



**Strategic Flood Risk Assessment
Detailed Site Summary Tables**

Shoreham Gateway



Site details

Site Code ADC/111/13

Address Shoreham Gateway

Area 2.5ha

Current land use Greenfield

Proposed land use Residential

Flood Risk Vulnerability More vulnerable

Sources of flood risk

Location of the site within the administrative area

The site is situated to the north west of Shoreham-by-Sea. The site is bounded by an A27 slip road to the north and Steyning Road (A283) to the east. Directly west of the site, the River Adur flows in a southerly direction. The site largely consists of agricultural land with a small yard/depot located at the southern extent of the site. Access to the site is via Steyning Road (A283).

Topography

The Environment Agency's 1m resolution 2022 Composite LiDAR indicates that there is a 15m wide and 2.5m high embankment which is a formal flood defence (see Section: Existing Defences) which separates the northern and southern areas of the site and runs along the western boundary of the site.

Site elevations range between 1.72-5.05mAOD; the lowest elevations are located along the western boundary and the highest elevations are along the embankment.

Elevations in northern parcel range between 1.72-3.35mAOD and the land generally slopes northeast to southwest. The topography in the southern area undulates and then gradually rises towards the southern boundary. Elevations in the southern areas range between 1.75-3.36mAOD.

Shoreham Gateway – Topography

Existing drainage features

The River Adur is located approximately 40m west of the site, flowing in a southerly direction. Due to the sites greenfield nature, it is likely that field ditches are located within the site boundary and should be investigated prior to development.

Flood Map for Planning (Rivers and Sea)

Available data and mapping: Environment Agency Flood Map for Planning for Rivers and Sea.

Shoreham Gateway - FMfP

Data analysis: Details of the sites location within each Flood Zone are provided within the SFRA Site Screening Appendix.

Flood characteristics: The entire site is located within Flood Zone 3 of the Flood Map for Planning.



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- Flood Zone 3 representing an area greater than 1 in 100 (1%) chance of river flooding in a given year or greater than 1 in 200 (0.5%) chance of tidal flooding.

Surface Water flooding should be considered. It is understood that additional Surface Water datasets will be published in 2025.

Available data and mapping: 2025 2025 Arun-Adur modelling – defended scenario.

Depth

Shoreham Gateway – Tidal – Present Day – 3.3%

Shoreham Gateway – Tidal – Present Day – 0.5%

Shoreham Gateway – Tidal – Present Day – 0.1%

Hazard

Shoreham Gateway – Tidal – Present Day – 3.3%

Shoreham Gateway – Tidal – Present Day – 0.5%

Shoreham Gateway – Tidal – Present Day – 0.1%

Velocity

Shoreham Gateway – Tidal – Present Day – 3.3%

Shoreham Gateway – Tidal – Present Day – 0.5%

Shoreham Gateway – Tidal – Present Day – 0.1%

Data analysis: Details of the site’s location within the 2025 2025 Arun-Adur modelling are provided within the Level 2 SFRA Site Screening Appendix.

0.5% AEP (1 in 200 year) event:

Proportion – 44%

Max Depth – 1.11m

Max Velocity – 0.6m/s

Max Hazard – 1.7- Danger to most

Mean Depth – 0.4m

Mean Velocity – 0.08m/s

Mean Hazard – 1.08 - Danger to some

0.1% AEP (1 in 1000 year) event:

Proportion – 92%

Max Depth – 1.75m

Max Velocity – 0.64m/s

Max Hazard – 1.91 - Danger to most

Mean Depth – 0.75m

Mean Velocity – 0.1m/s

Mean Hazard – 1.34 - Danger to most

Flood characteristics: Modelling of tidal flood events at the site shows that no flooding occurs during a 3.3% AEP event. However, flood risk increases significantly with the severity of events, with 44% of the site affected during a 0.5% AEP event and 92% during a 0.1% AEP event. During the 0.5% AEP event, flood depths exceed the height of the northern embankment and accumulate in the site’s northern parcel, particularly between central area and the western boundary, as result of impoundment between the two embankments. The mean flood depth and velocity are 0.4m and 0.08m/s respectively, creating a hazard classified as ‘Danger to some’. The southern part of the site remains unaffected during this scenario. As the high tide recedes water may become impounded in the northern parcel and take longer for levels to recede.

In the 0.1% AEP event, significant overtopping occurs at both the northern and, to a lesser extent, western embankments, causing tidal flooding across all northern site areas, extending onto Steyning Road

Tidal



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(A283). The southern site is also largely inundated, principally due to water flowing through the gap between the central embankment and Steyning Road. The mean flood depths reach 0.75m and velocities 0.64m resulting in a hazard rating of 'Danger to most'.

Available data and mapping: Arun-Adur modelling – defended. The Environment Agency guidance recommends that the Higher Central (55%) and Upper End (107%) allowance is considered.

Depth – 70th percentile (higher central)

Shoreham Gateway – Tidal – Future – 3.3%

Shoreham Gateway – Tidal – Future – 0.5%

Hazard - 70th percentile (higher central)

Shoreham Gateway – Tidal – Future – 3.3%

Shoreham Gateway – Tidal – Future – 0.5%

Velocity -70th percentile (higher central)

Shoreham Gateway – Tidal – Future – 3.3%

Shoreham Gateway – Tidal – Future – 0.5%

Depth – 95th percentile (upper end)

Shoreham Gateway – Tidal – Future – 3.3%

Shoreham Gateway – Tidal – Future – 0.5%

Hazard - 95th percentile (upper end)

Shoreham Gateway – Tidal – Future – 3.3%

Shoreham Gateway – Tidal – Future – 0.5%

Velocity -95th percentile (upper end)

Shoreham Gateway – Tidal – Future – 3.3%

Shoreham Gateway – Tidal – Future – 0.5%

Tidal with Climate Change

Data analysis: Details of the site’s location within the 2025 2025 Arun-Adur modelling are provided within the SFRA Site Screening Appendix.

3.3% AEP (1 in 30 year) + Higher Central Climate Change event:

Proportion – 98%

Max Depth – 2.97m

Max Velocity – 1.18m/s

Max Hazard – 2.84 Danger to all

Mean Depth – 2.04m

Mean Velocity – 0.18m/s

Mean Hazard – 2.12 - Danger to all

3.3% AEP (1 in 30 year) + Upper End Climate Change event:

Proportion – 98%

Max Depth – 3.09m

Max Velocity – 1.33m/s

Max Hazard –3.12 Danger to all

Mean Depth – 2.15m

Mean Velocity – 0.22m/s

Mean Hazard –2.22 Danger to all

0.5% AEP (1 in 200 year) + Higher Central Climate Change event:

Proportion – 98%

Max Depth – 3.05m

Max Velocity – 1.31m/s

Max Hazard – 3.03 Danger to all

Mean Depth – 2.12m

Mean Velocity – 0.19m/s

Mean Hazard – 2.19 Danger to all

0.5% AEP (1 in 200 year) + Upper End Climate Change event:

Proportion – 99%

Max Depth – 3.22m

Max Velocity – 1.33m/s

Max Hazard – 3.23 Danger to all

Mean Depth – 2.27m

Mean Velocity – 0.23m/s

Mean Hazard – 2.28 Danger to all



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Flood characteristics: The site is shown to flood in all climate change events. During the 3.3% AEP (1 in 30-year) climate change events, the entire site is inundated by tidal flooding with depths of up to 3.09m. The greatest of depths are located between the central and western boundary of the site. Mean velocities for the Higher Central and Upper End range between 0.18-0.22m/s. This equates to a mean hazard rating which ranges between 2.12-2.28 (Danger to all). For the 0.5% AEP (1 in 200-year) climate change events, the majority of the site's area is shown to flood with flood depths of up to 3.22m. The only area which remains dry is the formal flood embankment located across the centre of the site. Mean velocities for the Higher Central and Upper End range between 0.19-0.23m/s. The hazard ratings for these events range between 2.19-2.28 (Danger to all).

Available data and mapping: Environment Agency Risk of Surface Water flooding for the 3.3%, 1% and 0.1% AEP events. It should be noted that the data discussed below relates to the available surface water data prior to March 2025, as the newly released data does not include depth, hazard and velocity information. A comparison of the two surface water flooding datasets is discussed below and are detailed within the Site Screening document undertaken as part of the Level 2 SFRA.

- Shoreham Gateway – Surface Water Depth – Present Day – 3.3%*
- Shoreham Gateway – Surface Water Depth – Present Day – 1%*
- Shoreham Gateway – Surface Water Depth – Present Day – 0.1%*
- Shoreham Gateway – Surface Water Hazard – Present Day – 3.3%*
- Shoreham Gateway – Surface Water Hazard – Present Day – 1%*
- Shoreham Gateway – Surface Water Hazard – Present Day – 0.1%*
- Shoreham Gateway – Surface Water Velocity – Present Day – 3.3%*
- Shoreham Gateway – Surface Water Velocity – Present Day – 1%*
- Shoreham Gateway – Surface Water Velocity – Present Day – 0.1%*
- Shoreham Gateway – Surface Water – Present Day – NAFRA2*

Surface Water

Data analysis:

3.3% AEP (1 in 30 year) event:

| | |
|---------------------------------|----------------------------|
| Proportion – 7% | Mean Depth – 0.21m |
| Max Depth – 0.52m | Mean Velocity – 0.16m/s |
| Max Velocity – 0.92m/s | Mean Hazard – 0.74 Caution |
| Max Hazard – 1.3 Danger to most | |

1% AEP (1 in 100 year) event:

| | |
|-----------------------------|------------------------------|
| Proportion – 17% | Mean Depth – 0.23m |
| Max Depth – 0.61m | Mean Velocity – 0.23m/s |
| Max Velocity – 1.2m/s | Mean Hazard – Danger to some |
| Max Hazard – Danger to most | |

0.1% AEP (1 in 1000 year) event:

| | |
|-----------------------------|------------------------------|
| Proportion – 44% | Mean Depth – 0.29m |
| Max Depth – 0.83m | Mean Velocity – 0.32m/s |
| Max Velocity – 1.82m/s | Mean Hazard – Danger to some |
| Max Hazard – Danger to most | |

NAFRA2 - 3% AEP (1 in 30 year) event:



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Proportion – 6%

NAFRA2 - 1% AEP (1 in 100 year) event:

Proportion – 14%

NAFRA2 - 0.1% AEP (1 in 1000 year) event:

Proportion – 31%

Description of surface water flow paths: The site is shown to flood during all three events, with up to 44% coverage during the 0.1% AEP event.

During the 3.3% AEP event, surface water flooding flows along the western boundary, water then pools in the southern parcel. The mean depth and velocity during this event are 0.21m and 0.16m/s, the hazard rating is classified as 'caution'.

The surface water flood risk increases during the 1% AEP event, with 17% of the site covered. Large areas of the site remain unaffected by surface water flooding due to the topography of the site, with flooding occurring in the low-lying areas along the western site boundary. The mean depth and velocity during this event are 0.23m and 0.32m/s, scoring a hazard rating of 'Danger to some'.

The surface water flooding begins to extend from the low-lying areas adjacent to the western boundary to the central areas of the site during the 0.1% AEP event. As a result, the majority of western areas of the site are inundated by surface water with a mean depth and velocity of 0.29m and 0.32m/s, scoring a hazard of 'Danger to some'. The eastern areas of the site remain unaffected during this event.

NAFRA2 data shows a reduced surface water flood extent for the 3.3%AEP, 1%AEP and 0.1%AEP compared to the superseded dataset. The distribution of flooding at the site differs significantly with increased flooding in the southern land parcel and reduced flooding in the northern parcel compared to the superseded dataset.

**Surface Water with
Climate Change**

Available data and mapping: Surface Water flooding for the 3.3%, 1% and 0.1% AEP events with climate change, using data available prior to March 2025. The Environment Agency guidance recommends that the Upper End allowance is considered for both the 3.3% and 1% AEPs for the 2070's epoch, unless the allowance for the 2050's epoch is higher, in which case this should be used. The recommended uplift on peak rainfall intensity for the 3.3% AEP is 40% and for the 1% AEP is 45%.

Depth

Shoreham Gateway – Surface Water – Future – 3.3%+20CC

Shoreham Gateway – Surface Water – Future – 3.3%+40CC

Shoreham Gateway – Surface Water – Future – 1%+25CC

Shoreham Gateway – Surface Water – Future – 1%+45CC

Shoreham Gateway – Surface Water – Future – 0.1%+25CC

Shoreham Gateway – Surface Water – Future – 0.1%+45CC

Hazard

Shoreham Gateway – Surface Water – Future – 3.3%+20CC

Shoreham Gateway – Surface Water – Future – 3.3%+40CC

Shoreham Gateway – Surface Water – Future – 1%+25CC

Shoreham Gateway – Surface Water – Future – 1%+45CC

Shoreham Gateway – Surface Water – Future – 0.1%+25CC



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*Shoreham Gateway – Surface Water – Future – 0.1%+45CC
Velocity*

Shoreham Gateway – Surface Water – Future – 3.3%+20CC

Shoreham Gateway – Surface Water – Future – 3.3%+40CC

Shoreham Gateway – Surface Water – Future – 1%+25CC

Shoreham Gateway – Surface Water – Future – 1%+45CC

Shoreham Gateway – Surface Water – Future – 0.1%+25CC

Shoreham Gateway – Surface Water – Future – 0.1%+45CC

Data analysis:

3.3% AEP (1 in 30 year) + 20% Climate Change event:

Proportion – 12%

Max Depth – 0.71m

Max Velocity – 1.29m/s

Max Hazard – 1.42 Danger to most

Mean Depth – 0.22m

Mean Velocity – 0.19m/s

Mean Hazard – 0.76 Danger to some

3.3% AEP (1 in 30 year) + 40% Climate Change event:

Proportion – 17%

Max Depth – 0.75m

Max Velocity – 1.46m/s

Max Hazard – 1.52 Danger to most

Mean Depth – 0.23m

Mean Velocity – 0.22m/s

Mean Hazard – 0.81 Danger to some

1% AEP (1 in 100 year) + 25% Climate Change event:

Proportion – 43%

Max Depth – 0.82m

Max Velocity – 1.81m/s

Max Hazard – 1.98 Danger to most

Mean Depth – 0.29m

Mean Velocity – 0.32m/s

Mean Hazard – 1 Danger to some

1% AEP (1 in 100 year) + 45% Climate Change event:

Proportion – 50%

Max Depth – 0.89m

Max Velocity – 1.85m/s

Max Hazard – 2.07 Danger to all

Mean Depth – 0.31m

Mean Velocity – 0.34m/s

Mean Hazard – 1.04 Danger to some

0.1% AEP (1 in 1000 year) + 25% Climate Change event:

Proportion – 70%

Max Depth – 1.1m

Max Velocity – 1.92m/s

Max Hazard – 2.25 Danger to all

Mean Depth – 0.42m

Mean Velocity – 0.41m/s

Mean Hazard – 1.21 Danger to some

0.1% AEP (1 in 1000 year) + 45% Climate Change event:

Proportion – 77%

Max Depth – 1.18m

Max Velocity – 1.93m/s

Max Hazard – 2.28 Danger to all

Mean Depth – 0.46m

Mean Velocity – 0.42m/s

Mean Hazard – 1.25 Danger to most



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Description of surface water flow paths: The site is shown to flood during all climate change events, ranging between 12-77% coverage.

Model results indicate that during the 3.3% AEP climate change events, surface water flooding occurs in the low-lying areas along the western site boundary where water flows behind the Adur embankment. For the 1% AEP climate change events, surface water flooding covers up to 50% of the site. The modelling indicates that land between the western boundary and central areas of the site are to be inundated by surface water. This extent increases during the 0.1% AEP climate change events, where up to 77% of the site is covered by surface water. The mean depth, velocity and hazard during the 0.1% AEP plus 45% climate change is shown to be 0.46m, 0.42m/s and 1.25 'Danger to most'.

**Tidally influenced
Surface Water Risk
Zone**

Available data and mapping: JBA's Tidally influenced Surface Water Risk Zones derived using the RoFSW data, the Present day 1% AEP extreme tidal level, LiDAR data and the Environment Agency's climate change sea level uplift allowance for South East England.

Shoreham Gateway – Tidal Drainage Risk Zones

Flood characteristics: The majority of the site is shown to be located within SW2 within the Surface Water Risk Zone mapping. From the centre of the site to the western boundary there are bands of SW3 and SW4, with the latter closer to the River Adur. Adjacent to the site and along Steyning Road (A283), the risk is largely classified as SW3, with some areas of SW1 and 2. Located southeast of the site near the existing site access, the road is within SW4. No areas are shown to be located above the future tidal level.

- SW0 - Above the future tidal level.
- SW1 - Not at risk of SW flooding and above the current tidal level but below the future tidal level.
- SW2 - Not at risk of SW flooding but below the present-day tidal level OR at risk of SW flooding from climate change only and above the current day tidal level but below future tidal level.
- SW3 - At risk of SW flooding from climate change only and below the present-day tidal level OR At risk of SW flooding without climate change and above current day tidal level but below future tidal level.
- SW4 - At risk of SW flooding without climate change and below present-day tidal level.

Groundwater

Available data and mapping: The JBA Groundwater Flood Data Map (GW5) is provided as a 5m resolution grid.

Shoreham Gateway – Groundwater Flood Risk

Flood characteristics: During the 1% AEP groundwater flood event, groundwater levels are predominantly shown to be 'low risk'. The majority of the site is located within an area of low risk and the south eastern corner of the site is shown to have groundwater levels which are between 0.5 and 5m below the ground surface.

**Tidally influenced
Groundwater Risk
Zone**

Available data and mapping: JBA's Tidally influenced Groundwater Risk Zones derived using the JBA Groundwater data, the British Geological



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Society 50k bedrock mapping, the Present day 1% AEP extreme tidal level, LiDAR data and the Environment Agency's climate change sea level uplift allowance for South East England.

Shoreham Gateway – Groundwater Risk Zones

Flood characteristics: The whole site is located within GW2 of the Groundwater Risk Zone mapping. Adjacent to the site and along Steyning Road (A283) there are some areas which are shown to be located in GW1.

- GW0 - Above the future tidal level.
- GW1 - Groundwater level more than 0.5m below the surface and region is above the current tidal level but below the future tidal level.
- GW2 - Groundwater level more than 0.5m below the surface and region is below the present-day tidal level OR groundwater level between 0.025m and 0.5m below the surface and region is above the current tidal level but below the future tidal level.
- GW3 - Groundwater level between 0.025m and 0.5m below the surface and region is below the present-day tidal level OR Groundwater level within 0.025m of the surface and region is above the current tidal level but below the future tidal level.
- GW4 Groundwater level within 0.025m of the surface and region is below the present day tidal level.

Sewers

Available data and mapping: Drainage and Wastewater Management Plan (DWMP) [Overview of the Adur and Ouse River Basin Catchment](#) and Southern Water's Sewer Incident Report Form data (SIRF) at a five digit post code level.

Flood characteristics: 39 reportable sewer incidents have occurred since 1990 within the five-digit postcode area of the proposed development site. These incidents have been attributed to hydraulic overload following rainfall.

Flood history

Available data and mapping: The Environment Agency's Recorded Flood Outlines dataset and WSCC recorded flood incidents.

Shoreham Gateway – Historic Flooding

Flood characteristics: Although the site is not located within the Environment Agency's Recorded Flood Outlines dataset, the northern boundary of the site is located within 50m of a flood incident identified within the WSCC dataset. The cause of this flood incident is unknown.

Flood risk management infrastructure

Existing Defences

The Environment Agency's AIMS dataset identifies a formal flood defence located through the centre of the site, which separates the northern and southern areas of the site. In addition, an embankment runs along the western boundary of the site.

This flood defence forms part of the Shoreham Embankment Reach 3 (Asset ID: 777610) which has a design Standard of Protection (SOP) of 1 in 300 and is owned and maintained by a private individual, company or charity. From the site, this embankment extends southwards along the western boundary of the site.



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Joining the embankment and extending north is an embankment (Asset ID: 117987) which is owned and maintained by the Environment Agency. This flood defence has a design SOP of 1 in 30.

Available data and mapping: 2025 2025 Arun-Adur modelling – breach scenario. Breach scenario 'b'.

Depth

- Shoreham Gateway – Breach A–3.3%
- Shoreham Gateway – Breach A – 0.5%
- Shoreham Gateway – Breach A – 0.1%
- Shoreham Gateway – Breach B–3.3%
- Shoreham Gateway – Breach B – 0.5%
- Shoreham Gateway – Breach B – 0.1%
- Shoreham Gateway – Breach C–3.3%
- Shoreham Gateway – Breach C – 0.5%
- Shoreham Gateway – Breach C – 0.1%
- Shoreham Gateway – Breach D –3.3%
- Shoreham Gateway – Breach D – 0.5%
- Shoreham Gateway – Breach D – 0.1%
- Shoreham Gateway – Breach E–3.3%
- Shoreham Gateway – Breach E – 0.5%
- Shoreham Gateway – Breach E – 0.1%

Hazard

- Shoreham Gateway – Breach A–3.3%
- Shoreham Gateway – Breach A – 0.5%
- Shoreham Gateway – Breach A – 0.1%
- Shoreham Gateway – Breach B–3.3%
- Shoreham Gateway – Breach B – 0.5%
- Shoreham Gateway – Breach B – 0.1%
- Shoreham Gateway – Breach C–3.3%
- Shoreham Gateway – Breach C – 0.5%
- Shoreham Gateway – Breach C – 0.1%
- Shoreham Gateway – Breach D –3.3%
- Shoreham Gateway – Breach D – 0.5%
- Shoreham Gateway – Breach D – 0.1%
- Shoreham Gateway – Breach E–3.3%
- Shoreham Gateway – Breach E – 0.5%
- Shoreham Gateway – Breach E – 0.1%

Velocity

- Shoreham Gateway – Breach A–3.3%
- Shoreham Gateway – Breach A – 0.5%
- Shoreham Gateway – Breach A – 0.1%
- Shoreham Gateway – Breach B–3.3%
- Shoreham Gateway – Breach B – 0.5%
- Shoreham Gateway – Breach B – 0.1%
- Shoreham Gateway – Breach C–3.3%
- Shoreham Gateway – Breach C – 0.5%
- Shoreham Gateway – Breach C – 0.1%
- Shoreham Gateway – Breach D –3.3%
- Shoreham Gateway – Breach D – 0.5%
- Shoreham Gateway – Breach D – 0.1%
- Shoreham Gateway – Breach E–3.3%
- Shoreham Gateway – Breach E – 0.5%
- Shoreham Gateway – Breach E – 0.1%

Residual risk



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Flood characteristics:

The site is impacted by a breach occurring at location 'b' in all events. Following a breach, flooding occurs at the site immediately due to the site's proximity to the River Adur. In the 3.3%AEP event, the maximum flood extent is reached in approximately 4hrs, with the north west of the site impacted. The maximum depth is 0.78m. In the 0.5%AEP, the flooded extent increases covering the entirety of the northern parcel. Flooding onset is immediate and the northern parcel is inundated within 90 minutes. The maximum depth at the site is 1.54m. Due to the tidal nature of the River Adur, the extent of the breach impact is dependent on the tide height.

Emergency planning

Flood warning

The site has been identified to be located within the Shoreham Harbour (065WAC408) Flood Alert Area and the Shoreham Harbour (065FWC3001) Flood Warning Area.

Shoreham Gateway – Flood Warning

Future residents should be encouraged to sign up to Environment Agency flood alerts and warnings.

Access and egress

Surface Water 1% AEP plus 45% climate change (central allowance)

Surface water modelling indicates that access and egress to the site is limited due to depths exceeding 300mm along Steyning Road (A283). Improved highway drainage could reduce this surface water risk and allow safe access and egress to the site.

Tidal 0.5% AEP plus 55% climate change (higher central allowance)

Access and egress across the site are unavailable during the 0.5% AEP plus climate change tidal events as depths are greater than 1.2m throughout the site and across Steyning Road (A283). These areas have been classified as 'Danger to All'.

As a result of the affected access and egress and the severity of the hazard ratings throughout the design flood events it is necessary that a Flood Response Plan is developed in line with ADEPT Guidance.

Requirements for drainage control and impact mitigation

Broad-scale assessment of possible SuDS

Geology & Soils

The geology consists of the Newhaven Chalk Formation comprised of Chalk. The whole site is underlain by superficial deposits of Alluvium (clay, silt, sand and peat).

The soils are shown to be loamy and clayey soils of coastal flats with naturally high groundwater. These soils are naturally wet and drain to local groundwater.



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The geology of the Adur District is complex; areas of chalk are often capped with small sections of clay. This can result in groundwater being trapped beneath the clay layer and surface water pooling at the surface unable to infiltrate. Groundwater may find a fissure in the clay and rise to the surface resulting in flooding that is difficult to predict in terms of location and scale.

SuDS

Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity and biodiversity. Evidence should be given where multiple benefits are not provided to show that this is not possible.

Preference should be given to multi-functional sustainable drainage systems, and to solutions that allow surface water to be discharged according to the hierarchy of drainage options listed in the [PPG Flood Risk and Coastal Change paragraph 056](#).

The layout and function of drainage systems needs to be considered at the start of the design process for new development, as integration with road networks and other infrastructure can maximise the availability of developable land.

Suitability and considerations for sustainable drainage

In line with Defra's [National Standards for Sustainable Drainage Systems](#), runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- Priority 1: collected for non-potable use
- Priority 2: infiltrated to ground
- Priority 3: discharged to an above ground surface water body
- Priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- Priority 5: discharged to a combined sewer

SuDS measures should also follow West Sussex County Council's discharge hierarchy, and 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 based on the National Standards for SuDS.

Surface water discharge rates should not exceed pre-development discharge rates for the site and should be designed to be as close to greenfield runoff rates as reasonably practical in consultation with the LLFA. Discharge to a watercourse or surface water sewer must be restricted to the estimated mean greenfield runoff rate (Q_{bar}) for all design storm events. The calculations must be based on the positively drained area, rather than the entire greenfield site area

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.



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The majority of the site is not considered to be susceptible to groundwater flooding (low risk), therefore infiltration is likely to be feasible. As groundwater levels are indicated to be between 0.5 and 5m below ground level within the south eastern areas of the site, there may be a risk to subsurface assets and below ground development. Site investigation work and additional groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system. The infiltration potential of the site should be confirmed through infiltration testing, in line with BRE 365 or similar.

Groundwater levels are shown to be influenced by tide levels. The capacity for infiltration needs to take into account the impact of future sea levels. The influence of tide levels on groundwater levels should be investigated through groundwater monitoring.

The topography of the site is unlikely to affect any proposed SuDS features. Any water not intercepted via infiltration is likely to drain towards the River Adur. It is therefore recommended that the LLFA and the EA are consulted about viable discharge locations for surface water from the site and their attenuation potential.

The whole site is located within a Nitrate Vulnerable Zone. Therefore, early engagement with the LLFA and the Environment Agency is recommended to determine requirements for the site to manage the impact to surrounding watercourses. Consideration of water quality is likely to be of high importance and demonstrated through the use of the Simple Index Approach.

Northeast areas of the site are located within a Groundwater Source Protection Zone 3 (Total catchment). Within this area, infiltration techniques may not be suitable and should only be used following the granting of any required environmental permits from the Environment Agency for Zones 2, 3 and 4 although it is possible that infiltration may not be permitted. Proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible opportunities and constraints.

The site is not located within a historic landfill site.

Opportunities for wider sustainability benefits and integrated flood risk management

- Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity and biodiversity. This could also provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.
- 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.
- Opportunities to incorporate source control techniques such as green roofs, permeable surfaces and rainwater harvesting must be considered in the design of the site.
- SuDS are to be designed so that they are easy to maintain, and it should be set out who will maintain the system, how the maintenance will be funded and should be supported by an appropriately detailed maintenance and operation manual.



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- SuDS should be designed with a holistic approach, combining ecology, landscape and drainage requirements specific to the site, and incorporating Biodiversity Net Gain requirements.
- Opportunities to incorporate filtration techniques such as filter strips, filter drains and bioretention areas must be considered. Consideration should be made to the existing condition of receiving waterbodies and their Water Framework Directive objectives for water quality. The use of multistage SuDS treatment will improve water quality of surface water runoff discharged from the site and reduce the impact on receiving water bodies.
- 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.
- SuDS should be designed in line with the National Standards for Sustainable Drainage Systems.

NPPF and planning implications

Exception Test requirements

(Local Authority considerations)

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. In addition, once the Sequential Test has been passed, a sequential approach to development should still be undertaken.

The site is located within Flood Zone 3 according to the Environment Agency's Flood Map for Planning and also shown to be at tidal risk in the 2025 2025 Arun-Adur detailed modelling and surface water flood risk. The NPPF classifies the usage as "More Vulnerable". The Exception Test is therefore required for this site due to the severity of flooding.

A site specific FRA will be required for this site.

Requirements and guidance for site-specific Flood Risk Assessment

(Developer considerations)

Flood Risk Assessment:

The Level 1 SFRA has more guidance on this section and any relevant policies and information applicable to development within Adur District.

- All sources of flooding should be included as part of the site specific FRA.
- The most recent risk of Flooding from Surface Water dataset should be used.
- Consultation with Adur and Worthing Councils, West Sussex County Council, and where relevant the Environment Agency and Southern Water should be undertaken at an early stage.
- Development within 16m of a tidal main river, a tidal river flood defence or culvert or a sea defence is likely to require a flood risk activities permit: <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>. If development is within 20m of a main river, flood defence or flow control structure the developer will need to check with the Environment Agency if a separate permit or consent is needed.
- Development plans should consider the Level 1 and 2 SFRA for Adur, as well as the Local Flood Risk Management Strategies to identify cumulative flood risk issues. The Cumulative Impact Assessment (CIA) completed as part of the Level 1 SFRA, highlights that the East



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Adur catchment, is at a high risk of cumulative impacts. The risk of cumulative impacts of this development and others in the local area on flood risk should be considered within the site-specific flood risk assessment. It should also promote an integrated approach to water management.

- Developers should consult with Adur and Worthing Council to ensure that the development aims to help achieve the targets of the Drainage and Wastewater Management Plan. Drainage should be designed and implemented in ways that promote multiple benefits.

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).
- The risk from surface water flow routes should be quantified as part of a site-specific FRA, including detailed surface water modelling and a drainage strategy, so runoff magnitudes from the development are not increased by development across any ephemeral surface water flow routes (temporary/seasonal surface water flow paths). A drainage strategy should help inform site layout and design to ensure runoff rates do not exceed greenfield rates.
- Development design should prioritise avoiding development within surface water flow paths, including off-site flow paths. Any loss in surface water flood storage will require on-site level for level compensatory storage, so that any displaced volumes of water do not increase surface water flood risk within the site or elsewhere.
- The site is located within a surface water risk zone and therefore surface water drainage systems are likely to be influenced by tide levels. The drainage strategy should consider the risk of tide locking.
- A drainage strategy should be prepared to understand infiltration capacity at the site given the underlying chalk geology and risk of groundwater emergence.
- Following groundwater monitoring, development should be directed away from areas of high groundwater risk.
- Arrangements for safe access and egress are unlikely to be possible due to the severity of flooding and will need to be considered further within a site-specific FRA for the tidal and surface water events with an appropriate allowance for climate change, using the depth, velocity, and hazard outputs. This will need to accompany a Flood Response Plan for the site and its users.
- The Flood Response Plan should consider arrangements for safe use, access and egress of the site in a breach event due to the speed of onset and maximum flood depths recorded.
- The design and layout of development at the site will need to consider the impact of tidal and surface water flow paths. A



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sequential approach to development should be undertaken with development located in the areas of lowest risk within the site boundary. The site layout should make space for water and seek to avoid obstructing offsite flow paths and avoid off site detriment.

- As outlined in the PPG, the Finished Floor Levels of the development should be raised to a minimum of whichever is higher of 600mm above the:
 - Average ground level of the site
 - Adjacent road level to the building
 - Estimated river or sea flood level
- It is suggested that flood resilient design is adopted in the construction of development. The PPG sets out that flood resistant material that have low permeability should be used to at least 600mm above the estimated flood level; flood resilient materials to at least 600mm above the estimated flood level and raising of electrical equipment at least 600mm above the estimated flood level.

Key messages

The site is identified to be at high risk of flooding. According to the 2025 Arun-Adur modelling, the site is situated 44% in Flood Zone 3a and 48% in Flood Zone 2. 99% of the site is at risk of tidal flooding in the design event (0.5% AEP plus 55% climate change allowance).

The site is at high risk of surface water flooding, at risk of surface water flooding during the 3.3%AEP scenario. Land with this probability is considered high risk and development in these areas should not take place. 50% of the site is at risk of surface water flooding in the design event ((1% AEP plus 45% climate change allowance).

The key access routes to the site are via Steyning Road (A283). During both the tidal and surface water design events, flooding is predicted along access route, with depths exceeding 1.2m in the tidal design event. Access and egress is likely to be unavailable, detailed consideration into site access and egress will be required.

Given the high flood risk posed to the site, development is unlikely to progress unless:

- The Exception Test is satisfied.
- A sequential approach to development is undertaken. Layout and design should aim to avoid developing in the areas of greatest flood risk.
- Mitigation measures are incorporated to reduce the risk of flooding to the development. Early consultation should be held with the Environment Agency to discuss this.
- A site-specific Flood Risk Assessment, including detailed modelling, is undertaken to assess the risk of tidal and surface water flooding in relation to the proposed development, and the access and egress arrangements.
- A detailed Flood Response Plan is prepared in line with ADEPT guidance that considers not only the risk at the site but also the access and egress arrangements. The Arun-Adur modelling indicates that access and egress is not available in the design flood event. The flood response plan would need to demonstrate that:
 - Flood warnings are available for the site
 - Evacuation of the site can take place prior to flooding



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- Areas of suitable safe refuge at the site are available, with access to power and water uninterrupted.
- The site-specific Flood Risk Assessment assesses the risk of breach and incorporates this risk into a flood response plan for the site development.
- Infiltration rates and groundwater levels are assessed on site as part of a drainage strategy.
- Finished floor levels are raised to a minimum of whichever is higher of 600mm above the average ground level of the site, the adjacent road level to the building or the estimated river or sea flood level. The flood level is for the design event (tidal flood level plus higher central climate change allowance, surface water flood level plus upper end)

Sources of information

National Planning Policy Framework (NPPF)

https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

Planning Practice Guidance (PPG), Flood Risk and Coastal Change

<https://www.gov.uk/guidance/flood-risk-and-coastal-change>

Flood Map for Planning (NaFRA2 2025)

<https://www.data.gov.uk/dataset/104434b0-5263-4c90-9b1e-e43b1d57c750/flood-map-for-planning-flood-zones1>

Long Term Flood Risk

[Where do you want to check? - Check your long term flood risk - GOV.UK](#)

British Geological Survey (BGS) Geology Viewer

<https://geologyviewer.bgs.ac.uk/>

Southern Water's Drainage and Wastewater Management Plan

<https://www.southernwater.co.uk/about-us/our-plans/drainage-and-wastewater-management-plans/>

National standards for sustainable drainage systems (SuDS)

<https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds>

Flood Warning sign up

<https://www.gov.uk/sign-up-for-flood-warnings>