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PRINCIPLE
PLANNING

Flood Risk Assessment: Boardwalk, viewing platform, hides, footbridges and associated infrastructure at Pensthorpe Nature Reserve.

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Contents

1	The site.....	3
2	Proposed Development	4
3	Flood Zones	5
4	Flood Risk Assessment	7
	Sequential Test	8
	The development should remain operational and safe for users in times of flood.....	9
	The development should result in no net loss of floodplain storage; should not impede water flows and should not increase the risk of flooding elsewhere.....	9
5	Conclusion.....	10
	Appendix 1: Consultation Response from Environment Agency on similar proposal.....	11

Flood Risk Assessment: Boardwalk, viewing platform, hides, footbridges and associated infrastructure at Pensthorpe Nature Reserve.

1 The site

- 1.1 The application site is located within the Pensthorpe Nature Reserve and Park ('Pensthorpe'). Pensthorpe is a 700 acre nature reserve incorporating a visitor centre, café, indoor and outdoor areas for play and an extensive network of footpaths.
- 1.2 The wetland park was created out of a former sand and gravel extraction site, with restoration of the former workings focussed on creating a wetland habitat engineered to maximise biodiversity potential.
- 1.3 The site is located just outside of Fakenham and sits in the Upper Wensum Valley. The River Wensum runs through the southern part of the reserve and feeds the flooded former mineral workings which characterise the wetland park.
- 1.4 The application site lies at the foot of the shallow valley, within the series of lakes which are positioned to the north of the Wensum.



Figure 1: Application site and surrounding landscape (Google Earth)

Flood Risk Assessment: Boardwalk, viewing platform, hides, footbridges and associated infrastructure at Pensthorpe Nature Reserve.



Figure 2: Site location (extract from Location Plan)

2 Proposed Development

- 2.1 The proposal would see the construction of a new raised boardwalk across one of the islands within the lake known as Moon Water (sometimes also referenced as Pointers Lake).
- 2.2 The boardwalk would incorporate viewing platform and 2 'hides', offering views across the water and into the island's tree canopy. The raised boardwalk would be connected to the 'mainland' by two new rope suspension bridges located at the north-eastern and southern ends of the island.
- 2.3 This new infrastructure would tie into the existing path network within the park and has been specifically designed to create a wheelchair accessible 'loop' taking in the new boardwalk and an existing path.
- 2.4 The new bridges and boardwalk would be elevated so as to minimise impact on the ecology and biodiversity on the island, to afford views across the lake and to ensure the deck level is set substantially above any predicted flood level.
- 2.5 The boardwalk and bridges would be set at approximately 3.5m above typical water levels within the lake, before returning to ground level where it meets the existing path network.

3 Flood Zones

- 3.1 The Planning for Flood Risk mapping indicates the application site is located in an area considered to be at High Risk of flooding from river (Figure 3).

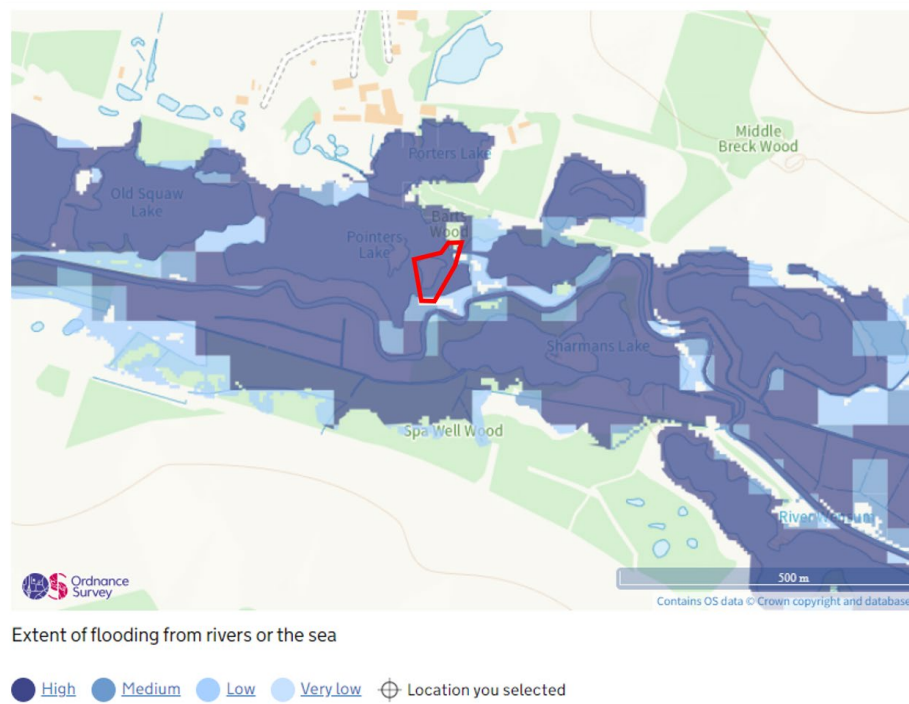


Figure 3: Annotated extract from Planning For Flood Risk mapping (.gov.uk)

- 3.2 The North Norfolk Strategic Flood Risk (SFRA) Map indicates the site is located in Flood Zone 3b – functional flood plain (Figure 4) .



Figure 4: Annotated extract from NNDc SFRA Flood Map – sheet NN30. Area shaded green denotes extent of Flood Zone 3b (functional floodplain)

Flood Risk Assessment: Boardwalk, viewing platform, hides, footbridges and associated infrastructure at Pensthorpe Nature Reserve.

- 3.3 SFRA mapping also confirms the site is at risk of flooding from surface water in the event of a 1 in 1,000 year flood event (Figure 5).

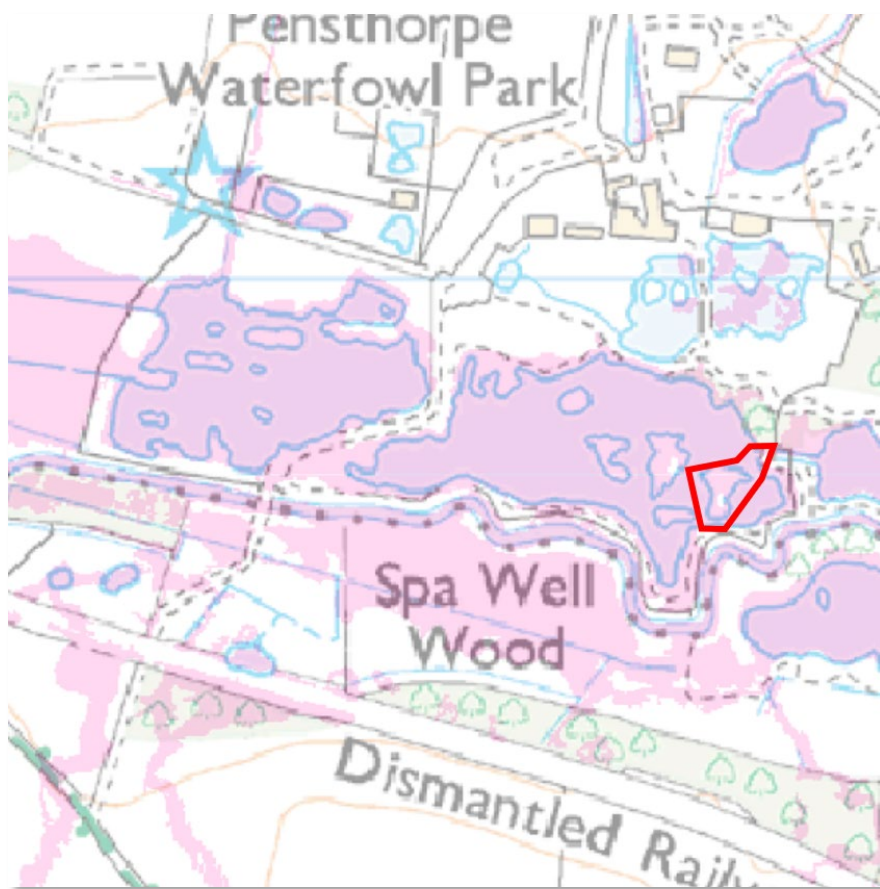


Figure 5: Annotated extract from NDC SFRA Flood Map – sheet NN30. Area shaded pink denotes modelled extent of surface water flooding during a 1 in 1,000 year event (RoFfSW 0.1% AEP)

4 Flood Risk Assessment

- 4.1 The application site lies in an area which is at risk of flooding from the River Wensum and, albeit it a much lesser extent, risk of surface water flooding.
- 4.2 SFRA and Environment Agency mapping show the site lies in the fluvial Flood Zone 3b (functional floodplain), which is land where water has to flow or be stored in times of flood, as defined in Table 1 of the Planning Practice Guidance (PPG).
- 4.3 The development proposal is for viewing hides, sections of raised boardwalk and two pedestrian/wheelchair footbridges. Development of this nature is regarded by the Environment Agency (EA) as water-compatible, as defined by Table 2 of the Planning Practice Guidance (see, for example, EA response to application BA/2021/0366/FUL, proposing new elevated boardwalk and hide in the Broads area – copy of letter included at Appendix 1).
- 4.4 Environment Agency Guidance¹ states that development of this nature within Flood Zone 2 or 3 will need to satisfy the requirements of the Sequential Test.
- 4.5 Table 2 of the PPG confirms that ‘Water Compatible Infrastructure’ proposed in Flood Zone 3b does not need to satisfy the requirements of the Exception Test (see Figure 6, below).

Table 2: Flood risk vulnerability and flood zone ‘incompatibility’

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Key:
 ✓ Exception test is not required
 X Development should not be permitted

Figure 6: Table 2 PPG Paragraph: 079 Reference ID: 7-079-20220825

- 4.6 However, para 079 of the PPG does require that where water-compatible uses are proposed in Flood Zone 3b (functional floodplain), it should be designed and constructed to:
- remain operational and safe for users in times of flood;
 - result in no net loss of floodplain storage;

¹ Flood risk assessment: the sequential test for applicants - <https://www.gov.uk/guidance/flood-risk-assessment-the-sequential-test-for-applicants#developments-that-need-a-sequential-test>

Flood Risk Assessment: Boardwalk, viewing platform, hides, footbridges and associated infrastructure at Pensthorpe Nature Reserve.

- not impede water flows and not increase flood risk elsewhere.

4.7 These matters are considered in turn, below:

Sequential Test

4.8 The sequential test compares the site at which development is proposed with other available sites to find out which has the lowest flood risk.

4.9 Guidance to the Sequential Test confirms the Test can be presented in any format as long as the requirements guidance are met. The following table includes all the criteria identified in the guidance, and makes an assessment of the site against those criteria.

Requirement	Assessment
The name and location of the site you're proposing for development	Pensthorpe Nature Reserve, Pensthorpe Road, Fakenham, NR21 0LN – see Section 1 of FRA for detail
An explanation of why you chose that specific site	Pensthorpe is an internationally recognised nature reserve and a landscape that has been created to optimise biodiversity and ecological interest. As such, the reserve is a well established location for nature conservation, education and leisure (nature walks, bird watching etc). The proposed development – elevated boardwalk, observation deck and hides – will help visitors explore, understand and appreciate this environment in a safe and low-impact manner.
Potential alternative sites	<p>Within the Pensthorpe reserve there are areas at lower risk of flooding than the application site. However the purpose of this development is to enable enhanced appreciation and understanding of, and controlled access to, the wetland ecosystem at Pensthorpe. Locating the proposal on land at lower risk of flooding elsewhere within the reserve would nullify this purpose; the structures need to be over the water (and, consequently, necessarily in an area at risk of flooding) to achieve this purpose.</p> <p>Outside of Pensthorpe, there may be wetland sites which are at a lower risk of flooding but, following research, this assessment has not identified such site in the district of North Norfolk. Even if such a site could be identified outside of the district, Pensthorpe is an established reserve and education centre which successfully balances the demands of visitor pressures against conservation principles. Relocating this development to a site which is at a lower risk of flooding but that lacks the accompanying visitor infrastructure (access, car parking, café, footpath network etc) would be both harmful to the site and unsatisfactory in respect of the achieving the purpose of the development.</p>
Conclusion	The Sequential Test is passed: There are no reasonably available suitable sites which could both accommodate the proposed development and which are also at lower risk of flooding.

The development should remain operational and safe for users in times of flood

- 4.10 The proposed development (comprising elevated boardwalk, footbridges and viewing hides) is designed with a deck height approximately 3.5m above the lake's water level (deck height 33.95m AOD, water level 30.4m AOD, island level 30.95m AOD). This puts the structure substantially above any modelled flood depths for the River Wensum in this location and will ensure it remains safe for users in times of flood.
- 4.11 The proposed bridges and walkway tie into the existing footpath network and, as such, do not expose visitors to the site to any new risk of flooding above that presented by the existing footpath network. This footpath network is managed by staff at the site (including live-in staff) and sections can be closed if conditions are too wet (this is done primarily to preserve the integrity of the footpath surface rather than as a result of risk to life presented by flooding)

The development should result in no net loss of floodplain storage; should not impede water flows and should not increase the risk of flooding elsewhere.

- 4.12 The boardwalk, viewing platform and hides will all be elevated on steel piles, meaning flood water can flow beneath the structures unimpeded. The deck height will be set 3.5m above the water level of the lake, meaning there is sufficient capacity for any flood water to flow from the River Wensum, into the Lake and (as necessary) beyond without the flow of water being obstructed by the structures proposed.
- 4.13 There are discrete points where the elevated boardwalk drops down to rejoin the existing paths and therefore matches the levels of that path – specifically at one end of each of the footbridges. However, the boardwalk is finished in timber decking and with timber pole balustrading (with poles spaced to enable light in and glimpse views out for children). Consequently, even at these two discrete points, flood water would pass over and through the structure without significant impedance and with no measurable loss of flood storage capacity.
- 4.14 Because the development would not impeded the flow of flood water, would not result in any measurable loss of flood storage capacity and would be set substantially higher than even the worst case flood model water levels, the development would not increase the risk of flooding elsewhere.

5 Conclusion

- 5.1 This application seeks consent for Water Compatible Development located in Flood Zone 3b.
- 5.2 A Sequential Test has been undertaken and there are no reasonably available sites which could both accommodate the proposed development and also be at lower risk of flooding.
- 5.3 The nature, design and specification of the structures proposed are such that the development would remain operational and safe for users in times of flood; result in no net loss of floodplain storage; and would not impede water flows and not increase flood risk elsewhere.
- 5.4 Accordingly the development is considered to accord with the provisions of the National Planning Policy Framework, Planning Practice Guidance and North Norfolk Core Strategy Policy EN10.

Flood Risk Assessment: Boardwalk, viewing platform, hides, footbridges and associated infrastructure at Pensthorpe Nature Reserve.

Appendix 1: Consultation Response from Environment Agency on similar proposal

Nigel Catherall
Broads Authority
Planning & Development
62-64 Thorpe Road
NORWICH
NR1 1RY

Our ref: AE/2021/126700/01-L01
Your ref: BA/2021/0366/FUL
Date: 06 January 2022

Dear Mr Catherall

ERECTION OF VIEWING HIDE AND INSTALLATION OF A SHORT SECTION OF BOARDWALK

BROADLAND CONSERVATION CENTRE, BROAD ROAD, RANWORTH, NORWICH, NR13 6HS

Thank you for your consultation and apologies for our delayed response. We have no objection to this planning application, providing that you have taken into account the flood risk considerations which are your responsibility. We have highlighted these in the flood risk section below.

Flood Risk

Our maps show the site lies in the tidal and fluvial Flood Zone 3b (functional floodplain), which is land where water has to flow or be stored in times of flood, as defined in [Table 1](#) of the Planning Practice Guidance (PPG). The development proposal is for a viewing hide and a short section of raised boardwalk and our view is that such facilities fall to be regarded as water-compatible under [Table 2](#) of the PPG. Please note that our view should not fetter the local planning authority in reaching its own conclusion on the flood risk status of the development proposal.

Therefore, to comply with national policy the application is required to pass the Sequential Test and be supported by a site specific Flood Risk Assessment (FRA).

To assist you in making an informed decision about the flood risk affecting this site, the key points to note are detailed below.

In accordance with the footnotes of [Table 3: Flood risk vulnerability and flood zone 'compatibility'](#) of the PPG, for water compatible development within Flood Zone 3b (functional floodplain), the applicant has designed their development to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Actual Risk

Environment Agency
Iceni House Cobham Road, Ipswich, IP3 9JD.
Customer services line: 03708 506 506
www.gov.uk/environment-agency

Cont/d..

- The site lies within the flood extent for a fluvial 1% (1 in 100) and a tidal 0.5% (1 in 200) annual probability events, including an allowance for climate change.
- As no FRA has been submitted with this application, we are limited in the advice that we can provide. However considering that this development is water compatible and the design of the viewing hide and boardwalk are raised, we feel that it is acceptable in this instance.
- We would recommend that an Emergency Flood Plan is prepared for the site, if one does not already exist for consideration with your Emergency Planners and the Emergency Services.
- The site does not benefit from the presence of defences.
- Compensatory storage is not required.

Guidance for Local Council

Safety of Inhabitants – Emergency Flood Plan

The Environment Agency does not normally comment on or approve the adequacy of flood emergency response procedures accompanying development proposals, as we do not carry out these roles during a flood. Our involvement with this development during an emergency will be limited to delivering flood warnings to occupants/users covered by our flood warning network.

The [Planning Practice Guidance](#) to the National Planning Policy Framework states that those proposing developments should take advice from the emergency services when producing an evacuation plan for the development as part of the flood risk assessment.

In all circumstances where warning and emergency response is fundamental to managing flood risk, we advise local planning authorities to formally consider the emergency planning and rescue implications of new development in making their decisions. As such, we recommend you consult with your Emergency Planners and the Emergency Services to determine whether the proposals are safe in accordance with the guiding principles of the Planning Practice Guidance (PPG).

We have considered the findings of the likely duration, depths, velocities and flood hazard rating against the design flood event for the development proposals. This indicates that there will be either:

- *A danger to most people (e.g. there will be danger of loss of life for the general public)*
- *A danger for all people (e.g. there will be danger of loss of life for the general public and the emergency services).*

This does not mean we consider that the access is safe, or the proposals acceptable in this regard. We remind you to consult with your Emergency Planners and the Emergency Services on the evacuation proposals.

Partnership funding for new/upgraded defences

Please note that government funding rules do not take into account any new properties

(residential or non-residential), or existing buildings converted into housing, when determining the funding available for new/upgraded defences. Therefore as the proposed development may reduce the funding available for any future defence works we would like to take opportunities to bring in funding through the planning system, so please can you consider this when determining the planning application.

Sequential Test / and Exception Tests


The requirement to apply the Sequential Test is set out in Paragraph 158 of the National Planning Policy Framework. The Exception Test is set out in paragraph 160. These tests are your responsibility and should be completed before the application is determined. Additional guidance is also provided on [Defra's website](#) and in the [Planning Practice Guidance](#).

Other Sources of Flooding

In addition to the above flood risk, the site may be within an area at risk of flooding from surface water, reservoirs, sewer and/or groundwater. We have not considered these risks in any detail, but you should ensure these risks are all considered fully before determining the application.

We trust this advice is useful

Yours sincerely



Mr Liam Robson
Sustainable Places - Planning Advisor

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Direct e-mail Liam.Robson@environment-agency.gov.uk