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# Orchard Lane / East Molesey

## Flood Risk Assessment

## CONTACT DETAILS

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Registered Office:  
 KRS Environmental Ltd  
 3 Princes Square  
 Princes Street  
 Montgomery  
 Powys  
 SY15 6PZ

Tel: [REDACTED]  
 Mob: [REDACTED]

Email: [REDACTED]

Web: [REDACTED]

LinkedIn: [REDACTED]

Office also at:  
 KRS Environmental Ltd  
 The Media Centre  
 7 Northumberland Street  
 Huddersfield  
 West Yorkshire  
 HD1 1RL

Tel: [REDACTED]  
 Mob: [REDACTED]

### The Molesey Venture Centre

Project	NPPF: Flood Risk Assessment
Client	Lifestyle Residences
Status	Final
Prepared by	Emma Serjeant LL.B, MSc
Reviewed by	Keelan Serjeant BSc (Hons), MSc, MCIWEM
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## EXECUTIVE SUMMARY

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The proposed development would be expected to remain dry in all but the most extreme conditions. Providing the recommendations made in this Flood Risk Assessment (FRA) are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of the National Planning Policy Framework (NPPF) and Elmbridge Council guidance.

This FRA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF. The development should not therefore be precluded on the grounds of flood risk.

## 1.0 INTRODUCTION

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### 1.1 Background

This Flood Risk Assessment (FRA) has been prepared by KRS Environmental Limited at the request of Lifestyle Residences to support a planning application for the proposed development at The Moseley Venture Centre. A separate Drainage Strategy in support of the planning application has been undertaken by others.

This FRA has been carried out in accordance with guidance contained in the National Planning Policy Framework (NPPF)<sup>1</sup> and associated Planning Practice Guidance<sup>2</sup>. This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

It is recognised that developments which are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. The development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues.

### 1.2 National Planning Policy Framework (NPPF)

One of the key aims of the NPPF is to ensure that flood risk is taken into account at all stages of the planning process; to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

It advises that where new development is exceptionally necessary in areas of higher risk, this should be safe, without increasing flood risk elsewhere, and where possible, reduce flood risk overall. A risk based approach is adopted at stages of the planning process, applying a source pathway receptor model to planning and flood risk. To demonstrate this, an FRA is required and should include:

whether a proposed development is likely to be affected by current or future flooding from all sources;

whether it will increase flood risk elsewhere;

whether the measures proposed to deal with these effects and risks are appropriate;

if necessary, provide the evidence to the Local Planning Authority (LPA) that the Sequential Test can be applied; and

whether the development will be safe and pass part c) of the Exception Test if this is appropriate.

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<sup>1</sup> Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework.

<sup>2</sup> Communities and Local Government (2014) Planning Practice Guidance - Flood Risk and Coastal Change.

### 1.3 Elmbridge Borough Council Core Strategy Policy CS26 – Flooding

Policy CS26 of the Elmbridge Borough Council Core Strategy provides guidance on flood risk and the planning process:

“In order to reduce the overall and local risk of flooding<sup>3</sup> in the Borough:

1. Development must be located, designed and laid out to ensure that it is safe; the risk from flooding is minimised whilst not increasing the risk of flooding elsewhere; and that residual risks are safely managed. Planning permission therefore will only be granted, or land allocated for development where it can be demonstrated that:

Through a sequential test it is located in the lowest appropriate flood risk zone in accordance with PPS25<sup>4</sup> and the Elmbridge Strategic Flood Risk Assessment.

It would not constrain the natural function of the flood plain, either by impeding flood flow or reducing storage capacity.

Where sequential and exceptions tests have been undertaken, any development that takes place where there is a risk of flooding will need to ensure that flood mitigation measures are integrated into the design to minimise the risk to property and life should flooding occur.

2. Permitted development rights for development which could result in a loss of flood storage capacity or impede flood flow will be removed from new developments in flood zone 3, in order to ensure the risk of flooding is not increased through unregulated development.

3. In the event that development takes place in flood zones 2 or 3, the Council will require flood resistance and resilience measures in line with current Environment Agency advice<sup>5</sup>, and advice included within the Elmbridge SFRA<sup>6</sup>.

4. New developments will need to contain SuDS, in line with the Council's Climate Neutral Development Checklist<sup>7</sup>. All development within flood zones 2 and 3 will require surface water runoff to be controlled, as near to its source as possible, and at greenfield rates. Where SuDS have not been used in these areas the applicant should justify these reasons.

5. For the classification of flood zones, the Council will take account of the recommendations of the most recent Strategic Flood Risk Assessment, and reclassify to take account of climate change and the protection of dry islands surrounded by high flood risk areas (see CS14-Green Infrastructure and CS15-Biodiversity).

6. The Council will support recommendations contained within the Lower Thames Strategy, provided that these do not result in an unacceptable impact on the local environment.

7. The Council will protect all undeveloped flood plains such as Desborough Island and Hurst Park, East Molesey, from non-flood compatible uses, and promote flood-compatible ones in accordance with PPS25.”

<sup>3</sup> Includes both fluvial and surface water flooding.

<sup>4</sup> PPS 25 Development and Flood Risk - [www.communities.gov.uk/planningandbuilding](http://www.communities.gov.uk/planningandbuilding).

<sup>5</sup> [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk).

<sup>6</sup> See Para 6.4.2 of the Strategic Flood Risk Assessment.

<sup>7</sup> The Elmbridge SFRA provides advice on the use of SuDS in new development. Further advice can be found in PPS25 Annex F. It is acknowledged that not all types of SuDS will be appropriate for every individual development site, However, a sustainable drainage approach should be possible on any site. [www.communities.gov.uk/planningandbuilding](http://www.communities.gov.uk/planningandbuilding).



#### 1.4 Elmbridge Borough Council Flood Risk Supplementary Planning Document (SPD) 2016<sup>8</sup>

The following advice is contained within the Flood Risk SPD:

“Flooding should be considered as early as possible in preparing development proposals and this guidance is to help them consider the flood risk to a property or site when applying for planning permission.

As part of a planning application the Council will require applicants to demonstrate full consideration of flood risk to a site and have taken steps to manage flood risk as part of the proposal. This SPD sets out when a Flood Risk Assessment (FRA) needs to be prepared and what should it include. The requirements depend upon the type of development being proposed and the level of flood risk.

The planning process looks to avoid inappropriate development in areas at risk of flooding and to direct development away from areas at highest risk of flooding. Where new development is necessary in high risk areas, it must be made safe without increasing flood risk elsewhere and, where possible, reducing flood risk overall. Flooding should be considered as early as possible in preparing development proposals and this guidance is to help them consider the flood risk to a property or site when applying for planning permission.”

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<sup>8</sup> Elmbridge Borough council – Flood Risk Supplementary Planning Document – May 2018.

## 2.0 LOCATION & DEVELOPMENT DESCRIPTION

### 2.1 Site Location

The site is located at The Molesey Venture Centre, Orchard Lane, East Molesey, KT8 0BN (see Figure 1). The National Grid Reference of the site is 514610, 167350. The area of the site is 0.64 hectares (ha).

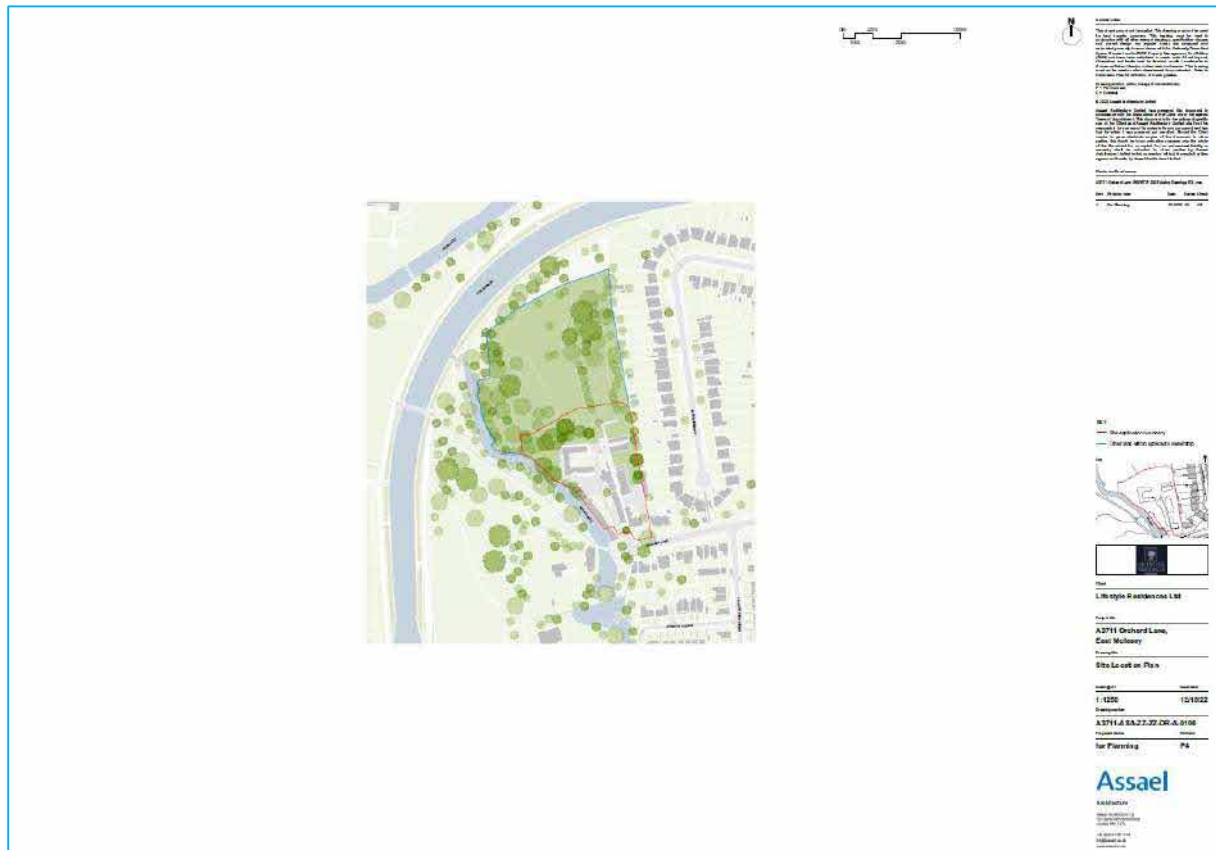


Figure 1 - Site Location

### 2.2 Existing Development

The site is currently used for residential care and housing.

### 2.3 Proposed Development

Redevelopment of site by way of demolition (or partial demolition) of all existing buildings and the erection of 3 buildings comprising 74 residential units (15 x 1 bed, 48 x 2 bed and 11 x 3 bed) and ancillary facilities for residents, underground and surface level car and cycle parking, mechanical plant, soft and hard landscaping and associated diversion of existing Thames Water pipe.

The proposed finished floor levels of the buildings is 9.45 metres Above Ordnance Datum (mAOD) with the entrance to the basement set at 9.40mAOD. Further details with regard to the proposed development can be found in Appendix 1 and the accompanying information submitted with the planning application.

## 2.4 Ground Levels

The site rises from west to east, with a minimum ground level of 8.77mAOD to the south west of the site. The maximum ground level is 10.10mAOD to the south east of the site. Ground levels are 8.79mAOD to the north west of the site and 9.10mAOD to the north east of the site. The majority of ground levels on the site are between 9.00mAOD and 9.50mAOD.

## 2.5 Catchment Hydrology

The nearest water feature is the River Ember, located adjacent to the western site boundary.

## 2.6 Geology

The British Geological Survey (BGS) mapping indicates that the underlying superficial geology in the northern 60% of the site consists of Alluvium which is classified as a Secondary (undifferentiated) Aquifer. The southern 40% consists of the Langley Silt Member which is classified as Unproductive Strata. The bedrock geology consists of the London Clay Formation which is classified as Unproductive Strata.

## 2.7 Groundwater

The Environment Agency has designated the bedrock deposits as Unproductive Strata - these are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. The superficial deposits are designated as Principal Aquifer - these are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

## 2.8 Source Protection Zone

The site is not located within an Environment Agency Source Protection Zone.

## 2.9 Soil

Information from the National Soil Resource Institute<sup>9</sup> details the site area as being situated on freely draining slightly acid loamy soils.

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<sup>9</sup> <https://www.landis.org.uk/soilscapes/>

## 3.0 FLOOD RISK

### 3.1 Sources of Flooding

All sources of flooding have been considered, these are; fluvial (river) flooding, tidal (coastal) flooding, groundwater flooding, surface water (pluvial) flooding, sewer flooding and flooding from artificial drainage systems/infrastructure failure.

### 3.2 Environment Agency Data

Information regarding the current flood risk at the application site, local flood defences and flood water levels has been obtained from the Environment Agency (see Appendix 2).

### 3.3 Historic Flooding

The Environment Agency has confirmed that the site flooded in 1968 and 1974, the channel capacity was exceeded (no raised defences) (see Figure 2). These records do not give an indication of the depth of flooding on the site. Since the 1968 flood event, flood defences have been constructed which protect the site against flooding. The return period of the event is unknown and since this event the flood defences have been built, the hydrology and topography of the area has been altered therefore, the flood pattern would be different compared to this event.

The Environment Agency has confirmed that the site did not flood during the flood events of 1947, 1979, 1988, 1990, 2000 and 2002/2003. Data from the BGS indicates that the types of deposits in the locality of the site are of the type normally associated with floodplains. This normally relates to flooding which happened many thousands of years ago.

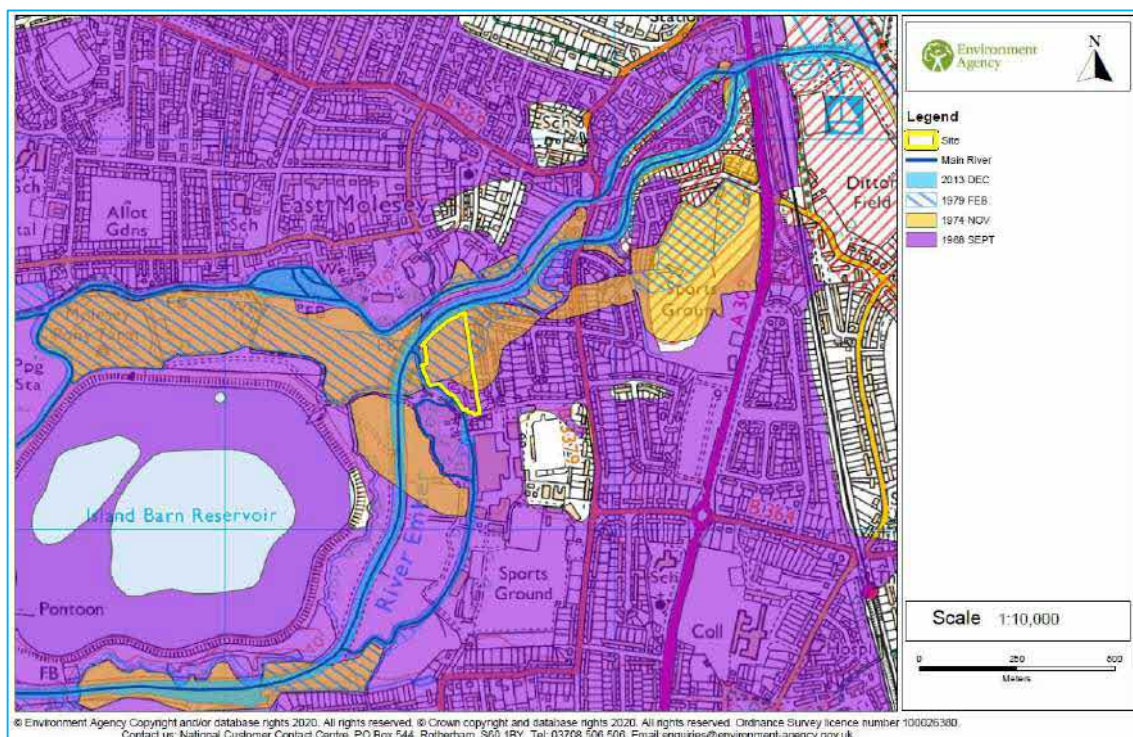


Figure 2 - Environment Agency Historic Flood Outlines

### 3.4 Existing and Planned Flood Defence Measures

The Environment Agency has confirmed that there are formal flood defences, known as the Lower Mole Flood Alleviation Scheme, within this area which protect the site from fluvial flooding. The Standard of Protection (SoP) of the scheme is 1 in 100 years (1%).

As a result of the great flood of 1968, the Lower Mole Flood Alleviation Scheme was built in the 1970's through to the mid 1980's. This scheme consists of a major channel creation, widening and dredging. 3km of earth bank have been constructed to keep the floods within the original floodplain upstream of Albany Bridge. The river is also now regulated through sluices and other structures designed to minimize flood damage. The scheme design flow is 241 cumecs. Of this, 31 cumecs flows via Royal Mills sluice before re-entering the flood relief channel downstream of Viaduct Sluice. The remaining 210 cumecs is diverted through Viaduct Sluice into the flood relief channel.

This site is within an area benefiting from flood defences. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year. If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.

Further flood risk management measures will be used to protect the site from flooding, these are discussed in Section 5.0.

### 3.5 Environment Agency Flood Zones

A review of the Environment Agency's Flood Zones indicates that the site is located within Flood Zones 1, 2 and 3. Therefore, the site has a 'low to high probability' of river flooding, see Figure 2, with less than a 1 in 1000 annual probability of river flooding in any year (<0.1%) (Flood Zone 1) to a 1 in 100 or greater annual probability of river flooding (>1%) in any year (Flood Zone 3).

The majority of the site is located within Flood Zones 1 and 2 with the south of the site being located within Flood Zone 1 which has a 'low probability' of river flooding with less than 1 in 1000 annual probability of river flooding in any year (<0.1%). The north of the site is located within Flood Zone 2 with a 'medium probability' of river flooding with between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) in any year.

A small area of the site to the west, immediately adjacent to the River Ember, is located within Flood Zone 3 with a 'high probability' of river flooding, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

The Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development. The Environment Agency Flood Zones show the worst case scenario.

The Environment Agency Flood Zones and acceptable development types are explained in Table 3. Tables 1 and 2 show that some development types are generally acceptable in Flood Zones 1, 2 and 3.

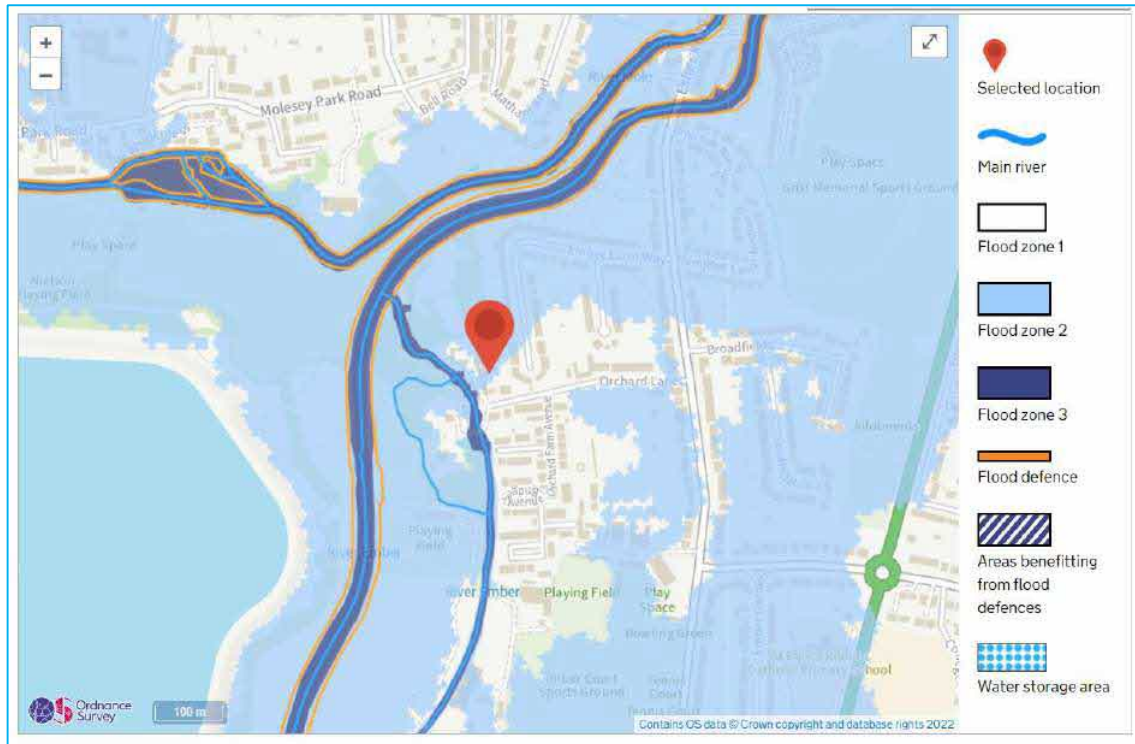


Figure 3 - Environment Agency Flood Zones

Table 1 - Environment Agency Flood Zones and Appropriate Land Use

Flood Zone	Probability	Explanation	Appropriate Land Use
Zone 1	Low	Less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)	All development types generally acceptable
Zone 2	Medium	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	Most development type are generally acceptable
Zone 3a	High	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	Some development types not acceptable
Zone 3b	'Functional Floodplain'	Land where water has to be flow or be stored in times of flood. SFRAs should identify this zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1% flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes)	Some development types not acceptable

### 3.6 Flood Risk Vulnerability

In the Planning Practice Guidance to the NPPF, appropriate uses have been identified for the Flood Zones. Applying the Flood Risk Vulnerability Classification in the Planning Practice Guidance to the NPPF, the existing and proposed use is designated as ‘more vulnerable’.

The proposed development will not change the vulnerability of the site or introduce a new ‘more vulnerable’ developments into the floodplain and will provide betterment compared to the existing situation. ‘More vulnerable’ uses are appropriate within Flood Zones 1, 2 and 3 after the completion of a satisfactory FRA. Further flood risk management measures will be used to protect the site from flooding these are discussed in Section 5.0.

Table 2 - Flood Risk Vulnerability and Flood Zone ‘Compatibility’

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1					
Zone 2			Exception test required		
Zone 3a	Exception test required		✘	Exception test required	
Zone 3b ‘Functional Floodplain’	Exception test required		✘	✘	✘

Key: : Development is appropriate, ✘: Development should not be permitted.

### 3.7 Climate Change

Projections of future climate change, in the UK, indicate more frequent, short-duration, high intensity rainfall and more frequent periods of long duration rainfall. Guidance included within the NPPF recommends that the effects of climate change are incorporated into FRA. Recommended precautionary sensitivity ranges for peak rainfall intensities and peak river flows are outlined in the Flood risk assessments: climate change allowances guidance<sup>10</sup>.

Table 3 shows the peak river flow allowances by river catchment. The flood risk assessments: climate change allowances guidance recommends that for ‘more vulnerable’ uses that the central allowances are used. Therefore, the design flood level for the site is the 1 in 100 year (+12%) water level.

Table 3 - Peak River Flow Allowances by River Catchment

River Catchment	Allowance Category	2020s	2050s	2080s
Mole Management Catchment	Upper	+27%	+26%	+40%
	Higher	+16%	+12%	+20%
	Central	+11%	+5%	+12%

### 3.8 Fluvial (river) Flooding

The principal flood risk posed to the site is from fluvial flooding from the River Ember. Table 4 shows the Environment Agency modelled floodplain water levels for the site and Table 5 shows the climate

<sup>10</sup> <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#high-allowances>

change modelled floodplain water levels for the site. Figure 4 identifies the location of the Environment 2D nodes.

The modelled water levels have been compared to the ground level of the site and areas within the vicinity of the site to assess the flood risk at the site in detail. All the nodes in Table 4 are within the site boundary and have been used to assess the flood risk to the site. Figure 5 and Figure 6 show the Environment Agency modelled flood outlines.

#### Defended Scenario

Figure 5 confirms that the site will not be inundated with floodwater for all events up to and including the defended 1 in 1000 year event. The site will be flood free during the defended 1 in 1000 year event however, during the defended 1 in 100 year (+20%) event a small proportion of the site, to the north, may be inundated with floodwater.

Water levels have been modelled at 8.96mAOD during the defended 1 in 100 year (+20%) event, the site minimum ground level is 8.77mAOD. Therefore, the site may be inundated with floodwater to a depth of 0.19m during the defended 1 in 100 year (+20%) event. However, it should be taken into account that this would only occur over a small proportion of the site with the majority of ground levels being over 9.00mAOD and rising to 10.10mAOD on the site.

The design flood level for the site is the 1 in 100 year (+12%) event, the water levels experienced at the site will be less than those experienced during the defended 1 in 100 year (+20%) event. From the 1 in 100 year to the 1 in 100 year (+20%) event the water level is shown to increase by 1.08m which equates to 0.054m per 1% of climate change. This has then been pro-rated to calculate the 1 in 100 year (+12%) event.

Therefore, the defended 1 in 100 year (+12%) will have a water level of approximately 8.53mAOD. The site minimum ground level is 8.77mAOD therefore, the site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event.

The finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details.

#### Undefended Scenario

Figure 6 shows that the site will not be inundated with floodwater for all events up to and including the undefended 1 in 100 year event. The site will be flood free during the undefended 1 in 100 year event however during the undefended 1 in 1000 year event even a small proportion of the site, to the north, may be inundated with floodwater.

As noted above, the finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details.



Table 4 - Modelled Floodplain Defended Node Levels (mAOD)

Node ID	Easting	Northing	Return Period (years)			
			20	100	100 (+20%)	1000
52948	514597	167379	Nil Return	Nil Return	8.88	Nil Return
53471	514597	167369	Nil Return	Nil Return	8.91	Nil Return
54462	514562	167349	Nil Return	Nil Return	8.88	Nil Return
54939	514597	167339	Nil Return	7.88	8.95	8.14
56058	514612	167314	7.29	7.88	8.96	8.14

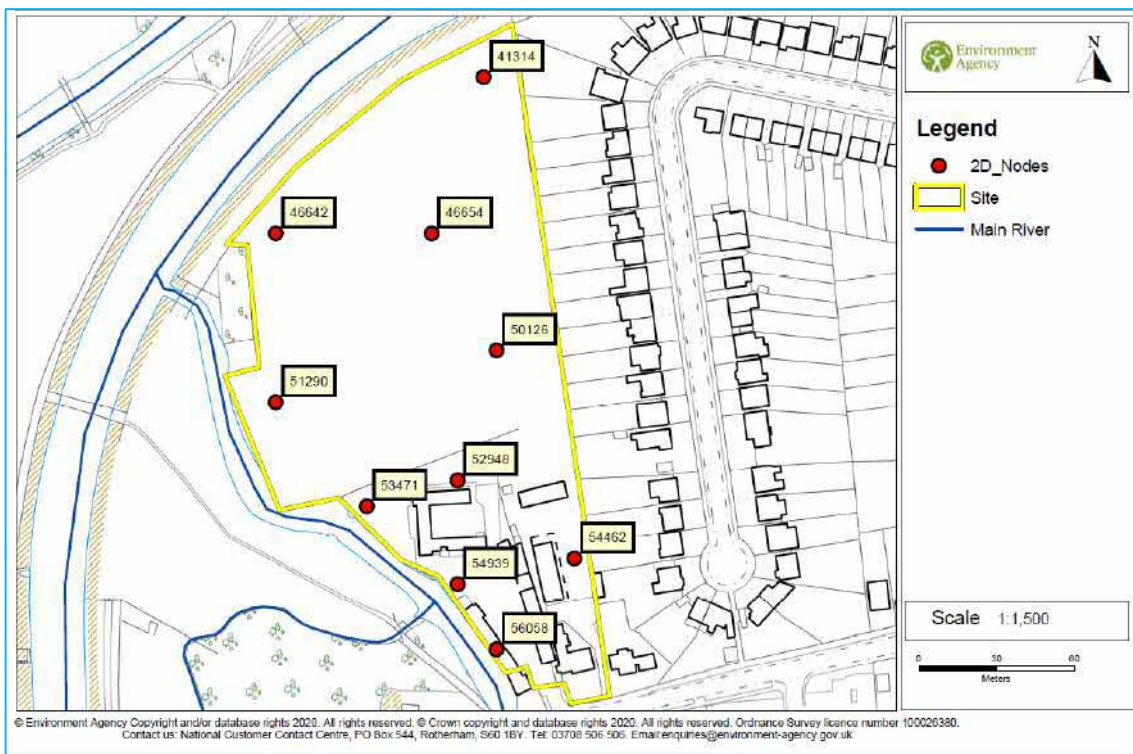


Figure 4 - Environment Agency 2D Node locations

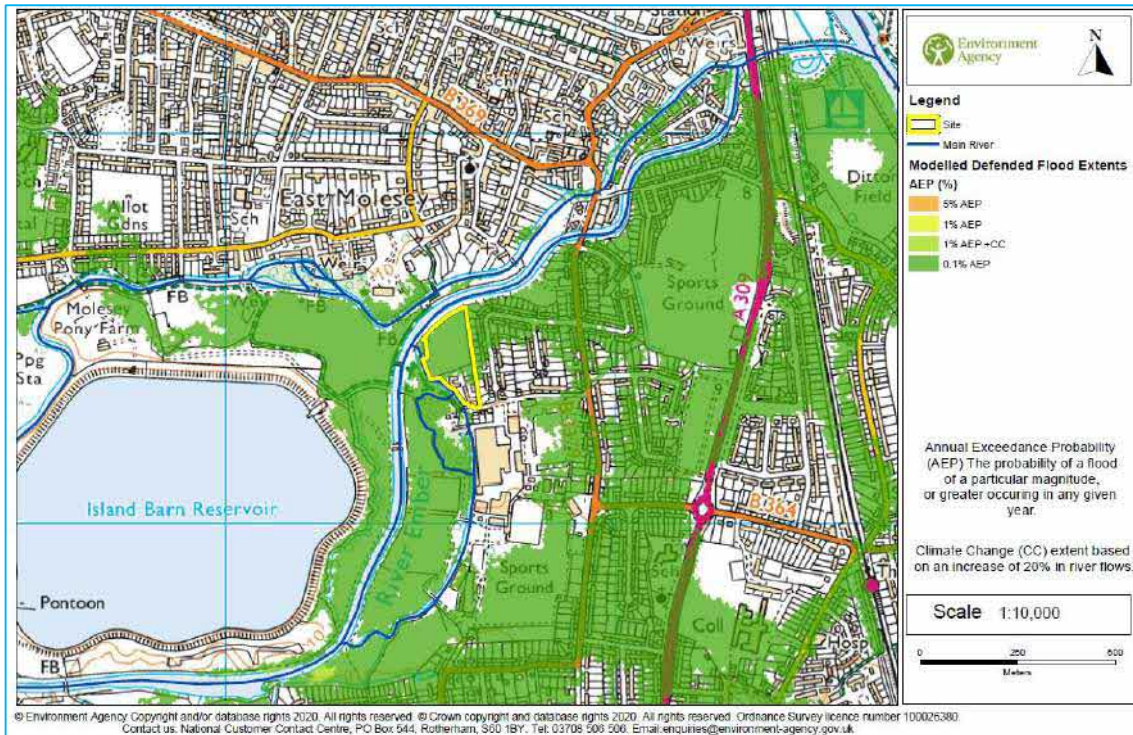


Figure 5 - Environment Agency Defended Modelled Flood Outlines

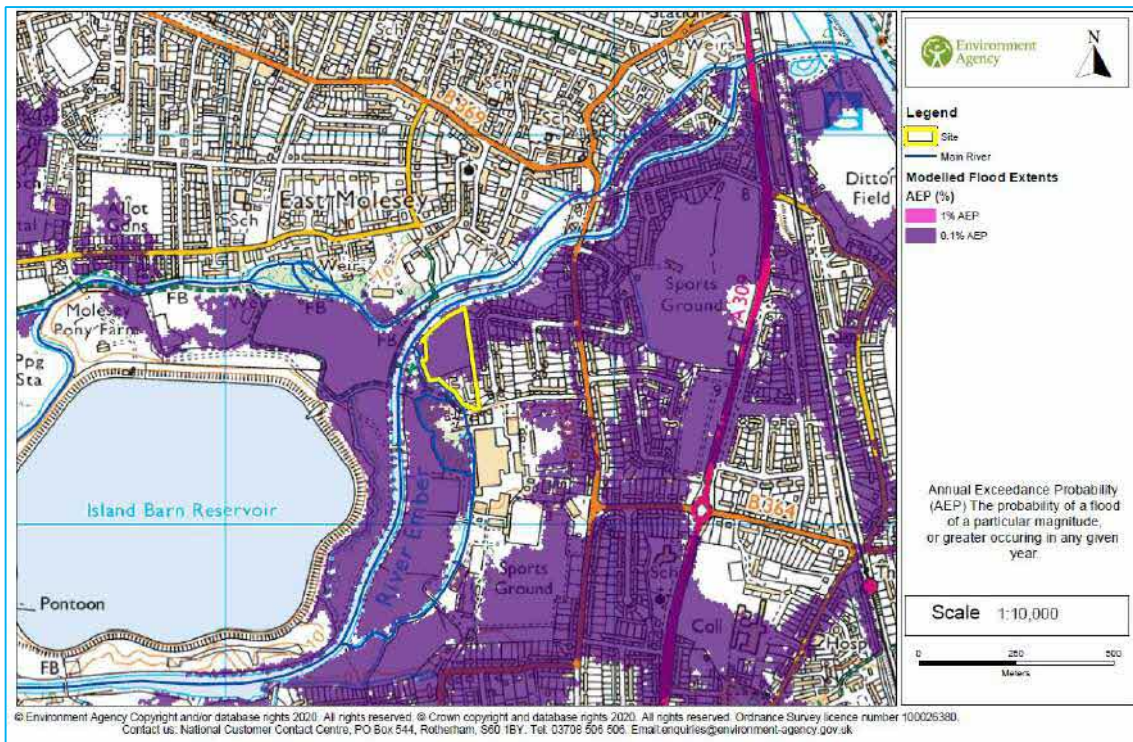


Figure 6 - Environment Agency Undefended Modelled Flood Outlines

Using a conservative estimate of water velocity of 0.50m/s and a maximum water depth of 0.19m any flooding would result in a ‘low’ flood hazard (Caution - “Flood zone with shallow flowing water or deep standing water”) during the 1 in 100 year (20%) event, as per the Supplementary Note on Flood Hazard Ratings and Thresholds for Development Planning and Control Purpose - Clarification of the Table 13.1 of FD2320/TR2 and Figure 3.2 of FD/2321/TR1. The debris will be limited due to the low water depths

being less than 0.50m, as per the guidance in Flood Risks to People, FD2321/TR1. The site is located where the onset of flooding is gradual as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2.

Given the scale and nature of the proposed development and the size and location of the fluvial flooding sources it has been concluded that fluvial flooding poses a low flood risk to the site and the risk of fluvial flooding is considered to be of medium significance. Further flood risk management measures will be used to protect the site from flooding these are discussed in Section 5.0.

### 3.9 Tidal (coastal) Flooding

The site is not located within the vicinity of tidal flooding sources and the risk of tidal flooding is considered to be not significant.

### 3.10 Groundwater Flooding

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

Groundwater flooding tends to occur sporadically in both location and time. When groundwater flooding does occur, it tends to mostly affect low-lying areas, below surface infrastructure and buildings (for example, tunnels, basements and car parks) underlain by permeable rocks (aquifers). No below surface infrastructure and buildings are located or are proposed for the site. The risk of flooding from groundwater flooding is considered to be not significant.

### 3.11 Surface Water (pluvial) Flooding

The site is not situated near to large areas of poor permeability or areas with the geology and/or topography which may result in surface water flooding. The site surroundings are relatively flat and there are no large catchments that would tend to generate surface water runoff towards the site. Surface water flow flooding tends to occur sporadically in both location and time such surface water flows would tend to be confined to the streets around the development.

The Environment Agency Surface Water flood map shows that the majority of the site has a very low risk of surface water flooding with a chance of flooding of less than 1 in 1000 (0.1% and 1%) years (see Figure 7). A small area of the site has a low risk of surface water flooding with a chance of flooding of between 1 in 100 and 1 in 1000 (0.1% and 1%) years. Therefore, the risk of flooding from surface water flooding is considered to be of low significance. Further flood risk management measures will be used to protect the site from flooding these are discussed in Section 5.0.

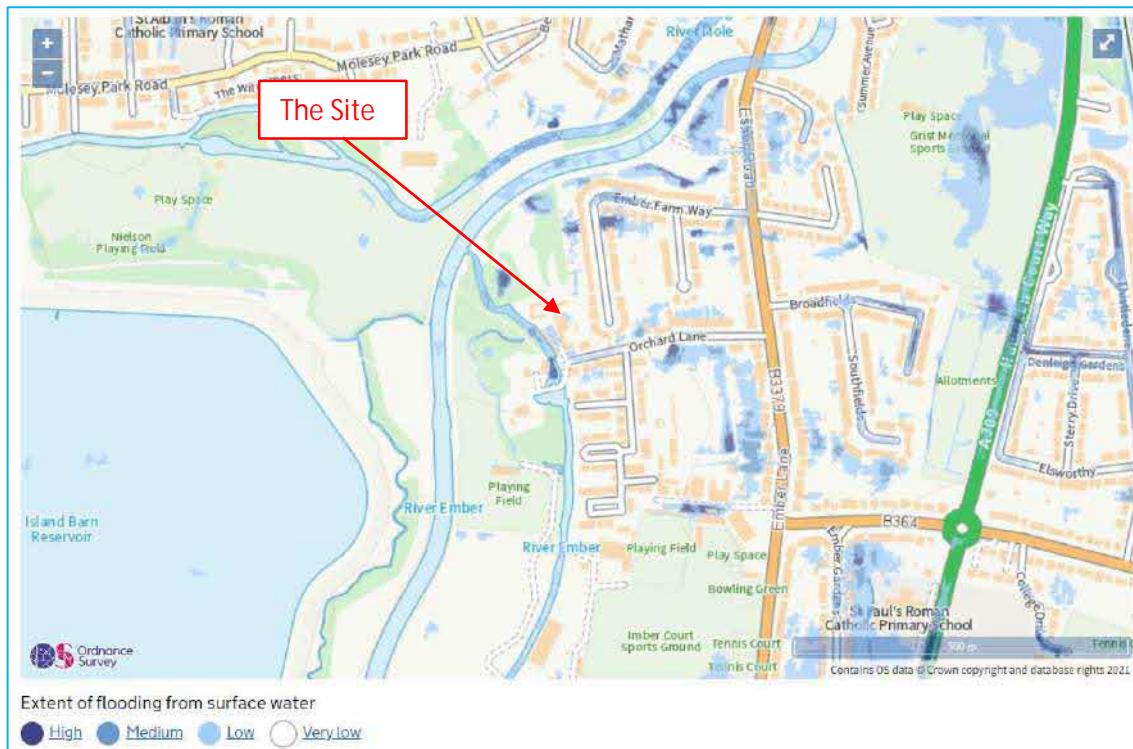


Figure 7 - Environment Agency Surface Water Flood Map

### 3.12 Sewer Flooding

Sewer flooding occurs when urban drainage networks become overwhelmed and maximum capacity is reached. This can occur if there is a blockage in the network causing water to back up behind it or if the sheer volume of water draining into the system is too great to be handled. Sewer flooding tends to occur sporadically in both location and time such flood flows would tend to be confined to the streets around the development.

There are existing sewers located within the vicinity of the site and these will inevitably have a limited capacity so in extreme conditions there would be surcharges, which may in turn cause flooding. Flood flows could also be generated by burst water mains but these would tend to be of a restricted and much lower volume than weather generated events and so can be discounted for the purposes of this assessment.

Given the design parameters normally used for drainage design in recent times and allowing for some deterioration in the performance of the installed systems, which are likely to have been in place for many years, an appropriate flood risk probability from this source could be assumed to have a return period in the order of 1 in 10 to 1 in 20 years.

The provision of adequate level difference between the ground floors and adjacent ground level would reduce the annual probability of damage to property from this source to 1 in 100 years or less. Sewer flooding poses a flood risk to the site therefore, the risk of flooding from sewer flooding is considered to be of low significance. Further flood risk management measures will be used to protect the site from flooding these are discussed in Section 5.0.

### 3.13 Flooding from Artificial Drainage Systems/Infrastructure Failure

The site is located within the vicinity of Thames Water reservoirs. Figure 8 shows that the site is at risk of flooding from reservoir failure. This map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds.

The Environment Agency Reservoir flood map has been prepared for emergency planning purposes and for this reason they reflect a worst case scenario. Since this is a prediction of a worst case scenario, it is unlikely that any actual flood would be this large.

Reservoir flooding is extremely unlikely; reservoirs in the UK have a very good safety record. There has been no loss of life in the UK from reservoir flooding since 1925. Since then reservoir safety legislation has been introduced to make sure reservoirs are well maintained.

The hazard is well managed through effective legislation and it is unlikely that the impact zone downstream of these reservoirs should not allow the proposed development. Reservoir flooding poses a very low flood risk to the site therefore, the risk of flooding from reservoir flooding is considered to be not significant.

There are no other nearby artificial water bodies, reservoirs, water channels and artificial drainage systems that could be considered a flood risk to the site. The risk of flooding from artificial drainage systems/infrastructure failure is considered to be not significant.



Figure 8 - Environment Agency Reservoir Flood Map

### 3.14 Summary of Site Specific Flood Risk

A summary of the sources of flooding and a review of the risk posed by each source at the site is shown in Table 5.

Table 5 - Risk Posed by Flooding Sources

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Fluvial Flooding	Yes	River Ember	Medium
Tidal Flooding	No	None Reported	None
Groundwater Flooding	No	None Reported	None
Surface Water Flooding	Yes	Poor Permeability	Low
Sewer Flooding	Yes	Local Sewers	Low
Flooding from Artificial Drainage Systems/Infrastructure Failure	No	None Reported	None

The site is unlikely to flood except in extreme conditions. The principal flood risk posed to the site is from fluvial flooding from the River Ember. The site is located within Flood Zones 1, 2 and 3. The majority of the site is located within Flood Zones 1 and 2 with the south of the site being located within Flood Zone 1 which has a 'low probability' of river flooding with less than 1 in 1000 annual probability of river flooding in any year (<0.1%). The north of the site is located within Flood Zone 2 with a 'medium probability' of river flooding with between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) in any year.

A small area of the site to the west, immediately adjacent to the River Ember, is located within Flood Zone 3 with a 'high probability' of river flooding, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

#### Defended Scenario

The site will not be inundated with floodwater for all events up to and including the defended 1 in 1000 year and 1 in 100 year (+12%) events. The design flood level for the site is the 1 in 100 year (+12%) water level, the defended 1 in 100 year (+12%) will have a water level of approximately 8.53mAOD. The site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event.

However during the defended 1 in 100 year (+20%) event a small proportion of the site, to the north, may be inundated with floodwater. The site may be inundated with floodwater to a depth of 0.19m during the defended 1 in 100 year (+20%) event. However, it should be taken into account that this would only occur over a small proportion of the site with the majority of ground levels being over 9.00mAOD and rising to 10.10mAOD on the site.

The finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details.

#### Undefended Scenario

The site will not be inundated with floodwater for all events up to and including the undefended 1 in 100 year event. The site will be flood free during the undefended 1 in 100 year event however during the undefended 1 in 1000 year even a small proportion of the site, to the north, may be inundated with floodwater. As noted above, the finished floor levels of the buildings and landscaped areas

immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details.

Given the scale and nature of the proposed development and the size and location of the fluvial flooding sources it has been concluded that fluvial flooding poses a low flood risk to the site and the risk of fluvial flooding is considered to be of medium significance. A number of secondary flooding source has been identified which may pose a low significant risk to the site. These are:

#### Surface Water Flooding

#### Sewer Flooding

The flooding sources will only inundate the site to a relatively low water depth and water velocity, will only last a short period of time, in very extreme cases and will not have an impact on the whole of the proposed development site. The risk from this source will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the site (see Section 5.0).

The proposed development will not change the vulnerability of the site or introduce a new 'more vulnerable' developments into the floodplain and will provide betterment compared to the existing situation. 'More vulnerable' uses are appropriate within Flood Zones 1, 2 and 3 after the completion of a satisfactory FRA.

The application is for a new, suitable flood-resilient design. The exposure of people and property will be reduced and minimised compared to existing site conditions. The chance of flooding each year is low each year. This takes into account the effect of any flood defences that may be located within the vicinity of the site as well property level protection measures.

## 4.0 IMPLICATIONS OF THE DEVELOPMENT ON FLOOD RISK

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### 4.1 Calculation of Net Loss or Gain in Flood Storage Capacity

The site is not located within the 1 in 100 year flood outline, therefore as per the Elmbridge Borough Council Flood Risk Supplementary Planning Document (SPD) floodplain compensation is not required (see para. 3.4.20 of the SPD).

Furthermore, the design flood level for the site is the 1 in 100 year (+12%) event, the site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event.

The site is currently occupied by existing buildings, the overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. The topography of the site will not be altered therefore; the overland flow routes will not be altered.

The proposed development proposes minimal new structures compared to the existing situation and will therefore allow floodwater to pass through the site with minimal effect on the conveyance routes. Therefore, mitigation measures are not required.

As per Page 17 of the SFRA the proposed development will result in a net reduction in flood risk and will ensure that floodplain storage and flow routes are not affected by:

1. Maintaining a similar built area compared to the existing situation.
2. Raising finished floor levels above the design flood level, which is an improvement on the existing situation.
3. Reduce surface water runoff rates and volumes from the site compared to the existing situation.
4. Maintain floodplain storage capacity.
5. Create space for flooding.
6. Propose minimal impedance to floodwater flow.
7. Incorporate flood resilient and/or resistance measures.
8. Ensure the development remains safe for users in time of flood.

The proposed development will have no detrimental impact on flood risk while also improving the access to the River Ember and its banks for maintenance.



## 5.0 FLOOD RISK MANAGEMENT

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### 5.1 Introduction

The flood risk at this location is considered suitable for 'more vulnerable' developments within the NPPF. In this flood zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development and the use of flood mitigation measures.

A number of techniques and mitigation strategies to manage and reduce the overall flood risk in the area will be used. This will ensure the development will be safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the proposed development on flood risk generally; and;
- Minimal disruption to natural heritage.

The flood risk at the site will be reduced by property level protection measures these are discussed in more detail below.

### 5.2 Sequential Approach

The sequential approach has been applied within the site by locating the most vulnerable elements of the development in the lowest risk areas. The proposed buildings will be located on the higher parts of the site, away from the River Ember, at a lower risk of flooding.

### 5.3 Finished Floor Levels

Raising the finished floor of the buildings will be used to mitigate the effects of flooding at the site. The finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45m AOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53m AOD, see Section 5.3 for more details. The basement entrance/s will have a threshold level of 9.40m AOD, which provides a more than adequate freeboard above the 1 in 100 year (+12%) event.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

### 5.4 First Floor Accommodation

Accommodation will be located on the first floor and above as well as the ground floor of the buildings. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor will be well above any floodwater levels.

This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the building. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

## 5.5 Flood Resilience and Resistance Measures

The development of the layout should always consider that the site is potentially at risk from an extreme event and as such the implementation of flood resilience and resistance methods should be assessed.

To make the buildings more resistant to seepage the following measures will be incorporated. Sealant will be used around external doors and windows. All external doors and windows will be constructed from durable materials and the walls of the buildings will be thick.

To improve the buildings resilience to flooding the following measures will be incorporated. All electrical wiring, switches, sockets, socket outlets, electrical, and gas meters etc. will be located a minimum of 450mm above the finished floor level of the house. Non-return valves will be fitted to the drains within the last manhole before discharge of water off the site.

## 5.6 Flood Warning

The site is located in a flood risk area therefore; the buildings will participate in the Environment Agency flood warning telephone service. The site will register contact details with the Environment Agency' Flood Warnings Service.

The Environment Agency operate a free flood warning service providing alerts by phone, text or email when flooding is anticipated providing an opportunity for owners to take necessary precautions, giving enough time for the building to be safely evacuated and mitigation measures to be put in place.

All occupants of the site will be made aware of the Environment Agency Floodline telephone number (Call Floodline on 0345 988 1188) and the Flood Warning Codes and their meaning. The Environment Agency uses Flood Warnings Codes. They can be issued in any order, usually ending with an 'all clear'. They are issued by the Environment Agency through their website and Floodline. The flood warning will be passed onto the visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

## 5.7 Flood Warning and Evacuation Plan

A Flood Warning and Evacuation Plan (FWEP) outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may have been developed (see Appendix 3).

Sensible precautions would include raising electrical items, irreplaceable items and sentimental items off the ground or where possible moving them to a higher floor, rolling up carpets and rugs and turning off utilities. In addition, consider what actions you would take should the property need to be evacuated including practising using the access and egress routes and preparing a flood kit in advance containing warm clothing, medication, a torch, food and wellingtons.

The FWEP is a 'living' document and therefore should be periodically reviewed and updated to provide advice and guidance to occupants in the event of an extreme flood. The FWEP will therefore reduce the vulnerability of the occupants to flooding and makes them aware of the mechanisms of flooding at the site.

### Residual Risk

If flooding starts to affect the site without any pre-warning i.e. in real time (e.g. through a failure of the flood warning delivery) the following actions will be taken:

Occupants and visitors should consider evacuating the site.

If flood levels continue to rise, occupants and visitors are advised to evacuate before safe access is lost. Occupants and visitors should monitor the flood progression and evacuate.

Flood levels will be monitored; occupants and visitors will be informed. The flood warning will be passed onto the occupants and visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required. If required a 'safe haven' on the first floor can also be maintained and may be required in very extreme events if a flood warning has not been received.

## 5.8 Safe Access and Egress Route

The NPPF requires that, where required, safe access and escape is available to/from new developments in flood risk areas. Access routes should be such that occupants can safely access and exit their dwellings in design flood conditions. These routes must also provide the emergency services with access to the development during a flood event and enable flood defence authorities to carry out any necessary duties during the period of flood.

The Elmbridge Borough Council Flood Risk SPD confirms that Elmbridge Borough Council's policy (see page 43 of the SPD) is that a safe access/egress route "...should allow occupants to safely exit and enter the buildings via a 'dry' route above 1 in 100 year event to reach land outside the flooded area (e.g. Flood Zone 1) using public rights of way without the intervention of the emergency services or others. Where this is not possible, a route through limited depths of flooding may be acceptable taking account of flow depth and velocity (flood hazard). This is a particularly important consideration for sites located on a 'dry island' or where a change of use is proposed."

The site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event therefore, dry access and egress from the site will be possible for all events up to and including the 1 in 100 year (+12%) event. Furthermore, the finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45m AOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53m AOD.

People should make their way to areas outside of the flood zone via Orchard Lane and Esher Lane (B3379) to the north. Facilities such as cafes, shops etc. are located to the north of the site which may be used in the event of a flood event. A safe access and egress route, including emergency access can be maintained for vehicles and/or by foot, as shown in Figure 9. In the event of a Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site.

The mechanism for flooding from the River Ember is generally prolonged episodes of heavy rainfall, which affords good time for flood warnings to be issued. The likelihood of a rapid river level rise within the River Ember and possible rapid inundation of urban areas within this area and posing a risk to life is considered to be minimal. This is primarily due to the large River Ember system and its substantial upper contributing catchment area which allows the Environment Agency, with its current flood warning system, to provide forewarning of two (2) days of a pending flood event.

The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2.

Given the nature of fluvial flooding and the Environment Agency's Flood Warning Service, occupants should be able to seek prior evacuation to the place of safe refuge before flood waters reach the site, or worst case refuge on the first floor level. The Safe Access and Egress Route shown in Figure 9 indicates the exit routes that all people (i.e. occupants and visitors) on site should follow once a flood warning has been received.

In the event of a Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site using the routes shown in Figure 9. Therefore, safe access and egress can be maintained in accordance with the NPPF, Environment Agency and the Elmbridge Borough Council Guidance.

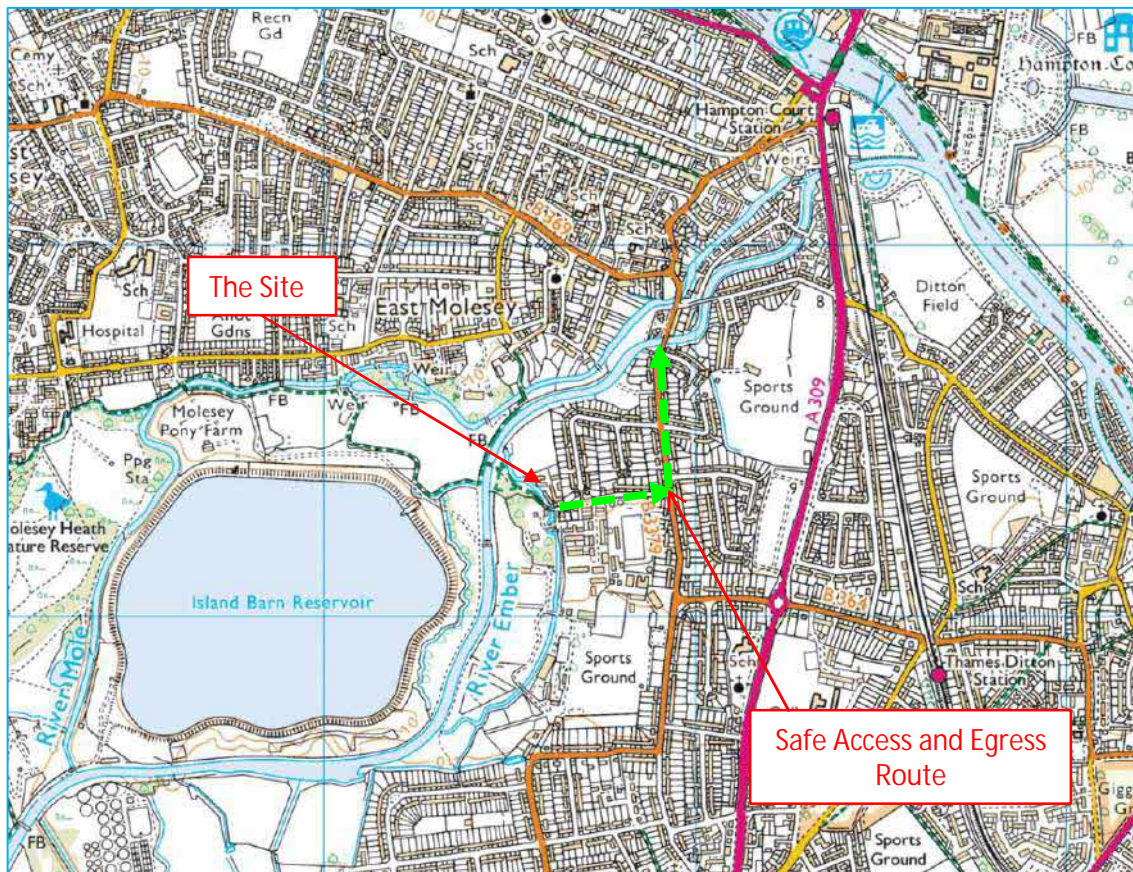


Figure 9 - Safe Access and Egress Route

## 5.9 Flood Warning Codes / Flood Evacuation Procedures

In order for the following evacuation procedures to be effective:

The house will participate in the Environment Agency flood warning telephone service. The site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0845 988 1188) in order to receive Flood Warnings/Alerts.

The flood warning will be passed onto the visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

## Flood Alert



‘Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!’.

The Environment Agency will issue a Flood Alert status when flooding is possible, based upon weather and river/sea conditions. Be prepared to act on your flood plan. At this stage occupants and visitors should make themselves aware of the Flood Plan and evacuation routes. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast.

## Flood Warning



‘Flooding of homes and businesses is expected. Act now!’.

The Flood Warning alert will be issued when water levels are rising, and further rain is expected. The site will be evacuated. Move family, pets and valuables to a safe place.

Safe access and egress, including emergency access can be maintained for vehicles and/or by foot. Water, electricity and gas supplies should be located and switched off before evacuating. The Environment Agency Floodline on 0845 988 1188 to get more information should be contacted to get more information, periodically and listen to and watch for weather and flood warnings on local radio and television stations.

## Severe Flood Warning



‘Severe Flooding is expected. There is extreme danger life and property. Act now!’.

If the site has not already been evacuated, it will be evacuated immediately. Co-operate with the emergency services and call 999 if immediately in danger. Safe access and egress, including emergency access can be maintained for vehicles and/or by foot.

## Warning No Longer in Force

‘Flood Watches or Flood Warnings are no longer in force for this area’.

Occupants and visitors should contact the Elmbridge Borough Council to check that it is safe to return to the site. Please be careful water may be around for several days. If there is any doubt that appliances may be water damaged, they must be checked before switching the power or gas back on.

Contact your insurance company as soon as possible to get their approval before arranging any clean-up or repairs.

#### 5.10 River Access

The proposed development will have no detrimental impact on flood risk while also improving the access to the River Ember and its banks for maintenance. Access to the River Ember has also been improved as part of the proposed development by function of the development layout. The proposed development will not only improve the access to the river for the Environment Agency but also for residents of the site.

#### 5.11 Residual Risk

The mitigation measures detailed above show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable. The site is unlikely to flood except in extreme conditions. This takes into account the property level protection measures.

## 6.0 SUMMARY AND CONCLUSIONS

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### 6.1 Introduction

This report presents an FRA in accordance with the NPPF for the proposed development at The Moseley Venture Centre.

This FRA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

### 6.2 Flood Risk

The site is unlikely to flood except in extreme conditions. The principal flood risk posed to the site is from fluvial flooding from the River Ember. The site is located within Flood Zones 1, 2 and 3. The majority of the site is located within Flood Zones 1 and 2 with the south of the site being located within Flood Zone 1 which has a 'low probability' of river flooding with less than 1 in 1000 annual probability of river flooding in any year (<0.1%). The north of the site is located within Flood Zone 2 with a 'medium probability' of river flooding with between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) in any year.

A small area of the site to the west, immediately adjacent to the River Ember, is located within Flood Zone 3 with a 'high probability' of river flooding, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

#### Defended Scenario

The site will not be inundated with floodwater for all events up to and including the defended 1 in 1000 year and 1 in 100 year (+12%) events. The design flood level for the site is the 1 in 100 year (+12%) water level, the defended 1 in 100 year (+12%) will have a water level of approximately 8.53mAOD. The site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event.

However during the defended 1 in 100 year (+20%) event a small proportion of the site, to the north, may be inundated with floodwater. The site may be inundated with floodwater to a depth of 0.19m during the defended 1 in 100 year (+20%) event. However, it should be taken into account that this would only occur over a small proportion of the site with the majority of ground levels being over 9.00mAOD and rising to 10.10mAOD on the site.

The finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details.

#### Undefended Scenario

The site will not be inundated with floodwater for all events up to and including the undefended 1 in 100 year event. The site will be flood free during the undefended 1 in 100 year event however during the undefended 1 in 1000 year even a small proportion of the site, to the north, may be inundated with floodwater. As noted above, the finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details.

Given the scale and nature of the proposed development and the size and location of the fluvial flooding sources it has been concluded that fluvial flooding poses a low flood risk to the site and the risk of fluvial flooding is considered to be of medium significance. A number of secondary flooding source has been identified which may pose a low significant risk to the site. These are:

Surface Water Flooding

Sewer Flooding

The flooding sources will only inundate the site to a relatively low water depth and water velocity, will only last a short period of time, in very extreme cases and will not have an impact on the whole of the proposed development site. The risk from this source will be further mitigated by using a number of property level protection measures to manage and reduce the overall flood risk at the site.

The proposed development will not change the vulnerability of the site or introduce a new 'more vulnerable' developments into the floodplain and will provide betterment compared to the existing situation. 'More vulnerable' uses are appropriate within Flood Zones 1, 2 and 3 after the completion of a satisfactory FRA.

The application is for a new, suitable flood-resilient design. The exposure of people and property will be reduced and minimised compared to existing site conditions. The chance of flooding each year is low each year. This takes into account the effect of any flood defences that may be located within the vicinity of the site as well property level protection measures.

### 6.3 Implications of the Development on Flood Risk

The site is not located within the 1 in 100 year flood outline, therefore as per the Elmbridge Borough Council Flood Risk Supplementary Planning Document (SPD) floodplain compensation is not required (see para. 3.4.20 of the SPD).

Furthermore, the design flood level for the site is the 1 in 100 year (+12%) water level, the site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event.

The site is currently occupied by existing buildings, the overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. The topography of the site will not be altered therefore; the overland flow routes will not be altered.

The proposed development proposes minimal new structures and will therefore allow floodwater to pass through the site with no effect on the conveyance routes. Therefore, mitigation measures are not required.

The proposed development will have no detrimental impact on flood risk while also improving the access to the River Ember and its banks for maintenance.

### 6.4 Flood Risk Management

The flood risk at the site will be reduced by property level protection measures these are discussed in more detail below.

**Sequential Approach:** The sequential approach has been applied within the site by locating the most vulnerable elements of the development in the lowest risk areas. The proposed buildings will be located on the higher parts of the site, away from the River Ember, at a lower risk of flooding.



Finished Floor Levels: Raising the finished floor of the buildings will be used to mitigate the effects of flooding at the site. The finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details. The basement entrance/s will have a threshold level of 9.40mAOD, which provides a more than adequate freeboard above the 1 in 100 year (+12%) event.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

First Floor Accommodation: Accommodation will be located on the first floor and above as well as the ground floor of the buildings. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor will be well above any floodwater levels.

This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the building. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

Flood Resilience and Resistance Measures: To make the buildings more resistant to seepage the following measures will be incorporated. Sealant will be used around external doors and windows. All external doors and windows will be constructed from durable materials and the walls of the buildings will be thick.

To improve the buildings resilience to flooding the following measures will be incorporated. All electrical wiring, switches, sockets, socket outlets, electrical, and gas meters etc. will be located a minimum of 450mm above the finished floor level of the house. Non-return valves will be fitted to the drains within the last manhole before discharge of water off the site.

Flood Warning: The site is located in a flood risk area therefore; the buildings will participate in the Environment Agency flood warning telephone service. The site will register contact details with the Environment Agency' Flood Warnings Service.

Flood Warning and Evacuation Plan: A FWEP outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may have been developed.

Safe Access and Egress Route: The Elmbridge Borough Council Flood Risk SPD confirms that Elmbridge Borough Council's policy (see page 43 of the SPD) is that a safe access/egress route "...should allow occupants to safely exit and enter the buildings via a 'dry' route above 1 in 100 year event to reach land outside the flooded area (e.g. Flood Zone 1) using public rights of way without the intervention of the emergency services or others. Where this is not possible, a route through limited depths of flooding may be acceptable taking account of flow depth and velocity (flood hazard). This is a particularly important consideration for sites located on a 'dry island' or where a change of use is proposed."

The site will not be inundated with floodwater during the defended 1 in 100 year (+12%) event, the site has a freeboard of 0.24m above the defended 1 in 100 year (+12%) event therefore, dry access and egress from the site will be possible for all events up to and including the 1 in 100 year (+12%) event. Furthermore, the finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD.

People should make their way to areas outside of the flood zone via Orchard Lane and Esher Lane (B3379) to the north. Facilities such as cafes, shops etc. are located to the north of the site which may

be used in the event of a flood event. A safe access and egress route, including emergency access can be maintained for vehicles and/or by foot. In the event of a Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site.

Given the nature of fluvial flooding and the Environment Agency's Flood Warning Service, occupants should be able to seek prior evacuation to the place of safe refuge before flood waters reach the site, or worst case refuge on the first floor level. The Safe Access and Egress Route indicates the exit routes that all people (i.e. occupants and visitors) on site should follow once a flood warning has been received. Therefore, safe access and egress can be maintained in accordance with the NPPF, Environment Agency and the Elmbridge Borough Council Guidance.

Flood Warning Codes / Flood Evacuation Procedures: The flood evacuation procedures have been developed so that the site can be safely evacuated. The property will participate in the Environment Agency flood warning telephone service. The site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Warnings. Flood warning will be passed onto the visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

River Access: The proposed development will have no detrimental impact on flood risk while also improving the access to the River Ember and its banks for maintenance. Access to the River Ember has also been improved as part of the proposed development by function of the development layout. Currently, a number of buildings back directly on to the river, and prohibit easy access along the bank. The proposed development will not only improve the access to the river for the Environment Agency but also for residents of the site.

## 6.5 Conclusion

In conclusion, the proposed development would be expected to remain dry in all but the most extreme conditions. Providing the recommendations made in this FRA are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of the NPPF and Elmbridge Council guidance.

This FRA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of the NPPF. The development should not therefore be precluded on the grounds of flood risk.



## APPENDIX 1 – Proposed Site Layout

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General notes  
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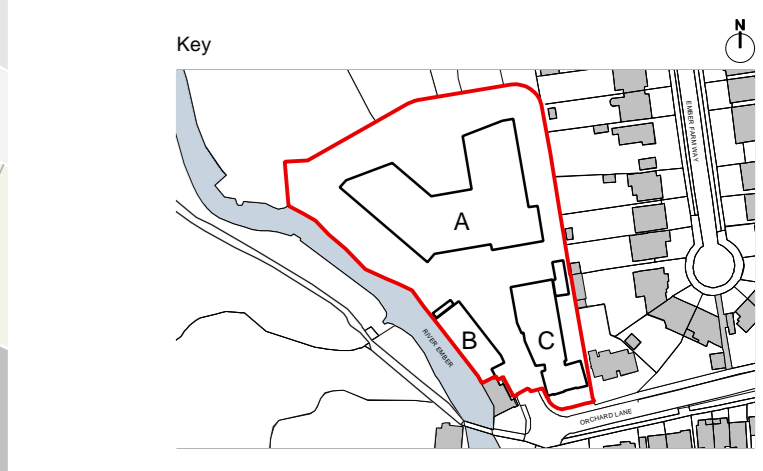
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Electronic file reference  
 A3711 Orchard Lane SHEETS 200 Proposed Plans R2.vwx

Rev	Revision note	Date	Drawn Check
32	For planning	11/10/22	AS ES

- KEY
- 1 Bed
  - 2 Bed
  - 3 Bed
  - Amenity
  - Residential Lobby
  - Back of House
  - Diverted Thames Water main



Client  
**Lifestyle Residences Ltd**

Project title  
**A3711 Orchard Lane, East Molesey**

Drawing title  
**Proposed Site Wide Ground Floor Plan**

Scale @ A1  
**1:250**

Issue date  
**11/10/22**

Drawing number  
**A3711-ASA-ZZ-00-DR-A-0210**

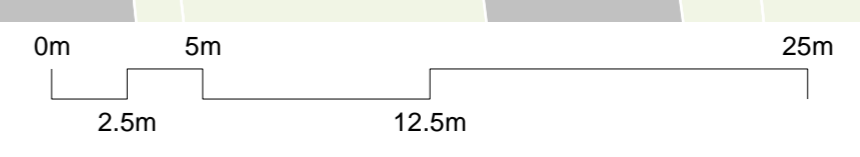
Proposed status  
**for Planning**

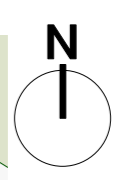
Revision  
**P32**

**Assael**  
 Architecture

Assael Architecture Ltd  
 123 Upper Richmond Road  
 London SW15 2TL

+44 (0)207 736 7744  
 info@assael.co.uk  
 www.assael.co.uk





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 A3711 Orchard Lane SHEETS 200 Proposed Plans.vwx

Rev	Revision note	Date	Drawn Check
23	For Planning	11/10/22	AS ES

- KEY**
- 1 Bed
  - 2 Bed
  - 3 Bed
  - Amenity
  - Residential Lobby
  - Back of House
  - Diverted Thames Water main



Client  
**Lifestyle Residences Ltd**

Project title  
**A3711 Orchard Lane, East Molesey**

Drawing title  
**Proposed Site Wide First Floor Plan**

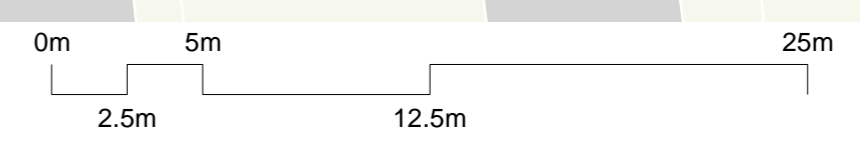
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**1:250 11/10/22**

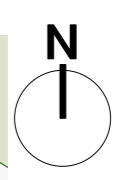
Drawing number  
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Proposed status Revision  
**for Planning P23**

**Assael**  
 Architecture

Assael Architecture Ltd  
 123 Upper Richmond Road  
 London SW15 2TL  
 +44 (0)207 736 7744  
 info@assael.co.uk  
 www.assael.co.uk





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Electronic file reference  
 A3711 Orchard Lane SHEETS 200 Proposed Plans.vwx

Rev	Revision note	Date	Drawn	Check
22	For Planning	11/10/22	AS	ES

**KEY**

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main



Client  
**Lifestyle Residences Ltd**

Project title  
**A3711 Orchard Lane, East Molesey**

Drawing title  
**Proposed Site Wide Second Floor Plan**

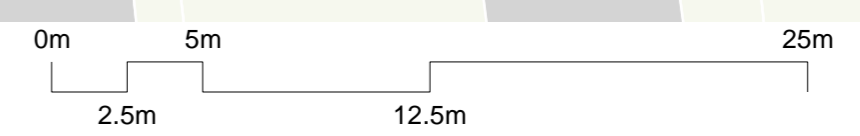
Scale @ A1  
**1:250** Issue date  
**11/10/22**

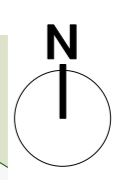
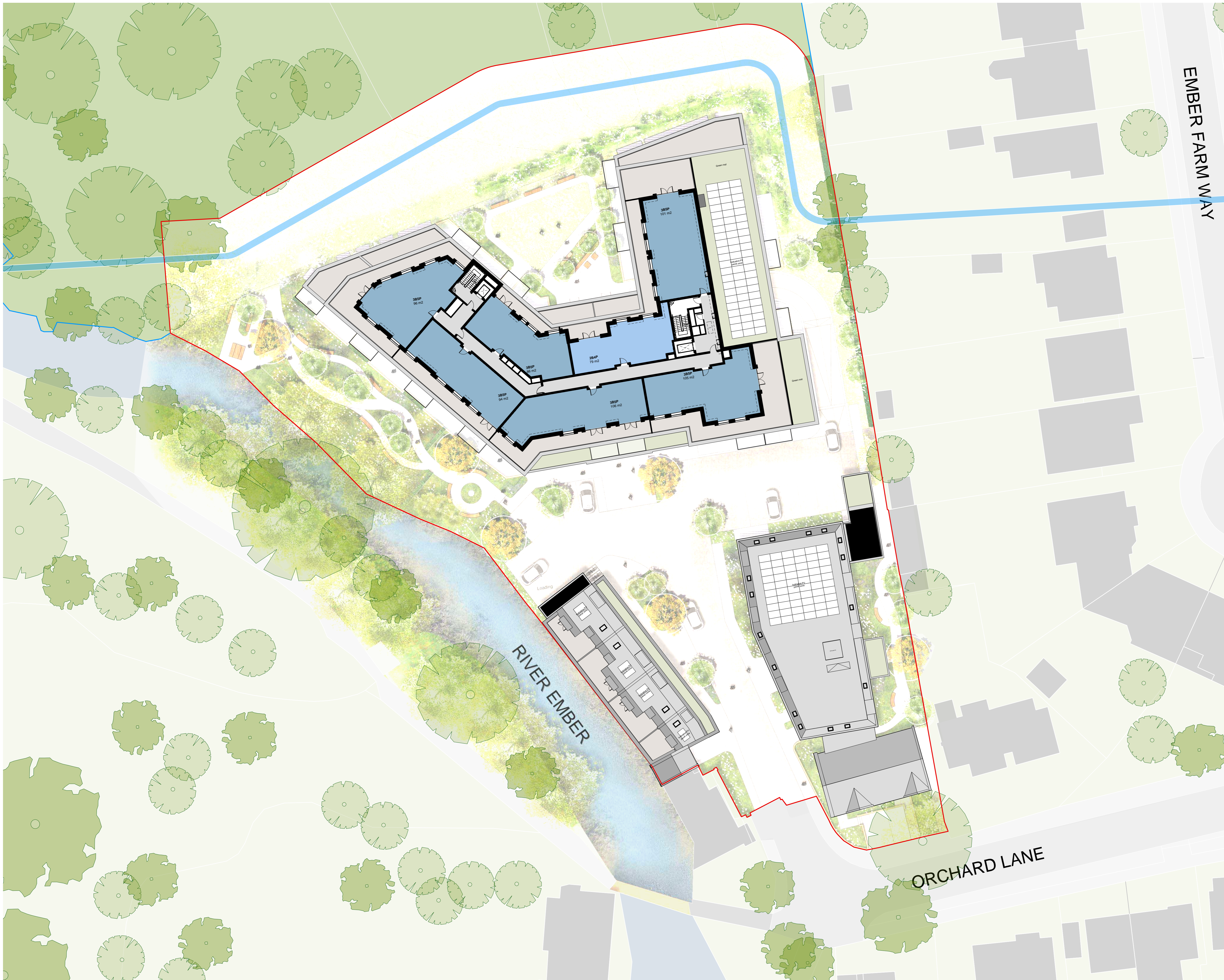
Drawing number  
**A3711-ASA-ZZ-02-DR-A-0212**

Proposed status  
**for Planning** Revision  
**P22**

**Assael**  
 Architecture

Assael Architecture Ltd  
 123 Upper Richmond Road  
 London SW15 2TL  
 +44 (0)207 736 7744  
 info@assael.co.uk  
 www.assael.co.uk





EMBER FARM WAY

RIVER EMBER

ORCHARD LANE

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Electronic file reference  
 A3711 Orchard Lane SHEETS 200 Proposed Plans vwx

Rev	Revision note	Date	Drawn	Check
22	For Planning	11/10/22	AS	ES

**KEY**

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main



Client  
**Lifestyle Residences Ltd**

Project title  
**A3711 Orchard Lane, East Molesey**

Drawing title  
**Proposed Site Wide Third floor plan**

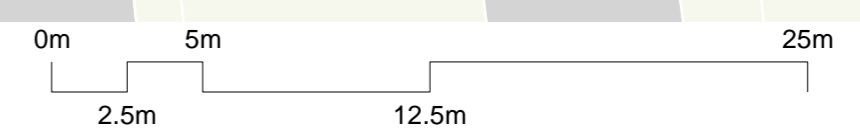
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**1:250** **11/10/22**

Drawing number  
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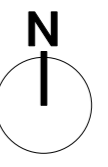
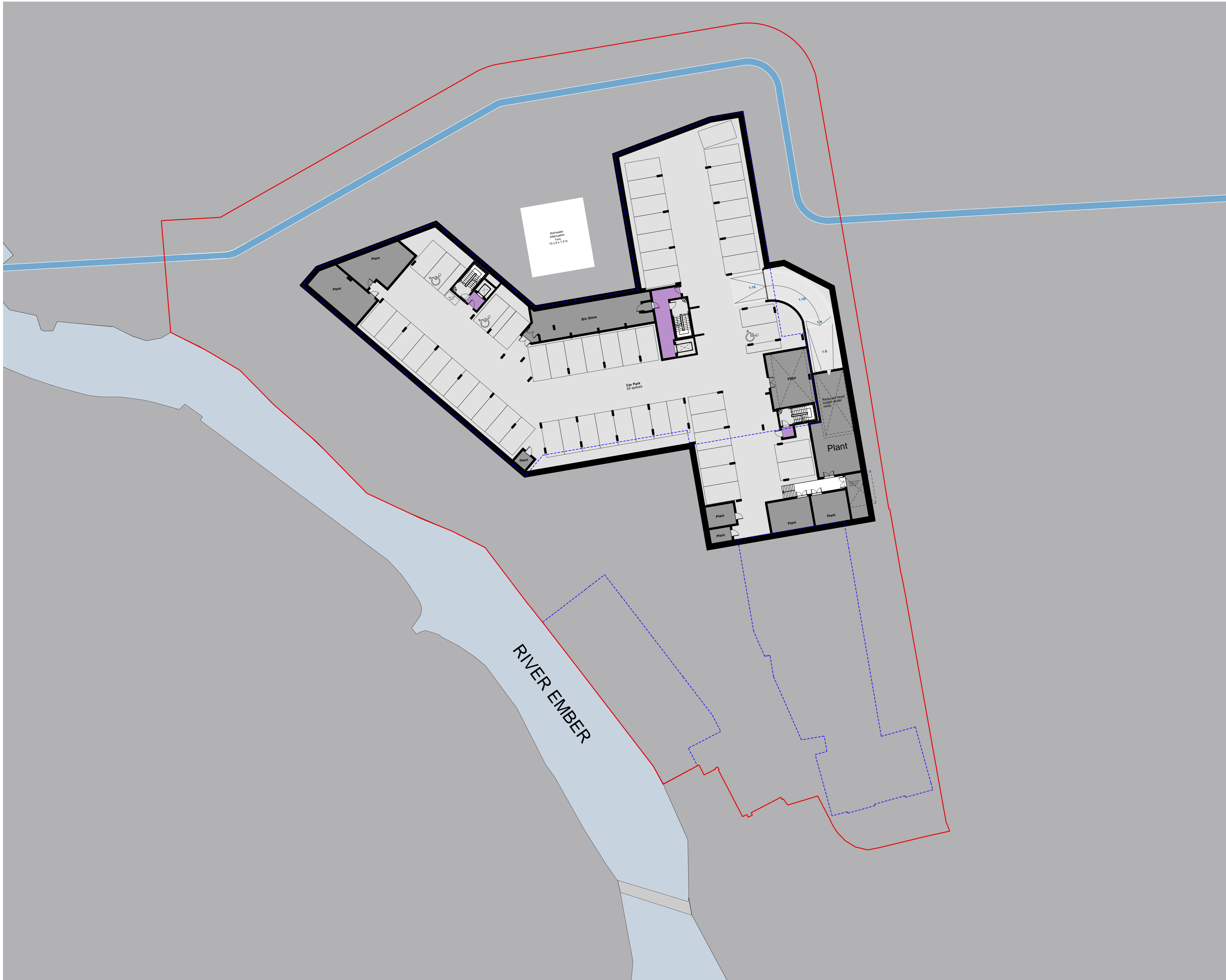
Proposed status Revision  
**for Planning** **P22**

**Assael**  
 Architecture

Assael Architecture Ltd  
 123 Upper Richmond Road  
 London SW15 2TL  
 +44 (0)207 736 7744  
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Electronic file reference

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Rev	Revision note	Date	Drawn	Check
30	For Planning	11/10/22	AS	ES

**KEY**

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main



Client

**Lifestyle Residences Ltd**

Project title

**A3711 Orchard Lane,  
East Molesey**

Drawing title

**Proposed Site Wide  
Basement Plan**

Scale @ A1 Issue date

**1:250** **11/10/22**

Drawing number

**A3711-ASA-ZZ-B1-DR-A-0209**

Proposed status Revision

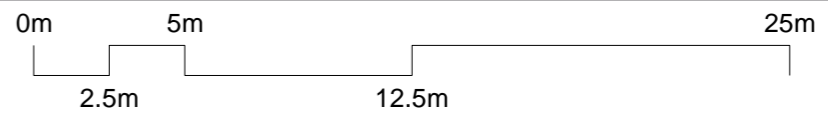
**for Planning** **P30**

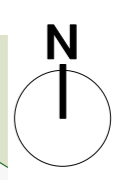
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 123 Upper Richmond Road  
 London SW15 2TL

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 info@assael.co.uk  
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Rev	Revision note	Date	Drawn	Check
23	For Planning	11/10/22	AS	ES



Client  
**Lifestyle Residences Ltd**

Project title  
**A3711 Orchard Lane, East Molesey**

Drawing title  
**Proposed Site Wide Roof Plan**

Scale @ A1  
**1:250** Issue date  
**11/10/22**

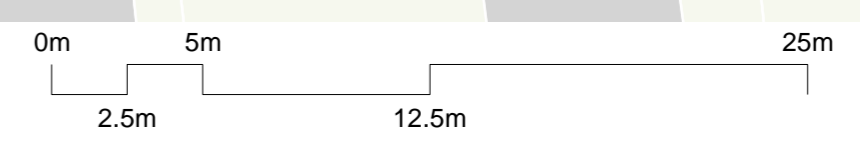
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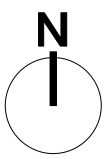
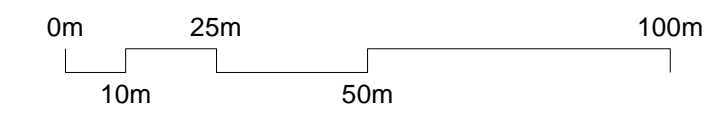
Proposed status  
**for Planning** Revision  
**P23**

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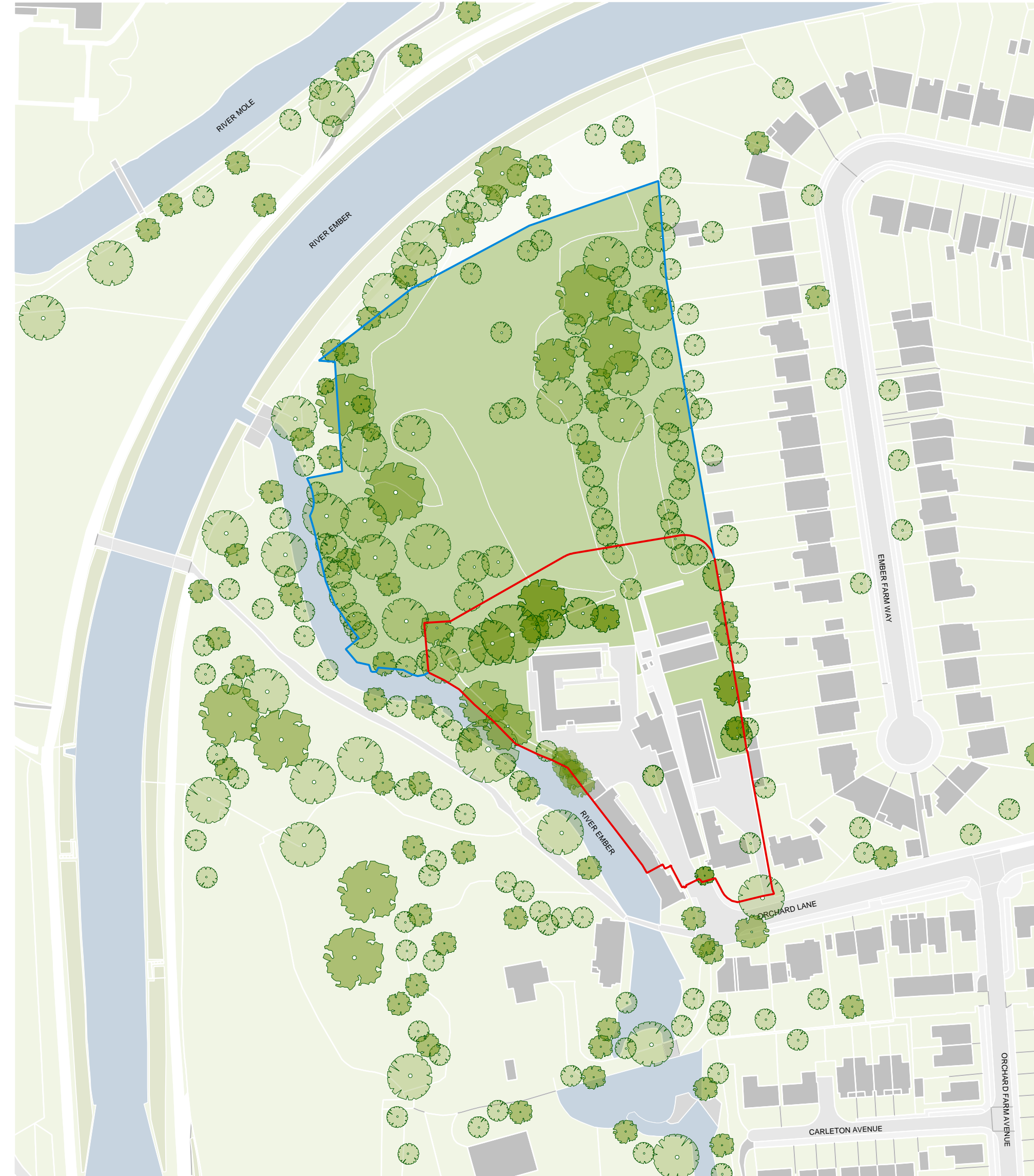
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Electronic file reference

A3711 Orchard Lane SHEETS 100 Existing Drawings R3 .vwx

Rev	Revision note	Date	Drawn	Check
4	For Planning	12/10/22	JG	AS



**KEY**

- Site application boundary
- Other land within applicants ownership



Client

**Lifestyle Residences Ltd**

Project title

**A3711 Orchard Lane,  
 East Molesey**

Drawing title

**Site Location Plan**

Scale @ A1

Issue date

**1:1250**

**12/10/22**

Drawing number

**A3711-ASA-ZZ-ZZ-DR-A-0106**

Proposed status

Revision

**for Planning**

**P4**

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Architecture

Assael Architecture Ltd  
 123 Upper Richmond Road  
 London SW15 2TL

+44 (0)207 736 7744  
 info@assael.co.uk  
 www.assael.co.uk

## APPENDIX 2 – Environment Agency Correspondence

---

Product 4 (Detailed Flood Risk) for: Sundial House, The Molesey Venture, Orchard Lane, East Molesey KT8 0BN

Requested by: Keelan Serjeant

Reference: KSL 230767 AC

Date: 31/08/2021

## Contents

- Flood Risk Assessments: Climate Change Allowances
- Flood Map for Planning (Rivers and Sea)
- Flood Map Extract
- Model Output Data
- Data Point Location Map
- Modelled Flood Outlines Map
- Defence Details
- Historic Flood Events Data
- Historic Flood Events Data Map
- Additional Data
- Surface Water
- Open Government Licence

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/improvements have been made to the data for this location. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

**Please note. Due to the location of your site you may also need to obtain the Lower Thames Flood Modelling Study. This can be done by contacting [enquiries\\_THM@environment-agency.gov.uk](mailto:enquiries_THM@environment-agency.gov.uk) .**

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.

Customer services line: 020 8474 6848

Email: [REDACTED]

Website: <https://www.gov.uk/government/organisations/environment-agency>

## Flood Risk Assessments: Climate Change Allowances

On 20/07/2021 the 'Flood risk assessments: climate change allowances' were updated and published on gov.uk. You can view the updated allowances at ['Flood risk assessments: climate change allowances'](#).

You will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

It remains the applicant's responsibility to demonstrate through their proposals and flood risk assessments that a new development will be safe in flood risk terms for its lifetime.

## Flood Map for Planning (Rivers and Sea)

### The Flood Map for Planning (Rivers & Sea)

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. The map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time, taking into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk).

### At this Site:

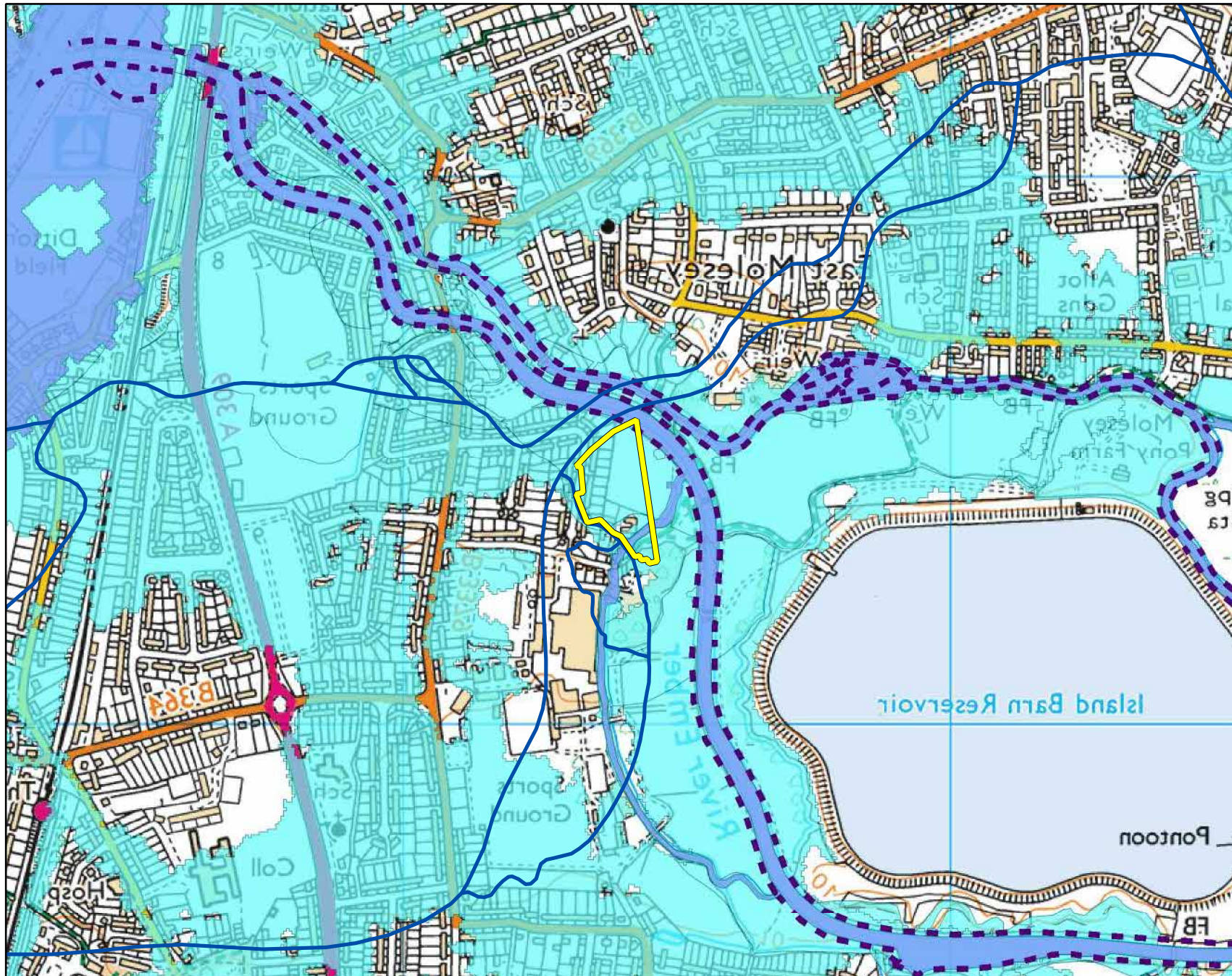
The Flood Map shows that this property/site lies within the outline of Flood Zone 2 this zone comprises land assessed as having a 0.1% chance of flooding from rivers in any given year.

Enclosed is an extract of our Flood Map which shows this information for your area.








### Method of production

The Flood Map at this location has been derived using our detailed fluvial model; 2D Lower Mole Modelling and Flood Risk Mapping, completed in 2009 by Halcrow

# Detailed FRA Map centred on KT8 0BN created 31 August 2021 (Ref: KSL 230767 AC)



## Legend

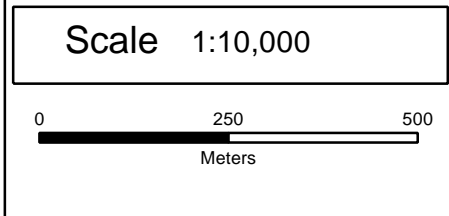
-  Site
-  Main River
-  Flood Defences
-  Flood Storage Area
-  Areas Benefiting From Flood Defence
-  Flood Zone 3
-  Flood Zone 2

### Flood Map for Planning (assuming no defences)

**Flood Zone 3** shows the area that could be affected by flooding:

- from the sea with a 0.5% or greater chance of occurring each year
- or from a river with a 1% or greater chance of occurring each year.

**Flood Zone 2** shows the extent of an extreme flood from rivers or the sea with up to a 0.1% chance of occurring each year.





## Model Output Data

You have requested flood levels for various return periods at this location.

2D

The modelled flood levels for the closest most appropriate model grid cells, any additional information you may need to know about the modelling from which they are derived and/or any specific use or health warning for their use are set out below.

Using a 2D TuFLOW model the floodplain has been represented as a grid. The flood water levels have been calculated for each grid cell.

A map showing the location of the points from which the data is taken is enclosed. Please note you should read the notice enclosed for your specific use rights.

Table 1: Modelled Defended Node Levels

Node ID	Easting	Northing	Modelled Flood Level for Annual Exceedance Probability Shown, in Metres AOD			
			5% AEP	1% AEP	1% AEP Plus Climate Change	0.1% AEP
41314	514607	167534	Nil Return	Nil Return	8.87	Nil Return
46642	514527	167474	Nil Return	Nil Return	8.88	Nil Return
46654	514587	167474	Nil Return	Nil Return	8.87	Nil Return
50126	514612	167429	Nil Return	Nil Return	8.88	Nil Return
51290	514527	167409	Nil Return	Nil Return	8.90	Nil Return
52948	514597	167379	Nil Return	Nil Return	8.88	Nil Return
53471	514562	167369	Nil Return	Nil Return	8.91	Nil Return
54462	514642	167349	Nil Return	Nil Return	8.88	Nil Return
54939	514597	167339	Nil Return	7.88	8.95	8.14
56058	514612	167314	7.29	7.88	8.96	8.14

Data taken from our 2D Lower Mole Modelling and Flood Risk Mapping, completed in 2009 by Halcrow

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.

Customer services line: 020 8474 6848

Email [REDACTED]

Website: <https://www.gov.uk/government/organisations/environment-agency>

1D

The modelled flood levels for the most appropriate cross sections taken from our 2D modelling of the River Mole, any additional information you may need to know about the modelling from which they are derived and/or any specific use or health warning for their use are set out below.

Table 2: Modelled Undefended Node Levels

Node ID	Easting	Northing	Modelled Flood Level for Annual Exceedance Probability Shown, in Metres AOD		
			1.% AEP	0.5% AEP	0.1% AEP
Emb301	514631	167222	8.68	9.02	9.58
Emb271	514614	167257	8.49	8.71	9.54
Emb217	514607	167308	8.49	8.71	9.55
Emb150	514561	167353	8.49	8.71	9.52
Emb94	514518	167378	8.49	8.71	9.51
Emb37	514502	167434	8.49	8.71	9.51
MRel1476	514519	167518	8.48	8.70	9.50
MRel1325	514650	167588	8.46	8.69	9.49
Emb301	514631	167222	8.68	9.02	9.58
Emb271	514614	167257	8.49	8.71	9.54

Data taken from our 2D Lower Mole Modelling and Flood Risk Mapping, completed in 2009 by Halcrow

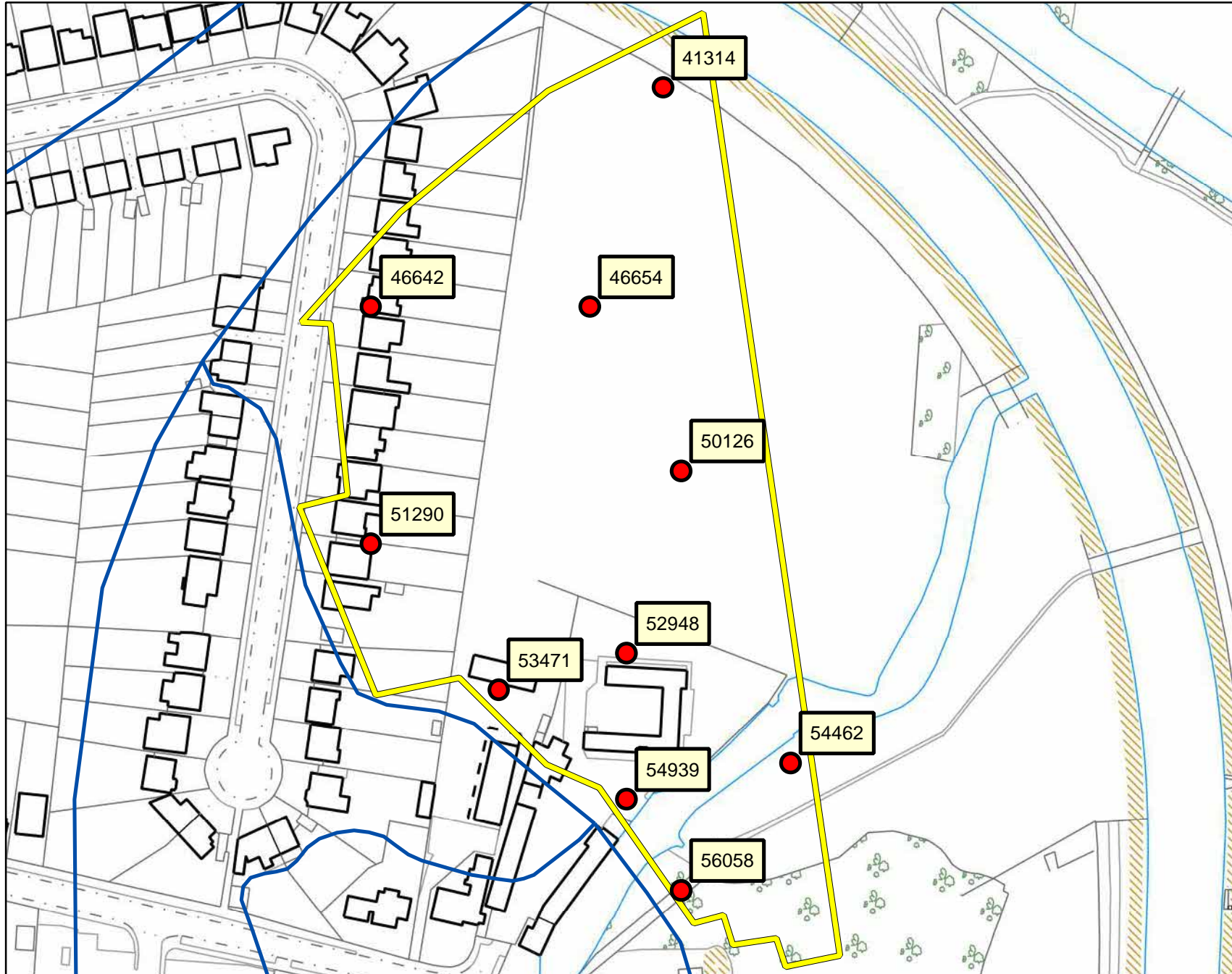
Table 3: Modelled Defended Node Levels

<b>Modelled Flood Level for Annual Exceedance Probability Shown, in Metres AOD</b>									
<b>Node ID</b>	<b>Easting</b>	<b>Northing</b>	<b>20% AEP</b>	<b>5% AEP</b>	<b>1.3 % AEP</b>	<b>1% AEP</b>	<b>1% AEP Plus Climate Change</b>	<b>0.5% AEP</b>	<b>0.1% AEP</b>
Emb301	514631	167222	8.07	8.25	8.62	8.70	9.08	9.04	9.60
Emb271	514614	167257	7.19	7.81	8.44	8.51	8.96	8.72	9.54
Emb217	514607	167308	7.19	7.81	8.44	8.51	8.96	8.72	9.55
Emb150	514561	167353	7.19	7.81	8.44	8.51	8.96	8.72	9.52
Emb94	514518	167378	7.19	7.81	8.44	8.51	8.96	8.72	9.51
Emb37	514502	167434	7.19	7.81	8.44	8.51	8.96	8.72	9.51
MRel1476	514519	167518	7.16	7.80	8.42	8.50	8.96	8.71	9.50
MRel1325	514650	167588	7.11	7.77	8.40	8.48	8.95	8.69	9.49
Emb301	514631	167222	8.07	8.25	8.62	8.70	9.08	9.04	9.60
Emb271	514614	167257	7.19	7.81	8.44	8.51	8.96	8.72	9.54

Data taken from our 2D Lower Mole Modelling and Flood Risk Mapping, completed in 2009 by Halcrow.

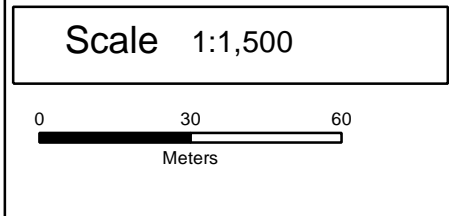
There are no health warnings or additional information for these levels or the model from which they were produced.

# 2D Node Map centred on KT8 0BN created 31 August 2021 (Ref: KSL 230767 AC)

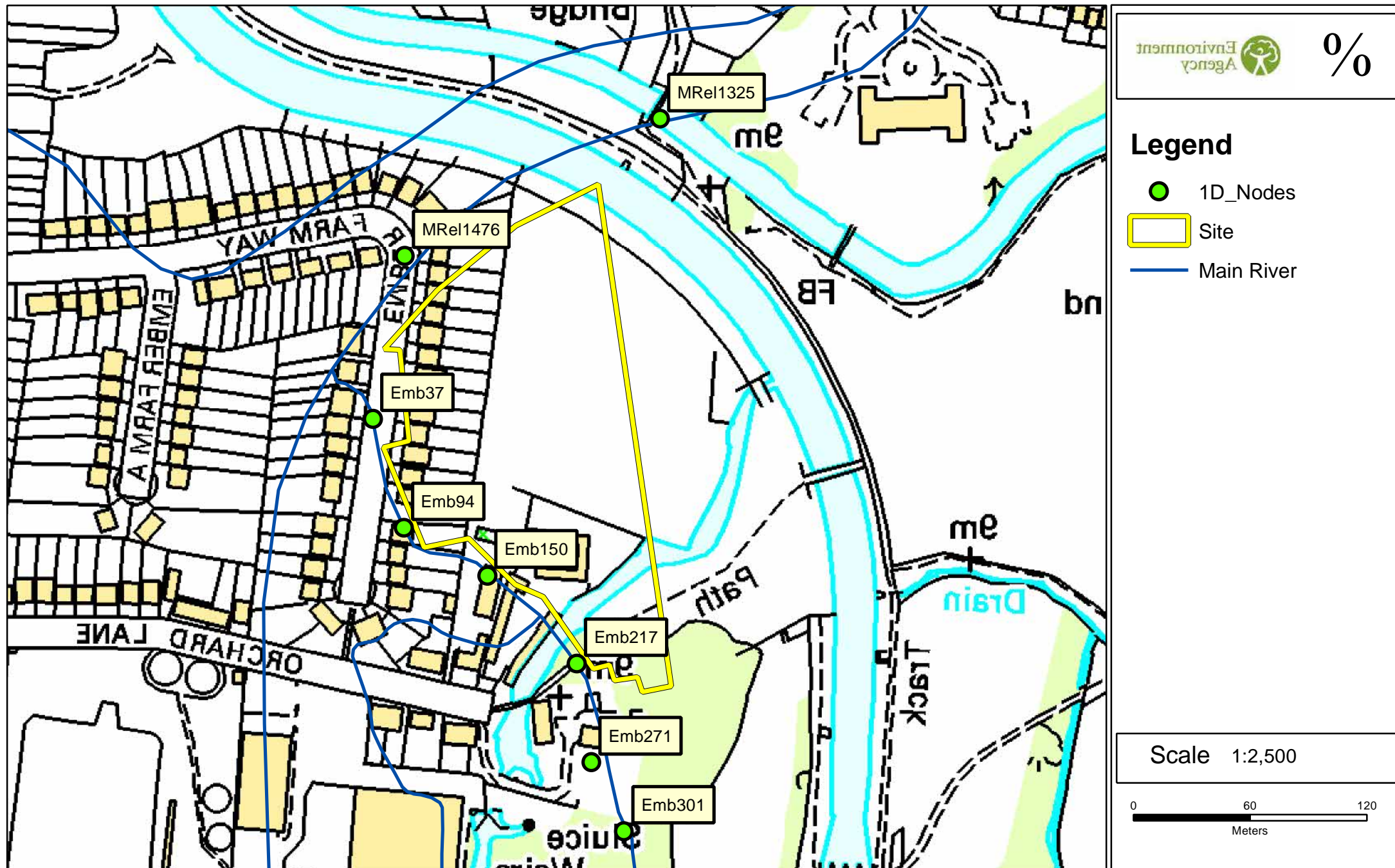


## Legend

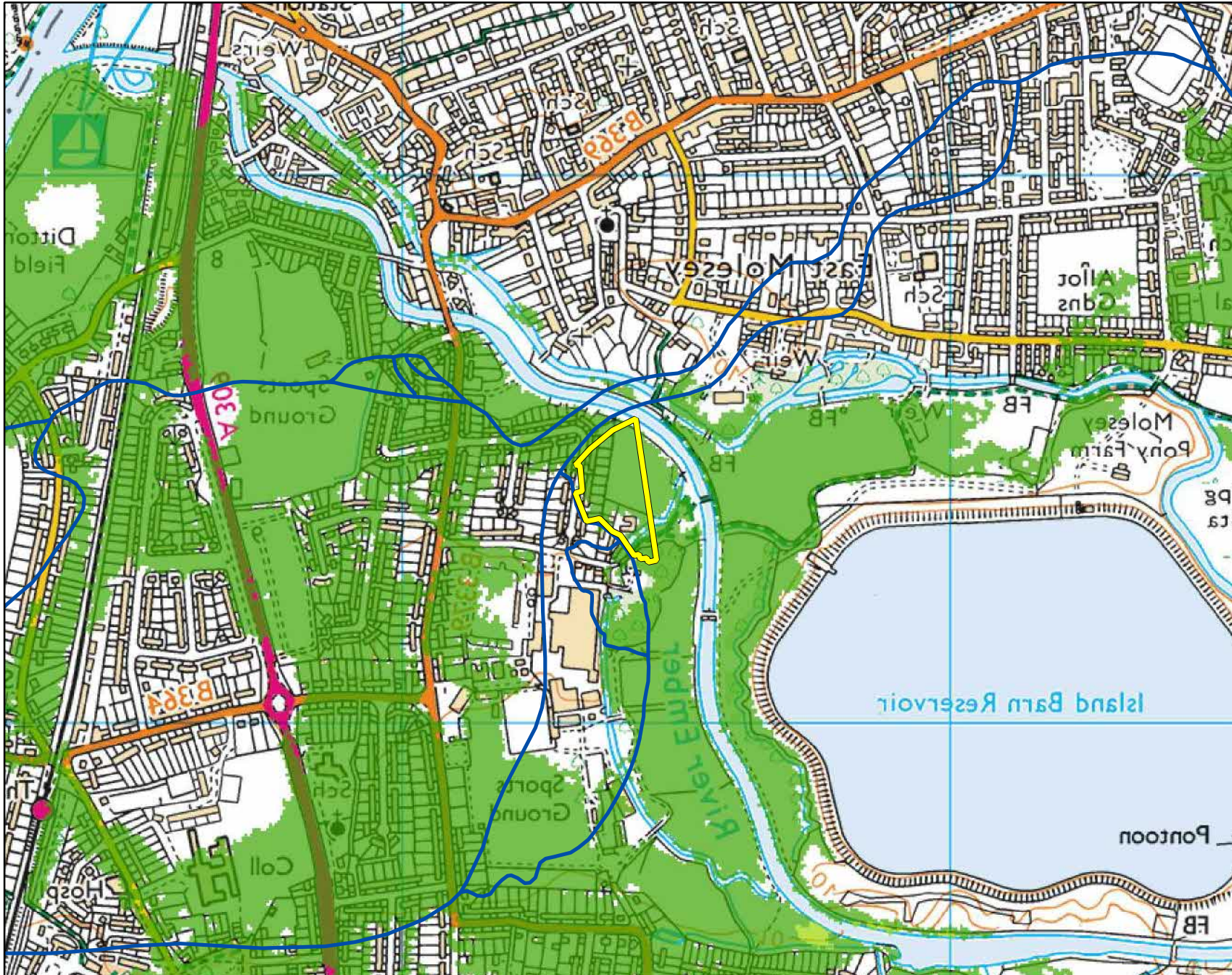
- 2D\_Nodes
- Site
- Main River




# 1D Node Map centred on KT8 0BN created 31 August 2021 (Ref: KSL 230767 AC)



# Modelled Defended Flood Extents Map centred on KT8 0BN created 31 August 2021 (Ref: KSL 230767 AC)




%

**Legend**

- Site
- Main River

**Modelled Defended Flood Extents**

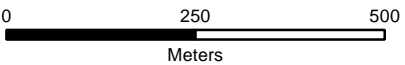
**AEP (%)**

- 5% AEP
- 1% AEP
- 1% AEP + CC
- 0.1% AEP

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

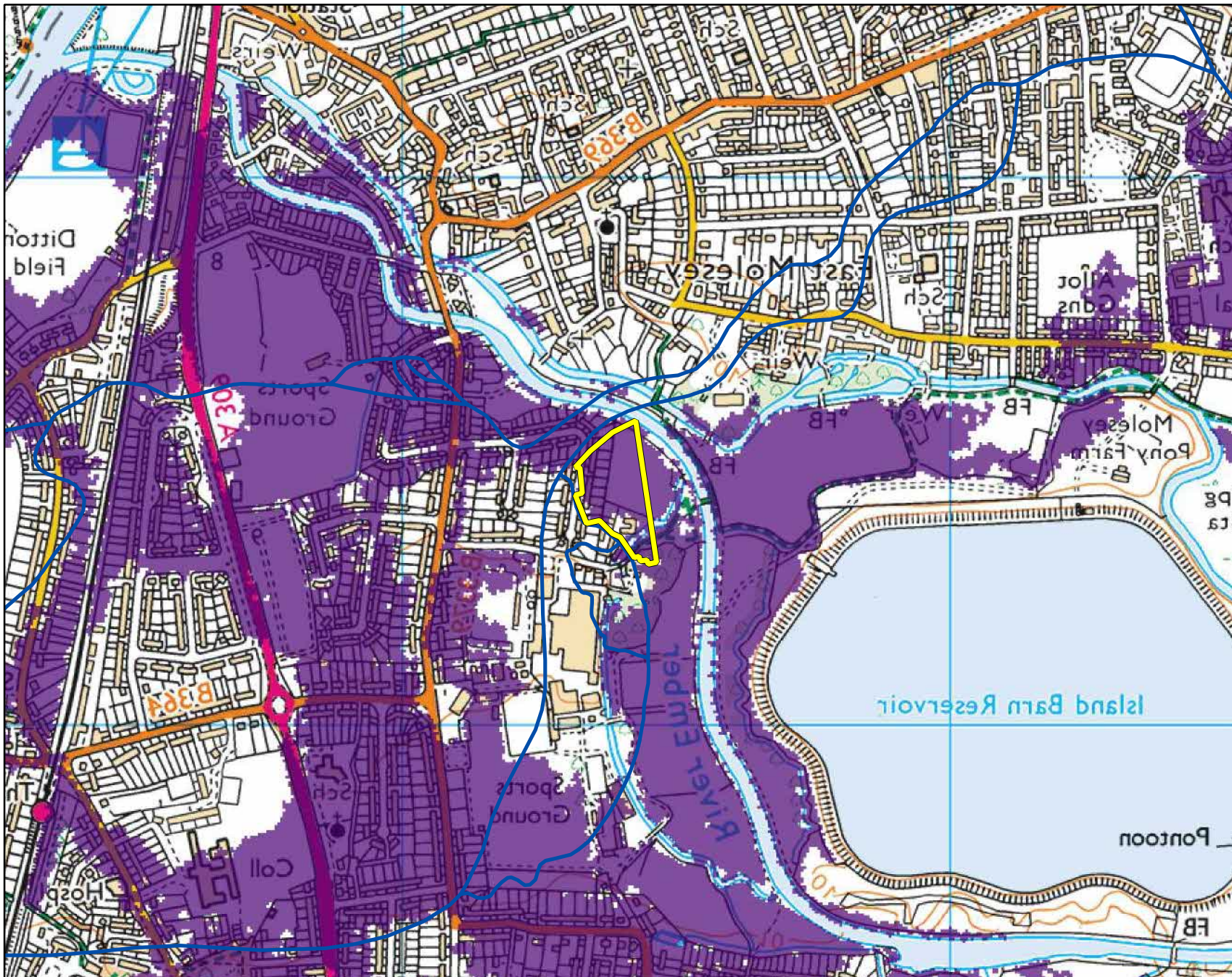
Climate Change (CC) extent based on an increase of 20% in river flows.

**Scale** 1:10,000



Meters

# Modelled Undefended Flood Extents Map centred on KT8 0BN created 31 August 2021 (Ref: KSL 230767 AC)



## Legend

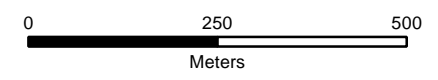
- Site
- Main River

## Modelled Flood Extents

- AEP (%)**
- 1% AEP
  - 0.1% AEP

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale 1:10,000



## Defence Details

Type and location: Lower Mole Flood Alleviation Scheme. As a result of the great flood of 1968, the Lower Mole Flood Alleviation Scheme was built in the 1970's through to the mid 1980's. This scheme consists of a major channel creation, widening and dredging. 3km of earth bank have been constructed to keep the floods within the original floodplain upstream of Albany Bridge. The river is also now regulated through sluices and other structures designed to minimize flood damage. The scheme design flow is 241 cumecs. Of this, 31 cumecs flows via Royal Mills sluice before re-entering the flood relief channel downstream of Viaduct Sluice. The remaining 210 cumecs is diverted through Viaduct Sluice into the flood relief channel.

Build date: 1980's

Standard of protection: In excess of a 1 in 100 year event (1% AEP).

Owner – EA, LA, private

### Areas Benefiting from Flood Defences

This property/site is within an area benefiting from flood defences. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year.

If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.



## Historic Flood Events Data

We hold records of historic flood events from rivers. Information on the floods that may have affected the area local to your site are provided below and in the enclosed map (if relevant).

### Flood Event Data

Dates of historic flood events in this area – Dec 2013, Feb 1979, Nov 1974, Sept 1968

Please note that our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

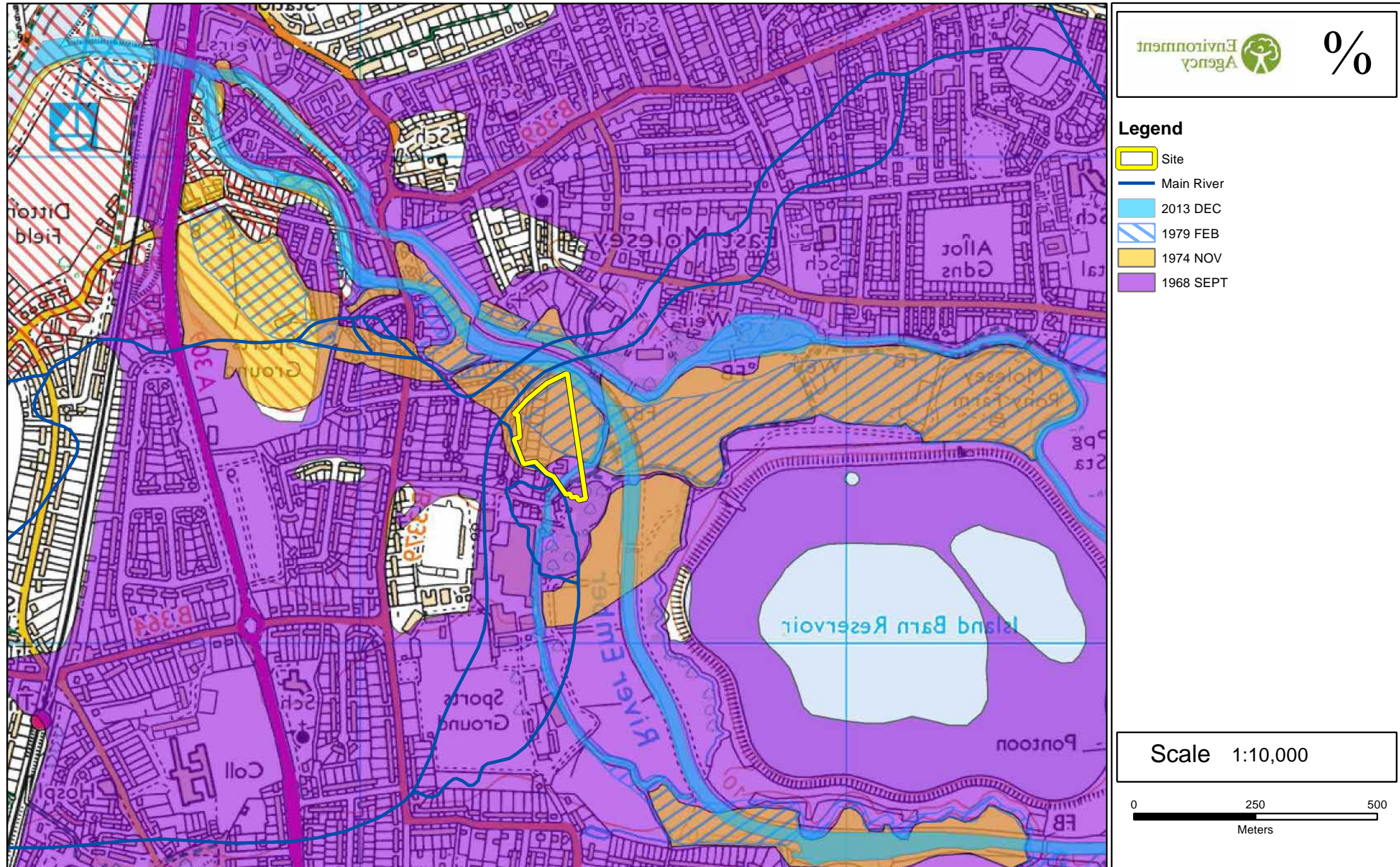
We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed,
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed.

# Historic Flood Extents Map centred on KT8 0BN created 31 August 2021 (Ref: KSL 230767 AC)



## Additional Information

### Information Warning - OS background mapping

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### Planning advice and guidance

The Environment Agency are keen to work with partners to enable development which is resilient to flooding for its lifetime and provides wider benefits to communities. If you have requested this information to help inform a development proposal, then we recommend engaging with us as early as possible by using the pre-application form available from our website:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

Complete the form in the link and email back to [kslplanning@environment-agency.gov.uk](mailto:kslplanning@environment-agency.gov.uk)

We recognise the value of early engagement in development planning decisions. This allows complex issues to be discussed, innovative solutions to be developed that both enables new development and protects existing communities. Such engagement can often avoid delays in the planning process following planning application submission, by reaching agreements up-front. We offer a charged pre-application advice service for applicants who wish to discuss a development proposal.

We can also provide a preliminary opinion for free which will identify environmental constraints related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

## Flood Risk Assessments guidance

### Flood risk standing advice for applicants

In preparing your planning application submission, you should refer to the Environment Agency's Flood Risk Standing Advice and the Planning Practice Guidance for information about what flood risk assessment is needed for new development in the different Flood Zones. This information can be accessed via:

<https://www.gov.uk/flood-risk-assessment-standing-advice>

<http://planningguidance.planningportal.gov.uk/>

<https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>

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

You should also consult the Strategic Flood Risk Assessment and flood risk local plan policies produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. You should discuss surface water management with your Lead Local Flood Authority.
3. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection due to insufficient information

## Surface Water

We have provided two national Surface Water maps, under our Strategic Overview for flooding, to your Lead Local Flood Authority who are responsible for local flood risk (i.e. surface runoff, ground water and ordinary watercourse), which alongside their existing local information will help them in determining what best represents surface water flood risk in your area.

Your Lead Local Flood Authority have reviewed these and determined what it believes best represents surface water flood risk. You should therefore contact this authority so they can provide you with the most up to date information about surface water flood risk in your area.

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewerage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources. We are working with these organisations to improve knowledge and understanding of surface water flooding.

## Open Government Licence

Please refer to the [Open Government Licence](#) which explains the permitted use of this information.

## APPENDIX 3 – Flood Warning and Evacuation Plan

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The Molesey Venture Centre  
Flood Warning and Evaluation Plan

For Lifestyle Residences

KRS.0572.001.R.004.C

October 2022

[www.krsevenvironmental.com](http://www.krsevenvironmental.com)



## CONTACT DETAILS

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Registered Office:  
KRS Environmental Ltd  
3 Princes Square  
Princes Street  
Montgomery  
Powys  
SY15 6PZ

Office also at:  
KRS Environmental Ltd  
The Media Centre  
7 Northumberland Street  
Huddersfield  
West Yorkshire  
HD1 1RL

Tel: [REDACTED]  
Mob: [REDACTED]

Tel: [REDACTED]  
Mob: [REDACTED]

Email: [REDACTED]  
Web: [REDACTED]  
LinkedIn: [REDACTED]

The Molesey Venture Centre	
Project	Flood Warning and Evaluation Plan
Client	Lifestyle Residences
Status	Final
Prepared by	Keelan Serjeant BSc (Hons), MSc, MCIWEM
Date	October 2022

### Disclaimer:

This report has been produced by KRS Environmental Limited within the terms of the contract with the client and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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## FLOOD WARNING AND EVACUATION PLAN DOCUMENT CONTROL

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The site is owned by Lifestyle Residences.

This Flood Warning and Evacuation Plan (FWEP) is owned, maintained and updated by Lifestyle Residences. All stakeholders of the plan are asked to inform the above of any changes in circumstances that may materially affect the plan in anyway. Details of any changes should be sent to Lifestyle Residences.

This plan should be reviewed:

- On first occupation;
- Every year following first occupation or;
- As a result of lessons identified following a flood event or exercise, or;
- Following changes of ownership of the property or;
- Following changes to any of the names / positions held within the plan; and
- Following changes to the Flood Warning process.

All updates/reviews shall be documented, recorded and will be communicated to the occupants and visitors of the site. The review shall be held within Appendix 1 of the FWEP.

Signed:

Dated:

Version No:

A copy of the completed FWEP will be held at The Moseley Venture Centre and shall be made available for inspection by the Environment Agency/Emergency Planners as and if required.

## 1.0 INTRODUCTION

---

### 1.1 Aims and Objectives

The Flood Warning and Evacuation Plan (FWEP) sets out the flood risk of the site, identifies the roles and responsibilities of the Flood Wardens, provides details of the proposed flood actions and sets out the roles and responsibilities of other bodies as well as providing contact details.

This FWEP has been carried out in accordance with guidance contained in the National Planning Policy Framework (NPPF)<sup>1</sup> and associated Planning Practice Guidance<sup>2</sup>. The FWEP is a 'living' document and therefore should be periodically reviewed and updated to provide advice and guidance to occupants and visitors in the event of an extreme flood.

The advice of the emergency services should be followed at all times and on the ground decisions will supersede this FWEP. Where information is not available from the relevant authorities this FWEP is intended to provide action points to protect property and allow early, safe evacuation from this site.

#### Aim

To minimise the risk of harm to the occupiers and visitors during an extreme flood event.

#### Objectives

To safely evacuate occupants and visitors from the site in the event of a major flood event.

To ensure safety by raising awareness of the flood risk.

To define the areas of responsibility for those participating in the FWEP.

To establish procedures for implementing the FWEP.

To reduce the risk to life.

### 1.2 Plan Structure

This FWEP has the following structure:

Section 2 shows the location of the site;

Section 3 details the flood risk to the site;

Section 4 describes the flood risk management methods used to reduce the flood risk;

Section 5 details the flood warnings that are available for the site;

Section 6 provides an overview of the flood evacuation procedures;

Section 7 provides of the evacuation of the site and safe exit route;

Section 8 describes the safe refuge area;

Section 9 provides a flood information notice;

---

<sup>1</sup> Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework.

<sup>2</sup> Ministry of Housing, Communities and Local Government (2014) Planning Practice Guidance - Flood Risk and Coastal Change.

Section 10 provides information on training;

Section 11 provides information on reoccupation of the site; and

Section 12 provides a list of useful telephone numbers, websites, radio and TV stations.

### 1.3 Assumptions

In order for the following evacuation procedures to be effective:

The site will participate in the Environment Agency flood warning service. The site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0345 988 1188) in order to receive flood warnings by telephone, text or email.

The flood warning will be passed onto the occupiers/visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

The Safe Access and Egress Route (see Figure 3) will be made available to the occupiers and visitors.

## 2.0 SITE LOCATION

### 2.1 Site Location

The site is located at The Moseley Venture Centre, Orchard Lane, East Moseley, KT8 0BN (see Figure 1). The National Grid Reference of the site is 514610, 167350.

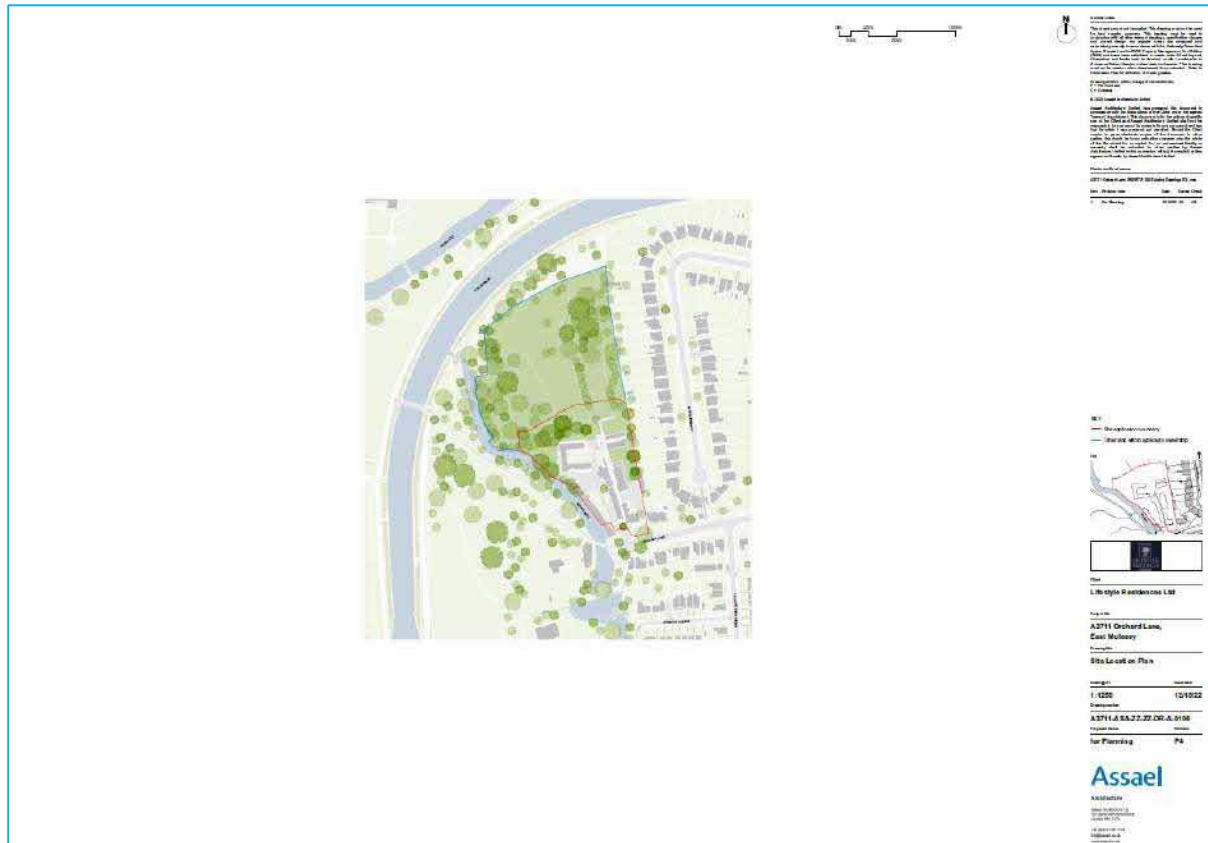


Figure 1 - Site Location

### 2.2 Proposed Development

Redevelopment of site by way of demolition (or partial demolition) of all existing buildings and the erection of 3 buildings comprising 74 residential units (15 x 1 bed, 48 x 2 bed and 11 x 3 bed) and ancillary facilities for residents, underground and surface level car and cycle parking, mechanical plant, soft and hard landscaping and associated diversion of existing Thames Water pipe.

The proposed finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings is 9.45 metres Above Ordnance Datum (mAOD) with the entrance to the basement set at 9.40mAOD. Further details with regard to the proposed development can be found in Appendix 1 and the accompanying information submitted with the planning application.



## 3.0 FLOOD RISK

### 3.1 Flooding

A Flood Risk Assessment (FRA) for the development has been undertaken<sup>3</sup>. A review of the Environment Agency's Flood Zones indicates that the site is located within Flood Zones 1, 2 and 3. Therefore, the site has a 'low to high probability' of river flooding, see Figure 2, with less than a 1 in 1000 annual probability of river flooding in any year (<0.1%) (Flood Zone 1) to a 1 in 100 or greater annual probability of river flooding (>1%) in any year (Flood Zone 3).

The majority of the site is located within Flood Zones 1 and 2 with the south of the site being located within Flood Zone 1 which has a 'low probability' of river flooding with less than 1 in 1000 annual probability of river flooding in any year (<0.1%). The north of the site is located within Flood Zone 2 with a 'medium probability' of river flooding with between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) in any year.

A small area of the site to the west, immediately adjacent to the River Ember, is located within Flood Zone 3 with a 'high probability' of river flooding, with a 1 in 100 or greater annual probability of river flooding (>1%) in any year.

The Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, because these can be breached, overtopped and may not be in existence for the lifetime of the development. The Environment Agency Flood Zones show the worst case scenario.

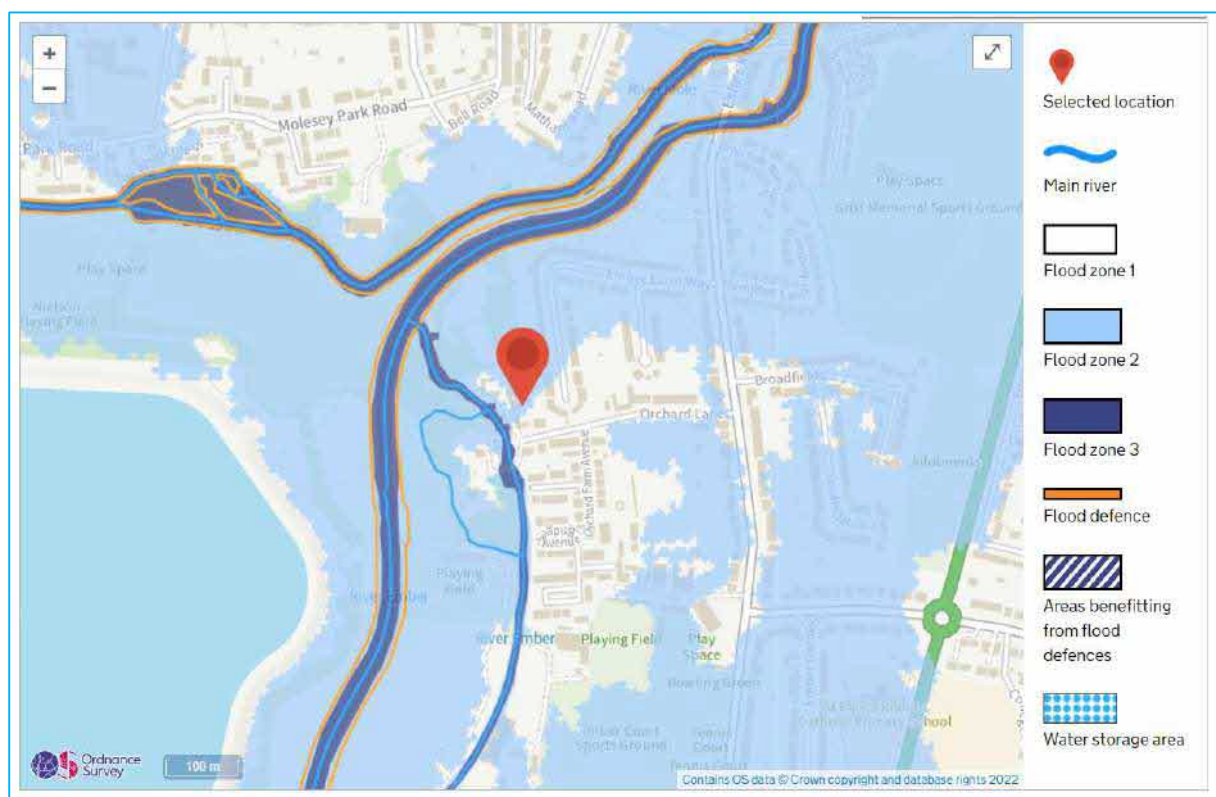


Figure 2 - Environment Agency Flood Zones

<sup>3</sup> KRS Environment Ltd, The Moseley Venture Centre, October 2022, Reference: KRS.0572.001.R.003.C.

## 4.0 PREVENT, PROTECT, PREPARE

---

### 4.1 Flood Prevention

The Environment Agency has confirmed that there are formal flood defences, known as the Lower Mole Flood Alleviation Scheme, within this area which protect the site from fluvial flooding. The Standard of Protection (SoP) of the scheme is 1 in 100 year (1%).

As a result of the great flood of 1968, the Lower Mole Flood Alleviation Scheme was built in the 1970's through to the mid 1980's. This scheme consists of a major channel creation, widening and dredging. 3km of earth bank have been constructed to keep the floods within the original floodplain upstream of Albany Bridge. The river is also now regulated through sluices and other structures designed to minimize flood damage. The scheme design flow is 241 cumecs. Of this, 31 cumecs flows via Royal Mills sluice before reentering the flood relief channel downstream of Viaduct Sluice. The remaining 210 cumecs is diverted through Viaduct Sluice into the flood relief channel.

This site is within an area benefiting from flood defences. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year. If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.

### 4.2 Flood Protection

The flooding sources will be managed and mitigated on the site by using a number of techniques, and mitigation strategies to manage and reduce the overall flood risk at the site. This will ensure the development will be safe. Measures used:

**Sequential Approach:** The sequential approach has been applied within the site by locating the most vulnerable elements of the development in the lowest risk areas. The proposed buildings will be located on the higher parts of the site, away from the River Ember, at a lower risk of flooding.

**Finished Floor Levels:** Raising the finished floor of the buildings will be used to mitigate the effects of flooding at the site. The finished floor levels of the buildings and landscaped areas immediately adjacent to the buildings will be raised to 9.45mAOD which provides a more than adequate freeboard above the 1 in 100 year (+12%) event water level of 8.53mAOD, see Section 5.3 for more details. The basement entrance/s will have a threshold level of 9.40mAOD, which provides a more than adequate freeboard above the 1 in 100 year (+12%) event.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

**First Floor Accommodation:** Accommodation will be located on the first floor as well as the ground floor of the buildings. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor will be well above any floodwater levels.

This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the building. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

Flood Resilience and Resistance Measures: To make the buildings more resistant to seepage the following measures will be incorporated. Sealant will be used around external doors and windows. All external doors and windows will be constructed from durable materials and the walls of the buildings will be thick.

To improve the building resilience to flooding the following measures will be incorporated. All electrical wiring, switches, sockets, socket outlets, electrical, and gas meters etc. will be located a minimum of 450mm above the finished floor level of the house. Non-return valves will be fitted to the drains within the last manhole before discharge of water to the sewers.

Flood Warning: The site is located in a flood risk area therefore; the buildings will participate in the Environment Agency flood warning telephone service. The site will register contact details with the Environment Agency' Flood Warnings Service.

Flood Warning and Evacuation Plan: A FWEP outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may has been developed, this plan.

Safe Access and Egress Route: The Safe Access and Egress Route indicates the exit route that all people (i.e. occupants and visitors) on site should follow once a flood warning has been received.

#### 4.3 Preparation for Flooding

The owner of the site should consider the following actions prior to occupation:

- Distribute a copy of this FWEP to the Emergency Planning department at Elmbridge Borough Council.

- Distribute a copy of this FWEP to the relevant occupants.

- Train householders in the procedures to be followed in response to receipt of the flood warning (see Section 7).

- Assemble a flood kit for use by householders in an emergency – including important documents, torch, waterproof high visibility jacket, first aid kit and blankets.

- Complete the list of useful contacts (see Section 12).

- Ensure that occupants have been shown how to turn off electricity, gas and water in an emergency.

- Acquire any flood protection items (e.g. flood boards, air brick covers etc.). The National Flood Forum lists some of the products available at <http://bluepages.org.uk/>

- Confirm that the insurance policy is adequate.




## 5.0 ENVIRONMENT AGENCY FLOOD WARNINGS

### 5.1 Flood Warning Service

In England the Environment Agency operates a Flood Warning service in areas at risk of flooding from rivers and the sea, which relies on direct measurement of rainfall, river levels, tide levels and in-house flood forecasting models, as well as rainfall data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

The Environment Agency uses three Flood Warnings Codes (see Table 1). They can be issued in any order, usually ending with an 'all clear'. They are issued by the Environment Agency through Floodline Warning Direct which is a free service. This provides flood warning via their website, telephone, mobile, email, SMS text message and fax.

Table 1 - Environment Agency Flood Warning Codes

Flood Warning Code	Key Message	What it means	Timing
	'Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!'	Warn people of the possibility of flooding and encourage them to be alert, stay vigilant and to make early preparations for flooding	2 days to 2 hours in advance of flooding
	'Flooding of homes and businesses is expected. Act now!'	Warn people flooding is expected and encourage them to take immediate action to protect themselves and their property	1 day to ½ hour in advance of flooding
	'Severe Flooding is expected. There is extreme danger life and property. Act now!'	Warn people of significant risk to life or significant disruption to communities caused by widespread or prolonged flooding, and encourage them to take immediate action to protect themselves and follow the advice of the emergency service	When flooding poses a significant threat to life
Warning No Longer in Force	'Flood warnings and flood alerts that have been removed in the last 24 hours!'	Warnings are removed to inform people that the threat has now passed	When river or sea conditions begin to return to normal

It should be noted that such warnings are issued in respect of the flood risk within the wider catchment area and may not specifically apply to the site itself and its immediate neighbourhood; in other words, the Environment Agency's Flood Warning Service may issue a Flood Alert which may not be applicable to the site. The site therefore should not solely rely on the Flooding Warning Service and should make use of other sources of information regarding severe weather such as the Met Office

([www.metoffice.gov.uk](http://www.metoffice.gov.uk)) the National Flood Forum (<https://nationalfloodforum.org.uk/>) and the Environment Agency website (<https://www.gov.uk/government/organisations/environment-agency>) and local radio/TV.

Flood warnings identify a potential rather than an actual threat. It is therefore noted that not all events will result in an automatic progression from one warning to another with the end result being flooding of the site. It is possible for smaller events to trigger initial warnings with water levels dropping before flooding of the site occurs. However, in the very unlikely event of a breach there may be a limited flood warning.

The Environment Agency has provided a useful leaflet, see Appendix 2, which highlights the key actions to take before, during and after a flood, as well as providing links to companies and organisations where additional information can be obtained.

When a flood is expected, Elmbridge Borough Council and the local emergency services will be responsible for public care and safety.

## 5.2 Floodline

The site is located in a flood risk area; therefore, the site will participate in the Environment Agency Flood Warning service in order to receive flood warnings by telephone, text or email. The site will register contact details with the Environment Agency' Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Warnings for the following Flood Warning area.

The occupants of the site will be made aware of the Environment Agency Floodline telephone number (on 0345 988 1188) and the flood warning meaning. A Flood Warden for the site will be appointed from the staff of the site. The Flood Warden will have an understanding of the flood mechanisms of the site and will ensure that the safety of the occupants and visitors will not be compromised. The Flood Warden will:

- Inform occupants and visitors of the existence of the FWEP where required.

- Ensure that the site is registered with the Environment Agency Floodline service.

- Ensure that flood protection equipment and materials, if required, are installed and maintained including any flood boards and pumps.

- Co-ordinate with the emergency services.

- Identify equipment or possessions that require special protective measures and co-ordinate the action required to prevent their damage in the event of a flood.

- Monitor flood levels and keep, occupants and visitors informed.

- Review the FWEP annually.

- To further manage the flood risk and to confirm that the exit route is safe an on-the-spot risk assessment will be undertaken by the Flood Warden, if required.

- Liaise with the Environment Agency on a regular basis.

- The needs of disabled, people who have reduced mobility or pregnant visitors will also need to be taken into account by the Flood Warden.

The FWEP will be passed onto the occupants and visitors of the site who will be made aware of the Safe Access and Egress Route, Environment Agency Floodline, Flood Warning Notice and Flood Warning Codes. Any flood warnings will be passed onto the occupants and visitors of the site verbally,

by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

### 5.3 How to Register

1. Internet using the Environment Agency's website:

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

2. Telephone

Calling Floodline on 0345 988 1188

### 5.4 Floodline by Telephone

During a heavy rainfall event, call Floodline on 0345 988 1188.

### 5.5 Updates

The Environment Agency website contains regular updates and information (<https://flood-warning-information.service.gov.uk/warnings>).

The Environment Agency also actively provides updates of flood warnings on Twitter ([www.twitter.com/EnvAgency](http://www.twitter.com/EnvAgency)) and Facebook ([www.facebook.com/environmentagency](http://www.facebook.com/environmentagency)).

The Met Office issues weather forecast for the UK, including severe weather warnings ([www.metoffice.gov.uk/weather/uk/se/se\\_forecast\\_warnings.html](http://www.metoffice.gov.uk/weather/uk/se/se_forecast_warnings.html)).

The Met Office regularly updates weather warnings on both Twitter ([www.twitter.com/metoffice](http://www.twitter.com/metoffice)) and Facebook ([www.facebook.com/metoffice](http://www.facebook.com/metoffice)).

To view and receive flood alerts via Facebook, you can use the FloodAlerts Facebook app (<https://www.facebook.com/FloodAlerts>).

To monitor river levels in your area and upstream you can use the GaugeMap website (<https://www.gaugemap.co.uk>).

Each river gauge is also available to follow via Twitter (<https://twitter.com/gaugemap>).

Social media sites are also useful sources of information.

During times of heavy rainfall, occupants should check TV/radio stations for information regarding flood risk. This may allow extra preparation time, enabling the property, contents and people to be better protected against the effects of flooding. Updates and news on flooding for the local area can be obtained from local television news reports and from local radio stations, including the following sources.

#### Radio Stations

BBC One/Two

Capital FM

Radio Jackie 107.8

## Television Stations Issuing Flood Alerts and Warnings

BBC News Channel

BBC One/Two

ITV News Channel

ITV1

Sky News Channel

### 5.6 Estimated Flood Warning Time

The likelihood of a rapid river level rise and possible rapid inundation of urban areas within this area and posing a risk to life is considered to be minimal. The Environment Agency, with its current flood warning system, to provide forewarning of two (2) days of a pending flood event. There is therefore considered to be a substantial lead time before the peak of a flood event at the site. A more accurate estimation will be provided when the flood warning is made.

## 6.0 FLOOD PROCEDURES

---

### 6.1 Procedures

The actions that need to be followed as part of the FWEP are given below. They should be read in conjunction with all the information within this plan. The strategy in this FWEP is for evacuation to take place before flooding of the site occurs, people should take immediate action to protect themselves and also follow the advice of the emergency service'. Where possible you should make arrangements with family or friends for shelter.

Based on the likely flood risk and associated warning time that is feasible, it is considered likely that there would be sufficient time to evacuate in dry conditions and regardless, also seek refuge on upper levels as appropriate: taking with you any important documents, bottled water, essential medicines and food sufficient to support you until rescue (see information related to "grab-bag" / flood Kit).

You should not assume that the emergency services will be able to assist you with the evacuation; their focus will be directed to those in greatest need.

### 6.2 General Conditions

Occupiers should be to be aware of the FWEP and the Safe Access and Egress Route and procedures that may need to be put in place in the event of flooding. Occupiers should be aware of changes in flood warning status such as forecasted bad weather. Occupiers should ensure flood kits are stocked and ready at all times.

### 6.3 Flood Alert Status Issued

'Flooding is possible - be prepared!'

In the event of the area being placed on 'Flood Alert', occupiers should prepare themselves to evacuate, and make arrangements to vacate the premises at short notice if required. Vehicles should be moved to higher ground in preparation for a more severe flood warning.

A 'Flood Alert' will be given 2 days to 2 hours in advance of flooding.

Occupiers and visitors should monitor the situation closely by calling the Environment Agency on 0345 988 1188 for regular updates, follow the Met Office website or alternatively through local and national media.

### 6.4 Flood Warning Status Issues

'Flooding expected – Immediate action is required!'

Should the flood warning code be escalated to 'Flood Warning', residents and visitors should get ready to evacuate the site. Move any critical equipment and important belonging within the ground floor to safe locations on the first floor.

A 'Flood Warning' will be given 1 day to ½ hour in advance of flooding.

It is possible that the Flood Warning alert would be triggered by the Environment Agency, although this depends on a number of factors rather than simply the water level and may not accurately reflect the risk to individual properties. Occupiers and visitors should monitor the situation closely by calling



the Environment Agency on 0345 988 1188 for regular updates, follow the Met Office website or alternatively through local and national media.

#### 6.5 Severe Flood Warning Status Issued – Evacuate if appropriate

‘Flooding poses a significant danger to life!’

Should the Environment Agency’s flood warning code be escalated to the highest level, ‘Severe Flood Warning’ and, if evacuation has not already been completed, the safest course of action is to evacuate the site. An appropriate Safe Access and Egress Route are identified in Section 7.

Should floodwater be present on the site prior to evacuation of the premises, it is considered unsafe to evacuate. Residents and visitors should remain in the buildings as the design floodwater level is not expected to internally flood the buildings. Residents and visitors should monitor the situation closely by calling the Flood Warning Service on 0345 988 1188 for regular updates or alternatively through local and national media. Residents should monitor the flood progression. Note that there is a risk this may occur before the Environment Agency issues their Severe Flood Warning status.

Residents and visitors should co-operate with the emergency services and call 999 if immediately in danger. At this stage Elmbridge Borough Council Emergency Team, the emergency services and the Environment Agency should be managing the situation, with widespread flooding potentially over a large area, and will endeavour to provide advice on an evacuation route, shelter and assistance to evacuees.

An appropriate Safe Refuge Area is identified in Section 8, if evacuation from the site has not been possible.

#### 6.6 Warning No Longer in Force

Reoccupation can be considered once approval has been given by the emergency services after a ‘Warning No Longer in Force’ has been issued. More details of the reoccupation procedure is given in Section 11. Occupiers and visitors should monitor the situation closely by calling the Environment Agency on 0345 988 1188 for regular updates, follow the Met Office website or alternatively through local and national media.

## 7.0 EVACUATION

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### 7.1 Personal Safety in a Flood Event

The following should be considered carefully by occupants and visitors before evacuation the premises during a flood event:

1. Do not put yourself at risk in the event of a flood, personal safety is paramount.
2. Be aware that floods bring their own unique hazards, the majority of which will be hidden from view.
3. Never try to swim through fast flowing water as you could be swept away or struck with an object from the floodwater.
4. Avoid wading through floodwater as this is likely to be contaminated with raw sewage as drains and sewers overflow.
5. Stay safe in a flood event.

### 7.2 Evacuation Procedure

Occupants and visitors should initially undertake a visual check to ensure that no floodwater is present within Orchard Lane prior to evacuation. If the visual check determines that the floodwater is yet to reach Orchard Lane, occupiers and visitors should exit via the main access to the site. Occupants and visitors should proceed swiftly but calmly onto the pathway of Orchard Lane. Occupiers and visitors should not take from the property any bulky items that may impede their evacuation. Occupiers and visitors should provide assistance to those who may need it, such as children, the elderly or disabled.

The emergency services should be contacted if floodwater has reach the site entrance and the occupants are unable to evacuate the site. As this point they should consider safe refuge, as detailed within Section 8.

Once on Orchard Lane the most appropriate routes are identified in Figure 3. People should make their way to areas outside of the flood zone via Orchard Lane and Esher Lane (B3379) to the north. Facilities such as cafes, shops etc. are located to the north of the site which may be used in the event of a flood event. A safe access and egress route, including emergency access can be maintained for vehicles and/or by foot.

In the event of a Severe Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site using the Safe Access and Egress Route shown in Figure 3.

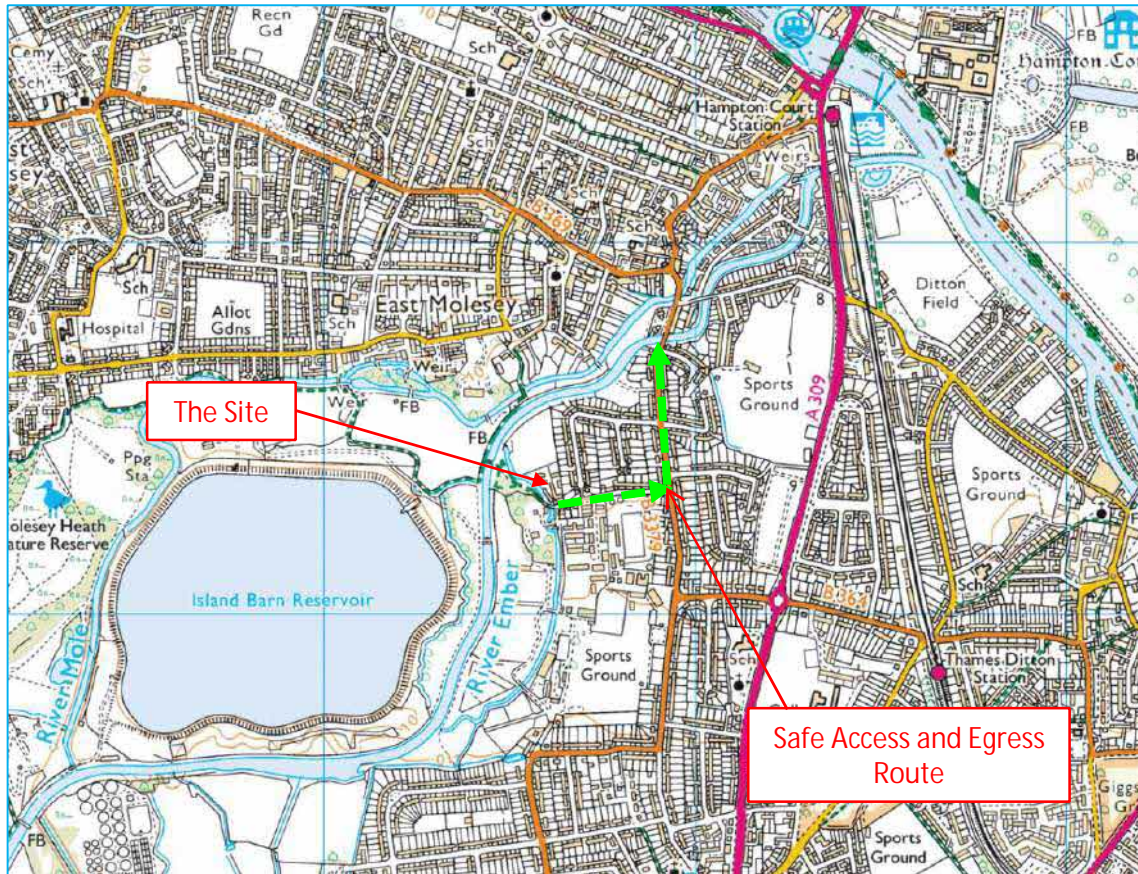


Figure 3 - Safe Access and Egress Route

If occupants are going to be evacuated to an off-site place of refuge via the Safe Access and Egress Route, an easily accessible “grab-bag” / flood Kit will be prepared and kept in a safe and dry place. The kit should include:

- Torch (windup or spare batteries)
- Blankets
- Waterproof clothing
- Wellington boots
- Water
- Non-perishable food (such as biscuits, crackers, cereal bars, dried fruit, sweets, tinned meats/fruits/vegetables and bottled water etc.)
- Portable radio (windup or spare batteries)
- Rubber gloves
- Medications
- Mobile phone
- A copy of this FWEP

## 8.0 SAFE REFUGE

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### 8.1 Safe Refuge Area

In the event that evacuation of the site is not possible then safe refuge is possible within the site. Accommodation will be located on the first floor as well as the ground floor of the site. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor will be located a minimum of 2.50m above the ground floor finished floor level well above any floodwater levels.

This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the building. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

If required further facilities located within the vicinity of the site are available. The primary responsibility of Elmbridge Borough Council during a flood is to provide temporary accommodation to any displaced people until such time that they are in a position to return to their homes or their insurance companies can arrange temporary accommodation for them. This shelter is provided in the form of reception centres, and provides a warm dry place to sleep and basic facilities including shower, food, etc.

## 9.0 FLOOD INFORMATION

### 9.1 Flood Information Notice

Flood Information Notices are intended to complement the Flood Evacuation Procedures, whilst being a standalone directive, guiding occupants and visitors through appropriate actions when a Flood Warning occurs. Figure 4 is an appropriate Flood Information Notice.

### Flood Information Notice

When a Flood Warning is received the Flood Warden will decide whether to initiate the FWEP. If the FWEP is initiated the following procedure should be followed:

1. When the Flood Warden receives Flood Warning site occupants, occupants and visitors will be made aware of its receipt.
2. The evacuation plan will be initiated.
3. The Flood Warden is to initiate shutdown of the site before evacuation and turn off power at the mains.
4. Be alert for gas leaks - Turn all gas appliances off, and do not smoke or use candles, lanterns, or open flames unless you know the gas has been turned off.
5. Stay in pairs - When following shutdown and evacuation procedures, work in pairs and stop work if it is not safe to finish procedures.
6. Listen for evacuation instruction - evacuate if you are told to do so
7. If instructed to evacuate follow the routes marked on the Safe Access and Egress Routes.
8. Leave the site with your vehicles ASAP following the routes marked on the Safe Access and Egress Routes.
9. Be careful walking through flowing water - Currents can be deceptive, and shallow, fast moving water can knock you off your feet. The Flood Warden will check the water depth.
10. Don't swim through fast flowing water - You may get swept away or struck by an object in the water.
11. If you have to walk in standing water, use a pole or stick to ensure that you do not step into deep water, open manholes or ditches. The water depth will be checked by the Flood Warden.
12. Be careful driving through a flooded area - You may not be able to see abrupt drop-offs and only half a metre of flood water can carry a car away. The Flood Warden will check the water depth.
13. Stay away from power lines - Electrical current can travel through water. Report power lines that are down to the power company.
14. Look before you step - After a flood, the ground and floors are covered with debris, which may include broken bottles, sharp objects, nails etc. Floors and stairs covered with mud and debris can be slippery.
15. Avoid direct contact with floodwater - It may be contaminated with sewage, oil, chemicals or other substances.
16. Refer to the SAFE EXIT PLAN and BE CAREFUL.

Figure 4 - Flood Information Notice

## 10.0 TRAINING

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### 10.1 Flood Training

Occupiers of the site shall be trained as part of the site induction prior to occupation. Relevant occupiers shall be informed of the potential flood risk and requirements of FWEP.

Occupiers and visitors with increased needs or vulnerability may require support during a potential evacuation/refuge situation. These needs must be assessed on an individual basis and specific Flood Wardens may need to be appointed to provide individual support.

In addition, the site owner will ensure that the FWEP is exercised on an annual basis, where exercising would involve an evacuation drill as well as a Table-Top exercise to ensure all occupants are aware of their duties and responsibilities.

The Flood Warden and occupants should prepare a flood Kit and kept in a safe and dry place. The kit should include:

- Torch (windup or spare batteries)

- Blankets

- Waterproof clothing

- Wellington boots

- Water

- Non-perishable food (such as biscuits, crackers, cereal bars, dried fruit, sweets, tinned meats/fruits/vegetables and bottled water etc.)

- Portable radio (windup or spare batteries)

- Rubber gloves

- Medications

- Mobile phone

- A copy of this FWEP

## 11.0 SITE REOCCUPATION

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### 11.1 Returning to the Premises

It is likely that it will not be possible to access the site for a number of days. Do not attempt to enter the site until such a time as the Emergency Services/Environment Agency have given the all clear.

Once the rainfall event has passed, and the flood warning has been removed, it may be possible to return to the property if it has been evacuated or it may be possible to vacate the property if people remained inside. Only return to the buildings once it is safe to do so and once permission has been granted by any emergency services in attendance.

### 11.2 First Steps

Floodwater may be still around and could be contaminated (see Appendix 3). Take care as there may be hidden dangers in the flood water like sharp objects, raised manhole covers and pollution. Flood water could have caused structural damage to the building.

Upon returning to the site it will be important to consider some of the hazards that may be present on the site following a flood event, including:

- Standing water remaining on the site.

- Transported debris from within the watercourse or from elsewhere on the site that could be a tripping hazard.

- Silt or residue deposited on the site that may be slippery.

- Potentially contaminated water.

As a priority, insurance companies should be contacted, and the structural condition of the property should be visually inspected from the outside by a competent professional prior to reoccupation. This is to identify if there has been any damage to the integrity of the building.

In almost all cases the insurance company will send a loss adjuster to look at the building. They will confirm what repairs and replacements are needed and covered by your policy.

### 11.3 Things to be Aware Of

Flood water can contain sewage, chemicals and animal waste. Always wear:

- Waterproof outerwear, including gloves.

- Wellington boots.

- Face mask.

If the electricity supply is not already switched off at the mains, get a qualified person to do this. DO NOT touch sources of electricity when standing in flood water. Upon entering the premises, a clean-up operation can commence. Occupiers may need to:

- Commission immediate emergency pumping/repair work if necessary, to prevent further damage.

- Open doors and windows to ventilate the property.

- Contact local authority or health service to find out where you can get help to clean up.

Contact utility providers to have them check services before re-use.

Dispose of all food that may have been in contact with floodwater as contamination could have occurred. For further assistance, contact your local authority Environmental Health department for advice.

Keep comprehensive records of flood damage (photographs, videos etc.).

Contact your insurance broker (24 hour) Emergency Helpline. They will be able to provide information on dealing with compensation claims.

Get an advice guide to repairing damaged property from Floodline (0345 988 1188).



## 12.0 USEFUL INFORMATION

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### 12.1 Organisations Involved in a Flood Response

Elmbridge Borough Council - 0114 273 4567

Thames Water - 01372 474474

Surrey Police - 101

Surrey Fire and Rescue Service - 03456 009 009

Environment Agency (General) - 03708 506 506

Environment Agency Floodline - 03845 988 1188

Environment Agency Incident Hotline (report flooding) - 0800 807 060

**In an emergency only call 999**

### 12.2 Radio Station

BBC One/Two

Capital FM

Radio Jackie 107.8

### 12.3 Television Stations

BBC News Channel

BBC One/Two

ITV News Channel

ITV1

Sky News Channel

### 12.4 Useful Websites

Environment Agency Flood Warnings:

<http://www.environment-agency.gov.uk/homeandleisure/floods/31618.aspx>

National Flood Forum

<http://www.nationalfloodforum.org.uk>

Elmbridge Borough Council

<https://www.elmbridge.gov.uk/>

Met Office

<http://www.metoffice.gov.uk>



## APPENDIX 1 – Review Record

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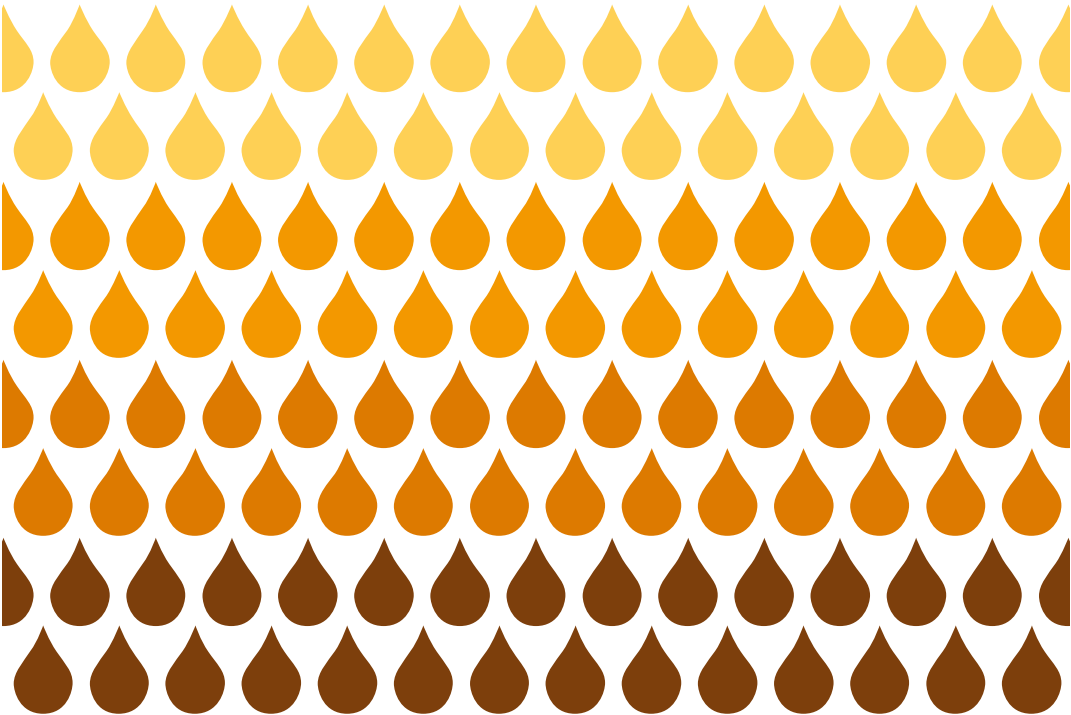
## APPENDIX 2 – Environment Agency Flood Warning Information

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The following information on health and safety relating to flooding is provided by Public Health England.

# What to do before, during and after a flood

Practical advice on what to do  
to protect yourself and your property



We are the Environment Agency.

It's our job to make people aware of flooding from rivers and the sea, provide flood warning services and build and maintain flood defences.

This leaflet contains useful information to help you reduce the effects of flooding on you and your property.

Published by:

Environment Agency  
Horizon House,  
Deanery Road,  
Bristol BS1 5AH  
Tel: 0370 8506 506\*  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)  
[www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

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\*Weekday Daytime calls cost 8p plus up to 6p/min from BT Weekend Unlimited. Mobile and other providers' charges may vary



# Your flood warning service

## Get the service that's right for you

We provide a free flood warning service to many areas at risk of flooding from rivers and the sea.

Find out if you can sign up for our free 24 hour Floodline Warnings Direct service by visiting our website or by calling Floodline. You can select to receive warnings by phone, text, email, fax or pager.

In some areas we also warn people about flooding using:

- Sirens –usually a wailing sound only activated when a flood is about to happen.
- Loud hailers –a vehicle will drive around repeating the flood warnings.

## Other places to get the latest flood update

- [www.environment-agency.gov.uk/flood](http://www.environment-agency.gov.uk/flood)
- BBC Ceefax Page 419 and Digital Ceefax Page 405.
- Local weather, news and travel bulletins.



# call Floodline on

# 0345 988 1188

Open 24 hours a day


- Find out what flood warning service is available where you live.
- Get practical advice on what to do before, during and after flooding.
- Get a Quickdial number for easy access to information on flooding in your area.

# your personal flood plan

Start preparing today before a flood happens.  
Use this checklist as your flood plan.

1. Know who to contact and how
  - Agree where you will go and how to contact each other.
  - Check with your council if pets are allowed at evacuation centres.
  - Keep a list with all your important contacts to hand.
2. Think about what you can move now
  - Don't wait for a flood. Move items of personal value such as photo albums, family films and treasured mementos to a safe place.
3. Think about what you would want to move to safety during a flood
  - Pets
  - Cars
  - Furniture
  - Electrical equipment
  - Garden pot plants and furniture
  - What else? .....
  - .....

Think about who you could ask for help / who you could offer to help, particularly vulnerable neighbours or relatives, in a flood.



## Know how to turn off your gas, electricity and water mains supplies

### 4. Check your insurance cover

- Check your buildings and contents insurance policy.
- Confirm you are covered for flooding.
- Find out if the policy replaces new for old, and if it has a limit on repairs.
- Don't underestimate the value of your contents.

### 5. Know how to turn off your gas, electricity and water mains supplies

- Ask your supplier how to do this.
- Mark taps or switches with stickers to help you remember.

### 6. Prepare a flood kit of essential items and keep it handy

- Copies of your home insurance documents.
- A torch with spare batteries.
- A wind-up or battery radio.
- Warm, waterproof clothing and blankets.
- A first aid kit and prescription medication.
- Bottled water and non-perishable foods.
- Baby food and baby care items.

# useful numbers

Your important flood telephone numbers.  
Fill this out and keep this leaflet with your flood kit.

Environment Agency Floodline	0345 988 1188
Quickdial number	
Local authority emergency helpline	
Insurance company 24-hour number and policy number	
Local radio station frequency for news alerts and weather updates	
Family and neighbours	
Work phone numbers	
Doctor's surgery	
Local police station	
Vet/kennel/cattery	
Local hotel or B&B	
Gas supplier and meter number	
Electricity supplier and meter number	
Water supplier and meter number	
Electrician	
Plumber	
Builder	

# temporary flood protection equipment

Flood protection equipment can help stop flood water getting into your property. Follow manufacturer instructions to put these in place when you get a flood warning.

You can get more information about flood protection equipment in our 'prepare your property for flooding' leaflet on our website.

## Floodboards

These fix to frames around windows and doors. They can be washed, stored and used again.

Always remove flood protection equipment once the flood water has gone. This will help your property dry out.

Plastic covers to seal airbricks  
These can stop flood water coming in through your airbricks.

## Sandbags

Your local council may provide these during a flood, but they may be scarce. You can buy your own sand and bags, or fill pillowcases and plastic bags with earth. Be aware that following a flood they will be contaminated by sewage in the water.

You can get more information about using sandbags on our website.

## Further steps to protect your property

There are things you can do to your property that will make it easier and cheaper to clean up after a flood. See list on page 22 of this booklet.

# Know your flood



## FLOOD ALERT

### What it means

Flooding is possible.  
Be prepared.

### What to do

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels on our website.



## FLOOD WARNING

### What it means

Flooding is expected.  
Immediate action required

### What to do

- Protect yourself, your family and help others.
- Move family, pets and valuables to a safe place.
- Keep a flood kit ready.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.

# warning codes



## SEVERE FLOOD WARNING

**What it means**  
Severe flooding.  
Danger to life.

### What to do

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate from your home.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

You need to be aware of flooding and keep an eye on the water levels and weather situation at all times. You can do this by checking the flood forecasts and the river and sea levels on our website or by listening to local news and weather forecasts.

You can get up-to-date information about flooding in your area by checking our website or by registering for our FREE Floodline Warnings Direct service.

# during a flood





## What to do to stay safe in a flood.

### In the event of a flood focus on the safety of you and your family

- Cooperate with the emergency services if they tell you to evacuate during flooding.
- Be prepared to act quickly and get yourself to safety.

We use our flood warning services to warn you of flooding from rivers and the sea as soon as we can. But there are some types of flooding we can't predict.

### Stay alert to localised flooding

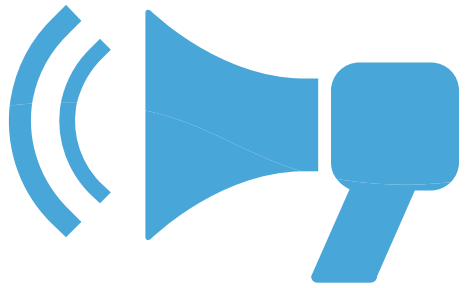
Also known as 'surface water flooding'. This usually happens where drainage systems are unable to cope with heavy spells of rainfall. We cannot give you a direct warning for this type of flooding. Instead we forecast where it might be a problem in certain counties and put a daily flood risk forecast on our website.

You can also find out about the possibility of 'surface water' flooding in your area by checking local weather forecasts.

# What to do in an emergency

Follow these simple steps to stay safe:

1. Check in with other people in your household - if they are not at home make sure they are somewhere safe.
2. Gather essential items together either upstairs or in a high place.
3. Fill jugs and saucepans with clean water.
4. Move your family and pets upstairs, or to a high place with a means of escape.
5. Turn off gas, electricity and water supplies when flood water is about to enter your home if safe to do so. **DO NOT** touch sources of electricity when standing in flood water.
6. Keep listening to local radio for updates or call floodline 0345 988 1188
7. Check in with vulnerable neighbours or relatives.
8. Flood water can rise quickly, stay calm and reassure those around you. Call 999 if you are in danger.



## Important! Flood water is dangerous

- Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.
- Avoid walking or driving through it.
- Keep children and vulnerable people away from it.
- Wash your hands thoroughly if you touch it.

Listen to the advice of the emergency services

# protect what you can...

Move important items to safety and put flood protection equipment in place when there is a flood warning. Follow manufacturers' instructions carefully to help stop or reduce the flood water entering your property.

## Take items upstairs or to a safe place in your property

- Safely store important documents such as insurance papers.
- Move items of personal value such as photos, family films or treasured mementos.
- Move lightweight household belongings you can pick up easily and quickly.
- Move items of furniture that are expensive or harder to repair before cheaper ones.

## If possible, move your outside belongings to higher ground

- If the flood water hasn't reached you, move your car to higher ground and move outdoor pets to safety.

## Help stop water entering your home

- Put plugs in sinks and baths. Weigh them down with a sandbag, a pillowcase or plastic bag filled with garden soil, or a heavy object.

## If you do not have non-return valves fitted

- Plug water inlet pipes with towels or cloths.
- Disconnect any equipment that uses water (like washing machines and dishwashers).

# ...but evacuate when told

Stay safe, always listen to the advice of the emergency services and evacuate when told to do so.

- Leave your home if the emergency services say so. Refusing to leave on their advice will put you, your family and those trying to help you at risk.
- When you are evacuated you will be taken to an evacuation centre run by your local council. Free food and bedding is provided. Bring spare clothing, essential medication and baby care items if you have an infant.
- Most evacuation centres will let you bring your pets. Take their food. Put cats and small animals in a pet carrier or secure box.
- People running the centres are trained to give you support and advice. They will help you through the stress of a flood and prepare you for what to do afterwards.

# after a flood

## Recovering from a flood.

### First steps

- Take care as there may be hidden dangers in the flood water like sharp objects, raised manhole covers and pollution.
- Flood water could have caused structural damage to your property.
- In almost all cases the insurance company will send a loss adjuster to look at your property. They will confirm what repairs and replacements are needed and covered by your policy.
- If you rent your property, contact your landlord and your contents insurance company as soon as possible.
- If you do not have insurance, your local council should be able to provide information on hardship grants or charities that may be able to help you.



## There are a number of things to be aware of when clearing up after a flood

Flood water can contain sewage, chemicals and animal waste. Always wear:

- waterproof outerwear, including gloves.
- wellington boots.
- face mask.

If your electricity supply is not already switched off at the mains, get a qualified person to do this. DO NOT touch sources of electricity when standing in flood water.

You can get water out of your property using a pump and generator. Position the generator outside in the open air as generators produce carbon monoxide fumes which can kill.

Only pump out water when flood levels outside your property start to be lower than inside. This reduces the risk of structural damage.

Shovel mud away evenly from both sides of a wall. This

stops pressure building up on one side.

You can clean and disinfect your property using ordinary household products.

A garden hose is useful for washing down. Do not use high-pressure hoses as they blast contaminated matter into the air.

If you are drying your property naturally, keep doors and windows open as much as possible. If using dehumidifiers, close external doors and windows.

If you have gas or oil central heating and it has been checked by an engineer, turn it on. Keep the thermostat between 20-22 degrees centigrade for steady drying.

Local councils usually provide skips and extra rubbish collections for items that your insurance company has agreed you can throw away.

# dealing with an insurance c

If flooding has caused damage to large parts of the country, you may have to wait for a loss adjuster to visit you.

## Ask the insurance company

- How long it will be before the loss adjuster visits.
- If you are to clean your property or if they will get a company to do it for you.

## Always make your own record of flood damage

- Use a permanent ink pen to mark on the wall the height the flood water got to. Do this in every room affected by flooding.
- Photograph or video your damaged property. List the damage to your property and belongings.

- If your insurance policy covers you for loss of perishable goods, make a list of all the foods you throw away. Include any food touched by flood water and anything in your fridge or freezer ruined by loss of power.

## Things to help with your insurance claim

- Confirm the insurance company will pay for any service or equipment you need.
- Make a note of all telephone calls. Record the date, name and what was agreed.



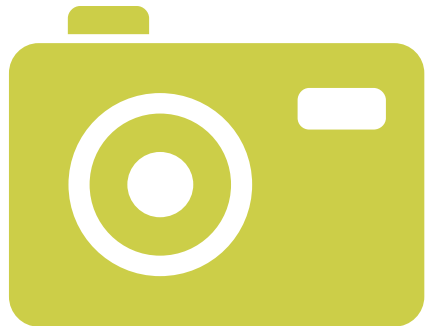
# Claim

- Keep copies of all letters, emails and faxes you send and receive.
- Keep receipts.
- Don't throw anything away until told (except ruined food).

**Important note:** the insurance company may only offer to clean and repair something, not replace it.

If you do not have insurance, your local council should be able to provide information on hardship grants or charities that may be able to help you.

Photograph  
or video record  
your damaged  
property



# further steps to protect your property

As you plan your property repairs, you might want to think about ways to protect it from future flooding.

There are things you can do whilst repairing your property that will make it easier and cheaper to clean up after a future flood.

## Here are some improvements you can make

Discuss them with your loss adjuster and builder.

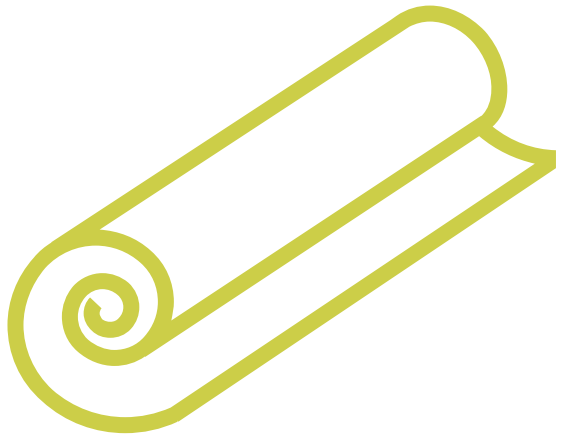
- Lay ceramic tiles on your ground floor and use rugs instead of fitted carpets.
- Raise the height of electrical sockets to at least 1.5 metres above ground floor level.
- Use lime plaster instead of gypsum on walls.
- Fit stainless steel or plastic kitchens instead of chipboard ones or have free-standing kitchen units you can move.
- Position any main parts of a heating or ventilation system, like a boiler, upstairs or raised well above the ground floor.
- Fit non-return valves to all drains and water inlet pipes.
- Replace wooden window frames and doors with synthetic ones. They are easier to clean.

# roperty

## Important!

Always use reputable building contractors. Beware bogus trade people calling door-to-door. Always check references and do not pay in advance.

Lay rugs instead of fitted carpets on your ground floor



# temporary housing

Flood repairs can take weeks or months to complete, especially if there has been widespread flooding and builders are scarce. It takes time to dry out a property and some buildings may have to be gutted before repairs can start.

Ask your insurance company or landlord if they will provide you with temporary accommodation. This could be a nearby bed and breakfast, a static caravan or a rented house. You do not have to accept the first place you are offered.

However, if flooding has affected many people, the choice of accommodation may be limited.

If you will be in a temporary property for some time, think about having your post redirected.

Your insurance company should provide you with temporary accommodation



## For more information

These organisations have advice, information and services to help you after a flood.

National Flood Forum

 [www.floodforum.org.uk](http://www.floodforum.org.uk)

 01299 403055

The financial ombudsman service

 [www.financial-ombudsman.org.uk](http://www.financial-ombudsman.org.uk)

 0300 123 9 123

The Construction Centre

 [www.theconstructioncentre.co.uk](http://www.theconstructioncentre.co.uk)

 01926 865825

The British Damage Management Association (BDMA)

 [www.bdma.org.uk](http://www.bdma.org.uk)

 07000 843 236

Citizens Advice Bureau

 [www.adviceguide.org.uk](http://www.adviceguide.org.uk)

 See local telephone directory

CIRIA  [www.ciria.org/flooding](http://www.ciria.org/flooding)

 020 7549 3300

Health Protection Agency

 [www.hpa.org.uk](http://www.hpa.org.uk)

 01235 822 603/742

Would you like to find out more about us,  
or about your environment?

Then call us on

03708 506 506\* (Mon - Fri 8am to 6pm)

Calls to 03 numbers cost the same as calls to standard geographic numbers (i.e. numbers beginning with 01 or 02).

email

[enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

or visit our website

[www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)

incident hotline 0800 80 70 60 (24 hrs)

floodline 0345 988 1188 (24 hrs)

Find out more about call charges: [www.gov.uk/call-charges](http://www.gov.uk/call-charges)

Environment first: Are you reading this on screen? Please consider the environment and only print if absolutely necessary. If you are reading a paper copy, please don't forget to reuse and recycle if possible.

## APPENDIX 3 – Flood Water Health and Safety

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The following information on health and safety relating to flooding is provided by Public Health England.

# Health advice - General information following floods

This leaflet provides important health advice and some basic precautions to keep you and your family safe in the event of floods. The latest alerts and general flooding advice are provided by the Environment Agency, see website [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

## Main health risks

Drowning is the clearest and most immediate health risk during floods. Serious injury can also be caused by falling into fast-flowing water or from hidden dangers under the water, such as missing manhole covers.

There is also a serious danger posed by carbon monoxide fumes from the use of generators and other fuel-powered equipment brought indoors to dry out buildings.

Do not underestimate the stress and strain of being flooded and cleaning up after floods. Take time to consider your and your family's mental health and well-being. Do not overdo it when cleaning up, and remember that tiredness, difficulty sleeping and anxiety are normal in these circumstances.

## The risk from bugs in the water

Infection problems arising from floods in this country are rare. Usually any harmful bugs in floodwater become very diluted and present a low risk, but there are a few precautions we can take:

- Wherever possible, try to avoid coming into direct contact with floodwater. If you have to go into the water, wear waterproof gloves and rubber boots and remember to be careful of potentially concealed hazards
- Wash your hands –this is the most important way to get rid of harmful bugs. Use warm, clean water and soap, then rinse and dry your hands after going to the toilet, before eating or preparing food, or after being in contact with floodwater, sewage or with items that have been in the water. Use cold water if there is no warm water, or wet wipes if there is no water at all
- Keep any open cuts or sores clean and prevent them being exposed to floodwater. Wear waterproof plasters.

## If you feel unwell

If you feel unwell this does not necessarily mean that you are suffering from any infection. If you are concerned, then call NHS Direct on 0845 4647 or visit your family doctor.



You should contact your doctor if you become ill after accidentally swallowing contaminated water or mud, particularly if you develop diarrhoea, fever or abdominal pain within 10 days of being in contact with floodwater or sewage.

## Keeping children safe

- Do not allow children to play in floodwater areas –they won't know how deep the water is and there may be hidden dangers
- Wash children's hands frequently and always before meals
- Parents with infants that are unwell with diarrhoea and vomiting should seek medical advice
- Do not let young children play on affected paved or concreted areas until they have been cleaned. Sunlight and soil help destroy harmful bacteria so it is usually safe for children to play on grass a week or so after the floodwater has gone.
- Wash floodwater-contaminated toys with hot water and detergent. Soft toys can be put in a hot (60°C) machine wash.

## Food and floods

The Food Standards Agency advises people not to eat any food that has been touched or covered by floodwater or sewage. Do not eat any produce grown on an allotment or garden that has been flooded, unless it has been cooked.

Wash your hands before and after preparing food. Using clean water, detergent, then a normal kitchen disinfectant, clean and disinfect work surfaces, plates, pans, cutlery, and plastic/glass chopping boards, before preparing food. If you have a working dishwasher, this is best for smaller items.

Throw away any food in your fridge if it has not been working for a few hours. Do the same with any freezer food containing meat, fish or dairy, if your freezer has stopped working. You will also need to discard any food that you would eat frozen, such as ice cream.

## Your local health services

If you want to check that your scheduled appointment is unaffected (eg. GP, outpatient, inpatient at local hospital), use the usual local telephone numbers for your health services. In more severe circumstances the local NHS primary care trust may be issuing updates on access to local NHS services and NHS Direct (0845 4647) is also a good source of local health service information.

For more information visit the following websites:

Health Protection Agency –[www.hpa.org.uk](http://www.hpa.org.uk)

Environment Agency –[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

Food Standards Agency –[www.foodstandards.gov.uk](http://www.foodstandards.gov.uk)

# Health advice - How to clean up safely following floods

This leaflet provides important health advice and some basic precautions to keep you and your family safe while cleaning up your flooded home. Further general advice is given in the Environment Agency leaflet *After a Flood*, which can be seen at the website [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

## Starting off

**Put on protective clothing:** rubber boots, an apron and waterproof gloves. A standard face mask, such as those sold in DIY stores, is also a good idea if you are scrubbing, hosing or pressure-washing. Goggles offer added protection and they can be reused after thorough washing. Cover any open cuts with waterproof plasters.

*Easy does it – the stress and strain associated with flooding and cleaning up afterwards can cause additional health problems. Do not overdo it when cleaning up.*

**Take care with electrics and gas:** do not switch on electrical appliances that have been in contact with floodwater unless a competent electrician has checked them, as there is a risk of electrocution.

Even if gas appliances appear to be working normally, the flue or ventilation systems maybe affected. For safety reasons, have appliances inspected by a Gas Safe Register engineer.

**Keep children safe:** keep children and pets out of the affected area until the clean-up has been completed. Damaged timber floorboards and tiles, even when they are dried out, may present a risk of injury to the young.

*Remember to wash your hands thoroughly after each clean-up session and always before eating or preparing food.*

## How and what to clean:

Using clean water, detergent, then a normal kitchen disinfectant, clean and disinfect work surfaces, plates, pans, cutlery, and plastic/glass chopping boards, before preparing food. Powerful disinfectants, such as strong bleach are not necessary and may be harmful to surfaces.

Thoroughly clean all other affected hard surfaces, including walls, hard-surfaced floors and furniture with hot soapy water, using an ordinary household detergent. Allow to dry thoroughly as this will also help to destroy germs left behind.

Do not mix detergents with bleaches as this may release hazardous fumes.

## Clothing and bedding

Wash these and other soft fabric articles such as children's toys on a hot cycle (60°C or higher), which will destroy most germs that may be present. Wash all clothes worn cleaning up separately to uncontaminated clothes.

Other contaminated soft furnishings that cannot be put in a washing machine will have to be cleaned professionally. If this is not possible they may have to be discarded.

*Remember to take regular breaks in the fresh air.*

## Drying out

Heating and good ventilation will assist the drying process. Leave doors and windows open whenever possible and safe. You can help this process by using fans, air conditioning units and dehumidifiers.

Remember that petrol or diesel generators and other fuel-driven equipment should never be brought indoors. *The exhaust gases contain carbon monoxide, which can quickly build up to poisonous levels without good ventilation.*

*Switch off appliances, move to a well-ventilated area and seek medical advice if you experience dizziness, headaches or disorientation.*

Dangerous fumes may build up in enclosed areas such as garages and cellars. Make sure these places are well ventilated before you go in and do not let children or animals go inside until the areas are safe.

## Mould

Mould on damp walls should disappear as your home dries out. Areas where mould remains can be cleaned with warm water and detergent. Arrange specialist treatment for persistent mould. The contractor will use appropriate protective equipment and precautions. You should not attempt to do this yourself.

## Rats and other pests

Rats may be on the move after a flood, but they are generally wary of humans. Put rubbish in hard bins, or if this is not possible, try to keep rubbish bags in an appropriate place away from your home. Avoid approaching rats. If you are bitten by a rat then seek medical advice. Dispose of any dead rats in a plastic bag, wearing rubber gloves.

## Living in your flood-damaged home

It is recommended that you only fully re-occupy your home once the above cleaning has been carried out. If you decide to return home with further work outstanding:

- Try to have some heating on at all times, once it has been safety checked
- Consider the use of a dehumidifier
- Ensure the property is well ventilated
- Leave windows open as much as possible but be mindful of security.

If you are living in a flood-damaged home and you become concerned that it is no longer safe to stay in, please contact your local council for advice.

For more information visit the following websites:

Health Protection Agency –[www.hpa.org.uk](http://www.hpa.org.uk)

Food Standards Agency –[www.foodstandards.gov.uk](http://www.foodstandards.gov.uk)

# Health advice - Coping without mains water

This leaflet provides practical and health advice for managing in the home with disrupted or no mains water, and should be read together with latest information from your water company regarding the safety of the water supply.

## Follow the advice

If you have a mains water supply, follow the advice of your local water company, which has a duty to protect public health. If there are problems with the supply then alternative water will be made available, such as bottled water or bowsers (large water transporters), but in the meantime consumers may be advised to boil tap water before drinking it.

## Boiling water for use in the home

If your water company has advised you to boil your tap water, this will be for drinking and for food preparation. This water should be brought to a boil and then allowed to cool before it is used.

In these circumstances it is safe to use unboiled tap water to prepare food that is to be cooked, and for cooking if it will be boiled during the cooking process.

Boiling water can scald, so it is safer to use a kettle rather than pots and pans. If you must use pots and pans then take care with young children and vulnerable people. Keep panhandles turned inwards so that children cannot reach them.

Water from the hot tap is not suitable for drinking in any circumstance.

## Bowsers

Your water company may provide extra supplies of water through bowsers placed locally. This water should be safe to drink, but it requires boiling before use because the containers people use to transfer water from bower to home may not be clean.

## If your mains water is turned off

Only boiled bower water or bottled water should be used for drinking, brushing teeth, washing food, cooking and making ice. If there is no gas or electricity available to householders to boil water then bottled water should be used in all circumstances.

## Cleaning water containers and taps

Use an appropriately diluted bleach solution or sterilising tablets, following the manufacturer's instructions, to clean containers such as bowls and buckets.

If your home has been flooded, ensure the water taps are cleaned with hot water and detergent before using them for the first time after the flood. Before starting to use the mains water again, allow the taps to run for a few minutes, as this should clear the pipes.

## Flushing the toilet

Flush toilets only for solid waste –you do not need to flush after urinating. If you have no mains water then save all water used for washing, cooking or washing up in buckets for flushing. Other sources of water, such as garden water butts, can also be used for flushing.

If the toilet is blocked then look for other facilities nearby, such as those of unaffected family, friends, neighbours, public toilets, portaloos, rest centres, local shops, supermarkets and hotels.

## Formula feed for babies without mains water supply

Ideally use boiled bowser or bottled water, left covered to cool for no more than half an hour. Alternatively, use ready-made formula milk.

If there is no power for boiling and you do not have ready-made formula, bottled water can be used without boiling, but the prepared feed should then be used immediately. Do not use unboiled bowser water to make formula milk.

Bottled water from your water company will be safe to use for baby feed. If you buy your own bottled water, be aware that some natural mineral water may have a high sodium content. Look at the label for sodium or 'Na' and check its level is not higher than 200mg per litre. If it is, then try to use another water. If no other water is available then use this water for as short a time as possible. It is important to keep babies hydrated.

## Water from a private supply

If a private supply from a well or spring has been covered by floodwater it may be affected. If the water changes colour, taste or smell, or you are concerned, then ring your local council for advice. In the meantime, assume the water is unsafe to drink unless it is boiled, or source an alternative supply. Continue to boil the water until the supply has been tested and shown to be safe.

## Bathing children without mains water

If the water company has advised that the mains supply is unsafe for drinking then it is safer not to use this for bathing infants. In this situation, boiled bowser water or bottled water are alternatives. Baby wipes can also be used for hand cleansing and washing infants.

## Cleaning contact lenses

Tap water or bowser water should never be used for cleaning or storing contact lenses as this could cause a rare but serious eye infection.

For more information visit the following websites:

Health Protection Agency –[www.hpa.org.uk](http://www.hpa.org.uk)

Food Standards Agency –[www.foodstandards.gov.uk](http://www.foodstandards.gov.uk)

Drinking Water Inspectorate –[www.dwi.gov.uk](http://www.dwi.gov.uk)



KRS Environmental Ltd

Mob: [REDACTED]

Tel: [REDACTED]

Tel: [REDACTED]

Email [REDACTED]

Web: [www.krsenvironmental.com](http://www.krsenvironmental.com)