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[redacted]

North Lincolnshire Council
Development Control
Church Square House
30-40 High Street
Scunthorpe
DN15 6NL

AMENDED

Date: 5 May 2022

Your Ref:
Our Ref:

Dear Sirs,

**Proposal**: Demolition of dwelling and erection of terrace of 3 houses
**Site Location:** 22 West Street, West Butterwick, DN17 3LA
**Application ref:**
**Applicant:** Mr Mark Stafford – Cleveland Build

**FLOOD RISK ASSESSMENT + ADDENDUM SECTION 12**

**1. National Planning Policy Framework**

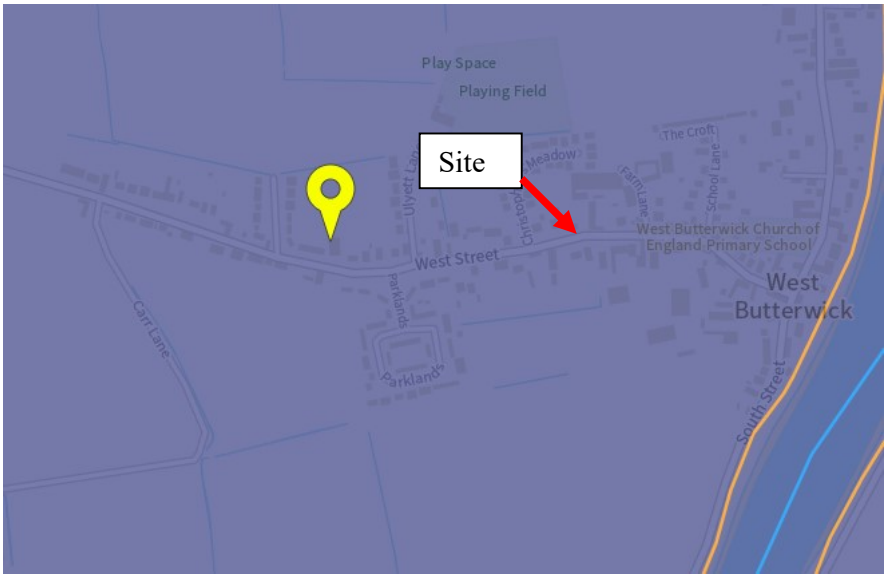
1.1 Section 10 of the National Planning Policy Framework sets out the requirements for applications/developments to meet climate change flooding and coastal change.

1.2 This guidance directs LPA's that inappropriate developments in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary making it safe without increasing flood risk elsewhere.

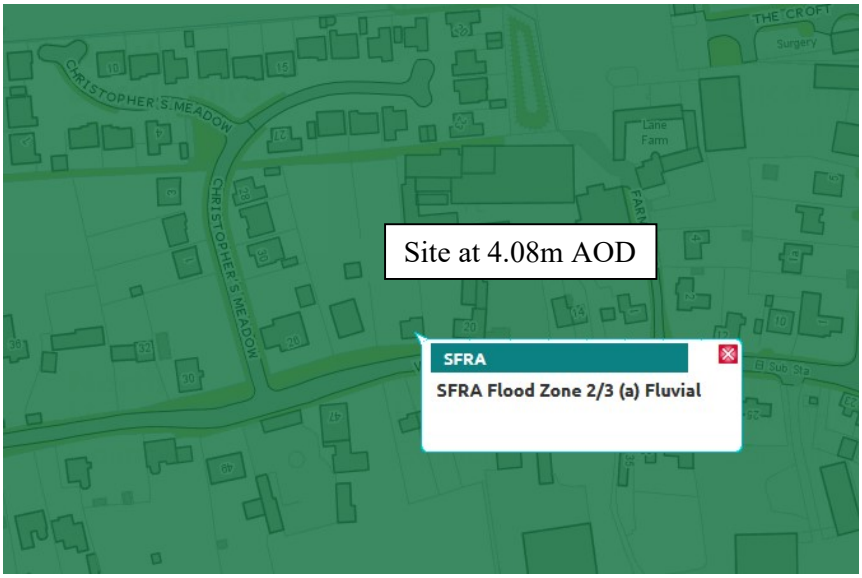
**2. Flood Zones**

2.1 The property is located in flood zone 2/3a as is shown on the attached Environment Agency flood risk map see below this however is classified in the North Lincolnshire SFRA 2011 as being in Flood Zone 2/3a.

Environment Agency Map




SFRA 2011



**3. Proposed Uses**

3.1The proposed use of this land is residential, from table 1 in the NPPF technical guide then in flood zone 2/3a less vulnerable and more vulnerable uses are compatible and appropriate in this flood zone.

3.2 From table 2 to the NPPF this then sets out definitions for more vulnerable uses one of which is "buildings used for dwelling houses".

**NPPF Table 1**

**Zone 3a - high probability**

**Definition**
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.

**Appropriate uses**
The water-compatible and less vulnerable uses of land (table 2) are appropriate in this zone. The highly vulnerable uses should not be permitted in this zone.

The more vulnerable uses and essential infrastructure should only be permitted in this zone if the Exception Test is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

**Flood risk assessment requirements**
All development proposals in this zone should be accompanied by a flood risk assessment.

**NPPF Table 2**

**More vulnerable**

- Hospitals.
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non–residential uses for health services, nurseries and educational establishments.
- Landfill and sites used for waste management facilities for hazardous waste[6].
- Sites used for holiday or short-let caravans and camping, *subject to a specific warning and evacuation plan.*[7]

**NPPF Table 3**

**Table 3: Flood risk vulnerability and flood zone 'compatibility'**

| | Flood risk vulnerability classification (see table 2) | Essential infrastructure | Water compatible | Highly vulnerable | More vulnerable | Less vulnerable |
|---|---|---|---|---|---|---|
| Flood zone (see table 1) | Zone 1 | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Zone 2 | ✓ | ✓ | Exception Test required | ✓ | ✓ |
| | Zone 3a | Exception Test required | ✓ | × | Exception Test required | ✓ |
| | Zone 3b functional floodplain | Exception Test required | ✓ | × | × | × |

**4.0 Summary**

4.1 The proposed development meets the requirements of the NPPF if it can be shown that the development as a whole meets the exception test.

**5. Exception Test**

5.1 Notwithstanding the above however, the exception test requires two conditions to be met before it can be said to have been passed,

A. The site specific FRA must show the development is safe from flood.

i) The North Lincolnshire SFRA contains critical flood levels for this area and site in particular therefore, this critical flood level which is a fluvial 1 in 100 return period and a tidal 1 in 200 return period with allowances for climate change. Refer Table 1 below.

**Table 1 - Critical Flood Level (mAOD)**

| Water Level | Ground Level |
|---|---|
| 4.10 | 4.00 – 4.60 |

This table shows the critical flood level for the site is 4.1m AOD. This means that during a 1:100 year event with allowance for climate change water level at the site could be expected to reach 4.1m AOD.

ii) The site level is 4.08m AOD as is shown on the block plan, this would mean that during a 1:100 year plus allowance for climate change event that the site would be 20mm below any flood level from this source.

iii) It is therefore proposed that the FFL (finished floor level of the new dwellings be raised to 4.4m AOD which would provide a freeboard of 300mm above the critical flood level of 4.1m AOD and in thus be in accordance with Environment Agency recommendations.

iv) The development will therefore be safe from flood.

B. The development provides wider sustainability benefits to the community that outweigh flood risk.

i) This development will benefit the community of West Butterwick in the following ways and thus show that it will indeed provide wider sustainability benefits to the community, notwithstanding the fact that the development will be safe in terms of Flood Risk and is on previously developed land.

a) *Social*
1. The construction of the new dwellings will provide employment for local tradesmen of all ages thus local skills will be enhanced, local employment created, increased opportunities for the employment of apprentices thus improving chances of longer term employability.
2. The new dwelling will be within walking distance of all local facilities this will thus promote a healthier community.
3. The dwellings will be designed in accordance with Police guidelines to minimise possible burglaries and thus reduce crime in the area.
4. The site is closely located to all local facilities and amenities including bus routes. It will therefore help to create and utilise a thriving local community and atmosphere.
5. This will also accord to the NPPF in promoting rural business to provide thriving rural communities.

b) -*Environmental*
1. The development of the proposed dwellings will make the best use of this site of previously developed land.
2. The new proposed dwellings will be carbon efficient and have lower than average emissions thus making a contribution to the improvement of air quality.

3. The site is within walking distance of all facilities and amenities plus local bus routes thus this will contribute to the reduction in private vehicle use and emissions.
4. All additional housing within rural villages will contribute to the use of public transport and thus additional demand will enhance it's long term provision.
5. The houses will be built to Code 3 level Sustainable Housing which is above the required level of energy efficiency required by the Building Regulations and thus further contribute to a reduction in the carbon footprint of new housing provision..
6. All materials used in the construction of the building will be sourced locally thus promoting sustainability in the construction process.

c) *Economic*
1. Construction of the new dwellings will provide much needed new jobs and play a part in small degree in the governments stated intention to build the country out of recession.
2. All local rural villages need vibrant centers and the construction of a new family dwellings will bring additional children into the village which will promote use of the local school, shops, doctor's surgery etc.
3. The construction of new dwellings will not only bring jobs to the local tradesmen but also have the spinoff of increased orders for building materials, Kitchen fittings, iron mongery, glazing etc, thus securing employment in jobs not immediately related to the site.

**6. Mitigation in time of flood – Flood Resilient Construction**

6.1 Ground floor level **FFL will be 4.4m AOD** First Floor level will be 7.0m AOD

6. 2 Flood proofing measures will be used to a height of at least 1200mm above Finished GFL to 5.6m AOD see below.

| Feature | Considerations To Improve Flood Proofing |
|---|---|
| External Walls | Careful consideration of materials: use low permeability materials to limit water penetration if dry proofing required. Avoid using timber frame and cavity walls. Consider applying a water resistant coating. Provide fitting for flood boards or other temporary barriers across openings in the walls. |
| Internal Walls | Avoid use of gypsum plaster and plasterboards; use more flood resistant linings (e.g. hydraulic lime, ceramic tiles). Avoid use of stud partition walls. |
| Floors | Avoid use of chipboard floors. Use concrete floors with integrated and continuous damp proof membrane and damp proof course. Solid concrete floors are preferable; if a suspended floor is to be used, provide facility for drainage of sub-floor void. Use solid insulation materials. |
| Fitting, Fixtures and Services | If possible, locate all fittings, fixtures and services above design floor level. Avoid chipboard and MDF. Consider use of removable plastic fittings. Use solid doors treated with waterproof coatings. Avoid using double-glazed window units that may fill with flood water. Use solid wood staircases. Avoid fitted carpets. Locate electrical, gas and telephone equipment and systems above flood level. Fit anti-flooding devices to drainage systems. |

## 7. Flood Warning

7.1 The Environment Agency have a range of Flood Warnings available and my clients will subscribe to them, please refer below.

**Appendix 1 – Environment Agency Flood Warnings**

| | |
|---|---|
|  **FLOOD ALERT** | **Flooding is possible. Be alert. Used two hours to two days in advance of flooding.**<br>• Be prepared to act on your flood plan<br>• Prepare a flood kit of essential items<br>• Monitor local water levels and the flood forecast on the EA website |
|  | **Flooding is expected. Immediate action required. Used half an hour to one day in advance of flooding.**<br>• Move family, pets and valuables to a safe place. Turn off gas, electricity and water supplies if safe to do so.<br>• Put flood protection equipment in place. |
|  **SEVERE FLOOD WARNING** | **Severe Flooding. Danger to life. Used When flooding poses a significant threat to life.**<br>• Stay in a safe place with a means of escape.<br>• Be ready should you need to evacuate from your home.<br>• Co-operate with the emergency services.<br>• Call 999 if you are in immediate danger. |
| **Warnings no longer in force** | **No further flooding is currently expected in your area. Used when river or sea conditions begin to return to normal.**<br>• Be careful. Flood water may still be around for several days.<br>• If you've been flooded, ring your insurance company as soon as possible. |

## 8. Evacuation Planning (in accordance with EA/DEFRA Report FD 2321)

8.1 From table 12.2 of the above report "Danger to people from breaching relative to distance from defence" please see below table 12.2 from which it is plain that if there is a breach inundation there will be a danger for some as the site is just over 500m from the River Trent the head above the flood plain is about 0.98m.

8.2 However, the property is outside of the "Rapid Inundation Zone" as identified in SFRA. Breach modeling was carried out as part of the Strategic Flood Risk Assessment prepared for North Lincolnshire Council. This identified that the high tide level (1 in 200 year event) was 5.88m AOD and that the average ground level adjacent to the flood defences was 4.9m AOD giving the head above floodplain of a little less than a metre.

8.3 The risk of Breach failure can be assessed by adopting the simple approach as is recommended by the DEFRA Report utilising the table below. The site is some 510m from the River Trent and thus there is a danger for some assessment.

8.4 From the SFRA it is estimated that there will be a 6 hour max window for the Environment Agency to provide warnings of flood. This is an adequate amount of time for occupants to be able to either vacate the property and put into place their evacuation plan, please refer below.

**Table 12.2 - Danger to people from breaching relative to distance from defence**

| Distance from breach (m) | Head above floodplain (m) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 |
| 100 | | | | | | | |
| 250 | | | | | | | |
| 500 | | | | | | | |
| 1000 | | | | | | | |
| 1500 | | | | | | | |
| 2000 | | | | | | | |
| 2500 | | | | | | | |
| 3000 | | | | | | | |
| 3500 | | | | | | | |
| 4000 | | | | | | | |
| 4500 | | | | | | | |
| 5000 | | | | | | | |

Key:
- Danger for some
- Danger for most
- Danger for all

8.5 Therefore given that the Environment Agency Flood Warning system has given the required notice and that by visual surveillance of surrounding water levels similar conclusions are reached that an evacuation of the site will be necessary within a decided time span. Then enough time will have been decided upon so as to safely move people to an area of safety.

8.6 The area of safety to which occupants would evacuate to would be to simply remain in their homes (in a first floor escape room) and wait for any flood waters to subside, all new dwellings will be two storeys so providing a safe area at first floor for occupants to safely evacuate to.

8.7 First Floor levels will be at 7.0m AOD

8.8 Alternatively the occupants could evacuate to an area of higher land in Flood Zone 1 see below.

8.9 if following advice from the Environment Agency Flood Warning a decision is reached that evacuation is necessary then two options are available,

Option A – to evacuate to Beltoft which is in Flood Zone 1 this is 2700m away.

Option B – to evacuate within West Butterwick to an area of land higher than the anticipated flood waters above 5.0m AOD, of which there are two proposed locations

i) West Butterwick C of E Primary School at 5.4m AOD and

ii) The Ferry Boat Public House at 5.10m AOD

Both the above are only 400m away from the application site.

Map Showing Option A evacuation route

Map showing Option B evacuation route


SELF ASSESSMNT TOOL TO CHECK THE CONTENTS OF FLOOD/EMERGANCY EVACUATION PLAN

| Detail | Evidenced in Plan? | | | Evidence / Comments |
|---|---|---|---|---|
| | Yes | Partially | No | |
| The flood evacuation / emergency plan is based on an assessment of the flooding risk, which identifies: | | | | |
| • the type of flood risk present (e.g. the extent, depth and velocities of flooding, the routes of flooding, the duration of flood, the worst case flood risk, the potential for a no-notice flood – e.g. breach of flood defences) | | Y | | Indicates three different flooding scenarios, but no specific information about the likely impact and potential hazards (e.g. danger of fast flowing water, displaced manhole covers, contamination etc) . |
| • the availability of the Environment Agency flood warnings for that property / site. | | Y | | It mentions that flood warnings are available, but not that the household will be signed up to them. |
| • a description of the warnings (see appendix 1) and the extent of the advance warning can be given | | | N | Description of the EA warnings are not included (see Appendix 1). |
| • the method of delivery of the EA warnings (phone, text, email or fax) | | | N | |
| • The availability of any flood defences for the property (e.g. door flood barriers) ) and how deployment may affect evacuation routes. | | | N | |

| Detail | Evidenced in Plan? | | | Evidence / Comments |
|---|---|---|---|---|
| | Yes | Partially | No | |
| The flood emergency / evacuation plan allows all residents of a property / site to evacuate to a place of safety before a flood happens, or allows all residents of a property / site to shelter in a refuge on site for the duration of a flood | Y | | | Scenario A allows for an evacuation to a place of safety, and scenario C allows for a shelter on site. |
| Where the decision to evacuate is taken by the occupants, the plan is not reliant on rescue from the emergency services. | | Y | | Scenarios 2 relies on support from the emergency services. |
| The flood emergency / evacuation plan includes information on how to switch off services (water, gas and electricity) prior to evacuation. | | | N | Add prompt with the location of the cut-off valves/switches |
| Off-site places of safety have been assessed and are not at risk of flooding. | | Y | | Assume that 14m AOD is safe from flooding, but not explicitly stated. |
| If the occupants take the decision to evacuate the building the plan documents the shelter arrangements. | | | N | If Humberside Police recommend evacuation, North Lincolnshire Council will normally assist them in providing temporary shelter for evacuees. However, the plan should, ideally, identify shelter arrangements. For example, relocate to [relatives/hotel/village hall] etc. |

| Detail | Evidenced in Plan? | | | Evidence / Comments |
|---|---|---|---|---|
| | Yes | Partially | No | |
| Suitable refuges are provided if there is a risk of a no-notice flood event (e.g. breach of defences) | | Y | | Lack of information on the suitability of refuge – see below* |
| On-site refuges have been risk assessed and would be free from flooding during a worst case flooding scenario and would provide a suitable shelter for the duration of the flooding event. | | | N | No indication given of likely flood depths, duration of flood, or how long residents could remain in refuge. Assumption is await rescue. |
| On-site refuges are provided with appropriate facilities proportionate to the likely duration of the flood (e.g. warmth, provisions, medications, communications) | | | N | Residents are required to take resources with them, rather than store them in the refuge. Will there be time and presence of mind to gather during an inundation event? No indication of heat, light etc. |
| The flood emergency / evacuation plan will operate during all times of the day (e.g. in the middle of the day and the middle of the night), in all weather conditions (rain and cold are usually associated with flooding) and at all times of the year (e.g. in the middle of winter and the middle of summer). | | | N | Not referenced, but Scenario 2 does not seem suited for all times / all weathers, or for a Scenario 2 leading to a scenario 3.<br>Not sure about heat in refuge. |
| Evacuation routes should be clearly stated. | Y | | | |

| Detail | Evidenced in Plan? | | | Evidence / Comments |
|---|---|---|---|---|
| | Yes | Partially | No | |
| The plan contains clear actions to follow in the event of a flood warning being issued. If flood warnings are not available for that area then the plan has identified another clear trigger / alert. | | Y | | There are actions to take, not clear about flood warning issue / receipt.<br><br>(see Appendix 1) |
| The actions / procedures outlined in the flood emergency / evacuation plans can be followed by people of all abilities (e.g. wheel chairs users, the visually impaired) | | | N | |
| If pets are allowed in the property / on site, then they are catered for in the flood emergency / evacuation plan | | | N | |
| The plan is adequate for visitors to the site / property without local knowledge to find the safe route to the designated refuge(s) | | Y | | Use of the term 'to the north' and 'travelling north along...' may be better written as 'turn left out of the front door' etc. |

| Detail | Evidenced in Plan? | | | Evidence / Comments |
|---|---|---|---|---|
| | Yes | Partially | No | |
| Plan review<br><br>To be fit for purpose, the whole of the contents of the plan must be reviewed annually and the date of the next review clearly stated.<br><br>Additionally, the plan should document the date the plan owner contacted the Environment Agency Floodline Service on 08459881188 or http://environment-agency.gov.uk to check on any changes to the flood risk to the property | | | N | No indication in the plan |
| Plan awareness<br><br>All people in the premises must be made aware of the plan and the actions they should take on receipt of flood warnings or should flooding occur. | | | N | No indication in the plan (See Appendix 1) |
| Plan testing<br><br>The plan should be tested periodically and a record kept of the date of the test. | | | N | No indication in the plan |

**9. Sequential Test**

9.1 The NPPF Technical Guide does as referred to in section 1 advises that LPA's direct development to areas of lower risk of flooding first.

9.2 Within West Butterwick at the present time there are no alternative plots available which are in better class flood zone.

9.3 I therefore consider it is reasonable to conclude that due to the lack of alternative sites the Sequential Test is also passed.

**10. Surface Water Flooding**

10.1 Referring to the Environment Agency map and risk advice below it can be seen the site is in a Very Low risk area in terms of surface water flooding.

**Surface Water Flood Map**

## 11. Conclusion

11.1 I therefore consider that

1) the development is safe in terms of flood risk and is allowable as a more vulnerable use a) FFL will be at 4.4m AOD above the critical flood level of 4.1m AOD. b) The evacuation plan has a place of safety at First Floor Level of 7.0m AOD c) The NPPF requires a development to be safe but does not specify what is acceptable, d) The SFRA 2011 (Appendix F) sets out a range of measures that may be considered including a place of safety able to accommodate occupants of the development safely for the duration of the flood in this case it is at FF Level or alternatively escape routes A or B.

2) That the development passes the exception and sequential tests.

11.2 That the risk of flooding from surface water is very low.

11.3 Therefore in conclusion the proposed development meets and passes all relevant tests in respect of Flood Risk and should therefore not be refused on these grounds.

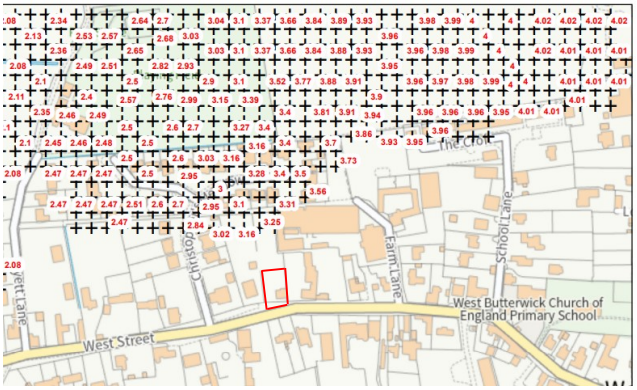
## 12. Environment Agency Consultation Response - reply

12.1 The Environment Agency responded to the above FRA on 11 February 2022 with an objection to it.

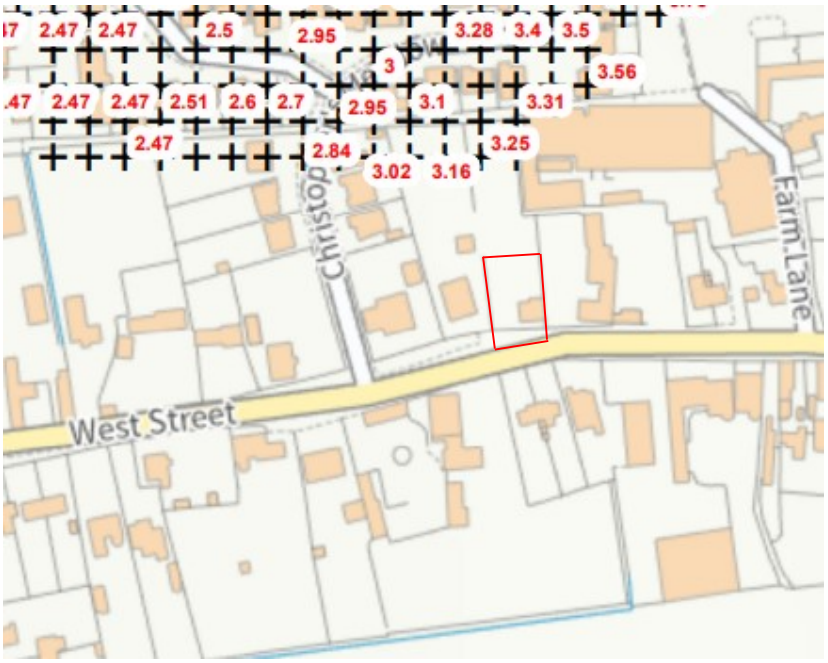
12.2 A request was therefore made under the Freedom of Information Act 2000 to the Environment Agency for Product 4 and Product 8 Flood Risk Assessment Data, full data was provided for Product 4. However the Environment Agency state that they do not hold Product 8 data and are therefore unable to supply same.

12.3 From the data supplied it can be seen that the site is unaffected by a breach given a 1:200 year + CC occurrence.

**Breach Modelled Extents Map centred on West Street, West Butterwick**
**Ref: [EMD254661]**



Same Map smaller scale




12.4 It is evident therefore that from the above maps that the site would not be affected by a breach, in addition the closest flood level from a breach will be over 1.2m lower than the proposed FFL at 4.4m AOD.

12.5 Please see Section 6 of the FRA – Flood Resilient Construction for full details to be applied in the building of these properties. In addition Flood Angel Nautilus barriers will be incorporated to both front and rear doors of each property.

12.6 I therefore consider the concerns of the Environment Agency have now been addressed.