



# Flood Risk Assessment for Planning

**June 2022**

**Our reference:**  
91934-SJM-ThreeSons

**Prepared for:**  
SJM Planning Limited

**Location:**  
The Three Sons  
Hampstead Lane  
Nettlestead  
ME18 5HN



## Document Issue Record

<b>Project:</b>	Flood Risk Assessment for Planning
<b>Client:</b>	SJM Planning Limited
<b>Application:</b>	Retrospective application for the siting of caravans and mobile homes for permanent residential use
<b>Location:</b>	The Three Sons, Hampstead Lane, Nettlestead, ME18 5HN
<b>Our reference:</b>	91934-SJM-ThreeSons
<b>Version:</b>	v1.0 150622
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## Contents

1.	Key Facts .....	4
1.1	Flood Risk Posed: .....	4
1.2	Flood Risk Mitigation: .....	4
2.	Introduction.....	6
3.	Existing Situation .....	7
3.1	Site Usage:.....	7
3.2	Topography:.....	7
3.3	Geology and Soil: .....	9
3.4	Riparian Ownership:.....	10
3.5	Environmental Permit for Flood Risk Activity: .....	11
4.	Development Proposal.....	12
5.	Assessment of Flood Risk.....	13
5.1	Flood Zones:.....	13
5.1.1	SFRA Flood Zones: .....	14
5.2	Fluvial (Ladden Brook).....	14
5.2.1	Modelled flood levels and extents:.....	14
5.2.2	Flood Storage Areas: .....	15
5.2.4	Flood Defences .....	15
5.2.5	Residual risk (breach or overtopping of flood defences): .....	16
5.2.6	Historical flood events: .....	16
5.3	Pluvial (Surface Water): .....	16
5.4	Groundwater:.....	18
5.5	Sewer Surcharge:.....	18
5.6	Other Sources: .....	19
5.	Flood Risk Management.....	20
6.1	Vulnerability to flooding:.....	20
6.2	EA Standing Advice: .....	20
6.3	Physical Design Measures: .....	20
6.4	Safe Escape and Flood Action Plan: .....	21
6.5	Flood Warning:.....	22
6.6	Flood Plan:.....	23
6.7	Off-Site Impacts: .....	24
6.7.1	Fluvial floodplain storage:.....	24
6.7.2	Surface Water Drainage:.....	24
7.	Discussion and Conclusions .....	26
8.	Appendix.....	28

# 1. Key Facts

## 1.1 Flood Risk Posed:

- Site within Flood Zone 3a (High Risk).
- The risk would appear to originate from the River Medway and its tributaries.
- The site is shown to be within Flood Zone 3a in the Medway SFRA.
- Modelled flood levels and extents have been provided from the River Medway Mapping and Modelling Study, completed by JBA in 2015.
- Comparison of these modelled flood levels with topographic site levels (12.67mAOD and 13.60mAOD), shows that the site is below all of the modelled flood levels provided, with a potential maximum depth of floodwater on site of 0.34m for the 1:100 year plus 35% Higher Central allowance.
- The floor levels of all the caravans and day rooms are entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level.
- The EA has historic records of flooding at the site.
- The EA Risk of Flooding from Surface Water Map suggests that the site lies within an area of "Very Low" to "High" risk of flooding from surface water. All static caravans and day rooms are shown to be outside of areas of "High" risk of flooding from surface water.
- The EA has commented that flooding has been recorded in this general area in the past, the indications are that direct flooding from a watercourse may not have been experienced on this site though waterlogging or surface water ponding during periods of prolonged or heavy rainfall may have occurred. We are also aware that a section of Hampstead Lane to the north west of the application site can be problematic to access due to poor drainage.
- The Maidstone SFRA shows the site lies within an area with "No risk" on their Groundwater Flood Map. No information has been provided to suggest that the site is susceptible to groundwater flooding. No records have been provided to suggest that the site has flooded from this source previously.

## 1.2 Flood Risk Mitigation:

- The EA has stated that static caravan floor levels should be set at least 600mm above the modelled 1:100 plus 35% allowance for climate change flood level (a finished floor level of 13.61mAOD).
- All but one static caravan (which is in the south eastern corner of the site) are at least 13.61mAOD. The applicant has confirmed that within 2 months of planning consent the finished floor level will be raised to 13.61mAOD using axle stands.
- Given that the application is retrospective, it is not possible to raise the finished floor levels of the brick built day room buildings. The day rooms contain no sleeping accommodation however. It is recommended that a flood proof door should be installed for all external day rooms doors below 13.61mAOD, or 600mm demountable flood defence barriers installed if flood proof doors are not practical or other planning constraints prevent it.
- It is recommended that the caravans are secured to their concrete mountings / foundations at a number of points to prevent them from becoming a floating debris hazard. It is considered that any potential loss in fluvial floodplain storage would be negligible.
- Any new fencing constructed on site will be of hit and miss or palisade design to allow the free passage of floodwaters through the site.
- Safe escape will be provided by a flood warning and evacuation plan, which will be prepared in liaison with the Council's Emergency Planners and tied in with the existing emergency plans for the area.
- The applicant has agreed to implement flood resistant design measures where practical and achievable into the development in consultation with the Local Authority building control department.

- A flood warning and evacuation plan which will be prepared.
- The applicant will register with the Environment Agency Floodline Warnings/Alert Direct service.

**Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.**

## 2. Introduction

Unda Consulting Limited have been appointed by SJM Planning Limited (hereinafter referred to as “the applicant”) to undertake a Flood Risk Assessment for the proposed development at The Three Sons, Hampstead Lane, Nettlestead, ME18 5HN (hereinafter referred to as “the site”). The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The purpose of the study is to support a planning application for the proposed development. This report presents our findings based on the readily available information and data relating to the site and surrounding drainage area.

The site appears to be located within Flood Zone 3a as defined by the Environment Agency (EA) on their Flood Map for Planning. Under the National Planning Policy Framework (NPPF), a FRA is required if a proposed development:

- includes building or engineering works in Flood Zone 2 or 3;
- includes building or engineering works on land classified by the Environment Agency as having critical drainage problem;
- changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- is larger than 1 hectare.

The assessment should demonstrate to the Local Planning Authority (LPA) and EA how flood risk will be managed now and over the development’s lifetime, taking climate change into account, and with regard to the vulnerability of its potential users.

- whether the proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate.

### 3. Existing Situation

#### 3.1 Site Usage:

It is understood that that the site is currently occupied as a gypsy and traveller site.

A map showing the site location is presented below in Figure 1.



Figure 1: Aerial photograph of site and surrounding area (Source: Google Earth)

#### 3.2 Topography:

A topographical site survey has been undertaken by SJM Surveys Ltd in June 2022, which shows topographic levels on site range between 12.67mAOD and 13.60mAOD.

The finished floor levels of the static caravans and brick built day rooms has also been surveyed:

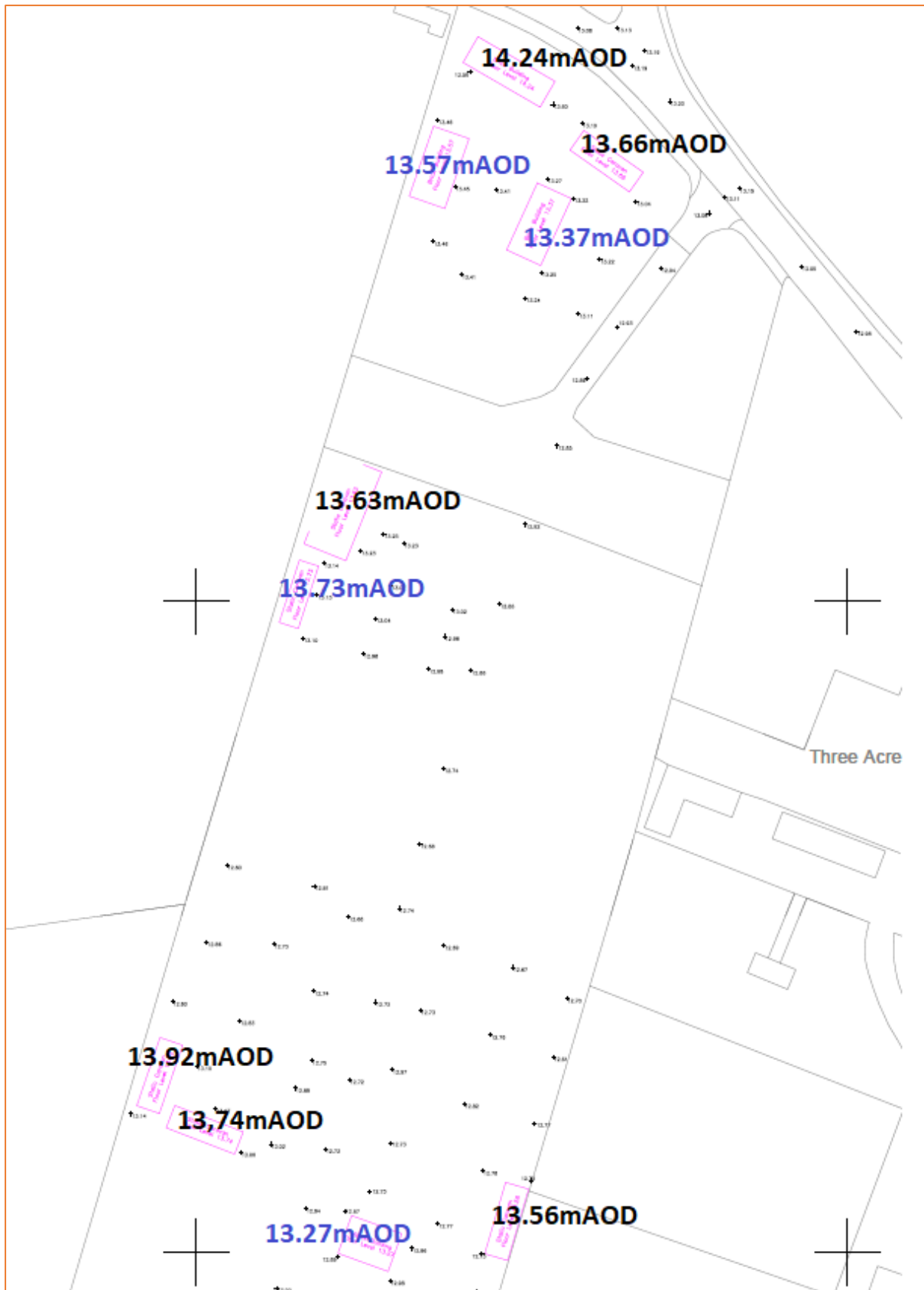


Figure 2: Extract from topographical site survey showing finished floor level of static caravans in black, and day rooms in blue (Source: SJM Surveys Ltd)



The topographical survey can be found in the report Appendix.

### 3.3 Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site Weald Clay Formation - Mudstone, with superficial deposits of River Terrace Deposits (Undifferentiated) – Clay and Silt.

The soil type taken from the UK Soil Observatory website is relatively deep soils from Terrace Clay and Loamy Loess soil parent material, with a silt to silty loam soil texture.

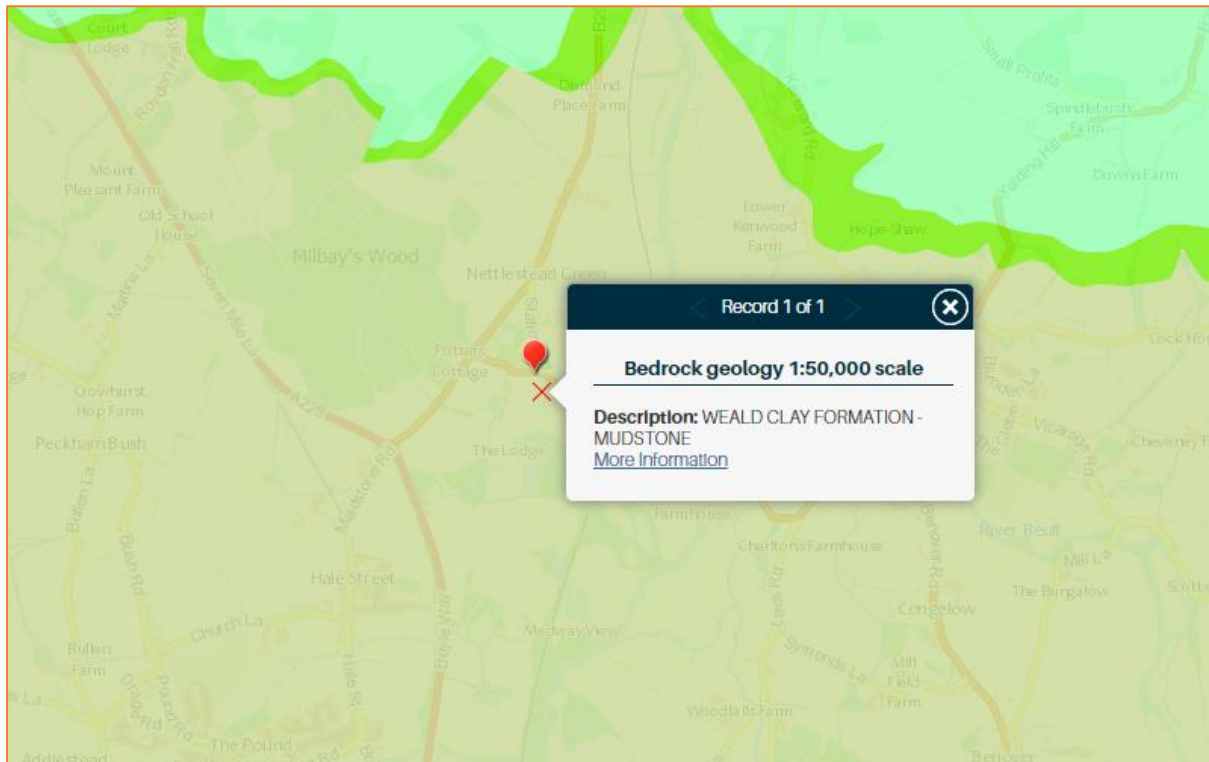


Figure 3: Local bedrock geology (Source: BGS)

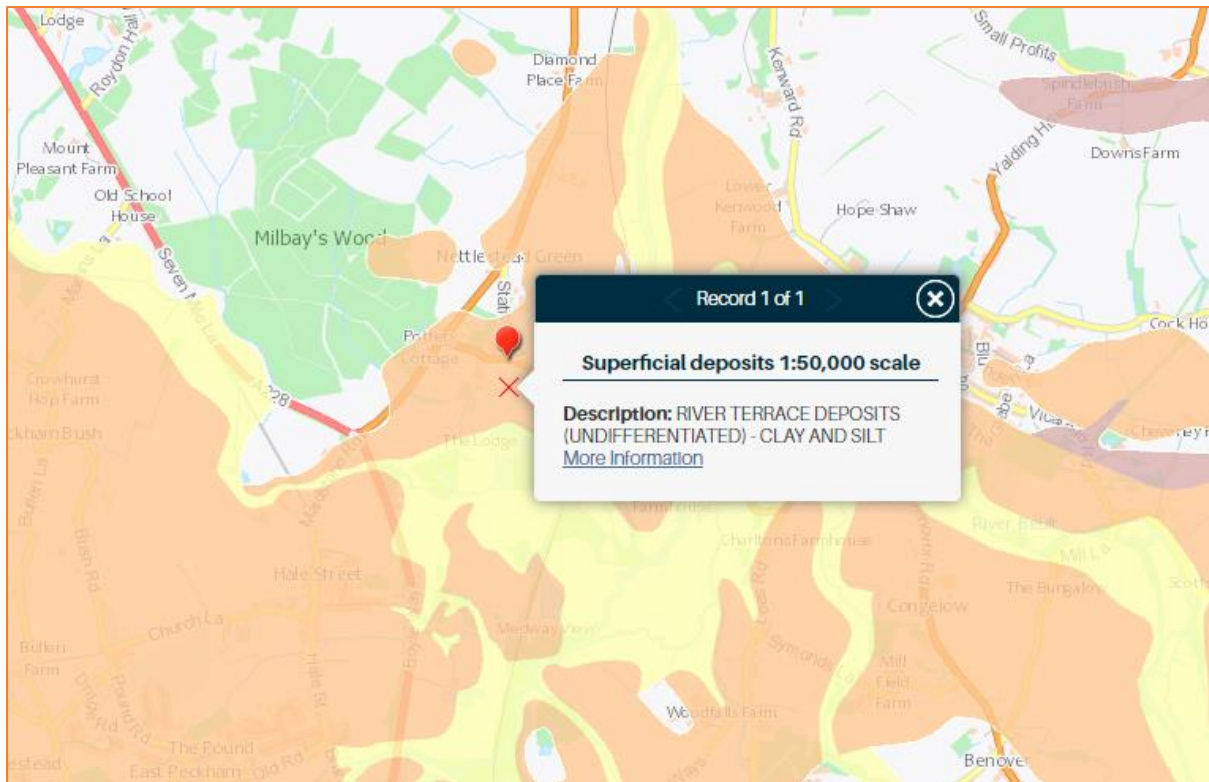


Figure 4: Superficial Deposits (Source: BGS)

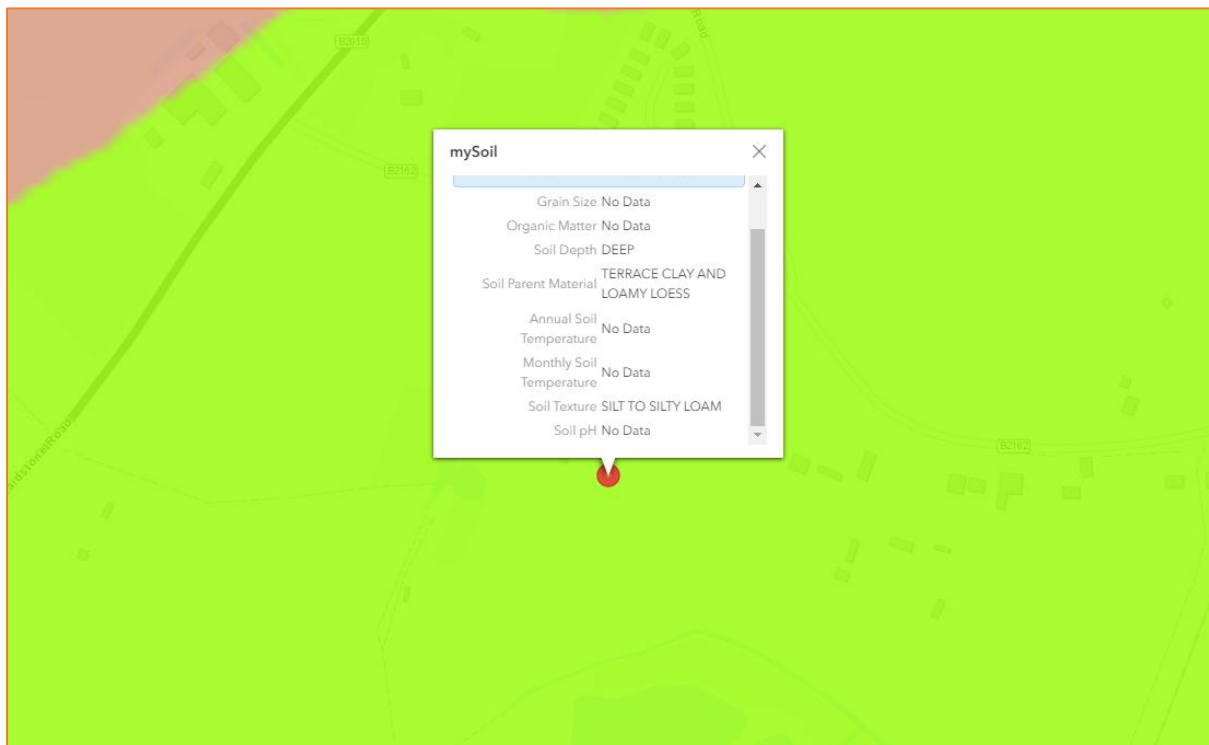


Figure 5: Local soil types (Source: UKSO)

### 3.4 Riparian Ownership:

A riparian owner is someone who owns land or property alongside a river or other watercourses. A watercourse is any natural or artificial channel through which water flows including flow through a culvert, ditch, drain, cut, dyke, sluice or private sewer.

Riparian owners have statutory responsibilities, including:

- Maintaining river beds and banks;
- Allowing the flow of water to pass without obstruction;
- Controlling invasive alien species

Further guidance for riverside property owners can be found in the Environment Agency's helpful booklet 'Living on the Edge, 5th Edition' published in June 2014.

### **3.5 Environmental Permit for Flood Risk Activity:**

Under the Environmental Permitting (England and Wales) Regulations 2010 any activity within 8m of the bank of a main river, or 16m if it is a tidal main river, or any activity within 8m of any flood defence structure or culvert on a main river, or 16m on a tidal river or any activity within 16m of a sea defence structure may require a permit. Some activities may be excluded or exempt. Further details and guidance are available on the GOV.UK website:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>.

For more information and to apply please contact the Partnerships and Strategic Overview team at:

- National Customer Contact Centre on 03708 506 506 or
- [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

Please be aware that Environment Agency permits, consents and licences are separate from the planning process and are not guaranteed.

## 4. Development Proposal

The planning application is for Retrospective application for the siting of caravans and mobile homes for permanent residential use.

## 5. Assessment of Flood Risk

### 5.1 Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's website.

Flood Zone	Definition
Zone 1 <b>Low Probability</b>	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 <b>Medium Probability</b>	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a <b>High Probability</b>	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b <b>The Functional Floodplain</b>	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 1: Flood Zones

The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

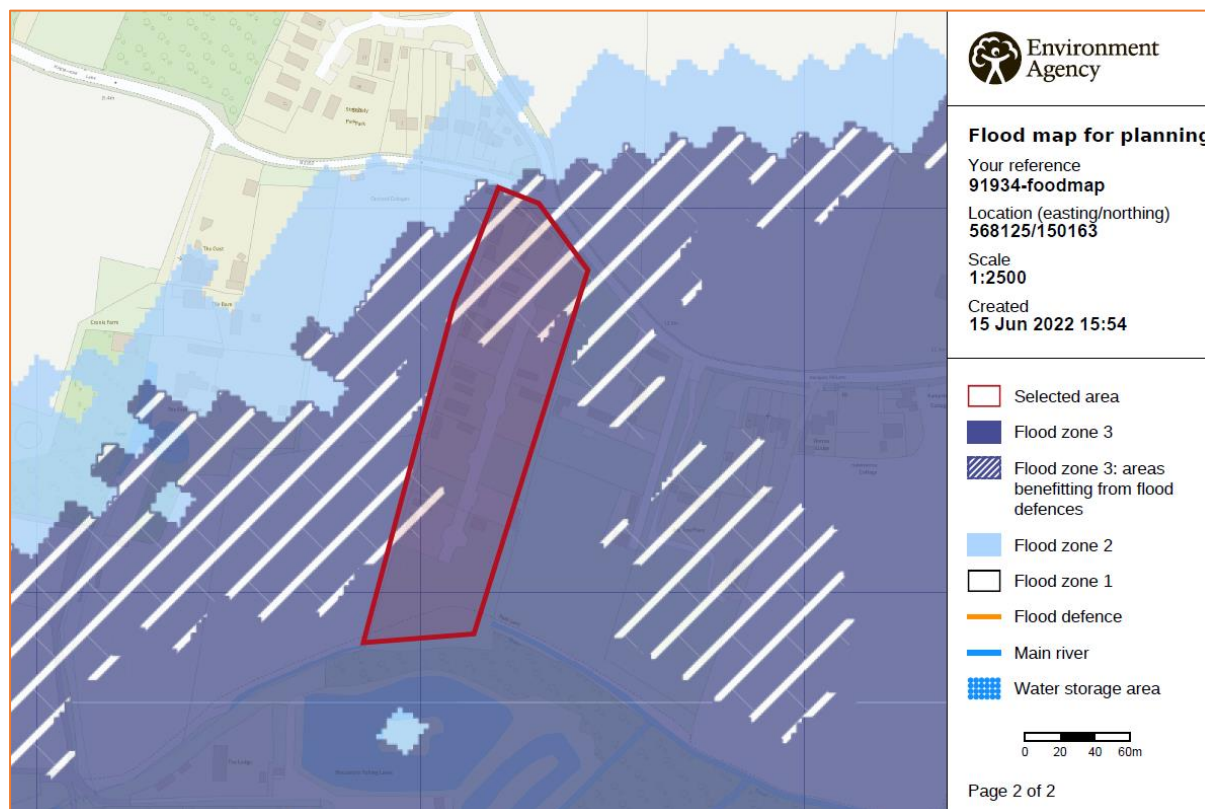


Figure 6: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located within Flood Zone 3a (High Probability), which means it is defined as land having a greater than 1 in 100 annual probability of river flooding; or land having a greater than 1 in 200 annual probability of sea flooding. The site is shown to be partially within an area that benefits from flood defences.

The risk would appear to originate from the River Medway and its tributaries.

### 5.1.1 SFRA Flood Zones:

The site is shown to be within Flood Zone 3a in the Maidstone Borough Council Strategic Flood Risk Assessment.

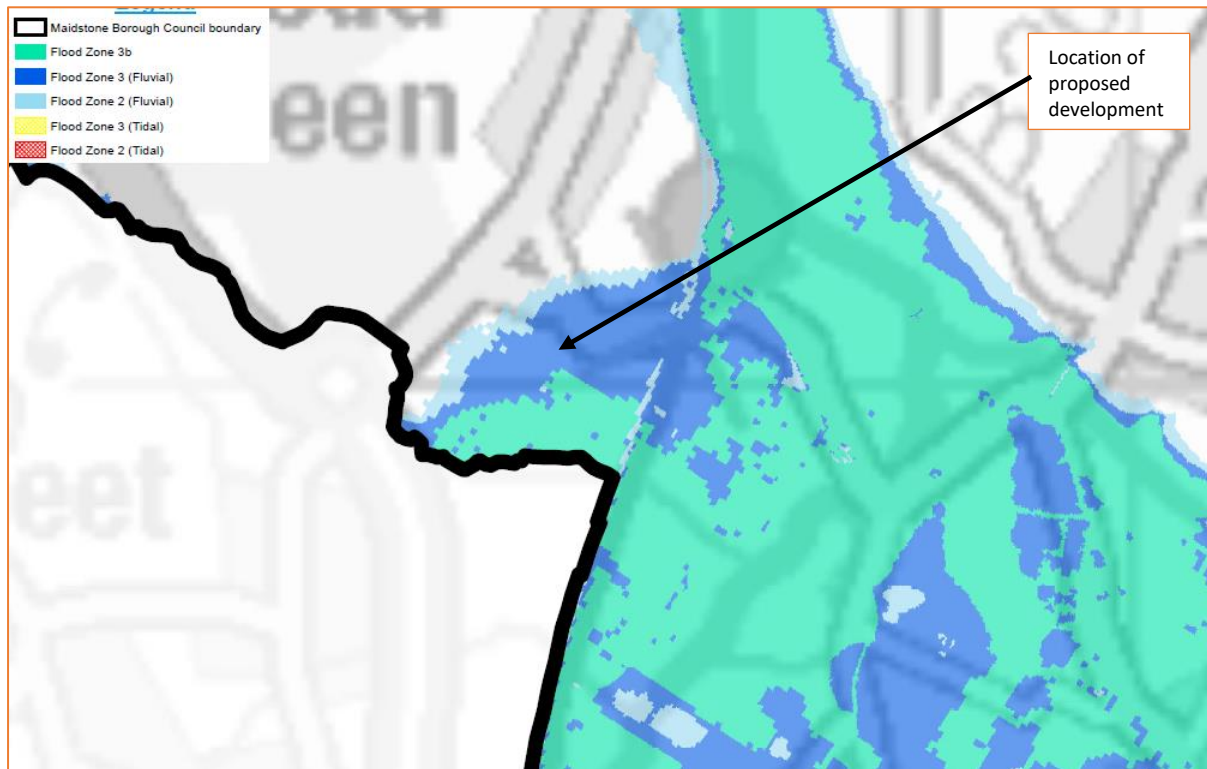


Figure 7: Maidstone SFRA Flood Zone Mapping (Source: Maidstone SFRA)

## 5.2 Fluvial (River Medway)

The River Medway is a river in South East England. It rises in the High Weald, East Sussex and flows through Tonbridge, Maidstone and the Medway conurbation in Kent, before emptying into the Thames Estuary near Sheerness, a total distance of 70 miles (113 km). About 13 miles (21 km) of the river lies in East Sussex, with the remainder being in Kent. It has a catchment area of 930 square miles (2,409 km<sup>2</sup>), the second largest in southern England after the Thames.

### 5.2.1 Modelled flood levels and extents:

Modelled flood levels and extents have been requested from the Environment Agency for use within this report.

Modelled flood levels and extents have been provided from the River Medway Mapping and Modelling Study, completed by JBA in 2015.

The site is located within Flood Zone 3a, and is classified as "highly vulnerable" (Caravans, mobile homes and park homes intended for permanent residential use). The Flood Risk Assessments: climate change allowances guidance – updated May 2022, states that the Higher Central climate change allowance should be applied.

The site falls within the Medway Management Catchment, where the Higher Central climate change allowance for the 2080's is a 37% increase in river flows.

The Flood Risk Assessments: climate change allowances guidance – updated May 2022, states that the Central climate change allowance should be applied (<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#peak-river-flow-allowances>).

The River Medway modelling includes a 1:100 year event with a 35% allowance for climate change. As such, this will be used for this assessment.

The following on-site flood levels have been extracted from the Medway modelling for the site:

1:20yr	1:100yr	1:100yr+35% (Higher Central)	1:1000yr
Entirely outside	12.51mAOD	13.01mAOD	13.59mAOD

Table 2: Modelled on-site flood levels (Source: EA)

Comparison of these modelled flood levels with topographic site levels (12.67mAOD and 13.60mAOD), shows that the site is below all of the modelled flood levels provided, with a potential maximum depth of floodwater on site of 0.34m for the 1:100 year plus 35% Higher Central allowance.

The topographic site survey shows that the finished floor levels of the static caravans range between 13.56mAOD and 14.24mAOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level.

The topographic site survey shows that the finished floor levels of the day rooms range between 13.27mAOD and 13.73mAOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level.

### 5.2.2 Flood Storage Areas:

Flood Storage Areas are areas that act as a balancing reservoir, storage basin or balancing pond. Their purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer time interval. Flood storage areas do not completely remove the chance of flooding and can be overtopped or fail in extreme weather conditions.

### 5.2.4 Flood Defences

The site lies partially within an area benefiting from flood defences, as shown on the EA Flood Map for planning. 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, or flooding from the sea with a 0.5% (1 in 200) 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.

The Leigh flood storage area was built in 1982 to defend Tonbridge, as it was in 1982, however it does reduce the risk of flooding to the site by a negligible amount. This site is classified as a high risk of flooding in the National Flood Risk Assessment (NaFRA) which means the risk of flooding is up to 1 in 100 in any given year (1%).

### 5.2.5 Residual risk (breach or overtopping of flood defences):

Breaching of flood defences can cause rapid inundation of areas behind flood defences as flow in the river channel discharges through the breach. A breach can occur with little or no warning, although they are much more likely to concur with extreme river levels or tides when the stresses on flood defences are highest. Flood water flowing through a breach will normally discharge at a high velocity, rapidly filling up the areas behind the defences, resulting in significant damage to buildings and a high risk of loss of life. Breaches are most likely to occur in soft defences such as earth embankments although poorly maintained hard defences can also be a potential source of breach.

Overtopping of flood defences occurs when water levels exceed the protection level of raised flood defences. The worst case occurs when the fluvial or tidal levels exceed the defence level as this can lead to prolonged flooding. Less severe overtopping can occur when flood levels are below defence levels, but wave action causes cyclic overtopping, with intermittent discharge over the crest level of the defence. Flood defences are commonly designed with a freeboard to provide protection against overtopping from waves. The risk from overtopping due to exceedance of the flood defence level is much more significant than the risk posed by wave overtopping. Exceedance of the flood defence level can lead to prolonged and rapid flooding with properties immediately behind the defences at highest risk.

### 5.2.6 Historical flood events:

EA records show recorded incidents of flooding at the site previously. Records show flooding the local area in November 1960, November 1963, September 1968, December 1979, October 2000 and December 2013. The site is shown to be partially within the 1968 historic flood extent.

## 5.3 Pluvial (Surface Water):

Pluvial (surface water) flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

In 2013 the EA, working with Lead Local Flood Authorities (LLFAs), produced an updated Flood Map for Surface Water. It is considered to represent a significant improvement on the previous surface water flood maps available, both in terms of method and representation of the risk of flooding. The modelling techniques and data used are considerably improved, and also incorporated locally produced mapping where this is available to represent features best modelled at a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- 1:30 (3.3%)
- 1:100 (1%)
- 1:1000 (0.1%)

The mapping below shows the Risk of Flooding from Surface Water centred on the postcode. Please note that the EA do not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The EA Risk of Flooding from Surface Water Map suggests that the site lies within an area of "Very Low" to "High" risk of flooding from surface water. All static caravans and day rooms are shown to be outside of areas of "High" risk of flooding from surface water.





Figure 8: Extract from EA Risk of Flooding from Surface Water Flood Map (Source: EA)

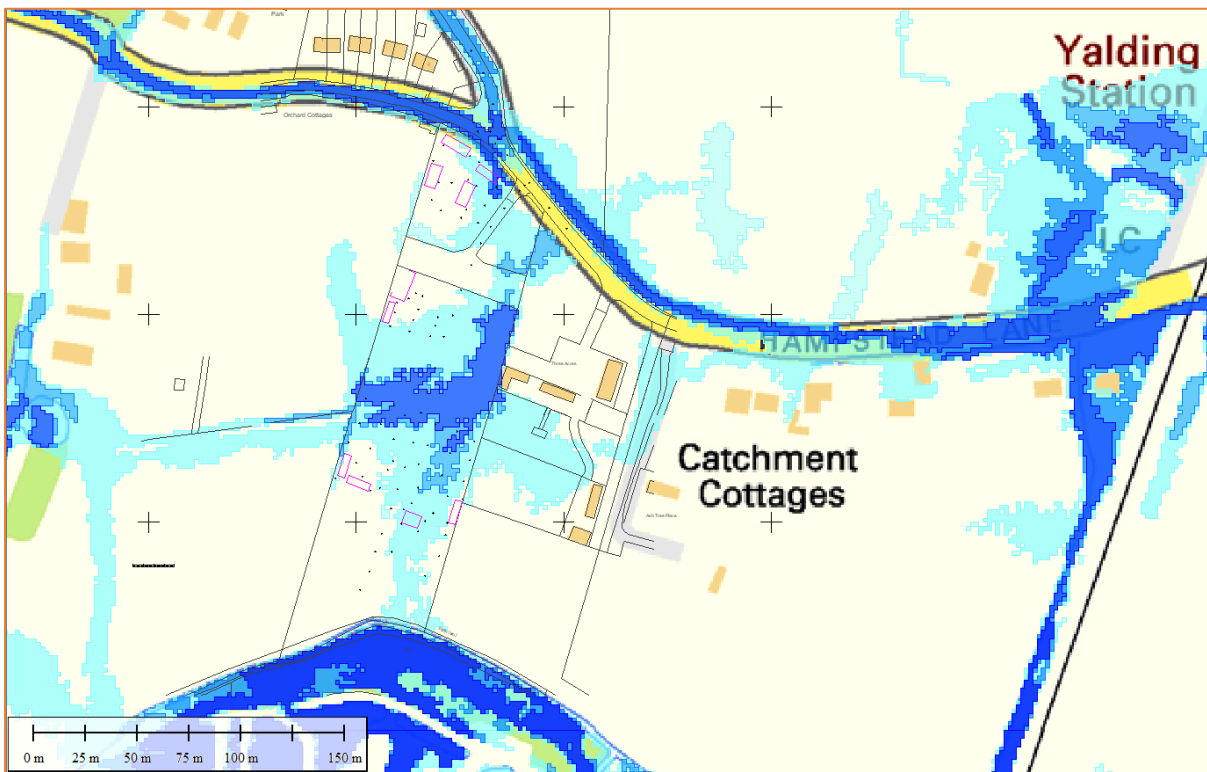


Figure 9: Risk of Flooding from Surface Water Flood Extents at the site (Source: EA)

The EA has commented that flooding has been recorded in this general area in the past, the indications are that direct flooding from a watercourse may not have been experienced on this site though waterlogging or surface water ponding during periods of prolonged or heavy rainfall may have occurred. We are also aware that a section of Hampstead Lane to the north west of the application site can be problematic to access due to poor drainage.

## 5.4 Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground.

The Maidstone SFRA shows the site lies within an area with "No risk" on their Groundwater Flood Map.

No information has been provided to suggest that the site is susceptible to groundwater flooding.

No records have been provided to suggest that the site has flooded from this source previously.

The Environment Agency has defined Source Protection Zones for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area.

The zones are used in conjunction with the EA Groundwater Protection Policy to set up pollution prevention measures in areas that are at a higher risk, and to monitor the activities of potential polluters nearby.

The published Environment Agency Groundwater Vulnerability map shows the site to be located outside of a Source Protection Zone.

## 5.5 Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company. The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

No information has been provided to suggest that the site is susceptible to sewer surcharge flooding.

## 5.6 Other Sources:

Reservoirs with an impounded volume in excess of 25,000 cubic metres (measured above natural ground level) are governed by the Reservoirs Act and are listed on a register held by the Environment Agency. The site is located within the maximum inundation extent on the EA Reservoir Inundation Map. The EA also advise on their website that reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. In accordance with the Reservoirs Act 1975 in England, these inspections are monitored and enforced by the EA themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial / tidal flooding to occur. The Environment Agency Reservoir Flood Map illustrated below, illustrates the largest area that might be flooded if the storage area were to fail and release the water it is designed to hold during a flood event.

Records of flooding from reservoirs and canals are erratic as there is no requirement for the Environment Agency to provide information on historic flooding from canals and raised reservoirs on plans. In particular, the NPPF does not require flood risk from canals and raised reservoirs to be shown on the Environment Agency flood zones.

Overflows from canals can be common as they are often fed by land drainage, and often do not have controlled overflow spillways. Occasionally, major bank breaches also occur, leading to rapid and deep flooding of adjacent land.

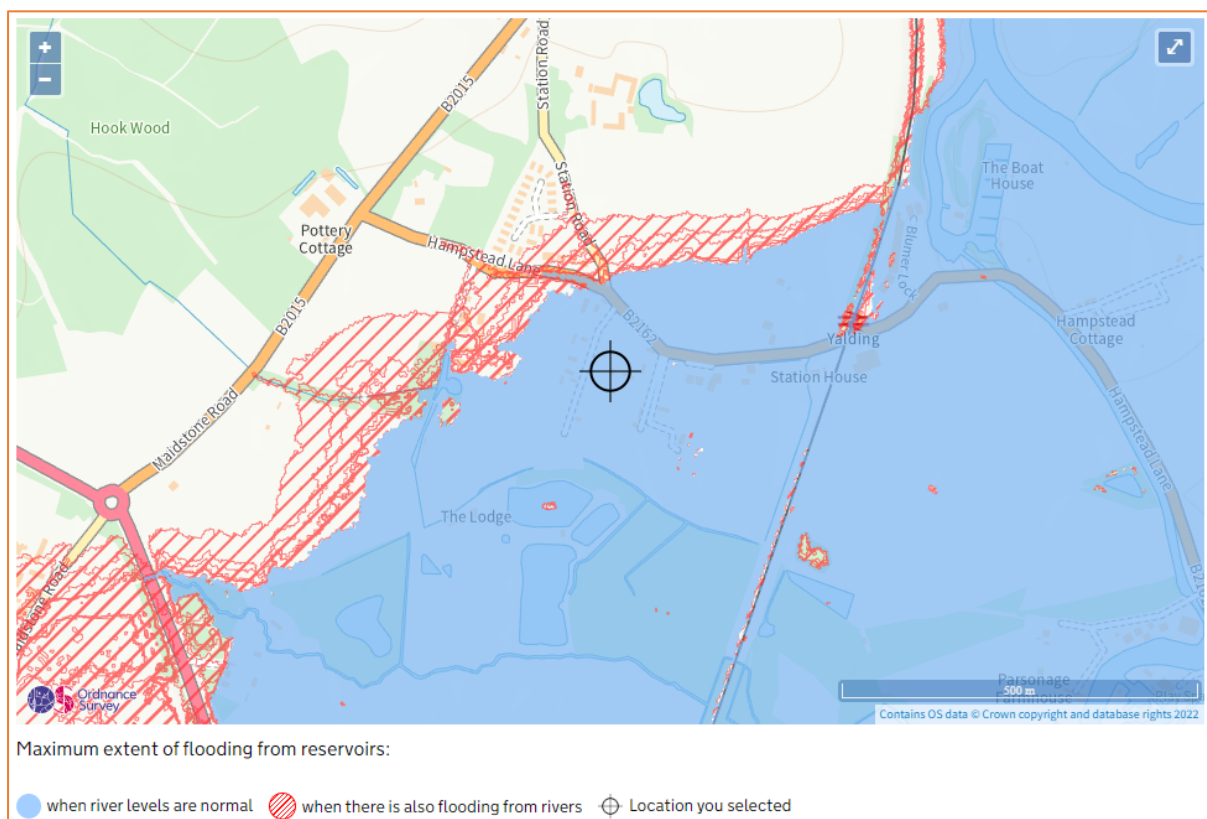


Figure 10: Extract from Environment Agency Risk of Flooding from Reservoirs Map (Source: EA)

## 5. Flood Risk Management

### 6.1 Vulnerability to flooding:

The NPPF classifies property usage by vulnerability to flooding.

The site is classified as "highly vulnerable" (Caravans, mobile homes and park homes intended for permanent residential use).

### 6.2 EA Standing Advice:

The EA Standing Advice guidance is for domestic extensions and non-domestic extensions where the additional footprint created by the development does not exceed 250m<sup>2</sup>. It should not be applied if an additional dwelling is being created, e.g. a self-contained annexe or additional commercial unit.

### 6.3 Physical Design Measures:

The application is for the Retrospective application for the siting of caravans and mobile homes for permanent residential use.

The EA has stated that static caravan floor levels should be set at least 600mm above the modelled 1:100 plus 35% allowance for climate change flood level (a finished floor level of 13.61mAOD).

The topographic site survey shows that the finished floor levels of the static caravans range between 13.56mAOD and 14.24mAOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level. All bar one static caravan (which is in the south eastern corner of the site) are at least 13.61mAOD. The applicant has confirmed that within 2 months of planning consent the finished floor level will be raised to 13.61mAOD using axle stands.

The topographic site survey shows that the finished floor levels of the day rooms range between 13.27mAOD and 13.73mAOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level. Given that the application is retrospective, it is not possible to raise the finished floor levels of the brick built day room buildings. The day rooms contain no sleeping accommodation however. It is recommended that a flood proof door should be installed for all external day rooms doors below 13.61mAOD, or 600mm demountable flood defence barriers installed if flood proof doors are not practical or other planning constraints prevent it.

To stop the caravans from potentially floating away and becoming a debris hazard during an extreme flood event, the caravans will be secured / tethered to the ground by a number of mounting points with chains. The caravans will therefore be prevented from ending up against a bridge or obstructing any structure in the river.

The applicant has agreed to implement flood resistant design measures where practical and achievable into the development in consultation with the Local Authority building control department.

These measures can include the following where practical and feasible:

- Closed-cell foam used in wall cavities;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Electrical main ring run from ceiling level at ground floor;
- Electrical incomer and meter situated at a high level on ground floor;

- Raised sockets and power outlets at least 600mm above ground floor level;
- Boilers, control and water storage / immersion installed at a high level;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-syphon fitted to all toilets.

#### 6.4 Safe Escape and Flood Action Plan:

The site is classified as “highly vulnerable”, as the planning application is for Retrospective application for the siting of caravans and mobile homes for permanent residential use.

As such, there will be an increase in vulnerability post development and introduction of an additional residential units.

The EA has provided modelled flood hazard data for the 1:100 year plus 35% climate change event. The flood hazard data shows that once site users reach Hampstead Lane the degree of flood hazard is shown to be low, and from the junction of Hampstead Lane and Station Road there is no shown flood hazard.

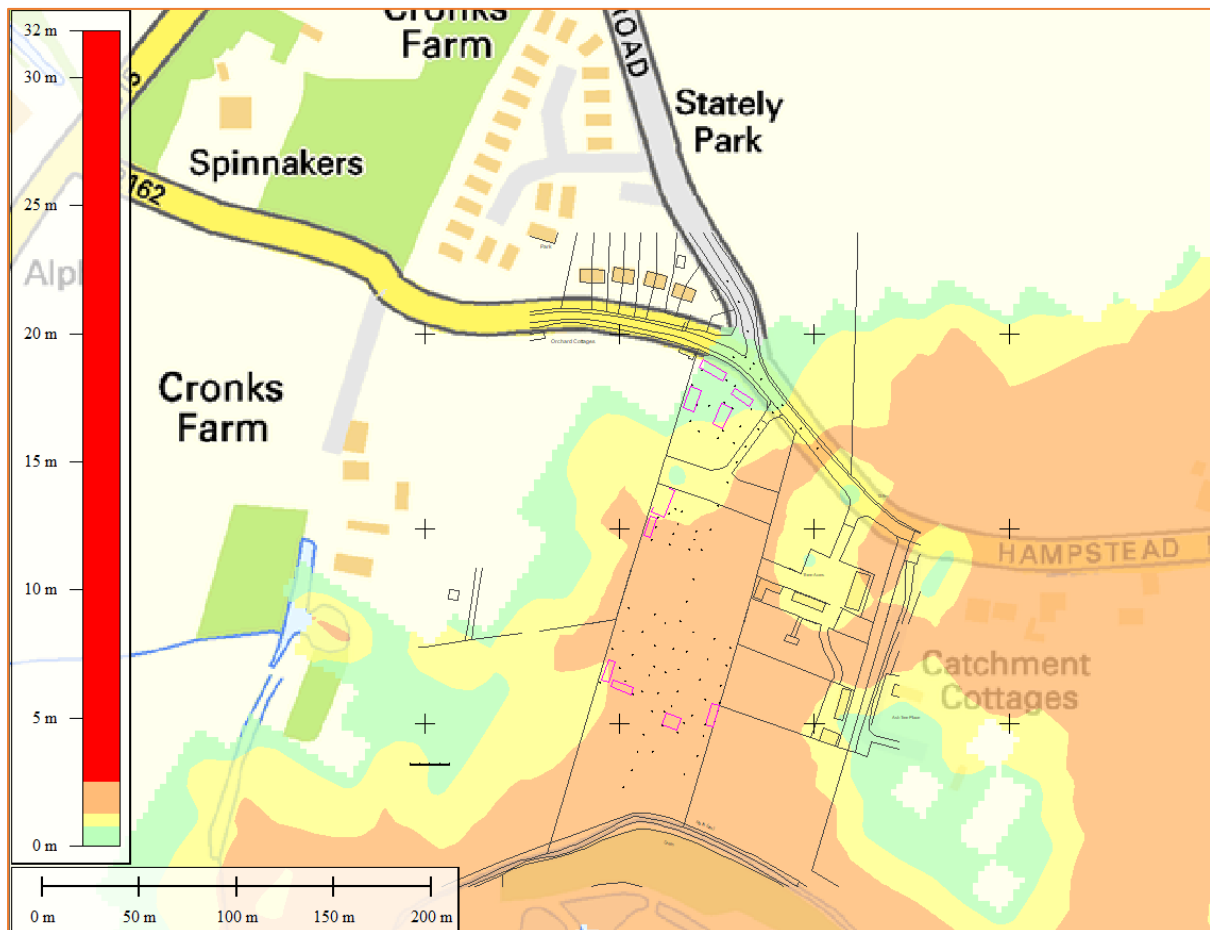


Figure 11: Modelled flood hazard for 1:100 year plus 35% climate change event (Source: EA)

Comparison of topographic site levels from the measured topographical survey with the modelled 1:100 year plus 35% climate change flood level (13.01mAOD) shows that the depth of flooding only exceeds 25cm (0.25m) for approximately 64m of the site access road.



Figure 12: Topographic surveyed overlay on aerial imagery. Red line shows section of site access with a flood depth exceeding 25cm (Source: SJM Surveys Ltd, Google)

Safe escape will be provided by a flood warning and evacuation plan, which will be prepared in liaison with the Council's Emergency Planners and tied in with the existing emergency plans for the area.

## 6.5 Flood Warning:

The EA is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door to door visits by the police or locally appointed flood wardens.

The EA issue flood warnings/alerts to specific areas when flooding is expected. It is recommended that the applicant registers online with the free Environment Agency Floodline Warnings/Alert Direct service at [www.gov.uk/sign-up-for-flood-warnings](http://www.gov.uk/sign-up-for-flood-warnings) to receive flood warnings by phone, text or email. The flood warning service has three types of warnings that will help you prepare for flooding and take action.

The site falls within the River Medway, Alder Stream, Coult Stream and River Bourne at East Peckham Flood Warning Area (Quickdial 317040).




Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
<b>What it means?</b>	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
<b>When it's used?</b>	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
<b>What to do?</b>	Be prepared to act on your flood plan.  Prepare a flood kit of essential items.  Monitor local water levels and the flood forecast on our website.	Move family, pets and valuables to a safe place.  Turn off gas, electricity and water supplies if safe to do so.  Put flood protection equipment in place.	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.

Table 3: EA Flood Warning Service

## 6.6 Flood Plan:

It is recommended that the applicant and future owners, occupiers and Landlords of the property prepare a flood plan to protect life and property during a flood event:

### Before a flood:

- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood.
- Know how to turn off electricity and water supplies to the site.
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.

### During a flood:

- Activate the evacuation plan and evacuate the site.
- Remove cars from the site if there is sufficient warning and the water levels are not rising rapidly.
- Switch off water and electricity for the site.
- Tune into your local radio station on a battery or wind-up radio.

- Listen to the advice of the emergency service and evacuate if told to do so.
- Avoid walking or driving through flood water. Six inches of fast-flowing water can knock over an adult and two feet of water can move a car.

**After a flood:**

- If you have flooded, contact your insurance company as soon as possible.
- Take photographs and videos of your damaged property as a record for your insurance company.
- If you don't have insurance, contact your local authority for information on grants and charities that may help you.
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outerwear, including gloves, wellington boots and a face mask.
- Have your electrics and water checked by qualified engineers before switching them back on.

**6.7 Off-Site Impacts:****6.7.1 Fluvial floodplain storage:**

The NPPF requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

The site is situated in Flood Zone 3a when using the Environment Agency Flood Map for Planning (Rivers and Sea), however the proposed development is for the placement of static caravan, touring caravans and day rooms.

It is recommended that the caravans are secured to their concrete mountings / foundations at a number of points to prevent them from becoming a floating debris hazard. It is considered that any potential loss in fluvial floodplain storage would be negligible.

Any new fencing constructed on site will be of hit and miss or palisade design to allow the free passage of floodwaters through the site.

**6.7.2 Surface Water Drainage:**

The development will utilise Sustainable Urban Drainage (SuDs) design in accordance with the NPPF for Planning Applications drainage hierarchy as follows:

1. Store rainwater for later use;
2. Infiltration techniques;
3. Attenuate rainwater by storing in tanks for gradual release;



4. Discharge rainwater direct into watercourse;
5. Discharge rainwater into surface water sewer;
6. Discharge rainwater into a combined sewer;
7. Attenuation of rainwater in ponds or open water features with controlled discharge into the local watercourse.

Assuming adhesion to these measures, post development there will be no increase in surface water run-off from the site. Due to the small scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning.

## 7. Discussion and Conclusions

Unda Consulting Limited have been appointed by SJM Planning Limited (hereinafter referred to as “the applicant”) to undertake a Flood Risk Assessment for the proposed development at The Three Sons, Hampstead Lane, Nettlestead, ME18 5HN (hereinafter referred to as “the site”). The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) July 2018 and the associated technical guidance.

The purpose of the study is to support a planning application for the proposed development.

The planning application is for Retrospective application for the siting of caravans and mobile homes for permanent residential use.

The site is classified as “highly vulnerable” (Caravans, mobile homes and park homes intended for permanent residential use).

As such, there will be an increase in vulnerability post development and introduction of an additional residential units.

The site is located within Flood Zone 3a (High Probability), which means it is defined as land having a greater than 1 in 100 annual probability of river flooding; or land having a greater than 1 in 200 annual probability of sea flooding. The site is shown to be partially within an area that benefits from flood defences.

The risk would appear to originate from the River Medway and its tributaries.

The site is shown to be within Flood Zone 3a in the Maidstone Borough Council Strategic Flood Risk Assessment.

Modelled flood levels and extents have been requested from the Environment Agency for use within this report.

Modelled flood levels and extents have been provided from the River Medway Mapping and Modelling Study, completed by JBA in 2015.

The site is located within Flood Zone 3a, and is classified as “highly vulnerable” (Caravans, mobile homes and park homes intended for permanent residential use). The Flood Risk Assessments: climate change allowances guidance – updated May 2022, states that the Higher Central climate change allowance should be applied. The site falls within the Medway Management Catchment, where the Higher Central climate change allowance for the 2080’s is a 37% increase in river flows.

The River Medway modelling includes a 1:100 year event with a 35% allowance for climate change. As such, this will be used for this assessment.

Comparison of these modelled flood levels with topographic site levels (12.67mAOD and 13.60mAOD), shows that the site is below all of the modelled flood levels provided, with a potential maximum depth of floodwater on site of 0.34m for the 1:100 year plus 35% Higher Central allowance.

The topographic site survey shows that the finished floor levels of the static caravans range between 13.56mAOD and 14.24mAOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level.

The topographic site survey shows that the finished floor levels of the day rooms range between 13.27mAOD and 13.73mAOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level.

EA records show recorded incidents of flooding at the site previously. Records show flooding the local area in November 1960, November 1963, September 1968, December 1979, October 2000 and December 2013. The site is shown to be partially within the 1968 historic flood extent.

The EA Risk of Flooding from Surface Water Map suggests that the site lies within an area of "Very Low" to "High" risk of flooding from surface water. All static caravans and day rooms are shown to be outside of areas of "High" risk of flooding from surface water.

The EA has commented that flooding has been recorded in this general area in the past, the indications are that direct flooding from a watercourse may not have been experienced on this site though waterlogging or surface water ponding during periods of prolonged or heavy rainfall may have occurred. We are also aware that a section of Hampstead Lane to the north west of the application site can be problematic to access due to poor drainage.

The Maidstone SFRA shows the site lies within an area with "No risk" on their Groundwater Flood Map. No information has been provided to suggest that the site is susceptible to groundwater flooding. No records have been provided to suggest that the site has flooded from this source previously.

The EA has stated that static caravan floor levels should be set at least 600mm above the modelled 1:100 plus 35% allowance for climate change flood level (a finished floor level of 13.61m AOD).

The topographic site survey shows that the finished floor levels of the static caravans range between 13.56m AOD and 14.24m AOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level. All but one static caravan (which is in the south eastern corner of the site) are at least 13.61m AOD. The applicant has confirmed that within 2 months of planning consent the finished floor level will be raised to 13.61m AOD using axle stands.

The topographic site survey shows that the finished floor levels of the day rooms range between 13.27m AOD and 13.73m AOD. All of these floor levels are above entirely above the modelled 1:100 year plus 35% Higher Central allowance flood level. Given that the application is retrospective, it is not possible to raise the finished floor levels of the brick built day room buildings. The day rooms contain no sleeping accommodation however. It is recommended that a flood proof door should be installed for all external day rooms doors below 13.61m AOD, or 600mm demountable flood defence barriers installed if flood proof doors are not practical or other planning constraints prevent it.

To stop the caravans from potentially floating away and becoming a debris hazard during an extreme flood event, the caravans will be secured / tethered to the ground by a number of mounting points with chains. The caravans will therefore be prevented from ending up against a bridge or obstructing any structure in the river.

The applicant has agreed to implement flood resistant design measures where practical and achievable into the development in consultation with the Local Authority building control department.

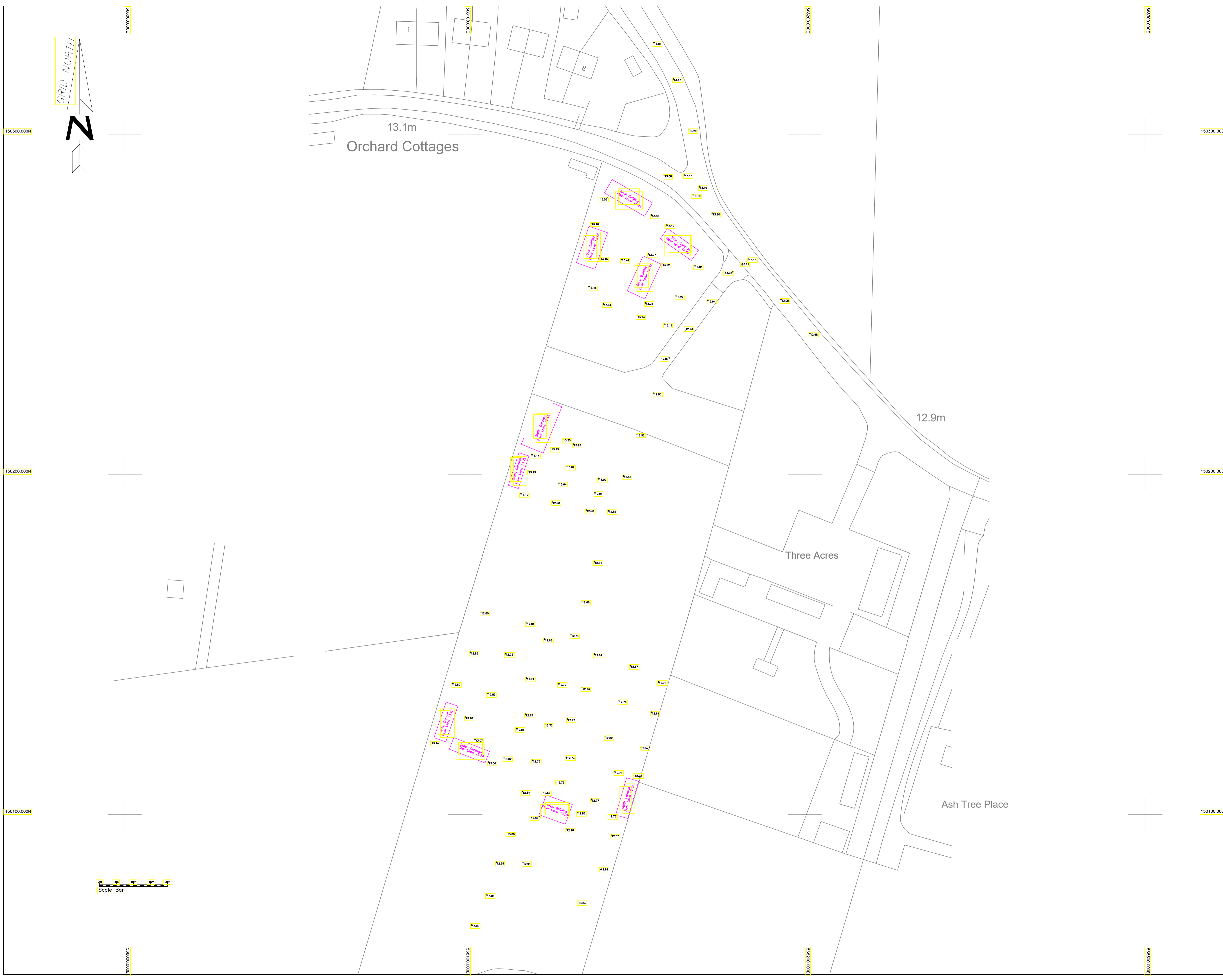
It is recommended that the caravans are secured to their concrete mountings / foundations at a number of points to prevent them from becoming a floating debris hazard. It is considered that any potential loss in fluvial floodplain storage would be negligible.

Any new fencing constructed on site will be of hit and miss or palisade design to allow the free passage of floodwaters through the site.

**Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.**

## 8. Appendix

- Topographical site survey.



### LEGEND

Street Furniture		Covers/Drainage	
ACU	Air Conditioning Unit	AV	Air Valve
BB	Banister Balcon	CL	Cover Level
BO	Boat	CH	Coal Hole
BS	Bus Stop	CP	Cable Pole
CB	Control Box	CTV	Cable TV
EP	Electricity Pole	DC	Drainage Channel
FP	Flag Pole	EC	Electric Cover
LB	Litter Bin	FH	Fire Hydrant
LP	Lamp Post	G	Gas Valve
MK	Marker	IC	Inspection Cover
PB	Post Box	IL	Invert Level
PM	Parking Meter	KO	Kerb Outlet
P	Post	MH	Manhole
RS	Road Sign	RE	Rodding Eye
RWP	Rain Water Pipe	SC	Stop Cock
TCB	Telephone Call Box	SV	Stair Valve
THL	Threshold Level	TC	Telecoms Cover
TL	Traffic Light	UTL	Unable to Lift
TP	Telegraph Pole	WC	Water Cover
VP	Vent Pipe	WM	Water Meter
		WO	Wash Out
Walls		Levels	
BW	Brick Wall	DPC	Damp Proof Course
CW	Concrete Wall	EL	Elev
GW	Gabion Wall	FL	Finished Floor
RTW	Restoring Wall	PL	Parapet
SW	Stone Wall	RL	Ridge
TW	Timber Wall	RFL	Flat Roof
Fences		THL	Threshold
CBF	Close Board Fence	TWL	Top of Wall
CLF	Chain Link Fence	WCL	Window Cill
CPF	Chestnut Paling Fence	WHL	Window Head
CSF	Concrete Slab Fence	STN	Survey Station
IRF	Iron Rail Fence	± 20.00	Spot Level
LJF	Larch Lap Fence	—	Gate
OBF	Open Board Fence	—	Contours
PRF	Post and Rail Fence	—	Hedge
PSB	Pedestrian Safety Barrier		
PWF	Post and Wire Fence		

### NOTES

**Survey Grid & Datum Levels**  
 Survey Grid  
 The survey grid is related to Ordnance Survey Grid by GPS observations.

**Survey Datum**  
 The survey datum is related to Ordnance Survey Datum by GPS observation.

**Base Map Data**  
 Information shown in grey for adjacent properties and boundaries is shown for illustrative purposes only, these features have not been surveyed unless otherwise stated.  
 This information has been taken from Ordnance Survey base mapping data © Crown Copyright and database rights 2022 OS Licence no. 100019960. This information is not indemnified against errors or omissions by SJM Surveys, a trading name of SJM Projects.  
 All critical dimensions must be checked by the contractor before commencing work on site. The copyright of this drawing remains with SJM Surveys (a trading name of SJM Projects) and may not be copied or reproduced in any form without prior written consent.

Rev	Date	Detail

Status: **SURVEY DRAWINGS**

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Client: **SJM Planning**

Site Address: **Three Sons, Hampstead Lane, Nettleston, Maidstone, Kent, ME18 5HN.**

Drawing Title: **Existing Topographical Survey**

Scale: **1:500 @ A1** Date: **13/06/2022** Drawn: **TDH**

Drawing N°: **2017-056-001- Status-Survey Plan** Rev: **000000**

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