

	<p>Dorset Council</p> <p>L2 SFRA - Detailed Site Summary Tables</p>																								
	<p>Site details</p>																								
<p>Site Code</p>	<p>WEY7</p>																								
<p>Address</p>	<p>Westwey Road and North Quay area, Weymouth</p>																								
<p>Area</p>	<p>6.3 hectares</p>																								
<p>Current land use</p>	<p>Brownfield site, offices and residential.</p>																								
<p>Proposed land use</p>	<p>Mixed uses which may include residential, hotel, commercial and small-scale retail development.</p>																								
	<p>Sources of flood risk</p>																								
<p>Location of site within catchment</p>	<p>The site is located to the west and south of Weymouth Harbour (the River Wey), within Weymouth, between Westham Bridge to the north and Town Bridge to the east. The river flows south and then eastward through the Weymouth urban area.</p>																								
<p>Existing drainage features</p>	<p>The site is located adjacent to the River Wey, which runs through the town. The tidal river mouth containing Weymouth Harbour forms the eastern boundary of the site. The site lies downstream of Westham Bridge which acts as a tidal barrier during typical tidal conditions.</p> <p>There are no additional watercourses within the site boundary or in close proximity to the site.</p> <p>One surface water sewer drains from west of the northern section of the site east into Weymouth harbour. Another surface water sewer drains from the Marsh Road area east into Weymouth harbour. This surface water sewer (and those upstream) follows the line of an old watercourse. Historic Ordnance Survey (OS) maps suggest that this channel (to the west of the site) was "liable to flooding". Near the junction of the A354 with North Quay, two surface water sewers cross the site from the south and south west to drain into the harbour.</p> <p>It is understood that combined sewers drain most of the site to the Wessex Water Radipole pumping station.</p>																								
<p>Joint probability assessment</p>	<p>All hydraulic modelling undertaken as part of this assessment has used a joint probability approach based on the Environment Agency best practice FD2308 guidance. This avoids overestimating the amount of flood risk when multiple sources of flooding are being considered in conjunction. Rather than running all combinations of conditions for each event, the models were run for tidal dominated (TDT) event, fluvial dominated (FDT) event. For example, in a 0.5% AEP TDT event, the tidal boundary has 0.5% AEP conditions, whereas the fluvial boundary has 33% AEP conditions. The tables below detail the event combinations that were simulated for the TDT and FDT events.</p> <table border="1" data-bbox="534 1608 1444 1933"> <thead> <tr> <th>TDT Event AEP (%)</th> <th>50</th> <th>5</th> <th>2.5</th> <th>1.33</th> <th>1</th> <th>0.5</th> <th>0.1</th> </tr> </thead> <tbody> <tr> <th>Tidal AEP (%)</th> <td>50</td> <td>5</td> <td>2.5</td> <td>1.33</td> <td>1</td> <td>0.5</td> <td>0.1</td> </tr> <tr> <th>Fluvial AEP (%)</th> <td>1000</td> <td>500</td> <td>100</td> <td>100</td> <td>50</td> <td>33</td> <td>6</td> </tr> </tbody> </table>	TDT Event AEP (%)	50	5	2.5	1.33	1	0.5	0.1	Tidal AEP (%)	50	5	2.5	1.33	1	0.5	0.1	Fluvial AEP (%)	1000	500	100	100	50	33	6
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Site details

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FDT Event AEP (%)	50	10	5	2	1	0.5	0.1
Tidal AEP (%)	MHWS	MHWS	MHWS	100	50	33	6
Fluvial AEP (%)	50	10	5	2	1	0.5	0.1

For the surface water modelling a similar approach was taken when considering the downstream boundaries to avoid overestimating the extent of flood risk. As a result, for the 3.3% and 1% AEP events, the 50% AEP TDT and FDT boundary levels were applied to the model while the 5% AEP TDT and FDT levels were applied to the surface water model for the 0.1% AEP event.

Fluvial dominated	<p>Available data and mapping: A detailed coastal and fluvial TUFLOW model of Weymouth, developed for the Environment Agency in 2019 and updated as part of this Level 2 SFRA study has been used to describe the risk of fluvial flooding to the site.</p> <p>WEY7- Fluvial defended 3.3% AEP (depth) WEY7- Fluvial defended 1% AEP (depth) WEY7- Fluvial defended 0.1% AEP (depth)</p> <p>WEY7- Fluvial defended 3.3% AEP (hazard) WEY7- Fluvial defended 1% AEP (hazard) WEY7- Fluvial defended 0.1% AEP (hazard)</p> <p>WEY7- Fluvial defended 3.3% AEP (velocity) WEY7- Fluvial defended 1% AEP (velocity) WEY7- Fluvial defended 0.1% AEP (velocity)</p>
	<p>Data analysis:</p> <p>3.3% AEP (1 in 30-year) event: Proportion - <1% Max depth - 0m Max velocity - 0m/s Max hazard - 0</p> <p>1% AEP (1 in 100-year) event: Proportion - <1% Max depth - 0m Max velocity - 0m/s Max hazard - 0</p> <p>Mean depth - 0m Mean velocity - 0m/s Mean hazard - 0</p>



Dorset Council

L2 SFRA - Detailed Site Summary Tables

Site details

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In a 1 in 30-year (3.3% AEP) event plus 40% climate change uplift, surface water flooding is slightly greater in extent than the 1 in 100-year (1% AEP) surface water event with a greater increase on North Quay. Depths are 0.1-0.2m on much of Westwey Road and reach 0.5m on North Quay by the council offices but remain less than 0.1m across much of the site. Velocities are less than 0.1m/s across almost the entire site away from the major roads. On Westwey Road velocities are 0.1m/s and on Rodwell Road and North Quay 0.1-0.4m/s. The flooded areas have a flood hazard rating of 'Low' hazard except for North Quay by the council offices and some other small areas which have a 'Moderate' hazard rating. Very small areas by the council offices and at the junction of North Quay and New Road have a 'Significant' flood hazard rating (1.25 to 2.0).

In the 1 in 100-year (1% AEP) event plus 45% climate change uplift, surface water extents and depths increase slightly on the 3.3% AEP event plus 40% climate change uplift. Depths reach a maximum of 0.7m near the council offices and increase slightly to 0.1-0.3m on much of Westwey Road but are less than 0.2m across much of the site. Velocities are still less than 0.1m/s across almost the entire site away from the major roads. On Westwey Road velocities are 0.1-0.2m/s and on Rodwell Road and North Quay 0.1-0.5m/s. The flooded areas have a flood hazard rating of 'Low' hazard except for North Quay by the council offices and some other very small areas which have a 'Moderate' hazard rating. North Quay by the council offices and a very small area at the junction of North Quay and New Road have a 'Significant' flood hazard rating (1.25 to 2.0).

In the 1 in 1,000-year (0.1% AEP) event plus 45% climate change uplift, surface water extents and depths increase on the 1% AEP event plus 45% climate change uplift with a maximum depth of 0.8m on North Quay and 0.6m on Westwey Road. Flooding reaches 0.4m elsewhere on the site but is still fragmented. Velocities increase to 0.7m/s on North Quay and Rodwell Road, but on Westwey Road velocities remain less than 0.2m/s. Flood hazard ratings increase with most of Westwey Road having a flood hazard rating of 'Significant' with the remainder having a 'Moderate' flood rating. The area of 'Significant' hazard rating on North Quay expands, elsewhere flood hazard ratings are mainly 'Low'.

Surface water (tidal dominated downstream boundary)

Available data and mapping:
 The detailed InfoWorks ICM surface water model, developed for this Level 2 SFRA study has been used to describe the risk of surface water flooding to the site.

WEY7- Surface water (tidal downstream boundary) 3.3% AEP (depth)
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Dorset Council
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	<p>Data analysis:</p> <p>3.3% AEP (1 in 30-year) event:</p> <table border="0"> <tr> <td>Proportion - 25%</td> <td></td> </tr> <tr> <td>Max depth - 2.71m</td> <td>Mean depth - 0.1m</td> </tr> <tr> <td>Max velocity - 0.29m/s</td> <td>Mean velocity - 0.05m/s</td> </tr> <tr> <td>Max hazard - 2.8</td> <td>Mean hazard - 0.58</td> </tr> </table> <p>1% AEP (1 in 100-year) event:</p> <table border="0"> <tr> <td>Proportion - 29%</td> <td></td> </tr> <tr> <td>Max depth - 2.71m</td> <td>Mean depth - 0.12m</td> </tr> <tr> <td>Max velocity - 0.38m/s</td> <td>Mean velocity - 0.07m/s</td> </tr> <tr> <td>Max hazard - 2.8</td> <td>Mean hazard - 0.59</td> </tr> </table> <p>0.1% AEP (1 in 1,000-year) event:</p> <table border="0"> <tr> <td>Proportion - 40%</td> <td></td> </tr> <tr> <td>Max depth - 2.89m</td> <td>Mean depth - 0.12m</td> </tr> <tr> <td>Max velocity - 0.61m/s</td> <td>Mean velocity - 0.08m/s</td> </tr> <tr> <td>Max hazard - 2.85</td> <td>Mean hazard - 0.63</td> </tr> </table> <p>Flood characteristics:</p> <p>Significant depths, velocities and flood hazard ratings along the boundary with the harbour represent water levels within the harbour, rather than the site itself.</p> <p>In a 1 in 30-year (3.3% AEP) event, flooding is concentrated along Westwey Road with many separate small areas of ponding to its west. In the southeast section of the site flooding follows the roads and access roads in the council offices car park. Westwey Road is flooded to depths of approximately 0.1m. In most areas away from Westwey Road depths are less than 0.1m but reach up to 0.4m in isolated small areas. The maximum depth of 0.5m is located at a property at the junction of New Road and North Quay. Velocities are less than 0.1m/s across almost the entire site with the exception of North Quay where velocities reach 0.2m/s. The flooded areas have a flood hazard rating of 'Low' hazard (less than 0.75) except for some very small, isolated areas which have a 'Moderate' hazard (0.75 to 1.25) rating.</p> <p>In a 1 in 100-year (1% AEP) event, flooding increases but is still concentrated in the same locations as in the 1 in 30-year (3.3% AEP) event. Depths increase slightly to 0.1-0.2m on much of Westwey Road. In most areas away from Westwey Road depths are less than 0.1m but reach up to 0.5m in isolated small areas. Velocities are less than 0.1m/s across almost the entire site but reach 0.1m/s on Westwey Road and 0.1-0.3m/s on North Quay. The flooded areas have a flood hazard rating of 'Low' hazard except for some very small, isolated areas which have a 'Moderate' hazard rating. A very small area at the junction of North Quay and New Road has a 'Significant' flood hazard rating (1.25 to 2.0).</p> <p>In the 1 in 1,000-year (0.1% AEP) event, flood depths increase slightly to 0.2-0.3m along Westwey Road. Depths increase to 0.1-0.3m in some areas of ponding to the west of Westwey Road, with some very isolated small areas reaching depths of 0.4-0.5m. Velocities increase slightly: on Westwey Road velocities are approximately 0.2m/s and on North Quay 0.2-0.4m/s, with a maximum velocity (0.5m/s) in a very localised area by the council office car park. Much of Westwey Road has a flood hazard rating of 'Moderate', the rest of the flooded areas have a 'Low' hazard rating except for</p>	Proportion - 25%		Max depth - 2.71m	Mean depth - 0.1m	Max velocity - 0.29m/s	Mean velocity - 0.05m/s	Max hazard - 2.8	Mean hazard - 0.58	Proportion - 29%		Max depth - 2.71m	Mean depth - 0.12m	Max velocity - 0.38m/s	Mean velocity - 0.07m/s	Max hazard - 2.8	Mean hazard - 0.59	Proportion - 40%		Max depth - 2.89m	Mean depth - 0.12m	Max velocity - 0.61m/s	Mean velocity - 0.08m/s	Max hazard - 2.85	Mean hazard - 0.63
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Dorset Council
L2 SFRA - Detailed Site Summary Tables

Site details

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Address	Westwey Road and North Quay area, Weymouth
Area	6.3 hectares
Current land use	Brownfield site, offices and residential.
Proposed land use	Mixed uses which may include residential, hotel, commercial and small-scale retail development.

Significant depths, velocities and flood hazard ratings along the boundary with the harbour represent water levels within the harbour, rather than the site itself.

In a 1 in 30-year (3.3% AEP) event plus 40% climate change uplift, surface water flood depths are mostly 0.1-0.2m along Westwey Road. There is fragmented flooding to the west of Westwey Road, mostly with depths of less than 0.1m but with some very small areas reaching depths of 0.4m. North Quay is flooded to depths of 0.5m. Velocities reach 0.3m/s on North Quay and 0.1-0.2m/s on Westwey Road. Elsewhere, velocities are less than 0.1m/s. Flood hazard ratings are 'Low' (less than 0.75) across the flooded areas, except for North Quay where there is a 'Moderate' (0.75 to 1.25) flood hazard.

In the 1 in 100-year (1% AEP) event plus 45% climate change uplift, surface water flooding extents, depths and velocities are very similar to the 3.3% AEP event plus 40% climate change uplift with depths increasing by approximately 0.1m in the flooded areas. Flood hazard ratings remain similar, except for on North Quay where it increases to 'Significant' (1.25 to 2.0) to the north and east of the council offices.

In the 1 in 1000-year (0.1% AEP) event plus 45% climate change uplift, surface water flooding increases significantly with most of the site flooded. Depths increase to 2.2m along much of Westwey Road and on the eastern section of North Quay. Depths of at least 1.0m extend approximately 100m inland from Westwey Road towards Granville Road. Velocities increase to 0.5-1.0m/s along much of Westwey Road, with another area of 1.0m/s at the junction of Westwey Road and North Quay. The area west and south of the courts has velocities of 0.6-0.7m/s. All of Westwey Road and North Quay have a flood hazard rating of 'Extreme' (greater than 2.0), with this extending into some areas west of Westwey Road, especially around the courts building. Much of the other flooded area has a flood hazard rating of 'Significant'.

Surface water (fluvial dominated downstream boundary)	Available data and mapping: The detailed InfoWorks ICM surface water model, developed for this Level 2 SFRA study has been used to describe the risk of surface water flooding to the site.	
	WEY7- Surface water (fluvial downstream boundary) 3.3% AEP (depth) WEY7- Surface water (fluvial downstream boundary) 1% AEP (depth) WEY7- Surface water (fluvial downstream boundary) 0.1% AEP (depth)	
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	Data analysis:	
	3.3% AEP (1 in 30-year) event:	
	Proportion - 25%	
	Max depth - 2.05m	Mean depth - 0.08m
	Max velocity - 0.29m/s	Mean velocity - 0.05m/s
	Max hazard - 2.34	Mean hazard - 0.56



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1% AEP (1 in 100-year) event:

Proportion - 29%	
Max depth - 2.05m	Mean depth - 0.1m
Max velocity - 0.38m/s	Mean velocity - 0.07m/s
Max hazard - 2.34	Mean hazard - 0.57

0.1% AEP (1 in 1,000-year) event:

Proportion - 40%	
Max depth - 2.05m	Mean depth - 0.11m
Max velocity - 0.6m/s	Mean velocity - 0.08m/s
Max hazard - 2.29	Mean hazard - 0.62

Flood characteristics:

Significant depths, velocities and flood hazard ratings along the boundary with the harbour represent water levels within the harbour, rather than the site itself.

In a 1 in 30-year (3.3% AEP) event, flooding is concentrated along Westwey Road with many separate small areas of ponding to its west. In the southeast section of the site flooding follows the roads and the council offices car park access roads. Westwey Road is flooded to depths of up to 0.1m. In most areas away from Westwey Road depths are less than 0.1m. The maximum depth of 0.5m is located at a property at the junction of New Road and North Quay. Velocities are less than 0.1m/s across almost the entire site with the exception of North Quay where velocities reach 0.2m/s. The flooded areas have a flood hazard rating of 'Low' hazard (less than 0.75) except for two very small areas on North Quay which have a 'Moderate' hazard (0.75 to 1.25) rating.

In a 1 in 100-year (1% AEP) event flooding increases but is still concentrated in the same locations as in the 1 in 30-year (3.3% AEP) event. Depths increase to 0.4m just west of the council offices and much of Westwey Road is flooded to 0.1-0.2m but depths remain less than 0.1m across much of the site. The maximum depth of 0.5m is located at a property at the junction of New Road and North Quay. Velocities are less than 0.1m/s across almost the entire site away from the major roads. On Westwey Road velocities just exceed 0.1m/s in a few locations and on North Quay increase to 0.1-0.3m/s. The flooded areas have a flood hazard rating of 'Low' hazard except for some very small areas which have a 'Moderate' hazard rating. A very small area at the junction of North Quay and New Road has a 'Significant' flood hazard rating (1.25 to 2.0).

In the 1 in 1,000-year (0.1% AEP) event, flood depths increase to 0.2-0.3m along Westwey Road from the junction with North Quay to the northern boundary of the site. Depths remain less than 0.1m across much of the site, with some very isolated small areas reaching depths of 0.4m. The maximum depth remains at 0.5m. On Westwey Road velocities are approximately 0.2m/s and on North Quay 0.2-0.4m/s. The maximum velocity (0.5m/s) is from very small areas to the north of the council office car park and where Rodwell Road meets North Quay. Much of Westwey Road has a flood hazard rating of 'Moderate', the rest of the flooded areas have a 'Low' hazard rating except for very small areas on North Quay and on the western edge of the law courts which have 'Moderate' and 'Significant' flood hazard ratings.



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In a 1 in 30-year (3.3% AEP) event plus 40% climate change uplift, surface water flooding is similar to the 3.3% AEP event. Flooding is concentrated along Westwey Road and North Quay with fragmented areas of flooding further from the river. In the southeast section of the site flooding follows the roads and the council offices car park access roads. North Quay floods to depths of 0.5m east of New Road. Flood depths are 0.1-0.2m along Westwey Road and to its west are less than 0.1m. Velocities on North Quay reach 0.3m/s, on Westwey Road and the areas to its west velocities are less than 0.1m/s, except for at its far southern end (0.2m/s). The flooded areas have a 'Low' (less than 0.75) flood hazard rating except for the eastern section of North Quay which has a 'Moderate' (0.75 to 1.25) flood hazard rating.

In the 1 in 100-year (1% AEP) event plus 45% climate change uplift, surface water flooding is very similar to the 3.3% AEP event plus 40% climate change uplift. Flood depths increase slightly to 0.6m on North Quay and to 0.3m on Westwey Road. On the far western edge of the site, Newstead Road floods to depths of 0.7m. Velocities increase very slightly; on North Quay they remain largely at 0.3m/s but there is a small area of 0.5m/s at the far east end of the council offices. Along much of Westwey Road velocities increase to 0.1m/s. Flood hazard ratings increase with small areas of 'Moderate' hazard along Westwey Road, a westwards expansion of the area of 'Moderate' hazard on North Quay and an increase in rating for the eastern section of North Quay to 'Significant' (1.25 to 2.0).

In the 1 in 1,000-year (0.1% AEP) event plus 45% climate change uplift, surface water flooding extents increase on the 1% AEP event plus 45% climate change uplift, with some fragmented areas inland combining. Depths increase to 0.8m on North Quay and to 0.5-0.6m along the length of Westwey Road. There are small areas of flooding with depths of up to 0.4m to the west of Westwey Road, the access road to the courts is flooded to a depth of 0.6m at its junction with Newstead Road and Newstead Road just beyond the edge of the site is flooded to a depth of 1.2m. Velocities on North Quay remain largely at 0.3m/s but increase to 0.7m/s in limited areas at the far east end of the council offices and at the junction of Rodwell Road with North Quay. Along Westwey Road and in some of the areas to its west, velocities increase to 0.1-0.2m/s, with an isolated area of 0.4m/s. Flood hazard ratings increase with much of North Quay and Westwey Road having a 'Significant' rating. The access road to the courts at its junction with Newstead Road, and Newstead Road just beyond the edge of the site also increase to a 'Significant' rating. Most of the other flooded areas remain with a 'Low' hazard rating, with small areas of 'Moderate' mostly on North Quay and Westwey Road.

Tidal dominated	Available data and mapping: A detailed coastal and fluvial TUFLOW model of Weymouth, developed for the Environment Agency in 2019 and updated as part of this Level 2 SFRA study has been used to describe the risk of fluvial flooding to the site.
	<p>WEY7- Tidal defended 3.3% AEP (depth) WEY7- Tidal defended 0.5% AEP (depth) WEY7- Tidal defended 0.1% AEP (depth)</p> <p>WEY7- Tidal defended 3.3% AEP (hazard) WEY7- Tidal defended 0.5% AEP (hazard) WEY7- Tidal defended 0.1% AEP (hazard)</p>



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WEY7- Tidal defended 3.3% AEP (velocity)
 WEY7- Tidal defended 0.5% AEP (velocity)
 WEY7- Tidal defended 0.1% AEP (velocity)

Data analysis:

3.3% AEP (1 in 30-year) event:

Proportion - <1%	
Max depth - 4.04m	Mean depth - 0.8m
Max velocity - 0.15m/s	Mean velocity - 0.05m/s
Max hazard - 3.19	Mean hazard - 1.03

0.5% AEP (1 in 200-year) event:

Proportion - 12%	
Max depth - 5.16m	Mean depth - 0.14m
Max velocity - 0.67m/s	Mean velocity - 0.14m/s
Max hazard - 3.83	Mean hazard - 0.6

0.1% AEP (1 in 1,000-year) event:

Proportion - 18%	
Max depth - 5.32m	Mean depth - 0.27m
Max velocity - 0.97m/s	Mean velocity - 0.19m/s
Max hazard - 3.86	Mean hazard - 0.92

Flood characteristics:

Significant depths, velocities and flood hazard ratings along the boundary with the harbour represent water levels within the harbour, rather than the site itself.

The site is shown not to be at risk of a 1 in 30-year (3.3% AEP) tidally dominant flooding event.

In a 1 in 200-year (0.5% AEP) event both Westwey Road and the far east of North Quay flood. Depths reach 0.1-0.2m on both roads, with velocities of 0.1-0.4m/s and these areas have a 'Low' (less than 0.75) flood hazard rating.

In a 1 in 1,000-year (0.1% AEP) event, extents are very similar to the 0.5% event but extend on both roads slightly further towards the junction of Westwey Road and North Quay. Depths increase to 0.3-0.5m and velocities reach 0.7m/s. Along Westwey Road there are narrow areas of flooding that extend inland for up to 60m, but flooding is mostly confined to the two principal roads in the site. The flood hazard rating for the site is 'Moderate' (0.75 to 1.25) along all the flooded section of Westwey Road, extending inland just south of Corscombe Close and for a small section of North Quay; the rest of the flooded areas have a 'Low' flood hazard rating.

Flood water comes direct from the harbour in a narrow strip along the harbourside, flooding Westwey Road from the north of the site to near the junction with North Quay from breach points near Corscombe Close and north of the law courts.



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	<p>Significant depths, velocities and flood hazard ratings along the boundary with the harbour represent water levels within the harbour, rather than the site itself.</p> <p>Much of the site would be inundated in a 1 in 30-year (3.3% AEP) event plus climate change. The areas not flooded are in the west of the site between Corscombe Close and Granville Road and along the southern edge of the North Quay section (west half) of the site. Depths are 1.1-1.2m along Westwey Road and more than 0.5m in much of the flooded area of the northern section of the site, reaching a maximum of 1.6m by Weymouth courts. Depths on North Quay reach a maximum of 1.6m. Velocities reach 0.7-1.8m/s in the Newstead Road and western end of North Quay areas, the maximum velocity (2.2m/s) is in a very localised area near the law courts. Elsewhere, velocities are less than 0.5m/s, generally reducing away from the harbour. Almost all of the flooded areas have a flood hazard rating of 'Significant' (1.25 to 2.0) with small areas of 'Extreme' hazard at the junction of North Quay and Newstead Road and mid-way along Westwey Road. Only small areas of 'Moderate' (0.75 to 1.25) and 'Low' (less than 0.75) hazard rating occur around the inland edges of these zones.</p> <p>In a 1 in 200-year (0.5% AEP) event plus climate change flooding increases slightly on the 3.3% AEP event plus climate change. Depths increase to 1.6-1.8m along Westwey Road and are more than 1.0m in much of the flooded area of the northern section of the site, reaching a maximum of 2.2m by the courts building. Depths on North Quay increase to 0.9-1.7m, rising from west to east and 0.7-1.5m inland at the council offices. Velocities reach a maximum of 1.7m/s in the area between the west end of North Quay, the law courts, Newstead Road and Westwey Road. Velocities are typically 0.3-0.9m/s along Westwey Road and North Quay, generally reducing away from the harbour. Almost all of the flooded areas have a flood hazard rating of 'Significant' (1.25 to 2.0) or 'Extreme' (greater than 2.0) with only small areas of 'Moderate' (0.75 to 1.25) hazard around the inland edges of these zones. All of Westwey Road and the western section of North Quay are in the 'Extreme' flood hazard zone.</p> <p>In a 1 in 1,000-year (0.1% AEP) event plus climate change, patterns are very similar to the 1 in 200-year (0.5% AEP) event plus climate change. Depths increase to 1.9m along Westwey Road and more than 1.3m in much of the flooded area of the northern section of the site, reaching a maximum of 2.3m by the courts building. Depths on North Quay increase to 1.9m. Velocities increase slightly to a maximum of 1.9m/s in the area between the west end of North Quay, the law courts, Newstead Road and Westwey Road. Velocities increase slightly to 0.4-1.0m/s along Westwey Road and North Quay, generally reducing away from the harbour. Flood hazard rating zones are similar, almost all of the flooded areas have a flood hazard rating of 'Significant' (1.25 to 2.0) or 'Extreme' (greater than 2.0). All of Westwey Road and the much of North Quay are in the 'Extreme' hazard zone.</p> <p>Flood water overtops along all of the harbour side of both the north and eastern sections of the site with a significant flow west across Newstead Road, flooding areas to the west of the site. As the flood develops, a westerly flow is significant from the council offices to the rest of the site.</p>
Reservoir	No risk of flooding from reservoir breaches has been identified within or around the vicinity of this site.
Groundwater	The JBA Groundwater Flood Map, at 5m resolution, shows that almost the entirety of this site is within the 'No risk' zone, deeming it as having a negligible risk from groundwater flooding during a 1% AEP groundwater flood event due to the nature of the local geology deposits. In the southeast a narrow (maximum 20m wide) zone

	<p>Dorset Council</p> <p>L2 SFRA - Detailed Site Summary Tables</p>
	<p>Site details</p>
<p>Site Code</p>	<p>WEY7</p>
<p>Address</p>	<p>Westwey Road and North Quay area, Weymouth</p>
<p>Area</p>	<p>6.3 hectares</p>
<p>Current land use</p>	<p>Brownfield site, offices and residential.</p>
<p>Proposed land use</p>	<p>Mixed uses which may include residential, hotel, commercial and small-scale retail development.</p>
	<p>running northeast to southwest across the corner of the site to the south and east of the council offices has groundwater flood levels between 0.5m and 5m below the ground surface. Within this zone there is the potential for tidally influenced groundwater flooding.</p> <p>This assessment does not negate the requirement that an appropriate assessment of the groundwater regime should be carried out at the site-specific FRA stage.</p>
<p>Flood history</p>	<p>Recorded Flood Outlines – Environment Agency: There are no recorded incidences of tidal, fluvial, storm sewer or surface water flooding occurring in or around the surrounding area of the site.</p> <p>Historic Flood Risk – Dorset Council (LLFA): Dorset Council provided information stating that flooding has been reported in the media just to the west of the central section of the site on Marsh Road. This combined with a further historic report suggests that this area is sensitive to downstream blockages in the sewer network. Historic Ordnance Survey (OS) mapping suggests that the area to the west (outside of the site boundary) of the central section of the site was “liable to flooding”.</p>
	<p>Flood risk management infrastructure</p>
<p>Defences – present day</p>	<p>Along the eastern and southern edges of the site (the west bank of Weymouth Harbour), (defences listed from north to south, then west to east):</p> <p>ID: 253, Type: Wall providing fluvial/tidal protection, Design Standard of Protection: 1 in 200-year (0.5% AEP), Condition: Not provided, Asset owner: Unknown, Asset maintainer: Private individual, Company or Charity.</p> <p>ID: 208 and 128763, Type: Natural high ground providing fluvial/tidal protection, Design Standard of Protection: 1 in 200-year (0.5% AEP), Condition: Not provided, Asset owner: Unknown, Asset maintainer: Private individual, Company or Charity.</p> <p>Outside of the site’s boundaries but reducing flood risk to the site are the following defences:</p> <p>To the north defence ID: 253 continues to the tidal barrier of Westham Bridge. To the east there is natural high ground with a Design Standard of Protection of 1 in 25-year (4% AEP) and walls with a Design Standard of Protection of 1 in 200-year (0.5% AEP).</p>
<p>Defences – proposed</p>	<p>Between 2020 – 2030, it is proposed to raise nine sections of the harbour wall and replace seven sections. All harbour walls are to be raised to the height of 3.74m AOD.</p> <p>The Outline Business Case and Weymouth Harbour and Esplanade Flood and Coastal Risk Management Strategy (2020) should be consulted to provide an understanding of the land which will need to be safeguarded against future development to enable the construction of these defences.</p>
<p>Residual risk</p>	<p>The modelled breach is located at the southern end of Westwey Road, opposite Weymouth courts.</p> <p>Baseline in this context refers to the equivalent percentage AEP present day or climate change tidal flooding event without a breach.</p> <p>In a 1 in 30-year (3.3% AEP) event, there is no flooding of the site in the baseline scenario and no flooding occurs with the breach.</p> <p>In a 1 in 200-year (0.5% AEP) event, there is no increase on flooding extents, depths or velocities from the baseline event.</p>



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Site details

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Address	Westwey Road and North Quay area, Weymouth
Area	6.3 hectares
Current land use	Brownfield site, offices and residential.
Proposed land use	Mixed uses which may include residential, hotel, commercial and small-scale retail development.

In a 1 in 30-year (3.3% AEP) event with climate change and future defences, compared to the baseline there is a very small increase in flood extents and depths. Depths increase to 1.3m along Westwey Road, reaching 1.5m at the Weymouth courts building and 1.6m on North Quay by the council offices. Velocities increase significantly from the baseline with a maximum of 2.1m/s in a localised area by the courts, 1.7m/s on the access road to the west of the courts and a larger area of 1.2-1.8m/s from Newstead Road to the junction of North Quay and New Road. Velocities are mostly 0.3-0.4m/s on Westwey Road and North Quay. The area of 'Significant' flood hazard rating increases slightly and there is now an area of 'Extreme' (greater than 2.0) hazard around the southern end of Westwey Road to the junction of North Quay and New Road, plus another area midway along Westwey Road.

In a 1 in 200-year (0.5% AEP) event with climate change and future defences, flooding extents and depths remain almost the same as the baseline event. Velocities increase significantly on the baseline and from the 3.3% AEP breach event with climate change and future defences. Maximum velocities occur near the breach site (2.7m/s) and along Westwey Road, with velocities exceeding 1.3m/s from the north edge of the site to the junction with Newstead Road. Velocities also increase to 1.7m/s on the access road to the courts and to 2.0m/s in small areas on North Quay.

Emergency planning

Flood warning	<p>Parts of the site are located in two Environment Agency Flood Warning Areas. Areas of the site along Westwey Road (A354) and extending inland to the north of Newstead Road are located in the Environment Agency Flood Warning Area 111FWTWEYH003 "Weymouth Harbour at Weymouth Town". A very small section of North Quay road in the east of the site is located within 111FWTWEYH001 "Weymouth Harbour at Lakeside Walk, Hope Street and Nothe Parade". These both provide flood warnings for the English Channel.</p> <p>Parts of the site are located in 2 Flood Alert Areas: 111WATWEYH "Weymouth Harbour" and 111WACECD "East coast of Dorset".</p>
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Access and egress	<p>The main access and egress to the site is via the A354 (Westwey Road) running north-south next to Weymouth harbour. Access and egress is also possible via Newstead Road to the west. In the northern section of the site, access does not currently exist into the site from the west via Granville Road and Stavordale Road but could potentially be made possible. In the southeast section of the site, access and egress is only via North Quay linking to the A354 as high ground along the southern edge of the site acts as a barrier.</p> <p>During present day tidally dominant flooding, safe access and egress is not likely to be possible by pedestrians or vehicles along Westwey Road and the eastern part of North Quay in the 0.1% AEP event.</p> <p>Flood events affect Westwey Road, especially from the north, and North Quay, especially in the east. Surface water 0.1% AEP event flooding affects Newstead Road ('Significant' flood hazard rating) and hence access to the west of the southern half of the northern section of the site including via Granville Road. In the south of the northern section of the site and for the east section of the site, access and egress would be most appropriate via the A354 to the south. However, this would still be affected by flooding on the southern section of Westwey Road and on North Quay which are flooded in most events and have flood hazard ratings of 'Extreme' and depths of greater than 0.9m in a 1 in 200-year (0.5% AEP) tidal event plus climate change. In the north of the northern section of the site, access and egress would be most appropriate via Stavordale Road if this is possible due to flood depths along Westwey Road.</p>
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L2 SFRA - Detailed Site Summary Tables

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Proposed land use	Mixed uses which may include residential, hotel, commercial and small-scale retail development.
	For detailed information on safe access and egress, please see the hazard maps.

Requirements for drainage control and impact mitigation

Broadscale assessment of possible SuDS	<p>Geology at the site (from BGS 625K mapping) consists of:</p> <ul style="list-style-type: none"> • Superficial deposits: no superficial deposits underlie the site, except for a 20m wide area of alluvium (clay, silt and sand) in the far south east corner of the site. • Bedrock: Kellaways formation and Oxford Clay formation (undifferentiated) (mudstone, siltstone and sandstone) underlie the north west section of the site, Corallian group (limestone, mudstone, siltstone and sandstone) underlies the eastern section of the site. <p>Topography – there are no steep slopes (>5%) within most of the site, except along the southern edge of the eastern section of the site.</p> <p>Surface water flood risk – in a 1 in 100-year (1% AEP) event plus 45 years’ climate change, many of the roads are flooded to depths of 0.1-0.3m, with a deeper area (up to 0.6m) at the eastern end of North Quay. The areas away from the roads have some areas of flooding, generally with depths of less than 0.1m.</p> <p>The site is not located within a Groundwater Source Protection Zone and there are no restrictions over the use of infiltration techniques with regard to groundwater quality.</p> <p>Historic landfill – the site is not located within a historic landfill site.</p> <p>BGS data indicates that the underlying geology is likely to have highly variable permeability. Therefore, permeability should be confirmed through infiltration testing. Off-site discharge in accordance with the SuDS hierarchy may be required to discharge surface water runoff from the site.</p> <p>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work. Below ground development such as basements may still be susceptible to groundwater flooding and due to the proximity of the site to the coast, groundwater may be impacted by sea water ingress.</p> <p>Proposed attenuation features such as basins, ponds and tanks should be located outside of Flood Zone 2 or 3 to avoid the potential risks to the hydraulic capacity or structural integrity of these features. Surface water outfalls that discharge into Weymouth Harbour may be susceptible to surcharging/tide locking due to water levels in Weymouth Harbour. The impacts of tide locking/flood flows will need to be considered in terms of the attenuation storage requirements of the site and placement of the outfalls.</p> <p>Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, amenity and biodiversity. This could provide wider sustainability benefits to the site. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.</p> <p>Development at this site should not increase flood risk either on or off site. The design of the surface water management proposals should take into account the impacts of future climate change over the projected lifetime of the development.</p> <p>Opportunities to incorporate filtration techniques such as filter strips, filter drains and bioretention areas must be considered. Consideration should be made to the existing</p>
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condition of receiving waterbodies and their Water Framework Directive objectives for water quality. The use of multistage SuDS treatment will clean improve water quality of surface water runoff discharged from the site and reduce the impact on receiving water bodies.

Opportunities to incorporate source control techniques such as green roofs, permeable surfaces and rainwater harvesting must be considered in the design of the site.

The potential to utilise conveyance features such as swales to intercept and convey surface water runoff should be considered. Conveyance features should be located on common land or public open space to facilitate ease of access. Where slopes are >5%, features should follow contours or utilise check dams to slow flows.

As the site is brownfield, developers should seek to discharge surface water at greenfield rates. Where this is not possible, a significant reduction in current brownfield runoff rates should be achieved in consultation with the LLFA. It may be possible to reduce site runoff by maximising the permeable surfaces on site using a combination of permeable surfacing and soft landscaping techniques.

Surface water flood mapping indicates the presence of surface water flow paths during the 1% AEP event. Existing flow paths should be retained and integrated with blue-green infrastructure and public open space.

If it is proposed to discharge runoff to a watercourse or sewer system, the condition and capacity of the receiving watercourse or asset should be confirmed through surveys and the discharge rate agreed with the asset owner.

Opportunities for wider sustainability benefits and integrated flood risk management	<ul style="list-style-type: none"> Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, amenity and biodiversity. This could provide wider sustainability benefits to the site. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraint.
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NPPF and planning implications

Exception Test requirements (LA considerations)	<p>The Local Authority will need to confirm that the sequential test has been carried out in line with national guidelines. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Parts of the site lie within Flood Zone 3 and in some areas there is a high risk of surface water flooding, therefore, dependent on the proposed land use, the Exception Test is required for the site (see table 2 of the Planning Practice Guidance for further details).</p> <p>The Exception Test is needed if:</p> <ul style="list-style-type: none"> 'More Vulnerable' and 'Essential Infrastructure' development is located within Flood Zone 3a and 'Highly Vulnerable' development is located within Flood Zone 2. 'Highly Vulnerable' infrastructure should not be permitted within Flood Zone 3a and Flood Zone 3b. 'More Vulnerable' and 'Less Vulnerable' infrastructure should not be permitted within Flood Zone 3b. The site is located in an area at high risk of surface water flooding. <p>The development of a Local Adaptation and Resilience plan for Weymouth is recommended, considering the updated PPG, development of Nature Recovery Networks, requirements for Biodiversity net gain in development and to demonstrate that the</p>
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development and use of land in the local planning authority's area contribute to the mitigation of, and adaptation to, climate change.

To satisfy the exception test, development of this site would need to be compliant with the findings of the Local Adaptation and Resilience Plan.

Land that needs to be safeguarded against future development to enable the construction of the proposed flood defences will be identified within the Outline Business Case.

Requirements and guidance for site-specific Flood Risk Assessment

(Developer considerations)

- Flood Risk Assessment:**
- At the planning application stage, a site-specific Flood Risk Assessment will be required for this site as it exceeds one hectare in size, significant areas lie within Flood Zone 2 or Flood Zone 3, and is at increased flood risk in future.
 - All sources of flooding, particularly the risk of tidal, fluvial and surface water flooding should be considered as part of a site-specific flood risk assessment.
 - Development type and design should be carefully considered, the density of residential development should be minimised in the south of the northern section of the site and in the eastern section, which lie within areas of flood risk, as it is considered 'More Vulnerable' infrastructure, unless appropriate arrangements can be put in place to secure safe access and egress, or emergency plan provisions address matters affecting vulnerability of residents.
 - The site-specific FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance.
 - Consultation with the Local Authority and the Lead Local Flood Authority (both being Dorset Council) should be undertaken at an early stage.
 - The Outline Business Case for the future flood defences should be consulted to understand what land is safeguarded against future development to support the construction of the defences.
- Guidance for site design and making development safe:**
- The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).
 - Arrangements for safe access and egress will need to be provided during the design flood event (defined as river or surface water flooding likely to occur with a 1% annual flood probability plus an appropriate allowance for climate change or tidal flooding with a 0.5% annual flood probability plus an appropriate allowance for climate change). The depth, velocity and hazard outputs can be used to support this. Designs and access and egress arrangements will need to incorporate measures so development and occupants are safe.
 - Provisions for safe access and egress must not impact on surface water flow routes or contribute to loss of floodplain storage. Consideration should be given to the siting of access points with respect to areas of surface water flood risk. Due to the significant flood risk posed to the site, a site-specific flood risk assessment may need to show that appropriate evacuation procedures and flood response infrastructure are in place to manage the residual risk associated with an extreme flood event.



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	<ul style="list-style-type: none"> • Flood resilience and resistance measures should be implemented wherever appropriate during the construction phase, e.g. use of boundary walls and raising of floor levels to a minimum of whichever is higher of 300mm above the: <ul style="list-style-type: none"> ○ average ground level of the site; ○ adjacent road level to the building; ○ estimated design flood level. • Flood resilience measures should be tested to ensure they do not increase flood risk elsewhere. • The risk from surface water flow routes should be quantified as part of a site- specific FRA, including a drainage strategy, so runoff magnitudes from the development are not increased by development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond current greenfield rates. • As the site is brownfield, developers should seek to discharge surface water at greenfield rates. Where this is not possible, a significant reduction in current brownfield runoff rates should be achieved in consultation with the LLFA. • Developers should refer to: Dorset Level 1 SFRA, Dorset Level 2 SFRA, Dorset Council’s National and Local List of Requirements for Planning Applications.
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