



YEW TREE ASSOCIATES

LAND, PLANNING AND DEVELOPMENT CONSULTANTS

**FLOOD RISK ASSESSMENT**

**SEQUENTIAL TEST AND EXCEPTION TEST**

**FOR**

**THE ERECTION OF RESIDENTIAL DEVELOPMENT**

**AT**

**THE LAND AT THE REAR OF 5–17 COMMERCIAL STREET**

**NORTON**

**FOR**

**MR P SEDMAN**

20.08.14

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**1. Introduction**

1.1 This flood risk assessment is to accompany a detailed planning application for the development of a site for residential use at land to the rear of 5 – 17 Commercial Street, Norton, Malton.

**2. Site Location and Description**

2.1 The site is roughly rectangular in shape and is some 0.4952 ha (1.224 acres) in area and it lies to the north of Commercial Street, Norton to the rear of No's 5 to 17 Commercial Street.

2.2 The site comprises two parts. The first being the premises of the former ATS tyre depot to the east which includes two workshops on the northern and eastern boundaries with associated hard standing to the front. The second is land to the west and to the rear of No's 5 to 15 Commercial Street, which includes the formal garden areas of the adjacent properties together with a more natural area of self- planted shrubs and trees. The site is bounded to the north by the York Scarborough railway line, to the west by residential development, to the south by a row of terraced properties in a mix of commercial and residential uses and the east by partly commercial properties, but mainly scrubland. The whole site is shown edged red on Fig. 1 below.



**3. Proposals**

3.1 The proposal is for the erection of residential development comprising 61 dwellings (See Drawings submitted with the Detailed planning Application for the site).

**4. Flood Risk**

4.1 In the consideration of developing sites where there is a possibility of flood risk we turn to the National Planning Policy Framework (NPPF) for guidance. This was issued on 27<sup>th</sup> March 2012 and replaced PPG 25.

4.2 At paragraph 103 of the NPPF it states that:-  
'103. When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:

●●within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and

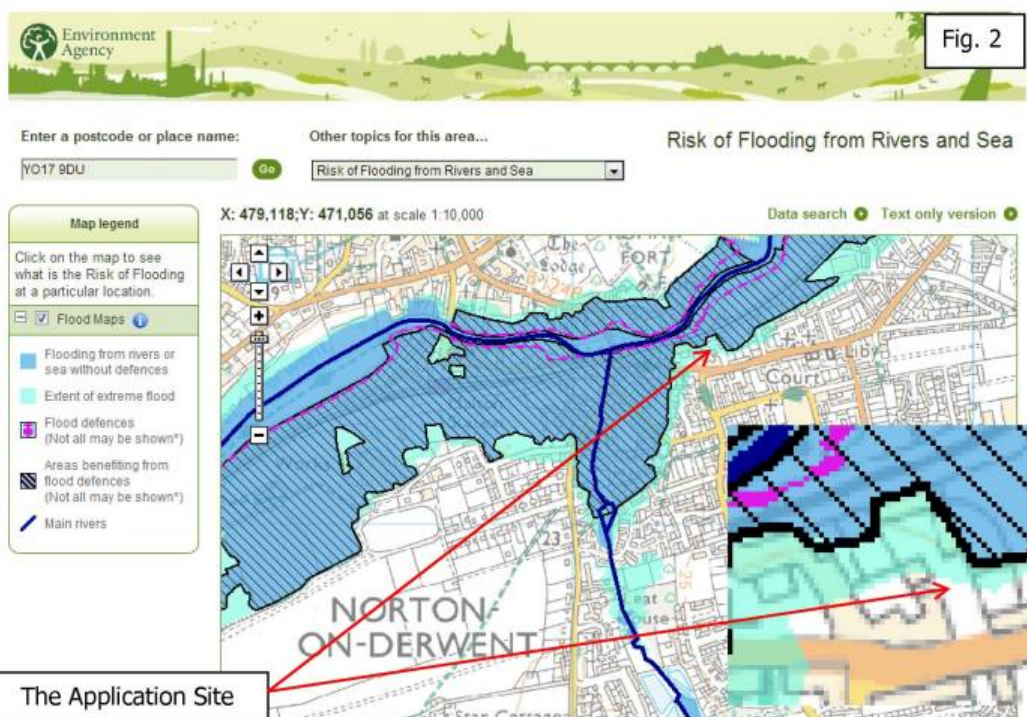
●●development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.'

4.3 To determine the extent of the potential flooding risk, we need to examine the Environment Agency's Flood Map.

4.4 The results of this are now provided as follows.

4.4.1 Environment Agency's Flood Map

The site is shown as within three flood zones as can be seen on the Environment Agency Flood Map see Fig.2 below.



4.4.2 The Environment Agency define these areas as follows

Clear Area

'Clear shows the area where flooding from rivers and the sea is very unlikely. There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year.

*(For planning and development purposes, this is the same as Flood Zone 1, in England only.)'*

#### Light Blue Area-

*'Light blue shows the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000) chance of occurring each year.*

*(For planning and development purposes, this is the same as Flood Zone 2, in England only.)*

#### Dark Blue Area

*'Dark blue shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded: from the sea by a flood that has a 0.5 per cent (1 in 200) or greater chance of happening each year; or from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year.*

*(For planning and development purposes, this is the same as Flood Zone 3, in England only.)'*

#### Hatched Area

*'Hatched areas benefit from the flood defences shown, in the event of a river flood with a 1 per cent (1 in 100) chance of happening each year, or a flood from the sea with a 0.5 per cent (1 in 200) chance of happening each year. If the defences were not there, these areas would be flooded.*

*Flood defences do not completely remove the chance of flooding, however, and can be overtopped or fail in extreme weather conditions.'*

In the case of the light blue area we take the view that this is classed as Flood Zone 2 and in respect of the dark blue/hatched area is classed as Flood Zone 3.

When referring to The National Planning Policy Framework (NPPF) Technical Guidance a different approach is taken for each zone.

To take each in turn:-

#### 4.4.3 Flood Zone 1

The front part of the site where it accesses Commercial Street is in an area which at low probability of flooding as it is outside the floodplain.

#### 4.4.4 Flood Zone 2

Most of the site, the northern part is shown as within Flood Zone 2 and The Environment Agency defines these areas as:-

*'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.'*

- 4.4.5 This is an area where the risk flooding is of medium probability. Dwellings are classed as a more vulnerable form of development in The National Planning Policy Framework (NPPF) Technical Guidance Table 2 and need to pass the sequential test in order to be permitted in Flood Zone 2. This is dealt with later in the report.

4.4.6 Flood Zone 3

The remainder and a small area on the north western boundary of the site falls within Flood Zone 3 and The Environment Agency define these areas as:-

*'an area that has a moderate chance of flooding. The chance of flooding each year is 1.3% (1 in 75) or less, but greater than 0.5% (1 in 200).*

Dwellings are again classed as a more vulnerable form of development in The National Planning Policy Framework (NPPF) Technical Guidance Table 2 and need to pass the sequential test referee to above in order to be permitted in Flood Zone 3 and this is also dealt with later in the report.

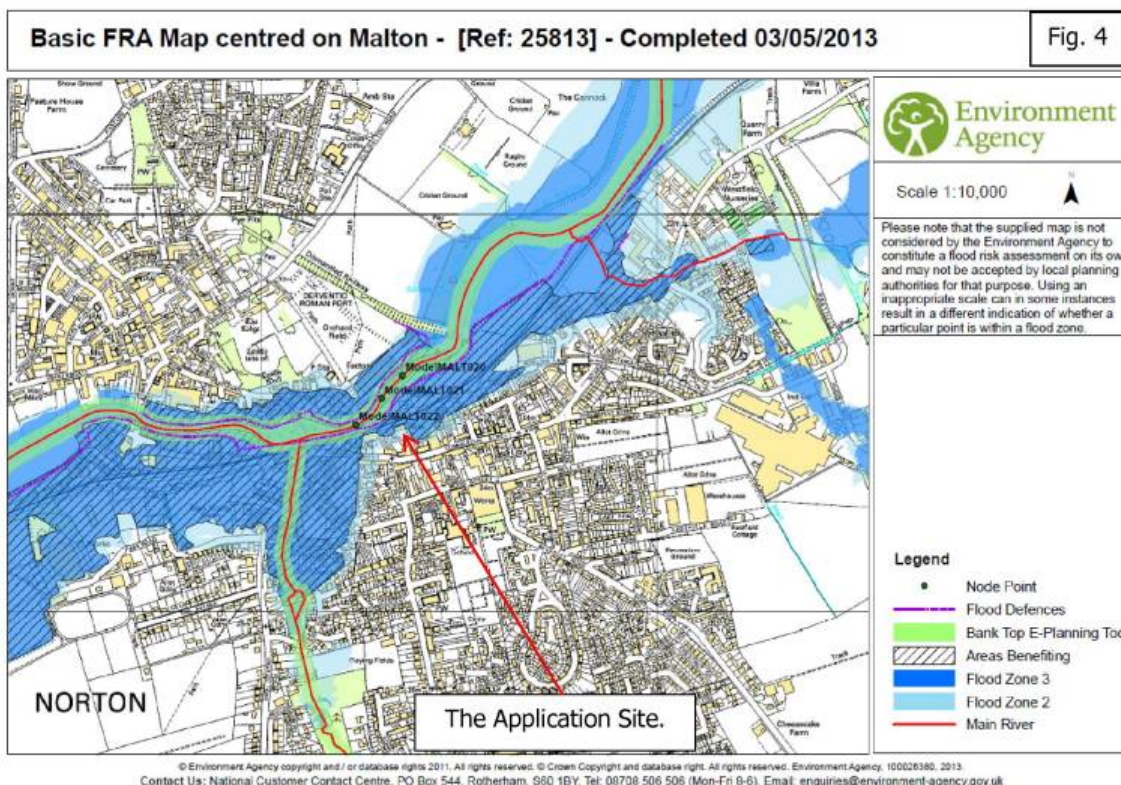
4.4.7 According to the Environment Agency's Model data from the 2009 Malton Data Improvements Study, the following flood levels are predicted (See Fig 3 Below). These node points are in mAOD and are shown on the map at Fig 4 below. The 101 return period is the 1 in 100 year plus climate change scenario.

NodePointName	ReturnPeriod	LevelValue	FlowValue
ModelMALT020	5	18.18	83.08
ModelMALT020	10	18.47	95.62
ModelMALT020	25	18.82	112.9
ModelMALT020	50	19.26	135.4
ModelMALT020	75	19.27	135.4
ModelMALT020	100	19.54	149.2
ModelMALT020	101	19.92	171.4
ModelMALT020	200	19.7	157.5
ModelMALT020	1000	20.35	219.4
ModelMALT021	5	18.16	83.05
ModelMALT021	10	18.45	95.61
ModelMALT021	25	18.79	112.9
ModelMALT021	50	19.24	135.4
ModelMALT021	75	19.24	135.4
ModelMALT021	100	19.51	149.2
ModelMALT021	101	19.89	171.6
ModelMALT021	200	19.67	157.5
ModelMALT021	1000	20.3	225.7
ModelMALT022	5	18.16	83.04
ModelMALT022	10	18.44	95.61
ModelMALT022	25	18.79	112.9
ModelMALT022	50	19.24	135.4
ModelMALT022	75	19.24	135.4
ModelMALT022	100	19.51	149.2
ModelMALT022	101	19.89	173.9
ModelMALT022	200	19.67	157.4
ModelMALT022	1000	20.3	233.5

Fig. 3

levels are in mAOD

101 = 1 in 100 year plus climate change scenario



4.4.8 In the light of the above information, it is reasonable to propose a minimum ground floor level of the 20.5m AOD for the new properties, which is at 200mm above the 1 in 1000 year predicted flood level.

4.4.9 In addition it must be noted that the proposed scheme involves the removal of two existing buildings on the site which currently occupy some 556 sq. m within the flood zone areas of the site which equates to some cubic metres of flood storage capacity. Furthermore, the proposed design of the scheme proposes that the new building will have ground floor uses that will allow inundation in the event of a flood. In essence the scheme will therefore result in a net increase in flood storage capacity to the benefit of the local area.

4.4.10 In the light of parts of the site lying in both Flood Zones 2 and 3 we therefore apply a Sequential Test to the site as follows.

**5. Sequential Test**

5.1 In general terms the Sequential Test should be applied to demonstrate that there are no reasonably available sites in the area with a lower probability of flooding that would be appropriate for this type of development. To demonstrate the case for the application site we consider the following:-

- (i) The Area of Search Used to Assess Alternative Sites
- (ii) Identification of Alternative Sites in the Area of Search
- (iii) Assessment and Explanation of Whether Alternative Sites at a Lower Flood Risk Level are Reasonably Available

To take each in turn:-

5.1.1 Area of Search

In the light of the nature of the development being most suitable in the urban area, the most reasonable and relevant area of search is defined as the town envelopes of Malton and Norton as shown in the Council's Strategic Housing Land Availability Update 2012 as Principle Service Centre.

5.1.2 Alternative Sites

In identifying reasonably available alternative sites, we consider only those within the development limit of the adopted Ryedale Local Plan and that meet the functional requirements of the proposed development in the urban area at a lower flood risk level and as such we refer to the Council's Strategic Housing Land Availability Assessment (SHLAA) Update 2012. (See Fig.3 below). The Flood Risk Zones are taken from the Environment Agency's Flood Map for Norton.

Sites 512 and 198 are missing from the table in Fig. 5, but they have been included in the assessment which follows.

5.1.3 The following table (Fig. 6) refers to (Fig. 5) above and provides information gathered on thirteen relevant sites identified in the SHLAA from the SHLAA 2009 and Update 2012, Ryedale Local Plan and the Council's Planning Application Register.

Fig. 5

<b>SHLAA Site No</b>	<b>Flood Risk Zone</b>	<b>Planning Status In Adopted Ryedale Local Plan</b>	<b>In Dev. Limits</b>	<b>Site Capacity</b>	<b>Category</b>	<b>Deliverability</b>	<b>% Greenfield</b>
<b>Malton</b>							
2	3(a) (50%+)	Area Liable to Flood	100%	36	3	Not Deliverable	0%
234	1 (90%+)	Residential Site Completed	100%	40	1	0-5 yrs.	60%
235	1 (90%+)	Leisure	100%	67	2	5+yrs	100%
240	1 (90%+)	OPP for Retail Use & Car Park	100%	16	2	5+yrs	0%
457	1 (90%+)	App for Retail Use Pending	100%	12	2	5+yrs	0%
275	1 (90%+)	Pt. Leisure Pt. Unallocated	0%	17	1	0-5yrs	100%
<b>Norton</b>							
113	3(a) (50%+)	Pt. Leisure Pt. Unallocated Pt. Area Liable to Flood	100%	326	3	Not Deliverable	50%
259	1 (90%+)	Unallocated	100%	21	2	5+yrs	0%
430	3(a) (50%+)	DPP for Retail Use	100%	29	3	Not Deliverable	0%
431*	3(a) (50%+)	Area Liable to Flood	100%	30	3	Not Deliverable	0%
433	3(a) (50%+)	Area Liable to Flood	100%	45	3	Not Deliverable	0%
512	1 (90%+)	Unallocated	100%	20	1	0-5yrs	0%
198	1 (90%+)	Unallocated	100%	18	1	0-5yrs	0%

\* The application site is identified as being part of Site 431.



5.1.4 Assessment of Alternative Sites

In assessing the above sites we take account of the fact that the Council have acknowledged that they currently have a shortfall in their 5 year housing supply. In addition as the new Ryedale Plan Sites Document is at an early stage and there has been no consultation as yet on preferred sites due to the outcome of the Local Plan Strategy being still awaited. Moreover, an examination into the Sites Document will not take place until sometime in 2014.

5.1.5 Whilst there are significant numbers of potential dwellings within the total of the SHLAA sites, it is by no means certain that all of these will be allocated for housing in the eventual the Local Plan. We submit therefore that at this stage the decisions on the acceptability of new sites for housing in the short term must be restricted to current adopted national and local planning policy.

5.1.6 Our terms of reference are therefore limited to the Adopted Ryedale Local Plan designations and the requirement to consider brownfield sites in preference to greenfield sites for development as required by the national NPPF. Whilst we appreciate that the Council have granted recently a number of planning permissions for residential development on greenfield land outside development limits as a result of the Council's 5-year housing provision shortfall, we still maintain that brownfield land development should be the priority for new housing sites.

5.1.7 Our assessment of the various SHLAA sites is made in the light of the above position and it as follows:-

To take each in turn.

**Malton**

Site 2.

This brownfield site and lies 50% in Flood Zone 3a within the Development Limit and is comparable to the application site. The non deliverable designation is primarily the Flood Zone category. Whilst we would accept that on the basis that not all the greenfield sites proposed in the SHLAA that this site could be developed with appropriate flooding mitigation measures, we see this site as less preferable to the application site due to the its bad neighbour constraint and that that it has a higher Flood Zone designation.

Site 234.

This a brownfield site in Flood Zone 1 within the Development Limits on which a residential development has been recently been completed and is therefore not available. The site should therefore be discounted.

Site 235.

This site is currently greenfield and mostly within Flood Zone 2 within the Development Limits. However, it is currently an allocated area of open space which is well located to serve the local area and should be retained. The site is also identified as being only available in the 5+ Year period, whereas the application site is available immediately. The site should therefore be discounted.

Sites 240

This is a brownfield site mostly in Flood Zone 1 which has recently been granted Outline Planning Permission on appeal for a Retail Use and Car Park. This site is clearly not available as the intentions of the owners are clear and should therefore be discounted

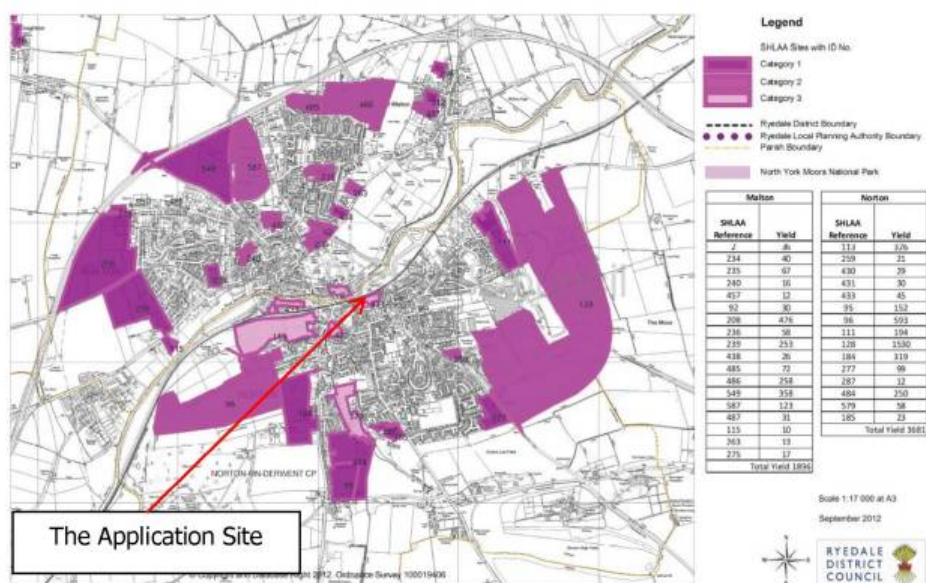
**Site 457**

This is a brownfield site mostly in Flood Zone 1 in the Development Limits and unallocated on which there is currently a planning application pending a Retail Use. This site is clearly not available as the intentions of the owners are clear and should therefore be discounted.

**Site 275**

This site is mostly in Flood Zone 1, unallocated, greenfield, allocated partly for leisure and outside the Development Limits. In addition it forms part of Malton School Playing fields which are a valuable resource to local. Its development would also be constrained by traffic noise from the A64 bypass. Whilst the site is in a lower flood zone it should be discounted for the reasons referred to above.

Malton and Norton SHLAA Sites



**Norton**

**Site 113**

The site lies 50%+ in Flood Zone 3(a), 50% greenfield, allocated part leisure, part unallocated, part in area liable to flood and undeliverable. In addition, access to the site is severely restricted and for this reason and those referred to above we would submit that the site should be discounted.

**Site 259**

This site is mostly in Flood Zone 1, unallocated, brownfield, inside the Development Limits and not available until 5+ Years. The site is currently occupied by an Elderly Persons Home, which will involve a relocation of the existing residents. The SHLAA states that there is currently no replacement facility is available. Whilst the site is in a lower flood zone it should be discounted as it is not immediately available.

**Site 430**

This site is 50% in Flood Zone 3(a), brownfield, within Development Limits and has recently been granted Detailed Planning Permission for a retail use. This site is clearly not available as the intentions of the owners are clear and should therefore be discounted.

Site 433

This site lies 50%+ in Flood Zone 3(a), brownfield, in area liable to flood and undeliverable. In addition, the site is currently occupied by the local bus station and a number of other commercial uses. For the above reasons we would submit that the site should be discounted.

Site 512

This site lies mostly in Flood Zone 1, unallocated, brownfield, unallocated, and inside the Development Limits. Whilst the site is in a lower flood zone, it should be discounted as we are aware that the site is the subject of a planning application for residential development which is currently awaiting validation.

Site 198

This site lies mostly in Flood Zone 1, unallocated, brownfield and inside the Development Limits. Whilst the site is in a lower flood zone, it has a very restricted access which will cause detriment to the neighbouring properties should it be developed.

Site 431

This site, which includes the application site, lies 20% in Flood Zone 1, 65% in Flood Zone 2 and 15% in Flood Zone 3(a), is brownfield, allocated as an area liable to flood and is not deliverable according to the SHLAA. However, of the other twelve sites assessed above, we consider that it is preferable in that it is immediately available, it is brownfield, inside the Development Limits, in a very sustainable location and we have a deliverable solution to overcome the Flood Zone designation.

In addition, as we have stated above, the Council have a shortfall in their 5 year housing supply in the District which we believe this site will contribute towards and assist in resolving. We therefore submit that the development of the site is acceptable from a flood risk standpoint.

5.1.8 In further support of the application the following should also be considered.

5.2 Current Planning Policy

5.2.1 Current Planning policy supports the development of the application site for residential development as is set out in the Planning Supporting Statement submitted with the planning application for the proposal.

5.3 Conclusion

5.3.1 In conclusion we consider that the Sequential Test for the construction of 61 No dwellings at land to the rear of No's 5-17 Commercial Street, Norton, Malton has been robustly applied and that the test has been passed.

**6. Exception Test**

6.1 The need for an Exception Test is demonstrated by reference to NPPF Technical Guidance as follows:-

6.2 As small part of the site lies in Flood Zone 3(a) we therefore turn to paragraph 5 Table 1 (See Fig.7 below) of the NPPF Technical Guidance where it states that:-

Table 1: Flood zones

*(Note: These flood zones refer to the probability of river and sea flooding, ignoring the presence of defences)*

<b>Zone 3a - high probability</b>	Fig. 7
<b>Definition</b> 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.	
<b>Appropriate uses</b> 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.	
<b>Flood risk assessment requirements</b> All development proposals in this zone should be accompanied by a flood risk assessment.	
<b>Policy aims</b> In this zone, developers and local authorities should seek opportunities to: <ul style="list-style-type: none"><li>• reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage systems;</li></ul>	

- 6.3 The nature of the proposed development is buildings used for dwelling houses and as such is classified in Table 2 in NPPF Technical Guidance (See Fig.8 below) as a 'more vulnerable' use of land and therefore an Exception Test is required.

Fig. 8

Table 2: Flood risk vulnerability classification

<p><b>Essential infrastructure</b></p> <ul style="list-style-type: none"> <li>• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.</li> <li>• Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.</li> <li>• Wind turbines.</li> </ul>
<p><b>Highly vulnerable</b></p> <ul style="list-style-type: none"> <li>• Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding.</li> <li>• Emergency dispersal points.</li> <li>• Basement dwellings.</li> <li>• Caravans, mobile homes and park homes intended for permanent residential use<sup>3</sup>.</li> <li>• Installations requiring hazardous substances consent<sup>4</sup>. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as "essential infrastructure")<sup>5</sup>.</li> </ul>
<p><b>More vulnerable</b></p> <ul style="list-style-type: none"> <li>• Hospitals.</li> <li>• Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.</li> <li>• Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.</li> <li>• Non-residential uses for health services, nurseries and educational establishments.</li> <li>• Landfill and sites used for waste management facilities for hazardous waste<sup>6</sup>.</li> <li>• Sites used for holiday or short-let caravans and camping, <i>subject to a specific warning and evacuation plan</i>.<sup>7</sup></li> </ul>
<p><b>Less vulnerable</b></p> <ul style="list-style-type: none"> <li>• Police, ambulance and fire stations which are <i>not</i> required to be operational during flooding.</li> <li>• Buildings used for shops, financial, professional and other services.</li> </ul>

6.4 Development within these areas may only be considered following application of the Sequential Test.' See above. Table 3 of NPPF Technical Guidance states that an Exception Test is required for 'More Vulnerable' developments in Flood Zone 3. (See Fig. 9 below).

Fig. 9

**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	✓	x	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	x	x	x

**Key:** ✓ Development is appropriate.  
 x Development should not be permitted.

**Notes to table 3:**

This table does not show:

- a. the application of the Sequential Test which guides development to Flood Zone 1 first, then Zone 2, and then Zone 3;
- b. flood risk assessment requirements; or
- c. the policy aims for each flood zone.

- 
- 6.5 We therefore now provide evidence of mitigation measures as required by Paragraph 103 of NPPF referred to above to prove that the Exception Test has been passed.
  - 6.6 To pass the exception test the development is required to -
    - a) provide wider sustainability benefits
    - b) be located on previously developed land
    - c) be safe from flooding, without increasing flood risk elsewhere.
  - 6.7 As required by a) and b), the development would de-contaminate the site, improve outlook for the occupants of surrounding buildings, make better use of a brownfield site, provide residential development, including affordable dwellings in the town centre and be constructed to BREEAM very good standards, as such there would be sustainability benefits. The site is also previously developed land.
  - 6.8 However, to satisfy item c) we need to demonstrate by the following information that the site will be safe from flooding without increasing flood risk elsewhere.
  - 6.9 In the most recent flood event in Autumn 2012 this area did not flood due to the existence of the Malton and Norton Flood Defences and the Malton - Scarborough railway line.
  - 6.10 If the Flood Defences were over topped, water would either enter the site directly from the River Derwent over the Malton - Scarborough railway line to the north or directly from Commercial Street to the south.

- 6.11 The Environment Agency have provided information referred to above for flooding within this area which consists of modelled flood levels if the defences were to fail.
- 6.12 It has already been noted above that in the recent flood event in November/December 2012, the site was not affected by flooding.
- 6.13 A topographical survey to Ordnance Survey levels has been undertaken and this is attached at Appendix 2 of this report. This shows that the general levels of the site range between 18.6m AOD on the site's northern boundary adjacent to the railway line to 21.31m AOD at the site entrance on the southern boundary.
- 6.14 It has already been noted above that the two existing buildings on site are to be demolished to make way for the proposed development which together would increase the flood capacity of the site by some 1305 cubic metres.
- 6.15. **Alleviation Measures**  
The projected 1 in 100 year plus climate change level of 19.51m AOD is a maximum of some 0.91m AOD above the existing ground levels of the northern most part of the site. The southern part being a maximum of some 1.80m AOD above. The 1 in 1000 year plus climate change level is 20.3m AOD and is 1.7m AOD above the northern half of the site and 1.10m AOD below the southern part of the site.
- 6.16 In the light of the above and as the existing ground levels at the site range between 18.6m AOD and 21.31m AOD it is recommended that the existing ground floor level of the proposed buildings are set a minimum of 200mm above the 1 in 1000 year plus climate change level i.e. 20.5m AOD.
- 6.17 In addition to raising the proposed ground floor level it is also advisable to include all or some of the following techniques to limit the damage to the building if flood water does enter the building:-
- Construct ground floor from solid concrete or suspended concrete floor
  - Construct external walls from masonry without cladding to first floor level
  - Construct interior walls with masonry to first floor level
  - Install water resistant insulation to walls
  - Install a water resistant plaster to ground floor walls
  - Install gas meters at high level within the houses to avoid flood water
  - Install electric consumer box at high level to avoid flood water
  - Feed electrical sockets from first floor and install sockets 600mm above ground floor level if practical
  - Install boiler preferably at first floor level or if impractical, high on wall at ground floor.
- 6.18 **Surface Water Drainage**  
The existing site surface area is of the site is partly non permeable, being concrete. However, we as the new development proposed will take up the whole site area, we don't believe the surface water areas will be significantly different from the existing, but these will be calculated with the appropriate solution and attenuation to achieve 30% reduction in flow rate.
- 6.19. **Safe Access and Egress**  
It is likely that in the absence of over topping of the existing flood defences no flooding would affect the site and access would be via Commercial Street.
- 6.20 If a major flood event were to occur within this area as a result of the failure of the flood defences, then this area would be evacuated by the Environment Agency and Ryedale

District Council. Egress would be via Commercial Street before flood water depths became unsafe or as a worst case scenario, the first floor could be used as a safe refuge as it would be above the 19.51m being the projected 1 in 100 year plus climate change level. An appropriate Flood Plan is attached as Appendix 3 to this report.

6.21 Recommendations

The following recommendations should be incorporated in the construction of the new dwellings and site.

- Floor Levels should be set at 20.5m AOD. and 1.7m higher than the lowest site ground level.
- Flood resilient measures should be incorporated into the fabric of the building.
- The impermeable area of the proposed site will be smaller than the predevelopment site thus reducing surface water run-off.
- An Emergency Flood and Evacuation Plan shown at Appendix 3 is proposed to allow safe evacuation measures to put in place in the event of flooding.

6.22. Conclusions

The site is in Flood Zones 2 and 3a and is protected by the River Derwent Flood Defences. Under normal conditions this site will not flood. However, it may flood in a worst case scenario within a 50-100 year storm event, if the Flood Defences are over topped. Reasonable measures can be put in place to minimise this flood risk which make the site safe for residential use.

6.23 This FRA and Exceptions Test confirm that this site is suitable for residential use with an acceptable flood risk.

**7. Conclusions**

7.1 We submit that this Flood Risk Assessment confirms that this site is suitable for residential use with an acceptable flood risk.

SMN/YTA 1.7.14

Appendix 1 Topographical Survey.

Appendix 2 Emergency Evacuation Plan



EMERGENCY FLOOD WARNING AND EVACUATION PLAN  
FOR LAND  
AT  
THE LAND AT THE REAR OF 5–17 COMMERCIAL STREET  
NORTON  
MALTON

1. WHY DOES THIS PROPERTY NEED AN EMERGENCY FLOOD WARNING AND EVACUATION PLAN?

1.1 This property is located adjacent to the River Derwent. The site is protected from flooding by the River Derwent Flood Defences. In normal circumstances during flood events, the defences will protect properties within this area from flooding. However the Environment Agency considers that the defences provide a 1 in 100 to 1 in 1000 year and 1 in 100 or greater protection against flooding. Therefore this property may be flooded within a flood event exceeding 1 in 100 years. To put this in context, the Environment Agency considers that any property with a flood risk between 1 in 100 years and 1 in 1000 years is at moderate risk of flooding and between 1 in 100 years or greater at a significant risk of flooding.

2. HOW WILL I KNOW IF THIS PROPERTY IS AT RISK DURING FLOODS?

2.1 The most important factor is to know when a flood is likely to affect this property. The Environment Agency provides a flood warning service to householders who are at risk of flooding. They can register with the Environment Agency on their floodline 0845 988 1188. Householders at this property should register with this service.

3. HOW CAN I BE READY FOR A FLOOD?

3.1 It is always prudent to design your own personal flood plan. The Environment Agency provide a template for this which is attached to this plan. This can be completed to help the householder to understand what actions to take in a flood.

4. WHAT IF I NEED TO LEAVE MY HOME?

4.1 The Personal Flood Plan provides advice on what to do in times of flood. In extreme events it may be necessary for the occupants to leave the premises. To do this, a safe route to higher ground should be available. For this property, the route is from the site south to Commercial Street.

A plan of the route is shown below.

## 5. EVACUATION ROUTE



## 6. WHAT IF I CAN'T LEAVE MY HOUSE FOR ANY REASON?

6.1 It is important to leave the premises if you consider that flood levels may affect your house and prevent you from leaving safely. You should also leave if you are advised to do so by the Environment Agency or by Officers of the Ryedale District. However, if the householder cannot leave for any reason, such if flood levels rise quickly and there is no safe exit, then the occupants should make their way to the first floor and use this as a safe refuge. The emergency services should then be contacted to arrange evacuation

## Personal flood plan

Name



**Are you signed up to receive flood warnings?**  
If not call Floodline on 0845 988 1188 to see  
if your area receives free flood warnings.

**Let us know** when you've completed your flood plan by calling Floodline on **0845 988 1188**.  
This will help us learn more about how people are preparing for flooding.

General contact list	Company name	Contact name	Telephone
Floodline	Environment Agency		0845 988 1188
Electricity provider			
Gas provider			
Water company			
Telephone provider			
Insurance company and policy number			
Local council			
Local radio station			
Travel/weather info			

### Key locations

Service cut-off	Description of location
Electricity	
Gas	
Water	

### Who can help/who can you help?

Relationship	Name	Contact details	How can they/you help?
Relative			
Friend or neighbour			

Be prepared for flooding. Act now

## Personal flood plan

## What can I do NOW?



- Put important documents out of flood risk and protect in polythene  Look at the best way of stopping floodwater entering your property  Find out where you can get sandbags  Identify what you would need to take with you if you had to leave your home
- Check your insurance covers you for flooding  Make a flood plan and prepare a flood kit  Identify who can help you/who you can help  Understand the flood warning codes

### What can you do if a flood is expected in your area?

Actions	Location
<b>Home</b>	
1 Move furniture and electrical items to safety	
1 Put flood boards, polythene and sandbags in place	
1 Make a list now of what you can move away from the risk	
1 Turn off electricity, water and gas supplies	
1 Roll up carpets and rugs	
1 Unless you have time to remove them hang curtains over rods	
1 Move sentimental items to safety	
1 Put important documents in polythene bags and move to safety	
<b>Garden and outside</b>	
1 Move your car out of the flood risk area	
1 Move any large or loose items or weigh them down	
<b>Business</b>	
1 Move important documents, computers and stock	
1 Alert staff and request their help	
1 Farmers move animals and livestock to safety	
<b>Evacuation - Prepare a flood kit in advance</b>	
1 Inform your family or friends that you may need to leave your home	
1 Get your flood kit together and include a torch, warm and waterproof clothing, water, food, medication, toys for children and pets, rubber gloves and wellingtons	

There are a range of flood protection products on the market to help you protect your property from flood damage. A directory of these is available from the **National Flood Forum** at [www.bluepages.org.uk](http://www.bluepages.org.uk)

Be prepared for flooding. Act now