

FLOOD RISK ASSESSMENT

Land South of Heron Orchard, Spalding

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Land South of Heron Orchard
Flood Risk Assessment
4th December 2020

REPORT

Quality Management

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Matthew Bell

4 December 2020

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1 INTRODUCTION

- 1.1 RPS Consulting Services Ltd ('RPS') was commissioned by Mr J Connors ('the Applicant') to undertake a Flood Risk Assessment (FRA) of *Land South of Heron Orchard, Frostley Gate, Holbeach, Spalding, PE12 8SR* in relation to the development proposal for the extension of Heron Orchard Holiday Park.
- 1.2 The aim of the FRA is to outline the potential for the site to be impacted by flooding, the impacts of the proposed development on flooding in the vicinity of the site, and the proposed measures which could be incorporated into the development to mitigate the identified risk. The report has been produced in accordance with the guidance detailed in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance (PPG). Reference has also been made to the South Holland District Council Strategic Flood Risk Assessment (SFRA) and the South Holland District Council Surface Water Management Plan (SWMP) / Preliminary Flood Risk Assessment (PFRA).
- 1.3 This report has been produced in consultation with the Environment Agency (EA) and the Lead Local Flood Authority (LLFA). The site is located within an Internal Drainage Board (IDB) District.
- 1.4 This report is not intended to provide formal details of the final drainage design for the development. However, it provides information regarding the capabilities of the conceptual surface water drainage strategy to meet the requirements of the NPPF.
- 1.5 The desk study was undertaken by reference to information provided / published by the following bodies:
- EA;
 - Centre for Ecology and Hydrology;
 - British Geological Survey (BGS);
 - Ordnance Survey (OS); and
 - Anglian Water.

2 PLANNING POLICY CONTEXT

National Planning Policy

- 2.1 The National Planning Policy Framework (NPPF) was released in March 2012 and was updated in June 2019. The document advises of the requirements for a site-specific Flood Risk Assessment (FRA) for any of the following cases (Planning and Flood Risk paragraph 163 (footnote 50)):
- All proposals (including minor development and change of use) located within the EA designated floodplain, recognised as either Flood Zone 2 (medium probability) or Flood Zone 3 (high probability);
 - All proposals of 1 hectare (ha) or greater in an area located in Flood Zone 1 (low probability);
 - All proposals within an area which has critical drainage problems (as notified to the Local Planning Authority by the EA);
 - Land identified in a strategic flood risk assessment as being at increased flood risk in future; and
 - Where proposed development may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

Local Planning Policy

- 2.2 The site is located within the administrative boundary of South Holland District Council which is covered by the South East Lincolnshire Local Plan which was adopted on 8th March 2019. The South East Lincolnshire Local Plan contains the following policy in relation to flood risk:

Policy 4: Approach to Flood Risk

- 2.3 This policy states: *“Development proposed within an area at risk of flooding (Flood Zones 2 and 3 of the Environment Agency’s flood map or at risk during a breach or overtopping scenario as shown on the flood hazard and depths maps in the Strategic Flood Risk Assessment) will be permitted, where:*
- *It can be demonstrated that there are no other sites available at a lower risk of flooding (i.e. that the sequential test is passed). The sequential test will be based on a Borough or District wide search area of alternative sites within the defined settlement boundaries, unless local circumstances relating to the catchment area for the development justify a reduced search area, i.e. there is a specific need for the development in that location. The sequential test is not required for sites allocated in the Local Plan, minor development or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site);*
 - *It can be demonstrated that essential infrastructure in FZ3a & FZ3b, highly vulnerable development in FZ2 and more vulnerable development in FZ3 provide wider sustainability benefits to the community that outweigh flood risk;*
 - *The application is supported with a site-specific flood risk assessment, covering risk from all sources of flooding including the impacts of climate change and which:*
 - *demonstrate that the vulnerability of the proposed use is compatible with the flood zone;*
 - *identify the relevant predicted flood risk (breach/overtopping) level, and mitigation measures that demonstrate how the development will be made safe and that occupants will be protected from flooding from any source;*

- *propose appropriate flood resistance and resilience measures (following the guidance outlined in the Strategic Flood Risk Assessment), maximising the use of passive resistance measures (measures that do not require human intervention to be deployed), to ensure the development maintains an appropriate level of safety for its lifetime;*
- *include appropriate flood warning and evacuation procedures where necessary (referring to the County's evacuation routes plan), which have been undertaken in consultation with the authority's emergency planning staff;*
- *incorporates the use of Sustainable Drainage Systems (SuDS) (unless it is demonstrated that this is not technically feasible) and confirms how these will be maintained/managed for the lifetime of development (surface water connections to the public sewerage network will only be permitted in exceptional circumstances where it is demonstrated that there are no feasible alternatives);*
- *demonstrates that the proposal will not increase risk elsewhere and that opportunities through layout, form of development and green infrastructure have been considered as a way of providing flood betterment and reducing flood risk overall;*
- *demonstrates that adequate foul water treatment and disposal already exists or can be provided in time to serve the development; and*
- *ensures suitable access is safeguarded for the maintenance of water resources, drainage and flood risk management infrastructure.*

Development in all flood zones, and development over 1 hectare in size in Flood Zone 1, will need to demonstrate that surface water from the development can be managed and will not increase the risk of flooding to third parties.

Caravans, mobile homes and park homes intended for permanent residential use will not be permitted in areas at risk of flooding. Caravan, chalet, log cabin, camping and touring sites at risk of fluvial flooding where there is a 'danger for most' and 'danger for all' will not be permitted. Occupancy of caravan, chalet, log cabin, camping and touring sites at risk of tidal flooding will not be permitted to open between 1st November in any one year and the 14th March in the succeeding year.

No development will be permitted within a 50m buffer from the toe of the raised Witham Haven Banks (flood defences), as shown on the indicative Plan contained in Appendix 10, to allow access for construction and maintenance.

Flood risk management infrastructure shall be provided at the strategic level, where development opportunities allow, to reduce the hazard and probability of flooding."

- 2.4 The South East Lincolnshire SFRA, dated March 2017, identifies and maps flood risk from all sources at a borough-wide scale as well as providing guidance on producing site specific FRAs. Relevant information from the SFRA has been referenced throughout this FRA report.

3 CONSULTATION

Environment Agency

- 3.1 Consultation has been undertaken with the EA in the form of a Preliminary Opinion Request based on the nature of flood risk within the site (described further in Section 6) and taking into account the nature of the proposed development. The EA provided their Preliminary Opinion on 9th November 2020. The EA's Preliminary Opinion is included as Appendix A and referenced throughout this report where relevant.
- 3.2 In addition to the above, an information request was submitted to the EA in the form of a Product 4 data request. The EA provided a response to this request on 19th November. This response is included as Appendix A and is described in Section 6.

Internal Drainage Board (IDB)

- 3.3 The site is located within the South Holland IDB District. Consultation has been undertaken with the IDB to obtain any data they may hold in relation to flood risk from Ordinary Watercourses within the vicinity of the site, notably the Little South Holland Drain which runs adjacent to the southern boundary of the site. RPS are currently awaiting a response from the IDB.

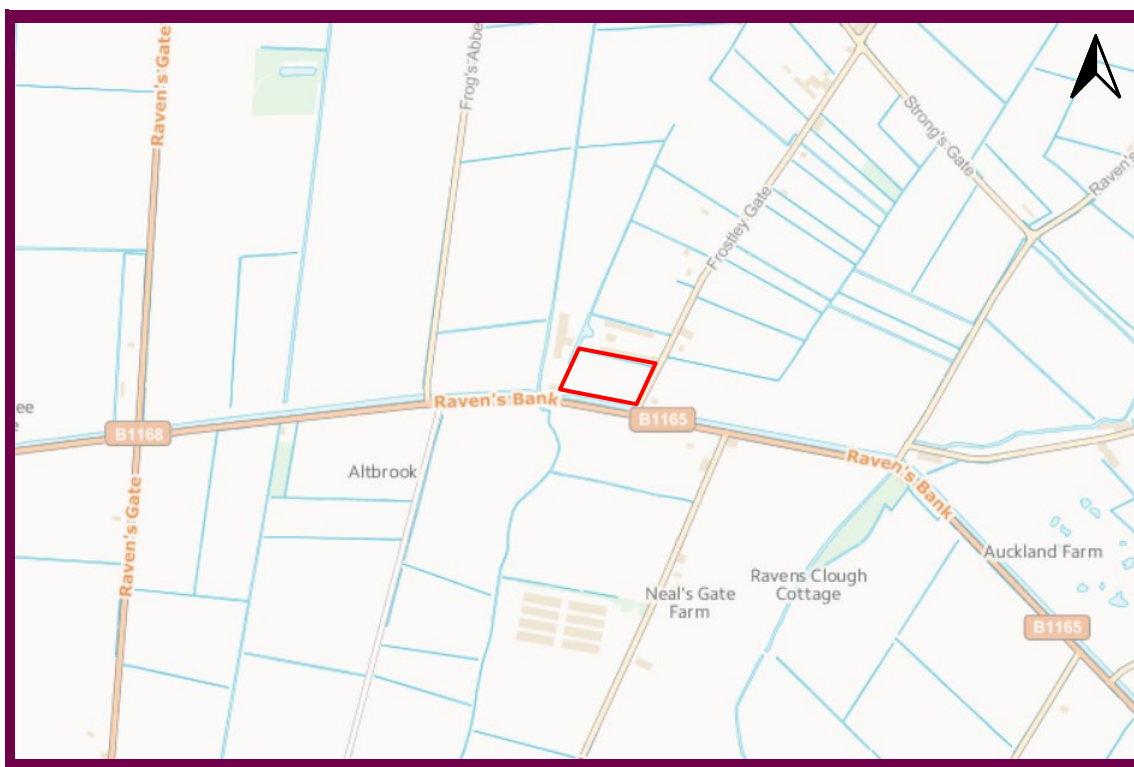
Anglian Water

- 3.4 The public sewer network within the vicinity of the site is operated by Anglian Water. Consultation has been undertaken with Anglian Water to obtain copies of their Asset Location Plans which are described in Section 8.

4 EXISTING SITE

Site Description

- 4.1 The site is located at National Grid Reference TF 36134 20390 is rectangular in shape and occupies an area of approximately 1.77 hectares (ha). The site location is presented in Figure 1.



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Figure 1. Site Location

- 4.2 The site currently wholly comprises grazing land.

Surrounding Land Uses

- 4.3 A summary of the land use within the vicinity of the site is provided in Table 1 below.

Table 1 Summary of surrounding land use

Direction	Land Use
North	The site is bounded to the north by the existing Heron Orchard Holiday Park.
South	The site is immediately bounded to the south by Little South Holland Drain beyond which is the B1168 (Raven's Bank)
East	The site is bounded to the east by Frostley Gate.
West	The site is bounded to west by an existing dwelling and associated ancillary buildings.

- 4.4 There are no designated sensitive areas (e.g. Special Area of Conservation (SAC), Special Protection Area (SPA) or Site of Special Scientific Interest (SSSI) within 1km of the site.

Topography

- 4.5 At this stage, no Topographic Survey has been made available. A LiDAR-derived digital terrain model (DTM) with a 1 metre (m) resolution has been used to establish the topographic profile of the site. The DTM indicates the site is generally levelled to between approximately 2 and 2.5 m above ordnance datum (AOD) and peaks in the south eastern corner at approximately 2.9 m AOD. The level drops to approximately 1.6m AOD in the northern area of the site, with depressions apparent in the central area and north western corner. The DTM is presented as a map and included as Appendix B.

5 PROPOSED DEVELOPMENT

- 5.1 The proposed development forms an extension to the existing Heron Orchard Holiday Park and will comprise seasonal touring use. Touring caravans will be situated on grassed pitches.
- 5.2 The proposed development will include an internal access road, however, no information regarding layout or points of access has been provided at this stage. The access road will be formed by crushed hardcore and recycled tarmac and will be permeable in nature.
- 5.3 The proposed use of the site is classified as 'More Vulnerable' within the Planning Practice Guidance, subject to the provision of a Flood Warning and Evacuation Plan.

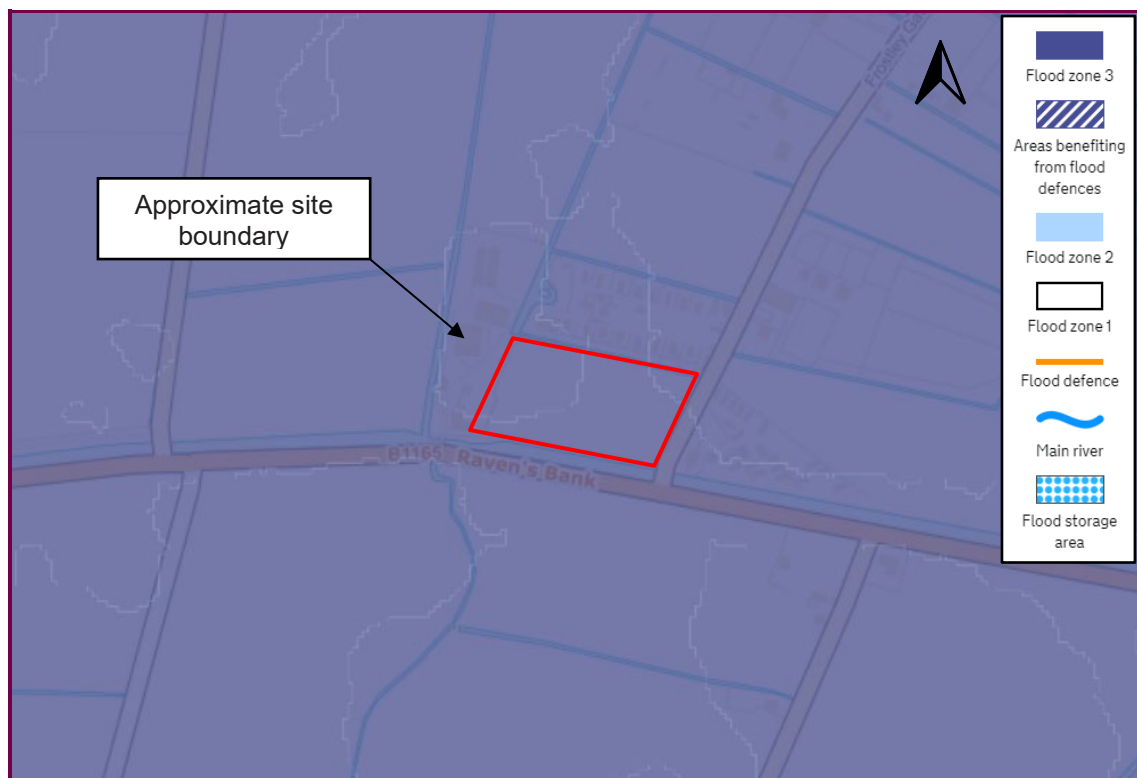
6 HYDROLOGICAL SETTING

Nearby Watercourses

- 6.1 The southern boundary of the site is formed by Little South Holland Drain which is classified as an Ordinary Watercourse. The drain flows in a south easterly direction before eventually discharging into South Holland Drain approximately 2.25 km south east of the site. South Holland Drain flows in an easterly direction before eventually discharging into the River Nene.
- 6.2 OS mapping indicates an existing watercourse adjacent to the north eastern corner of the site. This watercourse appears to flow in a northerly direction along the western boundary of the wider Holiday Park. In addition, a watercourse is shown along the northern boundary of the site.
- 6.3 No EA Main Rivers are identified within the vicinity of the site.
- 6.4 A number of drainage ditches and field drains are located within the vicinity of the site.

Fluvial / Tidal Flood Risk Classification

- 6.5 The EA online Flood Map for Planning indicates that the site is located within Flood Zone 3, whereby the annual probability of flooding from fluvial or tidal sources is classified as greater than 1 in 100 and 1 in 200, respectively. The EA Flood Map for Planning is provided in Figure 2.



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Figure 2. EA Flood Map for Planning

Environment Agency Data

- 6.6 Based on the site's setting within Flood Zone 3, modelled flood level data has been requested from the EA in the form of a Product 4 data request. In addition, a Preliminary Opinion request has also

been submitted to the EA. Within their responses, the EA indicate that flooding within the site is tidally driven, noting that the site is not at risk of flooding from any Main Rivers.

6.7 The EA have provided extreme sea levels for a number of node points located in the Humber Estuary and along the east coast, the most hydraulically relevant of which are identified as follows:

- 3992_5 Fosdyke Bridge (located along tidal reach of the River Welland);
- Marsh Road (located along tidal reach of the River Welland); and
- 4008 West Lighthouse (located at the mouth of the River Nene).

6.8 Extreme sea levels for the above node points are presented in Table 1.

Table 2 EA extreme sea levels

Node	Maximum Tide level in m AOD		
	1 in 100	1 in 200	1 in 1,000
3992_5 Fosdyke Bridge	6.13	6.38	6.97
4008 West Lighthouse	5.98	6.21	6.81
Marsh Road	5.85	5.98	NIL*

* Extreme sea level not provided.

6.9 Based on the relative distance between the above node points and the application site (nearest node point located some 10 km north west of the site) the depth of flooding on site is likely to be relatively shallow. Moreover, the EA Flood Map for Planning indicates the presence of flood defences along the coast. Data provided by the EA identifies that the existing defences consist of earth embankments which are in a good condition and reduce the risk of flooding (at the defence) to a 1 in 150 chance of occurring in any year.

6.10 Based on the presence of defences along the coast, the risk of tidal flooding is considered to be a residual risk therefore flooding would only occur in the event of a breach or overtopping of the defences. The EA have provided hazard mapping showing the maximum flood depth, velocity and hazard rating for the site.

6.11 During a 1 in 200 year 2115 breach event, the site is shown to largely remain free from flooding. However, part of the eastern area of the site is shown to be impacted by flooding to a depth of between 0 – 0.25 m deep. A linear area of the site along the southern boundary is shown to be impacted by flooding to a depth of 0.25 – 0.50 m. Velocity mapping identifies that the velocity of flooding would be 0 – 0.3 m/s. Overall, the site is categorised as having a very low to low hazard rating, however, a small area in the south eastern corner of the site is shown to have a “Danger for Some” hazard rating. The site is not shown to be impacted by a breach of the tidal defences during the present day 1 in 200 year scenario.

6.12 During the 1 in 1,000 year 2115 breach event, the majority of the site is shown to be impacted by flooding up to depth of 0.50 m. A linear area along the southern boundary of the site is shown to be impacted by flooding to a depth of between 0.50 – 1.0 m. Velocity mapping identifies that the velocity of flooding would be 0 – 0.3 m/s. Overall, the majority of the site is classified as having a very low to Danger for Some hazard rating. A linear area along the southern boundary of the site is shown to have a “Danger for Most” hazard rating. The site is not shown to be impacted by a breach of the tidal defences during the present day 1 in 1,000 year scenario.

6.13 As noted above, the EA have identified that the site is not at risk of flooding from Main Rivers. The site is bounded to the south by Little South Holland Drain which is classified as an Ordinary Watercourse. Consultation has been undertaken with the South Holland IDB to obtain any flood risk data they hold in relation to Little South Holland Drain, however, a response is yet to be received. At this stage, it is anticipated that water levels within Little South Holland Drain are appropriately managed to ensure that this watercourse does not pose a source of flood risk.

Surface Water Flood Risk Classification

- 6.14 The EA's updated Flood Map for Surface Water, which is available online, indicates that the majority of the site is at very low risk of flooding from surface water. This corresponds with an annual probability of flooding that is less than 1 in 1,000. A small area in the east of the site has a low risk of flooding from surface water, this corresponds with an annual probability of flooding that is between 1 in 100 and 1 in 1,000.
- 6.15 The EA's surface water flood modelling indicates that during a 1 in 100-year rainfall event the site is not predicted to experience surface water flooding.

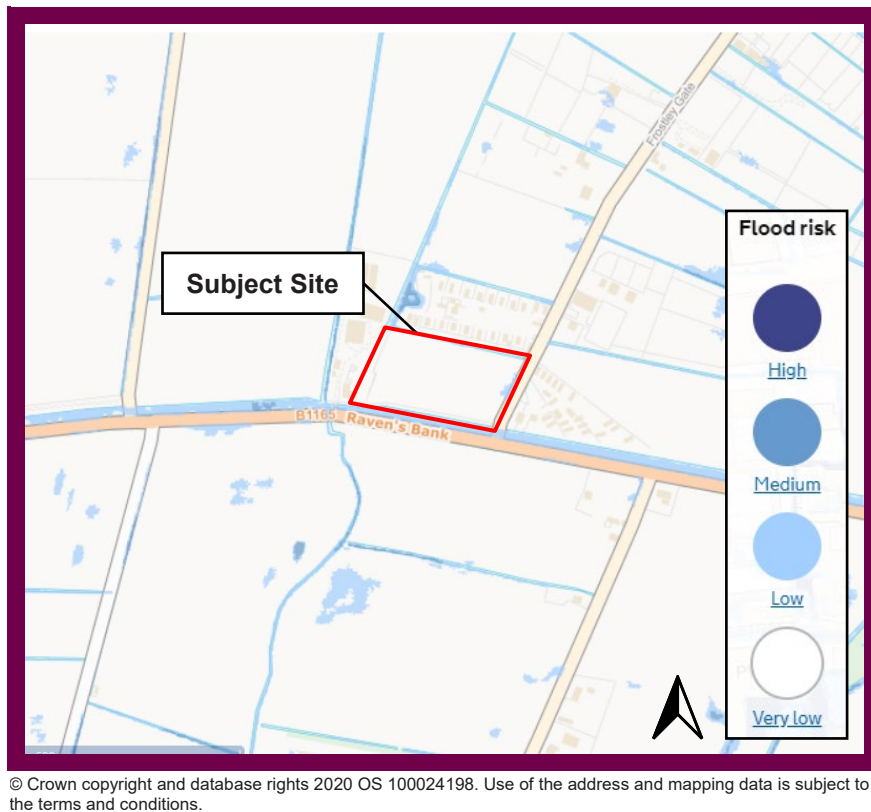


Figure 3. Updated Flood Map for Surface Water

Reservoir Flood Risk Classification

- 6.16 EA mapping also indicates that the site is not located within an area potentially at risk from reservoir flooding.

7 HYDROGEOLOGICAL SETTING

Published Geology

- 7.1 British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the site is situated on superficial Tidal Flat Deposits consisting of Clay and Silt. This is underlain by bedrock of the West Walton Formation, consisting of Mudstone and Siltstone.
- 7.2 BGS borehole records indicate there are no publicly accessible borehole logs within the immediate vicinity of the site.
- 7.3 The soils are described as '*Loamy and clayey soils of coastal flats with naturally high groundwater*' by the National Soils Research Institute.
- 7.4 According to the EA's Aquifer Designation Mapping, the Tidal Flat Deposits at the surface and the underlying West Walton Formation are both classified as Unproductive Stratum. This is described by the EA as '*having a low permeability and negligible significance for water supply or base flow*'.
- 7.5 EA online groundwater Source Protection Zone (SPZ) mapping indicates that the site is not located within a groundwater SPZ.

8 EXISTING DRAINAGE / WATER MAINS

Onsite Drainage

- 8.1 The site currently comprises grazing land therefore it is anticipated that no formal, positive drainage network is present within the site. Agricultural field drains (i.e. mole drains) may be present; however, this is unconfirmed at this stage.
- 8.2 It is anticipated that surface water generated within the site discharges into the ground via infiltration until such a time that the ground becomes saturated. At this point, it is anticipated that surface water run-off either ponds on the site or discharges to the surrounding watercourses following the topography of the site.

Offsite Drainage

- 8.3 Anglian Water plans of public sewers, included as Appendix C, indicates that there are no public sewers on or in the vicinity of the site.

Water Mains

- 8.4 Water network plans provided by Anglian Water identifies the following water mains within the vicinity of the site:
- A 2 inch diameter water main is shown to be located beneath Frostley Gate to the east of the site; and
 - A 3 inch diameter water main is shown to be located beneath Raven's Bank to the south of the site.

9 FLOOD RISK AND MITIGATION

- 9.1 The key sources of flooding that could potentially impact the site are discussed below:

Fluvial / Tidal Flooding

- 9.2 The EA online Flood Map for Planning, included as Figure 2, indicates that the site is located within Flood Zone 3 whereby the annual probability of fluvial flooding is classified as greater than 1 in 100 and the annual probability of tidal flooding is classified as greater than 1 in 200.
- 9.3 Data provided by the EA indicates the site would only be impacted by flooding in the event of a breach of tidal defences along the east coast. The site is not identified to be at risk of fluvial flooding from Main Rivers.
- 9.4 Breach mapping provided by the EA indicates that the site is shown to largely remain free from flooding during the 1 in 200 year 2115 breach event. However, part of the eastern area of the site is shown to be impacted by flooding to a depth of between 0 – 0.25 m deep. A linear area of the site along the southern boundary is shown to be impacted by flooding to a depth of 0.25 – 0.50 m. Velocity mapping identifies that the velocity of flooding would be 0 – 0.3 m/s. Overall, the site is categorised as having a very low to low hazard rating, however, a small area in the south eastern corner of the site is shown to have a “Danger for Some” hazard rating. The site is not shown to be impacted by a breach of the tidal defences during the present day 1 in 1,000 year scenario
- 9.5 During the 1 in 1,000 year 2115 breach event, the majority of the site is shown to be impacted by flooding up to depth of 0.50 m. A linear area along the southern boundary of the site is shown to be impacted by flooding to a depth of between 0.50 – 1.0 m. Velocity mapping identifies that the velocity of flooding would be 0 – 0.3 m/s. Overall, the majority of the site is classified as having a very low to Danger for Some hazard rating. A linear area along the southern boundary of the site is shown to have a “Danger for Most” hazard rating. The site is not shown to be impacted by a breach of the tidal defences during the present day 1 in 1,000 year scenario.
- 9.6 The EA’s preliminary opinion response identifies that the PPG requires proposals for holiday or short-let caravans and camping sites are accompanied by a flood warning and evacuation plan, undertaken and agreed in consultation with the local planning authority Emergency Planning Officer.
- 9.7 The proposed development forms an extension to the existing Heron Orchard Holiday Park and will comprise seasonal touring use. The proposed use of the site will allow the site to be evacuated prior to the onset of flooding. The site is located within an EA Flood Warning Area.
- 9.8 Consultation with the EA has identified that they would require the imposition of a condition stating *“no caravans/chalets/log cabins on site shall be occupied between 1 November (or the following Sunday, if half term extends into November) in any one year and 14 March in the succeeding year”*. This is in line with the Local Plan Policy 4 – Approach to Flood Risk.
- 9.9 As noted above, the EA have identified that the site is not at risk of flooding from Main Rivers. The site is bounded to the south by Little South Holland Drain which is classified as an Ordinary Watercourse. Consultation has been undertaken with the South Holland IDB to obtain any flood risk data they hold in relation to Little South Holland Drain, however, a response is yet to be received. At this stage, it is anticipated that water levels within Little South Holland Drain are appropriately managed to ensure that this watercourse does not pose a source of flood risk.

Proposed Mitigation

- 9.10 Based on the above, the overall risk of tidal flooding is considered to be moderate. A Flood Warning and Evacuation Plan (FWEP) has been prepared separate to this FRA. The aim of the FWEP is to ensure the safe evacuation of the site prior to the potential onset of flooding through utilisation of the EA’s Flood Warning Service.

- 9.11 It is recommended that the site is registered with the EA's Flood Warning Service in order to receive Flood Alerts and Flood Warnings in the event of flooding. This will allow the timely implementation of the FWEPP thus ensuring that the site is evacuated prior to the onset of flooding.

Flooding from Sewers

- 9.12 Sewer flooding can occur during periods of heavy rainfall when a sewer becomes blocked or is of inadequate capacity. The site currently comprises grazing land therefore it is anticipated that there is no formal positive drainage network within the site.
- 9.13 Anglian Water Asset Location Plans, included as Appendix C, indicate there are no public sewers within the vicinity of the site.

Proposed Mitigation

Based on the above, the overall risk of sewer flooding is considered to be low therefore no mitigation is considered necessary.

Surface Water Flooding (Overland Flow)

- 9.14 This can occur during intense rainfall events, when water cannot soak into the ground or enter drainage systems. The EA's Surface Water Flood Map indicates that the majority of the site is classified as having a very low risk of surface water flooding.
- 9.15 A small area in the east of the site is identified to be at a low risk of surface water flooding which likely represents the ponding of surface water within a small topographic depression.

Proposed Mitigation

- 9.16 Based on the above, the overall risk of surface water flooding is considered to be low therefore no mitigation is considered necessary.

Groundwater Flooding

- 9.17 This can occur in low-lying areas when groundwater levels rise above surface levels, or within underground structures. BGS mapping indicates that the site is underlain by superficial Tidal Flat Deposits which is further underlain by bedrock deposits from the West Walton Formation.
- 9.18 The underlying superficial and bedrock deposits are classified as unproductive stratum and have a low permeability and negligible significant for water supply or base flow.
- 9.19 There are no basement levels proposed as part of the development.

Proposed Mitigation

- 9.20 Based on the above, the overall risk of groundwater is considered to be low therefore no mitigation is considered necessary.

Other Sources

- 9.21 There is a limited risk of flooding occurring as a result of a break in a sewage water main. The locations of the water mains in the immediate vicinity of the site are described in Section 8. In the event of a burst in the water main located beneath Frostley Gate, it is anticipated that water would largely remain limited to the road network, however, some minor ingress into the site could occur although this would likely to be shallow depths and would be of a short duration.
- 9.22 The EA flood risk from reservoir mapping illustrates that the site is not located within an area potentially at risk from reservoir flooding.

Event Exceedance

The mitigation measures proposed as part of the development scheme are considered appropriate to help mitigate against event exceedance scenarios.

10 SURFACE WATER MANAGEMENT

Existing Site

- 10.1 The site currently comprises grazing land therefore it is anticipated that no formal, positive drainage network is present within the site. It is anticipated that surface water generated within the site discharges into the ground via infiltration until such a time that the ground becomes saturated. At this point, it is anticipated that surface water run-off discharges to the surrounding watercourses following the topography of the site.

Proposed Development

- 10.2 The proposed development will form an extension to the existing Heron Orchard Holiday Park and comprises seasonal touring use. Ground cover within the site will largely remain as existing with grassed pitches for touring caravans. An internal access road will be created and will be formed by crushed hardcore and recycled tarmac. The access road will be permeable in nature thus allowing water to drain as per the existing the situation.

11 SEQUENTIAL TEST AND EXCEPTION TEST

Sequential Test

- 11.1 The NPPF requires the Local Authority to apply the Sequential Test in consideration of new development. The aim of the Test is to steer new development to areas at the lowest probability of flooding. Given that the subject site has not been allocated as one of the Council's proposed future development sites, it has not been specifically assessed within the SFRA. Therefore, the Sequential Test is based on the EA Flood Zones and information contained within the SFRA.
- 11.2 The EA Flood Map for Planning indicates that the site is located within Flood Zone 3 and is located within the EA's modelled tidal flood mapping breach extent. However, reference to data provided by the EA indicates the depth and velocity of on-site flooding are relatively low. The site is considered to have a low risk of flooding from all other sources.
- 11.3 The proposed development forms an extension to the existing Heron Orchard Holiday Park and thus cannot be sequentially located elsewhere. The proposed development comprises seasonal touring use which allows the site to be safely evacuated prior to the onset of flooding, subject to sufficient warning.

The Exception Test

- 11.4 The PPG advises that 'more vulnerable' development can be considered appropriate in Flood Zone 3a, following satisfactory application of the Exception Test. The Exception Test aims to ensure that more vulnerable property types are not allocated to areas at high risk of flooding. For the Exception Test to be passed:
- a) It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared;
 - b) A site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
- 11.5 With reference to point (a) above the development forms an extension to the existing Heron Orchard Holiday Park and will provide a boost to the local economy through increased tourism. In addition, the proposed development comprises seasonal touring use therefore no significant construction activities, which may result in local disruption, will be required.
- 11.6 With reference to point (b) above, this FRA demonstrates that the development will be safe, without increasing flood risk elsewhere.
- 11.7 It is considered that the development passes the Exception Test.

12 SUMMARY AND CONCLUSIONS

- 12.1 The aim of the FRA is to outline the potential for the site to be impacted by flooding, the potential impacts of the development on flooding both onsite and in the vicinity, and the proposed measures which can be incorporated into the development to mitigate the identified risks. The report has been produced in accordance with the guidance detailed in the NPPF and in consultation with the EA and South Holland IDB.
- 12.2 The potential flood risks to the site and the measures proposed to mitigate the identified risks are summarised in the table below.

Source of flooding	Identified Risk			Mitigation proposed	Residual risk		
	L	M	H		L	M	H
Fluvial	✓			The EA have identified that the site is not at risk of flooding from Main Rivers. The site is bounded to the south by Little South Holland Drain. The water level within this watercourse is likely to be appropriately managed by the IDB to ensure that this does not pose a source of flood risk.	✓		
Tidal		✓		The site is shown to be at risk of tidal flooding in the event of a breach of tidal defences. Based on the nature of the proposed development, a Flood Warning and Evacuation Plan has been developed separately to this FRA. The aim of the FWEP is to ensure that the site is safely evacuated prior to the onset of flooding. It is recommended that the site is registered with the EA's Flood Warning Service. This will allow Flood Alerts and Flood Warnings to be received thus allowing timely implementation of the FWEP.	✓		

Source of flooding	Identified Risk			Mitigation proposed	Residual risk		
	L	M	H		L	M	H
Sewers	✓			No mitigation considered necessary.	✓		
Surface Water	✓			No mitigation considered necessary.	✓		
Groundwater	✓			No mitigation considered necessary.	✓		
Other Sources (e.g. reservoirs, water mains)	✓			No mitigation considered necessary.	✓		

- 12.3 The proposed development forms an extension to the existing Heron Orchard Holiday Park and will comprise seasonal touring use. The EA online Flood Map for Planning indicates that the site is wholly located within Flood Zone 3.
- 12.4 Data provided by the EA identifies that the site is at risk of flooding in the event of a breach of tidal defences along the east coast. The site is not shown to be at risk of flooding from Main Rivers. Breach mapping provided by the EA indicates that the site would largely remain free from flooding during a 1 in 200 year 2115 breach event, however, parts of the eastern area of the site are shown to be potentially impacted by flooding up to a depth of 0.25 m. A linear area along the southern boundary of the site is shown to be impacted by flooding up to a depth of 0.5 m. The overall hazard rating for the site is largely classified as a very low to low albeit a small area in the south eastern area of the site has a hazard rating of Danger to Some.
- 12.5 The site is shown to have a low risk of flooding from all other sources.
- 12.6 A Flood Warning Evacuation Plan has been prepared separately to this FRA. The aim of the Flood Warning and Evacuation Plan is to ensure the safe evacuation of the site prior to the onset of flooding. It is recommended that the site is registered with the EA Flood Warning Service.
- 12.7 It has been demonstrated that the development meets the Sequential and Exception Tests imposed under the NPPF.
- 12.8 Overall, it has been demonstrated that the development would be safe, without increasing flood risk elsewhere.

APPENDICES

Appendix A

EA Consultation Response & Product 4

Appendix B

LiDAR DTM

Appendix C

Anglian Water Asset Location Plans

