SITE REFERENCE: 40120	ALLOCATION NUMBER: B8a	CLUSTER: Benfleet	SITE AREA: 0.391 ha
SITE NAME: Richmond Avenue Car Park			

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*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

PROPOSED UNITS: 27

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	97%	Flood Zone 2 (0.1% AEP):	1%	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	0%	Flood Zone 3b (defined in SFRA report):	2%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1968 September Flood Outline

PROXIMITY TO MAIN RIVER: Located on edge of site boundary **PROXIMITY TO NEAREST WATERCOURSE:** Located on edge of site boundary

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

166 records in Postcode Area SS7 5

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 2.6%

SURFACE WATER FLOODING

0.1% AEP:	24%	1% AEP:	14%	3.33%:	18%
0.1% AEP + 40% Climate Change:	27%	1% AEP + 40% Climate Change:	17%	3.33% AEP + 40% Climate Change:	35%

EXCEPTION TEST?

Development is not permitted in Flood Zone 3b. Exception Test is not required for More Vulnerable development in Flood Zone 1 and 2. Where possible, development should be sequentially located outside of the surface water flood risk area.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** N/A

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 65%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS08

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40120	Allocation Number	B8a	Site Name	Richmond Avenue Car Park

Flood Risk Summary

The site is located in Benfleet. The Benfleet Hall Brook flows south along the western boundary of the site (as shown on the Environment Agency's Statutory Main River Map), before flowing south to Benfleet Creek. The Benfleet Flood Storage Area lies approximately 240m to the south of the site. The majority of the site is defined as Flood Zone 1 'Low' probability of flooding (97%). 1% of the site is defined as Flood Zone 2 'Medium Probability of Flooding and 2% is defined as Flood Zone 3b 'Functional Floodplain' (derived from the Benfleet Hall Brook model). The site does not lie within the Reduction in Risk of Flooding from Rivers and Sea due to Defences area.
Modelling for the Benfleet Hall Brook shows that during the design flood event (1% AEP plus a 25% climate change allowance), a small area (2.6%) on the western boundary of the site is at risk of flooding.
Historic flood records indicate that the site experienced flooding in the September 1968 flood event.
Modelling has been undertaken to understand the impact from overtopping of the tidal defences and that associated with a breach in the tidal defences. During the design event (0.5% AEP) for the year 2125, the site is shown to be protected from flooding from the Thames. The site is however shown to be at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. This shows that over 50% of the site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The east of the site is not at risk of flooding, there is a small area of 'Extreme' hazard (Danger to All) to the west of the site and an area of 'Significant' hazard (Danger to Most) to the south. The remainder of the site is 'Low' to 'Moderate' hazard (Caution to Danger to Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS08 is approximately 4.7m AOD. Ground levels are approximately 4.5m AOD across the site. Access to the north towards the B1006 is not at risk of flooding.
The modelled surface water risk mapping indicates a surface water flow path to the west of the site associated with the Benfleet Hall Brook. 24% of the site is at low risk, 14% at medium risk and 18% at high risk, a total of 56% of the site. When taking climate change into consideration, the extent of surface water flooding increases with a total of 79% of the site at low to high risk. The local road network is at high risk of surface water flooding including the access road to the north along High Road.
The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

27 residential units are proposed for the site. More Vulnerable development (e.g. residential) is permitted in Flood Zones 1 and 2 (98% of the site). More Vulnerable development is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made:

Tidal and Fluvial

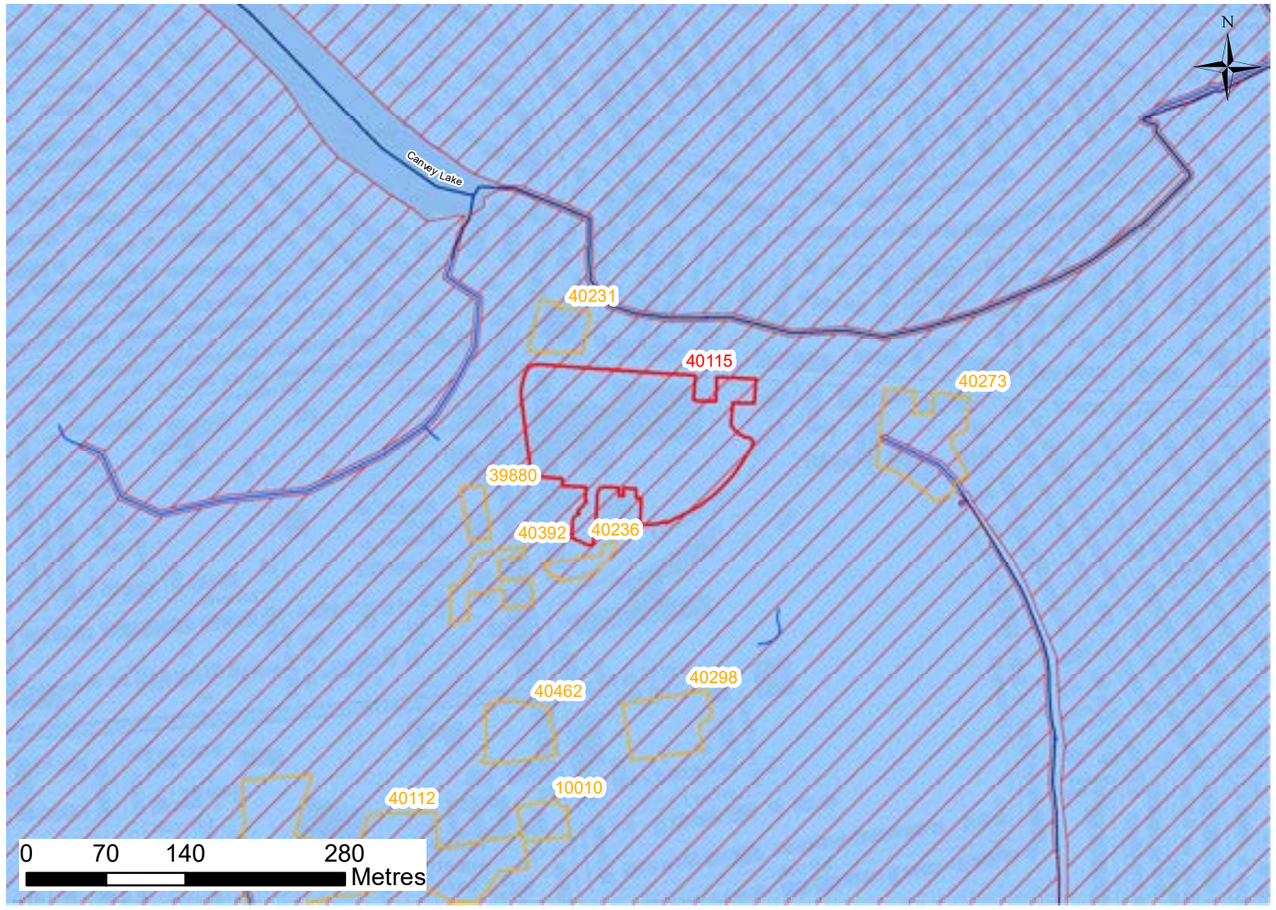
- Development is not permitted in Flood Zone 3b. This part of the site should be retained as floodplain and steps taken to restore land to provide a more natural edge of the Benfleet Hall Brook.
- Development of the site must ensure that the risk of flooding to surrounding areas is not increased, and where possible is reduced (including for all sources of flood risk). Development should be steered away from areas within the fluvial design event along the western edge of the site. If this part of the site is considered for development, level for level and volume for volume floodplain compensation storage must be provided. Refer Level 1 SFRA Section 5.6.
- An 8m wide undeveloped buffer strip should be retained from top of bank alongside the Benfleet Hall Brook and opportunities should be explored for riverside restoration. New development within 8m of a Main River will require consent from the Environment Agency (guidance on Environment Agency Flood Risk Activity Permits is available online https://www.gov.uk/guidance/flood-risk-activities-environmental-permits).
- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the breach flood level during the extreme event (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS08 is approximately 5.3m AOD.
- Finished Floor Levels for residential accommodation must be above the design fluvial flood event (1% AEP including central climate change allowance) plus a minimum 300mm freeboard. Flood resilience and resistance measures should be implemented (refer to Level 1 SFRA Section 5.8).

- Safe access/egress (i.e. that is dry or Low hazard during the 1% AEP event including central climate change allowance) is achievable for the site. A dry route is available north along Richmond Avenue which leads to the B1006 High Road.
- The site is located within the 'Canvey Island North' Flood Warning Area. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing. Development should be sequentially located away from the surface water flow path where possible.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40115	ALLOCATION NUMBER: C2	CLUSTER: Canvey TC	SITE AREA: 2.104 ha
SITE NAME: Knightswick Shopping Centre			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 210

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 51m **PROXIMITY TO NEAREST WATERCOURSE:** 50m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
5%	2%	1%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
7%	3%	5%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40115	Allocation Number	C2	Site Name	Knightswick Shopping Centre

Flood Risk Summary

The site is located in the centre of Canvey Island. An unnamed Main River which feeds into Canvey Lake is located approximately 48m north of the site (as shown on the Environment Agency's Statutory Main River Map). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The east of the site is at 'Significant' hazard (Danger for Most) with the central and western areas at 'Low' to 'Moderate' hazard (Caution to Danger for Some). The maximum flood depth during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.5m AOD. Ground levels are approximately 2.3m AOD across most of the site and 1.7m AOD to the south east of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of flooding from surface water. A small area of the site in the north is at high risk of flooding from surface water, including an allowance for climate change and a small area of the site in the south east is at high risk from a surface water flow path along Folksville Road. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

210 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

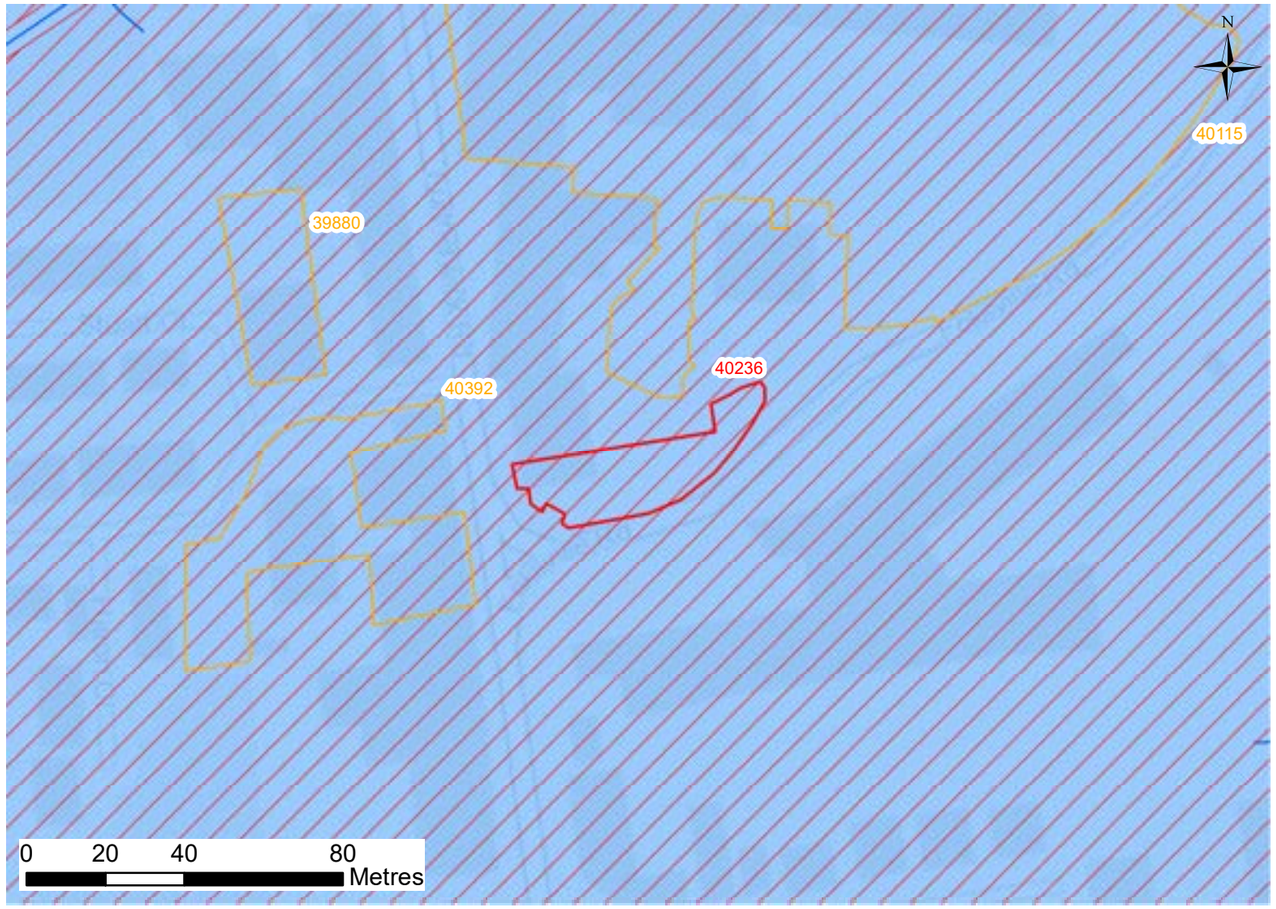
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.7m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing. Development should be sequentially located away from the surface water flow path where possible.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40236	ALLOCATION NUMBER: C3	CLUSTER: Canvey TC	SITE AREA: 0.093 ha
SITE NAME: Canvey Library and Barclays			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

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*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 9

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	0%	Flood Zone 2 (0.1% AEP):	0%	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	100%	Flood Zone 3b (defined in SFRA report):	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 212m **PROXIMITY TO NEAREST WATERCOURSE:** 143m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	39%	1% AEP:	13%	3.33%:	13%
0.1% AEP + 40% Climate Change:	29%	1% AEP + 40% Climate Change:	20%	3.33% AEP + 40% Climate Change:	29%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40236	Allocation Number	C3	Site Name	Canvey Library + Barclays

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Significant' hazard (Danger for Most) with a small area to the west as 'Moderate' hazard (Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.6m AOD. Ground levels are approximately 2.0m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates that the majority of the site is at risk of flooding from surface water with 39% at low risk, 13% at medium risk and 13% at high risk. When taking climate change into consideration, the extent of surface water flooding increases with a total of 78% of the site at low to high risk. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

9 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

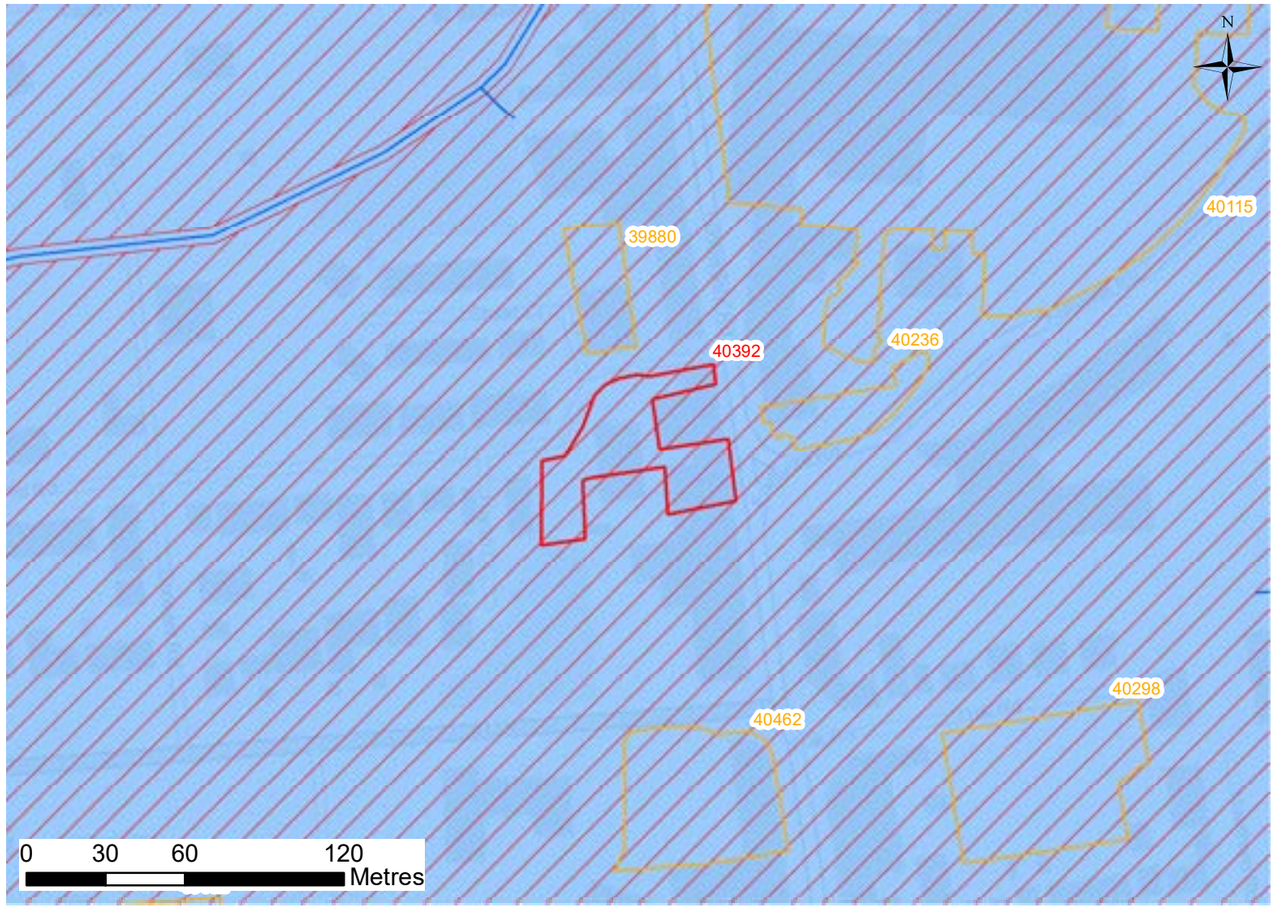
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.7m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety. Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing. Development should be sequentially located away from the surface water flow path where possible.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40392	ALLOCATION NUMBER: C4	CLUSTER: Canvey TC	SITE AREA: 0.479 ha
SITE NAME: Grouts and land to the rear			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 23

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 224m **PROXIMITY TO NEAREST WATERCOURSE:** 106m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

228 and 134 records in Postcode Area SS8 9 and SS8 7, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
2%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
2%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 71%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS03, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40392	Allocation Number	C4	Site Name	Grouts and land to rear

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Low' hazard (Caution) with an area to the south west as 'Moderate' hazard (Danger for Some). The maximum flood depth during this event is between 0 and 0.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.5m AOD. Ground levels are approximately 2m AOD in the south of the site and 2.4m AOD in the north of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is not at risk of flooding from surface water with a small area to the south (2%) at low risk when considering climate change. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

23 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

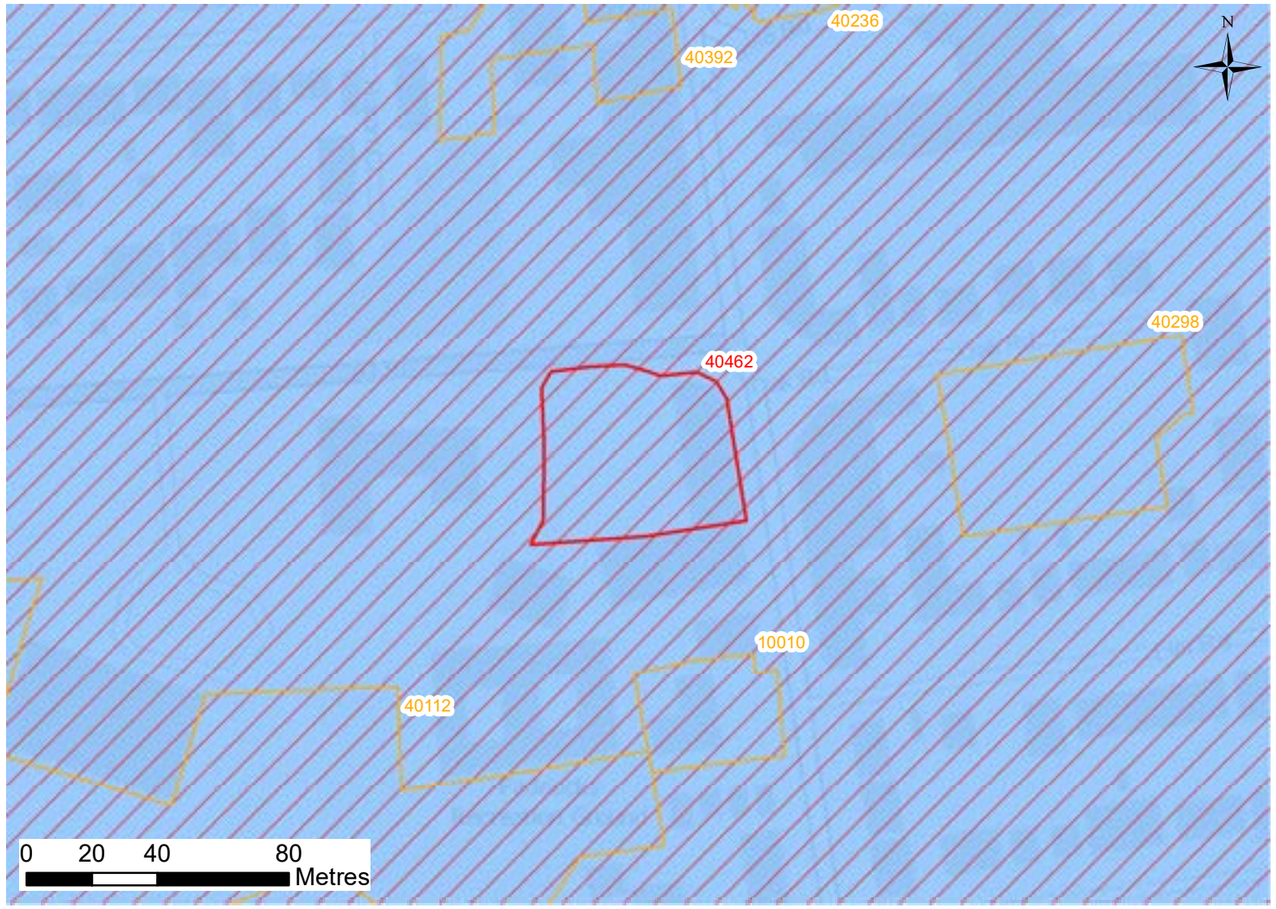
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.6m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40462	ALLOCATION NUMBER: C5	CLUSTER: Canvey TC	SITE AREA: 0.29 ha
SITE NAME: Long Road and Furtherwick Road Cluster			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 29

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 348m **PROXIMITY TO NEAREST WATERCOURSE:** 192m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 and 90 records in Postcode Area SS8 7 and SS8 0, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
0%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 97%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS02, CAS03, CAS04, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40462	Allocation Number	C5	Site Name	Long Rd & Furtherwick Rd Cluster

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The south west corner of the site is 'Significant' hazard (Danger for Most) with the remainder of the site as 'Low' to 'Moderate' hazard (Caution to Danger for Some). The maximum flood depth during this event is between 0 and 0.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.6m AOD. Ground levels are approximately 2.3m AOD across the site with levels of approximately 2m AOD in the south west of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of surface water flooding. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

29 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

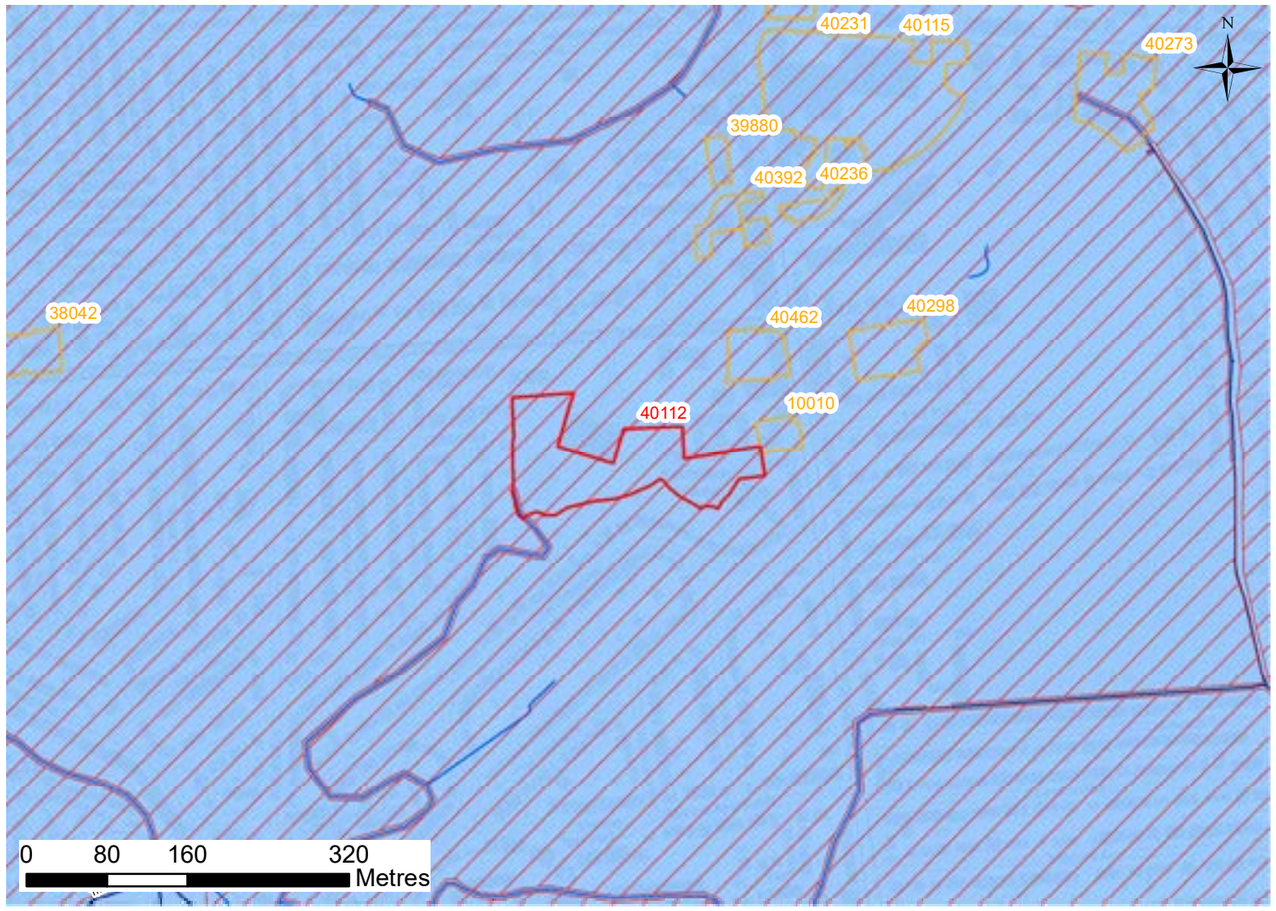
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.6m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40112	ALLOCATION NUMBER: C7	CLUSTER: Canvey TC	SITE AREA: 1.559 ha
SITE NAME: Land above The Paddocks			



*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

PROPOSED UNITS: 124

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 266m **PROXIMITY TO NEAREST WATERCOURSE:** Located on edge of site boundary

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 and 90 records in Postcode Area SS8 7 and SS8 0, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
13%	3%	4%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
31%	7%	8%

EXCEPTION TEST?

Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS02, CAS03, CAS04, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40112	Allocation Number	C7	Site Name	L/a The Paddocks

Flood Risk Summary

The site is located in the centre of Canvey Island. A tributary of Thorneycreek Fleet (Ordinary Watercourse) flows along the south west boundary of the site and flows in a south westerly direction before flowing into the Thames Estuary (as shown on the OS Watercourse layer). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (99%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The entire site is at 'Significant' hazard (Danger for Most). The maximum flood depth during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.5m AOD. Ground levels are approximately 1.6m AOD to 1.8m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at low to high risk of flooding from surface water, predominantly in the south of the site with a flow path to the watercourse along the south west boundary. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

124 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

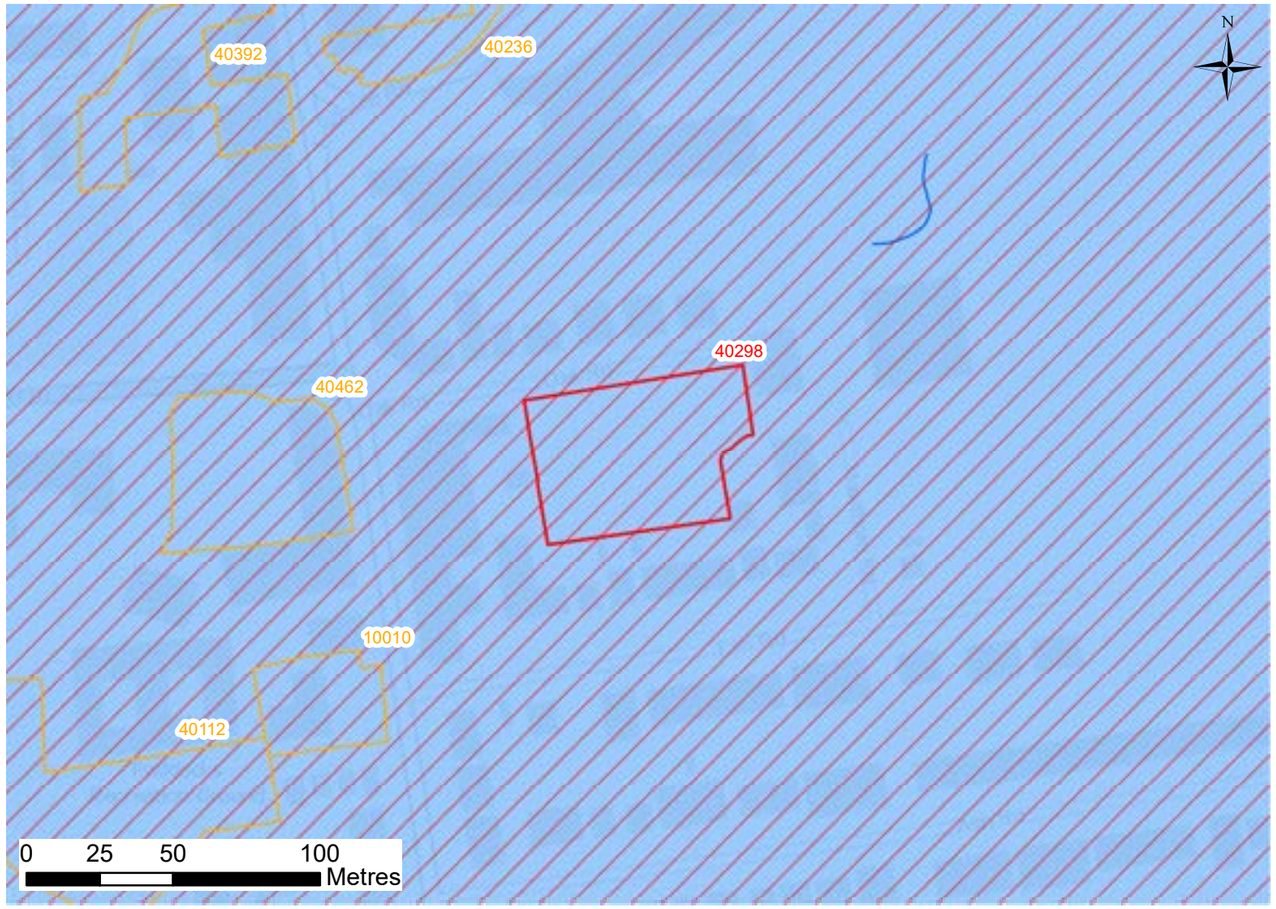
Tidal and Fluvial

- The unnamed Ordinary Watercourse which flows through the site may be culverted and should therefore be investigated further as part of a site specific Flood Risk Assessment. An 8m wide buffer strip should be retained alongside Ordinary Watercourses and opportunities should be explored for riverside restoration and deculverting (where applicable). New development within 8m of an Ordinary Watercourse will require consent from Essex County Council (as LLFA).
- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.6m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing. Development should be sequentially located away from the surface water flow path where possible.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40298	ALLOCATION NUMBER: C8(a)	CLUSTER: Canvey TC	SITE AREA: 0.407 ha
SITE NAME: Oak Road Car Park			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 44

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 281m **PROXIMITY TO NEAREST WATERCOURSE:** 60m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
0%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS03, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL:	WHEN THERE IS ALSO FLOODING FROM RIVERS:
0%	0%

Site Reference	40298	Allocation Number	C8(a)	Site Name	Oak Road Car Park

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Significant' hazard (Danger for Most) with a small area to the north as 'Moderate' hazard (Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.6m AOD. Ground levels are approximately 2m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at very low risk of surface water flooding The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

44 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

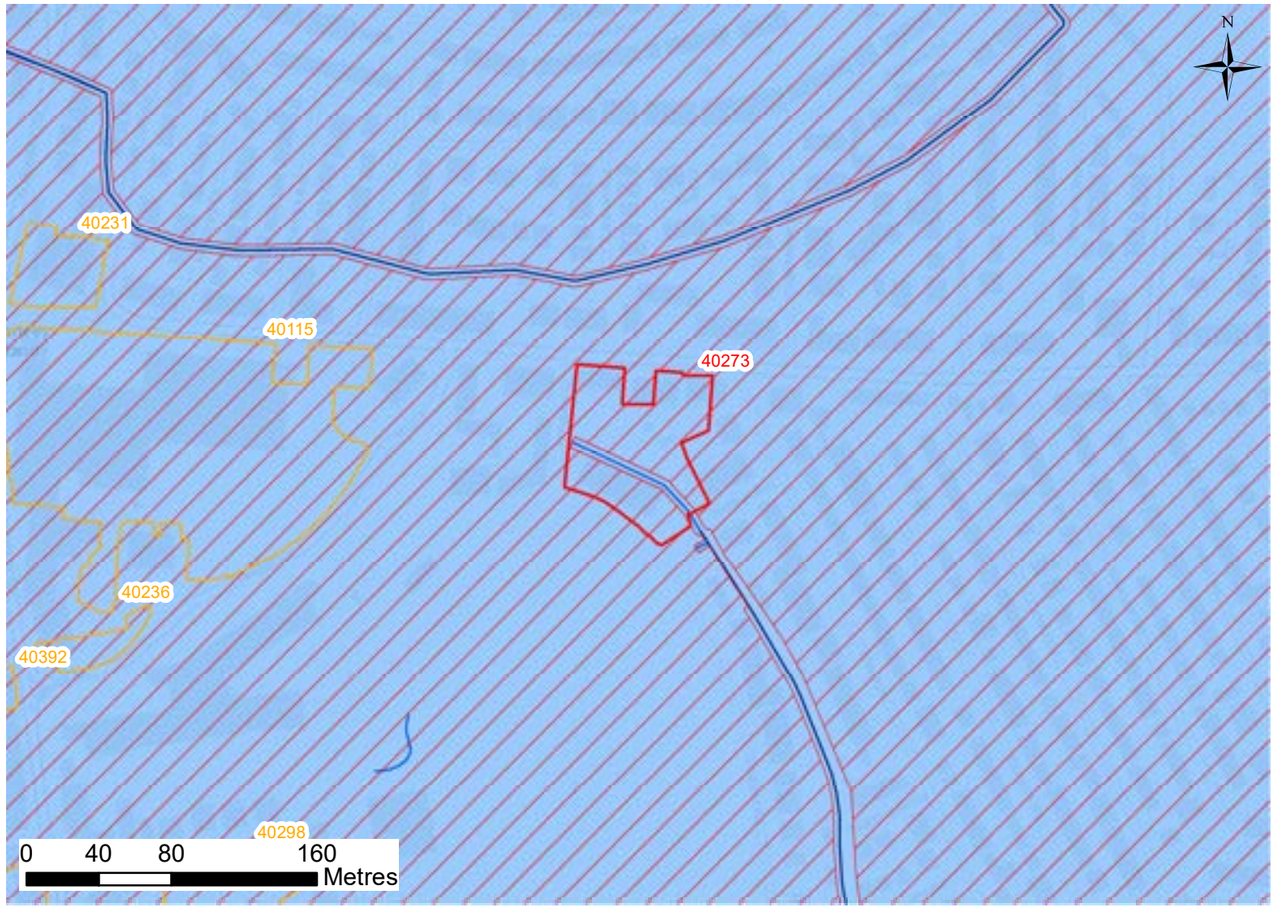
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.7m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40273	ALLOCATION NUMBER: C8(b)	CLUSTER: Canvey TC	SITE AREA: 0.533 ha
SITE NAME: Venables Close Cluster			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 55

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 6m **PROXIMITY TO NEAREST WATERCOURSE:** Located within site boundary

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
9%	2%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
24%	7%	2%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40273	Allocation Number	C8(b)	Site Name	Venables Close Cluster

Flood Risk Summary

The site is located in the centre of Canvey Island. An unnamed Ordinary Watercourse which is a tributary of Leigh Beck flows south through the centre of the site (as shown on the OS Watercourse layer). Leigh Beck is located approximately 6m south of the site and flows south into the Thames Estuary. This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (92%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Significant' hazard (Danger for Most) with the north of the site as 'Low' to 'Moderate' hazard (Caution to Danger for Some). The maximum flood depth during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS06 is approximately 2.7m AOD. Ground levels are approximately 1.4m AOD in the south of the site and 2.4m AOD in the north of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at low to medium risk of flooding from surface water which is associated with the Ordinary Watercourse through the site. When taking climate change into account, this risk increases with a small area of high risk (2%) in the centre of the site. The access route to the north on the High Street is at low to medium risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

55 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

Tidal and Fluvial

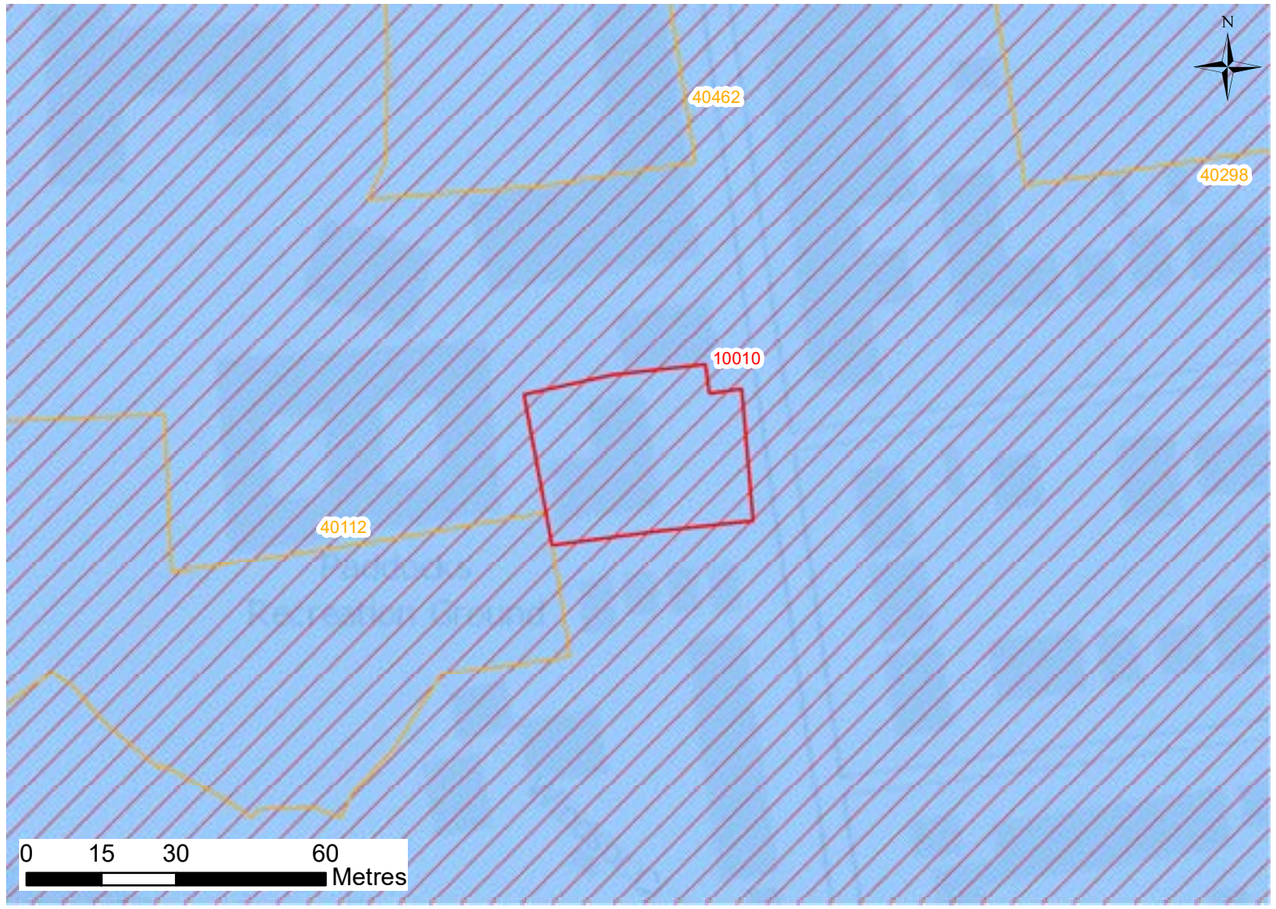
- The unnamed Ordinary Watercourse which flows through the site may be culverted and should therefore be investigated further as part of a site specific Flood Risk Assessment. An 8m wide buffer strip should be retained alongside Ordinary Watercourses and opportunities should be explored for riverside restoration and deculverting (where applicable). New development within 8m of an Ordinary Watercourse will require consent from Essex County Council (as LLFA).
- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 and CAS06 is approximately 2.7m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing. Development should be sequentially located away from the surface water flow path where possible.

- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 10010	ALLOCATION NUMBER: C8(c)	CLUSTER: Canvey TC	SITE AREA: 0.13 ha
SITE NAME: Canvey Job Centre			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 13

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 276m **PROXIMITY TO NEAREST WATERCOURSE:** 220m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
0%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS08

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	10010	Allocation Number	C8(c)	Site Name	Canvey Job Centre

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Low' hazard (Caution) with the edges of the site (east and west) as 'Moderate' hazard (Danger to Some). The maximum flood depth during this event is between 0 and 0.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.6m AOD. Ground levels are approximately 2.3m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at very low risk of surface water flooding. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

13 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

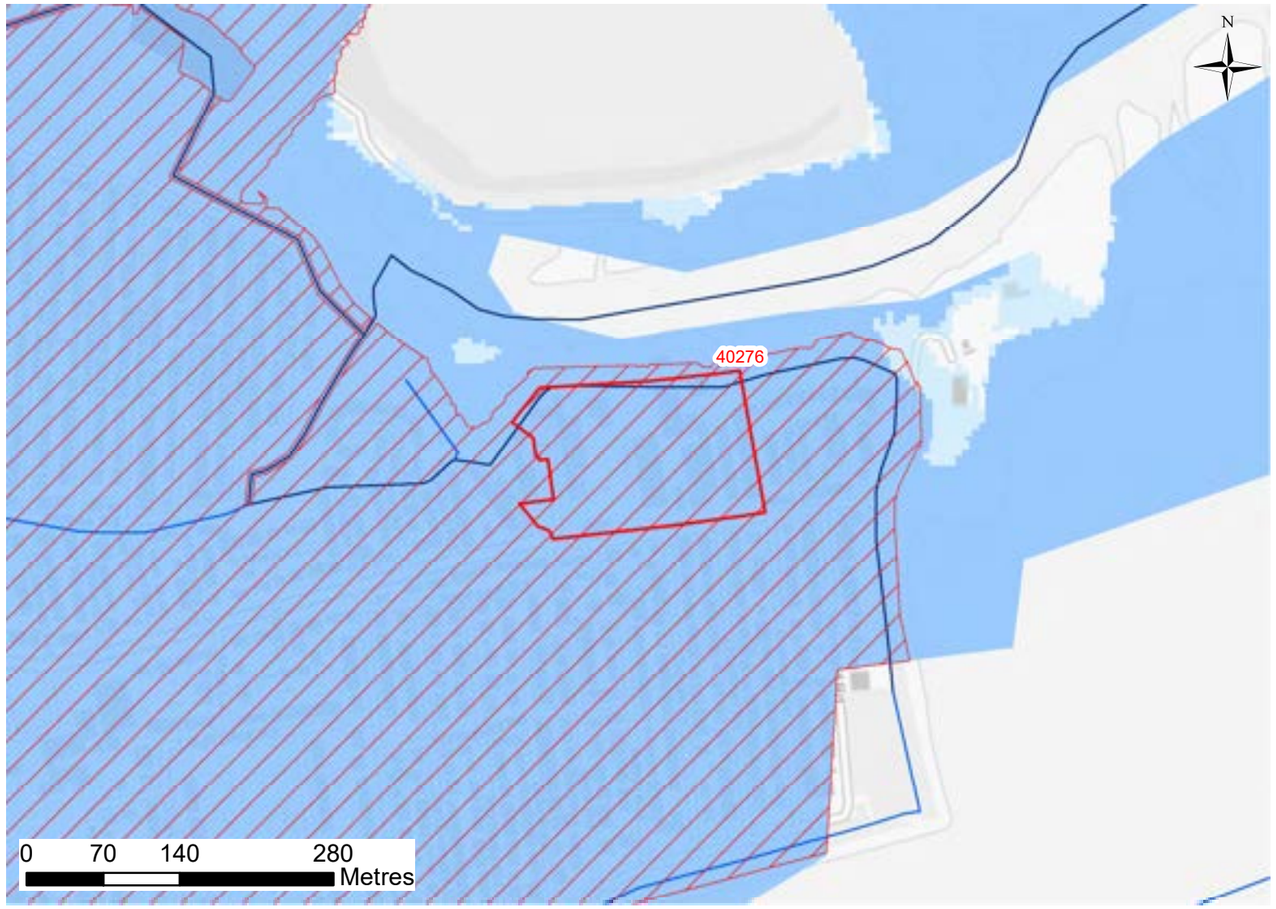
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 2.7m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40276	ALLOCATION NUMBER: C15	CLUSTER: Canvey	SITE AREA: 2.648 ha
SITE NAME: Land at The Point			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 172

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: Located on edge of site boundary **PROXIMITY TO NEAREST WATERCOURSE:** 56m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
7%	3%	3%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
9%	4%	6%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 97%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS05

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL:	WHEN THERE IS ALSO FLOODING FROM RIVERS:
0%	0%

Site Reference	40276	Allocation Number	C15	Site Name	Land at The Point

Flood Risk Summary

The site is located in the south east of Canvey Island. An unnamed tributary (Main River) of Smallgains Creek flows west along the northern boundary of the site (as shown on the Environment Agency's Statutory Main River Map), before flowing east out to the Thames Estuary. This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the majority of the site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is at 'Significant' hazard (Danger for Most) with a small area to the north which is not at risk of flooding. The maximum flood depth during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 3.1m AOD. Ground levels are approximately 2m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of surface water flooding. There are some small areas of low to high surface water flood risk towards the site boundary which increases when taking climate change into account. The access route to the west on Point Road is at medium to high risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding.

The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

172 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

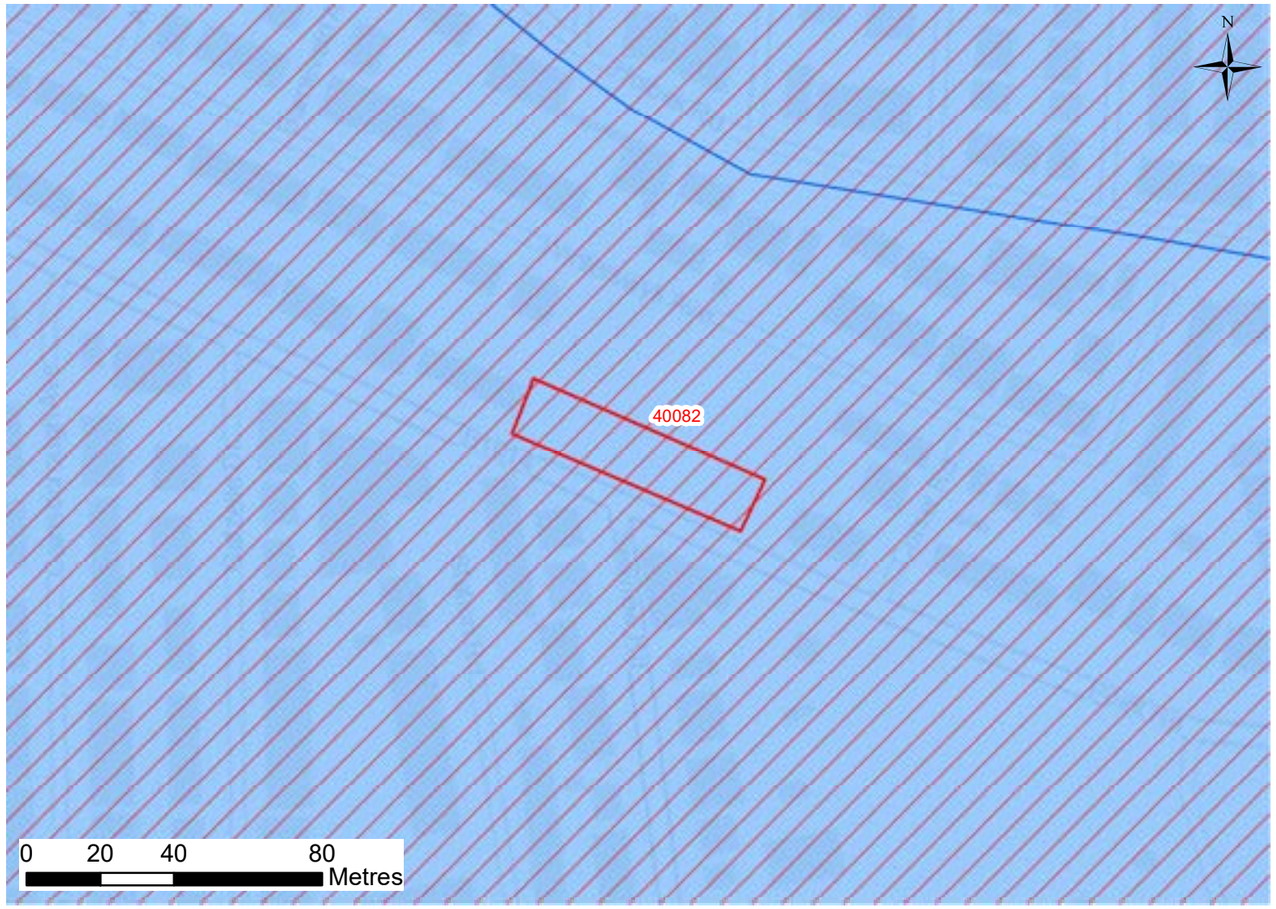
Tidal and Fluvial

- A 19m wide undeveloped buffer strip should be retained from the tidal flood defences to the north of the site at Smallgains Marina. New development within 19m of the tidal flood defences will require consent from the Environment Agency (guidance on Environment Agency Flood Risk Activity Permits is available online https://www.gov.uk/guidance/flood-risk-activities-environmental-permits).
- The unnamed Environment Agency Main River which flows through the site may be culverted and should therefore be investigated further as part of a site specific Flood Risk Assessment. An 8m wide undeveloped buffer strip should be retained alongside the watercourse and opportunities should be explored for riverside restoration and deculverting (where applicable). New development within 8m of a Main River will require consent from the Environment Agency.
- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 3.3m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40082	ALLOCATION NUMBER: C16(a)	CLUSTER: Canvey	SITE AREA: 0.106 ha
SITE NAME: Formal Admiral Jellicoe, High Street			



*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook
RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE
SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS
MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**
MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

PROPOSED UNITS: 7

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 249m **PROXIMITY TO NEAREST WATERCOURSE:** 74m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

101 and 134 records in Postcode Area SS8 8 and SS8 7, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
0%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS05

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40082	Allocation Number	C16(a)	Site Name	Former Admiral Jellicoe, High Street

Flood Risk Summary

The site is located in the south east of Canvey Island. An unnamed tributary of Smallgains Creek lies to the north of the site at a distance of approximately 74m (as shown on the OS Watercourse layer). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The entire site is at 'Significant' hazard (Danger for Most). The maximum flood depth on the site during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 3.0m AOD. Ground levels are approximately 2.3m AOD across most of the site with levels of approximately 1.8m AOD in the centre of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at very low risk of flooding from surface water. The access route to the north on the High Street is at low to medium risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding.

The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

7 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

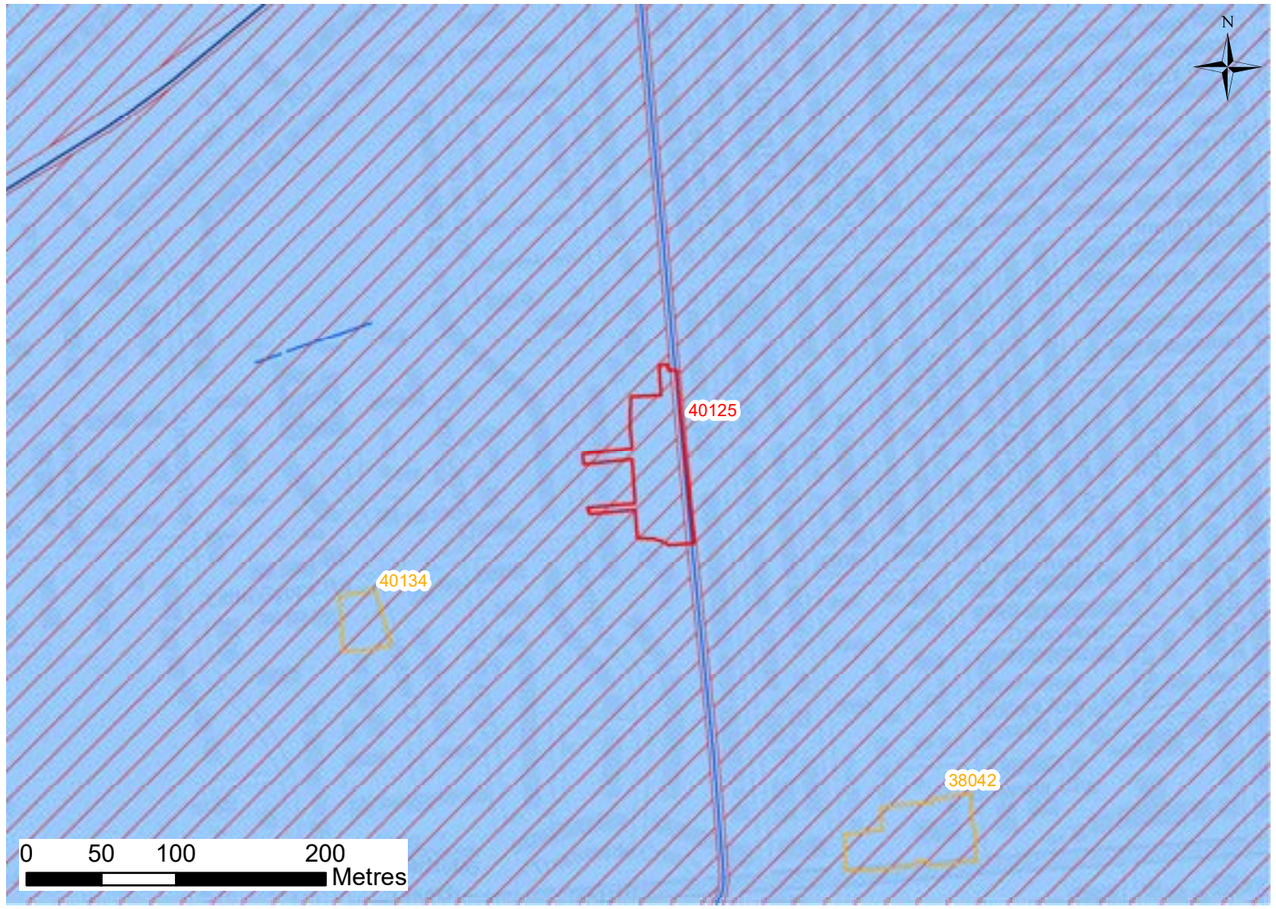
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 3.1m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40125	ALLOCATION NUMBER: C16(b)	CLUSTER: Canvey	SITE AREA: 0.404 ha
SITE NAME: Land to the rear of North Avenue			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES

MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY

RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING

RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH**

MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH**

MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 21

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	0%	Flood Zone 2 (0.1% AEP):	0%	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	100%	Flood Zone 3b (defined in SFRA report):	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 353m **PROXIMITY TO NEAREST WATERCOURSE:** Located on edge of site boundary

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

228 records in Postcode Area SS8 9

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	4%	1% AEP:	0%	3.33%:	3%
0.1% AEP + 40% Climate Change:	9%	1% AEP + 40% Climate Change:	1%	3.33% AEP + 40% Climate Change:	6%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS02, CAS03, CAS04, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40125	Allocation Number	C16(b)	Site Name	Land to the rear of North Avenue

Flood Risk Summary

The site is located in the centre of Canvey Island. An unnamed Ordinary Watercourse flows south along the eastern boundary of the site (as shown on the OS Watercourse layer), before flowing south into Thorneycreek Fleet and out to the Thames Estuary. This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. 87% of the site is shown to be within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The west of the site is 'Significant' hazard (Danger for Most) with the east of the site at 'Moderate' hazard (Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS03 is approximately 2.2m AOD. Ground levels are approximately 1.6m AOD to 1.9m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of surface water flooding with a small area to the south of the site boundary at low to high risk of surface water flooding which increases slightly with climate change. The map indicates the local road network may be susceptible to low to medium risk surface water ponding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

21 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

Tidal and Fluvial

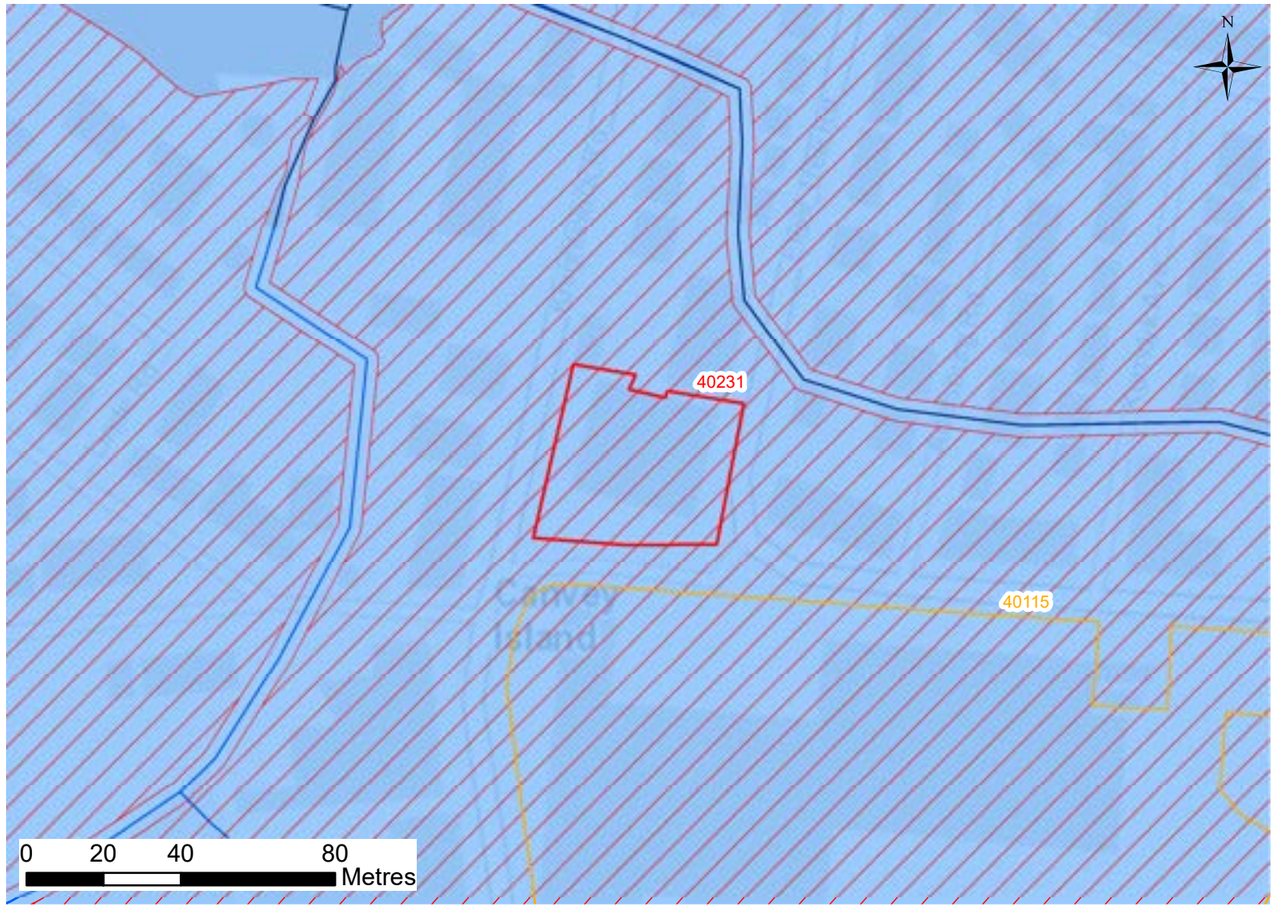
- The unnamed Ordinary Watercourse which flows through the site may be culverted and should therefore be investigated further as part of a site specific Flood Risk Assessment. An 8m wide buffer strip should be retained alongside Ordinary Watercourses and opportunities should be explored for riverside restoration and deculverting (where applicable). New development within 8m of an Ordinary Watercourse will require consent from Essex County Council (as LLFA).
- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS03 is approximately 2.3m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.

- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40231	ALLOCATION NUMBER: C16(c)	CLUSTER: Canvey TC	SITE AREA: 0.19 ha
SITE NAME: Essex Coachworks, 218 High Street			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 19

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	0%	Flood Zone 2 (0.1% AEP):	0%	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	100%	Flood Zone 3b (defined in SFRA report):	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 47m **PROXIMITY TO NEAREST WATERCOURSE:** 16m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

101 and 134 records in Postcode Area SS8 8 and SS8 7, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	0%	1% AEP:	0%	3.33%:	0%
0.1% AEP + 40% Climate Change:	0%	1% AEP + 40% Climate Change:	0%	3.33% AEP + 40% Climate Change:	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40231	Allocation Number	C16(c)	Site Name	Essex Coachworks, 218 High Street

Flood Risk Summary

The site is located in the centre of Canvey Island. An unnamed watercourse lies to the north of the site at a distance of approximately 16m which flows west into Canvey Lake site (as shown on the Environment Agency's Statutory Main River Map). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Significant' hazard (Danger for Most) with a small area to the south east as 'Low' to 'Moderate' hazard (Caution to Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS06 is approximately 2.6m AOD. Ground levels are approximately 2.5m AOD to the south of the site and 1.8m AOD to the north of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at very low risk of surface water flooding. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding. The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

19 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

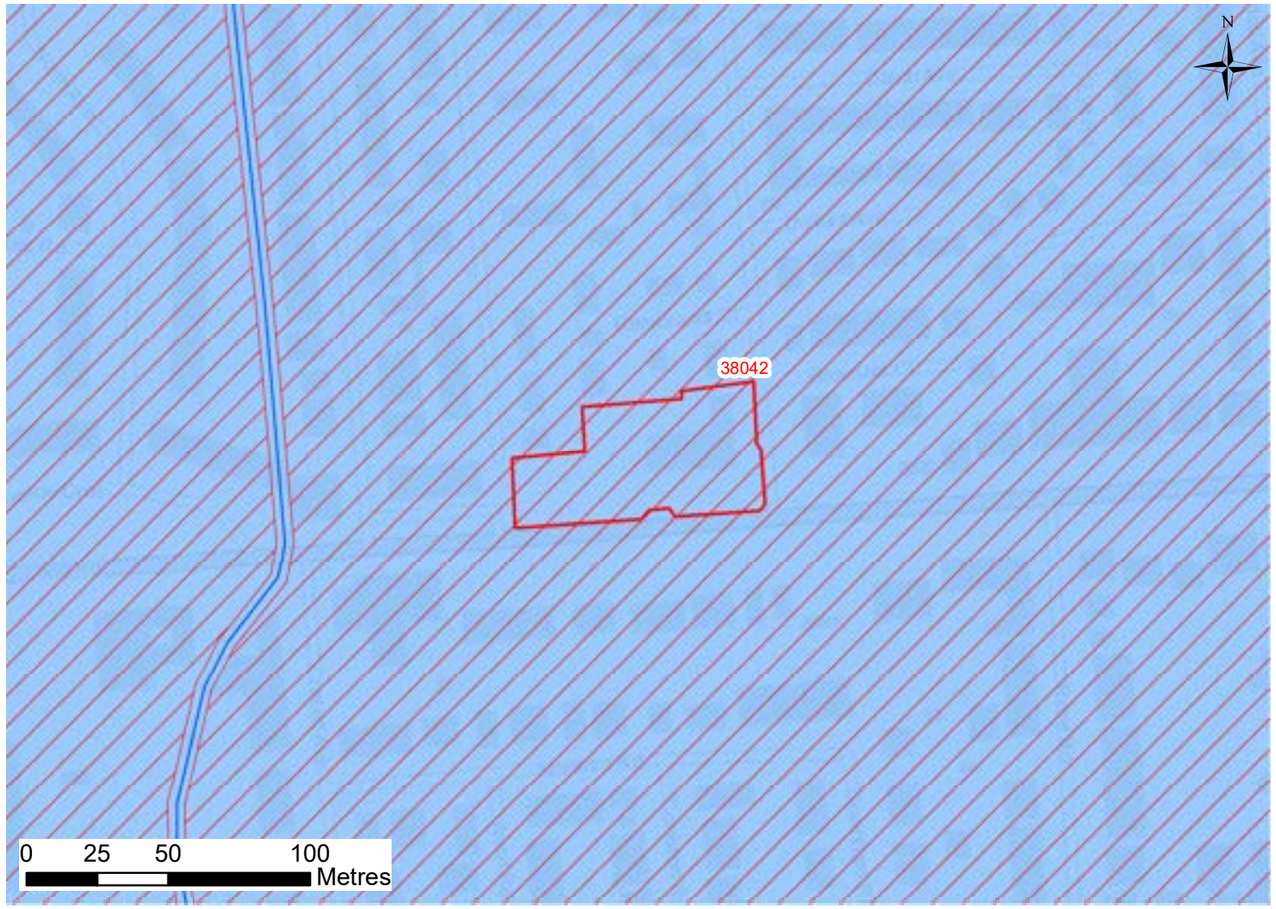
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS06 is approximately 2.7m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 38042	ALLOCATION NUMBER: C16(d)	CLUSTER: Canvey	SITE AREA: 0.322 ha
SITE NAME: Former Council Offices, Long Road			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 32

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 503m **PROXIMITY TO NEAREST WATERCOURSE:** 81m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

228 and 90 records in Postcode Area SS8 9 and SS8 0, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
1%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS02, CAS03, CAS04, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	38042	Allocation Number	C16(d)	Site Name	Former Council Offices, Long Rd

Flood Risk Summary

The site is located in the centre of Canvey Island. An unnamed watercourse lies to the west of the site at a distance of approximately 81m and flows south, before flowing south into Thorneycreek Fleet and out to the Thames Estuary (as shown on the OS Watercourse layer). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The west of the site is 'Significant' hazard (Danger for Most) with the rest of the site as 'Low' to 'Moderate' hazard (Caution to Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS03 is approximately 2.3m AOD. Ground levels are approximately 1.8m AOD to 2.0m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of flooding from surface water. The access route along Long Road is also at very low risk of flooding from surface water.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

32 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

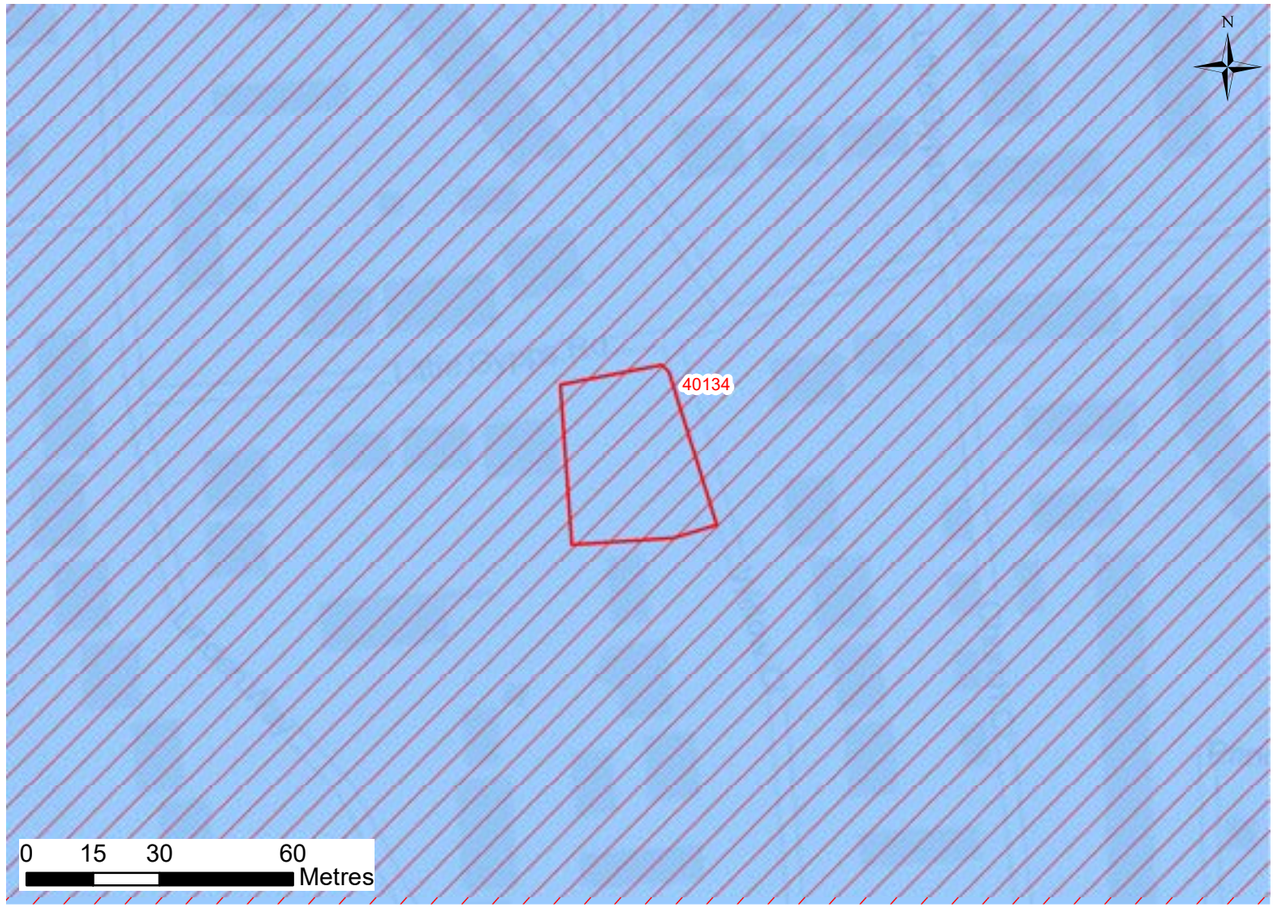
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS03 is approximately 2.3m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40134	ALLOCATION NUMBER: C16(e)	CLUSTER: Canvey	SITE AREA: 0.107 ha
SITE NAME: Corner of Little Gypps Road and Willow Close			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 7

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 348m **PROXIMITY TO NEAREST WATERCOURSE:** 166m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

228 records in Postcode Area SS8 9

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
1%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
3%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS02, CAS03, CAS04, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40134	Allocation Number	C16(e)	Site Name	Corner of Little Gypps Rd & Willow Cl

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The centre of the site is 'Significant' hazard (Danger for Most) with the south west of the site as 'Moderate' hazard (Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS03 is approximately 2.3m AOD. Ground levels are approximately 1.8m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of surface water flooding with a small area on the eastern boundary at low risk. The map indicates the local road network may be susceptible to low risk surface water ponding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

7 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

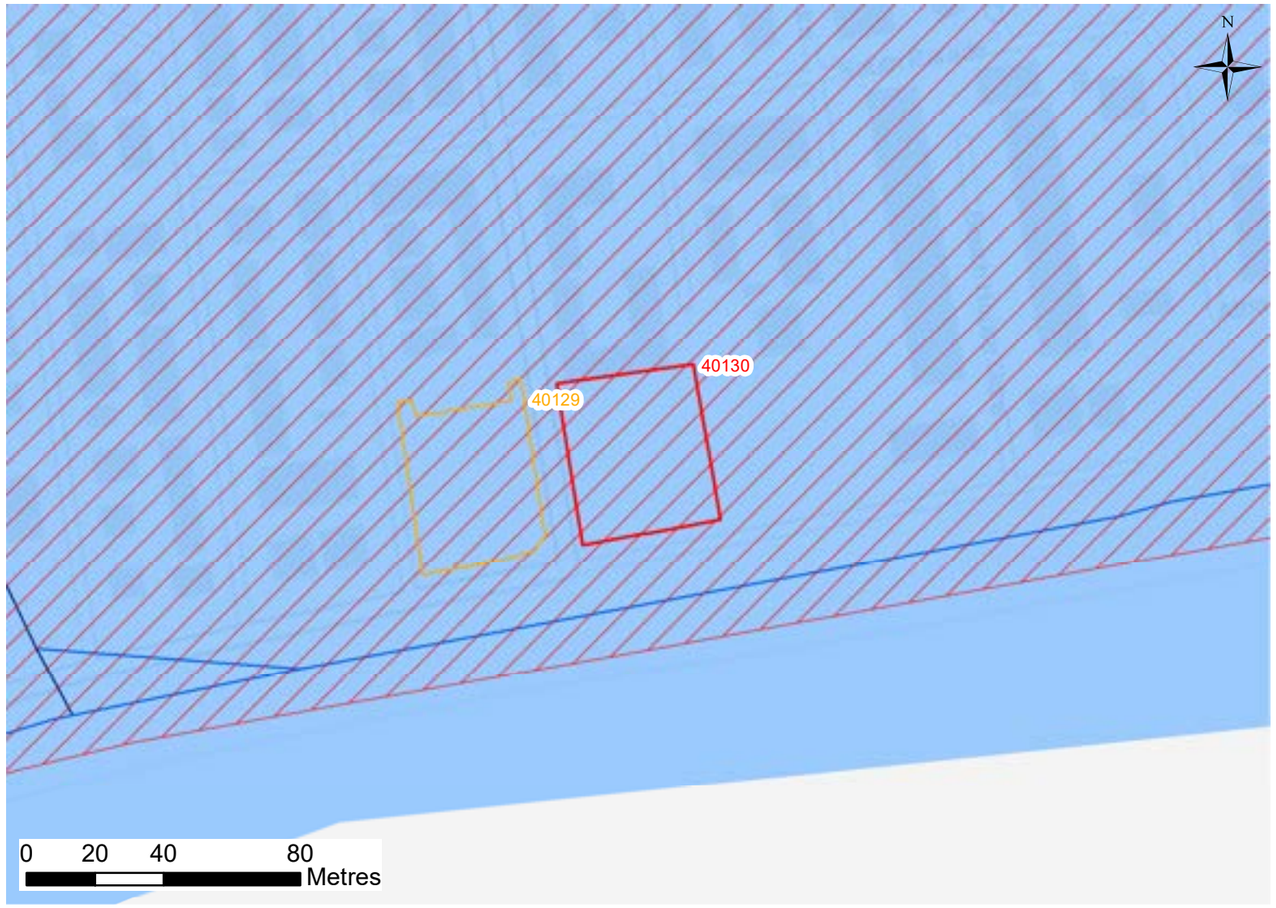
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS03 is approximately 2.3m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40130	ALLOCATION NUMBER: C16(f)	CLUSTER: Canvey	SITE AREA: 0.189 ha
SITE NAME: Ozonia Gardens, Eastern Esplanade			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

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*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

PROPOSED UNITS: 12

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 157m **PROXIMITY TO NEAREST WATERCOURSE:** 20m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
4%	0%	0%

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS05

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40130	Allocation Number	C16(f)	Site Name	Ozonia Gardens, Eastern Esplanade

Flood Risk Summary

The site is located in the south east of Canvey Island. An unnamed watercourse lies to the south of the site at a distance of approximately 20m which flows to the west and into the Thames Estuary (as shown on the OS Watercourse layer). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Extreme' hazard (Danger for All) with a small area to the north as 'Significant' hazard (Danger for Most). The maximum flood depth during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 3.0m AOD. Ground levels are approximately 1.6m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of surface water flooding with only a small area in the south west corner at low risk when taking climate change into account (4%). The access route to the west along the Esplanade is at high risk of surface water flooding and Seaview Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

12 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

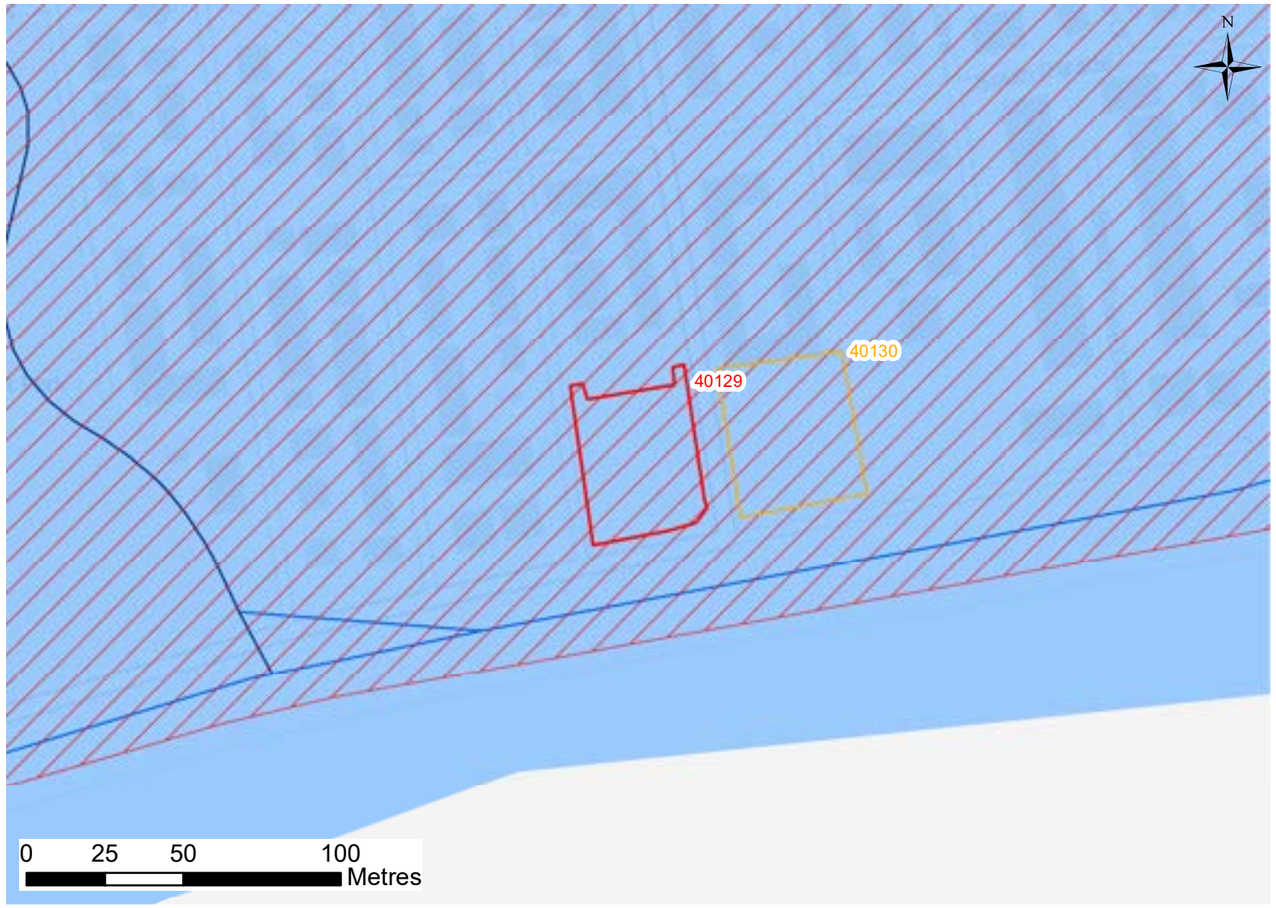
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 3.2m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40129	ALLOCATION NUMBER: C16(g)	CLUSTER: Canvey	SITE AREA: 0.171 ha
SITE NAME: Land between Station Road and Seaview Road			



*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

THESE MAPS ARE INTERACTIVE AND REQUIRE THE USE OF ADOBE ACROBAT TO BE ABLE TO CLICK ON THE INDIVIDUAL TABS TO LOAD THE LAYERS. PLEASE USE THE BUTTONS BELOW TO DISPLAY / HIDE DIFFERENT SOURCES OF FLOOD RISK TO THE SITE.

FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook | RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE | SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS | MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD** | MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

PROPOSED UNITS: 11

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 110m **PROXIMITY TO NEAREST WATERCOURSE:** 20m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
0%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
0%	0%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS05

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL:	WHEN THERE IS ALSO FLOODING FROM RIVERS:
0%	0%

Site Reference	40129	Allocation Number	C16(g)	Site Name	Land between Station Rd & Seaview rd

Flood Risk Summary

The site is located in the south east of Canvey Island. An unnamed watercourse lies to the south of the site at a distance of approximately 20m which flows to the west and into the Thames Estuary (as shown on the OS Watercourse layer). This watercourse may be culverted. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Extreme' hazard (Danger for All) with a small area to the north as 'Significant' hazard (Danger for Most). The maximum flood depth during this event is between 1 and 1.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 3.0m AOD. Ground levels are approximately 1.7m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at very low risk of surface water flooding. The access route to the west along the Esplanade is at high risk of surface water flooding and Seaview Road to the north is at low risk of surface water flooding. The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

11 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

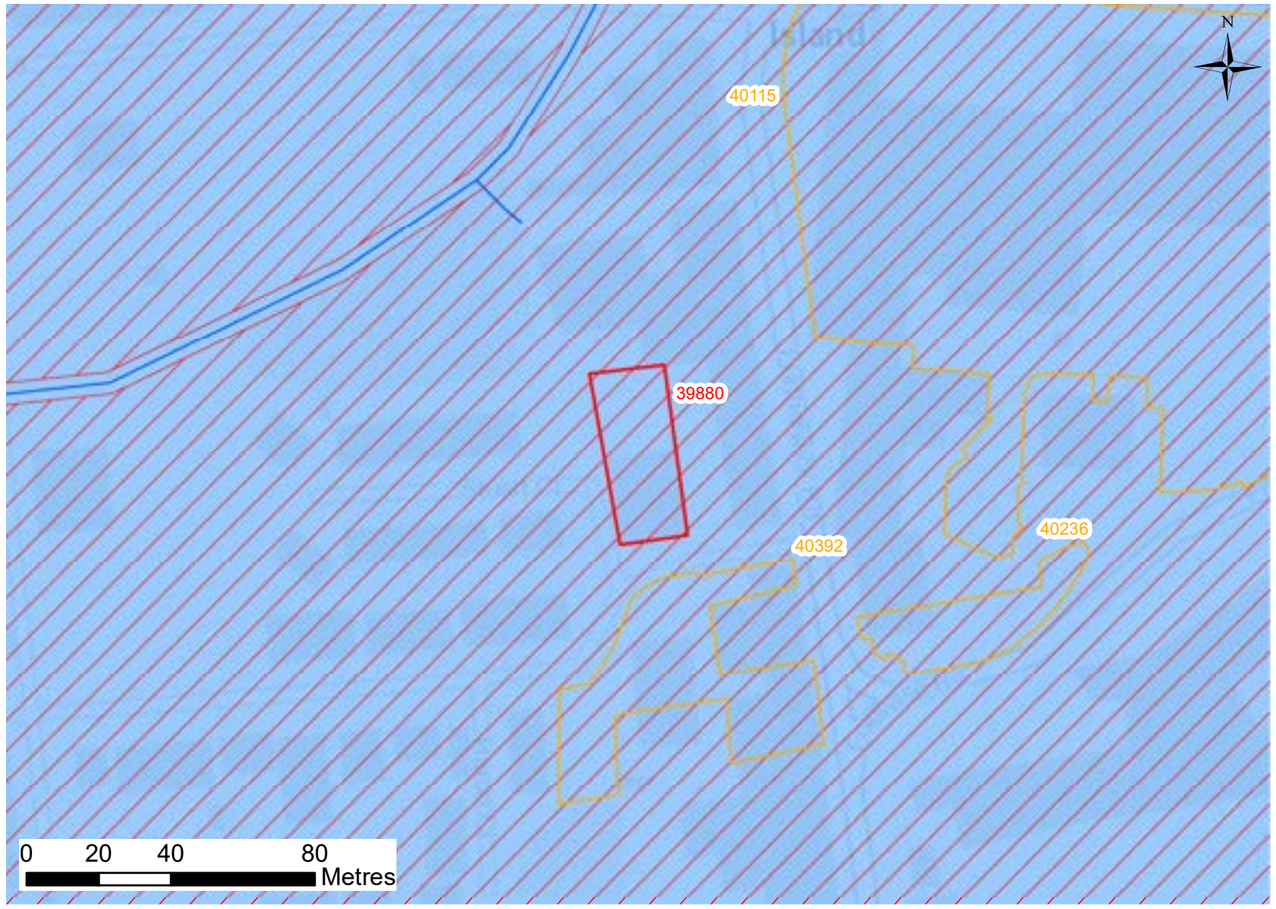
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 3.2m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 39880	ALLOCATION NUMBER: C1	CLUSTER: Canvey TC	SITE AREA: 0.1 ha
SITE NAME: Matrix House, 12-16 Lionel Road			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 10

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	Flood Zone 2 (0.1% AEP):	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	Flood Zone 3b (defined in SFRA report):
0%	0%	100%	0%

FLOOD WARNING AREA: Canvey Island north

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 192m **PROXIMITY TO NEAREST WATERCOURSE:** 46m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

228 and 134 records in Postcode Area SS8 9 and SS8 7, respectively

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	1% AEP:	3.33%:
20%	0%	0%
0.1% AEP + 40% Climate Change:	**1% AEP + 40% Climate Change:**	**3.33% AEP + 40% Climate Change:**
17%	13%	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: 1-4 hours **FROM BREACH LOCATION(S):** CAS03, CAS05, CAS06

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	39880	Allocation Number	C1	Site Name	Matrix House, 12-16 Lionel Rd

Flood Risk Summary

The site is located in the centre of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The north of the site is 'Moderate' hazard (Danger to Some) and the south of the site is 'Low' hazard (Caution). The maximum flood depth during this event is between 0 and 0.5m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.4m AOD. Ground levels are approximately 2.2m AOD across the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the majority of the site is at very low risk of flooding from surface water with an area in the north of the site (20%) at low risk. When considering climate change, this area to the north of the site (13%) is at medium risk. The access route to the south on Furtherwick Road is at high risk of surface water flooding and Central Wall Road to the north is at low risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

10 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

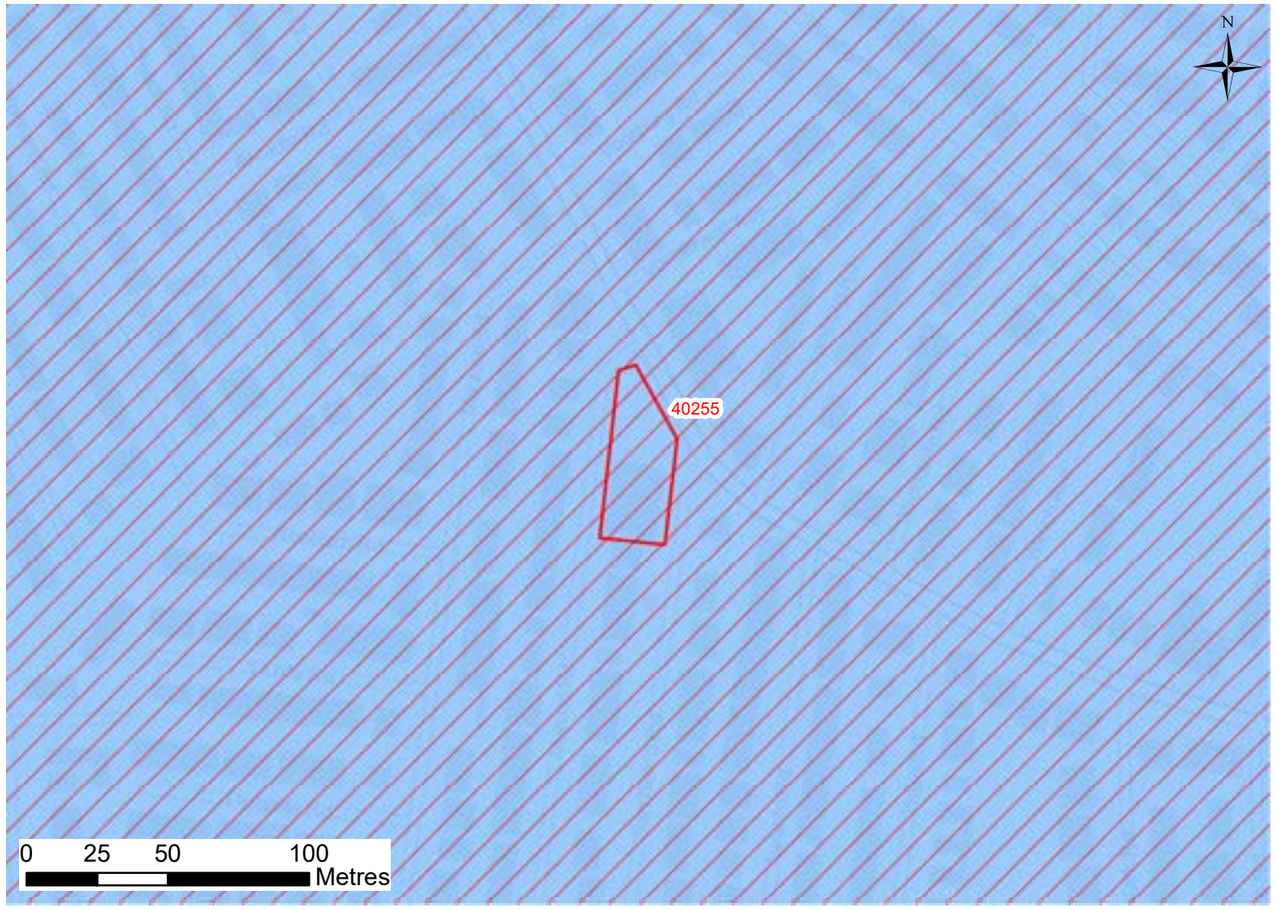
Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 and CAS06 is approximately 2.5m AOD.
- The site is located within the 'Canvey Island North' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.
- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring.

SITE REFERENCE: 40255	ALLOCATION NUMBER: C10(c)	CLUSTER: Canvey - 40225	SITE AREA: 0.121 ha
SITE NAME: Kushi, Furtherwick Road			



Legend

- Castle Point Borough Council
- Site of Interest
- Other Allocation Sites
- EA Main River
- Watercourse
- Reduction in Risk of Flooding from Rivers and Sea due to Defences

Flood Zones

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

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FLOOD ZONES | MODELLED FLUVIAL FLOOD EXTENTS: Benfleet Hall Brook and Prittle Brook

RISK OF FLOODING FROM SURFACE WATER: PRESENT DAY | RISK OF FLOODING FROM SURFACE WATER: CLIMATE CHANGE

SUSCEPTIBILITY TO GROUNDWATER FLOODING | RISK OF FLOODING FROM RESERVOIRS

MODELLED OVERTOPPING DESIGN EVENT FLOOD DEPTH** | MODELLED OVERTOPPING DESIGN EVENT FLOOD HAZARD**

MODELLED BREACH EVENT FLOOD DEPTH** | MODELLED BREACH EVENT FLOOD HAZARD**

*For the fluvial modelling, the design event is the 1% AEP including a higher central climate change allowance.
**For tidal modelling, the design event is the 0.5% AEP including a higher central climate change allowance. It should be noted that this is 'actual' risk for the overtopping and 'residual' risk for the breach.
***Due to the number of breach scenarios modelled, individual time to inundation breach mapping has not been included within this proforma.
**** Results from two models; South Essex and Canvey Island. The Canvey Island model has superseded the South Essex model across the Canvey Island area.
PLEASE REFER TO THE SFRA REPORT FOR FURTHER DETAIL ON MODELLING DISPLAYED WITHIN THIS PROFORMA

PROPOSED UNITS: 8

VULNERABILITY CLASSIFICATION: More Vulnerable

FLOOD ZONES AND HISTORIC FLOODING

Flood Zone 1 (<0.1% AEP):	0%	Flood Zone 2 (0.1% AEP):	0%	Flood Zone 3a (1% AEP Fluvial/0.5% AEP Tidal):	100%	Flood Zone 3b (defined in SFRA report):	0%

FLOOD WARNING AREA: Canvey Island south

RECORDED FLOOD OUTLINES IN WHICH THE SITE IS LOCATED: 1953 Coast Flood Outline Essex

PROXIMITY TO MAIN RIVER: 355m **PROXIMITY TO NEAREST WATERCOURSE:** 279m

ANGLIAN WATER DG5 RECORDED FLOOD INCIDENTS BASED ON POSTCODE AREA

134 records in Postcode Area SS8 7

FLUVIAL FLOODING

% OF SITE AT RISK OF FLOODING IN THE DESIGN EVENT (1% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE): 0%

SURFACE WATER FLOODING

0.1% AEP:	0%	1% AEP:	0%	3.33%:	0%
0.1% AEP + 40% Climate Change:	0%	1% AEP + 40% Climate Change:	0%	3.33% AEP + 40% Climate Change:	0%

EXCEPTION TEST?
Exception Test required.
Site is fully located within Flood Zone 3a. Proposed development has a vulnerability classification of More Vulnerable.

GROUNDWATER FLOODING

BEDROCK GEOLOGY: London Clay Formation **SUPERFICIAL GEOLOGY:** Tidal Flat Deposits

BGS SUSCEPTIBILITY TO GROUNDWATER FLOODING

This site is not indicated to be prone to groundwater flooding.

TIDAL FLOODING

OVERTOPPING DESIGN EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK OF FLOODING: 0%

BREACH EVENT (0.5% AEP + HIGHER CENTRAL CLIMATE CHANGE ALLOWANCE)

% OF SITE AT RISK FROM FLOODING: 100%

BREACH FASTEST TIME TO INUNDATION (0.1% AEP + UPPER END CLIMATE CHANGE ALLOWANCE)***

FASTEST TIME TO INUNDATION: <1 hour **FROM BREACH LOCATION(S):** CAS05

RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH)

% OF SITE AT RISK OF FLOODING FROM RESERVOIRS (IN THE EVENT OF A BREACH):

WHEN RIVER LEVELS ARE NORMAL: 0% **WHEN THERE IS ALSO FLOODING FROM RIVERS:** 0%

Site Reference	40255	Allocation Number	C10(c)	Site Name	Kushi, Furtherwick Rd

Flood Risk Summary

The site is located in the east of Canvey Island. The site, and the whole of Canvey Island, is defined as Flood Zone 3a 'High probability' of flooding from the Thames Estuary. However, Canvey Island is surrounded by tidal flood defences which provide a high level of protection, and therefore the majority of the island, and therefore the site (100%), is also shown to be defined as within the 'Reduction in Risk of Flooding from Rivers and Sea due to Defences' area. During the design event (0.5% AEP) for the year 2125, the site and Canvey Island is shown to be protected from flooding from the Thames. The site is therefore at residual risk of flooding from the sea, in the event of a breach or failure of flood defences. Historic flood records indicate that the site experienced flooding in the 1953 Essex flood event, before the tidal flood defences were in place.

Tidal breach modelling has been undertaken to assess the residual risk of flooding from the Thames Estuary. This shows that the entire site is at risk of flooding in the event of a breach or failure of flood defences during the 0.5% AEP for the year 2125. The majority of the site is 'Significant' hazard (Danger for Most) with a small area in the centre of the site of 'Moderate' hazard (Danger for Some). The maximum flood depth during this event is between 0.5 and 1m. The maximum water level on the site during this event from breach location CAS05 is approximately 2.8m AOD. Ground levels are approximately 2.3m AOD to the north of the site and 2m AOD to the south of the site. Access off Canvey Island is also at risk of flooding from a breach event.

The modelled surface water risk mapping indicates the site is at very low risk of surface water flooding. The access route to the north on the High Street is at low to medium risk of surface water flooding.

The BGS Susceptibility to Groundwater Flooding dataset indicates this area is not considered to be prone to groundwater flooding. The site does not lie within the at risk of flooding from reservoirs in the event of a breach or failure when both river levels are normal or when there is also flooding from rivers area.

Site Specific Recommendations

8 residential units are proposed for the site. More Vulnerable development (e.g. residential) is only permitted in Flood Zone 3a where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. A site-specific FRA will be required. The following recommendations are made for this site:

Tidal and Fluvial

- The site is at residual risk of flooding from the Thames Estuary in the event of a breach in flood risk management infrastructure. Therefore an internally accessible place of safety should be defined within the proposed development above the extreme flood level (0.1% AEP including climate change), capable of accommodating the likely number of occupants. The maximum water level on the site during the extreme flood event from breach location CAS05 is approximately 3.0m AOD.
- The site is located within the 'Canvey Island South' Flood Warning Area. Safe access/egress is available during the design event but is not available during a breach event. Developers need to sign up to Flood Warnings and prepare Emergency Plans for occupants of the site to set out the response in the event of a flood warning with respect to safe access routes and places of safety.
- Modelling of the design event (0.5% AEP including higher central climate change allowance) shows that Canvey Island is not at risk of flooding through overtopping, so there are no specific requirements on Finished Floor Levels for residential accommodation in relation to the risk of flooding from the sea.

Surface Water

- Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water in accordance with the drainage hierarchy; make use of SuDS (including green/blue roofs, permeable paving, downpipe planters, attenuating tree pits, rain gardens and other innovative technologies); and incorporate soft landscaping, planting and permeable surfacing.

- Finished Floor Levels of any new buildings should be raised by a minimum of 300mm above the surrounding ground level to address the surface water flood risk and the residual risk of exceedance events or blockages to the surface water system occurring..