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FLOOD RISK ASSESSMENT

KFC DRIVE-THRU DEVELOPMENT

HOLBEACH ROAD

SPALDING

PREPARED FOR: SME CORPORATION (2) LTD

JOB NO: P18-547

REVISION: B

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DOCUMENT HISTORY

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-	First issue.	25.09.18
A	EA flood risk data added to Appendix D & drainage layout drawing revised.	28.09.18
B	EA & Anglian Water comments incorporated	11.10.18

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1. INTRODUCTION

1.1 This report has been prepared by Simpson Associates on behalf of SME Corporation (2) Ltd to accompany a planning application for a proposed KFC drive-thru development at Holbeach Road, Spalding.

1.2 The report considers the flood risk associated with the development proposals and details a strategy for the disposal of foul and surface water runoff from the development.

1.3 The report has been prepared in accordance with the Department for Communities and Local Government's National Planning Policy Framework (NPPF) and Planning Practice Guidance, which provides advice on development and flood risk.

2. SITE LOCATION AND TOPOGRAPHY

2.1 The development is proposed on vacant land located to the south of Holbeach Road in Spalding at the junction of the A151 and the A16 as shown on *Figure 1* below. The site is centred on Ordnance Survey grid reference TF 26525 23773 and co-ordinates: X: 526525, Y: 323773. The nearby post code is PE12 6EP.

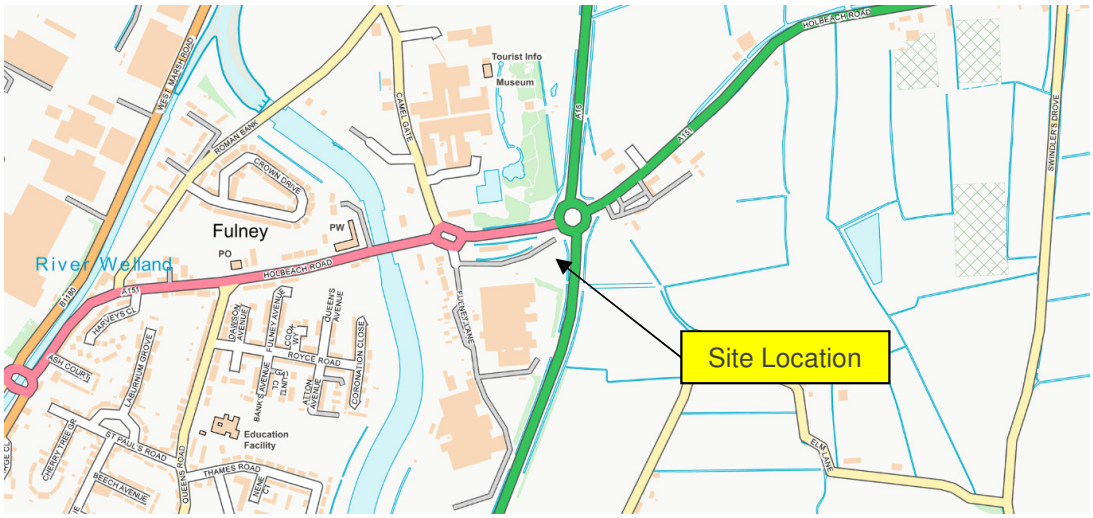


Figure 1: Site Location

2.2 The site is approximately 0.49Ha in area and is bounded by an access road to the north and west, the A16 to the east and a factory to the south.

2.3 Vehicular access to the site is gained from Fulney Lane via the access road along the north and west boundary.

2.4 A topographical survey is included in *Appendix A*. The survey shows the site to generally be at levels of between 4.00mAOD to 4.60mAOD. A mound is present in the middle of the site, which rises to a level of approximately 6.80mAOD, while a bank is present along the southern edge of site with levels of approximately 3.40 to 3.70mAOD at the base of the bank, which tie into neighbouring land to the south.

3. EXISTING GROUND CONDITIONS

3.1 The Soilscapes online soil dataset developed by Cranfield University and sponsored by DEFRA indicates the local area to be underlain by loamy and clayey soils with naturally high groundwater.

3.2 This has been confirmed by investigations included in the Geo-environmental Report ref. "CRM.252.001.GE.R.001.A", which will be submitted with the planning application. The Geo-environmental Report identified ground conditions at the site to comprise variable depths of Made Ground over clays and sands. Soils were noted to become soft and very soft clays and loose sands at depths of between 2m and 4m bgl. Groundwater was encountered at depths of between 3.0m and 3.1m bgl during return monitoring visits.

4. EXISTING DRAINAGE CHARACTERISTICS

4.1 The site is not formally drained but based on level information shown on the topographical survey included in *Appendix A* it is anticipated that overland flows associated with extreme storm events would be discharged to an existing drainage ditch located along the site's eastern boundary, which in turn discharges to the watercourse known as The Lords Drain located to the north of the site.

4.2 Anglian Water sewer records are included in *Appendix B*, which show a network of foul sewers to be present to the west of the site in Holbeach Road. The records do not show any surface water sewers to be present in the local area.

5. PROPOSED SCHEME

5.1 The development proposals comprise of a KFC drive-thru development. A site layout plan is included in *Appendix C*, which shows the overall development proposals.

6. SOURCES OF FLOODING

6.1 The Evidence Base on South Holland District Council's website includes a list of documents, which have been used to inform the different plans and policies of the Local Development Plan. The list of documents includes the March 2017 South East Lincolnshire Strategic Flood Risk Assessment (SFRA), which provides details of sources of flood risk within the local area. The flood risk associated with sources of flooding identified within the SFRA has been reviewed under the headings below.

<u>Fluvial / Tidal Flooding</u>

6.2 The EA has derived flood maps of England, from which it is possible to initially identify whether a site is located within an area that is at risk of tidal / fluvial flooding. The maps, which are available on the EA's website, categorise land as being within Flood Zone 1, Flood Zone 2 or Flood Zone 3, with Flood Zone 1 being all land falling outside of the floodplain and Flood Zone 2 and 3 being all land within the floodplain. Flood Zone 3 is split into two further categories, namely Flood Zone 3a and Flood Zone 3b with Flood Zone 3b considered to be the functional floodplain.

6.3 The definitions of the Flood Zones extracted from the National Planning Policy Framework (NPPF) are described below:

- Flood Zone 1 – Low probability. This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

- Flood Zone 2 – Medium probability. This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% - 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% - 0.1%) in any year.

- Flood Zone 3a – High probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

- Flood Zone 3b – The functional floodplain. This zone comprises land where water must flow or be stored in times of flood. Typically land, which would flood with an annual probability of 1 in 20 (0.5%) or greater in any year or is designed to flood in an extreme (0.1%) flood.

6.4 The flood zone map in *Figure 2* below has been taken from EA's website and shows the site plus surrounding area to be in Flood Zone 3 associated with the River Welland.

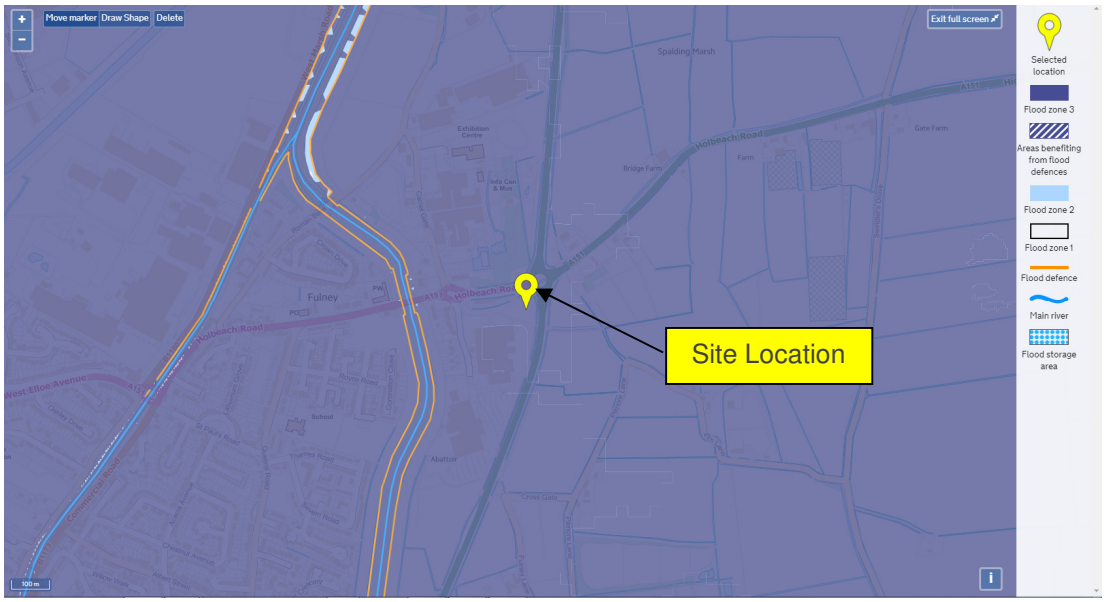


Figure 2: EA Flood Zone Map

6.5 The flood zone map indicates the presence of flood defenses along the River Welland and the actual level of flood risk is assessed to be medium as shown on *Figure 3* below.

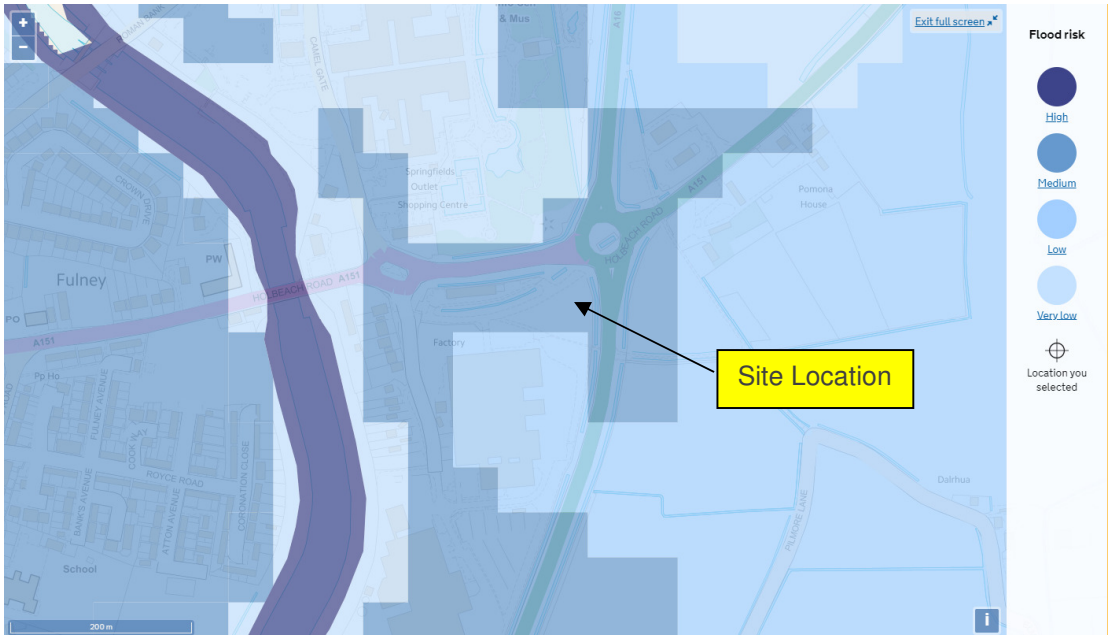


Figure 3: EA Risk of Fluvial Flooding Map

6.6 The SFRA advises that the low lying nature of the district makes it vulnerable to flooding from both rivers and sea, with the main rivers in the district susceptible to tidal influences. Although the area is protected from flooding by an extensive network of raised engineered defences, climate change brings an increased likelihood of flooding due to predicted high tides coupled with potential for storm surge conditions causing major breaches in coastal / tidal defences.

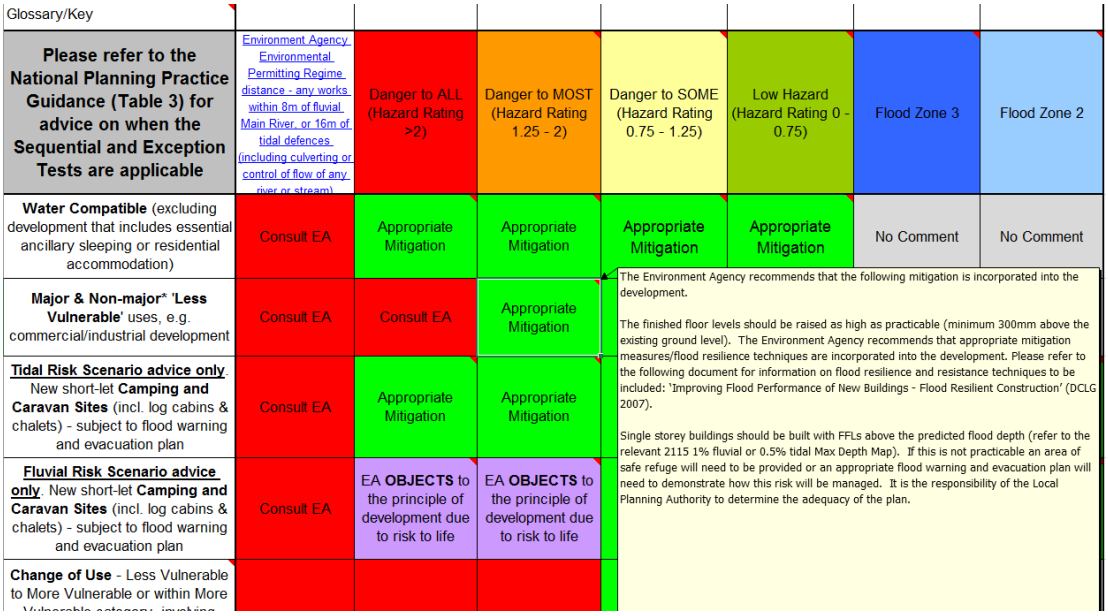
6.7 The SFRA includes hazard and flood depth mapping associated with breach / overtopping of the flood defences for a 1 in 200 (0.5%) and 1 in 1000 (0.1%) Annual Event Probability in present day (2006 baseline) circumstances as well as for the year 2115, which is the current allowance recommended for the lifetime of development by DEFRA. The flood maps are included in *Appendix D* and show the predicted hazard rating, flood depth and velocity to be as *Table 1* below.

Table 1: Predicted Flood Hazard, Flood Depth & Velocities

Flood Event	Hazard	Flood Depth (m)	Velocity (m/s)
0.5% Present Day AEP	N/A	N/A	N/A
0.1% Present Day AEP	0.75 – 2.0	0.0 – 2.0	0.0 – 1.0
0.5% 2115 AEP	0.75 – 2.0	0.0 – 2.0	0.0 – 1.0
0.1% 2115 AEP	0.75 – 2.0	0.0 – 2.0	0.0 – 1.0

6.8 The flood maps appear to consistent with flood level information provided by the EA, which is included in *Appendix D* and shows predicted fluvial / tidal flood levels to be well above existing ground levels shown on the topographical survey.

6.9 The SFRA includes a local standing advice matrix, which is based on a sites flood hazard and the vulnerability of the proposed development use. The sites flood hazard rating of 0.75 to 2.0 would be classified as "*danger to most*" by the SFRA, whilst the vulnerability classification of a drive-thru restaurant, determined using the NPPF, would be "*less vulnerable*". *Figure 4* below, shows an extract from the matrix based on these criteria.



Glossary/Key							
Please refer to the National Planning Practice Guidance (Table 3) for advice on when the Sequential and Exception Tests are applicable	Environment Agency Environmental Permitting Regime distance - any works within 8m of fluvial Main River, or 16m of tidal defences (including culverting or control of flow of any river or stream)	Danger to ALL (Hazard Rating >2)	Danger to MOST (Hazard Rating 1.25 - 2)	Danger to SOME (Hazard Rating 0.75 - 1.25)	Low Hazard (Hazard Rating 0 - 0.75)	Flood Zone 3	Flood Zone 2
Water Compatible (excluding development that includes essential ancillary sleeping or residential accommodation)	Consult EA	Appropriate Mitigation	Appropriate Mitigation	Appropriate Mitigation	Appropriate Mitigation	No Comment	No Comment
Major & Non-major* 'Less Vulnerable' uses, e.g. commercial/industrial development	Consult EA	Consult EA	Appropriate Mitigation				
Tidal Risk Scenario advice only. New short-let **Camping and Caravan Sites** (incl. log cabins & chalets) - subject to flood warning and evacuation plan	Consult EA	Appropriate Mitigation	Appropriate Mitigation				
Fluvial Risk Scenario advice only. New short-let **Camping and Caravan Sites** (incl. log cabins & chalets) - subject to flood warning and evacuation plan	Consult EA	EA **OBJECTS** to the principle of development due to risk to life	EA **OBJECTS** to the principle of development due to risk to life				
Change of Use - Less Vulnerable to More Vulnerable or within More							

The Environment Agency recommends that the following mitigation is incorporated into the development.

The finished floor levels should be raised as high as practicable (minimum 300mm above the existing ground level). The Environment Agency recommends that appropriate mitigation measures/flood resilience techniques are incorporated into the development. Please refer to the following document for information on flood resilience and resistance techniques to be included: 'Improving Flood Performance of New Buildings - Flood Resilient Construction' (DCLG 2007).

Single storey buildings should be built with FFLs above the predicted flood depth (refer to the relevant 2115 1% fluvial or 0.5% tidal Max Depth Map). If this is not practicable an area of safe refuge will need to be provided or an appropriate flood warning and evacuation plan will need to demonstrate how this risk will be managed. It is the responsibility of the Local Planning Authority to determine the adequacy of the plan.

Figure 4: Standing Advice Matrix

6.10 Based on the matrix in *Figure 4*, the following minimum level of mitigation is recommended to manage the risk of tidal / fluvial flooding.

- Finished floor levels should be raised as high as practicable (min. 300mm above the existing ground level).

- Flood resilience measures should be incorporated into the development in accordance with the May 2007 Communities and Local Government Report "*Improving the Flood Performance of New Buildings*".

- Single storey buildings should be built with finished floor levels above the predicted flood depth. If this is not practicable an area of safe refuge will need to be provided or an appropriate flood warning and evacuation plan should be used.

Surface Water Flooding

6.11 The EA have modelled locations along critical flow paths and areas situated in topographic depressions, which could flood following an extreme rainfall event. *Figure 5* below, shows a surface water flood risk map taken from the EA's website with the location of the site identified.

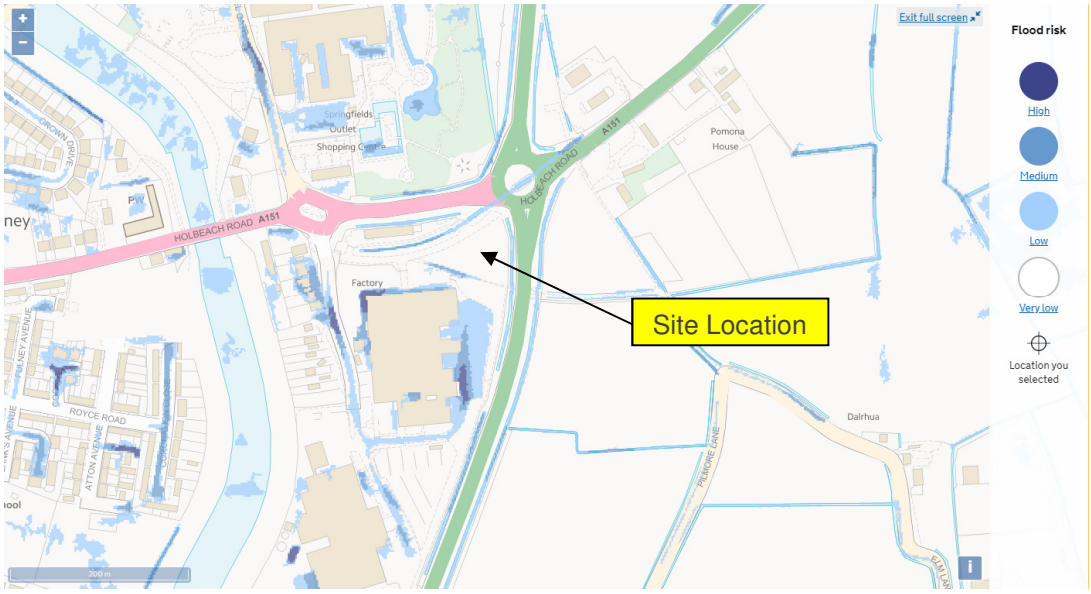


Figure 5: EA Surface Water Flood Risk Map

6.12 *Figure 5* identifies the site and surrounding area to be at very low risk from surface water flooding.

Groundwater Flooding

6.13 Given the proximity of the River Welland, it is considered that groundwater levels would closely match river levels and given the site is raised above the rivers normal water level it is considered unlikely that the site would be affected by groundwater flooding. Furthermore, no subterranean development is proposed as part of the development. Therefore, the development is not considered to be at risk of groundwater flooding.

Sewer Flooding

6.14 Sewer records included in *Appendix B* indicate that there are no public sewers located on the site with the nearest sewers shown to be located in Holbeach road to the west of the site. This has been confirmed by Anglian Water, who have also advised that their existing foul sewerage infrastructure would have capacity for the development. The correspondence received from the Anglian Water is included in *Appendix B*. Given the distance to the nearest public sewer and Anglian Waters confirmation that their existing foul sewerage infrastructure would have capacity for the development, the site is not assessed to be at risk of sewer flooding.

Flooding from Artificial Sources

6.15 Flooding from artificial sources, is most likely to result from burst water mains or from infrastructure failure in an artificial watercourse or water body, i.e. canals or other water features such as reservoirs. These systems are maintained, improved and regularly inspected by the Canal and River Trust (canals), Anglian Water (water mains) and EA (water bodies). Therefore, flood risk from these sources is generally considered to be low.

6.16 Flood maps associated with large reservoirs that hold over 25,000 cubic meters of water are available on the EA website. The maps help to identify areas that could

potentially be affected by reservoir flooding and display a realistic worst case scenario of the largest area that may be flooded if a reservoir were to fail and release the water it holds.

6.17 *Figure 6* below shows a Reservoir Flood Map taken from the EA's website. The map shows the site to be unaffected by reservoir flooding, therefore, the development is assessed to not be at risk of flooding from this source.



Figure 6: EA Reservoir Flood Map

6.18 There are no canals in the immediate surrounding area, therefore, the development is assessed to not be at risk of flooding from this source.

6.19 Flood patterns associated with burst water mains would be similar to surface water flood patterns, which have been assessed to be very low.

7. THE SEQUENTIAL & EXCEPTION TEST

7.1 The National Planning Policy Framework (NPPF) encourages a sequential risk-based approach to determine the suitability of land for development in flood risk areas. It advises local planning authorities to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed.

7.2 In areas at risk of flooding, the NPPF advises that preference be given to new development in Flood Zone 1. If there are no reasonably available sites in Flood Zone 1 the flood vulnerability of the development can be considered in locating development in Flood Zone 2 and then Flood Zone 3. Within each flood zone new development should be directed to sites at the lowest probability of flooding from all sources.

7.3 *Section 6* of this report established that the development would fall within Flood Zone 3. A sequential test will be prepared by the developers planning consultant to

demonstrate that there are no other sites suitable for the development in areas at lower risk of flooding (Flood Zone 1 & 2).

7.4 In connection with the Exception Test a drive-thru development is classified as a "*less vulnerable*" use by the NPPF, which does not require an Exception Test when located in Flood Zone 3.

8. MANAGING THE RISK OF FLOODING

8.1 *Section 6* of this report identified the site to be in Flood Zone 3 and in an area assessed to be at medium probability of fluvial / tidal flooding associated with breach / overtopping of the River Welland's flood defences. The local standing advice recommendations for managing the risk of tidal / fluvial flooding where established to be:

- Finished floor levels should be raised as high as practicable (min. 300mm above the existing ground level).

- Flood resilience measures should be incorporated into the development in accordance with the May 2007 Communities and Local Government Report "*Improving the Flood Performance of New Buildings*".

- Single storey buildings should be built with finished floor levels above the predicted flood depth. If this is not practicable an area of safe refuge will need to be provided or an appropriate flood warning and evacuation plan should be used.

8.2 The following section of this report demonstrates how the development would comply with the above requirements.

Finished Floor Level

8.3 The site layout plan included in *Appendix C* shows that a floor level of 4.55mAOD is proposed for the building. This would result in the buildings floor level being set between 370mm and 550mm above existing levels along the sites eastern boundary and between 730mm to 1110mm above existing levels along the sites southern boundary. On this basis the development would comply with the floor level requirements set out in the Local Standing Advice as the floor level would be set well above the minimum requirement of 300mm above existing ground level.

Flood Resilience Measures

8.4 *Section 6* of this report identified that flood depths of up to 2.0m could be experienced on the site because of breach / overtopping of the River Welland's flood defences in an extreme flood event. For such flood depths, the May 2007 Communities and Local Government Report "*Improving the Flood Performance of New Buildings*" recommends that resilience measures are used, which place emphasis on allowing water into the building, facilitating draining and consequent drying.

8.5 Appropriate measures that should be used to ensure the building is resilient to flooding are summarised below:

- Floor construction should comprise of a ground bearing concrete slab on 1200 gauge damp proof membrane.

- The wall construction of the building would comprise of a steel frame with metal side rails and metal stud walls including plasterboard lining. Sacrificial materials should be used in the external and internal faces of the wall construction, which following a flood could be stripped to assist drying.

- In terms of fittings, it is recommended that durable fittings are used that would not be affected by floodwater, such as plastic or stainless steel units. Wood fittings should be avoided; however sacrificial fittings that can be easily replaced following a flood would be acceptable. Electrical and gas fittings should be placed as high as practical above the ground floor to reduce damage from flooding.

- In terms of services, it is recommended that electrical sockets, boiler units and ancillary devices are placed as high as practical above the ground floor to reduce damage from flooding, with appropriate insulation incorporated in pipework and wiring for telephone, TV, internet and other services.

Safe Refuge / Evacuation

8.6 As the development comprises of a single storey KFC drive-thru it would not be practicable to provide a safe refuge for staff or customers during an extreme flood event. On this basis it recommended that the development is evacuated on issue of a flood warning. It is proposed to manage an evacuation using the flood response plan included in *Appendix E*. The flood response plan would ensure that management and staff are aware of the risk of flooding and the procedures to be followed in the event of it being necessary to evacuate the site.

8.7 The EA have been consulted with the proposals and have advised that the scheme is deemed to be a low risk proposal and they do not foresee there being any issues from a fluvial / tidal flood risk perspective as the mitigation measures are in accordance with the standing advice. They advise that South Holland District Council should determine the application in accordance with the Local Standing Advice with it not necessary to contact them for a bespoke response. The correspondence received from the EA is included in *Appendix D*.

9. SURFACE WATER MANAGEMENT & DRAINAGE STRATEGY

Surface Water Disposal

9.1 The NPPF Planning Practice Guidance advises that Sustainable Urban Drainage Systems (SUDS) should be used to control surface water runoff close to where it falls as well as to mimic natural drainage as closely as possible with surface runoff discharged as high up the following hierarchy of drainage options as reasonably practicable.

- into the ground (infiltration);
- to a surface water body;
- to a surface water sewer, highway drain, or another drainage system;
- to a combined sewer.

9.2 The methods of disposal are summarised in *Table 2* below with an assessment of each methods suitability also provided.

Table 2: Surface Water Runoff Destination Assessment

Surface Water Runoff Destination	Assessment
Into the ground (infiltration)	It would not be suitable to discharge surface water to ground with investigations included in the Geo-environmental Report ref. "*CRM.252.001.GE.R.001.A*" establishing that the variability of the soils and presence of cohesive materials would prohibit the use of infiltration drainage techniques.
To a surface water body	The site has no existing drainage outfalls. A watercourse known as the Lords Drain is located to the north of the site Based on level information shown on the topographical survey included in *Appendix A*, the site would appear to dispose of surface water runoff by overland flow to the watercourse via a highway drainage ditch located along the eastern boundary. With the Lords Drain established to be the natural surface water destination in the existing situation it would not be appropriate to consider further destinations down the hierarchy of drainage options.

9.3 Based on the assessment in *Table 2*, it is assessed to be appropriate to discharge surface water runoff from the development to the watercourse known as the Lords Drain located to the north of the site. The Lead Local Flood Authority, Lincolnshire County Council have confirmed this to be the preferred location for the disposal of surface water runoff from the development. The correspondence received from the Lincolnshire County Council is included in *Appendix B*. The Lords Drain falls within the control of South Holland Drainage Board who were also consulted with the proposal but had not provided a response at the time of this report. The correspondence sent to South Holland Drainage Board is included in *Appendix D*.

Runoff Management

9.4 Surface water runoff from new development should be managed in accordance with the suggested procedures set out in the March 2015 DEFRA report "*Sustainable Drainage Systems: Non-statutory technical standards for sustainable drainage systems*."

9.5 The site is greenfield in nature. For developments on greenfield sites Policy S2 of the DEFRA report advises that the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event. Policy S4 of the DEFRA report advises that where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event, should never exceed the greenfield runoff volume for the same event.

9.6 Greenfield runoff rates and volumes have been estimated based on the IH124 method using the ICP SUDS Facility of the MicroDrainage Software Package. The design results are included in *Appendix G* and are based on the developments measured drained area of 2663m^2, as identified on the drained area layout drawing included in *Appendix F*. The calculated rates and volumes for a variety of storm events up to the 1 in 100 year return period are summarised in *Table 3* below.

Table 3: Estimated Runoff Rates & Volumes

Return Period (Year)	Greenfield		Brownfield	
	Peak Runoff Rate (l/s)	6hr Runoff Volume (m^3)	Peak Runoff Rate (l/s)	6hr Runoff Volume (m^3)
QBAR	0.7	N/A	N/A	N/A
1	0.6	10.2	9.7	41.3
30	1.7	24.6	21.7	91.9
100	2.5	35.2	28.2	119.4
100+40%	N/A	N/A	39.4	167.2

9.7 *Table 3* also shows the estimated brownfield runoff rates and volumes in the post-development situation, which have been established using the Modified Rational Method Formula based on rainfall profiles generated using the FSR rainfall model within the WINDES Software Package by MicroDrainage. The Modified Rational Method calculations and rainfall profiles are included in *Appendix G*. The runoff rates and volumes in the post-development situation are shown to be greater than runoff rates and volumes in the greenfield situation. This is due to the effects of climate change and the introduction of impermeable area of 2663m^2, as shown on the drained area layout drawing included in *Appendix F*.

9.8 To comply with Policies S2 and S4 of the DEFRA report it would be necessary to discharge all the runoff from the site for the 1 in 100 year event at a rate of 2.0 l/s/ha or at the average annual peak flow rate (i.e. the mean annual flood, QBAR), whichever is the greater in accordance with the recommendations of the CIRIA C753 SuDS Manual 2015. This would be at a rate considered not to adversely affect flood risk thus complying with Policy S6 of the DEFRA report.

9.9 The sites measured drained area is 2663m^2 as shown on the drained area layout drawing included in *Appendix F* and the resultant runoff rate based on 2.0 l/s/ha would be 0.5 l/s. This is less than the mean annual peak runoff rate for the site, which has been calculated to be 0.7 l/s, which is based on the IH124 method using the ICP SUDS Facility of the MicroDrainage Software Package. The design results are included in *Appendix G* and are also based on the measured drained area of 2663m^2.

9.10 Based on the above it would be necessary to discharge all runoff from the site at a rate of 0.7 l/s for the 1 in 100 year event, however it would not be practicable to limit a flow control device to this rate due to risk of blockage, thus it is proposed to limit the rate of discharge from the site to a minimum practicable discharge rate of 2.0 l/s.

<u>Sustainable Urban Drainage Systems (SUDS)</u>

9.11 Within the drainage strategy it is necessary to consider the use of SUDS, which encompass a wide range of drainage techniques intended to minimise the rate of discharge, volume and environmental impact of runoff and include; green roofs / rainwater harvesting; soakaways / infiltration systems; infiltration trenches and filter drains; permeable paving; swales and basins; ponds and wetlands. *Table 3* below provides an assessment of each methods suitability.

Table 4: SUDS Assessment

System	Assessment
Green Roofs	The use of green roofs is not considered appropriate for the management of surface water runoff as the building design will comprise of lightweight materials unable to support a green roof.
Rainwater Harvesting	Rainwater harvesting is unlikely to contribute to a reduction in surface water runoff volumes as the development use would have limited requirement for recycled rainwater. Therefore, rainwater harvesting has not been considered as part of the surface water drainage strategy for the development.
Soakaway / Infiltration Systems / Infiltration Trenches	Infiltration drainage techniques are assessed to be inappropriate for the site with the Soilscapes online soil dataset indicating the local area to be underlain by loamy and clayey soils with naturally high groundwater.
Permeable Pavements / Filter Drains	Although infiltration drainage techniques are not considered to be appropriate for the site, permeable paving and gravel filled filter drains could be used to intercept / retain / treat precipitation as well as reduce runoff rates provided that they are lined with an impermeable drainage membrane and connected to a surface water drainage network.
Swales, basins, ponds, wetlands and below ground attenuation tanks.	Given the nature of the development, which comprises of a KFC Drive-thru in a town centre environment, the building has been designed to maximise the available land with its scale and massing chosen so that it is appropriate to the site and its context whilst having regard to the environmental objectives of the scheme. Areas of soft landscaping are thus limited, with the building and car park occupying a majority of the site, and no areas available for swales, basins, ponds and wetlands. On this basis, the use of a below ground storage tank is considered the most appropriate technique for the attenuation and storage of surface water runoff as a tank could be located below the developments car park.

9.12 Based on the assessment in *Table 3*, a surface water drainage scheme has been developed for the site and is shown on the proposed drainage layout included in *Appendix H*. A description of the proposals provided below.

- The development is shown to discharge surface water to the watercourse located to the north of the site via a below ground geocellular attenuation tank and flow control chamber, which would limit flows to a maximum allowable discharge rate of 2.0 l/s.

- The car park and parking bays are shown to be drained via a combination of gravel filled filter drains and permeable paving. The permeable paving would allow surface water runoff to filter through a block paved surface into a filter zone of sub-base beneath the bedding layer. The filter zone of sub-base would comprise of 30% voids, which would temporarily store runoff. This will then be collected by perforated pipes installed within the sub-base and discharge to the geocelluar storage tank via a network of below ground pipework. The gravel filled filter drains would allow surface water runoff to filter through a gravel trench before being collected by perforated pipes at the base of the trench, which would then discharge to the geocelluar storage tank via a network of below ground pipework.

- Roof water would be drained via roof gutters and rainwater, which would in turn discharge to the geocelluar storage tank via a combination of below ground pipework and filter drains.

Hydraulic Analysis

9.13 The source control facility in the MicroDrainage software package has been used to design the attenuation tank and flow control chamber. The design results are included in *Appendix I* and confirm that surface water runoff would be limited to a maximum allowable discharge rate of 2.0 l/s with the geocellular storage tank providing sufficient capacity for the storage and attenuation of excess runoff for the 1 in 100 year storm return period with 40% allowance for increase in peak rainfall intensity.

Exceedance

9.14 If the capacity of the surface water drainage network was exceeded site levels would allow surface water to be channelled off-site in an easterly direction as illustrated on the drainage layout drawing included in *Appendix H*. Further to this the buildings finished floor level would be raised above surrounding levels to minimise the risk from overland flows.

Water Quality

9.15 Standard S3 of the SUDS Standards Document advises that where surface water is likely to be contaminated, effective management is required to prevent negative impacts on the receiving water quality and/or protect downstream drainage systems, including sewers.

9.16 The CIRIA C753 SuDS Manual 2015 sets out requirements for delivering appropriate levels of treatment to surface water runoff using SUDS. *Table 6* below identifies that the proposed SUDS components would have a total pollution mitigation index equal to or exceeding the recommended pollution hazard index thus confirming the SUDS components would provide suitable treatment to surface water runoff.

Table 5: Comparison of Discharge Rates & Volumes

Use	Pollution Hazard Index			SUDS Component	Mitigation Index		
	TSS	Metals	TPH		TSS	Metals	TPH
Roof	0.3	0.2	0.05	Filter Drain	0.4	0.4	0.4
Car Park	0.5	0.4	0.4	Permeable Paving	0.5	0.4	0.4

Amenity / Biodiverisity

9.17 Standard S4 of the SUDS Standards Document advises that the design of the surface water management system should maximise amenity benefits, while Standard S5 requires the design of the surface water management system to maximise biodiversity benefits.

9.18 The proposed drainage layout included in *Appendix H* shows all of the proposed surface water storage to be located beneath the car parking areas and no unnecessary loss of amenity space is therefore required to enable the development. The proposals also maximise the opportunity for biodiversity benefits to be implemented within the retained open space at the site.

Implementation

9.19 It is recommended that the surface water drainage system is implemented in accordance with the SUDS Implementation Plan included in *Appendix J* with the

Contractors Construction Health and Safety Plan to incorporate the measures proposed in plan.

Management & Maintenance Plan

9.20 It is recommended that the surface water drainage system is maintained in accordance with the SUDS Maintenance Plan included in *Appendix J*. The Plan should be incorporated into the site Operation and Maintenance Manual.

10. FOUL WATER DRAINAGE STRATEGY

10.1 It is anticipated that foul water runoff would be discharged to the network of foul sewers shown to the west of the site in Holbeach Road on Anglian Water sewer records, included in *Appendix B*. Based on invert levels provided with the records it is anticipated that it would be necessary to pump foul water flows as shown on the drainage layout drawing included in *Appendix H*.

10.2 Anglian Water have advised that their existing foul sewerage infrastructure would be capable of accommodating a pumped discharge rate of 3.8 l/s from the site. The correspondence received from the Anglian Water is included in *Appendix B*.

11. CONCLUSIONS

11.1 Flood Zone maps show the site to be in Flood Zone 3 and in an area assessed to be at medium probability of fluvial / tidal flooding associated with breach / overtopping of the River Welland's flood defences.

11.2 A sequential test will be required to demonstrate there are no other sites suitable for the development in areas at lower risk of flooding (Flood Zone 1 & 2).

11.3 Hazard and flood depth mapping extracted from the March 2017 South East Lincolnshire SFRA indicates that the site and surrounding area would be inundated by flood water in the event of breach / overtopping of the flood defences.

11.4 The SFRA includes a local standing advice matrix, which is based on a sites flood hazard identified from the flood maps and the vulnerability of the proposed development use determined from the NPPF. The maps show the site to have a flood hazard rating of 0.75 to 2.0, which would have a hazard classification of "*danger to most*". The vulnerability classification of a drive-thru restaurant would be "*less vulnerable*". Based on the matrix the following measures are recommended to manage the risk of tidal / fluvial flooding.

- Finished floor levels should be raised as high as practicable (min. 300mm above the existing ground level). As such a floor level of 4.550mAOD is proposed for the building, which results in the buildings floor level being set between 370mm and 550mm above existing levels along the sites eastern boundary and between 730mm to 1110mm above existing levels along the sites southern boundary.

- Flood resilience measures should be incorporated into the building design in accordance with the May 2007 Communities and Local Government Report "*Improving the Flood Performance of New Buildings*". Such measures would involve using materials in the wall and floor construction that promote easy draining / drying and place emphasis on allowing water into the building.

- As the development comprises of a single storey KFC drive-thru it would not be practicable to provide a safe refuge for staff or customers during an extreme flood event. On this basis it recommended that the development is evacuated on issue of a flood warning with such an evacuation managed using a flood response plan, which would ensure that management and staff are aware of the risk of flooding and the procedures to be followed in the event of it being necessary to evacuate the site.

11.5 The EA have advised that the scheme is deemed to be a low risk proposal and they do not foresee there being any issues from a fluvial / tidal flood risk perspective as the mitigation measures are in accordance with the standing advice. They advise that South Holland District Council should determine the application in accordance with the Local Standing Advice with it not necessary to contact them for a bespoke response.

11.6 A hierarchical assessment has established that the watercourse located to the north of the site would be the most appropriate destination for the disposal of surface water runoff from the development. The Lead Local Flood Authority, Lincolnshire County Council have confirmed this to be the preferred location for the disposal of surface water runoff from the development. The Lords Drain falls within the control of South Holland Drainage Board who were also consulted with the proposal but had not provided a response at the time of this report.

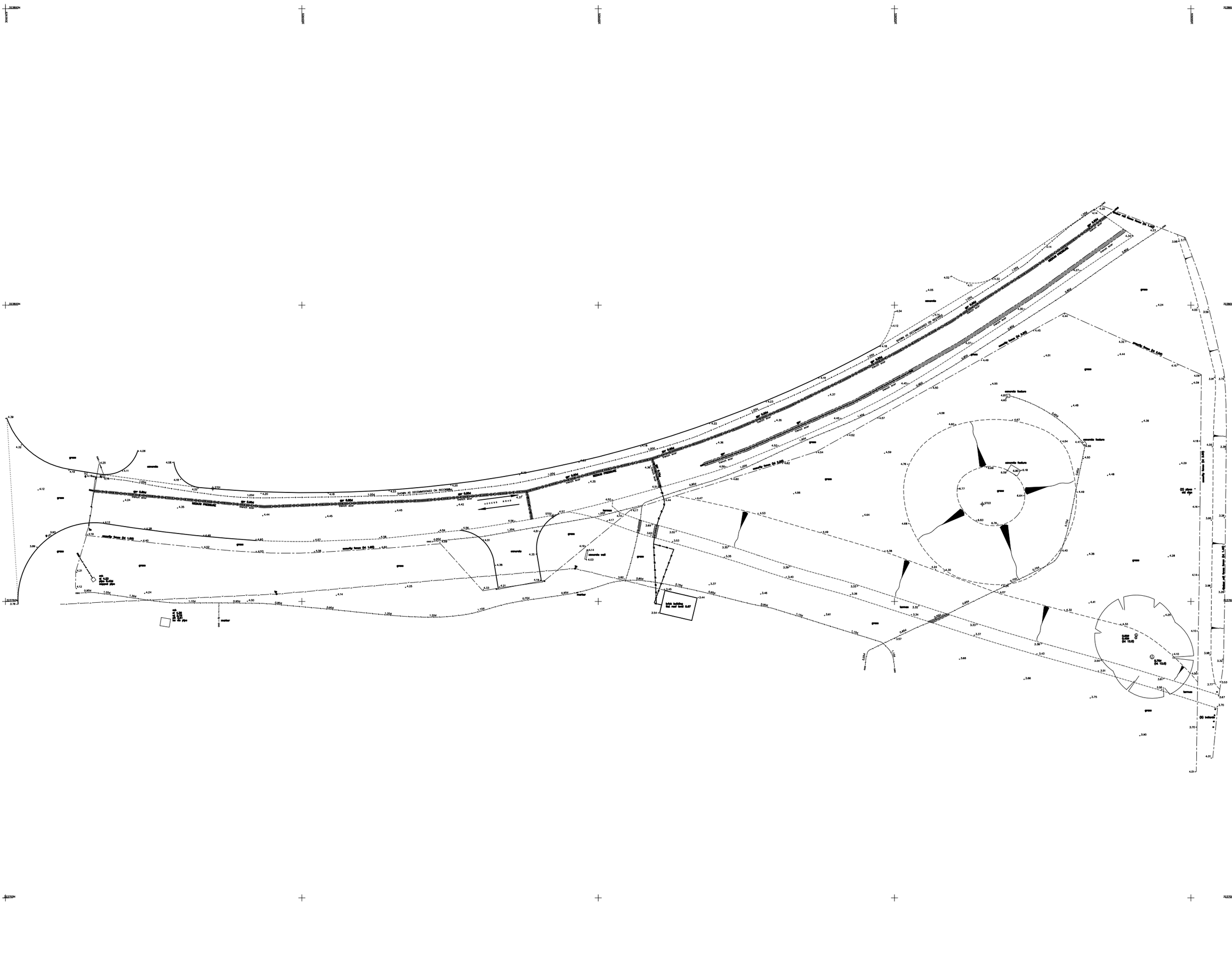
11.7 The site is greenfield in nature and it would be normal practice to discharge all runoff from the site for the 1 in 100 year event at either a rate of 2.0 l/s/ha or the average annual peak flow rate (i.e. the mean annual flood, QBAR). However, such rates would yield a maximum allowable discharge rate of 0.7 l/s. It would not be practicable to limit a flow control device to this rate due to risk of blockage, thus it is proposed to limit the rate of discharge from the site to a minimum practicable discharge rate of 2.0 l/s.

11.8 A surface water drainage strategy has been developed for the site on this basis, which includes SUDS in the form of permeable paving and a geocellular storage tank for the conveyance, treatment, storage and attenuation of runoff. The proposed surface water drainage scheme would ensure that surface water flows are limited to a maximum allowable discharge rate of 2.0 l/s. The drainage scheme would provide sufficient capacity for excess runoff to stored and attenuated on site up to and including the 1 in 100 year storm return period with 40% allowance for increase in peak rainfall intensity over the lifetime of the development.

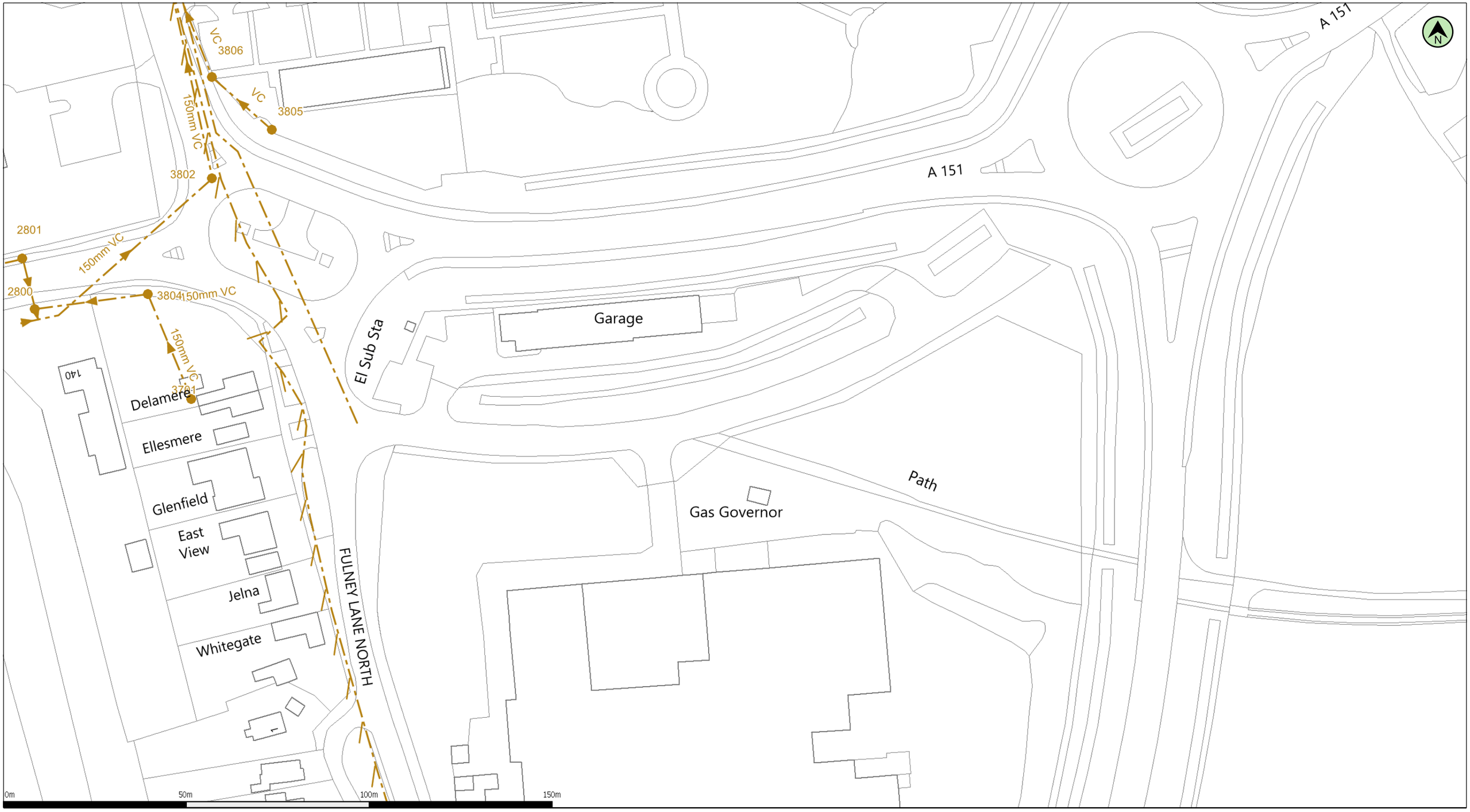
11.9 It is anticipated that foul water runoff would be discharged to a network of foul sewers located to the west of the site in Holbeach Road. Anglian Water have advised that their existing foul sewerage infrastructure would be capable of accommodating a pumped discharge rate of 3.8 l/s from the site.

11.10 In terms of flood risk, it is concluded that the development can be occupied and operated safely and that there will be no increase in the level of flood risk to the site or neighbouring sites as a result of the development.

APPENDIX A
TOPOGRAPHICAL SURVEY


323850N
324000N
324150N
324300N
324450N
324600N
324750N
ST01
ST02
ST03
3703
access road
shown as decommissioned on records
grass
concrete
tarmac
gravel
metal
water
concrete feature
kiosk
telephone
BT manhole
BT cover
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APPENDIX B
SEWER RECORDS & DRAINAGE INFORMATION



(c) Crown copyright and database rights 2018 Ordnance Survey 100022432 | Date: 20/02/18 | Scale: 1:1000 | Map Centre: 526457,323774 | Data updated: 04/01/18 | Our Ref: 254029 - 2 | Wastewater Plan A3

This plan is provided by Anglian Water pursuant its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. The information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or inaccuracy or omission, including the failure to accurately record, or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. This plan is produced by Anglian Water Services Limited (c) Crown copyright and database rights 2018 Ordnance Survey 100022432.This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

- Foul Sewer
- Surface Sewer
- Combined Sewer
- Final Effluent
- Rising Main*
- Private Sewer*
- Decommissioned Sewer*
- Outfall*
- Inlet*
- Manhole*
- Sewage Treatment Works
- Public Pumping Station
- Decommissioned Pumping Station

*(Colour denotes effluent type)

gb@midlandsurvey.co.uk
31093

love every drop anglianwater

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
2800	F	-	-	-
2801	F	-	-	-
3701	F	-	2.982	-
3802	F	4.238	1.678	2.56
3804	F	3.432	2.972	0.46
3805	F	-	-	-
3806	F	-	-	-

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Pre-Planning Assessment Report

KFC DRIVE THROUGH **1270/903873260/1/0001044**

Report published 01/10/2018

Section 1: Proposed development

Thank you for submitting a pre-planning enquiry. This has been produced for Simpson Associates. Your reference number is **1270/903873260/1/0001044**. If you have any questions upon receipt of this report, please contact the Pre-Development team on 34560 66087 or email planningliaison@anglianwater.co.uk.

The response within this report has been based on the following information which was submitted as part of your application:

List of planned developments	
Type of development	**No. Of units**
Restaurants and cafes	2

The anticipated residential build rate is:

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
Build rate	2	0	0	0	0	0	0	0	0	0	0	0

Site grid reference no.

TF2649723772

Development type

Greenfield

Planning application status

Pending Consideration

The comments contained within this report relate to the public water mains and sewers indicated on our records. Your attention is drawn to the disclaimer in the useful information section of this report.

Section 2: Assets affected

Our records indicate that there are no public water mains/public sewers or other assets owned by Anglian Water within the boundary of your development site. However, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

Section 3: Water recycling services

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and influent quality arising from your development.

Water recycling centre

The foul drainage from the proposed development is in the catchment of Spalding Water Recycling Centre, which currently has capacity to treat the flows from your development site. Anglian Water cannot reserve capacity and the available capacity at the water recycling centre can be reduced at any time due to growth, environmental and regulation driven changes.

Used water network

Our assessment has been based on development flows connecting to the nearest foul water sewer of the same size or greater pipe diameter to that required to drain the site. The infrastructure to convey foul water flows to the receiving sewerage network is assumed to be the responsibility of the developer. Conveyance to the connection point is considered as Onsite Work and includes all work carried out upstream from of the point of connection, including making the connection to our existing network. This connection point has been determined in reference to the calculated design flow using criteria from Sewers for Adoption (6th edition). On this basis, a 150mm internal diameter pipe is required to drain the development site. Anglian water has assessed the impact of a pumped conveyance from the planned development to the public foul sewerage network. We can confirm that this is acceptable as the foul sewerage system, at present, has available capacity for your site. The connection point will be to the nearest 150mm diameter sewer, which is manhole 3805, at National Grid Reference TF2633023849 located off of Holbeach Road. The recommended discharge rate is 3.8l/s. As per the current version of Sewers for Adoption, Anglian Water would wish to see an intermediate manhole constructed no closer than 5 metres from manhole 3805 for pumped connections to allow your flows to gravitate.

It is assumed that the developer will provide the necessary infrastructure to convey flows from the site to the network. Consequently, this report does not include any costs for the conveyance of flows.

Surface water disposal

There are no public surface water sewers within the vicinity of the proposed development. Therefore Anglian Water will be unable to provide the site with a feasible solution of surface water disposal within the current assets. Alternative methods of surface water disposal will need to be investigated such as infiltration techniques or a discharge to a watercourse in accordance with the surface water management hierarchy as outlined in Building Regulations Part H. The alternative is that a new surface water sewer is constructed which is used to convey your surface water to a watercourse or as part of a SuDs scheme, where appropriate. Subject to the sewer being designed in accordance with the current version of Sewers For Adoption, the sewer can be put forward for adoption by Anglian Water under Section 104 of the Water Industry Act 1991. If the outfall is to a watercourse, the applicant will be required to obtain consent to discharge via the appropriate body. If your site has no means of drainage due to third party land then you may be able to requisition Anglian Water, under Section 98, to provide a connection to the public sewer for domestic drainage purposes. As part of this option, you may wish to enter into a works agreement in accordance with Section 30 of the Anglian Water Authority Act 1977. This will allow you to design and construct the public sewer using Anglian Waters' statutory powers in accordance with Section 159/168 of the Water Industry Act 1991.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website at http://www.anglianwater.co.uk/developers/suds.aspx. We will adopt features located in public open space that are designed and constructed, in conjunction with the Local Authority and Lead Local Flood Authority (LLFA), to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating than the assets can be maintained both now and in the future with adequate access.

If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website at: http://www.anglianwater.co.uk/developers/suds.aspx

The proposed method of surface water disposal is not relevant to Anglian Water; we suggest that you contact the relevant Local Authority, Lead Local Flood Authority, the Environment Agency or the Internal Drainage Board, as appropriate.

Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

Used Water Budget Costs

As a result of the recent charging rules published by Ofwat, our charging regime has changed. Your development site will be required to pay a Zonal charge for each new property connecting to the public sewer that benefits from Full planning permission.

Payment of the Zonal charge must be made before premises are connected to the public sewer. More information on the Zonal charge can be found at http://www.anglianwater.co.uk/developers/charges

The Zonal charge consists of two elements. The first is called the 'Fixed Element' which is the same in nature to the Infrastructure charge applied prior to April 2018. The second is called the 'Variable Element' which may vary each financial year.

The elements are combined together to create the 2018/19 Zonal charge for Sewerage:

Fixed Element	£ 370
Variable Element	£ 101

In most circumstances zonal charges are raised on a standard basis of one charge per new connection (one for water and one for sewerage). However, if the new connection is to non-household premises, the fixed element is calculated according to the number and type of water fittings in the premises.This is called the "relevant multiplier" method of calculating the charge. Details of the relevant multiplier for each fitting can be found at our web-page: http://www.anglianwater.co.uk/developers/charges/

It has been assumed that the onsite used water network will be provided under a section 104 Water Industry Act application.

It is recommended that you also budget for connection costs. Please note that we offer alternative types of connections depending on your needs and these costs are available at our website.

Section 4: Useful Information

Used water

Water Industry Act – Key Used Water Sections:

Section 98:

This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

Section 102:

This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.

Section 104:

This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.

Section 106:

This provides you with the right to have your constructed sewer connected to the public sewer.

Section 185:

This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our website at http://www.anglianwater.co.uk/developers or via our Development Services team on 03456 066087.

Sustainable drainage systems:

Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are not resilient to climate change in the long term. Therefore our preferred method of surface water disposal is through the use of Sustainable Drainage Systems (SuDS). SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website at http://www.anglianwater.co.uk/developers/suds.aspx . We also recommend that you contact the Local Authority and Lead Local Flood Authority (LLFA) for the area to discuss your application.

Private sewer transfers:

Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

- Surface water sewers and lateral drains that did not discharge to the public sewer, e.g. those that discharged to a watercourse.
- Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.
- Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

Encroachment:

Anglian Water operates a risk based approach to development encroaching close to our used water infrastructure. We assess the issue of encroachment if you are planning to build within 400 metres of a water recycling centre or, within 15 metres to 100 metres of a pumping station. We have more information available on our website at http://anglianwater.co.uk/developers/encroachment.aspx

Locating our assets:

Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from . All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge. We have more information on our website at: http://www.anglianwater.co.uk/developers/our-assets/

Summary of charges:

A summary of this year's water and used water connection and infrastructure charges can be found at http://www.anglianwater.co.uk/developers/charges

Disclaimer:

The information provided in this report is based on data currently held by Anglian Water Services Limited ('Anglian Water') or provided by a third party. Accordingly, the information in this report is provided with no guarantee of accuracy, timeliness, completeness and is without indemnity or warranty of any kind (express or implied).

This report should not be considered in isolation and does not nullify the need for the enquirer to make additional appropriate searches, inspections and enquiries. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework ('NPPF') and any infrastructure needs identified in this report must be considered in the context of current, adopted and/or emerging local plans. Where local plans are absent, silent or have expired these needs should be considered against the definition of sustainability holistically as set out in the NPPF.

Whilst the information in this report is based on the presumption that proposed development obtains planning permission, nothing in this report confirms that planning permission will be granted or that Anglian Water will be bound to carry out the works/proposals contained within this report.

No liability whatsoever, including liability for negligence is accepted by Anglian Water, or its partners, employees or agents, for any error or omission, or for the results obtained from the use of this report and/or its content. Furthermore in no event will any of those parties be liable to the applicant or any third party for any decision made or action taken as a result of reliance on this report.

This report is valid for the date printed and the enquirer is advised to resubmit their request for an up to date report should there be a delay in submitting any subsequent application for water supply/sewer connection(s).

Gareth Crowther

From: Jon Sharpe <Jon.Sharpe@lincolnshire.gov.uk>
Sent: 27 September 2018 08:34
To: Gareth Crowther
Subject: RE: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding
Attachments: 00206BBB0F62180927081944.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Morning Gareth.
The Lord's Drain is the watercourse I have coloured blue on the attached copy of your plan. The old Holbeach Road is coloured light green.
I believe The Lord's Drain is a watercourse that falls within the control of South Holland Drainage Board, who are members of the Water Management Alliance. You can contact them at; planning@wlma.org.uk
Regards,
Jon.

From: Gareth Crowther [mailto:gareth.crowther@simpsoneng.com]
Sent: 26 September 2018 17:25
To: Jon Sharpe
Subject: RE: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding

Hi Jon

Many thanks for your swift response. I am not certain what you mean by "The Lord's Drain via a culvert under the old Holbeach Road". Would you be able to mark this on one of the plans I sent you?

Regards

GARETH CROWTHER

OFFICE: 01491 576 221
DIRECT: 01491 635 766
MOBILE: 07920 489 573

simpson

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From: Jon Sharpe <Jon.Sharpe@lincolnshire.gov.uk>
Sent: 26 September 2018 10:20
To: Gareth Crowther <gareth.crowther@simpsoneng.com>
Subject: FW: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding

Good morning Gareth.
I have sought advice from the Local Highways Manager on the possibility of connecting the surface water system on this prospective development into the highway drain running alongside the A16 Spalding by-pass.
It would appear that we have some existing issues with this watercourse and the Authority would therefore not wish to risk exacerbating those issues by introducing additional water into that system.
Have you considered taking the site surface water directly into The Lord's Drain via a culvert under the old Holbeach Road? This section of road is not a public highway, having been Stopped-up under Side Road Orders for the A16 Spalding by-pass.
Regards,
Jon Sharpe
Principal Development Management Officer
LCC Directorate for Environment and Economy

From: DevelopmentManagement
Sent: 20 September 2018 08:10
To: Jon Sharpe
Subject: FW: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding

Lauren Burnley
Development Management Officer
Flood Risk and Development Management Team

t: 01522 782070

Lincolnshire County Council | Environment and Economy Directorate
Lancaster House
36 Orchard Street
Lincoln
LN1 1XX

From: DEV_PlanningEnquiries
Sent: 19 September 2018 14:42
To: DevelopmentManagement
Cc: gareth.crowther@simpsoneng.com
Subject: FW: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding

Dear Highways Development Management

Please see the attachments and enquiry below from Mr Crowther. The Minerals and Waste Planning Team are not in a position to progress.

Regards

Felicity Webber
Planning Officer
Planning
2nd Floor
Lancaster House
36 Orchard Street
Lincoln
LN1 1XX

Tel: 01522 782070

Lincolnshire COUNTY COUNCIL
Working for a better future

From: Gareth Crowther [mailto:gareth.crowther@simpsoneng.com]
Sent: 19 September 2018 14:27
To: DEV_PlanningEnquiries
Subject: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding

To Whom it may concern

We are currently preparing a flood risk assessment for a proposed KFC Drive Thru Development at Holbeach Road, Spalding, PE12 6EP. A site location plan and site layout plan is attached.

We are preparing a surface water drainage strategy as part of the report and anticipate that ground conditions would not be suitable for infiltration drainage techniques with records indicating the local area to be underlain by loamy and clayey soils with naturally high groundwater. Based on level information shown on the attached topographical survey it would appear that a drainage ditch located in highway land along the sites eastern boundary would be the natural destination for overland surface water flows from the site in the existing situation.

Please could you advise if Lincolnshire County Council would permit a surface water connection to the ditch subject to surface water flows from the site being limited to match greenfield runoff rates as closely as possible using SUDS with excess runoff stored on site for all rainfall events up to and including a 1 in 100 year event with 40% allowance for climate change.

Regards

GARETH CROWTHER

OFFICE: 01491 576 221
DIRECT: 01491 635 766
MOBILE: 07920 489 573

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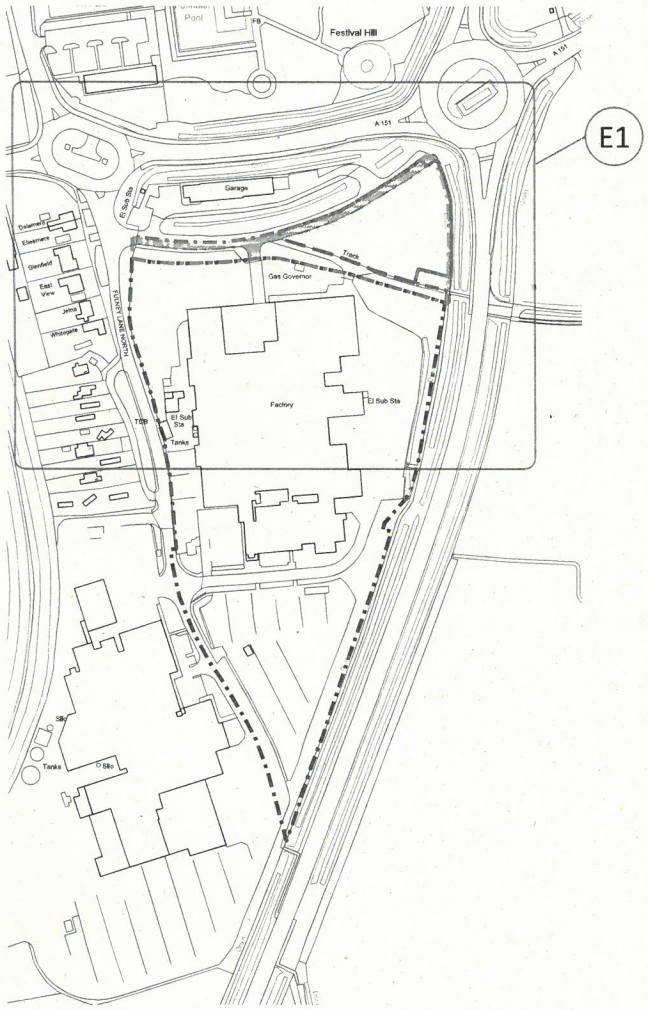
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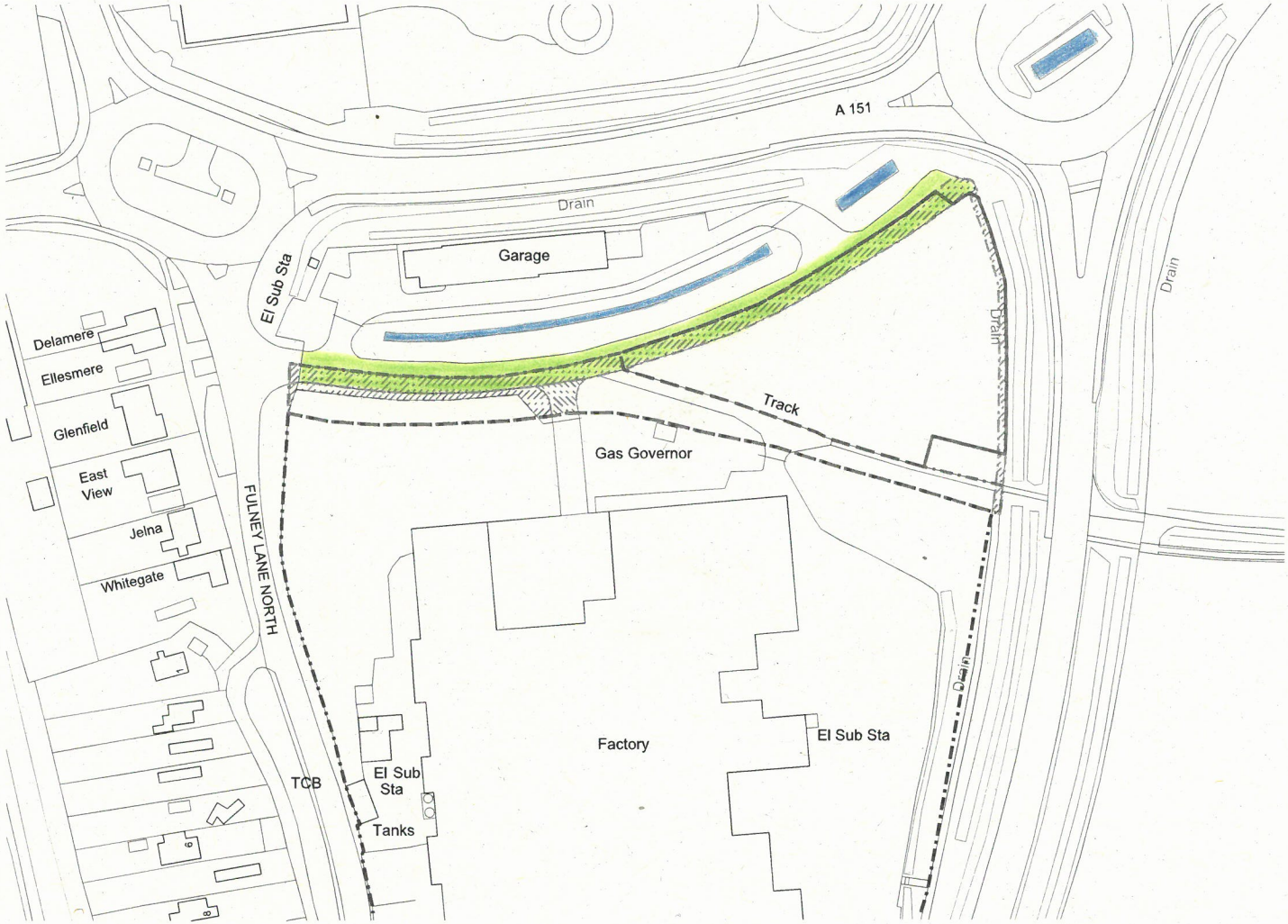
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LOCATION PLAN
NTS



EXTRACT 1 (E1)
1:1250

- PLOT 1 - 9.79 acres
- PLOT 2 - 1.57 acres
- LAND FOR SALE - 1.05 acres
- RIGHT OF WAY WITHIN PLOT 2 (BRIDLEWAY 831) - 0.27 acres
- RIGHT OF WAY WITHIN PLOT 2 (VEHICLE ACCESS TO PLOT 1) - 11m²
- RIGHT OF WAY WITHIN PLOT 2 (FOOTPATH) - 177m²

NORTH

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
REVISIONS				

PROJECT TITLE
PORK FARMS
SPALDING

DRAWING TITLE
SITE BOUNDARY PLAN

DRAWING NO.	REVISION	DATE	DRAWN BY
SK01		15.02.16	PC
SCALE	SHEET	STATUS	CHECKED BY
1:1250	A3	LEGAL	PC

Ashton Smith, Belvedere House, 2 Victoria Avenue, Harrogate, North Yorkshire, HG1 1EL
Tel: 01423 522882 Fax: 01423 565104
www.ashtonsmith.co.uk

CLIENT

ashtonsmith
beyond design

JOB NO. 16012

Gareth Crowther

From: Gareth Crowther
Sent: 27 September 2018 12:43
To: 'planning@wlma.org.uk'
Subject: FW: Pre-planning Enquiry for Proposed KFC Drive Thru Development at Holbeach Road, Spalding
Attachments: Proposed Site plan +Signs G121 B.pdf; 00206BBB0F62180927081944.pdf

To Whom it may concern

We are currently preparing a flood risk assessment for a proposed KFC Drive Thru Development at Holbeach Road, Spalding, PE12 6EP. A site location plan and site layout plan is attached.

We are preparing a surface water drainage strategy as part of the report and anticipate that ground conditions would not be suitable for infiltration drainage techniques with records indicating the local area to be underlain by loamy and clayey soils with naturally high groundwater. Based on the attached ordnance information it would appear that the Lords Drain (shaded in blue) would be the natural destination for overland surface water flows from the site in the existing situation.

Please could you advise if South Holland Drainage Board would permit a surface water connection to the ditch subject to surface water flows from the site being limited to match greenfield runoff rates as closely as possible using SUDS with excess runoff stored on site for a 1 in 100 year event with 40% allowance for climate change.

Regards

GARETH CROWTHER

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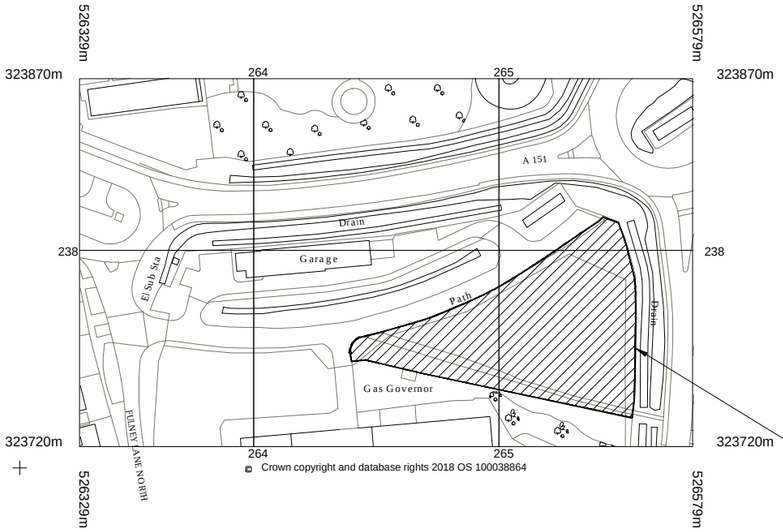
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APPENDIX C
SITE LAYOUT PLAN

SITE DESIGN SIGNOFF	
Name / Title	
SPM	
Signature	Date



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Proposed site

Proposed site plan

scale - 1:250 @ A1 + 1:500@A3

20 10 5 0 20

Metres

FOR INFORMATION

ALL DIMENSIONS TO BE CHECKED ON SITE.

DO NOT SCALE FROM THIS DRAWING EXCEPT FOR THE PURPOSES OF LOCAL AUTHORITY PLANNING

rev	date	description
B	11.9.18	LAYOUT REVISED TO SHOW SINGLE LEVELS ROUND THE UNIT. DAO
A	6.9.18	LAYOUT REVISED TO SHOW SINGLE OUTLET SCHEME. DAO

rpa:group
51-53 church road
ashford, middlesex, tw15 2ty
telephone: +44 (0) 1784 256 579
facsimile: +44 (0) 1784 247 300
website: www.therpagroup.com

NEW STORE

store address
LAND at A151/A16
SPALDING
PE12 6EP
LINCOLNSHIRE

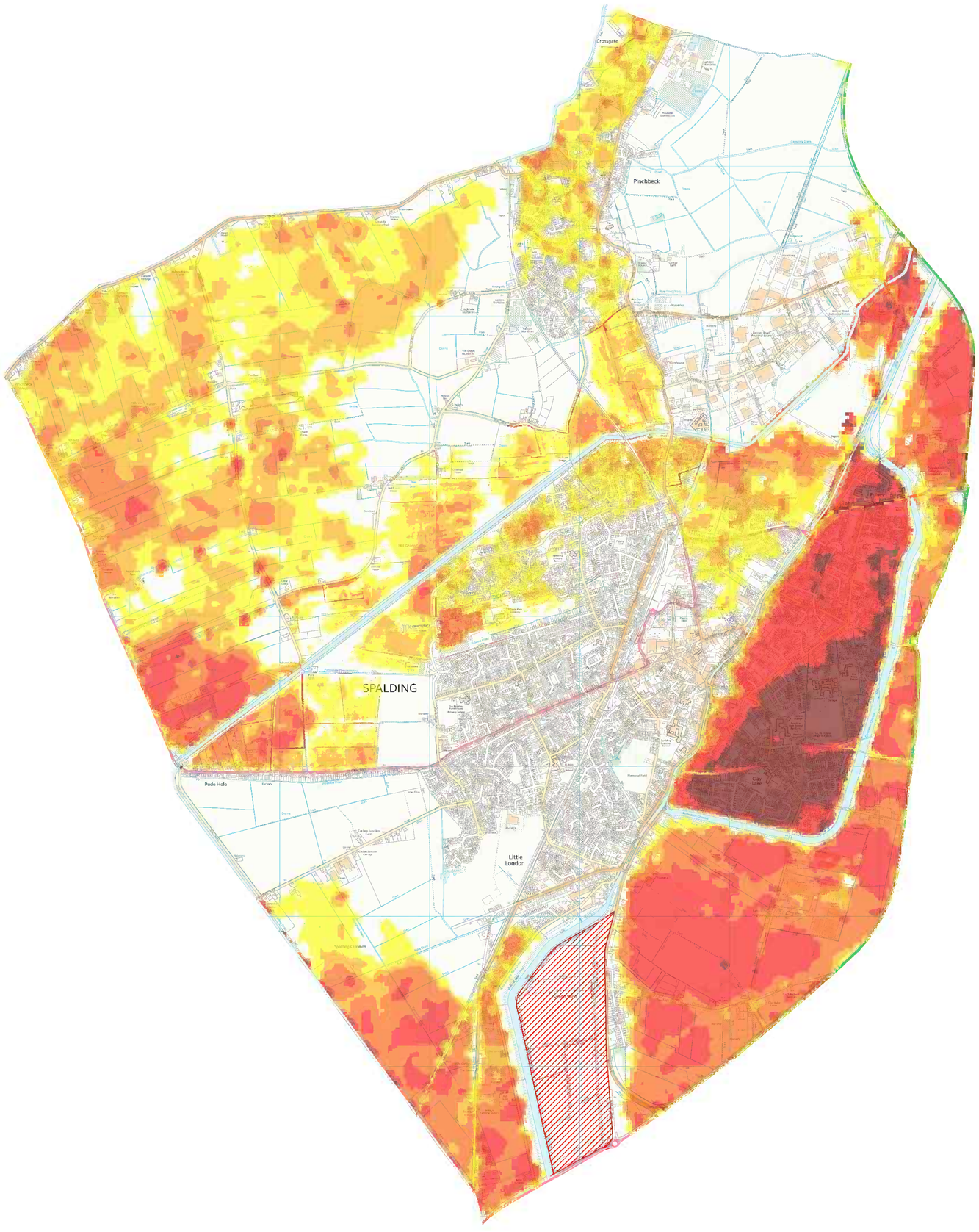
drawing title
PROPOSED
Site location plan

drawn by	checked	date
N.O.	DAO	23.08.2018
store no.	scale	
-	as indicated @ A1	

drawing no.	revision
2005733-2018-G121	B

APPENDIX D
SFRA FLOOD MAPS & EA FLOOD RISK INFORMATION

N



NOTES

1. The potential flooding consequences shown on this map primarily relate to flooding from the sea and main rivers taking into account the presence of current flood risk management measures such as flood defences.

2. This update only included new flood risk information from River Welland (Fluvial), River Glen (Fluvial) and Tidal hazard mapping (River Welland, River Nene and the Wash sea defences). No new information from the Internal Drainage Boards and associated systems was used for this update.

3. In addition to the potential flood extents shown on this map, there may be shallow flooding in low-lying rural areas

4. The consequences designated as being a Residual Risk arise from direct overtopping of defences, where this would occur, together with breach failure which is assumed could occur at any point along the defences.

5. Functional Floodplain encompasses areas where water is intended to flow or be stored in times of flood.

6. Land outside South Holland District is not considered.

7. This map shows the extents only of the flooding probability bands relevant to the map Title

Map Legend

Peak Depth

Peak Depth
- 0m - 0.25m
- 0.25m - 0.5m
- 0.5m - 1m
- 1m - 2m
- 2m +
- Functional Floodplain
- South Holland District Boundary

REV	DATE	REMARKS
2	Feb 17	Modelling and Mapping Update
1	Dec 16	Modelling and Mapping Update

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SOUTH HOLLAND DISTRICT COUNCIL

SOUTH HOLLAND DISTRICT COUNCIL
COUNCIL OFFICES
PRIORY ROAD
SPALDING
LINCOLNSHIRE
PE11 2XE

UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT

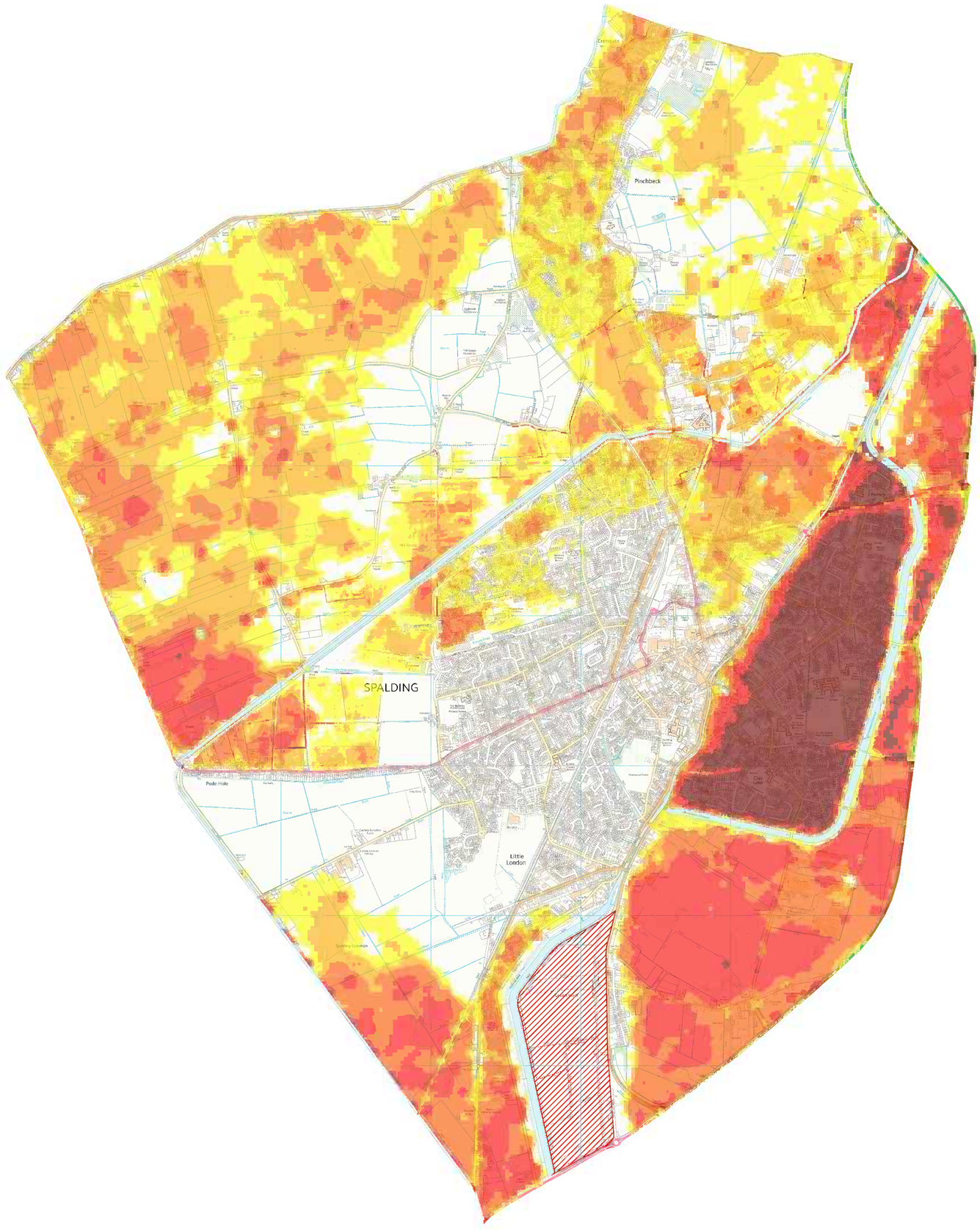
Residual Peak Depth
Spalding - Present Day
1% Fluvial / 0.5% Tidal Event Probability

DATE OF ISSUE: Feb 2017 **REV NO:** 2

SCALE: 1 : 15,000 @ A1

MAP NO:

N



NOTES

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7. This map shows the extents only of the flooding probability bands relevant to the map Title

Map Legend

Peak Depth

- 0m - 0.25m
- 0.25m - 0.5m
- 0.5m - 1m
- 1m - 2m
- 2m +
- Functional Floodplain
- South Holland District Boundary

REV	DATE	REMARKS
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UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT

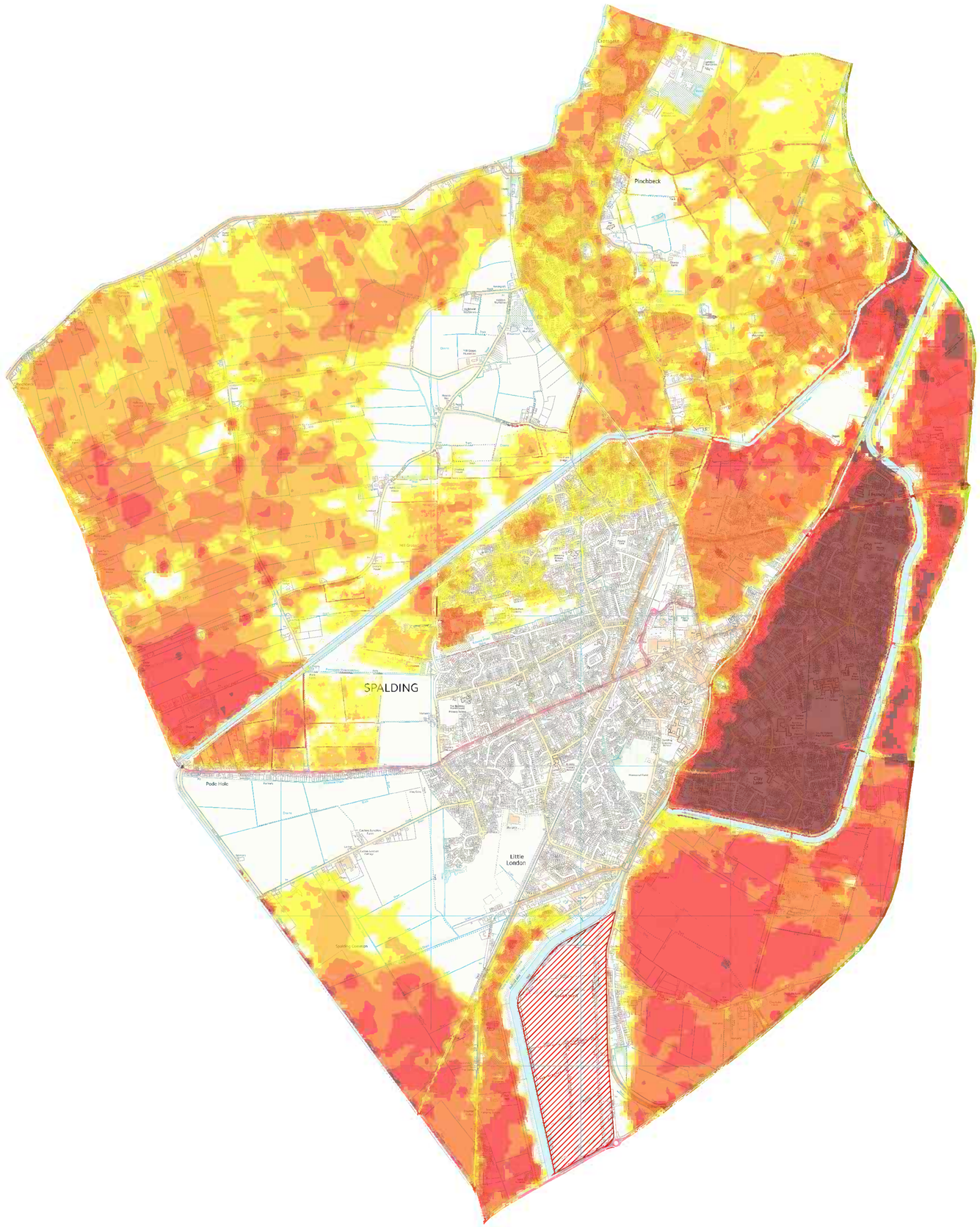
Residual Peak Depth
Spalding - Present Day
0.1% Event Probability

DATE OF ISSUE: Feb 2017 **REV NO:** 2

SCALE: 1 : 15,000 @ A1

MAP NO:

N



NOTES

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- South Holland District Boundary

REV	DATE	REMARKS
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SPALDING
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UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT

Residual Peak Depth
Spalding - Year 2115
1% Fluvial / 0.5% Tidal Event Probability

DATE OF ISSUE: Feb 2017 **REV NO:** 2

SCALE: 1 : 15,000 @ A1

MAP NO: