

# Planning Committee

08 December 2023

Agenda item number 7.1

## BA/2022/0357/FUL – Ludham- Water storage reservoir for agriculture

Report by Planning Officer

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### Proposal

A balanced cut and fill earth moving operation to create an irrigation reservoir for the storing of winter abstractions.

### Applicant

Nicholas Collier

### Recommendation

Approve, subject to conditions.

### Reason for referral to committee

Major application in terms of area.

### Application target date

22 May 2023

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## 1. Description of site and proposals

- 1.1. The application site is situated to the west of the village of Ludham on the east side of the River Ant. To the north is the How Hill estate and National Nature Reserve (NNR). To the south is How Hill Fen Nature Reserve. Much of the land to the northwest and south of the site is covered by a number of statutory designations, including as part of the Ant Broads and Marshes SSSI which forms part of the Broads Special Area of Conservation (SAC), Broadland Special Protection Area (SPA) and is a County Wildlife Site (CWS).
- 1.2. The application site is currently a grassed field measuring 6.2 hectares in total, located within a meander of the River Ant on raised land overlooking Buttles Marsh to the south. The nearest residential properties are located approximately 150m to the south-east of the site. A public footpath (Ludham FP10) runs along the southern boundary of the site.
- 1.3. The proposal is for a new reservoir which will encompass the whole field, except for a grass margin around the edge. The approximate footprint of the reservoir would be 230m by 215m.
- 1.4. The boundary treatment will be 2.4m high green fencing to prevent animals and people gaining entry. Hedgerows will be planted on the southern boundary, adjacent to the public footpath. Bunds approximately 4m high will be constructed inside the fence and these will be grassed to allow for sheep grazing.
- 1.5. Two sets of pipework are proposed to be constructed, one to fill the reservoir and the second to remove the water. The fill pipe is 134.95m long and connects through the woodland to the north into the River Ant. It will be 0.9m below the ground surface in a 1.05m deep trench, except through the woodland where the pipework will be above ground. The irrigation pipe, which would remove the water for use, is proposed to be 3034m long and will connect to an existing pipe just south of Grove Farm on Goffins

Lane. This will require the excavation to a depth of 1.05m but all surfaces will be reinstated after construction. The underground main route goes through gaps in hedges and therefore there will be no loss of hedgerow.

- 1.6. Three abstraction licences were granted by the Environment Agency on 16 February 2023 for abstraction at How Hill Farm (Grid Ref TG 26835 18412). These allow for abstraction between 1 November and 31 March up to a maximum of 90,000 cubic metres per year, not exceeding 1,500 cubic metres per day. The licences expire on 31 March 2030.

## **2. Site history**

- 2.1. A Members site visit took place on 17 April 2023 and the minutes of this meeting are attached at Appendix 2.

## **3. Consultations received**

There have been several consultations throughout the application process. The following responses include the most recent consultation responses received following the submission of additional information to allow the Habitat Regulations Assessment Appropriate Assessment to be carried out (September 2023).

### **Ludham Parish Council**

- 3.1. No response (to any consultations).

### **BA Ecologist**

- 3.2. Full Habitats Regulations Assessment Appropriate Assessment (HRA AA) is attached in Appendix 3.
- 3.3. Looking at this project in isolation, the conclusion of the HRAAA is that, provided the mitigation outlined in the supporting documentation ('Construction Environment Management Plan', Supporting Evidence for the Appropriate Assessment, Ecology Report 2023) is conditioned and implemented, if planning permission is granted for this application, it is expected that no adverse effect on the integrity of the Broads SAC and Broadland SPA will be seen due to this development taking place in isolation.
- 3.4. It has been highlighted that another reservoir proposal application maybe submitted within close vicinity of the Limes Farm proposal, approximately 1km north-east. If the construction of the two proposed reservoirs took place over the same winter period, there is the potential for additional noise and therefore disturbance impacts to qualifying bird populations. However, mitigation in the form of pre-construction bird surveys will be in place for this application to avoid disturbing any SPA/Ramsar bird species. It is also unlikely that construction of the two reservoirs would take place at the same time, given they would be at different stages in the planning process.
- 3.5. Looking at this project and the potential for in combination effects, the conclusion of the HRAAA is provided that the mitigation outlined above and in the supporting

documentation is conditioned and implemented, if planning permission is granted for this application, it is expected that no adverse effect on the integrity of the Broads SAC and Broadland SPA will be seen due to this development taking place in isolation or in combination with other projects.

### BA Landscape

- 3.6. My previous comments included requests for additional information and since then, the information submitted includes an Arboricultural Impact Assessment (AIA), Construction Environment Management Plan (CEMP) and Ecology Reports.
- 3.7. The AIA 5.6 *Installation of Pipe Through Woodland* notes that the pipeline through the rest of the woodland will be put in place above ground. Whilst this avoids potentially damaging excavation, it would introduce a new engineered feature into the landscape. No details seem to have been provided to enable assessment. 5.6 also refers to a new track proposed along the eastern edge of the reservoir to give access to refuel the pump. Again, this would introduce a new engineered feature into the landscape, for which no details seem to be available.
- 3.8. The AIA concludes that the proposed development will have minimal impact to trees on and adjacent to the site. This would be subject to the tree protection measures in the Arboricultural Method Statement being implemented in full and arboricultural supervision being followed. These would need to be secured by condition and would require monitoring.
- 3.9. The CEMP has been prepared in accordance with best practice by suitably qualified Ecologists.
- 3.10. The Ecology report recommends species rich grassland on reservoir banks, which is supported. However, this alone would not represent adequate landscape mitigation.
- 3.11. Fencing: previous details were provided for Otter fencing. The Ecology report now suggests a need for Badger fencing. As fencing could be a significant visual intrusion, clarification of proposals is needed.
- 3.12. Concern remains that the proposals involve not only the introduction into a highly sensitive landscape of a large scale engineered reservoir, but also a range of associated ancillary features, the nature, impacts and appearance of which remains unclear.
- 3.13. Further concern remains that the LVIA has been carried out without comprehensive information of the proposals being available and that the design of proposals have not been informed by the LVIA. This may consequently be the reason why insufficient landscape mitigation is proposed.
- 3.14. As a result of the above concerns there is a Landscape **objection**. This could be overcome by submission of the following:
  - Outstanding information and clarifications.

(1. Pipework connecting abstraction point to reservoir: Pipeline/trenching layout, cross-section, construction methodology. 2. Irrigation pipework: Pipeline/trenching layout, cross section of trench and pipe, construction methodology and 3. Operation of pumping, irrigation, and abstraction – timings, duration, noise levels.)

- An updated LVIA on full proposals which informs landscape mitigation and enhancement.

- Amendments to the design of the reservoir and ancillary features in response to LVIA.

- A Landscape scheme informed by LVIA.

- A Landscape management plan

## Natural England

3.15. Natural England welcomes the production of the HRA, which includes an Appropriate Assessment which addresses the concerns raised in their previous letter dated 15 June 2023.

3.16. Natural England notes that your authority, as competent authority, has undertaken an appropriate assessment of the proposal in accordance with regulation 63 of the Conservation of Species and Habitats Regulations 2017 (as amended). Natural England is a statutory consultee on the Appropriate Assessment stage of the Habitats Regulations Assessment process.

3.17. Your Appropriate Assessment concludes that your authority is able to ascertain that the proposal will not result in adverse effects on the integrity of any of the sites in question. Having considered the assessment, and the measures proposed to mitigate for all identified adverse effects that could potentially occur as a result of the proposal, Natural England advises that we concur with the assessment conclusions, providing that all mitigation measures are appropriately secured in any planning permission given.

3.18. No objection subject to appropriate mitigation:

- Implementation of all measures as outlined in the Construction Environment Management Plan (Wild Frontier Ecology September 2023).
- Strict adherence to the Reservoir Act 1975, including weekly reservoir checks by a qualified engineer.
- Installation and weekly checking of suitable 'wildlife fencing' to ensure the reservoir banks are not destabilised by excavating animals.

## RSPB

3.19. The additional information regarding construction of the reservoir and mitigating solutions is helpful. However, we wish to know who or how these mitigating solutions and actions will be overseen and monitored? An example might be the response to a diesel spillage at the point of abstraction. However, RSPB's principal concern still centres on the abstraction licences. Throughout the HRA statements are made without empirical evidence.

- 3.20. At EA HRA Annex 1 Page 17, in the last paragraph the sentence 'This suggests that there is water available to licence at higher flows, typically in the winter for new abstractions as long as there is a suitable hands-off flow to ensure the CSMG flow targets are still protected.' We ask; are we basing the decision to potentially damage adjacent protected sites based on a model, which seems to indicate water is available? This doesn't appear to be a robust foundation on which to make decisions about abstraction in the driest part of the UK.
- 3.21. We seem to recall that the graphs in the HRA refer to the impact on flow resulting from mostly groundwater abstraction, not the current string of new applications to abstract surface water. This take from the R Ant would be more direct and have an immediate impact on protected sites and flow locally. RSPB disagrees that the single HoF monitoring point at Honing Lock is appropriate to validate and evaluate flow at Little Reedham some 10km to the south. We would also question how the draw down of water at this point of abstraction would impact Little Reedham if the pump creates a depressed, local, inverted hydraulic cone within the spur ditch connected to the R Ant?
- 3.22. Page 12 2nd paragraph states '... in the interest of fairness on operators wanting to abstract winter water from the R Ant it has been agreed that applications downstream of the Ant Broads and Marshes will be awarded the same HoF conditions.' Again, there is no empirical data describing the evidence and how this position has been arrived at. It also doesn't take account of the landowners and managers trying to maintain quality of habitat in the face of impacts on water supply, especially for sites which rely on gravity feed from the river.
- 3.23. Reference is made to other known proposals to abstract surface water from the R Ant, which would lead to an in-combination impact. The process is flawed as it only considers individual planning proposals, not the total, incremental effect on flow and thus potential for salt water to move further upstream.
- 3.24. RSPB would ask how future applications to abstract surface water will be prioritised, especially in a scenario when flow is low? Will it be a case of the first application accepted has first take of water and subsequent proposals may or may not be viable? How will any water abstracted be correlated to the flow reading at Honing Lock? What would be the implications of a landowner abstracting outside of the flow parameters?
- 3.25. Until the evidence is provided to the questions outlined above the RSPB maintains its position to object to this proposal.

### **Norfolk Wildlife Trust**

- 3.26. No response to the latest consultation. Last response 14 June 2023 as follows:
- 3.27. We previously objected to this application in our letter dated 5 April 2023, noting that the Habitats Regulations Assessment (HRA) screening exercise provided by the Broads Authority determined that there would be a Likely Significant Effect on the Broads SAC. We are concerned at the continued absence of information to inform the Habitats Regulations decision making process and believe that it would have been beneficial to

have provided the shadow Habitats Regulations Assessment (HRA) at the same time as the ecology report. Due to the absence of the HRA, it is impossible to conclude that adverse effects on the Broads SAC could be avoided. We strongly recommend that the shadow HRA is sought from the applicant prior to any decision on this application.

- 3.28. Whilst we are grateful for the submission of the Ecology Report, we also remain concerned that the potential impacts on the adjacent CWS from leaks or spills, and the potential risk of damage from badgers, has not been sufficiently covered to rule out adverse effects on the CWS. The ecology report recommends that a Construction Environmental Management Plan (CEMP) is provided as part of the mitigation measures. Whilst CEMP are sometimes secured by way of condition should consent be granted, given the proximity of the proposal to multiple designated sites of high ecological sensitivity, we strongly recommend in this situation that any CEMP for this proposal should be provided prior to determination, in order to ensure that any aspired mitigation measures can be demonstrably delivered.
- 3.29. In conclusion, insufficient information has been provided to allow the Authority to safely rule out any adverse effects on the Broads SAC, and we also recommend that further information is sought on mitigation measures for potential impacts on the adjacent Buttles Marsh CWS. We share the ongoing concerns raised by the RSPB and Landscape Partnership and maintain our objection to this proposal.

### NCC - Archaeology

- 3.30. The proposed development site is located between two areas where cropmarks have been recorded from aerial photographs. The cropmarks are thought to represent field systems and enclosures of possible prehistoric, Roman, medieval and post-medieval date. There is potential for previously unidentified heritage assets with archaeological interest (buried archaeological remains) to be present within the current application site and that their significance would be affected by the proposed development.
- 3.31. If planning permission is granted, we therefore ask that this be subject to a programme of archaeological mitigatory work in accordance with National Planning Policy Framework (2021), Section 16: Conserving and enhancing the historic environment, para. 205.
- 3.32. In this case the programme of archaeological mitigatory work will commence with geophysical survey and informative trial trenching to determine the scope and extent of any further mitigatory work that may be required (e.g. an archaeological excavation or monitoring of groundworks during construction).
- 3.33. We suggest that the following conditions are imposed:-
- A. No demolition/development shall take place until an archaeological written scheme of investigation (WSI) has been submitted to and approved by the local planning authority in writing. The scheme shall include an assessment of significance and research questions; and 1) The programme and methodology of site investigation and recording, 2) The programme for post investigation assessment, 3) Provision to

be made for analysis of the site investigation and recording, 4) Provision to be made for publication and dissemination of the analysis and records of the site investigation, 5) Provision to be made for archive deposition of the analysis and records of the site investigation and 6) Nomination of a competent person or persons/organization to undertake the works set out within the written scheme of investigation and 7) any further project designs as addenda to the approved WSI covering subsequent phases of mitigation as required.

and,

- B. No demolition/development shall take place other than in accordance with the written scheme of investigation approved under condition (A) and any addenda to that WSI covering subsequent phases of mitigation.

and,

- C. The development shall not be occupied or put into first use until the site investigation and post investigation assessment has been completed in accordance with the programme set out in the archaeological written scheme of investigation approved under condition (A) and the provision to be made for analysis, publication and dissemination of results and archive deposition has been secured.

A brief for the archaeological work can be obtained from Norfolk County Council Environment Service historic environment strategy and advice team. We charge applicants for the elements of our involvement in planning cases not covered by our service level agreements with local planning authorities.

## 4. Representations

- 4.1. Landscape Partnership on behalf of Mr & Mrs Harris of Catfield Hall, Ludham:
- 4.2. We note that additional information has again been posted, specifically supporting evidence for a Habitats Regulations Assessment and a CEMP prepared by Wild Frontier Ecology, and also an Appropriate Assessment carried out by the Broads Authority. We are satisfied that these are of a reasonable standard, but they highlight the very high degree of risk associated with this reservoir site.
- 4.3. Consequently, we remain of the opinion that the proposed location at Buttle Marsh, so close to designated habitat, including a wetland SAC, when numerous suitable alternative locations exist (which do not carry this high level of ecological risk nor need for a strict programme of regular stability checks), is undesirable.
- 4.4. The extensive mitigation proposed by the Broads Authority's Ecologist and Wild Frontier demonstrate the level of risk created by siting a reservoir at this location. Should the Broads Authority nevertheless be minded to approve the application, the following should be conditioned, as a minimum:



- Wild Frontier Ecology would carry out a watching brief of the reservoir works area as well as the neighbouring Buttle Marsh to identify any potential ecological impacts, including on bird species. This will be done prior to the commencement, but on the same day as, the works. A report would be provided to the Broads Authority on completion, highlighting any issues that arose during construction and the manner in which they were resolved.
- Wild Frontier Ecology would carry out a watching brief of the proposed irrigation pipeline on a field by field basis. A report would be provided to the Broads Authority on completion, highlighting any issues that arose during construction and the manner in which they were resolved.
- An ECoW would be appointed to deliver the CEMP on-site. A log of site attendance would be completed and the ECoW would report back to the Broads Authority on completion, highlighting any issues that arose during construction and the manner in which they were resolved.
- A badger-proof fence would be installed around the reservoir and this and the condition of the walls of the reservoir would be inspected weekly by a qualified reservoirs engineer. An annual report containing a schedule of inspection visits should be submitted to the Broads Authority, highlighting any issues arising and the manner in which they were resolved.
- Badgers are highly mobile mammals, and we would wish to see Wild Frontier Ecology visit the site at least quarterly to assess whether there is any change in badger activity levels at the site. An annual report containing a schedule of inspection visits should be submitted to the Broads Authority, highlighting any issues arising and the manner in which they were resolved.

4.5. We remain, however, extremely concerned about the practicability of undertaking all of the proposed mitigation and the mechanism by which the Broads Authority might ensure that the mitigation actually takes place. We are also concerned that, whatever conditions are placed on the long-term water abstraction and the reservoir itself, both the EA's permitting team and the BA's own officers will find it difficult to enforce them; noting that any failure to deliver mitigation on the part of the applicant operator or on the EA/BA in enforcing the mitigation has potential to damage Buttle Marsh, Little Reedham and The Broads SAC.

4.6. We note that the following matters still remain to be resolved:

We welcome and endorse the views of Natural England with regard to the requirement for the project to deliver ecological enhancement / net gains for biodiversity in line with the NPPF.

- Incorporating shallow, muddy margins
- Linking the reservoir to other wetland habitat
- Planting trees and shrubs on the edges
- Where embankments are present, grazing with sheep, or sowing a wildflower mix
- Creating shallow margins around the edges to encourage reed and rush growth

- Shaping to include shallow and deep areas of water
  - Allowing aquatic plants to colonise the margins
  - Establishing floating islands in deeper areas, and covering with shingle or vegetation
  - Creating shallow dips in areas adjacent to the reservoir, to provide habitat for waders
  - Establishing reed, scrub, and wet grassland habitat on the surrounding land.
- 4.7. We would wish to see further information on the proposed spillway as no information has been supplied other than that that excess water will ‘soak away into the adjoining arable land and woodland’ and ultimately travel to the soke dyke and IDB pump. Any significant flow risks carrying eutrophic water and non-native species down to Buttle Marsh.
- 4.8. We would wish to see further information on the mechanisms to regulating water height within the reservoir so as ensure requirement for a spillway is minimised.
- 4.9. We would wish to see an assessment of the hydrological effects of abstraction from the rear of Little Reedham (a site of SSSI quality and which supports SAC Priority habitat); specifically, the implications of drawing in nutrient rich, saline water to the high-quality fen habitats at the ‘upland’ side of the fen and the potential for a hydraulic ‘cone of depression’ to form, which would inevitably damage the priority habitat.
- 4.10. No information has been submitted as to the outcome of an archaeological desk-based assessment. We are aware that the county archaeologists have stated that they will require archaeological investigation to be carried out and we welcome this stance as we consider that the location of the proposed reservoir to be of potential archaeological significance, occupying, as it does, an elevated peninsula of land in a loop of the river and thus ideally suited as a prehistoric settlement site.
- 4.11. We concur with the view of the Broad’s Authority’s Landscape Officer that the submitted Landscape & Visual Impact Assessment (LVIA) appears to have been carried out without full knowledge of the overall proposals.
- 4.12. No information has been provided to allow assessment of the noise impacts generated by pumping water across a footpath and up to the reservoir or through the system of irrigation pipes.
- 4.13. The planning implications of the proposed system of irrigation pipes which will traverse agricultural land, footpaths and public highways, is not covered in the application and remains unclear.
- 4.14. We note that the proposed water abstraction from the River Ant has not yet been permitted. Further, no information has as yet been submitted to show how the timing of abstraction might be controlled; for example we would wish to see a mechanism for automated cut-off during low river flows, as without this, the abstraction would risk breaching its licence. We have formally objected to this abstraction, along with others

which have potential to negatively impact upon freshwater flows and flushing in the Ant catchment.

- 4.15. Accordingly, we maintain our objection to the proposed development and re-iterate many of the points made in our previous objection letters; and endorse the views of RSPB, Norfolk Wildlife Trust, Natural England, the County Archaeologists, and your own Ecologist and Landscape Officer.

## 5. Policies

- 5.1. The adopted development plan policies for the area are set out in the [Local Plan for the Broads](#) (adopted 2019).
- 5.2. The following policies were used in the determination of the application:
- DM5 – Development & Flood Risk
  - DM13- Biodiversity
  - DM16 – Development & Landscape

## 6. Assessment

- 6.1. The main considerations in the determination of the application are the principle of the development and the impact of the proposal on the landscape and biodiversity.

### Principle of development

- 6.2. Prior to considering the principle of the proposed development, it is useful to understand the background to this application. As is clear from the description of the area at 1.1 above, the site is located within an internationally important and highly sensitive wetland environment which is protected by multiple designations. It is also, however, set within a working agricultural landscape and there is evidence that current abstraction levels may be causing damage to the environment. Consequently, in June 2021 the Environment Agency announced major changes to water abstraction licences held by businesses in the Ant Valley, reducing both the volume and the timings of abstraction. This has meant that farmers and local businesses have had to develop alternative and more sustainable sources of water, rather than continuing to take it from rivers, lakes or groundwater. The Environment Agency has a phased programme to revoke, reduce and/ or constrain licences used by businesses in order to bring abstraction back to sustainable levels. Farmers within the Ant catchment have therefore been looking at the construction of reservoirs so that they can store winter rainfall for use in the growing season.
- 6.3. In terms of the principle of development, there are no specific policies within the Local Plan for the Broads which relate to this type of development, which has arisen as a result of a particular set of circumstances. However, it is recognised that the marshes surrounding the site are nationally and internationally important wetland habitats for many species and large areas are designated as a result. On this basis, Strategic Policy

SP6 is relevant as this requires that development protects the value and integrity of nature conservation interest and objectives of national and local nature conservation designations. These are the principles behind the proposal, which seeks to secure a more sustainable water and thereby contribute to reducing the water pressures in the Ant Valley. The principle of the development is therefore in accordance with SP6 and is considered acceptable.

### Impact on biodiversity

- 6.4. Whilst the proposed development is acceptable in principle, in that it seeks to address positively an identified issue, it must also be acceptable in detail such that the specific factors of the development cause no harm. The key consideration is the potential impact on the designated sites. As the competent authority under the Conservation of Species and Habitats Regulations 2017 (as amended), the Broads Authority has carried out an Appropriate Assessment (AA) and this is attached in Appendix 3.
- 6.5. Looking first at the potential impact on habitats and species in the SAC, the conclusion of the AA is that there would be no adverse impact on the protected sites as a consequence of the development, subject to compliance with the following mitigation measures:
  - i. strict adherence to the Reservoir Act 1975, including weekly checks by a qualified engineer; and
  - ii. the installation and weekly checking of wildlife fencing in order to significantly reduce the risk of a potential bank breach.
- 6.6. Turning to the potential impact on species in the SPA, the conclusion of the AA is that there would be no adverse impact on the protected sites as a consequence of the development, subject to additional mitigation to ensure the construction of the reservoir and pipeline being undertaken only during the winter period of November – February in order to prevent disturbance to nesting birds. This can be covered by planning condition.
- 6.7. The AA also considers the measures that would need to be taken to ensure the prevention of pollution impacts on both the SAC/SPA habitats and species and functionally linked wetlands during the reservoir construction. Several mitigation measures are identified as necessary and these are noted in the submitted CEMP.
- 6.8. Natural England are the statutory consultee with responsibility for providing advice on the protection of the natural environment and their consultation response supports the conclusions of the AA. Therefore, it is considered that the development is in accordance with Policies DM5 and DM13 of the Broads Local Plan.
- 6.9. It is noted, nonetheless, that there remain objections to the proposal on biodiversity grounds and these must be considered. The RSPB raises a detailed objection, but this relates primarily to the abstraction licences and is not a matter for the Local Planning Authority (LPA) directly. Whilst the issues are linked (in that the reservoir is required to

store the rainfall that would be abstracted from the river in winter), the LPA is not able to give weight to matters that are the responsibility of another regulatory body. The abstraction licence applications have already been through the HRA Appropriate Assessment process by the Environment Agency, and have been granted, and the appropriate route to challenge these is through the Courts, not the planning process. The RSPB raise no concerns that are material considerations under the planning process.

6.10. There is also an outstanding objection from the Norfolk Wildlife Trust, on grounds of incomplete information for the HRA AA and the absence of a CEMP. The response, however, has not been updated following the submission of further HRA details and the CEMP.

6.11. A detailed representation has also been submitted on behalf of local residents. In this they acknowledge the information that has been provided and the HRA AA assessment that has been completed, and do not disagree with the conclusions of either, but go on to outline their continuing concerns about the risk to the designated sites of the proposal, stating:

*“we remain of the opinion that the proposed location at Buttle Marsh, so close to designated habitat, including a wetland SAC, when numerous suitable alternative locations exist (which do not carry this high level of ecological risk nor need for a strict programme of regular stability checks), is undesirable. The extensive mitigation proposed by the Broads Authority’s Ecologist and Wild Frontier demonstrate the level of risk created by siting a reservoir at this location.”*

6.12. The concerns that are raised are valid, as is evident from the fact that these are the very matters that are the subject of the proposed planning conditions to ensure that the necessary mitigation is implemented and maintained. The LPA, however, is required to determine the application that has been submitted and can give little weight here to an argument that there may be a better site elsewhere. If the development proposed is in accordance with planning policy and/or can be made acceptable through the use of planning conditions then permission should be granted. So, whilst there may be other suitable locations for the reservoir, the conclusion of the Appropriate Assessment that the mitigation measures proposed are acceptable and will ensure that no adverse effect on the integrity of the Broads SAC and Broadland SPA will be seen due to this development taking place in isolation or in combination with other projects indicates that planning permission should be granted.

6.13. The objection also raises other issues requiring to be resolved, including archaeology, noise implications and the effect on the PROW, however conditions can be imposed to cover the first two issues and there is no change proposed in respect of the footpath. The issue of the abstraction licence is, as detailed above, a matter for the EA.

- 6.14. In conclusion, whilst the objections are noted and have been considered, there are no valid reasons to refuse planning permission on grounds of impact on biodiversity or the protected sites.

### Impact upon landscape

- 6.15. The proposal will introduce a new feature into the landscape at the site and it is the case that this will be very visible from close views, particularly from the PROW. However, the site is quite isolated in terms of views from the wider area and, being on rising ground, the visual impact would not be prominent from long- or medium range vantage points. There is also existing vegetation to the boundaries and the agent has confirmed that they would be content to screen the fencing here with a hedge, details of which can be conditioned.
- 6.16. Despite the submission of an Arboricultural Impact Assessment and Construction Environmental Management Plan, there still remains an objection from the Broads Authority Landscape Officer, who has concerns about the potential adverse impacts of a large scale engineered reservoir and associated ancillary features into this sensitive landscape. However, it is considered that the additional information including detailing of the pipework installation and a Landscape Management Plan can be conditioned to be subsequently approved, meaning the development is in accordance with Policy DM16 of the Local Plan for the Broads.

### Other issues

- 6.17. Norfolk County Council's Archaeology Team have requested a written scheme of investigation prior to the commencement of development, and this is considered to be an acceptable condition of planning consent.

## 7. Conclusion

- 7.1. Based on the information submitted to support this application for the proposed works, the principle of development is in accordance with all relevant planning policy, in particular DM5, DM13 & DM16. The design of the proposal is considered to be acceptable subject to additional information secured by condition and it is not considered that the proposal will result in an adverse impact on biodiversity, flood risk or landscape character. Therefore, it is recommended that planning permission is approved subject to conditions.

## 8. Recommendation

- 8.1. Approve subject to the following conditions:
- Time limit.
  - In accordance with submitted plans.
  - Mitigation in accordance with the submitted CEMP.
  - Submission of a Landscape Scheme and Management Plan.

- Archaeological conditions.
- Construction only during the winter period (November – February).
- Vegetation ground clearance only outside of breeding bird season.
- Pre-construction watching brief surveys for wintering birds.
- No lighting.
- Reservoir generator operation 1 November – 31 March.
- Ecological enhancements as per the Ecology Report.

Author: Cheryl Peel

Date of report: 27 November 2023

Appendix 1 – Location map

Appendix 2 – Minutes of the site visit held on 17 April 2023

Appendix 3 – Habitats Regulation Assessment, Appropriate Assessment

# Appendix 1 – Location map

BA/2022/0357/FUL - Field 500M West Of, Limes Farm, Blind Lane, Ludham



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## Minutes of the site visit held on 17 April 2023

### Present

Harry Blathwayt – in the Chair, Stephen Bolt, Nigel Brennan, Bill Dickson, Andrée Gee, Tim Jickells and Melanie Vigo di Gallidoro.

### In attendance

Jason Brewster – Governance Officer, Cheryl Peel – Senior Planning Officer, Cally Smith – Head of Planning and James Watts – Senior Operations Technician.

### Members of the public in attendance

Andrew Alston – a landowner on behalf of the applicant, and his son Henry Alston. Keith Bacon - observer on behalf of the Broads Society and Adam Varley - DC Cllr for St. Benet Ward (Horning & Ludham).

## 1. Apologies

Apologies were received from Tony Grayling, Gail Harris, James Knight and Fran Whymark.

## 2. Introduction

Members met at Buttle Barn, Clint Street, Ludham which was located on the southern boundary to an adjacent field to the east of the site. Clint Street leads onto Blind Lane, a Public Right of Way (PROW), which traversed the southern boundary of the site.

The Chair welcomed everyone and invited attendees to introduce themselves.

The Chair reminded members of the protocol associated with a site visit emphasising that it was purely a fact finding exercise and no decision would be made at this visit. The application would be considered for determination at a future committee meeting. The aim of the visit was not to debate the issues, but to enable members to see the site and its context, and to make sure all participants were satisfied that members had seen all the appropriate details of the site and its surroundings.

Members were reminded:

- To be as impartial as possible before, during and after the visit.
- To avoid discussing the application with applicants/agents or objectors before, during or after the site visit.
- If members wanted to ask questions of any party, this should take place only when the whole group was present.

### 3. BA/2022/0357/FUL – Ludham - Water storage reservoir for agriculture

The Senior Planning Officer (SPO) provided an overview of the application for an irrigation reservoir within a grassed field measuring 6.2 hectares located 500m west of Limes Farm, Blind Lane, Ludham. Members were provided with the following material:

- A diagram detailing the proposed reservoir layout, showing the gradient of slope of the bunds, the elevations of the bunds and depth of the reservoir as well as illustrating a typical cross-section of the bund structure (Appendix C in Part 2 of the Landscape and Visual Appraisal).
- A map showing the site, with viewpoint locations marked (see Appendix 1 below).
- A map detailing the landscape character and designations within 1.5km of the site (Figure INF\_N0977(08)003 in Part 2 of the Landscape and Visual Appraisal)

The SPO indicated that the reservoir would result in bunds approximately 4m high marking the perimeter. Due to the topography of the site the slope of the bunds would vary from 1:3 on the east and northern boundaries, 1:5 on the southern boundary and 1:8 on the western boundary. The base of the bunds would be approximately 7m from the existing field boundary. The boundary treatment consisted of a 2.4m high wire mesh fence intended to keep people and animals out and keep sheep, used to graze the bunds, in.

In response to a member question, the SPO confirmed that there was no peat within the site. The SPO confirmed that a Habitat Regulations Assessment had been received. A member believed some historic artefacts had been found in the local area and the SPO confirmed that Historic Environment Services had been consulted.

Mr Alston confirmed that the reservoir would be lined and non-contiguous with the existing watercourse, and that the abstraction licences would apply from November to March.

The Head of Planning (HoP) confirmed that photographs from all the viewpoints would be included in the planning report.

### 4. Site Context

The group followed Blind Lane, stopping at Points 02, 01 & 03 as indicated on the map in appendix 1.

At Point 02 members had an unbroken view of the site looking north, along the tree lined eastern boundary, then tracking west across the field, along the wood on the northern boundary and then following the hedge along the western boundary.

This location was where the pump house would be installed, at the base of the eastern bund on the south-eastern corner.

The HoP highlighted the distance from the shared track/Public Right of Way (PRoW) to the start of the bund by walking into the field.

Andree Gee joined the meeting.

The landowner took a sample of the soil from the field and showed it to members to demonstrate its sandy nature and very fine texture.

Point 01 provided a view north along a hawthorn hedge demarcating the western boundary of the field and then the reverse of the view from Point 02 as you tracked east across the field to the tree lined eastern boundary and the shared track/ProW on the southern boundary.

Point 03 provided an extensive view of the western boundary hedge as it formed the horizon along with the tops of the trees marking the eastern boundary. The HoP indicated that the reservoir would alter the skyline beyond the western hedge boundary and this would be reflected in the Landscape Architect's visual assessment of the development.

At this point the group split in two as Andrée Gee and Melanie Vigo di Gallidoro were driven to Point 08.

The remainder of the group followed the PRow as it tracked round to the north following the boundary of the field to the west of the site.

At point 04 looking east the site was obscured by the slope of the neighbouring field. Looking along the footpath to the north provided a view of How Hill House.

Just before the footpath reached the wood on the northern boundary of the site the group took the PRow heading north-west and leading on to the flood bank to the east of the river Ant (midway between points 06 and 07). Once up on the flood bank, looking south-east, provided a clear view of the wood along the northern site boundary and the north-west corner of the site where it intersected with the western boundary hedge.

The group followed the flood bank heading south to a vantage point opposite the mouth of dyke adjacent to Browns Hill (midway between Points 06 and 14). At this location the eastern horizon, framed between the woods that denoted the north and south site boundaries, consisted of a view of the site's western hedge boundary along with the tree tops of the eastern boundary.

The group then returned north along the flood bank towards Point 07 leaving the flood bank at the intersection of paths to How Hill and Turf Fen Lane. This point marked where the abstraction pipe required to fill the reservoir would start.

The group took the path to Turf Fen Lane and after 50m left the path to follow the eastern tree line of the wood on the northern boundary of the site. On reaching the northern boundary of the site the group walked east following the site's northern boundary and then along the eastern boundary of the site to return to Point 02. Both groups were reunited at Buttle Barn (Point 15) where the site visit terminated. The Chairman asked if there were any further questions relating to the proposal and none were raised.

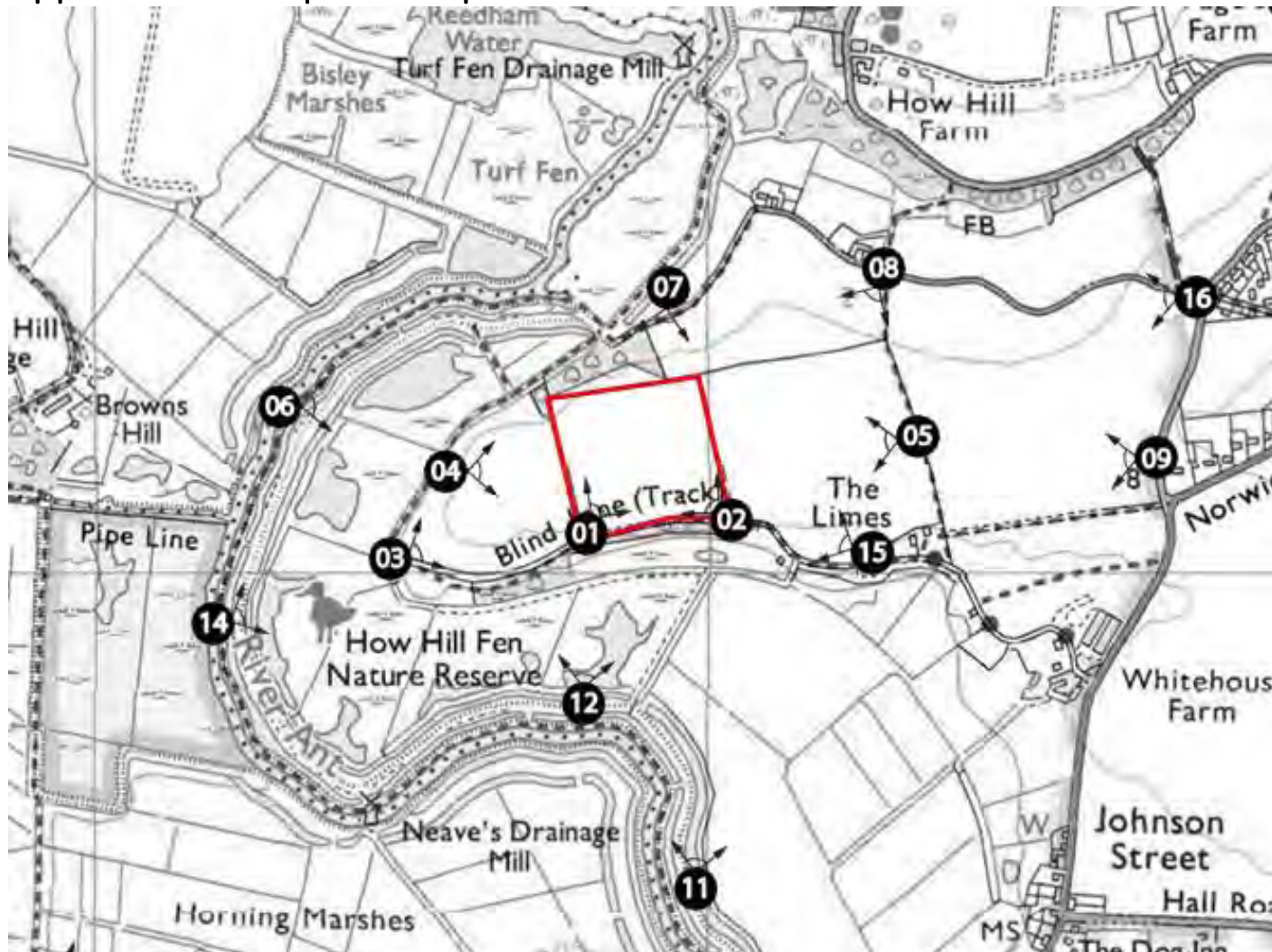
## 5. Conclusion

The Chairman confirmed that the application would be considered by the Planning Committee, subject to consultation responses, in due course. It was hoped that it could be considered at the 26 May 2023 meeting. The Chairman thanked everyone for attending the site inspection.

The meeting was closed at 12:08pm

DRAFT

## Appendix 1 – Map of viewpoint locations



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# **Appropriate Assessment for BA/2022/0357/FUL**

Proposed Irrigation Reservoir: Limes Farm, Ludham, Norfolk

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## **1.0 Development Area**

The proposed development site is located within the holding of Limes Farm, Blind Farm, Ludham, Norfolk. The National Grid Reference is TG 36897 18182. (See Appendix Map 1)

The reservoir development area is primarily cultivated arable fields; however, the proposed fill pipe will also pass through a broad-leaved plantation woodland and some modified grassland before reaching the River Ant.

## **2.0 Description of Development Proposal**

The development proposal is for a balanced cut and fill earth moving operation to construct an agricultural irrigation reservoir for the storage of winter water abstractions. The reservoir capacity is estimated at 140,000 cubic metres irrigation water which will be shared between three farming businesses. The water will be abstracted from the River Ant via a 135-metre fill pipe. The proposed pumphouse will be situated at the south-east corner of the proposed reservoir and will be powered by a diesel generator. Approximately three-kilometres of irrigation pipes to transport the stored water to agricultural fields is included as part of the application. (See Appendix Map 2)

## **3.0 Legislation and Protected Habitats and Species**

The proposed development site lies adjacent to Buttle Marsh County Wildlife Site, and just south of The Ant Broads and Marshes SSSI, which is also designated as part of the Broadland Special Protection Area (SPA), and Broads Special Area of Conservation (SAC). The SPA's and SAC's are now known as 'National Site Networks' as amended under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019).

These important nature conservation sites are also designated wetlands of international importance under the Ramsar Convention.

The areas described above are within the nationally designated landscape of the Broads National Park.

## **4.0 Role of the Broads National Park Authority**

The statutory purposes of the National Park are to conserve and enhance the natural beauty, wildlife and cultural heritage of the park; and to promote opportunities for the understanding and enjoyment of the special qualities of the park by the public.

As a planning authority, it is a duty of the Broads Authority to consider any development impacts on designated conservation sites and protected species within the national park. The Broads Authority will also consider potential impacts, and opportunities for



enhancement to habitats and species outside of these protected areas, as part of its commitment to conserving and enhancing biodiversity.


## 5.0 Habitats Regulations Assessment

The proposal for the reservoir construction and associated pipeline has triggered a Habitats Regulations Assessment (HRA), in accordance with the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019). An HRA is undertaken to determine if a plan or project may affect the protected features of a designated habitat site. This process is undertaken so a decision can be made on whether to grant planning permission.

If a proposed plan or project is considered likely to have a significant effect on a protected habitat site (either individually or in combination with other plans or projects) then an Appropriate Assessment of the implications for the site, in view of the site’s conservation objectives, must be undertaken.

An HRA screening assessment (figure 1 below) has been undertaken for the proposal, and a likely significant effect of potential impacts to the nearby designated sites cannot be ruled out at this stage. An Appropriate Assessment is therefore required.

### HRA – Stage 1 Screening

<b>HABITAT REGULATIONS ASSESSMENT – SCREENING</b>	
<b>Record of Assessment of Likely Significant Effect On The Broads Special Area of Conservation, Broadland Special Protection Area and Broadland Ramsar site (HRA Stage 1)</b>	
<b>1. Type of permission/activity</b>	
The creation of an irrigation reservoir for storing winter water abstractions. This HRA only covers the reservoir construction. The abstraction is considered as part of a separate HRA assessment.	
<b>2. National Grid reference</b>	
TG36985 17803	
<b>3. Site reference</b>	
Field 500M West Of Limes Farm Clint street Ludham Norfolk NR29 5PA	
<b>4. Brief description of proposal</b>	

A balanced cut and fill earth moving operation to create an irrigation reservoir for the storing of winter abstractions.

**5. European site name(s) and status:**

the Broads Special Area of Conservation (SAC), Special Protection Area (SPA) and the Broad Ramsar Site.

**6. List of interest features:**

**The Broads SAC**

The SAC qualifying features are listed below and are Annex I natural habitat types of Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (EC Habitats Directive). The habitat group to which they are allocated in Environment Agency guidance documents is also indicated.

**Annex I habitats that are a primary reason for selection of this site**

**(Habitat group in brackets):**

- 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp (1.5);
- 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* type vegetation (1.5);
- 7140 Transition mires and quaking bogs (1.2);
- 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (1.2);
- 7230 Alkaline fens (1.1); and
- 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) (1.1).

**Annex I habitats present as a qualifying feature, but not a primary reason**

**for selection of this site (Habitat group in brackets):**

- 6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*).

**Annex II species (listed on the *Natura 2000* Standard Data Form for the SAC ) which form part of the primary reason of selection in the SAC:**

- 1016 Desmoulin`s whorl snail (*Vertigo moulinsiana*);
- 1903 Fen orchid (*Liparis loeselii*);
- 4056 Ram`s-horn snail (*Anisus vorticulus*); and
- Additionally listed within the SAC is the Eurasian otter (*Lutra lutra*) which is a qualifying feature, but not a primary reason for site selection.

## Broadland SPA

The SPA qualifying bird species are listed below in two groups according to whether they qualify under Article 4.1 or 4.2 of Council Directive 79/409/EEC on the conservation of wild birds. The designated population for each species is indicated, i.e. whether it is the breeding or non-breeding population. The lists are based on those given in the Natura 2000 Standard Data Form submitted to the EU, with amendments based on the SPA Review (2001) in accordance with JNCC (2011)<sup>1</sup>. The habitat groups used are shown within brackets after each species/assemblages.

**This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:**

### During the breeding season

- Bittern *Botaurus stellaris*; and
- Marsh harrier *Circus aeruginosus*.

### Over winter

- Bewick's swan *Cygnus columbianus bewickii*;
- Bittern *Botaurus stellaris*;
- Hen harrier *Circus cyaneus*;
- Eurasian Wigeon (*Anas Penelope*)
- Northern Shoveler (*Anas clypeata*)
- Pink-footed goose *Anser brachyrhynchus*;
- Ruff *Philomachus pugnax*; and
- Whooper swan *Cygnus Cygnus*.

**This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:**

- Gadwall *Anas strepera*; and
- Northern shoveler *Anas clypeata*.

**Assemblage qualification: A wetland of international importance. The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl:**

Over winter, the area regularly supports in excess of 20,000 individual waterfowl (RSPB, Count 99/00) including: Cormorant *Phalacrocorax carbo*, Bewick's swan *Cygnus columbianus bewickii*, Whooper swan *Cygnus cygnus*, Ruff *Philomachus pugnax*, Pink-footed goose *Anser brachyrhynchus*, Gadwall *Anas strepera*, Bittern *Botaurus stellaris*, Great crested grebe *Podiceps cristatus*, Coot *Fulica atra*, Bean goose *Anser fabalis*, White-fronted

goose *Anser albifrons albifrons*, Wigeon *Anas penelope*, Teal *Anas crecca*, Pochard *Aythya ferina*, Tufted duck *Aythya fuligula*, Shoveler *Anas clypeata*.

## Broadland Ramsar

### Ramsar criterion 2

This site supports a number of rare species and habitats within the biogeographical zone context, including the following Habitats Directive Annex I features:

- H7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliana* - Calcium-rich fen dominated by great fen sedge (saw sedge);
- H7230 Alkaline fens - Calcium-rich springwater-fed fens; and
- 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 Desmoulin's whorl snail *Vertigo moulinsiana*;
- S1355 Eurasian otter *Lutra lutra*; and
- S1903 Fen orchid *Liparis loeselii*.

The site supports outstanding assemblages of rare plants and invertebrates including nine British Red Data Book (RDB) plants and 136 British RDB invertebrates.

### Ramsar criterion 6 – species/populations occurring at levels of international importance.

#### Qualifying Species/populations (as identified at designation).

Species with peak counts in winter:

Tundra/Bewick's swan *Cygnus columbianus bewickii*;

Eurasian wigeon *Anas Penelope*;

Gadwall *Anas strepera*; and

Northern shoveler *Anas clypeata*.

#### Species/populations identified subsequent to designation for possible future consideration under Criterion 6.

Species with peak counts in winter:

Pink-footed goose *Anser brachyrhynchus*.

**7. Is the proposal directly connected with or necessary to the management of the site for nature conservation?**

<b>No</b>				
<b>8. What potential hazards are likely to affect the interest features? Are the interest features potentially exposed to the hazard?</b>				
<b>Assessment methodology</b>				
The potential hazards to the interest features are assessed using a matrix based approach. Each hazard is ranked based on likelihood of the effect (low to high) and its severity (low to high). The risk is then derived from the matrix below. A certainty (low to high), based on evidence, is also assigned to each effect.				
		<b>Severity</b>		
		<b>Low</b>	<b>Moderate</b>	<b>High</b>
<b>Likelihood</b>	<b>Low</b>	<i>Low</i>	<i>Low</i>	<i>Moderate</i>
	<b>Moderate</b>	<i>Low</i>	<i>Moderate</i>	<i>High</i>
	<b>High</b>	<i>Moderate</i>	<i>High</i>	<i>High</i>
<b>The Broads SAC Annex I habitats</b>				
<b>Sensitive Interest Feature</b>	<b>Potential hazard</b>	<b>Potential exposure to hazard and mechanism of effect / impact if known</b>		
3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	Reservoir breach and associated Impacts on ditch and pond flora and fauna	<p>The location of the proposed reservoir is directly east of Buttle Marsh, a mosaic of reedbeds, ponds, ditches and meadow, and part of a wetland creation project for bitterns and other wildlife, and designated a County Wildlife Site. The proposed development area is on the upland and therefore elevated above Buttle Marsh wetland. The proposal is for a large cut and fill reservoir. In the event of a reservoir breach, water flow and sediment would likely flow west downhill towards the wetland and infiltrate the ditches and large pools. The ditches and pools on Buttle marsh are considered to be of high environmental importance for aquatic plants including potamogeton species, stoneworts and invertebrates, as well as supporting wetland birds such as bittern and water voles. Buttle marsh is directly south of How Hill National Nature Reserve, SSSI and part of the Broads Special Area of Conservation (SAC), Special Protection Area (SPA) and the Broad Ramsar Site.</p> <p>Risk = low likelihood x high severity = moderate risk (medium certainty)</p>		
3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation (1.5);				

7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> (1.2).	Reservoir breach and associated Impacts on fen flora	Small areas of mixed fen habitats are located within Buttle Marsh. The proposed reservoir is on the upland and therefore elevated above Buttle Marsh wetland. In the event of a reservoir breach, water flow and sediment would likely flow west downhill towards the wetland, infiltrating the ditches, large pools and the fen and reedbed habitats. The arable sediment is likely to be high in nutrients which would be detrimental to the wetland flora communities.
7230 Alkaline fens (1.1);		<p>Directly north of the proposed development area is Little Reedham, a fen site, with important <i>Cladium</i> communities. This fen site sits in the Ant valley and could potentially be impacted by a reservoir breach transporting water and arable sediment downhill into nearby fen ditches. Nutrient enrichment caused by the arable sediment would be detrimental to the wetland ditch flora and fauna and potentially Reedham fen.</p> <p>Risk = low likelihood x high severity = moderate risk (medium certainty)</p>
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> ) (1.1).	Removal of areas of alder carr	<p>Alder carr woodland is not considered present on Buttle Marsh or within the immediate vicinity of the site.</p> <p>low likelihood x low severity = low risk (high certainty)</p>
<b>Is the potential magnitude of the above effects likely to be significant?</b>		
Yes, if there were to be a reservoir breach.		

The Broads SAC Annex II species		
Sensitive Interest Feature	Potential hazard	Potential exposure to hazard and mechanism of effect / impact if known  Likely significant effect
Desmoulin's whorl snail/ <i>Vertigo moulinsiana</i>	Impacts to invertebrate species from reservoir breach	It is not known if Desmoulin's whorl snail is present on Buttle Marsh, but there is suitable habitat to support this species. Desmoulin's whorl snail could be directly affected if a reservoir breach did occur with flows of arable sediment infiltrating the freshwater ditches and ponds. This semiaquatic snail is found in the vegetation on the banks of ditches, preferring reed and dense sedges including <i>Carex acutiformis</i> and <i>Carex riparia</i> . The arable sediment would likely be high in nutrients which would cause algal blooms, impacting water quality and leading to a loss of important aquatic vegetation that this and other invertebrate species rely on.  Risk = low likelihood x high severity = moderate risk (medium certainty)
Eurasian otter/ <i>Lutra lutra</i>	Disturbance to protected species	Otters are widespread in the Broads and are likely to use Buttle marsh for feeding and resting. Disturbance to otters could occur through prolonged machinery noise created by the construction and timing of the reservoir build. If a reservoir breach occurred it could transport nutrient rich water to the ditches and pools on Buttle Marsh, negatively impacting the fish communities that otters use as prey.  Risk = moderate likelihood x moderate severity = moderate risk (medium certainty)
<b>Is the potential magnitude of the above effects likely to be significant?</b>		
Yes, if there were to be a reservoir breach and if noise levels from the construction are significant.		
Broadland SPA species		
During the breeding season	Disturbance to breeding SPA birds from construction	Potential impacts to bittern include disturbance during the breeding season from the construction of the reservoir, and the associated noise from large machines over a long duration. Buttle marsh has suitable nesting and feeding habitat for bitterns given the large areas of reedbed

<ul style="list-style-type: none"> <li>• Bittern <i>Botaurus stellaris</i>; and</li> <li>• Marsh harrier <i>Circus aeruginosus</i>.</li> </ul>	<p>Impact on Bittern prey species</p> <p>Disturbance to breeding SPA birds from construction</p>	<p>for breeding, and the extensive dyke network and various ponds that can be used for foraging for food.</p> <p>Bitterns can establish their breeding territories by the end of February, starting to boom as early as January. Egg laying can be started between end of March and mid-July.</p> <p>Disturbance is dependent on the timing and construction phase of the reservoir.</p> <p>Risk = moderate likelihood x moderate severity = moderate risk (medium certainty)</p> <p>If a reservoir breach occurred it could transport nutrient rich water to the ditches and pools on Buttle Marsh, negatively impacting the fish communities and amphibians that bittern's prey on.</p> <p>Risk = low likelihood x high severity = moderate risk (medium certainty)</p> <p>Potential impacts to marsh harrier include disturbance during the breeding season from the construction of the reservoir, and the associated noise and its duration from large machines. Marsh harriers normally begin nest building in April, however earlier nest site prospecting and breeding has been noted in the northern Broads.</p> <p>moderate likelihood x moderate severity = moderate risk (medium certainty)</p>
<p>Over-wintering Birds:</p> <ul style="list-style-type: none"> <li>• Bewick's swan <i>Cygnus columbianus bewickii</i></li> <li>• Bittern, <i>Botaurus stellaris</i></li> </ul>	<p>Disturbance to overwintering SPA birds</p>	<p>Potential impacts to over wintering bittern include disturbance from the construction of the reservoir during the winter months, and the associated noise from large machines over a long duration.</p> <p>Hen harrier –Occasionally a winter visitor to Buttle Marsh, using the large expanse of wetland for hunting and resting. Disturbance to hen harrier is possible from the associated noise from large machines over a long duration.</p> <p>Wigeon and Shoveler– can be found during the winter months on the pools at Buttle Marsh. They are particularly sensitive to disturbance, and</p>



<ul style="list-style-type: none"> <li>• Hen harrier, <i>Circus cyaneus</i></li> <li>• Eurasian Wigeon, <i>Anas Penelope</i></li> <li>• Northern Shoveler, <i>Anas clypeata</i></li> <li>• Pink-footed goose, <i>Anser brachyrhynchus</i></li> <li>• Ruff <i>Philomachus pugnax</i></li> <li>• Whooper swan <i>Cygnus Cygnus</i></li> </ul>		<p>there is the potential for the construction noise and plant movement from the development to displace these species.</p> <p>Bewick's swan, Whooper swan, and Pink-footed goose have been noted in the adjacent fields close to the development site in recent years. These fields provide important outlying sites for these SPA species. These birds are particularly sensitive to disturbance, and there is the potential for the construction noise and plant movement to displace these species.</p> <p>moderate likelihood x moderate severity = moderate risk (medium certainty)</p>
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**Is the potential magnitude of the above effects likely to be significant?**

Yes

**Broadland RAMSAR**

<p><u>RAMSAR criterion 2</u> <u>Habitats:</u></p> <ul style="list-style-type: none"> <li>• H7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> - Calcium-rich fen dominated by great fen sedge (saw sedge);</li> </ul>		<p><u>As outlined in SAC features above.</u></p>
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<ul style="list-style-type: none"> <li>• H7230 Alkaline fens - Calcium-rich springwater-fed fens; and</li> </ul>		
<ul style="list-style-type: none"> <li>• H91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i>, <i>Salicion albae</i>) – Alder woodland on floodplains.</li> </ul>		
<p><u>RAMSAR criterion 2</u> <u>Species:</u></p> <ul style="list-style-type: none"> <li>• S1016 Desmoulin’s whorl snail <i>Vertigo moulinsiana</i>;</li> </ul>	<p>Destruction of habitat and killing of individuals</p>	
<ul style="list-style-type: none"> <li>• S1355 Eurasian otter <i>Lutra lutra</i>;</li> </ul>		
<p>RAMSAR criterion 6 Species</p> <ul style="list-style-type: none"> <li>• Tundra/Bewick’s swan, <i>Cygnus columbianus bewickii</i></li> <li>• Eurasian wigeon, <i>Anas Penelope</i></li> <li>• Gadwall <i>Anas strepera</i></li> <li>• Northern shoveler, <i>Anas clypeata</i></li> <li>• Pink-footed goose, <i>Anser brachyrhynchus</i></li> </ul>	<p>Audible and visual disturbance of wintering wildfowl.</p>	

**Broadland RAMSAR**

**See previous sections for comments regarding habitats and species falling under the Ramsar criterion**

**Is the potential magnitude of the above effects likely to be significant?**

**Yes**

**Conclusion**

<p>Is the proposal likely to have a significant effect 'alone and/or in combination' on a European site?</p>	<p>Further information is required to allow a full HRA assessment of the proposed project;</p> <p>The proposal is for a large reservoir close to the Ant Broads and Marshes SSSI. The proposed reservoir is immediately adjacent to Buttle Marsh County Wildlife Site which supports SPA birds and priority habitats. As well as Buttle Marsh CWS, European designated sites are situated close by in the river valley. If a reservoir bank breach were to occur, there would likely be a significant effect on these priority habitats, and species therefore the ecological impacts of such a breach should be considered as part of the proposal.</p> <p>The HRA screening highlights that there is the potential for disturbance to SPA breeding and wintering bird species on Buttle Marsh CWS, and potentially on functionally-linked land (FLL) including Little Reedham fen and the surrounding arable land. Natural England's response (17/03/2023) provides further information the applicant should provide with regards to FLL. Further information is required on the reservoir construction and operational phase, as well as any possible maintenance work which will be required. Additional information regarding timings and possible noise effects during these phases is required.</p> <p>An ecological assessment of the impacts of the pipeline construction between the reservoir and the abstraction point is also required by a suitably qualified ecologist.</p> <p>Further information on the proposed spill way is required, as it is implied in the screening report that water will 'soak away into the adjoining arable land and woodland'; and end up in the soke dyke and IDB pump. Further information on the mechanisms to regulating water height and volume of the reservoir should be given, as any discharge from the reservoir to Buttle Marsh could potentially impact wetland habitats and the aquatic flora and fauna of the ditches and ponds. This could result in associated ecological impacts on SPA birds such as bittern.</p> <p>Recent surveys have shown that the soke dyke proposed for the residual spill way water contains good aquatic plants communities and populations of water voles. Ecological impacts to these species should be considered as part of the proposal.</p>
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**10. Broads Authority Officer**

<b>Name:</b> Senior Ecologist	
<b>Date:</b> 27/04/2023	
<b>11. Natural England comments</b>	

## 6.0 Appropriate Assessment

The scope of the Appropriate Assessment follows the interest features and potential hazards from the proposed construction and development works that were identified in the HRA screening above.

Further information as requested at the HRA screening stage has been submitted in the form of a *Supporting Evidence for the Appropriate Assessment and Construction Environment Management Plan: Biodiversity (Wild Frontier Ecology Ltd 2023)*.

The information provided in the *Supporting Evidence for the Appropriate Assessment and Construction Environment Management Plan (2023)*, will be considered in relation to mitigating those identified impacts to the special interest features of the designated sites below, particularly the Broads Special Area of Conservation (SAC), and Broadland Special Protection Area (SPA).

- Ant Broads and Marshes Site of Special Scientific Interest (SSSI)
- The Broads Special Area of Conservation (SAC)
- Broadland Special Protection Area (SPA)
- Broadland Ramsar Site
- The Broads National Park

## 6.1 Hazards

### SAC Annex I habitats

3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation

1. Potential hazard: **Reservoir breach and associated impacts on freshwater habitats**
2. Potential hazard: **Pollution incident during reservoir construction and operation and associated impacts on freshwater habitats**

#### Issue

The location of the proposed reservoir is directly east of Buttle Marsh, a mosaic of reedbeds, ponds, ditches and meadow, and part of a wetland creation project for bitterns and other wildlife, and designated a County Wildlife Site. This site also acts as functionally linked land for features of the nearby Broads Special Area of Conservation (SAC) and Broadland Special Protection Area (SPA). Buttle Marsh is hydrologically connected to the nearby designated sites via the River Ant.

The proposed development area is on the upland and therefore elevated above Buttle Marsh and the river valley. The proposal is for a large cut and fill reservoir. In the event of a reservoir breach, potentially large quantities of water and sediment would flow downhill towards the wetland and infiltrate the ditches and large pools. The ditches and pools of Buttle marsh are considered to be of high environmental importance for aquatic plants including potamogeton species, stoneworts and invertebrates, as well as supporting wetland birds such as bittern and water voles.

Buttle marsh is directly south of How Hill National Nature Reserve, which is part of the Ant Broads and Marshes SSSI, and also designated as part of the Broads Special Area of Conservation (SAC), Special Protection Area (SPA) and the Broadland Ramsar Site. Areas of the SPA and SAC downstream, could be impacted if there were to be an uncontrolled breach of water from the reservoir.

There is the potential for pollution incidents to arise during the reservoir construction from oil/ fuel spills associated with the construction machinery or other sources. The primary risk of pollution during the operational phase of the proposed reservoir is oil and fuel spills from running and refuelling the generator used to power abstraction. If pollution sources were to reach the wetland habitats of Buttle Marsh they could negatively impact the ditch flora and fauna which support SPA/SAC interest features.

7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* / 7230 Alkaline fens

7230 Alkaline fens

7140 Transition mires and quaking bogs

3. Potential hazard: **Reservoir breach and associated Impacts on fen flora**
4. Potential hazard: **Pollution incident during reservoir construction and operation and associated impacts on fen habitats**

Issue

Small areas of mixed fen habitats are located within Buttle Marsh. The proposed reservoir is on the upland and therefore elevated above Buttle Marsh wetland. In the event of an uncontrolled reservoir breach, water flow and sediment would flow downhill towards the wetland, infiltrating the ditches, large pools and the fen and reedbed habitats. The arable sediment is likely to be high in nutrients which would be detrimental to the wetland flora communities.

Directly north of the proposed development area is Little Reedham, a fen site, with important *Cladium* communities. This fen site sits in the Ant valley and could potentially be impacted by a reservoir breach transporting water and arable sediment downhill into nearby fen ditches. Nutrient enrichment caused by the arable sediment would be detrimental to the wetland ditch flora and fauna and potentially Reedham fen.

There is the potential for pollution incidents to arise during the reservoir construction from oil/ fuel spills associated with the construction machinery or other sources. The primary risk of pollution during the operational phase of the proposed reservoir is oil and fuel spills from running and refuelling the generator used to power abstraction. If pollution sources were to reach the wetland habitats of Buttle Marsh they could negatively impact the fen flora and fauna, and peat habitats which support SPA/SAC interest features.

Discussion

If there were to be an uncontrolled release of water from the reservoir, then there is the potential for large quantities of water and sediment to be washed into nearby Buttle Marsh, an important wetland, which also acts as functionally linked land to the nearby SPA, and SAC designated sites.

The water in the reservoir may become eutrophic over time, and in the case of a reservoir bank breach, then large quantities of eutrophic water and sediments infiltrating the nearby wetland sites could cause nutrient enrichment, and have a detrimental impact on the qualifying habitats and species of the nearby designated sites such as breeding bittern.

As discussed in the *Supporting Evidence for the Appropriate Assessment* (page 43; section 8.4) the reservoir proposal falls within the Reservoirs Act 1975 (as amended) 25.

This act aims to prevent the risk of flooding and other related impacts from reservoirs through design standards, regular inspections, maintenance and repairs, regulatory oversight and enforcement. As stated in the document, to date there has been no uncontrolled release of water from any structure covered by this legislation.

Under the Reservoirs Act 1975 regular inspections by a qualified engineer are required, and in the case of this reservoir proposal, checks on a weekly basis are required, due to the possibility of wild animals excavating the soil of the reservoir, and causing a bank breach.

Mitigation in the form of 'Wildlife fencing' has been identified and will be required around the reservoir to avoid the risk of this occurring. The fencing will need to be checked regularly, as part of the reservoir inspections.

The potential for pollution risks is evident during the construction and operation stages of the proposed reservoir, with sources including fuel/oil spills from construction machinery, and the generator fuel. However, these risks can be minimised with the implementation of safety precautions in the Construction Environment Plan.

### **Conclusion: SAC Annex I habitats**

We conclude that the following mitigation, will significantly reduce the risk of a potential reservoir bank breach and the uncontrolled release of water to nearby SAC/SPA designated habitat sites and the adjacent Buttle Marsh CWS.

1. Strict adherence to the Reservoir Act 1975, including weekly reservoir checks by a qualified engineer.
2. The installation and weekly checking of appropriate 'wildlife fencing' (as identified in the Supporting Evidence for the Appropriate Assessment (2023)) to ensure the reservoir banks are not destabilised, by excavating animals.

We conclude that the risks of pollution to nearby SAC/SPA designated habitat sites and the adjacent wetlands of Buttle Marsh CWS, during the construction and operation of the reservoir can be mitigated, with the implementation of a Construction Environment Plan (2023).

**The mitigation identified above (points 1 & 2) to avoid the uncontrolled release of water from the reservoir, and a Construction Environment Plan to mitigate risks of pollution is to be conditioned as part of the planning permission if granted by the LPA.**

## SAC Annex II species

1. Potential hazard: **Impacts to invertebrate species from reservoir breach & pollution**  
Desmoulin's whorl snail (*Vertigo moulinsiana*)

### Issue:

It is not known if Desmoulin's whorl snail is present on Buttle Marsh, but there is suitable habitat to support this species. Desmoulin's whorl snail could be directly affected if a reservoir breach did occur with flows of arable sediment infiltrating the freshwater ditches and ponds. This semiaquatic snail is found in the vegetation on the banks of ditches, preferring reed and dense sedges including *Carex acutiformis* and *Carex riparia*. The arable sediment would likely be high in nutrients which would cause algal blooms, impacting water quality and leading to a loss of important aquatic vegetation that this and other invertebrate species rely on.

There is the potential for pollution incidents to arise during the reservoir construction from oil/ fuel spills associated with the construction machinery or other sources. The primary risk of pollution during the operational phase of the proposed reservoir is oil and fuel spills from running and refuelling the generator used to power abstraction. If pollution sources were to reach the wetland habitats of Buttle Marsh they could negatively impact the ditch and pond water quality leading to declines in invertebrates, such as Desmoulin's whorl snail (*Vertigo moulinsiana*).

### Discussion:

If there were to be an uncontrolled release of water from the reservoir, then there is the potential for large quantities of water and sediment to be washed into nearby Buttle Marsh, an important wetland, which also acts as functionally linked land to the nearby SPA, and SAC designated sites.

The water in the reservoir may become eutrophic over time, and in the case of a reservoir bank breach, then large quantities of eutrophic water and sediments infiltrating the nearby wetland sites could cause nutrient enrichment, and have a detrimental impact on freshwater invertebrates such as Desmoulin's whorl snail (*Vertigo moulinsiana*).

Under the Reservoirs Act 1975 regular inspections by a qualified engineer are required, and in the case of this reservoir proposal, checks on a weekly basis are required, due to the possibility of wild animals excavating the soil of the reservoir, and causing a bank breach.

Mitigation in the form of 'Wildlife fencing' has been identified and will be required around the reservoir to avoid the risk of this occurring. The fencing will need to be checked weekly, as part of the reservoir inspections.



2. Potential Hazard: **Disturbance to Sensitive Interest Feature and Impact on prey species from reservoir breach** - Eurasian otter (*Lutra lutra*)

Issue:

Otters are widespread in the Broads and are likely to use Buttle marsh for feeding and resting. Disturbance to otters could occur through prolonged machinery noise created by the construction and timing of the reservoir build. If a reservoir breach occurred it could transport nutrient rich water to the ditches and pools on Buttle Marsh, negatively impacting the fish communities that otters use as prey.

Discussion:

If there were to be an uncontrolled release of water from the reservoir, then there is the potential for large quantities of water and sediment to be washed into nearby Buttle Marsh, an important wetland, which also acts as functionally linked land to the nearby SPA, and SAC designated sites.

The water in the reservoir may become eutrophic over time, and in the case of a reservoir bank breach, then large quantities of eutrophic water and sediments infiltrating the nearby wetland sites could cause nutrient enrichment, and have a detrimental impact on the qualifying habitats and species of the designated sites such as breeding bittern, and otter.

As discussed in the *Supporting Evidence for the Appropriate Assessment* (page 43; section 8.4) the reservoir proposal falls within the Reservoirs Act 1975 (as amended) 25. This act aims to prevent the risk of flooding and other related impacts from reservoirs through design standards, regular inspections, maintenance and repairs, regulatory oversight and enforcement. As stated in the report, to date there has been no uncontrolled release of water from any structure covered by this legislation.

Under the Reservoirs Act 1975 regular inspections by a qualified engineer are required, and in the case of this reservoir proposal, checks on a weekly basis are required, due to the possibility of wild animals excavating the soil of the reservoir, and causing a bank breach.

Mitigation in the form of 'Wildlife fencing' has been identified and will be required around the reservoir to avoid the risk of this occurring. The fencing will need to be checked weekly, as part of the reservoir inspections.

There is the potential for otters to be disturbed during the construction phase of the reservoir, if they were present on the functionally linked land surrounding the development site. Otters are highly mobile mammals, and if disturbed they could easily move to nearby wetlands via the River Ant. The proposed construction work is due to take place during the winter months, reducing the chance that otters would be actively breeding.

The potential for pollution risks is evident during the construction and operation stages of the proposed reservoir, with sources including fuel/oil spills from construction machinery,

and the generator fuel. If pollution did reach nearby Buttle Marsh it could negatively impact the prey species of otters, and other SAC/SPA interest features.

However, these pollution risks can be minimised with the implementation of safety precautions in the Construction Environment Plan for the reservoir works.

### **Conclusion: SAC Annex II species**

We conclude that the following mitigation, will significantly reduce the risk of a potential reservoir bank breach, and the uncontrolled release of water to nearby SAC/SPA designated sites and the adjacent Buttle Marsh CWS, therefore impacts to SAC Annex 11 species are not anticipated.

1. Strict adherence to the Reservoir Act 1975, including **weekly** reservoir checks by a qualified engineer.
2. The installation and **weekly** checking of appropriate 'wildlife fencing' (as identified in the Supporting Evidence for the Appropriate Assessment (2023)) to ensure the reservoir banks are not destabilised, by excavating animals.

We conclude that the risks of pollution to nearby SAC/SPA designated habitat sites and the adjacent wetlands of Buttle Marsh CWS during the construction and operation of the reservoir can be mitigated, with the implementation of a Construction Environment Plan (2023).

**The mitigation identified above (points 1 & 2) to avoid the uncontrolled release of water from the reservoir, and a Construction Environment Plan to mitigate risks of pollution is to be conditioned as part of the planning permission if granted by the LPA.**

### **SPA Annex 1 Species**

1. Potential Hazard: **Disturbance to breeding SPA birds** – Bittern (*Botaurus stellaris*) & Marsh harrier (*Circus aeruginosus*)
2. Potential Hazard: **Impact on SPA breeding bird prey species** - Bittern (*Botaurus stellaris*)

#### **Issue:**

Potential impacts to bittern include disturbance during the breeding season from the construction of the reservoir, and the associated noise from large machines over a long duration. Buttle marsh has suitable nesting and feeding habitat for bitterns given the large areas of reedbed for breeding, and the extensive dyke network and various ponds that can be used for foraging for prey.

Bitterns can establish their breeding territories by the end of February, starting to boom as early as January. Egg laying can be started between end of March and mid-July. Disturbance is dependent on the timing and construction phase of the reservoir.

Potential impacts to marsh harrier include disturbance during the breeding season from the construction of the reservoir, and the associated noise and its duration from large machines. Buttle marsh has suitable nesting and feeding habitat for marsh harriers which normally begin nest building in April. However earlier nest site prospecting and breeding has been noted in the northern Broads.

Marsh harriers are known to also nest in arable fields with tall crops, so they could potentially nest in the development site if conditions were preferable. The reservoir construction could potentially disturb a Schedule 1 bird.

#### Discussion:

Disturbance to SPA breeding birds on the adjacent Buttle Marsh, and nearby designated SPA sites are possible during the construction phase of the reservoir. Sources can include increased noise and vibration impacts from the construction, as well as an increased presence of machinery and people to the site. Marsh Harriers are known to nest in arable fields where there is a tall crop, however there are large expanses of reedbed in the nearby designated sites, and Buttle Marsh wetland which is the harriers preferred nesting habitat.

There is the potential for SPA species such as bittern to be impacted by the proposed development if there were to be pollution impacts from the proposed development, which negatively impacted their aquatic prey items. Pollution sources could potentially originate from the uncontrolled release of water from the reservoir infiltrating ponds and ditches on Buttle Marsh with eutrophic water, impacting aquatic invertebrate species that Bitterns rely on for prey.

However, mitigation is proposed above regarding safeguards to prevent the uncontrolled release of water from the reservoir, in the form of weekly checks by a qualified engineer and wildlife fencing to prevent burrowing animals damaging the reservoir walls.

Other pollution sources could originate from oil/ fuel spills associated with the construction machinery or possibly the reservoir generator and fuel. An *Environmental Construction Management plan 2023*, has been submitted which provides safeguards to prevent possible pollution leaks from machinery associated with the construction, maintenance and operation of the reservoir.

The following mitigation is proposed to prevent disturbance to SPA nesting birds;

- Construction of the reservoir and pipeline (including works at the abstraction point) to be undertaken during the winter period (November – February inclusive).

**We conclude that the mitigation outlined above will avoid disturbance to breeding SPA species from the proposed reservoir construction. Timing of the construction works during November – February is to be conditioned as part of the planning permission, if granted by the LPA.**

The following mitigation is proposed to prevent pollution impacts to nearby SAC/SPA habitats and species, and functionally linked wetlands during reservoir construction:

- Safeguards to prevent pollution as detailed in the Construction Environment Plan 2023
- The CEMP will make provision for an Ecological Clerk of Works (ECoW), who will be available to oversee and advise on site works as required.
- The ECoW's duty will be to familiarise the workforce with the qualifying species/habitats on, or near to, the site, and to keep these features uppermost in the minds of site workers for the duration of the works.
- The CEMP will conform to The British Standard for Biodiversity BS42020:2013, and should include the following information:
  - a) Risk assessment of potentially damaging construction-type activities.
  - b) Identification of "biodiversity protection zones" and areas where invasive species have been identified.
  - c) Inclusion of or reference to details for implementation of method statements required to achieve specific biodiversity outcomes, and particularly mitigation measures.
  - d) Identification of practical measures, both physical measures and sensitive working practices to avoid impacts during development, for protecting biodiversity through the control or regulation of construction-type activities
  - e) The location and timing of sensitive works to avoid harm to biodiversity features.
  - f) The times during construction or development implementation when particular specialists need to be present on site to oversee works.
  - g) Responsible persons and lines of communication.
  - h) Defining and communicating the role and responsibilities on site of an ecological clerk of works (ECoW), or appointed ecologist(s) responsible for managing

biodiversity issues on site, and times and activities during construction or development implementation when they need to be present to oversee works.

- i) Use of exclusion fences, protective barriers and warning signs.

The following mitigation is proposed to prevent pollution to nearby SAC/SPA habitats and species, and functionally linked wetlands during the reservoir operation

- The fuel tank and generator for the reservoir will be double-bunded.
- Spill kits will be located in the bunded area and near to the generator.
- All hydraulic oil used in the operation and maintenance of the generator will be biodegradable.

**We conclude that the mitigation outlined above and in the Construction Environment Plan 2023, will mitigate any potential impacts from pollution to the nearby SAC/ SPA habitats and species and functionally linked wetlands. These details are to be conditioned as part of the planning permission, if granted by the LPA.**

### **3. Potential hazard: Disturbance to overwintering SPA birds -**

Bewick's swan (*Cygnus columbianus bewickii*), Bittern, (*Botaurus stellaris*) Hen harrier, (*Circus cyaneus*), Eurasian Wigeon, (*Anas Penelope*), Northern Shoveler, (*Anas clypeata*) Pink-footed goose, (*Anser brachyrhynchus*), Ruff (*Philomachus pugnax*), Whooper swan (*Cygnus Cygnus*)

#### Issue:

During the construction and operational phase of a proposed reservoir, impacts to nearby habitat sites from disturbance is likely. As discussed in the *Supporting Evidence for the Appropriate Assessment (2023)*, Disturbance impacts can include an increase in on site activity (in terms of presence and movements of people and machinery), noise, lighting and possibly ground vibration during construction. Disturbance can impact wildlife in a variety of ways, including causing a species to avoid the site and the surrounding land.

The proposed reservoir footprint, proposed fill pipe route and proposed irrigation pipe route are situated 250m, 150m and 185m from the nearest point of the Broads SAC and Broadland SPA/Ramsar, respectively. At this distance there is the potential for construction works to disturb certain qualifying species situated both within the boundary of nearby habitat sites, as well as qualifying species using the surrounding area and the land within the red line boundary of the proposed development.

The following SPA bird species are known to use the adjacent wetland of Buttle Marsh, which is functionally linked to the nearby designated SPA habitats, and is an important wetland habitat.

Bittern - disturbance from the construction of the reservoir during the winter months, and the associated noise from large machines over a long duration.

Hen harrier –Occasionally a winter visitor to Buttle Marsh, using the large expanse of wetland for hunting and resting. Disturbance to hen harrier is possible from the associated noise from large machines over a long duration.

Wigeon and Shoveler– can be found during the winter months on the pools at Buttle Marsh. They are particularly sensitive to disturbance, and there is the potential for the construction noise and plant movement from the development to displace these species.

Bewick's swan, Whooper swan, and Pink-footed goose have been noted in the adjacent arable fields close to the development site in recent years. These areas are likely to be used as a winter foraging resource or resting area between suitable wetland sites. These fields provide important outlying sites for these SPA species. These wetland birds are particularly sensitive to disturbance, and there is the potential for the construction noise and plant movement to displace these species.

#### Discussion:

The proposed reservoir site is 150-250m metres from the Broadland SPA, and adjacent to the wetland of Buttle Marsh, and other functionally linked land of the SPA designated sites including Little Reedham fen, and the arable land proposed for the development which can be used by SPA over- wintering swan and goose species.

It is therefore possible that SPA wintering bird species, could be disturbed by the construction of the reservoir and associated pipeline installation.

Mitigation has been proposed in the form of pre-construction watching brief surveys to be undertaken by a Suitably Qualified Ecologist (SQE).

The surveys will be carried out as follows:

- Proposed reservoir: a watching brief will be undertaken of the reservoir works area as well as Buttle Marsh. This will be done prior to the commencement, but on the same day, of the works.
- Proposed irrigation pipeline: pre-commencement watching briefs will be undertaken on the same day of construction on a field-by-field basis as works progress.

- If there is the likelihood of construction disturbing any qualifying species present in the area then works will be allowed to proceed until the SQE has confirmed, through additional watching briefs, the species will not be impacted by the works (i.e. when the species is outside its individual disturbance zone). Where required, qualifying species will be protected from disturbance by a buffer zone advised by the SQE. The scope of the watching brief surveys will be adjusted if needed by the SQE depending on factors such as the project's construction timescale and any change in the perceived risk to wintering birds. *Supporting Evidence for the Appropriate Assessment (2023)*

The proposed abstraction point area close to Little Reedham Fen, is already regularly disturbed by walkers using the public footpath. The proposed construction works in this area are proposed to be small in nature, with no trenching proposed, therefore it is not anticipated that the construction works will contribute to SPA wintering bird disturbance in this area.

**We conclude that the mitigation outlined above will significantly reduce the impacts of construction disturbance to wintering SPA species from the proposed reservoir. The mitigation outlined above, and in the Construction Environment Plan 2023, will be conditioned as part of the planning approval, if granted by the LPA.**

#### **Conclusion: SPA Annex 1 Species**

In conclusion, provided that the mitigation in the form of watching brief bird surveys prior and during the construction of the reservoir and pipelines, and the appropriate advice is carried out by a suitably qualified ecologist, then impacts of disturbance to wintering SPA species from the proposed reservoir can be mitigated, and it is felt that **no adverse effect on the integrity of the designated SPA site features** will be seen due to this development taking place.

#### **Broadland RAMSAR**

See previous sections for comments regarding habitats and species falling under the Ramsar criterion.

## 7.0 Conclusion

In conclusion, provided that the mitigation outlined above and in the supporting documentation ('Construction Environment Management Plan', Supporting Evidence for the Appropriate Assessment, Ecology Report 2023) is conditioned and implemented, if planning permission is granted for this application, it is expected that **no adverse effect on the integrity of the Broads SAC and Broadland SPA will be seen due to this development taking place in isolation.**

It has been highlighted that another reservoir proposal application maybe submitted within close vicinity of the Limes Farm proposal, approximately 1km north-east.

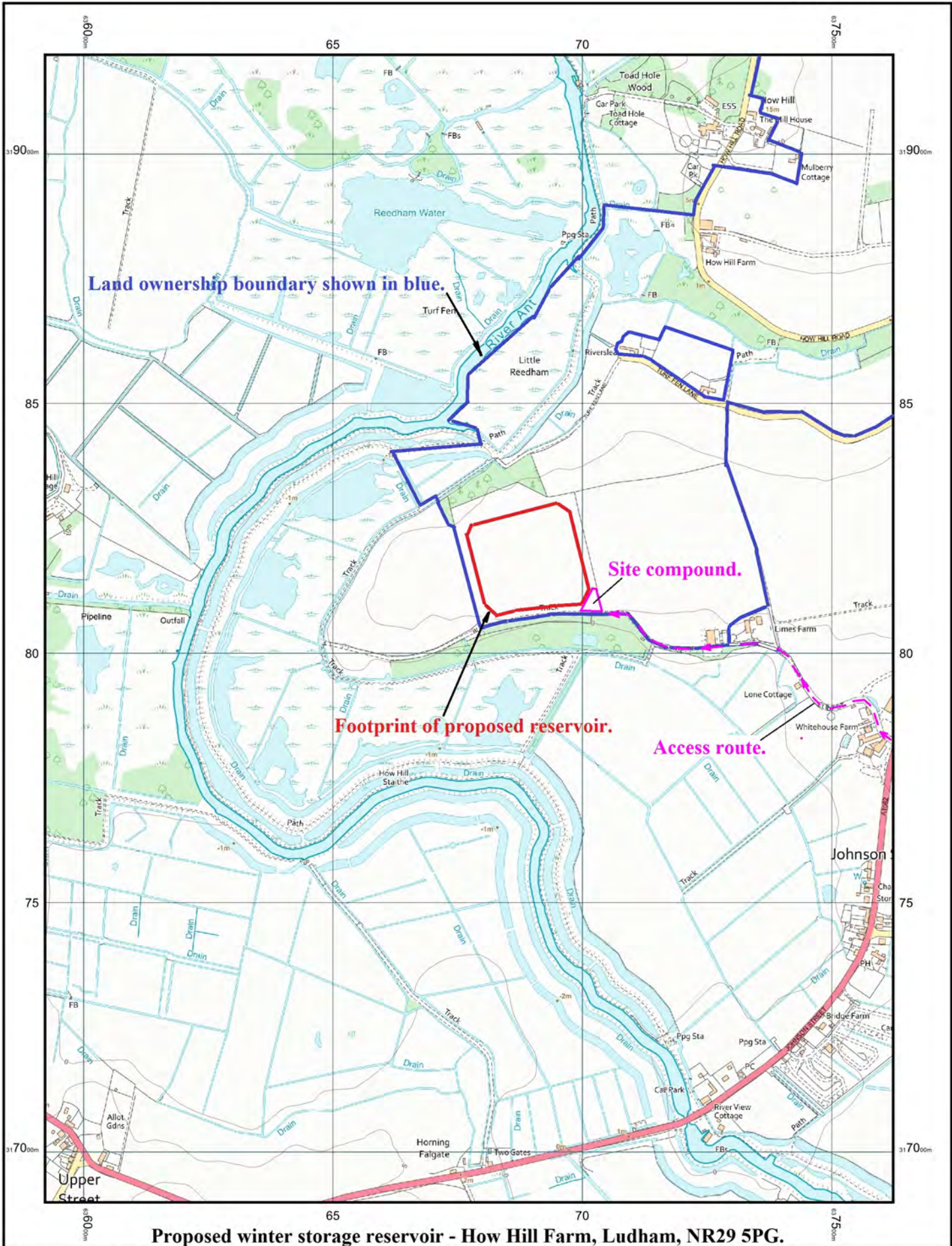
If the construction of the two proposed reservoirs took place over the same winter period there is the potential for additional noise and therefore disturbance impacts to qualifying bird populations. However, mitigation in the form of pre-construction bird surveys will be in place for this application to avoid disturbing any SPA/Ramsar bird species.

It is also unlikely that construction of the two reservoirs would take place at the same time, given they would be at different stages in the planning process.

In conclusion, provided that the mitigation outlined above and in the supporting documentation is conditioned and implemented, if planning permission is granted for this application, it is expected that **no adverse effect on the integrity of the Broads SAC and Broadland SPA will be seen due to this development taking place in isolation or in combination with other projects.**

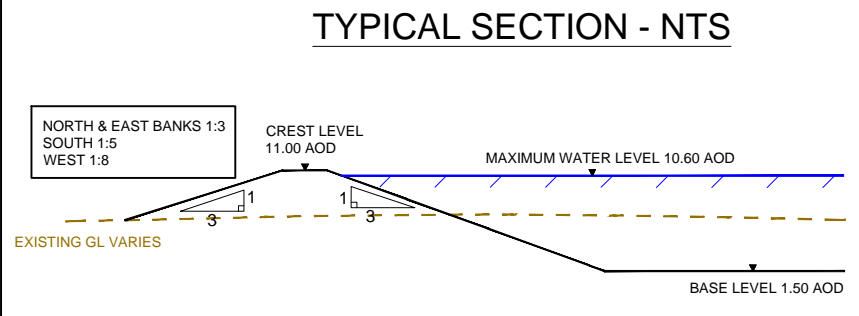
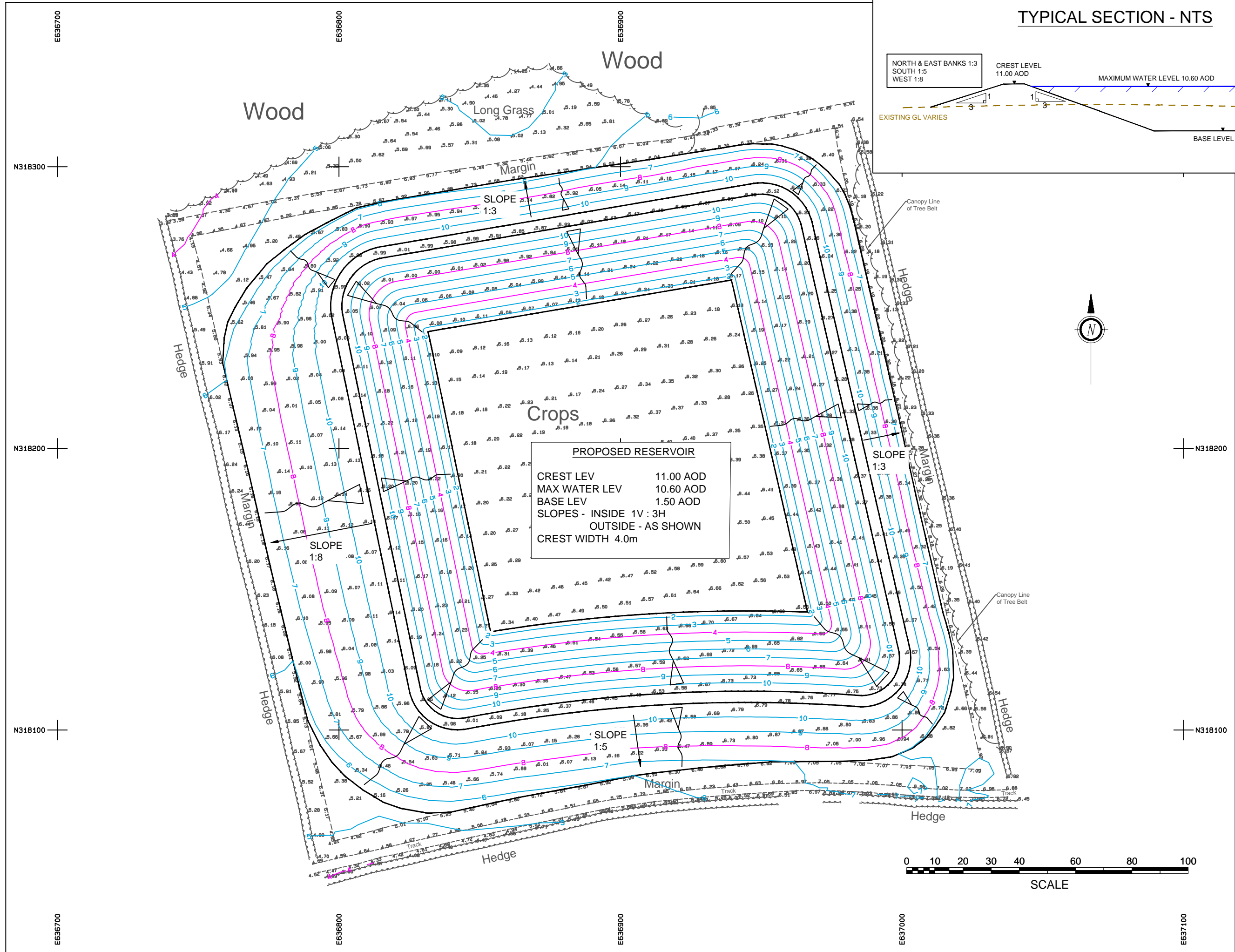


## **Appendix 1 – Site Location Plan**



## Appendix 2 – Site Proposal Plan





**PROPOSED RESERVOIR**

CREST LEV 11.00 AOD  
 MAX WATER LEV 10.60 AOD  
 BASE LEV 1.50 AOD  
 SLOPES - INSIDE 1V:3H  
 OUTSIDE - AS SHOWN  
 CREST WIDTH 4.0m

**Notes**

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SURVEY COORDINATES RELATE TO OSTN15 & OSTGM15 DATUMS

BUILDING LOCATIONS & LEVELS TAKEN USING REMOTE MEASURING METHODS



**Client**

BLIND LANE  
 LUDHAM, NORFOLK  
 NR29 5PA

**Title**

PROPOSED  
 RESERVOIR LAYOUT

**SURVEYING AND GEOMATICS**

- Topographical Surveying • Setting Out • 3D Modelling •
- Earthworks Volumes • As Built Surveys •
- GPS Machine Control • Drone Surveys & Photography •

BERGAN HOUSE  
 HIGH ROAD  
 GREAT FINBOROUGH  
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<b>Date</b>	<b>Scale</b>	<b>Proj Status</b>
10.09.21	1250@A1	
<b>Job No.</b>	<b>Proj No.</b>	<b>Rev.</b>
1779	L01	