1. Introduction

1.1 Runnymede Borough Council has produced a Level 2 Strategic Flood Risk Assessment to underpin its emerging Local Plan. This study considers flood risk at 5 of the allocations proposed in the draft Local Plan. The results will assist the Council in understanding the flood risk posed to new development at these sites. The level 2 Strategic Flood Risk Assessment was originally published in January 2018 as part of the evidence base underpinning the draft Local Plan but has been revised and republished in May 2018 following:

- The consideration of a number of comments made in representations made during the course of the January 2018 public consultation on the draft Local Plan;
- The receipt of the Rive Ditch modelling and a number of modelling outputs from the new Lower River Thames model (Hambledon to Teddington).

1.2 This Level 2 Strategic Flood Risk Assessment follows on from the Level 1 Strategic Flood Risk Assessment which was completed by the Council during the course of 2016 and 2017, and which was published in its final form in January 2018. The Level 1 Strategic Flood Risk Assessment, which includes detailed information on the application of the sequential test and provides information on the strategic approach to managing flood risk, alongside local policy and background information, should be read in conjunction with this report.

1.3 This Level 2 Strategic Flood Risk Assessment provides a more detailed assessment of flood risk at proposed allocations where some of the land is identified as being located in Flood Zones 2 and 3, and provides mapping showing flood outlines for different flood scenarios, taking account of the presence and likely performance of flood risk management infrastructure.

1.4 The NPPF provides the following detailed definition of flood zones:

- Flood Zone 1 is land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year;
- Flood Zone 2 is land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1%-0.1%), or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5%-0.1%) in any year;
- Flood Zone 3a is land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year and;
- Flood Zone 3b is land where water has to flow or be stored in times of flood (functional floodplain), usually defined as land which would flood with an annual probability of 1 in 20 (5%) or greater in any year.

1.5 The NPPF does not provide flood zone definitions for groundwater, sewer, surface water or artificial sources of flooding. However flood risk from alternative sources is considered in this Level 2 Strategic Flood Risk Assessment. The application of the sequential approach in the planning process will ensure that development can be safely and sustainably delivered.

1.6 The Level 2 Strategic Flood Risk Assessment should be read in conjunction with both national and local policy, including but not limited to, the NPPF, the PPG, the Council's Level 1 Strategic Flood Risk Assessment, and the emerging Runnymede Borough Local Plan. Furthermore, the Level 2 Strategic Flood Risk Assessment does not displace the

responsibilities of catchment scale flood risk management plans, strategies, approaches and solutions, nor does it remove the requirement for appropriately focused site level Flood Risk Assessment (FRAs) at the planning application stage.

2. Level 2 Strategic Flood Risk Assessment requirements

2.1 This Level 2 Strategic Flood Risk Assessment has been developed in accordance with the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) on Flood Risk and Coastal Change.

2.2 The Level 1 Strategic Flood Risk Assessment and Strategic Sequential Test, alongside the Council's wider site selection work which has underpinned the preparation of the Local Plan have helped ensure that new development is steered towards areas with the lowest probability of fluvial flooding (Flood Zone 1) in the Borough over the period of the Local Plan and out of medium and high fluvial flood risk areas (Flood Zones 2 and 3) and areas affected by other sources of flooding where possible. The sequential approach aims to reduce the exposure of new development to flood risk and reduce the reliance on long-term maintenance and replacement of built flood defences.

2.3 This Level 2 Strategic Flood Risk Assessment has been produced because the evidence from the Level 1 Strategic Flood Risk Assessment and Strategic Sequential Test shows that land outside areas at risk of flooding cannot appropriately accommodate all necessary development in Runnymede borough over the period of the Local Plan.

2.4 The Level 2 Strategic Flood Risk Assessment:

- Supports the application of the Exception Test by providing more detailed evidence of flood risk at a site level;
- Supports the application of the onsite Sequential Test, which ensures development is primarily situated in the lowest areas of flood risk onsite;
- Recommends high level solutions to safeguard new development from the consequences of flooding over its proposed lifetime (for more information on the lifetime of development, please see the Level 1 Strategic Flood Risk Assessment); and
- Recommends mitigation techniques which help to avoid increasing flood risk elsewhere where relevant.

2.5 For highly vulnerable development proposed in Flood Zone 2, essential infrastructure or more vulnerable development proposed in Flood Zone 3a or essential infrastructure proposed in Flood Zone 3b, planning consent can only be given to development proposals which pass the Exception Test. The Exception Test ensures that new development located in areas at risk of flooding (because no suitable alternative sites are available) satisfactorily manage flood risk to people and property by remaining safe and operational for users in times of flood.

3. Strategic Flood Risk Assessment Summary

3.1 The Level 2 Strategic Flood Risk Assessment determines the risk of flooding from various sources (fluvial, surface water, sewer and artificial sources) occurring at each proposed allocation where fluvial flooding risk has been identified. Full extents of site boundaries have been used where applicable during the analysis to fully capture the information in regards to flood risk. The site reference numbers in the Level 2 SFRA correspond with the site reference numbers in the Council's Strategic Land Availability Assessment.

3.2 The following methodology was used in order to facilitate the application of the Sequential Test and the technical part of the Exception Test for 5 proposed allocations.

Fluvial Flooding

Table 1: Definition of Flood Zones in Runnymede

Flood Zone	Probability of fluvial flooding	Definition
Flood Zone 1	Low probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Flood Zones 2 and 3)
Flood Zone 2	Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or Land having between a 2% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Flood Zone 3a	High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 2% or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Flood Zone 3b	The functional floodplain	Undeveloped land with an annual probability of flooding of 5% (1 in 20 year) as defined in the Level 1 Strategic Flood Risk Assessment produced by the Council. Where detailed modelling is not available, flood zone 3 as defined by the Environment Agency in their Flood Map for Planning (rivers and sea) will be relied upon to show other parts of the Borough which potentially also fall within the functional floodplain, and where further detailed modelling by an applicant will be required.

3.3 The following steps were taken in the assessment:

- The proportion of land within each of the EA's Flood Zones 1, 2 and 3 was identified for each proposed development site.
- Flood defences, which benefit the sites were identified.
- Fluvial flood risk was determined using the modelled flood depth outlines for a 1 in 1000 year return period, a 1 in 100 year return period and a 1 in 20 year return period.

Hazard mapping

3.4 Depth and velocity data has been made available as part of the modelling outputs for both the new Lower River Thames model (Hambledon to Teddington) and the Rive Ditch. This data has been used to give an appropriate assessment of the flood hazard on each of the sites being assessed as part of this level 2 Strategic Flood Risk Assessment.

Surface Water Flooding

3.5 The risk of flooding from surface water was determined using the EA's Risk of Flooding from Surface Water mapping, more commonly referred to as the UFMfSW.

Flooding from Artificial Sources

3.6 The risk of flooding from artificial sources was determined using the EA's Risk of Flooding from Reservoirs mapping.

Flood Risk Management Recommendations

3.7 This Level 2 Strategic Flood Risk Assessment provides policy recommendations for flood risk management relevant for each of the 5 proposed allocations.

Reasonable prospect of compliance within the Exception Test

3.8 This Level 2 Strategic Flood Risk Assessment also comments on whether the development proposed has a reasonable prospect of complying with the technical part of the Exception Test where relevant. This is a general recommendation based upon the assessment of flood risk conducted for the Level 2 Strategic Flood Risk Assessment and should not be regarded as planning approval. It is recommended that the developer communicate with Runnymede Borough Council for further advice.

Flood Risk Suitability Score

3.9 A Flood Risk Suitability Score was allocated based upon the levels of flood risk on site and the ability for that site to develop were it to avoid areas at high flood risk, incorporating safe access and egress and including on-site SuDS. Table 2 shows the Flood Risk Suitability Assessment Criteria used for each of the 5 proposed developments.

Table 2: Flood Risk Suitability Assessment

Score	Criteria
1	Site is mainly in Flood Zone 3b
2	Site is mainly in Flood Zone 3a
3	Site is mainly in Flood Zone 2
4	Site is mainly in Flood Zone 1 but affected by Flood Zone 2, 3a and 3b

5	Site is fully in Flood Zone 1

3.10 A site would score ‘1’ if it were mainly situated within Flood Zone 3b (regarded as at high risk of fluvial flooding), whereas a site would score ‘5’ if it were located fully within Flood Zone 1 (regarded as at low risk of fluvial flooding).

4. Conclusion

4.1 This Level 2 Strategic Flood Risk Assessment considers 5 proposed allocations where part of the land was identified as being located in Flood Zones 2 and 3 (i.e. at medium or high risk from river flooding).

4.2 Sustainability scores were used to differentiate sites based upon the ease in which to manage flood risk and avoid increasing flood risk, as shown in Table 2.

4.3 One site was awarded a score of ‘3’. This site is located in Flood Zone 2 where more work would be required at the drainage strategy stage to ensure that flood risk could be managed on site. The remaining sites were awarded a high score of ‘4’; where it is feasible that all development could be placed within the safest areas with the lowest flood risk.