FLOOD RISK ASSESSMENT

DEVELOPMENT AT 20 TOWER ESTATE, POINT CLEAR BAY, ST OSYTH, ESSEX, CO16 8NG





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1 INTRODUCTION

- 1.1 Tecton Land has been commissioned to prepare this assessment in connection with the proposals for the redevelopment of 20 Tower Estate, Point Clear Bay, St Osyth, C016 8NG.
- 1.2 This report is to be used to assist in determining the planning application in respect of the property. The report has been produced to demonstrate how risks from sources of flooding to the site and flood risk to others from the development will be managed.
- 1.3 The site lies within Flood Zone 3 (high risk) in an area benefitting from flood defences.
- 1.4 According to the Technical Guidance to the NPPF, "flood risk vulnerability classification" residential development is classified as more vulnerable to flood risk, and "Flood risk vulnerability and flood zone compatibility classification" requires the Exception Test. However, as this is a replacement dwelling the Sequential Test is not appropriate in this case. The second part of the Exception Test is that the development will be safe for its lifetime. This is addressed in this report. The report concludes that in a flood risk context, the proposals are appropriate and safe and do not cause an increased flood risk.



2 DEVELOPMENT DESCRIPTION AND SITE LOCATION

2.1 The site is located approximately 2km to the west of the village of St Osyth, immediately adjacent to the sea wall at Point Clear at grid reference 215697N and 608178E. There is direct access to the site via the private road of Tower Estate and Colne Way/Western Promenade.



Figure 1 – Location of the site, highlighted.

- 2.2 The site is currently occupied by a timber frame and brick built chalet style residential building. The existing building is 2 storeys in height with the lower floor at the level of the access road (approx. 1.8m AOD), while the upper level is at the same height as the footpath (approx. 3.85m AOD), alongside the sea wall (top of wall is 4.7m AOD).
- 2.3 It is proposed to replace the existing dwelling with a slightly larger and higher 3 storey dwelling for residential use. The area of the site is approximately 0.012ha.
- 2.4 As this is a replacement of an existing dwelling within a Flood Risk area, the report is prepared in accordance with the Technical Guidance to the National Planning Policy Framework (NPPF) to support a planning application for a new residential dwelling.



- 2.5 The proposal is to replace an existing 2 storey dwelling which lies below the flood level with a 3 storey dwelling which has accommodation partly below and partly above the 1 in 200 year flood levels. A garage/boat store and shower room is proposed at lower level, with a kitchen/dining/living area and office/snug at the middle level, and two bedrooms and a reading room / third bedroom at the upper level. The development will not increase the number of dwellings on the site, nor will it significantly increase the number of rooms, hence it will not materially change the circumstances.
- 2.6 The site is at or about 1.8m AOD. For the proposed building, the lower level of accommodation is set at approx. 4.5m AOD, while the upper level of accommodation is set at approx. 7.2m AOD.

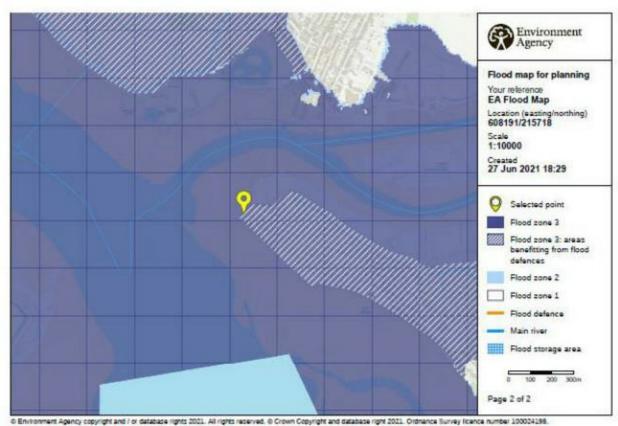
3 SOURCES OF FLOODING

- 3.1 For all development sites there are three main sources of flooding that need to be considered:
 - Tidal or fluvial
 - Ground water
 - · Artificial sources
- 3.2 The site is adjacent to the sea and therefore could be at risk during high tide events either by overtopping or failure of the defences. The area has been flooded in the past by tidal events, the last being the January 1953 floods. Since then the sea walls have been raised.
- 3.3 Ground water is not considered a risk due to location and relatively low water table levels.
- 3.4 The main sources of artificial flooding are the sewer systems and water supply mains.
 The lower level of the proposed dwelling will be sited above the surrounding ground and therefore it will be protected from these sources of flooding.



4 FLOOD RISK ASSESSMENT

4.1 The site is identified as Flood Zone 3 by the Environment Agency which is assessed as having a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. The site is defended by a well maintained system of flood defences to a 1 in 200 year event. The current predicted 1 in 200 year event is 4.29m AOD. Therefore in a design event the site is safe.



- 4.2 The site is at or about 1.8m AOD. It is located almost equidistant between EA Nodes EA051CD1163_370 and EA051CD1163_389. For the proposed building the middle level of accommodation will be set at 4.5m AOD thus putting it at about 0.2m above a 1 in 200 year event. The upper level of accommodation will be set at approx. 7.2m AOD which is approx. 2.9m above the 1 in 200 year event.
- 4.3 The EA have provided flood level data and mapping from the Colne & Blackwater Estuary Flood Risk Study (2011) undertaken by CH2M Hill Halcrow. The data provides modelled flood levels for a variety of AEP events including climate change.



Flood Level Data at Node EA051CD1163_389 (closest to the site)
Annual Exceedance Probability (AEP) Event

	5%	0.5%	0.5% + 20%CC	0.1%
Flood Level (mAOD)	3.76	4.29	5.46	4.68

- 4.4 If 100 years of climate change are added to the sea levels Shoreline Management Plan policy, then it is calculated that tidal levels will increase by approx 1.25m. In this case the defences would be overtopped by a design event, assuming that the defences are not improved to counter. However it is anticipated that sea defences will be increased as part of current Shoreline Management Plan policy Hold the Line. It should also be noted that the latest published advice on sea level change for the south east suggests that the sea level rise may not be as high as previously predicted.
- 4.5 The predicted sea level for a 1 in 200 year event with an allowance for climate change is 5.46m AOD. The upper floor accommodation is set above this level at 7.2m AOD and would therefore provide refuge in the event of a flood.
- 4.6 The impact of climate change and land level changes are predicted to result in a net rise in sea level in the future. Assuming that the building has a design life of 100 years then the future levels should be predicted through to 2121. The current Government Guidance shows allowances of:

1990 - 2025 : 4mm / year
 2026 - 2055 : 8.5mm / year
 2056 - 2085 : 12mm / year
 2086 - 2115 : 15mm / year

- 4.7 The predicted sea level for a 1 in 1000 year event with an allowance for climate change is 5.84m AOD. The upper floor accommodation is set above this level at 7.2m AOD and would therefore provide refuge in the event of a flood.
- 4.8 The existing layout produces a small amount of surface water from the roof and external paved areas. An area of SuDS is proposed for the site.

5 FLOOD RISK MANAGEMENT MEASURES

- 5.1 Because this is a replacement dwelling located in a flood zone it is not possible to reduce all of the risks associated with the location. However by implementing the measures set out above it is possible to increase the safety of the building and its occupants in the event of flooding.
- 5.2 The site's occupants will be able to take refuge in the upper level, which is set at approximately 7.2m AOD. This is in the event that the occupants had not previously evacuated to higher ground.
- 5.3 The prediction of weather and tide combinations that could lead to a breach of the defences is now significantly improved. Sufficient notice should be available to allow decisions to be taken about the need for evacuation of the area. A Flood Response Plan will be provided to the Council prior to first occupation, providing details of safe route(s) into and out of the site to an approved safe haven. The access route to the property is at a similar level to the level of the site of between 1.5m and 2.0m AOD.
- 5.4 A draft Flood Evacuation Plan is attached at Appendix 1.
- 5.5 The occupants of the property will be registered to receive EA flood warnings. Tidal events of a scale large enough to impact this site will be predicted at least 12 hours in advance.

6 OFFSITE IMPACTS

6.1 There are no offsite impacts to consider since the development will not materially increase the existing surface water discharge to the existing sewer network.

7 RESIDUAL RISKS

- 7.1 The residual risk is usually taken to refer to the portion of the overall risk that remains once risk-aversion measures have been put in place.
- 7.2 A breach or overtopping of the sea defence infrastructure could occur as a result of extreme climate change or tidal surge events, however this is considered very unlikely. A structural failure of the sea defences, at the same time as a 1 in 200 year event may lead to localised flooding. Again this is considered very unlikely, and the design of the new dwelling would provide a safe refuge for occupants.

8 CONCLUSION

- 8.1 The existing building is set below the 1 in 200 year flood level and relies on the existing sea defences with no safe zone for occupants.
- 8.2 The replacement dwelling will significantly improve the resident's safety during future flood events, and therefore this will reduce the associated risks.
- 8.3 The proposed disposal of surface water from this development will not impact on the existing sewer network, as any additional increase in footprint is considered negligible.
- 8.4 Residents of the replacement dwelling will remain safe during a flood event (assuming that they have not evacuated) by taking refuge on the upper floor which is set above the 1 in 200 year tidal level including allowance for climate change, and also set above the 1 in 1000 year tidal level including allowance for climate change.



Appendix 1

DRAFT Flood Warning & Evacuation Plan

for

20 Tower Estate, Point Clear, CO16 8NG

Written by AK

Distribution List:

Occupants of 20 Tower Estate Local Authority Planning Dept.

Address	Department
Town Hall, Station Road, Clacton on Sea	Emergency Planning
	Town Hall, Station

Ownership and Amendments

This document is owned by the owners of 20 Tower Estate

Amendments for this document should be notified to Emergency Planning, Tendring DC.

Record of Amendments / Review:

Date	Amendment / Review	Name of Author



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1.0 Introduction

The purpose of the plan is to inform the occupants of the correct Flood Warning and Evacuation procedures.

The property is permitted to be occupied permanently, but currently it is usually occupied during the summer months and occasionally during winter months (usually at weekends/holidays).

1.1 Background

The property is located adjacent to the sea wall in a low lying area. The site is protected by the sea wall, and the property has accommodation that is above the possible flood levels. However, in the event of an exeptional storm surge there is the possibility that the wall may be over-topped, and in this circumstance it may be considered safer to evacuate to higher ground rather than remain at the property. There is also a chance of breach of the sea wall.

The East Coast of the UK is vulnerable to a phenomenon called a North Sea Tidal Surge. This type of event is most likely to occur between September and April, but requires very specific conditions, strong north to northeasterly winds over a period of days, combining with spring tides, (the highest high tides). Spring tides are predicted years in advance and with the technological advances in weather forecasting and prediction the Met Office and Environment Agency can identify the likelihood of a North Sea Tidal Surge, several days in advance with a high degree of confidence. As the Tendring District is bounded on 3 sides by coastal or tidal waters (Rivers Stour to the north and Colne to the west), it is vitally important that our coastal communities are aware of the need to be prepared should such an event occur.

The last North Sea tidal surge to affect the East Coast occurred in January 2017, resulting in the evacuation of the area from Clacton to Leewick.

1.2 The Site

The property known as 20 Tower Estate, Point Clear.

1.3 Local Risk Assessment

Risk	Impact on Site	What can the site owners do to prepare?
Flood event caused by high tides and storm surge.	Possible flooding at ground level, with potential of storm water reaching 1m –	Be aware of Flood Warnings and prevailing weather conditions. Register for Environment Agency Flood Warnings.



	1.5m above the ground floor (of the building) level.	Grab Bag for essential items if the site is to be vacated. Don't forget pets.
Flood Event caused by Wall Breach	Possible flooding at lower ground level, with potential of storm water reaching the ground floor (of the building) level.	Be vigilent. Remove valuable items from lower ground floor. Safe refuge would be available in uppers floors and the water would be expected to recede after a short period.

1.4 Key Locations

Electricity – Master Switch is in xx. Fuse box is in xx at 1F level.

Water - Stop cock is in garage.

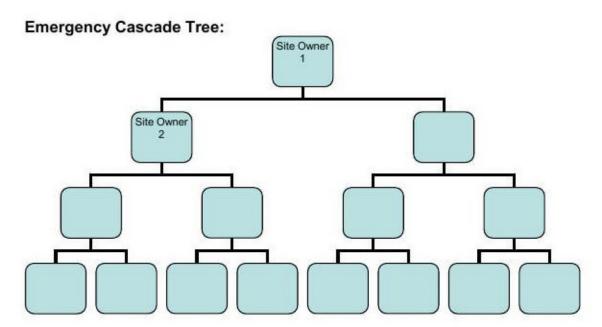
Gas - Not connected.

Alternative accommodation is available at xx.

1.5 Emergency Contact List and Casacde

NAME:
TITLE: Site Owner 1
24hr telephone contact:
Email:
Address
NAME:
TITLE: Site Owner 2
24hr telephone contact:
Email:
20 Tower Estate, Point Clear, CO16 8NG;





1.6 Activation and Triggers

- 1. Reference to Met Office and Environment Agency Warnings.
- 2. Notification by emergency services to evacuate.

Flood Warning Codes



Meaning

Flooding is possible Be prepared.

General advice

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels and the flood forecast on our website.



Meaning

Flooding is expected.

Immediate action required.

General advice

- Move family, pets and valuables to a safe place.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.





Meaning

Severe flooding.

Danger to life.

General advice

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate.
- Co-operate with the emergency services
- Call 999 if you are in immediate danger.

WARNING NO LONGER IN FORCE

Meaning

No further flooding is currently expected in your area.

General advice

- Be careful. Floodwater may still be around for several days.
- If you've been flooded, ringyour insurance company as soon as possible.

What Action will be taken on receipt of each code:



Get Prepared



FLOOD WARNING

Get Prepared to Evacuate, or evacuate



Evacuate

WARNING NO LONGER IN FORCE

Only return when the Emergency Services indicate it is safe.

1.7 First Steps in an Emergency

	Task	Allocated to:	Tick when Completed
1	If life believed to be in danger call 999 – unless alerted already	Site Owner(s)	
2	Ensure you are in no immediate	Site Owner(s)	1



	danger		
3	Contact Site Owner(s) if not on site.	Occupants (i.e. relatives of the Owner(s)	
4	Provide information to other occupants	Owner	
5	Prepare to Evacuate	All	
6	Evacuate	All	
7	Activate Insurance	Owner	
8	Prepare to Return	Owner	

1.8 What Resources do we need?

If there is not sufficient time to evacuate to higher ground then:

Food (in cupboard)

Blankets (in cupboard)

Shelter (1st floor will be above flood levels)

Alternative accommodation (Go to higher ground)

House Essentials:

If you have to stay indoors because the emergency services have advised that it is unsafe to leave, or severe weather impacts your ability to leave, make sure that there is an Emergency Home Kit.

Checklist

- Torch (wind-up or with batteries)
- Radio (wind-up or with batteries)
- A telephone that works when there is a power cut
- First aid kit
- Bottles of water
- Toiletries
- Tinned or packed food
- Camping stove
- Antibacterial hand gel and wipes
- Notebook and pen/pencil
- Spare batteries
- Insurance documents
- Prescription medicines

Grab Bag

If you have to leave the home because of an emergency you should put together a Grab Bag, so that you are ready to leave quickly



and have all the things you will need.

Checklist

- Home and cars keys
- Money and bank cards
- Mobile Phone (with charger)
- Identification
- Insurance documents
- Essential Medicine or Prescription details
- Bottled water
- Basic toiletries
- Emergency phone numbers
- Antibacterial hand gel
- Important computer files and photos on USB memory stick
- Home Emergency Plan
- Glasses and contact lenses Leads for Pets (if required)

2.Establishing Contact with the Emergency Services

Call 999 if life is in immediate danger only

3.Establish Contact with Tendring District Council only if considered necessary to inform them of vacating the site: 01255 222022

Environment Agency

http://apps.environment-agency.gov.uk/flood/34978.aspx

https://flood-warning-information.service.gov.uk/5-day-flood-risk

https://flood-warning-information.service.gov.uk/river-and-sealevels?location=co16+8ng

https://www.facebook.com/environmentagency

https://twitter.com/EnvAgency

For current flood warnings in force please call 24-hour Floodline on:

- Type talk: 0345 602 6340 (for the hard of hearing)
- · Telephone Floodline Warning Direct



Met Office

The weather can impact on your everyday life in many ways – from what to wear to whether to travel. The Met Office provides severe weather warnings to the public and emergency responders. For further information on Severe Weather Warnings visit the Met Office website www.metoffice.gov.uk

Local Radio:

In an emergency situation tune in to your local radio station for information, so make sure you have details of their frequencies.

BBC Radio Essex 95.3 FM, 103.5FM

Heart Essex 96.3FM, 102.6FM

4. What actions can safely be taken?

Vacate to higher ground if there is time.

Switch off electricity at fuse box at 1F kitchen level

Switch off electricty at lower level only if no flood waters at lower ground floor level. Switch off water.

5. Who is going to take the lead for the agreed actions?

Site Owner 1 and/or 2

6.Any other issues?

Escape Route

Exit Tower Estate and turn right on The Promenade. Follow road up to roundabout and turn right up the hill towards St Osyth.

If The Promenade is blocked, an alternative route is available through the Caravan Park.

If none of the above are possible, take refuge in the 1F which is above anticipated flood levels.

1.9 Evacuation

In the event of evacuation, return to main residence. Only return to property when Emergency Services inform that it is safe to do so.

1.10 Actions Agreed with Local Authority in the event of an Evacuation

In the event of evacuation, return to main residence. Only return to property when Emergency Services inform that it is safe to do so.

1.11 Alternative Arrangements for Staying in Contact if Usual Communications Have Been Disrupted

Hand held VHF Radio is located at xx. (All owners and occupiers are familiar with their use).

(Channel 16 for Emergency Calls to Coastguard; Channel 68 for Brightlingsea Harbour)



1.12 Pets

Don't forget them, leads, food, blankets!!

SECTION 2:

2.0 Other Information:

EA Flood Warning Area	(delete areas that are not appropriate for your location) Area Description	0845 9881188 select option 1 enter quick dial code from list below
054FWCDV4B5	Tidal Stour Estuary	111020
051FWCDV4B6	Waterside properties at Mistley and Brantham	111015
051FWCDV4B7	Manningtree Town	111010
054FWCDV4B8	River Stour upstream of Cattawade Barrage	111025
051FWCDV4B9	Parkeston Quay and the Ramsey River	111030
051FWCDV4B10	Harwich Town, Dovercourt and Bathside Bay	111035
051FWCDV4B11	Hamford Water	111040
051FWCDV4B12a	Walton on the Naze	111045
051FWCDV4B12b	Holland Marshes	111045
051FWCDV4C1a	The Coast from Clacton to Lee Wick	111101
051FWCDV4C1b	Tidal River Colne at Point Clear and Saint Osyth Creek	111101
051FWCDV4C1c	Tidal River Colne from Brightlingsea to the Colne Barrier	111101

2.1 Flood Warning Codes



Meaning

Flooding is possible Be prepared.

General advice

- . Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels and the flood forecast on our website.



Meaning

Flooding is expected.

Immediate action required.

General advice

- Move family, pets and valuables to a safe place.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.





Meaning

Severe Mooding.

Danger to life.

General advice

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

WARNING NO LONGER IN FORCE

Meaning

No further flooding is currently expected in your area.

General advice

- Be careful. Floodwater may still be around for several days.
- If you've been flooded, ringyour insurance company as soon as possible.

2.2 What Action will be taken on receipt of each code:



Get Prepared



FLOOD WARNING

Get Prepared to Evacuate, or evacuate



Evacuate

WARNING NO LONGER IN FORCE

Only return when the Emergency Services indicate it is safe.

SECTION 3: RECOVERY

3.0 When is it safe to go back?

Speak to Emergency Services following receipt of the Warning No Longer In Force message from the Environment Agency.

3.1 How do we recover?

- √ Do not start the clean-up until the threat of further impact, such as flooding, has passed;
- √ Don't throw anything away until told to do so by your insurer;
- √ BEFORE you start, check with your insurance company if it is OK to start cleaning;
- √ Confirm what services your insurance company will pay for;
- √ Use a perminant marker to mark on the wall the height of the flood water in each affected room / location:
- √ All surfaces that have been covered by flood water will be contaminated, wear waterproof, gloves, boots and a face mask;
- √ Household products are sufficient to clean and disinfect your property;
- √ DO NOT attempt to reconnect your utilities yourself. Liaise with your utility provider;
- √ DO NOT use vegetables and fruit from affected vegetable beds;
- √ Use mains pressure garden hose for washing down, not high pressure hose lines;
- √ As soon as possible, ask your insurance company when a loss adjuster will visit;
- √ Ask your insurance company if they will pay for repairs that will make your
 property more flood resilient for the future;
- √ Keep records: date, time, name of person you spoke to and what was agreed;
- √ Keep receipts;
- √ Take photos and video of your damaged property;
- √ Make a list of your damaged property;

SECTION 4: Awareness, Training and Review

4.0 Awareness

Plan is to be displayed at 20 Tower Estate at all times. Regular checks of weather situation required when on site.

5.0 Emergency Contact List

Police	If Life in danger	999	
	Routine		
Fire	If life in danger	999	
	Routine		
Ambulance	If life in danger	999	
	Routine		



HM Coastguard	Emergency	999	
	Routine		24/7
NHS			8
Tendring District Council	Emergency Contact		24/7
	Routine EP		
Environmen t Agency	Emergency		
Met Office			
Insurance Company			
Electricity Provider	UKPN E-ON		
Water Provider	Affinity Water		
Sewage provider	Anglian Water		
Gas Provider	n/a		
Teleophone Provider	n/a		
Main Residence			