

Mr & Mrs Savage  
The Tallet, Nupdown, Oldbury on  
Severn, Thornbury BS35 1RS

Flood Risk Assessment

10 June 2022

Revision D



New Civil Engineer  
**100**  
COMPANIES OF THE YEAR 2018



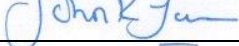
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## Quality Assurance

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## 1 Introduction

Mr & Mrs Savage propose to convert an existing outbuilding located in the hamlet of Nupdown, near Oldbury on Severn, into a dwelling.

According to the Environment Agency (EA) Flood Map for Planning the site is located in Defended Flood Zone 3, at risk of residual tidal flooding.

As the proposal is for change of use from an existing residential outbuilding to full residential use, it complies with Paragraph 164 of the National Planning Policy Framework (NPPF) and is not required to pass the Sequential Test or Exception Test.

Edenvale Young Associated Ltd has been instructed to prepare this Flood Risk Assessment to show that the proposal is safe for its lifetime and does not increase flood risk off site.

## 2 Site Location and Setting

The site is located at The Tallet, in the hamlet of Nupdown, off Nupdown Lane, to the northeast of Oldbury on Severn at BS35 1RS. The land is generally low-lying and drained by ditches (at approximately 6m AOD).

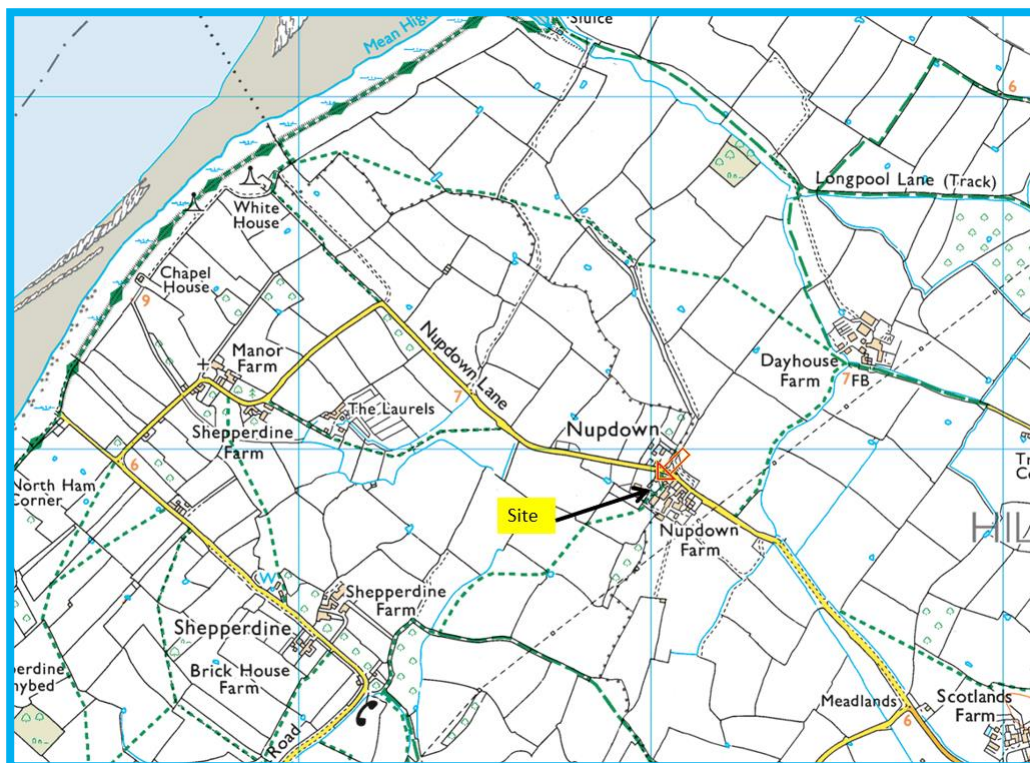


Fig 1 Site location, to the east of the Severn Estuary (Streetmap).

The site is located within a group of rural buildings and dwellings approx. 1.5km east of the Severn Estuary, and is in the following setting:

- North of the site is The Tallet (a dwelling), Nupdown Lane (with roadside ditches), another dwelling and then open farmland leading to the Severn Estuary.
- East of the site are large farm buildings with concrete yards and dwellings and then open farmland leading to Hill, 1km from the site, where there is a localised hill, beyond which is a ridge rising to 54m AOD.
- South and west of the site is a further dwelling and outbuilding, leading through open farmland to Oldbury Power Station and Oldbury Naite.

The site is therefore located within the hamlet of Nupdown, within a group of houses and farms, within an area of low-lying land, and high ground to the east, 1.5km from the Severn defences.



Fig 2 Site location within the hamlet of Nupdown.



### 3 Existing Development

The existing outbuilding is located between two dwellings with a farmyard to the east and garden to the west. The irregular shape site is within an area 60m north-south and 50m east west.

The conventional ridge roofed outbuilding is approximately 14m long and 7.7m wide and to the southwest of the site. The ground floor is at 6.7m AOD and the ridge at 12.77m AOD, providing internal space 6m high.

The external surfaces are generally hard paved and impermeable, typical of a farmyard area with dwellings, but with some vegetation immediately west of the outbuilding and a small area to the east.

The outbuilding includes a mezzanine supported on concrete walls to create a controlled storage working space with welfare facilities on the ground floor within the building, and storage above.



Fig 3 Site boundary with outbuilding to the southwest of the site. Note the drain to the north of Nupdown Lane (Bristol Know Your Place).

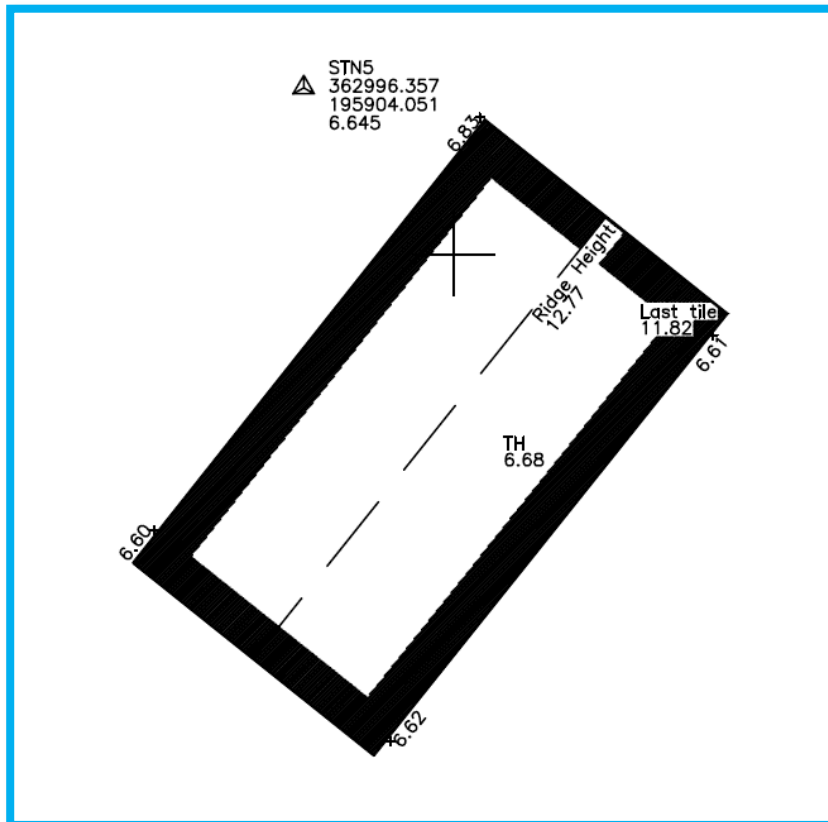


Fig 4 Extract from topographical survey, with key threshold, ridge and external levels annotated (South West Surveys).



Fig 5 Image of outbuilding showing robust character, high eaves and ridge, with compacted hardcore apron and impermeable paths.



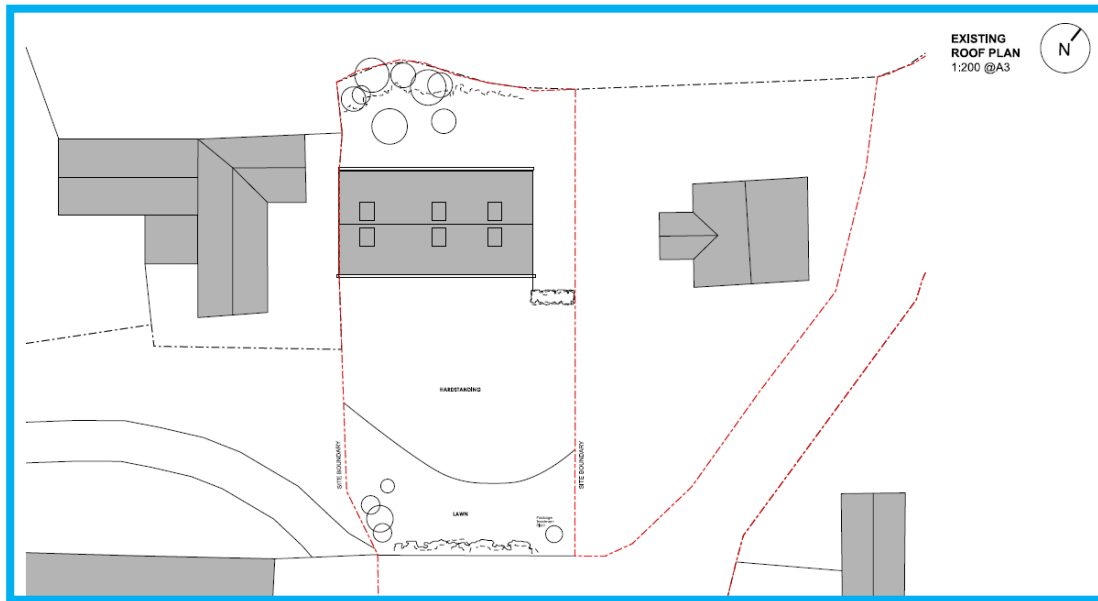


Fig 6 Existing roof plan of outbuilding with rooflights within red line. The area below the outbuilding (southeast) is shown largely as hardstanding with a small lawn area. Note north point in top right corner of image (Mitchel Eley Gould).

#### 4 Proposed Development

The proposal is to change the use of the building from a residential outbuilding into a dwelling with principal accommodation over two storeys and a safe refuge 'snug' raised above the first floor. The external areas will be landscaped to reduce the paved area and to form an attractive and biodiverse setting for the dwelling.

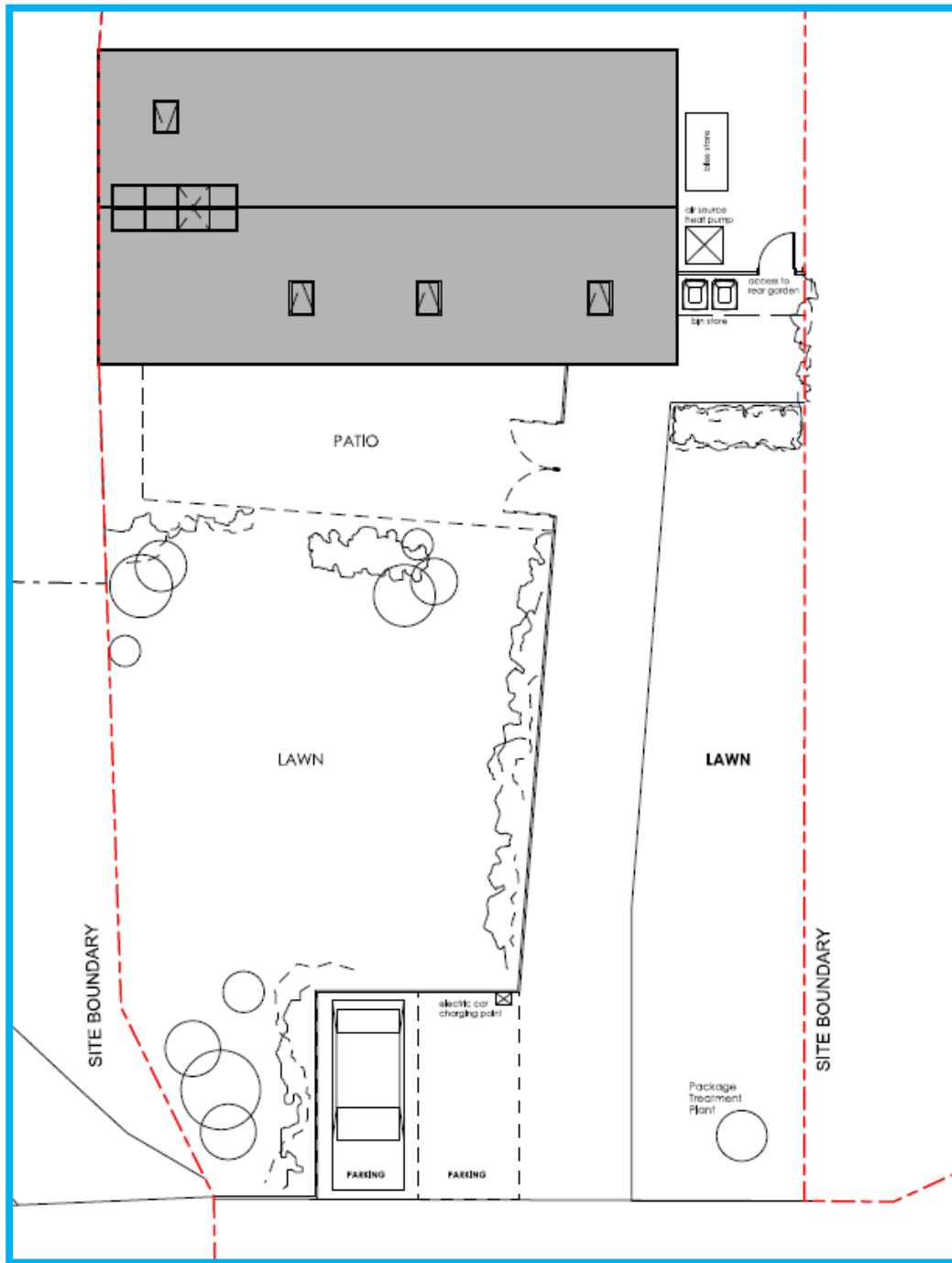


Fig 7 Site plan showing improved setting with permeable patio, parking and gardens (Mitchel Eley Gould).

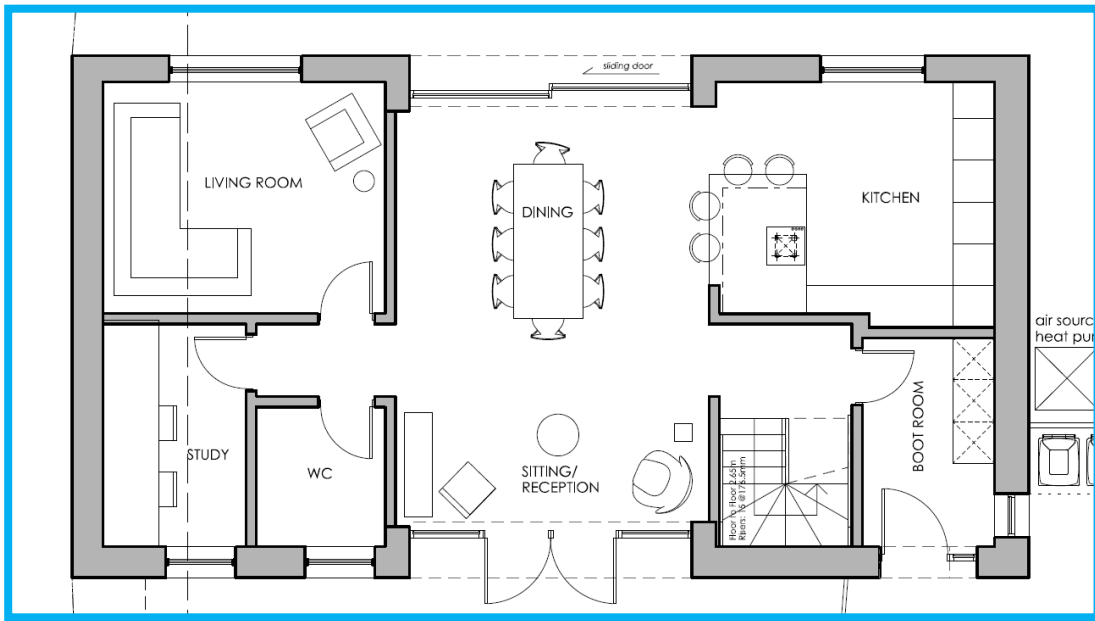


Fig 8 Proposed ground floor with general living accommodation (Mitchel Eley Gould).

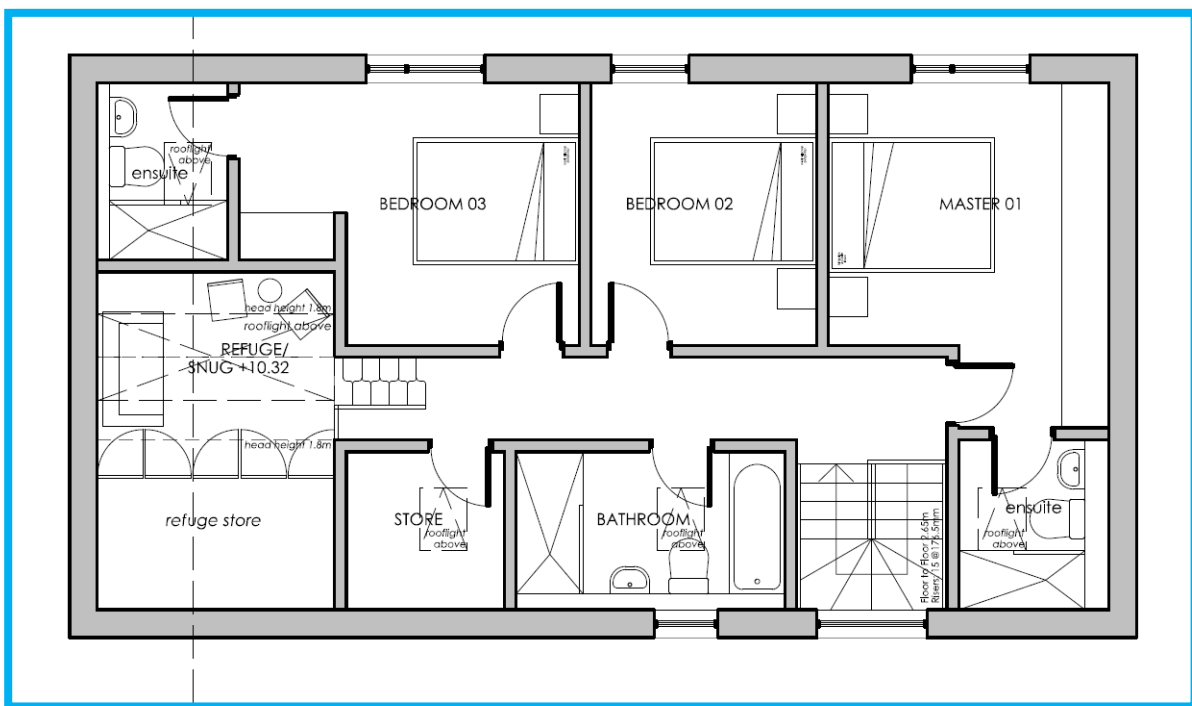


Fig 9 Proposed first floor with bedrooms and snug, serving as safe refuge (Mitchel Eley Gould).

The ground floor is proposed at a level of 7.07m AOD, some 400mm above existing floor level. The first floor will give access to a snug which can serve as a safe refuge at 10.8m AOD, giving 1.9m headroom, and will include a store cupboard.

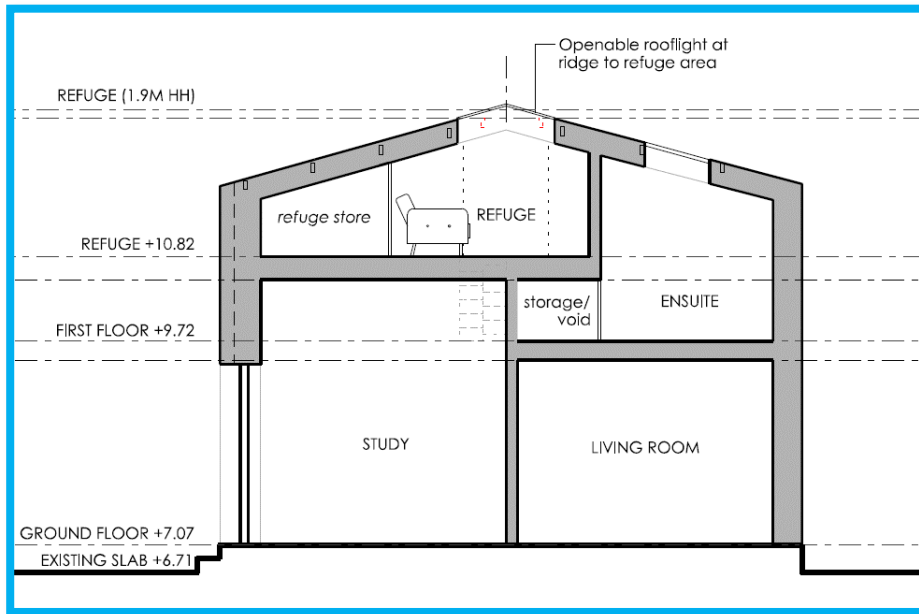


Fig 10 Cross section with proposed levels.

## 5 Flood Risk

### 5.1 Tidal Flood Risk

According to the Environment Agency (EA) Flood Map for Planning the site is in Defended Flood Zone 3.

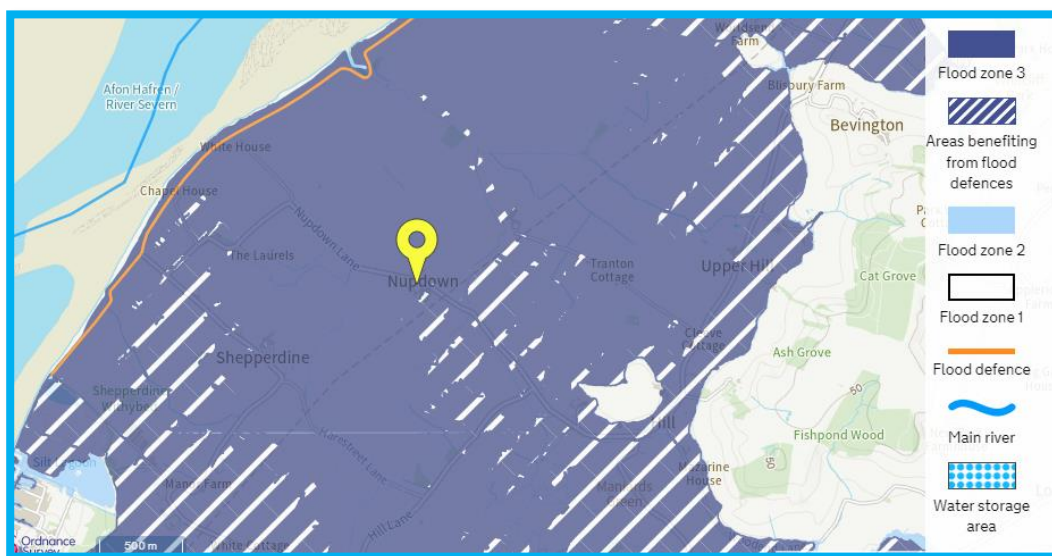


Fig 11 EA Flood Map for Planning, showing site in Defended Flood Zone 3, with the defences and Oldbury Power Station to the west and south, and hills to the east.



Fig 12 Site shown to be within the cross-hatched defended area.

The hatched area of the flood map confirms that the site is protected by defences against a current day 1 in 200 year flood event as a minimum. Land to the west of the site is lower and shown to be outside the defended area.

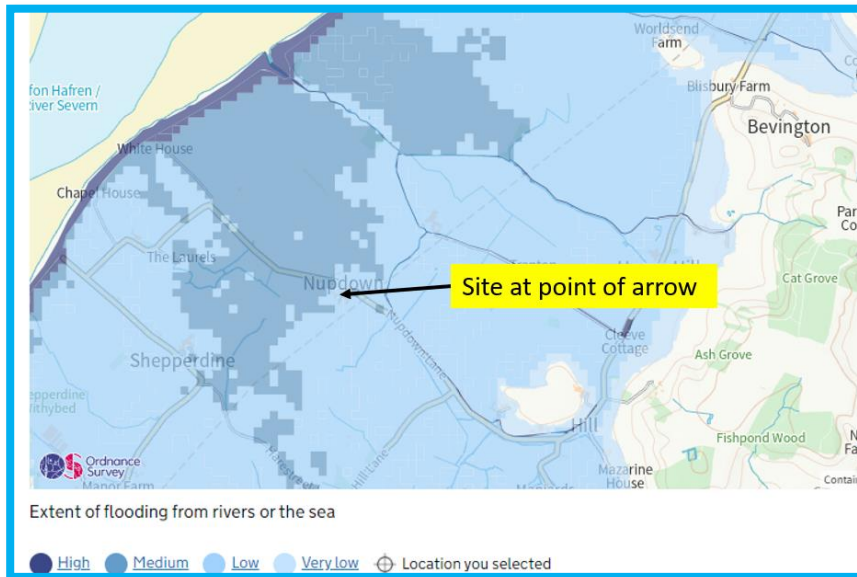


Fig 13 EA Long Term Flood Risk Map – Extent of flooding from rivers or seas showing the site to be at low risk of flooding commensurate with its defended location.

The EA has provided the following predicted defended and undefended flood levels for the site as extracted from the 2020 Portishead-Minehead/Woodspring Bay/Severn House Farm model, dated 23<sup>rd</sup> June 2021 (Reference 220198-WX).

<u>Defended</u>		
AEP	Maximum depth (in metres)	Maximum level (mAOD)
0.1% (1 in 1000)	0.63	7.07
0.5% (1 in 200)	0.08	6.53
0.5% with CC 2068 added	1.04	7.49
0.5% with CC 2118 added	3.59	10.03
20% (1 in 5)	0.00	0.00

Fig 14 Site specific Defended flood levels (Product 4) supplied by the EA (ref:220198-WX).

<u>Undefended</u>		
AEP	Maximum depth (in metres)	Maximum level (mAOD)
0.1% (1 in 1000)	3.43	9.87
0.5% (1 in 200)	2.97	9.41
0.5% with CC 2068 added	3.50	9.94
0.5% with CC 2118 added	4.32	10.76
20% (1 in 5)	2.38	8.82

Fig 15 Site specific Undefended flood levels (Product 4) supplied by the EA (ref:220198-WX).



The site is shown to be at very low risk of surface water flooding, and there are no other risks of flooding in the area.

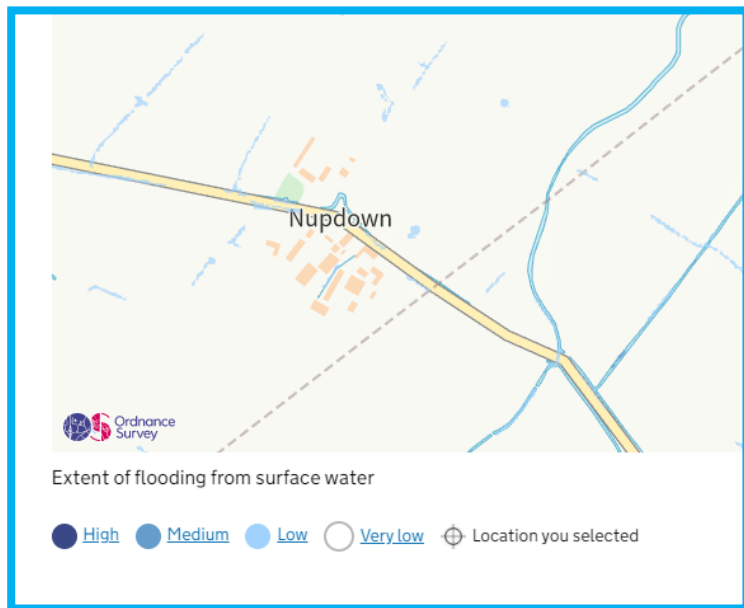


Fig 16 Risk of flooding from surface water showing very low risk in Nupdown.

The above EA Product 4 data has been used to inform the design floor and refuge levels within the development.

## 6 Summary of Levels

Location	Levels
<b>Site Levels – Existing</b>	
Site level	6.61 – 6.83m AOD
Floor level	6.7m AOD
<b>Site Levels – Proposed</b>	
Ground floor level	7.07m AOD
First floor level	9.72m AOD
Second floor (safe refuge)	10.82m AOD
<b>EA Product 4 Data (ref: 220198-WX)</b>	
1 in 200 year current day defended	6.53m AOD
1 in 1000 year current day defended	7.07m AOD
1 in 200 year 2118	10.03m AOD
1 in 200 year 2118 breach	10.76m AOD

## 7 Flood Mitigation

The outbuilding is a robust and resilient structure and the walls, floors etc forming the dwelling will use resilient techniques such as concrete floors and block walls, with finishes that can be cleaned and dried after flooding to bring them back into use soon after a flood event.

Sensitive services will be within the refuge cupboard where feasible, to reduce the risk of damage in the event of a flood.

## 8 Safe Escape

Given that the site is within Defended Flood Zone 3, the homeowner and residents will register with the Environment Agency Flood Warning System. A Flood Plan will be prepared such that the outbuilding is evacuated if a flood warning is issued.

The Met Office has confirmed that they warn of significant tidal events some 4 -5 days before they reach the UK coasts. The owners will therefore monitor the weather forecasts, newsfeeds and social media to be alert to weather conditions and the potential risk of flooding. This gives the residents ample time for preparation and departure.

The site is in defended flood plain, and Fig 13 shows that there is a large cell to the west which will fill prior to the building being affected, providing warning time and visual indicators, delaying the time when flooding affects the site.

The hazard posed by the large area of flooding will be low – it will behave as rising water – there is no evidence that streaming would occur.

The safe escape route is shown at Fig 17, leading along Nupdown Lane which is rising to the high ground of Thornbury. The Hill and the high ridge provide intermediate locations for refuge if required.

It is never right to be complacent with regard to flood risk, and in the event that flooding has begun to affect the area surrounding the site, the occupants have a safe refuge at 10.8m AOD where they could remain for the short duration of the potential peak of the flood tide. This refuge has an opening rooflight which can be used to monitor the conditions outside.



Fig 17 Proposed flood evacuation route, moving away from the source of flooding within defended areas, including routes to local hills.

## 9 Conclusions and Recommendations

It is proposed to change the use of an existing outbuilding at The Tallet, Nupdown, into a 2-storey dwelling with safe refuge.

The Environment Agency (EA) Flood Risk Map for Planning shows the site to be in Defended Flood Zone 3 and this is confirmed by EA predicted flood levels.

Change of use of the outbuilding is proposed, with no increase in its footprint. The NPPF states that change of use applications are not required to pass the Sequential Test or Exception Test.

The floor of the proposed dwelling will be raised some 400mm above existing levels, and also elevated above the general ground level by approximately 400mm, which will reduce the risk of flooding.

Prior to occupation, a Flood Emergency Plan will be prepared. The homeowner should sign up to the EA flood warning service and monitor news broadcasts for predicted weather. They will have several days warning of a significant storm event which could prove a hazard, with the potential to breach or overtop the defences as was recently experienced with Storm Eunice. The strategy would be to leave the area in the event of a severe flood warning, prior to the onset of flooding. If flooding has commenced, a safe route is shown.

Site-specific flood data has been obtained from the EA and a safe refuge and cupboard is proposed for use in the event of a complete breach of the defences, if flooding has commenced prior to escape.

The mechanism arising from a breach has been described, showing that the site is not subject to rapid inundation.

The proposal is therefore shown to be safe for its lifetime.

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