



Resilience and
Flood Risk

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Parkside Crescent, Spalding Flood Risk Assessment

22nd January 2016
Version 2.0
RAB: 1172L

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Revision history

Version	Date	Amendments	Issued to
1.0	22.10.15		Richard Scorthorne
2.0	22.01.16	Revised layout – changes to Section 3.0 and 6.1	Richard Scorthorne

Quality control

Action	Signature	Date
Prepared	G.M. Wilson	22.01.2016
Checked	P. Batty	22.01.2016
Approved	R.A. Burton	22.01.2016

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1.0 Introduction

This Flood Risk Assessment has been prepared by RAB Consultants, in support of a proposal for a residential planning application at land off Parkside Crescent, Spalding.

The Planning Practice Guidance that supports the National Planning Policy Framework (NPPF) requires a Flood Risk Assessment to be carried out to ensure that new development is safe from flooding and will not increase the risk of flooding elsewhere.

2.0 Site Location

The proposed development site is located at Parkside Crescent, Spalding, Lincolnshire, PE11 1RA; NGR: TF 24427 23147 (Figure 1 and Appendix A).

Pedestrian and vehicular access to the site is available direct from Parkside Crescent, with an additional pedestrian access from Park Road.

3.0 Site History and Development Proposals

The existing site comprises 8 garages with hardstanding, a surrounding lawn and natural areas. The total site area is approximately 3125m² of which approximately 100m² is occupied by garages, 525m² is hardstanding and the remaining 2500m² is permeable.

Planning permission is being sought to construct 10 dwellings, configured as 2 blocks of 5 terraced houses. The development will also include an access road, 20 parking spaces, paths, patios and gardens. The total building footprint will be approximately 395m². The area of access road and parking spaces will be approximately 480m² and 265m² respectively.



FIGURE 1 – VIEW OF THE EXISTING SITE (GOOGLE MAPS – STREET VIEW)



4.0 Flood Risk

4.1 Sequential test

According to the Environment Agency's online flood map the site lies in Flood Zone 3 (land having a 1 in 100 (1%) or greater annual probability (a.p.) of river flooding).

The NPPF follows a sequential risk-based approach in determining the suitability of land for development in flood risk areas, with the intention of steering all new development to the lowest flood risk areas.

NPPF Planning Practice Guidance Table 2 confirms the 'Flood risk vulnerability classification' of a site, depending upon the proposed usage. This classification is subsequently applied to Table 3 'Flood risk vulnerability and Flood Zone compatibility' to determine whether:

- The proposed development is suitable for the Flood Zone in which it is located; and
- Whether an Exception Test is required for the proposed development.

The proposed development is classed as a 'more vulnerable' development in accordance with Table 2. The development is therefore appropriate for the Flood Zone, however both a sequential test and exception test are required. The report is included in Appendix C.

4.2 Fluvial and Coastal Flood Risk

The proposed development site lies approximately 0.75km west of the River Welland, which flows to the north-east through Spalding. The River Welland, Spalding and large areas of Lincolnshire around the Wash are strongly influenced by coastal flooding. Spalding however benefits from a flood defence scheme.

A flood data request was made to the Environment Agency. In response, the Environment Agency report that modelled data is for in-channel levels, which will be high due to the flood defences (Appendix D). They advise that the FRA should assess the flood risk mitigation required from the hazard mapping included in the South Holland Strategic Flood Risk Assessment SFRA; specifically from the residual depth maps including climate change (2115 maps). This includes the sea, main rivers, Internal Drainage Board systems and flood defences.

The 1% a.p. fluvial / 0.5% a.p. coastal with climate change residual flood map shows no flooding at the proposed development site (Appendix D). This reflects the consequences arising from direct overtopping of defences, where this would occur, together with breach failure which is assumed could occur at any point along the defences.

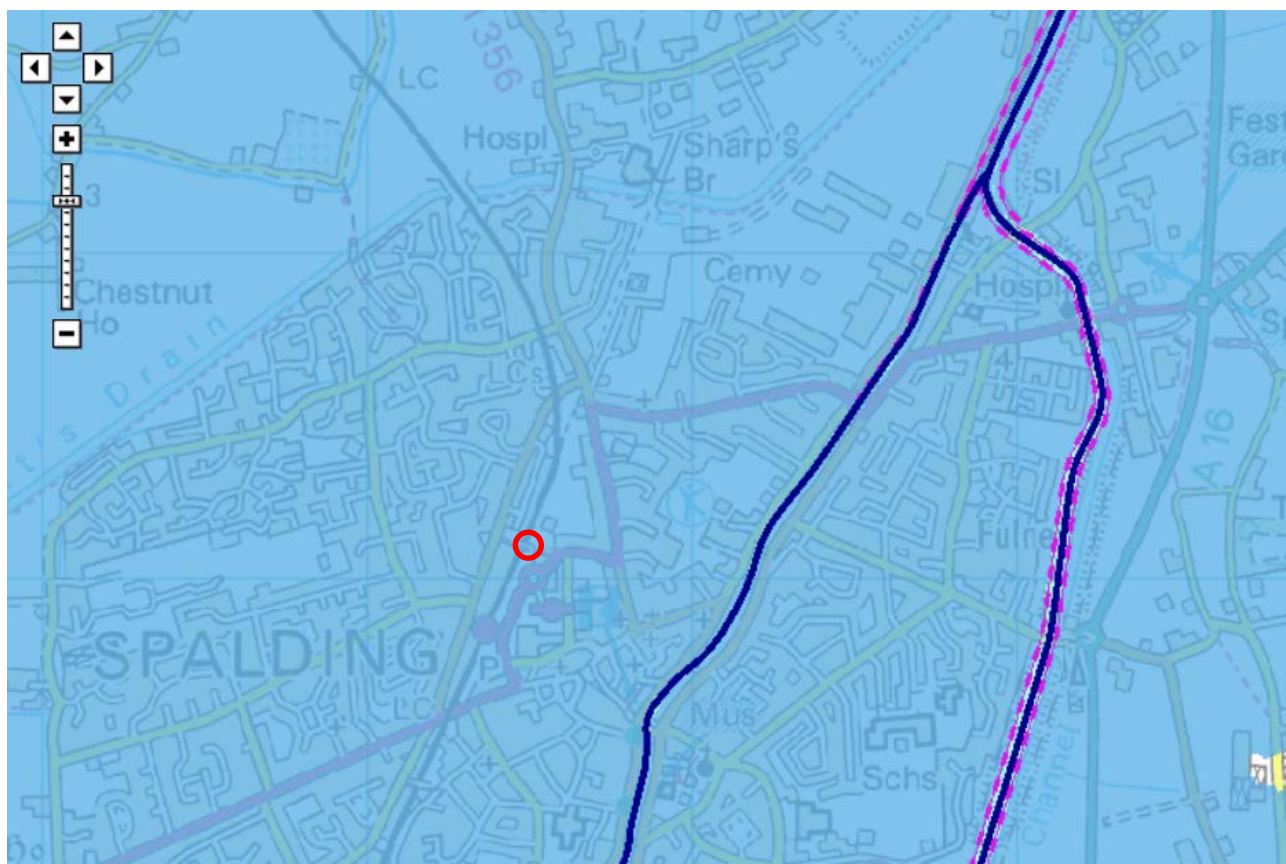


FIGURE 2 SCREEN SHOT TAKEN FROM THE ENVIRONMENT AGENCY'S ONLINE FLOOD MAP ON 15.09.15

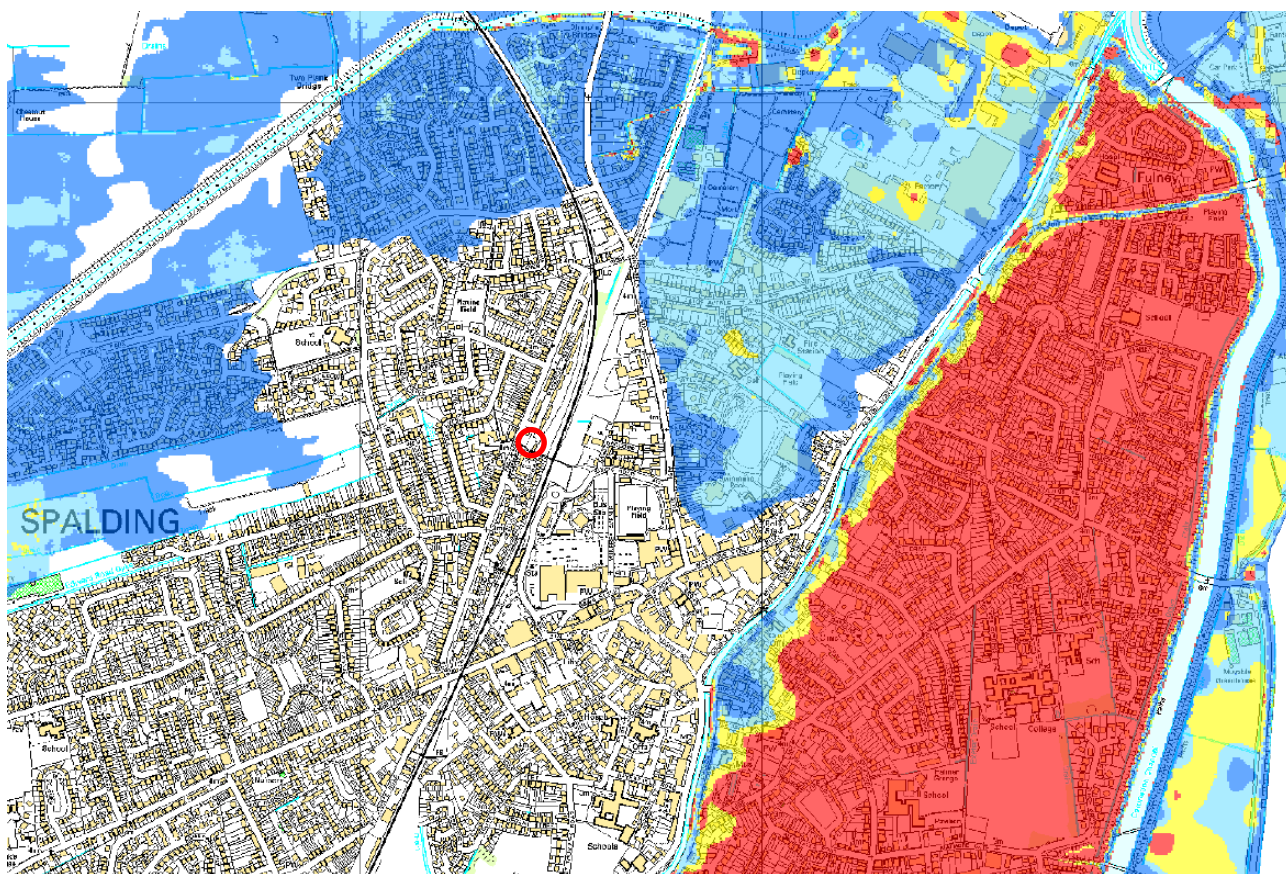


FIGURE 3 SCREEN SHOT TAKEN FROM THE RESIDUAL FLOOD MAP (1%A.P. FLUVIAL / 0.5%A.P. YEAR 2115)

4.3 Risk of Flood Defence Breach or Overtopping

The 1% a.p. fluvial / 0.5% a.p. coastal plus climate change and 0.1% a.p. residual flood maps, which includes overtopping and breach, show no flooding at the proposed development site (Appendix D).

4.4 Surface Water Flooding

The Environment Agency surface water flood mapping generally indicates that the site is at 'very low' chance of flooding from this source (a chance of flooding of less than 1 in 1000 (0.1%). There is a small amount of flooding shown along Parkside Crescent.

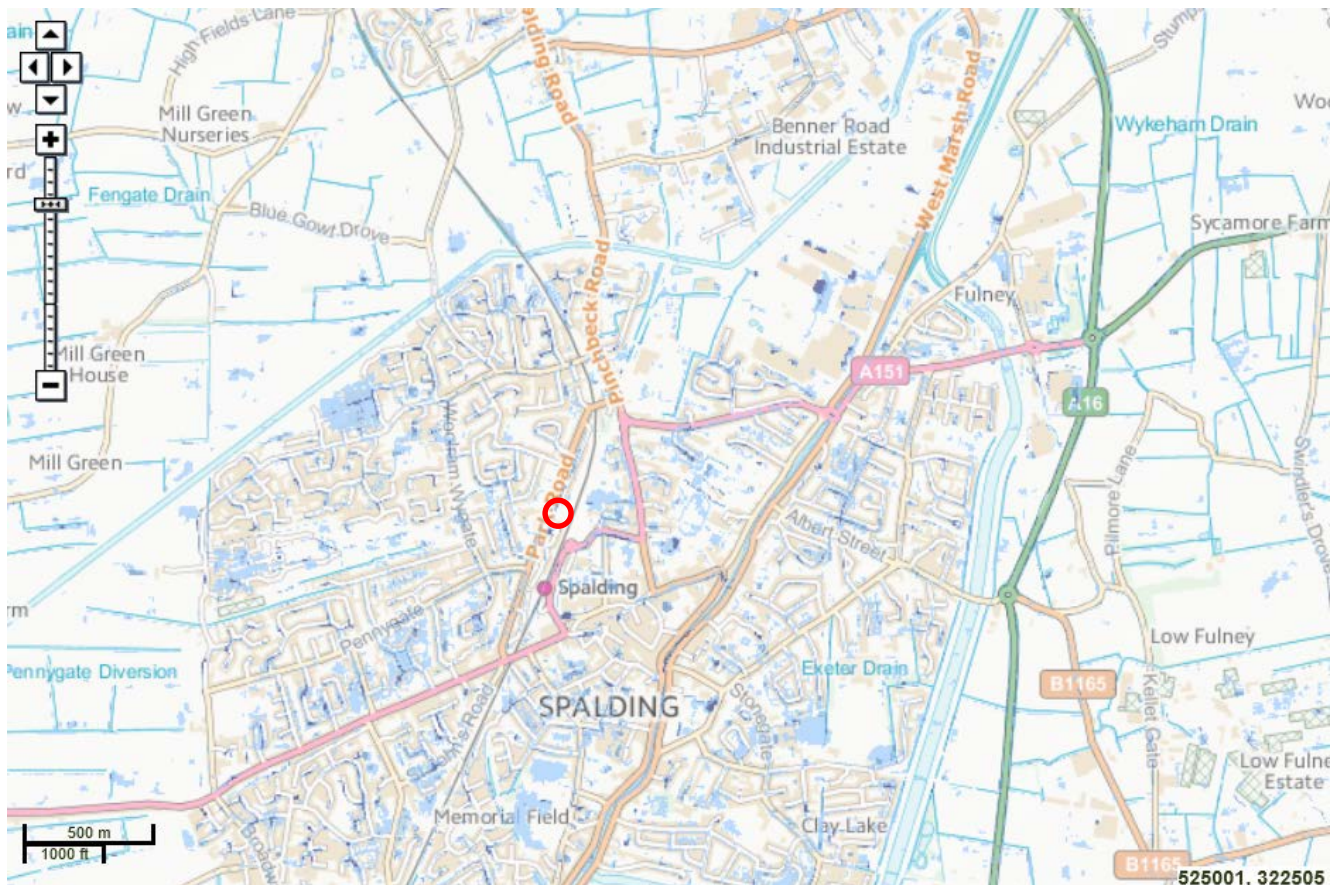


FIGURE 4 - SCREEN SHOT TAKEN FROM THE ENVIRONMENT AGENCY SURFACE WATER FLOOD MAP ON 03.09.2015

4.5 Groundwater Flooding

South Holland District Council published an updated Strategic Flood Risk Assessment in January 2010. The report says:

'There are no reports of groundwater flooding occurring in the District. This issue is therefore taken as having no strategic significance in relation to flood risk.'

The site owner has no knowledge of groundwater flooding affecting the site.

Groundwater flooding is therefore not considered a significant risk to the site.

4.6 Sewer Flooding

South Holland District Council's updated Strategic Flood Risk Assessment reports:

'Through consultation with Anglian Water, as well as drawing on the Council's own local experience, it is found that flooding from sewers is limited to minor isolated cases. It is not of strategic significance as regards flood risk.'

The site owner has no knowledge of sewer flooding affecting the site.

Sewer flooding is therefore not considered a significant risk to the site.

Anglian Water report that a rising main crosses the site.

4.7 Flooding from Reservoirs, Canals and Other Artificial Sources

The development site is not shown as being at risk of reservoir flooding on the Environment Agency's reservoir flood map.

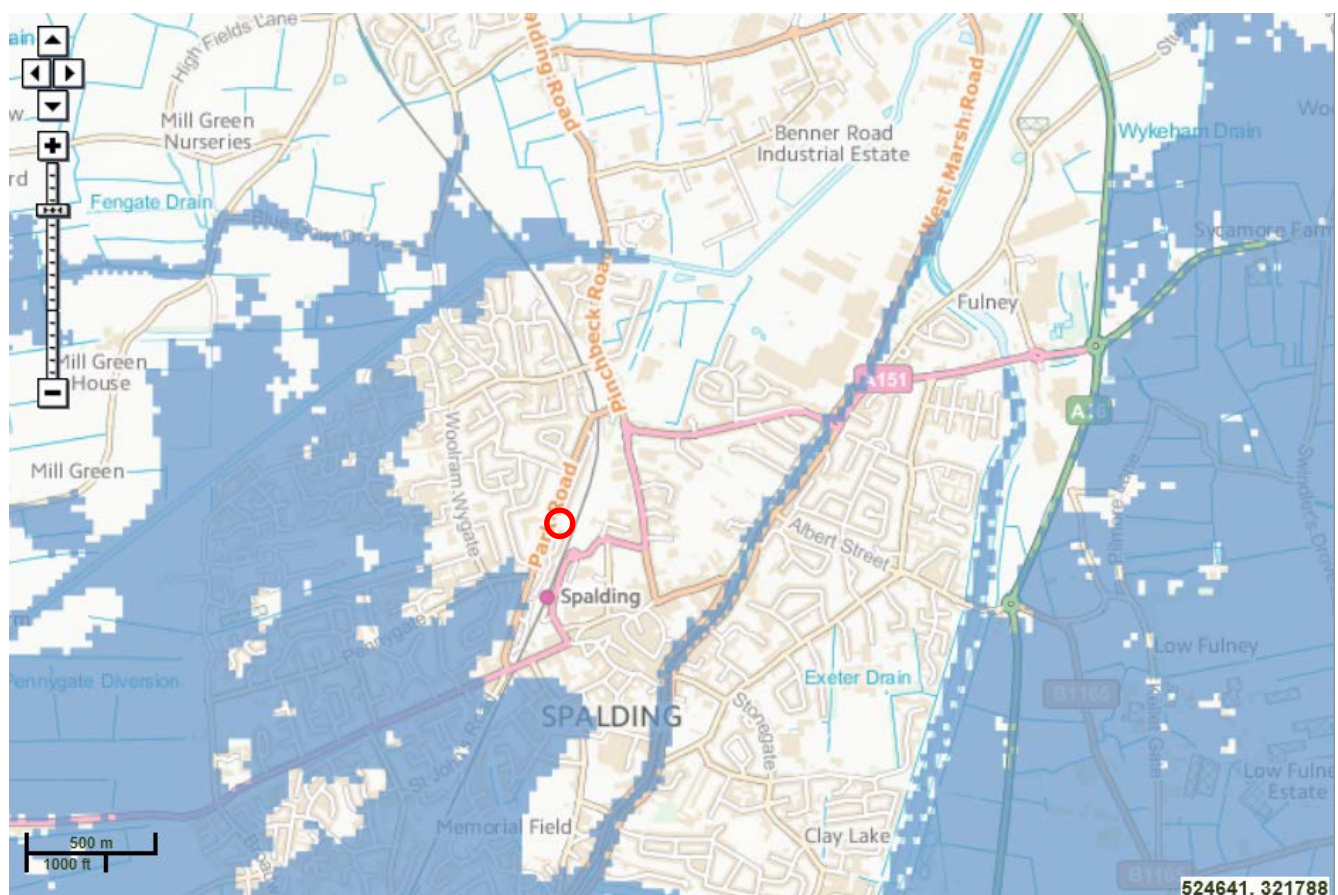


FIGURE 5 - SCREEN SHOT TAKEN FROM THE ENVIRONMENT AGENCY RESERVOIR FLOOD MAP ON 15.09.2015

The site is not in close proximity to a raised canal.



4.8 Previous Flood History

South Holland District Council's updated Strategic Flood Risk Assessment reports no flood events since construction of the Coronation Channel through Spalding in 1953, which diverts excess water around Spalding. Prior to construction, parts of the town were prone to flooding. Post-construction and with the coastal flood defence scheme in place, it is understood that the town and development site have not been flooded. The system was severely tested by a tidal event in January 1978, where the flood level was near to the 0.5% (1 in 200) annual probability level and was accompanied by strong winds and wave action.

The site owner has no knowledge of flooding occurring at the site over the past years, which includes the storm of 2013.

5.0 Mitigation measures

5.1 Recommended Finished Floor Levels

The Environment Agency advise that, for Parkside Crescent, finished floor levels should be set 150mm above ground level.

The existing ground levels are shown on the topographic survey in Appendix E.

5.2 Safe Access and Exit

The development site and access receive a high level of flood protection. A safe dry access route will therefore be available in all but the most extreme of events.

The residual risk will be managed by the implementation of a flood warning and evacuation plan (Appendix F).

6.0 Surface Water Runoff

The total site area is approximately 3125m² of which approximately 20% is currently impermeable. Under the proposal the development area will increase to approximately 38%, therefore there is a potential for increased runoff leaving the site.

6.1 SUDS – Sustainable Drainage Systems

Paragraph 1.3.2 from the SUDS manual (C697) discusses the SUDS 'management train' which is intended to mimic the natural catchment process as closely as possible. The hierarchy of techniques used to achieve the management train include:

Table 1 Hierarchy of techniques and their descriptions

Technique	Description
Prevention	The use of good house design and housekeeping measures to prevent runoff and pollution; rainwater reuse/harvesting
Source control	Soakaways, porous and pervious surfaces, water butts, green roofs
Site control	Routing water to large soakaways, infiltration or detention basins
Regional control	Balancing pond, wetlands, swales, retention ponds

Table 2 Feasibility of SuDS techniques at the proposed site

Technique	Issues	Feasible? Y / N
Prevention		
Good building design and rainwater harvesting	Ensuring that drains and guttering are properly located and laid could enable water to be collected for re-use via water butts or water harvesting systems.	Y
Source Control		
Porous and pervious materials/Soakaways/Green Roof	Permeable surfaces could be applied to the driveways and hardstanding areas to enable water to infiltrate as existing, The ground investigation company, ST Consult, report (Appendix G) that relevant borehole data shows summer groundwater between 1.5 and 2.2m below ground. Concentrated infiltration units, such as soakaways, are not expected to be appropriate given the high groundwater. The use of green roofs would provide both attenuation and natural water losses.	Y N Y
Site and Regional Control		
Infiltration / detention basins / balancing ponds / wetlands / swales / retention ponds	Shallow infiltration techniques may be appropriate. The shallow infiltration units, or underground systems, would provide attenuation storage space.	Y Y

Existing drainage

- 0.313ha total site area.
- 0.010ha of building footprint (garages).
- 0.053ha of impermeable surface.
- 0.250ha of permeable ground.

The existing garages are not formally drained. Rainwater simply falls, via downpipes, onto permeable ground behind the buildings. The hardstanding area contains one gulley located at a central low spot.



Anglian water report that there are no sewers serving this part of Spalding, however Welland Deepings Internal Drainage Board (IDB) confirm that they maintain an underground piped drain that crosses the site (Park Road Dyke). It is expected that impermeable areas in the local area discharge into this drain.

Proposed drainage

The total proposed area of buildings will be 0.040ha, while the total proposed area of road/parking will be 0.075ha. This gives a total drained area of 0.115ha.

ST Consult report the ground comprising sand/silt down to a depth of 4m (Appendix G), with summer groundwater between 1.5 and 2.2m below ground level. The relatively high groundwater will constrain the use of infiltration as the sole method of discharging surface water. Shallow infiltration components are expected to be effective.

The IDB drain will provide a final discharge point for the development, although a formal agreement would be needed to connect. During informal discussions with the IDB, it was suggested that a restriction would need to be applied to any discharge of greenfield runoff rate, 1.4l/s/ha. This flow equates to 0.16l/s. A minimum controlled outflow rate of 5l/s is normally advised to mitigate the risk of blockage within the drainage system.

The quick storage estimator module of Microdrainage has been used to estimate the total required attenuation storage volume and demonstrate feasibility of the concept. The required attenuation storage volume for 1 in 100 year annual probability plus climate change storms has been estimated to be in the range 30 – 60m³ [1].

This volume could easily be held above ground on the green spaces within the development to the west and east. The storage could be in the form of swales or shallow basins. The west square of green space is approximately 580m². The east strip of green space is approximately 250m². These storage areas would therefore need to manage approximately 0.15m depth of water during a 1 in 100 year annual probability plus climate change storm, assuming 50% of the space is available.

Alternatively, the road / parking areas could be used to store water, below ground. The area of this part of the development is 630m². This storage area would therefore need to manage approximately 0.32m depth of water during a 1 in 100 year annual probability plus climate change storm, assuming 30% of the space within the sub-base is available.

It is possible that during a major storm the Park Road Dyke will be full, imposing a natural limit on runoff from the site. Assuming runoff is actually limited to 0.16l/s with no infiltration available, as a worst case, the storage volume is estimated to increase to 104 – 128m³. The additional 68m³ of flood water could be managed within a larger swale, basin or porous car park sub-base. Alternatively this could be safely managed above ground contained by road kerbs and landscaping.

It is recommended that SuDS 'prevention' methods are used, either water harvesting or green / blue rooftops, to reduce and attenuate rainfall discharging from the houses.

Attention must be paid to exceedance of design. It is recommended that kerbs are used on the access road to safely contain rainwater from the whole scheme in the event of drainage scheme

¹ FEH Rainfall; C1(1km)=-0.023; D1(1km)=0.300; D2(1km)=0.303; D3(1km)=0.229; E(1km)=0.314; F(1km)=2.490; Cv=0.750(winter); Cv=0.840(summer); Impermeable area=0.115ha; Allowable discharge=5.0l/s; Infiltration coefficient=0.1m/hr; Safety Factor=2.0; Climate change=30%.



failure or exceedance. Safe over flow routes should be provided, such as north onto Parkside Crescent, or west onto Park Road or east onto the green space that runs alongside the railway line (although the latter may be difficult given the ground topography).

Lincolnshire County Council should be contacted regarding adoption of the SuDS drainage scheme. Alternatively a private maintenance company should be engaged to manage the scheme.

7.0 Conclusion

An assessment of flood risk has been made for a planning proposal to construct 10 dwellings on land at Parkside Crescent, Spalding.

The site is within Flood Zone 3 on the Environment Agency flood map due to a combination of fluvial and coastal flooding, however the site is protected by flood defences.

Residual flooding arising from both breach and overtopping of defences is not expected to reach the site.

Residual risk to the building will be managed by setting a suitable floor level.

The flood protection scheme will ensure safe access is available. In the unlikely event of an extreme flood the residual risk to people will be managed through the implementation of a flood warning and evacuation plan.

The development will manage all runoff through a combination of shallow infiltration and attenuation storage to ensure no increase of rates and volumes leaving the site.

It is concluded that the proposed development is appropriate for the flood risk and is not expected to increase the risk of flooding elsewhere.

8.0 Recommendations

- Set finished floor levels 150mm above the ground.
- Residents should sign up for the Environment Agency flood warning service and implement the flood warning and evacuation plan given in Appendix F.
- Undertake ground testing to establish infiltration rate and ground stability.
- Produce a detailed drainage design in line with the strategy given in Section 6.0.
- Trace the route of the IDB drain and Anglian Water sewer as they cross the site. Consult with the organisations to ensure the necessary easements are met and connection agreements put in place.



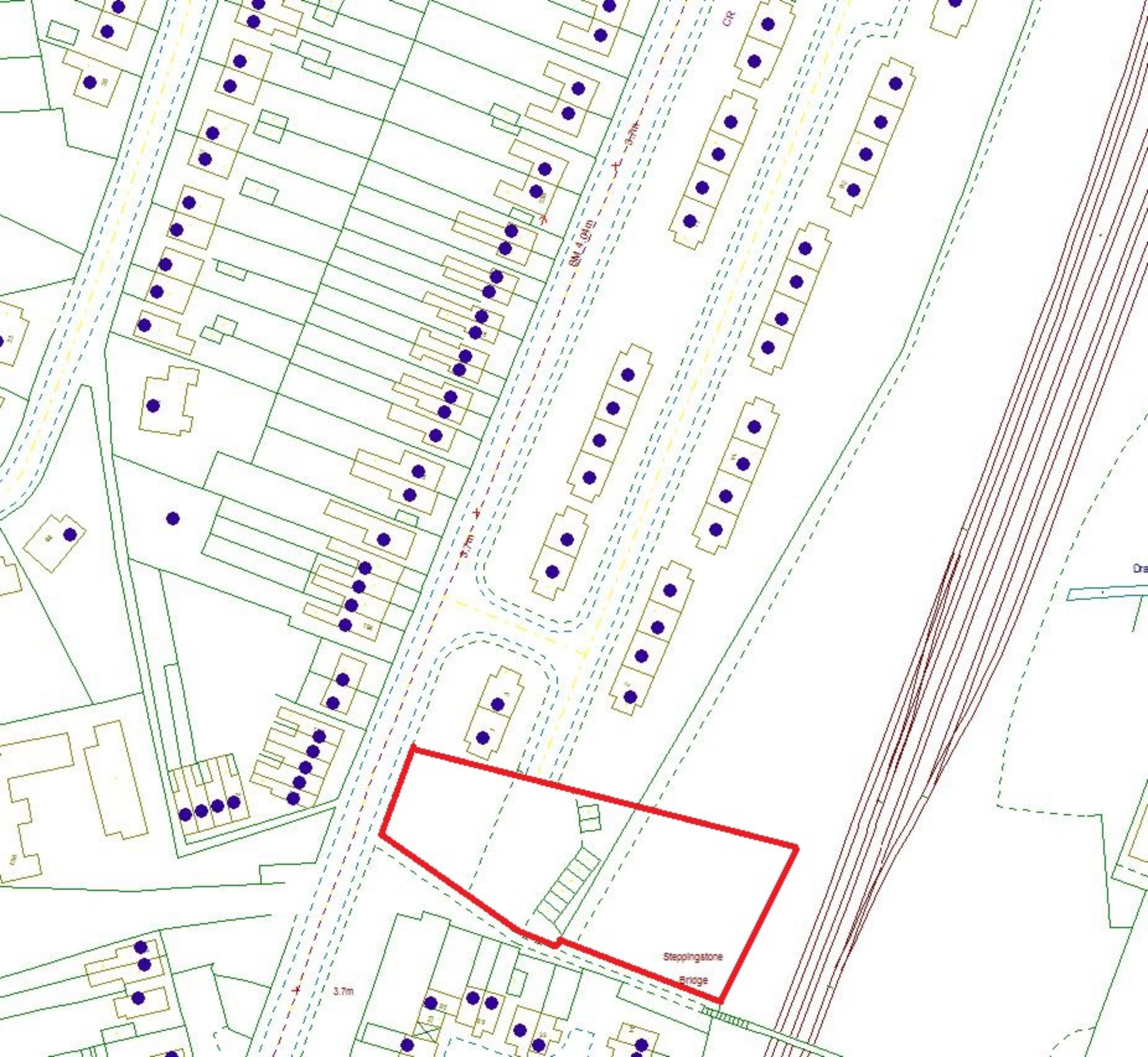
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Appendix A – Site location plan



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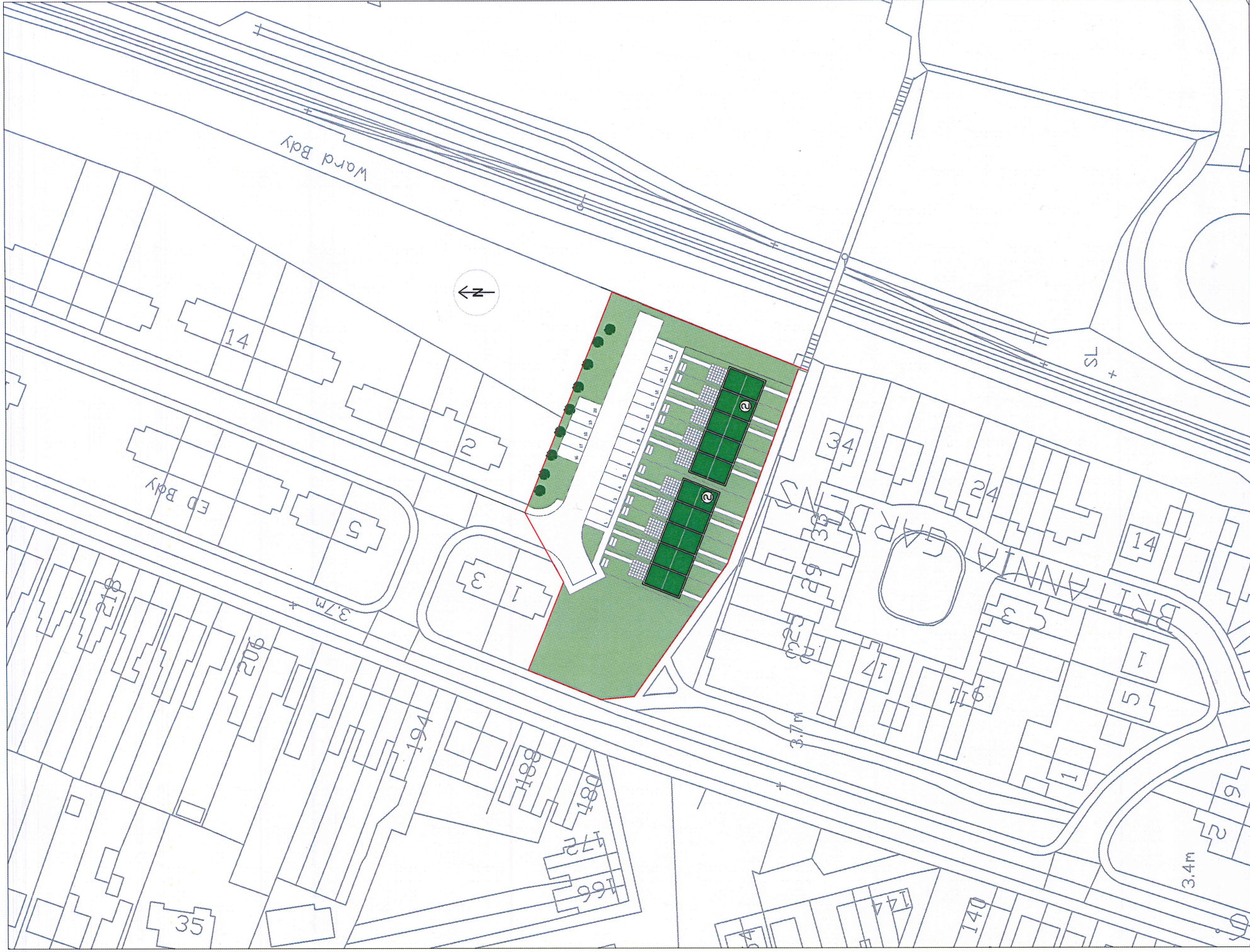




Appendix B – Proposed drawings



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S O U T H



H O L L A N D
DISTRICT COUNCIL

Property Services
South Holland District Council
Council Offices
Priory Road
Spalding
Lincs. PE11 2XE
Tel: (01775) 761161
Fax: (01775) 761048

PROJECT

PROPOSED NEW BUILD SCHEME
PARKSIDE CRESCENT, SPALDING
10 X 2 BED TERRACE HOUSING

DATE	SCALE
20/ 01 / 2016	1:1000
DRAWN	DRAWING No.
R. HASTIE	04b



Appendix C – Sequential Test



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Sequential Test & Exception Test – Parkside Crescent, Spalding

1.0 Proposed Development

The proposed development site is located at Parkside Crescent, Spalding, Lincolnshire PE11 1RA; NGR: TF 24427 23147.

The existing site comprises 8 garages with hardstanding and surrounding lawn and natural areas. The total site area is approximately 3125m² of which approximately 100m² is occupied by garages, 525m² is hardstanding and the remaining 2500m² is permeable.

Planning permission is being sought to construct 10 dwellings, configured as 2 blocks of 5 terraced houses. The development will also include an access road, 20 parking spaces, paths, patios and gardens. The total building footprint will be approximately 395m². The area of access road and parking spaces will be approximately 480m² and 265m² respectively. With sustainable choices for the access road and parking the proposal has the potential to reduce the drained impermeable area at the site.



FIGURE 1 – GOOGLE MAPS STREET VIEW IMAGE SHOWING THE EXISTING SITE

2.0 Flood Risk

The site lies within Flood Zone 3 (Land having a 1 in 100 or greater annual probability of river flooding) according to the Environment Agency's indicative flood map for planning.

The proposed development is classed as a 'more vulnerable' development in accordance with Table 2 Flood Risk Vulnerability Classification of the National Planning Policy Framework (NPPF) Planning Practice Guidance. A sequential test and exception test is therefore required in accordance with Table 3 Flood Risk Vulnerability and Flood Zone 'Compatibility' of the NPPF Planning Practice Guidance.



3.0 Sequential Test

The proposed development is a windfall opportunity to provide 10 high quality terraced houses on a brownfield site, centrally located within Spalding with ample car parking.

The proposed site is located within walking distance of local services and amenities and there is good access directly from Parkside Crescent.

Possible alternative sites have been limited to Spalding. Alternatives have been screened from the South East Lincolnshire SHLAA annual review 2010 (the most up to date document available on the South East Lincolnshire Joint Strategic Planning Committee's website), online estate agencies and Google maps. Any sites with area greater than 0.3ha have been automatically rejected, as being too large for a 10 dwelling development.

Flood risk at the alternative sites has been assessed using the Environment Agency's flood map for planning.

1. SH/SPA/08 – Steppingstones Bridge, which is in Flood Zone 3. This alternative is not lower flood risk compared with the proposed site as is therefore not sequentially preferable.
2. SH/SPA/10 – Horseshoe Road, which is in Flood Zone 3. This alternative is not lower flood risk compared with the proposed site as is therefore not sequentially preferable.
3. SH/SPA/37 – Churchill Drive, which is in Flood Zone 3. This alternative is not lower flood risk compared with the proposed site as is therefore not sequentially preferable.
4. SH/SPA/38 – Holbeach Road, which is in Flood Zone 3. This alternative is not lower flood risk compared with the proposed site as is therefore not sequentially preferable.
5. SH/SPA/39 – London Road, which is in Flood Zone 3. This alternative is not lower flood risk compared with the proposed site as is therefore not sequentially preferable.

The whole of the Spalding Parish is essentially within Flood Zone 3 and as such no sequentially preferable sites at lower flood risk are available.

4.0 Exception Test

The development must fulfil two conditions to pass the Exception Test:

- It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared;
- 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.

South East Lincolnshire Joint Strategic Planning Committee published a Sustainability Appraisal Scoping Report in July 2012. The report does not develop specific Sustainability Objectives, but is structured around a series of topic areas. The report does however identify the relevance of the earlier Lincolnshire Coastal Study to South East Lincolnshire and this earlier report does identify 15 specific objectives.

Benefits arising from the proposed development at Parkside Crescent have been identified against the Lincolnshire Coastal Study Sustainability Appraisal objectives in the table below:



Sustainability Objectives	Benefit in line with the objective
1. To ensure that the existing and future housing stock meets the housing needs of all communities.	The development will provide additional accommodation centrally located within Spalding, where the need is high but new development options are constrained.
2. To improve health and reduce health inequalities by promoting healthy lifestyles, protecting health and providing health services.	The proposed houses will be centrally located, within walking/cycling distance of employers, shops and services, encouraging residents' healthy lifestyle. The development will match the location of people with services, minimising the impact of travel on the environment.
3. To improve accessibility to jobs and services by increasing the use of public transport, cycling and walking, and reducing traffic growth and congestion.	The proposed houses will be centrally located, within walking/cycling distance of employers, shops and services, encouraging residents' healthy lifestyle. The development will match the location of people with services, minimising the impact of travel on the environment.
4. To reduce social exclusion and improve equality of opportunity amongst social groups.	The proposed houses are to be rented and have been designed to make it financially viable for a wide range of prospective tenants.
5. To improve educational achievement and skills levels.	The proposed houses will be centrally located, within easy distance of a range of educational services.
6. To protect, enhance and sustain biodiversity and to conserve geodiversity.	The development will protect biodiversity through careful garden design.
7. To restore and manage the historic environment and built environment.	The proposed site currently houses functional garages and hardstanding. The proposal will introduce good quality housing designed to be in-keeping with the local street scene.
8. To manage landscape change and enhance landscape quality.	The proposed site currently houses functional garages and hardstanding. The proposal will introduce good quality housing designed to be in-keeping with the local street scene.
9. To encourage sustainable use of resources, specifically land and water.	The development is proposed for a brownfield site. The development will provide an opportunity to improve drained water quantity and quality from the site in line with the latest SuDS best practice.

	The development will make use of the latest building best practice, to improve energy and water usage. The development can utilise existing service infrastructure at the site.
10. To reduce risk of fluvial and coastal flooding by adapting to climate change and coastal erosion.	The planning proposal provides an opportunity for a Flood Risk Assessment to ensure that the development is safe from flooding now and for the future, taking account of climate change. The development will provide an opportunity to improve drained water quantity and quality from the site in line with the latest SuDS best practice. The development will make use of the latest building best practice, to improve energy and water usage.
11. To reduce levels of atmospheric greenhouse gases (GHG) by reducing emissions and increasing extent of carbon sinks.	The development will make use of the latest building best practice, to improve energy and water usage. The proposed houses will be centrally located, within walking/cycling distance of employers, shops and services, reducing the number of car journeys.
12. To promote the utilisation of the local renewable energy potential.	The development gives an opportunity for the incorporation of solar cells.
13. To maximise the area's economic comparative advantages.	The type of residences proposed are expected to appeal to a wide range of tenants, helping to retain and encourage new skilled employees into the area.

A site-specific Flood Risk Assessment has been drafted, which demonstrates that the development is safe and will not increase the flood risk elsewhere.

5.0 Conclusion

There are no sequentially preferable sites available in lower flood risk areas that meet the aim of the project.

The proposed development provides wider sustainability benefits for the community that outweigh flood risk.

A Flood Risk Assessment has been drafted that demonstrates the development is safe and will not increase the flood risk elsewhere.

The proposal passes the requirement of the sequential test and fulfils the two conditions of the exception test and therefore is in accordance with the criteria for determining planning applications as detailed in paragraph 102 of the National Planning Policy Framework.



Appendix D – Environment Agency information

Gavin Wilson

From: Lincs & Northants, Customer Enquiries <LNenquiries@environment-agency.gov.uk>
Sent: 16 July 2015 16:36
To: Hannah Mays
Subject: RE: Product 4 data request - Parkside Crescent, Spalding-CCN/2015/39609

Hello Hannah,

Following your discussion with Rachel, please see our comments below:

The products provide in channel levels which will be high due to the flood defences.

The FRA should assess the flood risk mitigation required from the hazard mapping included in the South Holland Strategic Flood Risk Assessment SFRA

<http://www.sholland.gov.uk/environment/plandev/localplan/background/lfraupdatefinal2010.htm> . The residual depth maps including climate change (2115 maps) should be used. This map shows no flooding on this site.

FRA requirements for Parkside Crescent

- Finished floor levels should be set 150mm above ground level.

If you would like to discuss this further, please contact Rachael Storey, Partnership & Strategic Overview Officer by calling 01536 385225 or email rachael.storey@environment-agency.gov.uk

Many thanks.

Regards

Bola Abioye

Customers & Engagement Officer (Interim)

Environment Agency

Lincolnshire and Northamptonshire Area

✉ Waterside House, Waterside North, Lincoln, LN2 5HA

📧 a.bimbola.abioye@environment-agency.gov.uk

🌐 www.gov.uk/environment-agency



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Appendix E – Topographic survey



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STANDARD BOUNDARIES		 HEDGE  FOLIAGE OUTLINE			
	FENCE		BANKING		
BF	BOARDED	STREET SERVICES • LP LAMPPOST • NAME SIGN/PLATE • MS MILE STONE • TS TRAFFIC SIGNAL • RS ROAD SIGN • BDN BELLSHA BEACON • BD BOLLARD • HR HAND RAIL • CB CRASH BARRIER • BENCH ☐ BS BUS STOP ☐ CB BT CALL BOX ☐ BTBX BT ABOVE GROUND BOX ☐ BTM BM • TP TELEGRAPH POLE • CATV CABLE TELEVISION • EP ELECTRICITY POLE • ELMH ELECTRICITY MANHOLE • ER EARTH ROD • GAS GAS • FH FIRE HYDRANT • FHMP FIRE HYDRANT M/POST • VM WATER METER • VSV WATER STOP VALVE • SV STERIC VALVE • SVMP STOP VALVE M/POST • MTR METER • US UNIDENTIFIED SERVICE • TSCB TRAFFIC SIGNAL CNTL BOX			
CLF	CHAIN LINK				
CF	CHESTNUT				
BW/F	BARBED WIRE				
EF	ELECTRIC				
PRF	POST & RAIL				
PWF	POST & WIRE				
PF	GATEPOST				
IR	PANEL				
IR	IRON RAILING				
PT	GATE				
PT	POST				
SURFACES		☐ BS ☐ CB ☐ BTBX ☐ BTM ☐ TP ☐ CATV ☐ EP ☐ ELMH ☐ ER ☐ GAS ☐ FH ☐ FHMP ☐ VM ☐ VSV ☐ SV ☐ SVMP ☐ MTR ☐ US ☐ TSCB			
ROAD EDGE (NON KERBED)					
FOOTPATH					
DROPPED KERB					
KERB OUTLET					
TRACK					
KERB					
FEATURES					
BW	BRICK WALL				
BH	BUILDING				
STN	STONE WALL				
CW	CONCRETE WALL				
BLW	BLOCK WALL				
RW	RETAINING WALL				
SHED					
STRUCTURE					
GROUND LEVEL IS 5.55M					
BENCHMARK					
SURVEY STATION					
TREE GIRTH CIRCUM 0.5M					
SPREAD RADIUS 6M					
HEIGHT 10M					
SPECIES					
ASH					
STUMP					
STUMP GIRTH TO SCALE					
		☐ MHS ☐ MHT ☐ MHG ☐ CP ☐ DP ☐ V/P ☐ RD ☐ CL ☐ SL ☐ IL ☐ G			
		MANHOLES CATCH PIT DOWNPIPE VENT PIPE RODDING EYE COVER LEVEL SOFFIT LEVEL INVERT LEVEL GULLY			
		7.564			

A scale factor of 1 has been applied to this survey which has been based on station 1 and referenced to station 2.



JOB TITLE
TOPOGRAPHIC SURVEY OF
LAND AT PARKSIDE
CRESCENT, SPALDING

SHEET SIZE & SCALE A2 @ 1:250	DATE SURVEYED JUNE 2015	DRAWN BY AR
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DRAWING NUMBER	
5250-1	
CLIENT	
SOUTH HOLLAND DISTRICT COUNCIL	



Appendix F – Flood warning and evacuation plan

Flood Risk

Parkside Crescent is within Flood Zone 3 (Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%)) due to a combination of river and coastal flooding, however the site is protected by flood defences.

In the unlikely event of flood defence failure flood modelling shows the site will still remain dry, however some areas of Spalding and large parts of Lincolnshire will flood. There is still a residual risk of an extreme event affecting the site or access routes.

How Flood Warnings will be provided

The Environment Agency provides a free flood warning service 'Floodline Warnings Direct' for this area of Spalding, which offers a minimum 2 hour flood warning lead time before the onset of flooding at the site. Residents will need to contact the Environment Agency to register to this service by calling Floodline on **0345 988 1188**.

After a receipt of a flood warning, you are recommended to call the Environment Agency Floodline 'dial and listen' service to hear further information. After dialling **0345 988 1188** you will be given the option of entering a quick dial code for the flood warning area that relates to you.

The quick dial code that relates to you is **0311414**. This will give you an automated response regarding any flood warnings that have been issued for this area. If you wish to speak to someone about flooding in relation to Parkside Crescent you need to state that it is **Western areas of Spalding on the left bank of the River Welland and areas around Pinchbeck, including Crossgate, Podge Hole and Little London**.

Residents will be able to choose how they are contacted by the Environment Agency in the event of a flood, such as an automated telephone call, SMS text, email, fax or pager.

The Environment Agency use flood warning codes, each with specific public information / advice relating to it:



FLOOD ALERT
FLOODING IS POSSIBLE. BE PREPARED.

FLOOD ALERT

What it means: Flooding is possible. Be prepared.

When it's used: Two hours to two days in advance of flooding.

What to do for Parkside Crescent.

The water level is rising but the risk of flooding on Parkside Crescent is considered to be very low.

What you should do:

- Be prepared to act on your flood plan.
- Monitor local news and weather forecasts.
- Be aware of water levels. You can now see river levels on the Environment Agency's website. This information will show you what's happening to water levels in your area - <http://www.environment-agency.gov.uk/homeandleisure/floods/riverlevels/default.aspx>
- Call Floodline on 0345 988 1188.
- Prepare a flood kit of essential items.



FLOOD WARNING
FLOODING IS EXPECTED. IMMEDIATE ACTION REQUIRED.

FLOOD WARNING

What it means: Flooding is expected. Immediate action required.

When it's used: Half an hour to one day in advance of flooding.

What to do for Parkside Crescent.

You should take action when a flood warning is issued and not wait for a severe flood warning.

The water level is still rising, and flooding is expected. You should implement your flood warning and evacuation plan now.

What you should do:

- Evacuate the site if advised to do so by the emergency services and it is safe to do so.
- If the site is flooded and evacuation is not possible, people should stay in a high place with means of an escape.
- Call Floodline on 0345 988 1188 and monitor water levels.



- Turn off gas, electricity and water supplies if it is safe to do so. If you lose utility services, evacuate to the designated rest centre.
- Avoid walking or driving through floodwater, there could be hidden dangers, such as raised manhole covers (so have the potential to fall down a manhole).
- If in danger call 999 immediately. Listen to emergency services.



**SEVERE FLOOD
WARNING**

**SEVERE FLOODING.
DANGER TO LIFE.**

SEVERE FLOOD WARNING

What it means: Severe flooding. Danger to life.

When it's used: When flooding poses a significant risk to life.

What to do for Parkside Crescent.

Flooding is now posing a significant risk to life or disruption to the local community. Flooding at the site is expected.

What you should do:

- Act as with a Flood Warning.
- Evacuate the site if advised to do so by the emergency services and it is safe to do so.
- If the site is flooded and evacuation is not possible, people should stay in a high place with means of an escape.
- Call Floodline on 0345 988 1188 and monitor water levels.
- Turn off gas, electricity and water supplies if it is safe to do so. If you lose utility services, evacuate to the designated rest centre.
- Avoid walking or driving through floodwater, there could be hidden dangers, such as raised manhole covers (so have the potential to fall down a manhole).
- If in danger call 999 immediately. Listen to emergency services.



Emergency Flood Plan – Parkside Crescent

A list of useful telephone numbers: <
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Appendix G – Ground testing information

Gavin Wilson

From: Anthony Paton <apaton@stconsult.co.uk>
Sent: 06 August 2015 09:43
To: Hannah Mays
Subject: RE: Parkside Crescent, Spalding

Hannah,

I've just looked over the borehole logs – groundwater was encountered in every borehole at depths between 1.5-2.2m bgl and obviously we would expect this groundwater level to rise in the winter months.

The soils encountered down to a depth of 4.0m were a sand/silt, however deeper more impermeable clayey lenses cannot be ruled out due to the nature of the Tidal Flat Deposits. An archive borehole on site infers a peaty band at 4.4m within the Tidal Flat Deposits which could be impermeable or at least less permeable than the sand/silt encountered above.

I hope that information is of use to you,

Regards,

Anthony

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