



Proposed Residential Development  
Land off Radwinter Road  
Saffron Walden  
Essex

## **Flood Risk Assessment**

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## 1.0 Executive summary

### 1.1 National Planning Policy Framework Summary

1.1.1 The following table is based on National Planning Policy Framework (NPPF) and serves as an executive summary. This executive summary shall not be read in isolation to the main report that follows

<b>NPPF Summary Table</b>		
<b>Item</b>	<b>Summary statement</b>	<b>Report ref</b>
<b>1 Development description and location</b>		
1a	What type of development is proposed and where will it be located? Include whether it is new development, an extension to existing development or change of use.	Mixed use development including residential and commercial on green field site. Section 3.4
1b	What is its vulnerability classification?	Residential – More vulnerable Care Home – More Vulnerable B1 Offices – Less Vulnerable Section 3.4.2
1c	Is the proposed development consistent with the local development documents?	Yes
1d	Please provide evidence that the sequential test and where necessary the exception test has been applied.	Site in flood zone 1 and classified as more and less vulnerable, thus sequential test and exception test need not be applied. Section 4.1.1 4.1.2 and 4.6
<b>2 Definition of the flood hazard</b>		
2a	What sources of flooding could affect the site?	None identified Sections 4.1 to 4.4
2b	For each identified source, describe how flooding would occur, with reference to any historic records wherever these are available.	Not applicable Sections 4.1 to 4.5
2c	What are the existing surface water drainage arrangements for the site?	No formal drainage on site Section 5.1
<b>3 Probability</b>		
3a	Which flood zone is the site within?	Flood zone 1 Section 4.1
3b	If there is a Strategic Flood Risk Assessment covering the site what does it show?	Flood zone 1
3c	What is the probability of the site flooding taking account of the contents of the SFRA and of any further site-specific assessment	Site in flood zone 1 and no other sources of flood sources considered present a risk have been identified
3d	What are the existing rates and volumes of runoff generated by the site?	Green field run off rates and volumes Section 5.1.1

<b>Item</b>	<b>Summary statement</b>	<b>Report ref</b>	
<b>4 Climate Change</b>			
4a	How is flood risk at the site likely to be affected by climate change?	Development with life likely to be in excess of 60 years, thus storm water drainage designed for increase in storm intensities of 30%	Section 5.4.1
<b>5 Detailed development proposals</b>			
5a	Please provide details of the development layout, referring to the relevant drawings.		Appendix B
5b	Where appropriate, demonstrate how land uses most sensitive to flood damage have been placed in areas within the site that are at least risk of flooding.	Not appropriate	
<b>6 Flood risk management measures</b>			
6a	How will the site be protected from flooding, including the potential impacts of climate change, over the developments lifetime?	Site in flood zone 1, climate change not likely to affect zone classification during the lifetime of the development.	
<b>7 Off site impacts</b>			
7a	How will you ensure that your proposed development and the measures to protect your site from flooding will not increase flood risk elsewhere?	On site flood protection provided to cater for 1 in 100 year storm events plus an allowance of 30% for climate change, levels designed to convey overland flows away from buildings.	Section 5.6
7b	How will you prevent run-off from the completed development causing impact elsewhere?	Exceedance contained on site where possible overland flows directed towards the watercourse.	Section 5.6
<b>8 Residual risks</b>			
8a	What flood related risks will remain after you have implemented the measures to protect the site from flooding?	Overland flows in storm design, and maintenance / management of the storm water drainage system	Section 5.6
8b	How and by whom will these risks be managed over the lifetime of the development?	Development in part to be offered for adoption.. Maintenance regime to be established and implemented for the lifetime of the development.	Section 6.0

**Table 1.1**

## 1.2 Site location plan

- 1.2.1 The proposed residential development is located to the east of Saffron Walden at land off Radwinter Road as shown on the location plan below in Figure 1 and enclosed in Appendix A. The proposed development is bound by Radwinter Road to the north, agricultural land to the east and south and commercial development to the west.

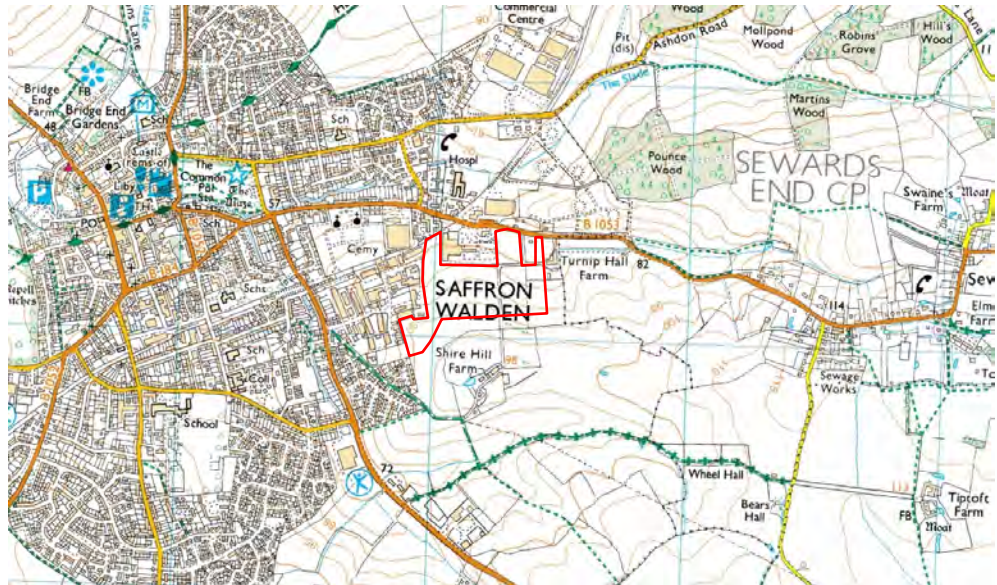


Figure 1.1 Site location plan.



## **2.0 Introduction**

### **2.1 Instructions**

2.1.1 This report is a Flood Risk Assessment for a proposed mixed development comprising predominately residential dwellings with commercial aspects located at land off Radwinter Road, Saffron Walden. The proposed development has a total development area of 14.163ha (141,628m<sup>2</sup>). The National Grid reference for the site is E555129, N238189. This report has been prepared by JPP Consulting Limited acting on instructions received from Manor Oak Homes.

### **2.2 Objectives**

2.2.1 The objective of this report is to advise interested parties in the development to the potential risk of flooding and management of surface water from a drainage perspective. The report both assesses flood risk and describes a strategy to drain the site in respect of surface water drainage.

2.2.2 This report has been prepared to support an application for an outline planning permission.

### **2.3 Reference documents**

2.3.1 This report has been prepared with reference to the following publications:-

- Department for Communities and Local Government (March 2012), *National Planning Policy Framework*
- Department for Communities and Local Government (March 2012) *Technical Guidance to the National Planning Policy Framework*
- HM Government (2010), *The Building Regulations (2010), Drainage and Waste Disposal, Approved Document H*, The NBS, Newcastle Upon Tyne
- Wilson, Bray, Cooper (2004), *Sustainable drainage systems: Hydraulic, structural and water quality advise*, C609, CIRIA, London
- Woods-Ballard et al (2007), *The SUDS Manual*, C697, CIRIA, London
- CIRIA Report C624 *Development and flood risk*
- National SUDS Working Group (2004), *Interim Code of Practise for Sustainable Drainage Systems*,
- Institute of Hydrology (1999), *Flood Estimation Handbook*, Institute of Hydrology, Wallingford
- BS EN 752:2008 *Drain and sewer systems outside buildings. Hydraulic design and environmental considerations*
- BS 8533:2011 *Assessing and managing flood risk in development – Code of Practice*
- CIRIA Report C635 *Designing for exceedence in urban drainage – good practice*

## **2.4 Status of this Report**

2.4.1 This report is considered final based on the information made available at the time.

## **2.5 Report distribution**

2.5.1 This report has been prepared to assist in the design and planning process of the development and normally will require distribution to the following parties in table 2.1, although this list may not be exhaustive:

<b>Report Distribution</b>	
<b>Party</b>	<b>Reason</b>
Client	For information / reference
Developer/Contractor/Project Manager	To ensure strategic information on drainage design are implemented and programmed
Planning department	Potentially to discharge planning conditions
Independent inspectors such as Building Control and Assessors	For compliance with building regulations
Project design team	To progress the design by taking into consideration strategic information contained in this report

**Table 2.5**

## **3.0 Description and history of the site and development proposals**

### **3.1 Location and description of the site**

3.1.1 The proposed residential development is located to the east of Saffron Walden at land off Radwinter Road as shown on the location plan below in Figure 1 and enclosed in Appendix A. The proposed development is bound by Radwinter Road to the north, agricultural land to the east and south and commercial development to the west.

3.1.2 Two alternative masterplans have been submitted as described below:

- 1 up to 230 dwellings, a retirement village comprising 102 beds and up to 1800m<sup>2</sup> gross floor area of B1 Office.
- 2 up to 200 dwellings, a retirement village comprising 102 beds, up to 1800m<sup>2</sup> gross floor area of B1 Office and a school

3.1.3 The proposed masterplans are shown in Appendix B

### **3.2 History of the Site**

3.2.1 We are not aware of any previous development on the application site which is currently utilised as agricultural land.

### **3.3 Geology of the site and ground investigation data**

3.3.1 Inspection of the geological maps for the site indicates that the site is underlain by Lewes Nodular Chalk Formation.

3.3.2 Infiltration testing will be completed prior to detailed design of the development. However, it is considered that infiltration techniques will not be viable due to the constraints likely to be implied on their proximity to foundations due to underlying chalk.

### 3.4 Development proposals and flood risk vulnerability

3.4.1 With reference to Table 2 of Technical Guidance to the National Planning Policy Framework, the proposed development for a residential development, a care home and school would be classified as More Vulnerable whilst the offices would be considered Less Vulnerable.

3.4.2 A copy of Table 2 from the NPPF is replicated below in table 3.2 with the proposed development type highlighted.

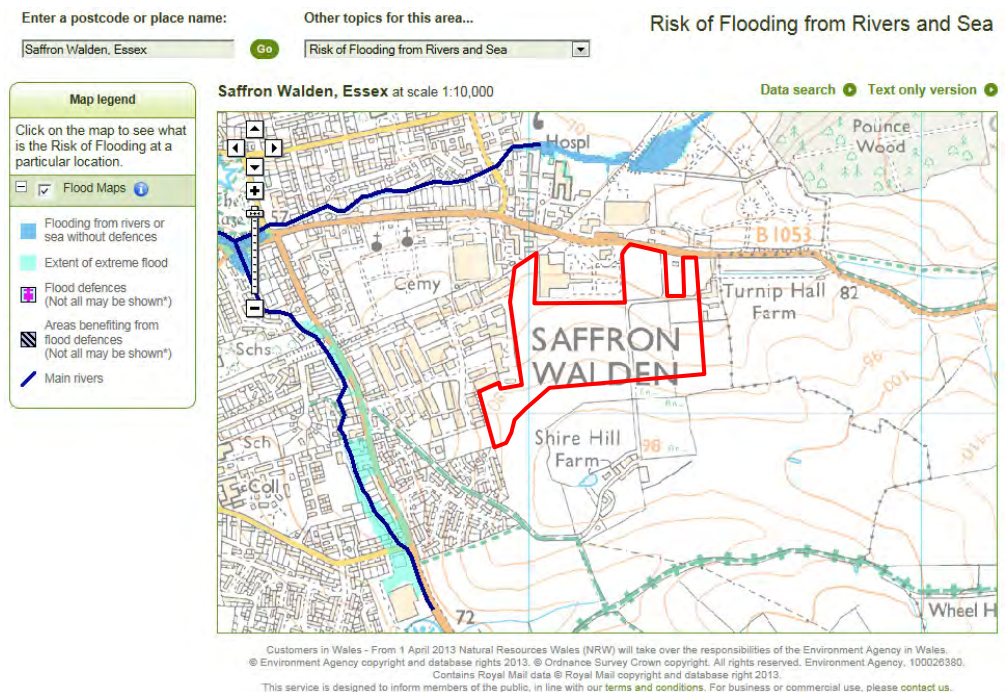
Flood Risk Vulnerability Classification	
Vulnerability	Development types
More vulnerable	Hospitals.  <b>Residential institutions such as residential care homes</b> , children’s homes, social services homes, prisons and hostels  Buildings used for: <b>dwelling houses</b> , student halls of residence, drinking establishments, night clubs, and hotels  Non-residential uses for health services, nurseries and <b>educational establishments</b>  Landfill and sites used for waste management facilities for hazardous waste.  Sites used for holiday or short-let caravans and camping, <i>subject to a specific warning and evacuation plan</i> .
Less Vulnerable	Police, ambulance and fire stations which are not required to be operational during flooding.  Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, <b>offices</b> , general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, and assembly and leisure.  Land and buildings used for agriculture and forestry.  Waste treatment (except landfill and hazardous waste facilities).  Minerals working and processing (except for sand and gravel working).  Water treatment works which do not need to remain operational during times of flood.  Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

**Table 3.4 – Source National Planning Policy Framework - 2012**

## 4.0 Flood risk

### 4.1 Fluvial / Tidal flooding

4.1.1 An extract of the Environment Agency flood risk map for Rivers and Sea is provided below in Figure 4.1. The flood map was extracted from the Environment Agency web site on the 8<sup>th</sup> October 2013. The approximate application site boundary is shown in red. The map indicates that the development site is located within Flood Zone 1 (Low Probability) and as such, the report considers the development to be in Flood Zone 1 and at a low risk of flooding from rivers or the sea.



**Figure 4.1 – Risk of Flooding from Sea and Rivers**  
**Source:** Environment Agency web site – 8<sup>th</sup> October 2013

4.1.2 Table 4.1 is an extract from Technical Guidance to the National Planning Policy Framework that defines Flood Zones. The proposed development which is located within Flood Zone 1 is assessed as having a less than 1 in 1,000 annual probability of river or sea flooding in any year (<0.1%).

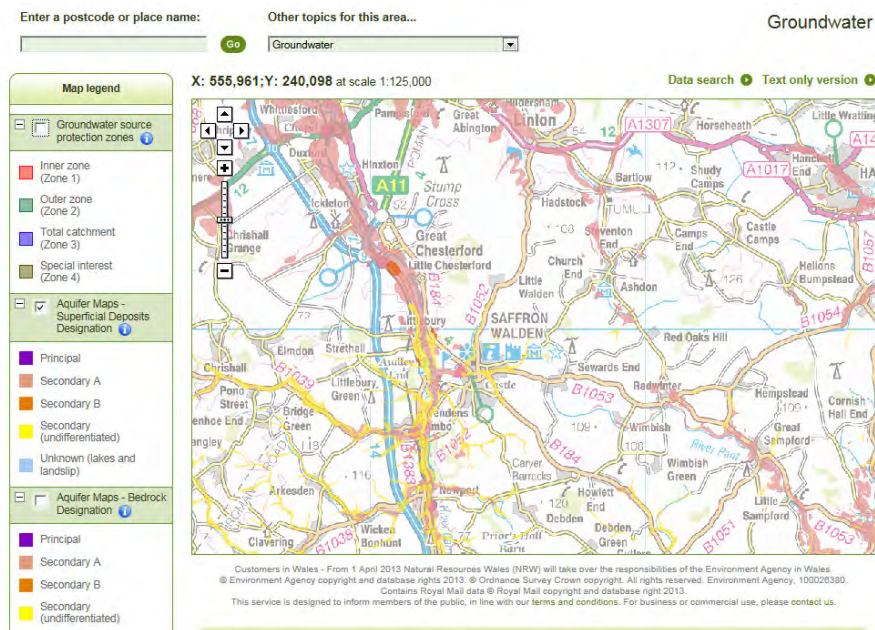
<b>Flood Zone</b>	
<b>Flood Zones</b>	<b>Definition</b>
<b>Zone 1: Low Probability</b>	<b>This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding in any year (&lt;0.1%)</b>
Zone 2: Medium Probability	This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year
Zone 3a High Probability	This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year
Zone 3b The Functional Flood plain	This zone comprises land where water has to flow or be stored in times of flood. SFRAs should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes

**Table 4.1**

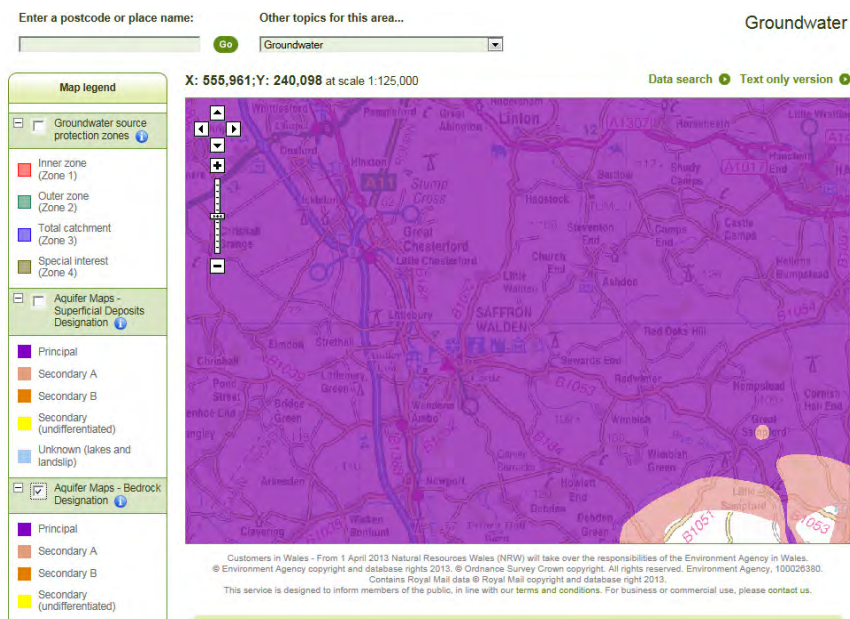


## 4.2 Flooding from groundwater

4.2.1 From information provided on the Environment Agency’s website, see Figure 4.2 and 4.3, the site does not appear to be underlain by an aquifer in the superficial deposits but is underlain by a Principal aquifer within the Bedrock layer. We are not aware of any flooding on the site caused by ground water. We would therefore consider the probability of flooding on the site from groundwater as low.



**Figure 4.2 – Groundwater – Superficial Designation**  
 Source: Environment Agency web site – 8<sup>th</sup> October 2013



**Figure 4.2 – Groundwater – Bedrock Designation**  
 Source: Environment Agency web site – 8<sup>th</sup> October 2013

### 4.3 Flooding from sewers

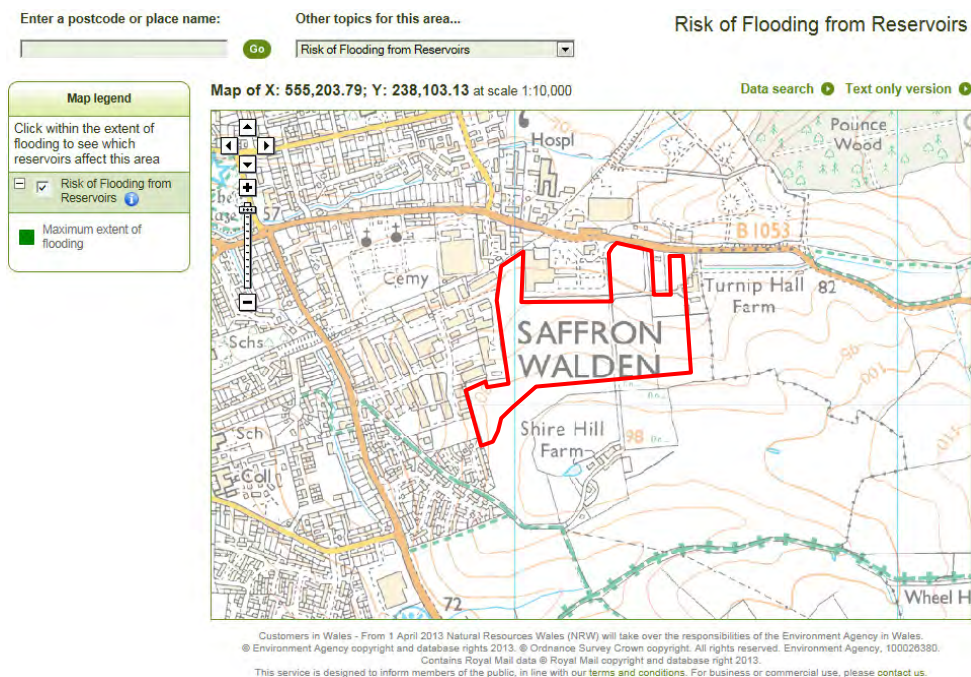
4.3.1 There are no sewers located within the site application boundary. We do not have any records of sewer flooding within the vicinity of the proposed development.

4.3.2 We therefore do not consider the risk of flooding from sewers to be a significant risk to the proposed development.

### 4.4 Flooding from reservoirs, canals and other artificial sources

4.4.1 We are not aware of any canals or artificial water sources that may result in flooding of this site.

4.4.2 An extract of the Environment Agency map 'Risk of Flooding from Reservoirs' is provided below in Figure 4.3. It can be seen that the proposed development site, shown in red, is not at a risk of flooding from reservoirs.



**Figure 4.3 – Risk of Flooding from Reservoirs**  
Source: Environment Agency web site – 8<sup>th</sup> October 2013

### 4.5 Historic flooding

4.5.1 We do not have any records showing historic flood events within the vicinity of the site.



## 4.6 Flood risk vulnerability and flood zone compatibility

4.6.1 Based on the above assessment of the site being located within Flood Zone 1 and classified as a Less and More Vulnerable development and with reference to Table 4.2 (Technical Guidance to the National Planning Policy Framework, Table 3) the proposed development of this site would be considered "appropriate". A copy of Table D3 is presented below highlighting the above. No sequential or exception test will be required.

**Table D3 - Flood Risk Vulnerability and Flood Zone Compatibility**

Flood risk Vulnerability classification	Essential Infrastructure	Water compatibility	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test required	✓	✓
Zone 3a	Exception Test required	✓	X	Exception Test required	✓
Zone 3b	Exception Test required	✓	X	X	X

✓ = Development is appropriate                      X = Development should not be permitted

**Table 4.6**

## 4.7 Access and egress

4.7.1 Access and egress to and from this site in the event of flooding will be via the proposed development's access road which will allow residents of the development to move to higher ground.

## **5.0 Management of surface water**

### **5.1 Current conditions**

5.1.1 The site is currently open and is fully permeable and therefore considered a greenfield site with no existing drainage. Therefore greenfield run calculations shall be used to derive the allowable run off rate from the site.

### **5.2 Storm water drainage outfalls**

5.2.1 It is a requirement of the The Building Regulations (2010), Drainage and Waste Disposal, Approved Document H, to dispose of surface water collected by a development in the following list of priorities:-

1. Infiltration systems where ground condition permit
2. To watercourses
3. To sewers

Each of these is considered separately below:

#### **5.2.2 Infiltration systems**

5.2.2.1 Infiltration testing will be completed prior to detailed design of the development. However, it is considered that infiltration techniques will not be viable due to the constraints likely to be implied on their proximity to foundations due to underlying chalk.

#### **5.2.3 Watercourses/ Main river**

5.2.3.1 There is a watercourse located adjacent to the northern boundary this will be used to serve approximately 60% of the total site area. Due to a north south ridge across the site it is not possible to drain the entire site via this watercourse.

#### **5.2.4 Sewers**

5.2.4.1 The remaining approximately 60% of the total site area which cannot drain to the watercourse will discharge to the surface water sewer located within the north western corner of the site. This sewer after approximately 250m discharges to the watercourse described above.

### 5.3 Storm water drainage strategy

- 5.3.1 Surface water will be attenuated to greenfield runoff rates to ensure that the rate of surface water runoff from the site does not increase as a result of the proposed development.
- 5.3.2 An indicative surface water drainage strategy plan is enclosed in Appendix C for both masterplans. The drawing shows that surface water attenuation can be accommodated on the site and the method of discharge assuming that infiltration techniques are not viable. The detail design parameters of the drainage are described in detail in section 5.4.
- 5.3.3 The detail surface water design will accommodate the use SUDS techniques where possible. Techniques that could be implemented include swales and tanked permeable paving to private areas.
- 5.3.4 Swales will be used where possible as a conveyance method for surface water, however, these can only be utilised in an east / west direction due to the gradient of the site. Swales cannot be accommodated in a north / south direction due to the relative steepness of the site which is generally in excess of 1 in 25.

### 5.4 Storm water drainage design and management

- 5.4.1 Proposals are to design the storm water drainage system to accommodate storms up to the 1 in 100 year event and allow for increase in storm intensities up to 30% (design life of the development assumed at greater than 60 years). Table 5.4 is a copy of from Technical Guidance to the National Planning Policy Framework, Table 5 and is presented below.

**National precautionary sensitivity ranges for peak rainfall intensities, peak river flows, offshore wind speeds and wave heights**

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Peak rainfall Intensity	+5%	+10%	+20%	+30%
Peak river flow	+10%	+20%	+20%	+20%
Offshore wind speed	+5%	+5%	+10%	+10%
Extreme wave height	+5%	+5%	+10%	+10%

**Table 5.4**

- 5.4.3 In addition to the above and where required further surface water management shall be provided to ensure that protection against flooding is provided for a 1 in 100 year storm event plus an allowance of 30% for climate change, in the form of an off line detention basin or similar.

## **5.5 Existing run off rates**

- 5.5.1 To reflect the changes in the near surface geology across the site the Greenfield runoff rates have been calculated. The method used to calculate the green field run off rates is the ICP SUDS and the calculations are presented in Appendix D. As this is an outline application and the final impermeable area is subject to detailed design the runoff rates are stated as a per hectare impermeable area.

- 5.5.2 The green field run off rate, for the application site is:
- |                   |   |
|-------------------|---|
| Soil type         | = 0.35 – determined from underlying strata  |
| SAAR              | = 591 mm – obtained from the FEH parameters |
| Urban             | = 0.000                                     |
| Region number     | = 6   |
| Proposed Imp Area | = 1.00 ha - indicative                      |
| $Q_1$             | = 1.8 l/s/ha                                |
| $Q_{bar}$         | = 2.1 l/s/ha                                |
| $Q_{30}$          | = 5.0 l/s/ha                                |
| $Q_{100}$         | = 7.4 l/s/ha                                |

- 5.5.3 Surface water runoff from the proposed development will be limited to the greenfield equivalent rate of 2.1 l/s/ha via a vortex flow control device.

## **5.6 Attenuation requirements**

### **5.6.1 Sewers requirements**

5.6.1.1 Surface water will discharge into the public sewer or watercourse located adjacent to the northern boundary. Surface water will be attenuated to a  $Q_{bar}$  greenfield runoff rate of 2.1 l/s/ha. To achieve this surface water will be attenuated via detention basins for the residential aspects and cellular storage within car parking areas for the commercial aspects. Surface water attenuation will be designed to accommodate a 1 in 100 year event plus an allowance of 30% for climate change.

### **5.6.2 Residential Development East**

5.6.2.1 The estimated impermeable area of the east portion of the residential development is calculated as 2.753 ha as shown on the plan enclosed in Appendix C. Based on the proposed impermeable area and allowable discharge rate of 7.3 l/s the storage requirement for the 1 in 100 year plus climate change event has been calculated utilising the following parameters. Full calculations are enclosed in Appendix F.

Rainfall profile	= Flood Estimation Handbook
Return Period	= 100 year
Durations	= 15 to 10080 minutes
Climate change	= 30%
Drained area	= 2.753 ha
Limiting flow to SW Sewer	= 5.8 l/s
Control	= Vortex flow control
Total Storage required	= 2232 m <sup>3</sup>

### **5.6.3 Residential Development West without school**

5.6.3.1 The estimated impermeable area of the west portion of the residential development is calculated as 2.039 ha as shown on the plan enclosed in Appendix C. Based on the proposed impermeable area and allowable discharge rate of 4.3 l/s the storage requirement for the 1 in 100 year plus climate change event has been calculated utilising the following parameters. Full calculations are enclosed in Appendix F.

Rainfall profile	= Flood Estimation Handbook
Return Period	= 100 year
Durations	= 15 to 10080 minutes
Climate change	= 30%
Drained area	= 2.039 ha
Limiting flow to SW Sewer	= 4.3 l/s
Control	= Vortex flow control
Total Storage required	= 1648 m <sup>3</sup>

#### **5.6.4 Residential Development West with school**

5.6.4.1 The estimated impermeable area of the west portion of the residential development is calculated as 2.628 ha as shown on the plan enclosed in Appendix C. Based on the proposed impermeable area and allowable discharge rate of 3.3 l/s the storage requirement for the 1 in 100 year plus climate change event has been calculated utilising the following parameters. Full calculations are enclosed in Appendix E.

Rainfall profile	= Flood Estimation Handbook
Return Period	= 100 year
Durations	= 15 to 10080 minutes
Climate change	= 30%
Drained area	= 1.577 ha
Limiting flow to SW Sewer	= 3.3 l/s
Control	= Vortex flow control
Total Storage required	= 1274m <sup>3</sup>

#### **5.6.5 Commercial Development**

5.6.5.1 Each of the commercial aspects (Office, Care Home and school) will have their own independent surface water attenuation. Surface water for each aspect will be attenuated to greenfield runoff rates equivalent to 2.1 l/s/ha of impermeable area. If the total impermeable area would result in flow controls with an aperture of less than 75mm the runoff rate will be increased to ensure a minimum aperture of 75mm is achieved. Utilising vortex flow control devices it is anticipated that this would result in a minimum outflow rate of 3.2l/s.

5.6.7 The indicative surface water drainage layout incorporating the attenuation is shown on the plan enclosed in Appendix C.

### **5.7 Flood compensation**

5.7.1 Flood compensation measures will not be required for this site as it is located within Flood Zone 1.

### **5.8 Overland flows**

5.8.1 Proposals are to design the storm water drainage to accommodate the 1 in 100 year storm event taking into account the predicted future effects of climate change (30% increase in intensity). Clearly there is a risk of this storm event being exceeded, albeit this risk is considered very low. In such an event the proposed drainage systems will become overwhelmed and overland flows could occur. Overland flows will be directed to follow the path that overland flows currently follow.

## **5.9 Foul water drainage strategy**

- 5.9.1 Foul water will discharge to Anglian Water's sewer network located in Thaxted Road. Anglian Water has confirmed that foul water flows from the site can be accommodated within their infrastructure. Correspondence with Anglian Water is enclosed in Appendix F.

## **6.0 Maintenance**

### **6.1 Storm drainage maintenance**

- 6.1.1 The drainage system will be designed to minimise maintenance requirements, however, a full maintenance scheme will be established for those elements not being offered for adoption.

### **6.2 Foul Drainage maintenance**


- 6.2.1 The drainage system will be designed to minimise maintenance requirements, however a full maintenance scheme will be established for those elements not being offered for adoption.

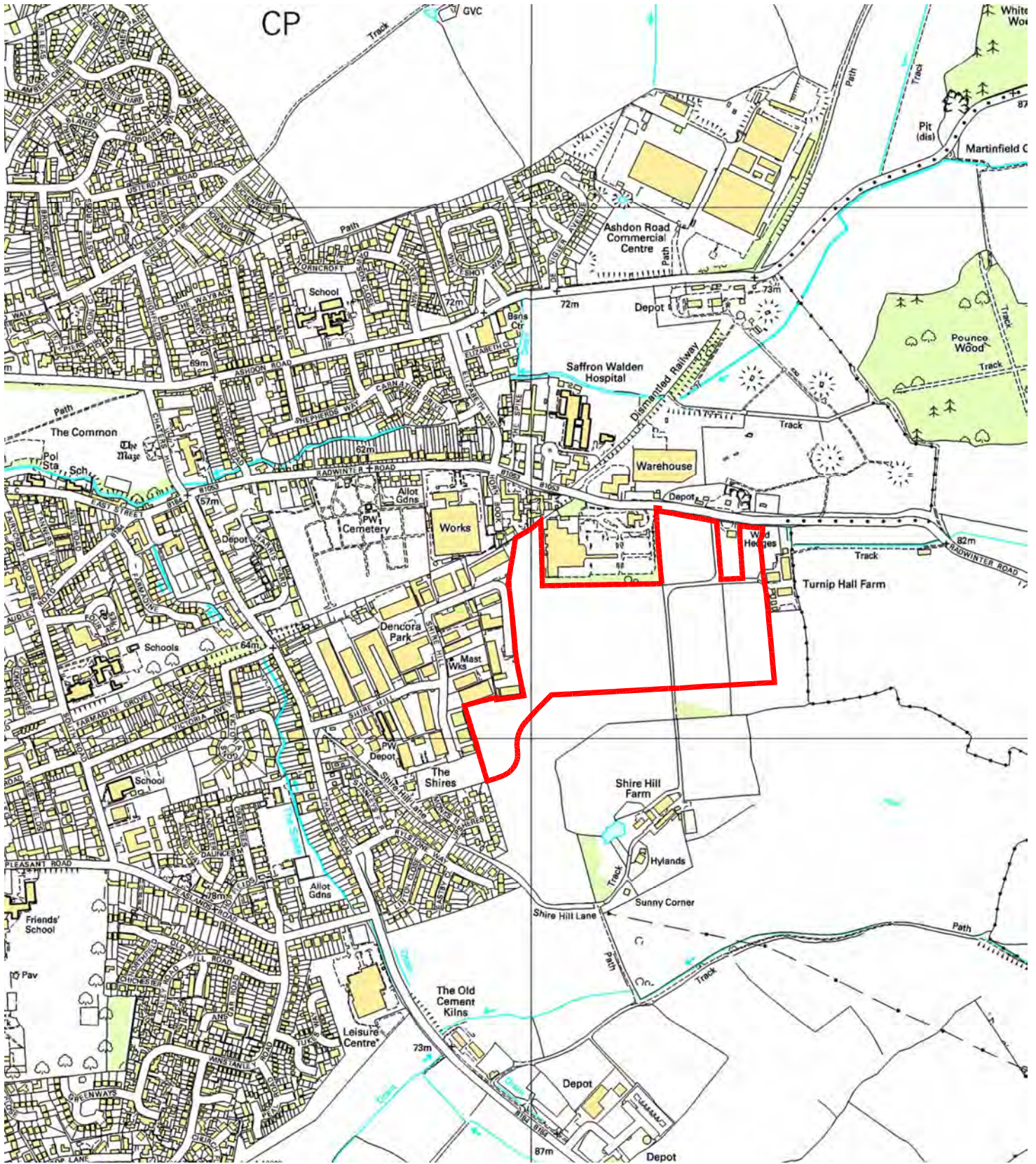
## **7.0 Conclusions and flood risk from site drainage proposals**

- 7.1 The surface water drainage from this site, post development, is such that the surface water will be managed and disposed of within the site boundary, thus complying with the Technical Guidance to the National Planning Policy Framework. Based on the above, providing the above strategies are adopted the developed site will not contribute further to flood risk thus satisfying the principles of the National Planning Policy Framework.



**Appendix A**  
**Site Location Plan**  
**JPP drawing no. R6694PP-FRA01**

Client	MANOR OAK HOMES		Date	OCTOBER 2013	 Civil & Structural Engineers	
Project	LAND OFF RADWINTER RD, SAFFRON WALDEN		Drawn by	MJA		
Title	SITE PLAN		Checked by			
Project ref	R6694PP	Drawing no.	FRA01	Revision	Scale at A4	
					1:10000	T: (01604) 781811    E: mail@jppuk.net F: (01604) 781999    W: www.jppuk.net





**Appendix B**  
**Illustrative Masterplan**  
**McBains Cooper drawing no. 57183-SK06B**  
**And**  
**Illustrative Masterplan – School Option**  
**McBains Cooper drawing no. 57183-SK07A**

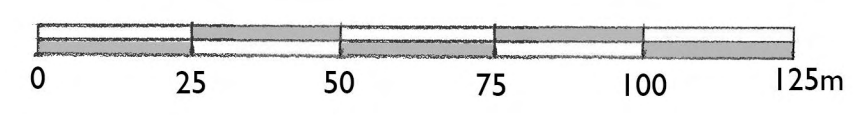
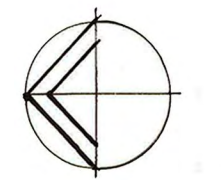


# ILLUSTRATIVE MASTERPLAN

APPROX 1: 2500 @A3 /1:1250 @A1

MCBAINS COOPER

McBainsCooper Consulting Ltd  
December 20 2013  
57183-SK06 B



RADWINTER ROAD

RETIREMENT VILLAGE

FOOT/CYCLE LINK

ATTENUATION

ATTENUATION

GREEN

GREEN

AVENUE

GREEN

ATTENUATION

ATTENUATION

TESCO

BI

BI

BALANCE OF DRAFT ALLOCATION

OPEN SPACE PROVISION

KIER HOMES APPLICATION

PUBLIC OPEN SPACE

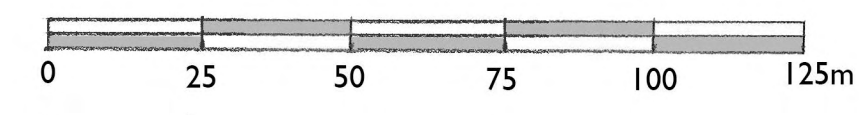
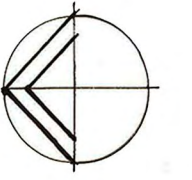


**ILLUSTRATIVE  
MASTERPLAN**  
SCHOOL OPTION

APPROX 1: 2500 @A3 1/1:1250 @A1

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December 20 2013  
57183-SK07 A



RADWINTER ROAD  
RETIREMENT VILLAGE  
FOOT/CYCLE LINK



ATTENUATION

ATTENUATION

GREEN

GREEN

AVENUE

GREEN

ATTENUATION

ATTENUATION

OPEN SPACE PROVISION

BALANCE OF DRAFT ALLOCATION

0.9HA EXPANSION

1.2 HA  
PRIMARY  
SCHOOL  
SITE

KIER HOMES  
APPLICATION

TESCO

BI

BI