.

Site GNLP0581/2041 was considered suitable for inclusion in the land supply assessment, and that conclusion remains the same with inclusion of a Gypsy and Traveller site into the overall proposal for an urban extension. But also, as with many locations, recent announcements about nutrient levels in river basin catchments will have to be addressed if GNLP5007 is developed.

The exact process for how GNLP5007 could be developed as a Gypsy and Traveller site is yet to be decided, but it is considered that options exist for bringing the site forward, and there is no reason to doubt that GNLP5007 is in a location that would be attractive to the Gypsy and Traveller community as a suitable site.

Parish: Costessey Availability and Achievability

Availability and Achievability Conclusions

Norwich City Council is a part owner in the land promoted as GNLP0581/2043, and therefore land required for a Gypsy and Traveller site is available for development. Investigations are being made as to how a Gypsy and Traveller site could come forward in a first phase of development, if GNLP0581/2043 becomes an allocation in the GNLP.

Overall Conclusions for Site

Subject to caveats, GNLP5007 is considered suitable for inclusion in the land availability assessment. If allocated in the local plan, some of the 18 pitches on GNLP0581/2043 could be deliverable within 5 years and the remaining pitches would be delivered by March 2032.

Parish: Wymondham Suitability Assessment

Site reference: GNLP5005

Site area: 0.07 Ha

LOCATION:

Land at Strayground Lane Wymondham
Recycling Centre

PROPOSED DEVELOPMENT:

A permanent residential Gypsy and Travellers site for 2 pitches

District: South Norfolk

CONSTRAINTS ANALYSIS

Site Access	Amber
Accessibility to Services	Amber
Utilities Capacity	Green
Utilities Infrastructure	Green
Contamination and Ground Stability	Amber
Flood Risk	Green
Market Attractiveness	Green

IMPACTS ANALYSIS

Significant Landscapes	Amber
Sensitive Townscapes	Green
Biodiversity and Geodiversity	Amber
Historic Environment	Green
Open Space and GI	Green
Transport and Roads	Green
Compatibility with neighbouring Uses	Amber

SITE SUITABILITY CONCLUSIONS

Site GNLP5005 measures 0.07 ha and is currently used as Wymondham Recycling Centre. The landowner intends to close this facility, and thus an opportunity exists to redevelop it for approximately 2 residential Gypsy and Traveller pitches. However, the site is not likely to become available until 2025 at the earliest.

GNLP5005 has a vehicular access onto Strayground Lane that serves the existing recycling centre. Strayground Lane is not to a good standard, there is no footpath, and the passing bays may require improvement; but the proposed use will generate less traffic than the existing recycling centre. Strayground Lane is a quiet lane in character and so opportunity exists for pedestrians and cyclists to use this route to access facilities in Wymondham.

The lack of footpath provision along Strayground Lane is a constraint in accessibility terms, but GNLP5005 is close to some facilities in Wymondham. There is a local shop approximately 700 m away, the closest GP surgery is approximately 900 m,

and Browick Road Primary School is approximately 1 km. This means that GNLP5005 has adequate access to schools and facilities for people to meet their daily needs.

In respect to heritage constraints GNLP5005 presents no substantive concerns, as the nearest listed building (Grade II 'Ivy Green Villa') is 300 m away and separated by the industrial area along Chestnut Drive. Environmental considerations will need further assessment such as an ecological survey, as GNLP5005 is approx. 50m from undeveloped areas along the Bays River, which is lowland fens priority habitat, and GNLP5005 partly overlaps the Bays River Meadows North County Wildlife Site. GNLP5005 is at low risk of flooding as within flood zone 1, and within the catchment of a groundwater Source Protection Zone (Zone III) as such, pollution mitigation measures with respect to water quality will be required but none of these factors rules out development potential.

Whilst not prohibiting possible development there are other points to consider due to past and present neighbouring uses. Immediately adjoining GNLP5005 to the west and south is the Gary Cooper Paving company that will pose considerations in terms of vehicle movements, noise, and possibly dust. The site abuts sections which overlap with a historic landfill site that will need investigation for possible further contamination. Immediately to the north-east, east, and south are various planning consents dating back to the 1990s for a gravel quarry, stockpiling aggregates, and landfilling of inert waste (references include C/92/7023 and C/94/7016).

Overall, GNLP5005 is considered suitable for the land availability assessment, subject to achieving mitigation measures, and provided the site can be appropriately converted from a recycling centre to a permanent residential site. But also, as with many locations, recent announcements about nutrient levels in river basin catchments will have to be addressed if GNLP5005 is developed.

The exact process for how GNLP5005 could be developed as a Gypsy and Traveller site is yet to be decided, but it is considered that options exist for bringing the site forward, and there is no reason to doubt that GNLP5005 is in a location that would be attractive to the Gypsy and Traveller community as a suitable site.

Parish: Wymondham Availability and Achievability

Availability and Achievability Conclusions

GNLP5005 is owned by Norfolk County Council and will become available for development once that existing recycling centre there closes. However, GNLP5005 is not likely to become available until 2025 at the earliest. A further 3 to 4 years might then be required to market the land, gain planning permission, and to develop GNLP5005.

Overall Conclusions for Site

Subject to caveats, GNLP5005 is considered suitable for inclusion in the land availability assessment. If allocated in the local plan, GNLP5005 would be developable within 6 to 10 years and could be completed by March 2032.