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

Site details	
Site Code	**ADC/086/13**
Address	Pond Road
Area	0.5ha
Current land use	Brownfield – Commercial
Proposed land use	Residential
Flood Risk Vulnerability	More Vulnerable
Sources of flood risk	
Location of the site within the administrative area	The site is located in the centre of Shoreham-by-Sea, directly south of the Railway Line. The site is currently used for commercial land-use and includes a library and healthcare centre. The site is surrounded by residential and commercial properties.
Topography	The Environment Agency's 1m resolution 2022 Composite LiDAR shows that the topography of the site is relatively flat, declining from south to north, with an approximate 1% gradient across the site. The localised peak is approximately 7mAOD in the south-east of the site, declining to 5.3mAOD in the north. A patch of raised ground, measured at approximately 6.9m, is also present in the centre of the site. The existing buildings at currently below ground level, with steps down to the buildings. *Pond Road – Topography*
Existing drainage features	The River Adur is situated approximately 210m south of the site, flowing in an easterly direction. Existing drainage features will already be present at the site.
Flood Map for Planning (Rivers and Sea)	**Available data and mapping:** Environment Agency Flood Map for Planning for Rivers and Sea. *Pond Road - 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 1 of the Flood Map for Planning for Rivers and Sea. • Flood Zone 1 represents areas which have less than a 1 in 1000 (0.1%) chance of river or tidal flooding in a given year. Surface Water flooding should be considered. It is understood that additional Surface Water datasets will be published in 2025.

	Strategic Flood Risk Assessment **Detailed Site Summary Tables** **Pond Road**	
Tidal	**Available data and mapping:** 2025 Arun-Adur modelling – defended scenario. **Mapping:** *Depth* *Pond Road – Tidal – Present Day – 3.3%* *Pond Road – Tidal – Present Day – 0.5%* *Pond Road – Tidal – Present Day – 0.1%* *Hazard* *Pond Road – Tidal – Present Day – 3.3%* *Pond Road – Tidal – Present Day – 0.5%* *Pond Road – Tidal – Present Day – 0.1%* *Velocity* *Pond Road – Tidal – Present Day – 3.3%* *Pond Road – Tidal – Present Day – 0.5%* *Pond Road – Tidal – Present Day – 0.1%* **Data analysis:** Details of the site's location within the 2025 Arun-Adur modelling are provided within the Level 2 SFRA Site Screening Appendix. **Flood characteristics:** The site has not been identified to be located within an area at risk of tidal flooding within the defended scenario.	
Tidal with Climate Change	**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)* *Pond Road – Tidal – Future – 3.3%* *Pond Road – Tidal – Future – 0.5%* *Hazard - 70th percentile (higher central)* *Pond Road – Tidal – Future – 3.3%* *Pond Road – Tidal – Future – 0.5%* *Velocity -70th percentile (higher central)* *Pond Road – Tidal – Future – 3.3%* *Pond Road – Tidal – Future – 0.5%* *Depth – 95th percentile (upper end)* *Pond Road – Tidal – Future – 3.3%* *Pond Road – Tidal – Future – 0.5%* *Hazard - 95th percentile (upper end)* *Pond Road – Tidal – Future – 3.3%* *Pond Road – Tidal – Future – 0.5%* *Velocity -95th percentile (upper end)* *Pond Road – Tidal – Future – 3.3%* *Pond Road – Tidal – Future – 0.5%* **Data analysis:** Details of the site's location within the 2025 Arun-Adur modelling are provided within the Level 2 SFRA Site Screening Appendix. **Flood characteristics:** The site has not been identified to be located within an area at risk of future tidal flooding within the defended scenario.	

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

Surface Water

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. Details on the coverage of the two surface water flooding datasets are discussed below and are detailed within the Site Screening spreadsheet undertaken as part of the Level 2 SFRA.

Pond Road – Surface Water Depth – Present Day – 3.3%
Pond Road – Surface Water Depth – Present Day – 1%
Pond Road – Surface Water Depth – Present Day – 0.1%
Pond Road – Surface Water Hazard – Present Day – 3.3%
Pond Road – Surface Water Hazard – Present Day – 1%
Pond Road – Surface Water Hazard – Present Day – 0.1%
Pond Road – Surface Water Velocity – Present Day – 3.3%
Pond Road – Surface Water Velocity – Present Day – 1%
Pond Road – Surface Water Velocity – Present Day – 0.1%

Data analysis:

0.1% AEP (1 in 1000 year) event:

Proportion – 15%

Max Depth – 0.41m	Mean Depth – 0.23m
Max Velocity – 0.43m/s	Mean Velocity – 0.08m/s
Max Hazard – 1.21 Danger to some	Mean Hazard – 0.78 Danger to some

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

Proportion – 19%

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

Proportion – 23%

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

Proportion – 39%

Description of surface water flow paths: The site is shown to flood during the 0.1% AEP event, reaching a maximum of 15% coverage. Localised flooding occurs in the north-west and through the centre of the site, with flooding pooling around the north, south and western boundary of the healthcare centre and library. The modelling indicates that water velocities are low suggesting that water is pooling within the site rather than flowing through. The mean depth, velocity and hazard for the 0.1% AEP event are shown to be 0.23m, 0.08m/s and 0.78 (a 'danger to some') respectively.

The NAFRA2 dataset indicates a greater risk of surface water flooding in all three scenarios. The area around the healthcare centre and library is impacted. In contrast to the superseded dataset is the building area is shown within the extents leading to the greater proportion of flood risk shown.

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

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%.

<u>*Depth*</u>
Pond Road – Surface Water – Future – 3.3%+20CC
Pond Road – Surface Water – Future – 3.3%+40CC
Pond Road – Surface Water – Future – 1%+25CC
Pond Road – Surface Water – Future – 1%+45CC
Pond Road – Surface Water – Future – 0.1%+25CC
Pond Road – Surface Water – Future – 0.1%+45CC
<u>*Hazard*</u>
Pond Road – Surface Water – Future – 3.3%+20CC
Pond Road – Surface Water – Future – 3.3%+40CC
Pond Road – Surface Water – Future – 1%+25CC
Pond Road – Surface Water – Future – 1%+45CC
Pond Road – Surface Water – Future – 0.1%+25CC
Pond Road – Surface Water – Future – 0.1%+45CC
<u>*Velocity*</u>
Pond Road – Surface Water – Future – 3.3%+20CC
Pond Road – Surface Water – Future – 3.3%+40CC
Pond Road – Surface Water – Future – 1%+25CC
Pond Road – Surface Water – Future – 1%+45CC
Pond Road – Surface Water – Future – 0.1%+25CC
*Pond Road – Surface Water – Future – 0.1%+45CC***Data analysis:**

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

Proportion – 15%

Max Depth – 0.41m	Mean Depth – 0.23m
Max Velocity – 0.43m/s	Mean Velocity – 0.07m/s
Max Hazard – 1.21 Danger to some	Mean Hazard – 0.78 Danger to some

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

Proportion – 16%

Max Depth – 0.43m	Mean Depth – 0.24m
Max Velocity – 0.43m/s	Mean Velocity – 0.07 /s
Max Hazard – 1.22 Danger to some	Mean Hazard – 0.85 Danger to some

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

Proportion – 24%

Max Depth – 0.5m	Mean Depth – 0.27m
Max Velocity – 0.72m/s	Mean Velocity – 0.09m/s
Max Hazard – 1.26 Danger to most	Mean Hazard – 0.94 Danger to some

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

Proportion – 26%

Max Depth – 0.53m	Mean Depth – 0.28m

	Max Velocity – 1.25m/s Max Hazard – 1.28 Danger to most Mean Velocity – 0.1m/s Mean Hazard – 0.96 Danger to some **Description of surface water flow paths:** The site is shown to flood during the 1% and 0.1% climate change events, covering up to 26% of the site during the 0.1% AEP plus 45% climate change event. Surface water enters the site from the north-west (Pond Road), with localised flooding in the north-west and centre of the site. Water pools around the existing health centre where ground levels are lower. The mean depth, velocity and hazard is shown to be 0.28m, 0.1m/s and 0.96 (a 'danger to some') during the 0.1% AEP plus 45% climate change event.
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. **Flood characteristics:** The majority of the site is shown to be located above the future tidal level with the exception of a localised patch in the centre of the site which is split between SW1 and SW2. It should be noted that areas identified to be at higher risk are generally defined by a lower topography. *Pond Road – Tidal Drainage Risk Zones* • 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. *Pond Road – Groundwater Flood Risk* **Flood characteristics:** During a 1% AEP groundwater flood event, groundwater levels are predominantly shown to be 'low risk', with the entire site classified as negligible risk from groundwater flooding due to the nature of the local geological deposits. It should be noted that there is a known relationship between tide levels and groundwater levels in the area and that this dataset does not account for any tidal influence on groundwater levels. It is therefore necessary that site investigations are carried out to better understand groundwater levels on the site at the earliest opportunity. The tidally influenced

	groundwater risk zones discussed below can be used to help identify areas where groundwater is likely to be influenced by tide levels.
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 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. *Pond Road – Groundwater Risk Zones* **Flood characteristics:** The majority of the site is shown to be located above the future tidal level with the exception of a localised patch in the centre of the site which is located within 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. *Pond Road – Historic Flooding* **Flood characteristics:** 39 reportable sewer incidents have occurred since 1990 within the five-digit postcode area of the proposed development site. Thes incidents have been attributed to hydraulic overload following rainfall.
Flood history	The site is not shown to be located within the Environment Agency's Recorded Flood Outlines extent.
Flood risk management infrastructure	
Existing Defences	The Environment Agency's AIMS dataset identifies two formal flood defences located to the south of the site. The site is defended by natural high ground which is owned and maintained by a private individual, company or charity. This defence runs along the River Adur. Adjoining the natural high ground is a flood wall. The flood wall is owned by a private individual, company or charity, the design SOP is 1 in 200 year.

	Strategic Flood Risk Assessment **Detailed Site Summary Tables** **Pond Road**	
Residual risk	**Available data and mapping:** The 2025 Arun-Adur modelling – breach scenario *Depth* *Pond Road – Breach A–3.3%* *Pond Road – Breach A – 0.5%* *Pond Road – Breach A – 0.1%* *Pond Road – Breach B–3.3%* *Pond Road – Breach B – 0.5%* *Pond Road – Breach B – 0.1%* *Pond Road – Breach C–3.3%* *Pond Road – Breach C – 0.5%* *Pond Road – Breach C – 0.1%* *Pond Road – Breach D –3.3%* *Pond Road – Breach D – 0.5%* *Pond Road – Breach D – 0.1%* *Pond Road – Breach E–3.3%* *Pond Road – Breach E – 0.5%* *Pond Road – Breach E – 0.1%* *Hazard* *Pond Road – Breach A–3.3%* *Pond Road – Breach A – 0.5%* *Pond Road – Breach A – 0.1%* *Pond Road – Breach B–3.3%* *Pond Road – Breach B – 0.5%* *Pond Road – Breach B – 0.1%* *Pond Road – Breach C–3.3%* *Pond Road – Breach C – 0.5%* *Pond Road – Breach C – 0.1%* *Pond Road – Breach D –3.3%* *Pond Road – Breach D – 0.5%* *Pond Road – Breach D – 0.1%* *Pond Road – Breach E–3.3%* *Pond Road – Breach E – 0.5%* *Pond Road – Breach E – 0.1%* *Velocity* *Pond Road – Breach A–3.3%* *Pond Road – Breach A – 0.5%* *Pond Road – Breach A – 0.1%* *Pond Road – Breach B–3.3%* *Pond Road – Breach B – 0.5%* *Pond Road – Breach B – 0.1%* *Pond Road – Breach C–3.3%* *Pond Road – Breach C – 0.5%* *Pond Road – Breach C – 0.1%* *Pond Road – Breach D –3.3%* *Pond Road – Breach D – 0.5%* *Pond Road – Breach D – 0.1%* *Pond Road – Breach E–3.3%* *Pond Road – Breach E – 0.5%* *Pond Road – Breach E – 0.1%* **Flood characteristics:**	

	The site is not considered to be at risk in the breach scenarios tested.
Emergency planning	
Flood warning	The site is not shown to be located within either a flood warning or flood alert area. *Pond Road – Flood Warning*
Access and egress	**Surface Water 1% AEP plus 45% climate change (upper end allowance)** Access and egress should be possible during the 1% AEP plus climate change surface water modelling events. Access via Pond Road, and roads to the south of the site remain low risk. The hazard rating is 'caution'. **Tidal 0.5% AEP plus 55% climate change (higher central allowance)** Access and egress are available to the site, with both Pond Road and the nearby local roads being shown to be low risk of flooding.
Requirements for drainage control and impact mitigation	
Broad-scale assessment of possible SuDS	**Geology & Soils** The geology consists of White Chalk Subgroup comprised of chalk. The superficial deposits consist of sand and gravel overlay across the entire site. The soils are shown be freely draining slightly acid loamy soils across the entire site, which suggests infiltration is likely to be possible. The site is at low risk of groundwater flooding. 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 and aim to be restricted to Greenfield Qbar. If that is not possible; flow should be restricted to as close to Qbar as is achievable. A relaxation factor shall be applied to the target 50% and 1% AEP greenfield runoff rates, this relaxation factor should be no greater than five times the greenfield runoff rate. This should be done in consultation with the LLFA. The site is not considered to be susceptible to groundwater flooding (low risk) therefore infiltration is likely to be feasible. 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. The site is located within a Nitrate Vulnerable Zone. Therefore, early engagement with the LLFA and the EA is recommended to determine requirements for the site to manage the impact to surrounding watercourses. Consideration of waterg quality is likely to be of high importance and demonstrated through the use of the Simple Index Approach. The site has not been identified to be located within a historic landfill site or a groundwater Source Protection Zone.
Opportunities for wider sustainability benefits and integrated flood risk management	• SuDS could be used to provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and Environment Agency) at an early stage to understand possible constraints. • 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 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. • 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 is required due to the groundwater risk at the site. Once the sequential test has been passed, a sequential approach to development should still be undertaken. The NPPF classifies the usage as "More Vulnerable"; given the site is located within Flood Zone 1, provided development is proposed outside of the areas of risk, the exception test is not required for this site. However, within the FRA evidence that development at this site does not increase flood risk elsewhere and that the development is safe throughout its lifetime will be required.
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. • Developers should consult with Southern Water to ensure that the development aims to help achieve the targets of the Drainage and Wastewater Management Plan. • Development plans should use the Level 1 and 2 SFRA for Adur & Worthing Council, as well as the Local Flood Risk Management

Strategies to identify cumulative flood risk issues. It should also promote an integrated approach to water management.

- Applicants are expected to provide fully detailed plans of the site's existing surface water drainage arrangements, including impermeable areas, gullies, outfalls, pipes & diameters, manholes, etc., to prove the extent of the existing positively drained areas and their associated points of discharge.

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 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 Qbar 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.
- Given the potential influence of tide levels on surface water flooding at the site, consideration should be given into the impact of rising sea levels and future surface water risk at the site

Key messages

The site has been identified to be at low risk of flooding due to its location within Flood Zone 1. Approximately 16% of the site is at surface water flood risk during the design flood event (1%AEP plus 45% climate change allowance).

Following a consideration of the surface water risk at the site by the developer, including preparing an FRA that evidences the site does not increase flood risk elsewhere and that the development is safe throughout its lifetime, it is likely that the development would be appropriate, and more vulnerable development would be permitted.

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