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# FLOOD RISK ASSESSMENT

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24 Sierra Drive, Mayberry  
Place, HP18 0YQ

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Rear extension and alterations  
to garage

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## **Introduction**

This assessment discusses the flood risk to the site, using a risk based approach. This Flood Risk Assessment has been undertaken in accordance with the National Planning Policy Framework (NPPF) March 2019 and the associated Planning Practice Guidance, 2014.

## **Existing site**

The application site is located on the north side of Sierra Drive and at the junction with Idaho Street. The site occupied by a two-storey single family dwelling. The surrounding area is predominantly residential in character. The site is within Flood Zone 2.

## **Flood Risk Assessment**

### Policy

#### *National Planning Policy*

Paragraph 163 of the NPPF states

When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment (50). Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
- b) the development is appropriately flood resistant and resilient;
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
- d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

Footnote 50 states;

A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

Furthermore Paragraph 30 of the National Planning Practice Guidance on Flood Risk and Climate Change states;

A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker 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 users (see Table 2 – Flood Risk Vulnerability).

The objectives of a site-specific flood risk assessment are to establish:

- Whether a 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;
- The evidence for the local planning authority to apply (if necessary) the Sequential Test, and;
- Whether the development will be safe and pass the Exception Test, if applicable.

Continuing paragraph 31 of the Guidance states;

The information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the interactive flood risk maps available on the Environment Agency's web site.

A flood risk assessment should also be appropriate to the scale, nature and location of the development. For example, where the development is an extension to an existing house (for which planning permission is required) which would not significantly increase the number of people present in an area at risk of flooding, the local planning authority would generally need a less detailed assessment to be able to reach an informed decision on the planning application. For a new development comprising a greater number of houses in a similar location, or one where the flood risk is greater, the local planning authority would need a more detailed assessment.

### *Local Planning*

Local Authorities consider flood risk through relevant environmental and climate change policies which enforce the requirements of the NPPF. Relevant local policy, as outlined by Southend-on-Sea Borough Council, is contained within the;

- Strategic Flood Risk Assessment
- Local flood Risk management Study

The Strategic flood Risk Assessment (SFRA) and the Local Flood Risk management Strategy (LFRMS) are key sources of flood risk specific information for the area. The SFRA provides a more detailed review of flood risks and recommendation for ensuring developments can be constructed and operated safely in accordance with the NPPF.

### Flood Risk Zones, Vulnerability and Classification

These 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 available on the Environment Agency's web site, as indicated in the table below.

*Table 1 – Flood Risk*

<b>Flood Zone</b>	<b>Definition</b>
Zone 1 Low Probability	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 Medium Probability	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 High Probability	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 The Functional Floodplain	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 2 – Flood Risk Vulnerability Classification***Essential infrastructure**

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

**Highly vulnerable**

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.

- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').

**More vulnerable**

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill\* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

**Less vulnerable**

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill\* and hazardous waste facilities).

- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

**Water-compatible development**

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.



Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

**Key:**

✓ Development is appropriate

X Development should not be permitted.

Notes to table 3

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;

- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

” \* “ In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

## Sources of flooding

### Fluvial/Tidal



The EA Flood Map identifies the development site to lie within Flood Zone 2, having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

### Surface Water Flooding

The Environment Agency's Flood Map for Surface Water identifies pluvial flood risk. The map below shows this for the site and surrounding area.



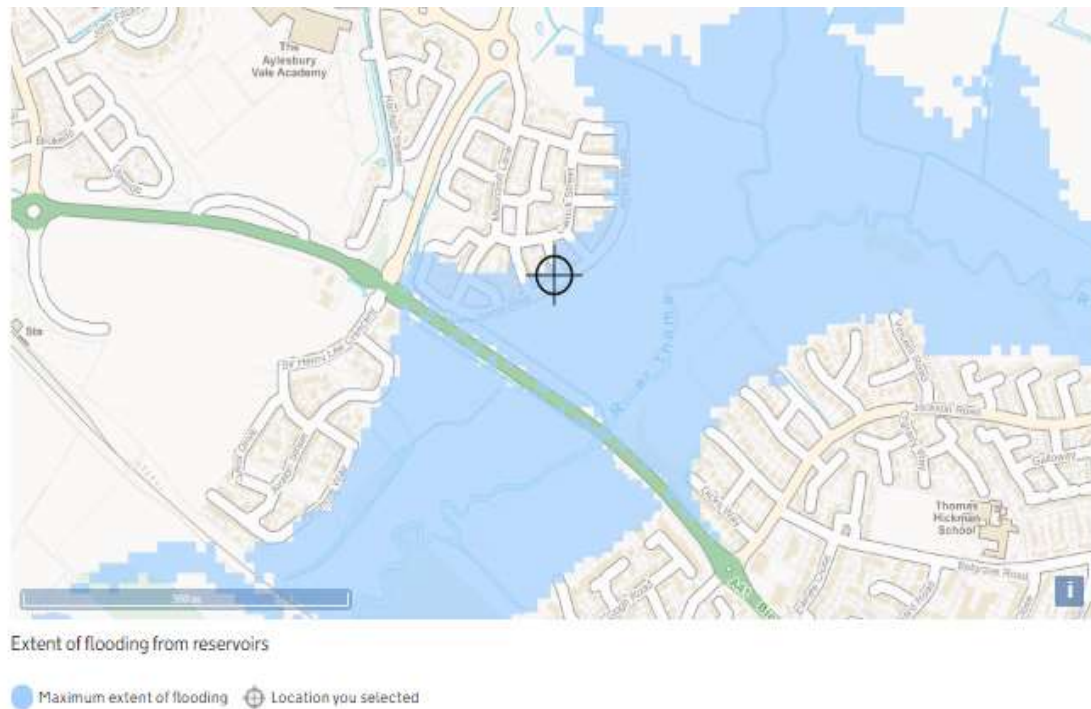
The site is not in an area at risk from surface water flooding.

#### Historic Flooding

Strategic flood risk documents produced by the Council do not indicate a history of flooding.

#### Reservoir

The site is not at risk of reservoir flooding.



### Groundwater

The Environment Agency Groundwater Vulnerability map indicates that the site is not over a Groundwater source Protection Zone. However, no the ground proposed for this development will be no impact on ground water.

### Sewers

If any of the sewers/drainage apparatus adjacent to the site were to surcharge and flood, it is likely that any floodwaters would be shallow, relatively slow moving and constrained within the limits of the carriageway.

### **Proposed Development**

The development is for single storey rear extension and alterations to existing garage.

The mitigation measures recommended in Section 5 should be put in place to deal with any residual/localised risk.

### Surface Water Drainage

It is understood that the existing arrangement of surface water from the development is into the surface water / combined sewerage system. The proposal would not affect these existing arrangements.

As such the discharge of surface water from the development will not see any surface water flooding on site and it will not increase the risk of surface water / sewer flooding elsewhere.

### Suds

Suds are a priority to aid the disposal of surface water from new developments. The proposal should include new soakaway and introduction of water butts which could improve the situation and further minimise surface water runoff from this site.

## **Management of Flood Risk**

### Tidal

To mitigate against extreme events the flood resistance and resilience measures identified below are incorporated into the scheme. The occupiers should also register for the EA flood Warning Service and develop a flood plan, as set out below, so that it can be implemented in the event of extreme flooding.

## **Flood emergency planning**

### Safe access and egress

As suggested above the occupiers should register for the EA Flood Warning Service. A suitable emergency access route is available by going north-west or south-west where flood zone 1 is reachable in a short walk.

### Flood Resistance and Resilience Measures

The works should include resistance and resilience measures to ensure that flooding exceedance events could be mitigated. Measure could include;

- External walls rendered resistant to flooding to higher level
- Removable waterproof covers fitted to external outlets, points and air bricks

- Ground level electrical main ring run from higher level and on separately switched circuit from first floor
- Plumbing insulation of closed –cell design
- Non-return valves fitted to all drain and sewer outlets
- Manhole covers secured
- Anti-siphon fitted to all toilets
- Ground floor units of solid, water resistant material
- Use of MDF carpentry avoided at ground floor level

Flood Plan

It would be prudent for a flood warning and evacuation plan to be set up and implemented post development. This plan would include residents signing up to the Environment Agency flood warning service.

The flood warning service has three types of warning that will help you to prepare for flooding and take action.

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding Danger to life.
When it's used?	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.
What to do?	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.

Flood Emergency Plan - Recommended Flood Plan:

*Before a flood*

- Find out if you are at risk of flooding
- Find out if you can receive flood warning

- Prepare and keep a list of all your contacts to hand or save them on your phone/tablet
- Think about what items you can move now and what you would want to move to safety during a flood such as vehicles, furniture and electrical equipment
- Know how to turn off gas, electricity and water supplies
- Prepare a flood kit of essential items and keep it to hand. It could include copies of important documents, a torch, a battery powered or wind up radio, blankets and warm clothing, waterproofs and first aid kit.

#### *On receipt of a flood warning*

- Tune in to your local radio station on a battery or wind up radio
- Get your prepared flood kit
- Move important documents upstairs or to high shelves
- Raise large items of furniture
- Move people, outdoor belongings, car to higher ground
- Switch off water, gas and electricity at mains when water is about to enter your home.
- Do not touch sources of electricity when standing in water
- Fit flood protection products to floor boards, airbricks covers and sandbags.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths
- Know your means of escape
- Listen to advice of the emergency service and evacuate if told to do so
- Avoid walking or driving through flood water – 300mm 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 outwear, including gloves, wellington boots and a face mask.

- Have your electrics, central heating and water checked by qualified engineers before switching them back on.

## **Conclusion**

As the development is for a minor extension to existing dwelling, it is acceptable in such a flood zone 2 and neither a Sequential or Exception Tests is required.

The resilience and resistance flood measures outlined above should be incorporated into the development to mitigate against extreme flood events. This can be secured by condition.

It is recommended that the future occupiers register for the flood warning service and head to flood zone 1, a short walk to the west and south, in the event of having to evacuate.

The proposed development can be occupied safely in flood risk terms, without increasing the flood risk elsewhere (if not reduce the risk elsewhere) and is therefore in accordance with the adopted development plan and national guidance.



