



Flood Consequence Assessment for Planning

Prepared for:
Philip Walters

July 2024

Our reference:
94437-Evans-HighStreet

Location:
Bumblers
High Street
St Florence
Tenby, SA70 8LN



Document Issue Record

Project: Flood Consequence Assessment for Planning
Client: Philip Walters
Location: Bumlbers, High Street, St Florence, Tenby, SA70 8LN
Application: Change of use of existing barn to full residential cottage
Our reference: 94437-Evans-HighStreet
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Lead Consultant: Mrs Emma Jeffery
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Key Facts

Flood Risk Posed:

- The site is located predominantly within Flood Zone A, with a small part of the site shown to be within Flood Zone C2.
- The site is approximately 28m to the south of the River Ritec.
- The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2.
- No modelled flood levels are available from NRW.
- Site outside NRW historic records of flooding.
- The Flood Risk from Surface Water and Small Watercourses map shows the site to be entirely outside of areas of High, Medium and Low Risk.
- The Flood Map for Planning shows the site to be entirely outside of the Surface Water and Small Watercourses – Flood Zone 2 and Surface Water Flood Zone 3.
- Risk of groundwater and sewer surcharge flooding would appear to be low.

Flood Risk Management:

- Proposal is for the change of use of existing building.
- "Highly vulnerable" development throughout (residential).
- Safe escape can be provided entirely within Flood Zone A, outside of Rivers and Sea Flood Zones 2 and 3 and Surface Water and Small Watercourses Flood Zones 2 and 3.
- Safe refuge is provided on the first floor of the property.
- Internal access will be maintained from the ground floor to the first floor to provide an area of safe refuge.
- Flood proofing of the building will be incorporated as appropriate.
- A flood warning and evacuation plan will be implemented post development.

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

Introduction

Unda Consulting Limited have been appointed by Philip Walters (hereinafter referred to as “the applicant”) to undertake a Site Specific Flood Consequence Assessment (FCA) for Planning at Bumlbers, High Street, St Florence, Tenby, SA70 8LN (hereinafter referred to as “the site”). The FCA has been undertaken in accordance with Technical Advice Note 15 (TAN 15) and the associated technical guidance.

The site appears to be located partially within Flood Zone C2, but predominantly within Flood Zone A as defined by Natural Resource Wales (NRW) on their Development Advice Map and partially within River and Sea Flood Zone 2 on the Flood Map for Planning. Under Technical Advice Note 15 (TAN 15), a FCA is required if a proposed development:

- includes building or engineering works in Flood Zone C1 or C2;
- includes building or engineering works on land classified 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 in Flood Zone B, but larger than 1 hectare.

Given that the proposed application site is located partially within Flood Zone C2 and includes the change of use of land or buildings, the applicant is required to submit a FCA under TAN 15. The assessment should demonstrate to the Local Planning Authority (LPA) and NRW 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.

The objectives of a FCA to support a planning application are to establish:

- 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.

Existing Situation

Site Usage:

The site comprises of an existing barn outbuilding, adjoining a dwelling known as 'Bumblers'.

The site has current and valid planning permission for conversion of the existing barn to holiday let accommodation. (Pembrokeshire County Council Planning Reference 22/0272/PA).



Figure 1: Aerial view of the site and immediate surrounding area (Source: Google Earth)



Figure 2: View of the existing site (Source: Google Streetview)

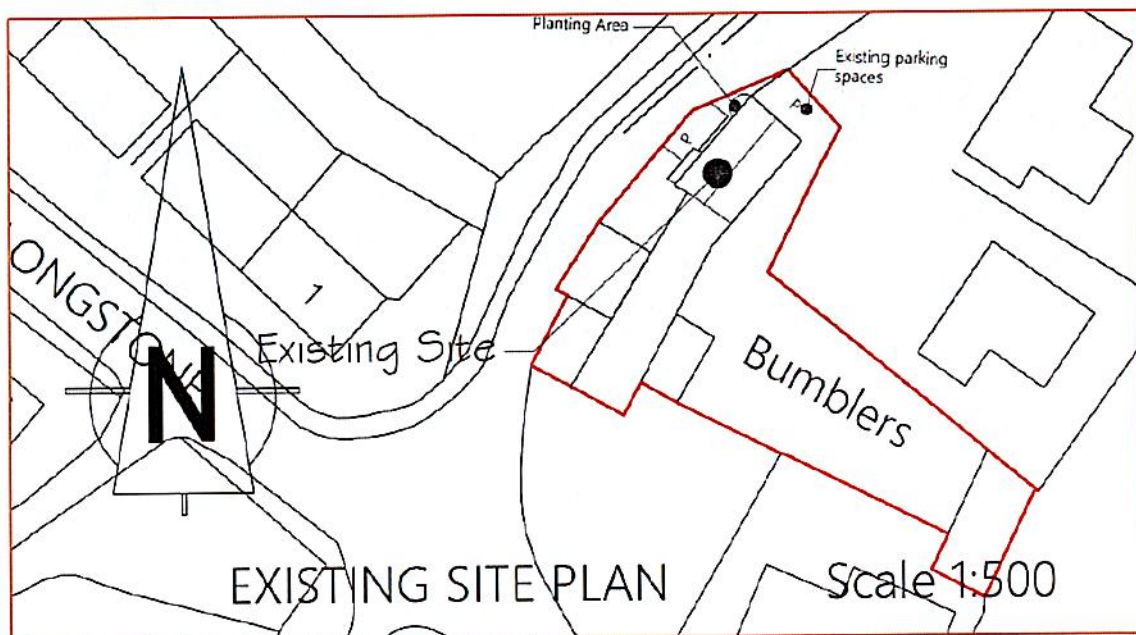


Figure 3: Location Plan (Source: D Hywel Rees Ltd)

Topography:

Environment Agency LIDAR has been used to assess the topography across the site and wider area. Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground surface. Up to 100,000 measurements per second are made of the ground,

allowing highly detailed terrain models to be generated at high spatial resolutions. The EA's LIDAR data archive contains digital elevation data derived from surveys carried out by the EA's specialist remote sensing team. Accurate elevation data is available for over 70% of England. The LIDAR technique records an elevation accurate to $\pm 0.3\text{m}$ every 2m. This dataset is derived from a combination of our full dataset which has been merged and re-sampled to give the best possible coverage. The dataset can be supplied as a Digital Surface Model (DSM) produced from the signal returned to the LIDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface) or as a Digital Terrain Model (DTM) produced by removing objects from the Digital Surface Model. 2.0m horizontal resolution DTM LIDAR data has been used for the purposes of this study.

2m LIDAR remotely sensed digital elevation data suggests that the ground topography on site ranges between approximately 12.40mAOD and 13.90mAOD. Topographic levels in the area of the outbuilding range between approximately 12.40mAOD and 12.65mAOD.



Figure 4: 2m LIDAR DTM showing topographic levels across the site. Transect runs from southeast to northwest. OS Mapping overlay. (Source: NRW, OS)

Proposed Development

The proposal is for the Change of use of existing barn to full residential cottage.

Proposed plans are provided in the report Appendix.

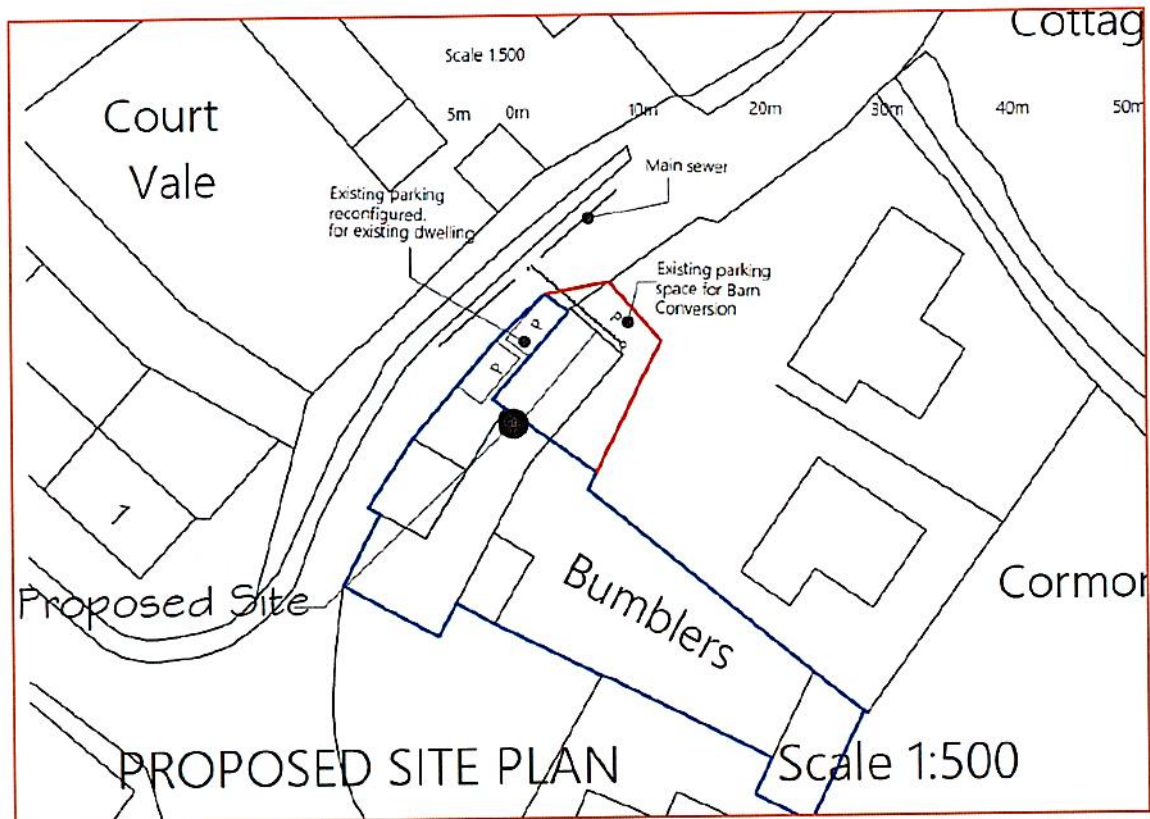


Figure 5: Proposed block plan (Source: D Hywel Rees Ltd)

Assessment of Flood Risk

Flood Zones:

Within planning, Flood Zones refer to the probability of river and sea flooding. They are shown on the Natural Resource Wales Development Advice Map, available on Natural Resource Wales' web site.

Description of Zone	Zone Name	Use within the precautionary framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further.
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal)	C	Used to indicate that flooding issues should be considered as an integral part of decision making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences
Areas of the floodplain without significant flood defence infrastructure.	C2	Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered.

Table 1: Flood Zones

The Flood Zones shown on the Natural Resource Wales Development Advice Map do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

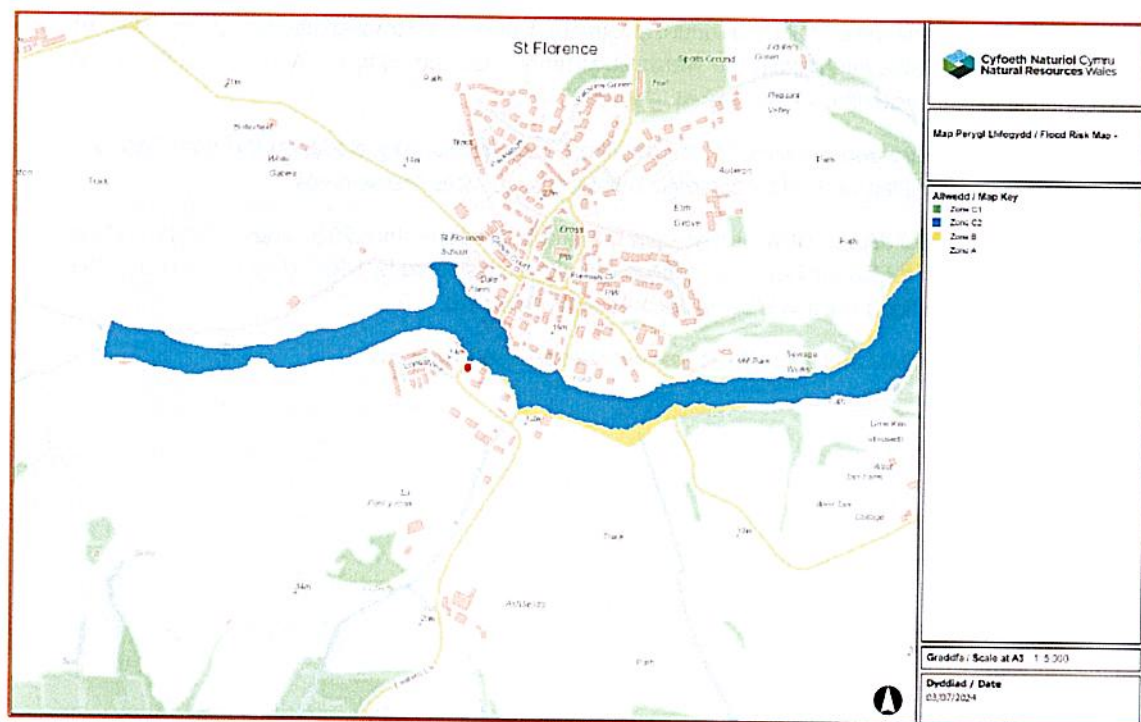


Figure 6: Natural Resource Wales Development Advice Map (Source: NRW)

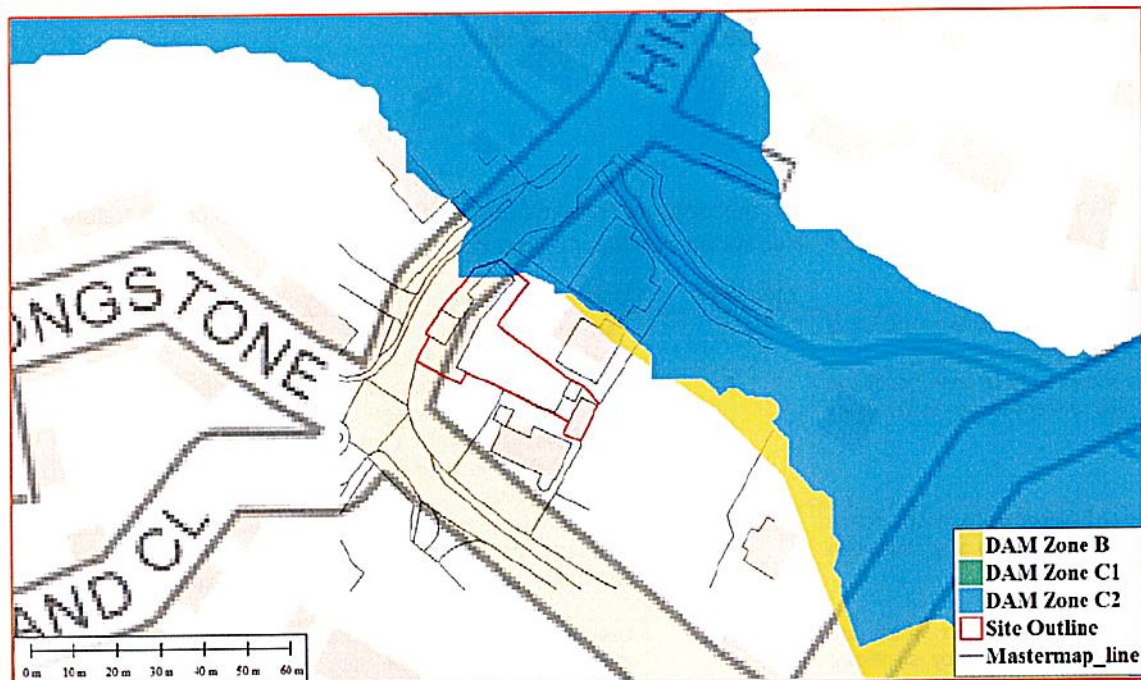


Figure 7: Natural Resource Wales Flood Zones at the site (Source: NRW Flood Zones, OS Mapping)

The Flood Zones shown on the Natural Resource Wales Development Advice Map do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

The site is located predominantly within Flood Zone A - Considered to be at little or no risk of fluvial or tidal/coastal flooding, with a small part of the site shown to be within Flood Zone C2 – Areas of the Floodplain without significant flood defence infrastructure.

The site is approximately 28m to the south of the River Ritec.

The Flood Map for Planning has no official status until it is formally implemented through planning policy, however, it represents the best available information the Welsh Government have on flood risk and Natural Resources Wales will continue to use this to inform their planning advice.

Local Planning Authorities are also expected to use the Flood Map for Planning alongside the draft TAN15 to support Local Development Plan work and in Strategic Flood Consequences Assessments.

The DAM is considered out of date by NRW, and no updates have been made since 2020, and no future updates are expected. The new Flood Map for Planning (FMfP) is therefore considered by NRW to be the best available spatial information held on flood risk and is being updated every 6 months.

NRW will consider both the DAM and the FMfP as part of the consultation process.

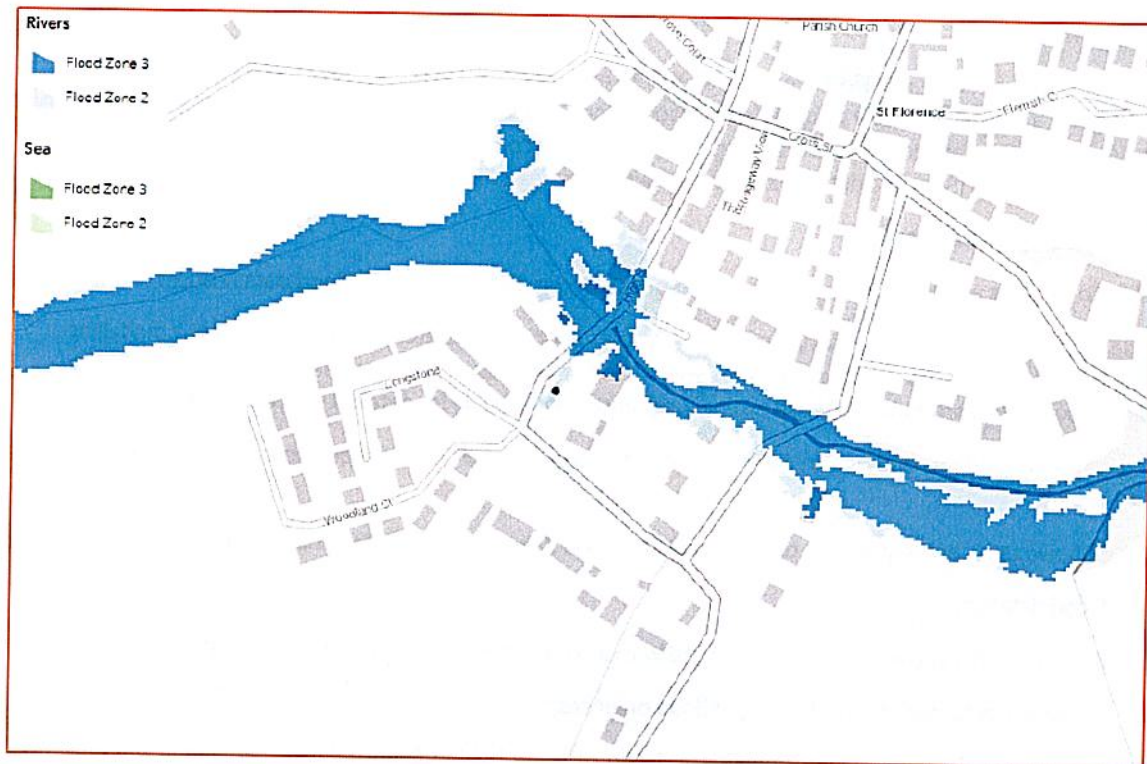


Figure 8: Flood Map for Planning Rivers and Sea Flood Zone Map (Source: NRW)

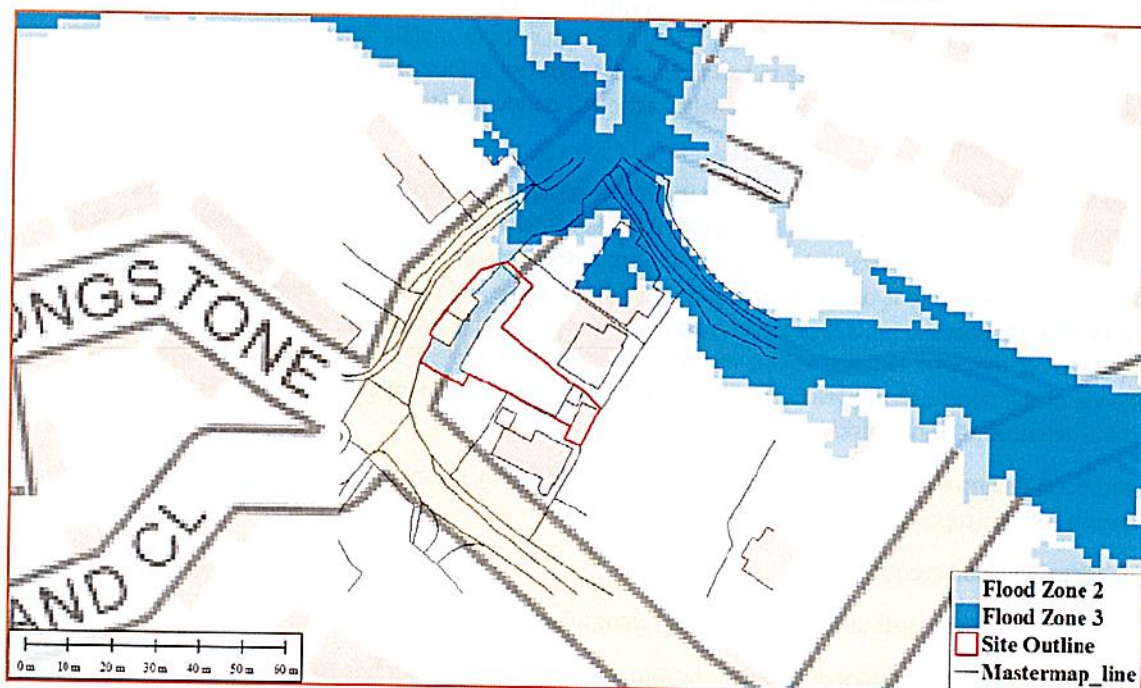


Figure 9: Flood Map for Planning River Flood Zones at the site (Source: NRW Flood Zones, OS Mapping)

The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2. As such, the risk of fluvial flooding is shown to be partially within areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from rivers in a given year, including the effects of climate change, but entirely outside of areas with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.

Fluvial (River Ritec):

The River Ritec is sourced near St Florence, in the south of Pembrokeshire, and flows in an easterly direction before discharging via a culvert at Tenby South Beach. Flood Zones 2 and 3 extend into the west of Tenby, within Pembrokeshire Coast National Park, overlapping areas of existing commercial development. There are no NRW flood defences present (Source: South West Wales – Stage 1 Strategic Flood Consequence Assessment).

Modelled flood levels and extents:

Modelled flood levels and flood extents have been requested from NRW as part of a flood data request.

It is understood that the flood map in this area is based on a nationally generated JFLOW model. JFLOW modelling uses LIDAR data to generate flood outlines with assumptions made about the channel capacity. This modelling was carried out for the production of flood extents only, and is not suitable for detailed site-specific assessments.

The site is located predominantly within Flood Zone A, with a small part of the site shown to be within Flood Zone C2.

The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2.

Flood defences:

No formal flood defences have been identified by NRW that offer protection to the site in this location.

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.

No raised flood defences act to defend the site from direct inundation, meaning there is negligible residual risk from breach and overtopping of flood defences.

Historical flood events:

NRW have provided no records of historical flooding having affected the site.

It is understood that Tenby has flooded previously from the River Ritec in December 2012.

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.

The mapping below shows the Flood Risk from Surface Water & Small Watercourses centred on the site. Please note that NRW 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 Flood Risk from Surface Water and Small Watercourses map shows the site to be entirely outside of areas of High, Medium and Low Risk.

The Flood Map for Planning shows the site to be entirely outside of the Surface Water and Small Watercourses – Flood Zone 2 - Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change and Surface Water Flood Zone 3 - Areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.

It is understood that local drainage concerns for the village of St Florence are being addressed following heavy rainfall and resultant road flooding. This work includes a commitment to map, clean, jet and repair any drainage system issues from Pembrokeshire County Council highways team.

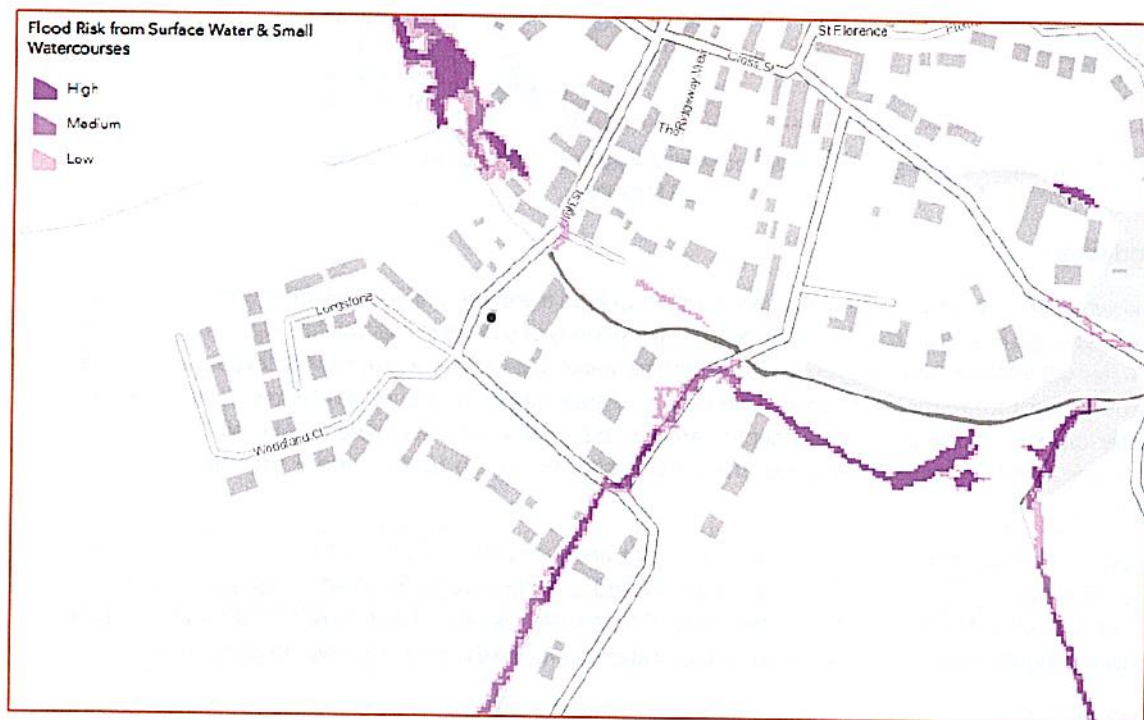


Figure 10: Extract from Natural Resources Wales Flood Risk from Surface Water & Small Watercourses showing surface water flood risk (Source: NRW)

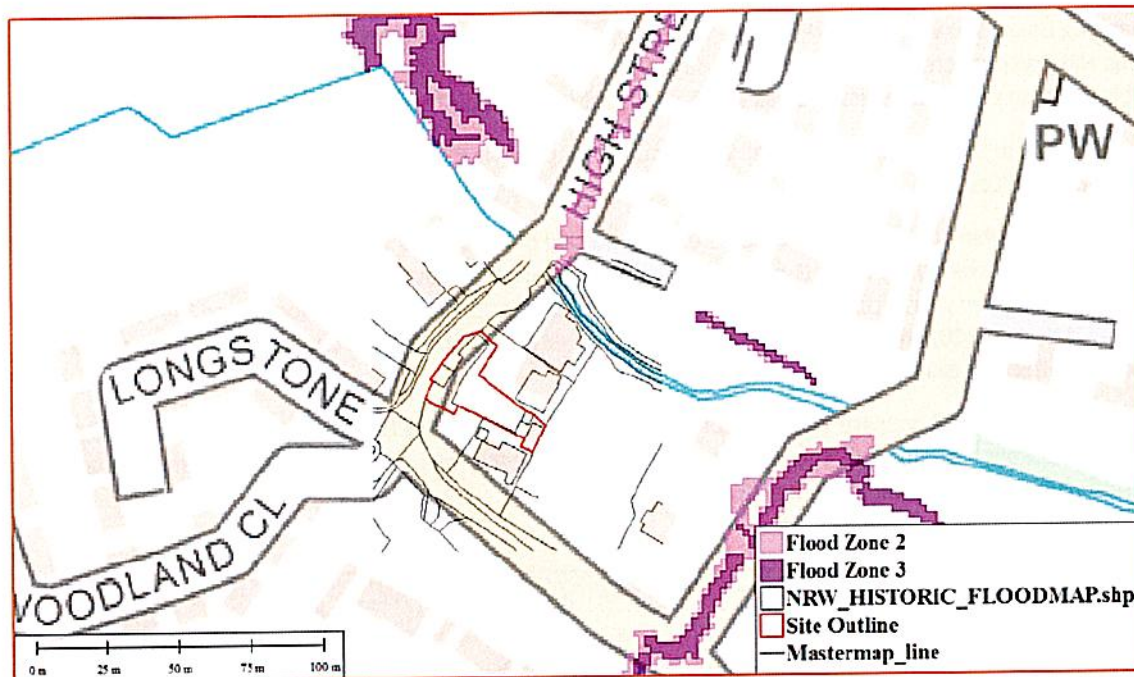


Figure 11: Flood Map for Planning Surface Water and Small Watercourses Flood Zones at the site (Source: NRW Flood Zones, OS Mapping)

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.

No further information has been provided to suggest that the site has flooded from groundwater flooding previously.

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 has flooded from sewer surcharge flooding previously.

Other Sources:

The Natural Resources Wales Risk of Flooding from Reservoirs Map suggests that the site lies outside of the "Maximum extent of flooding" from reservoir failure. The Natural Resources Wales also advise on their website that reservoir flooding is extremely unlikely. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. These inspections are monitored and enforced by the Natural Resources Wales themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial flooding to occur.

There do not appear to be any further artificial (man-made) sources of flood risk (such as raised canals) in the vicinity of the site.

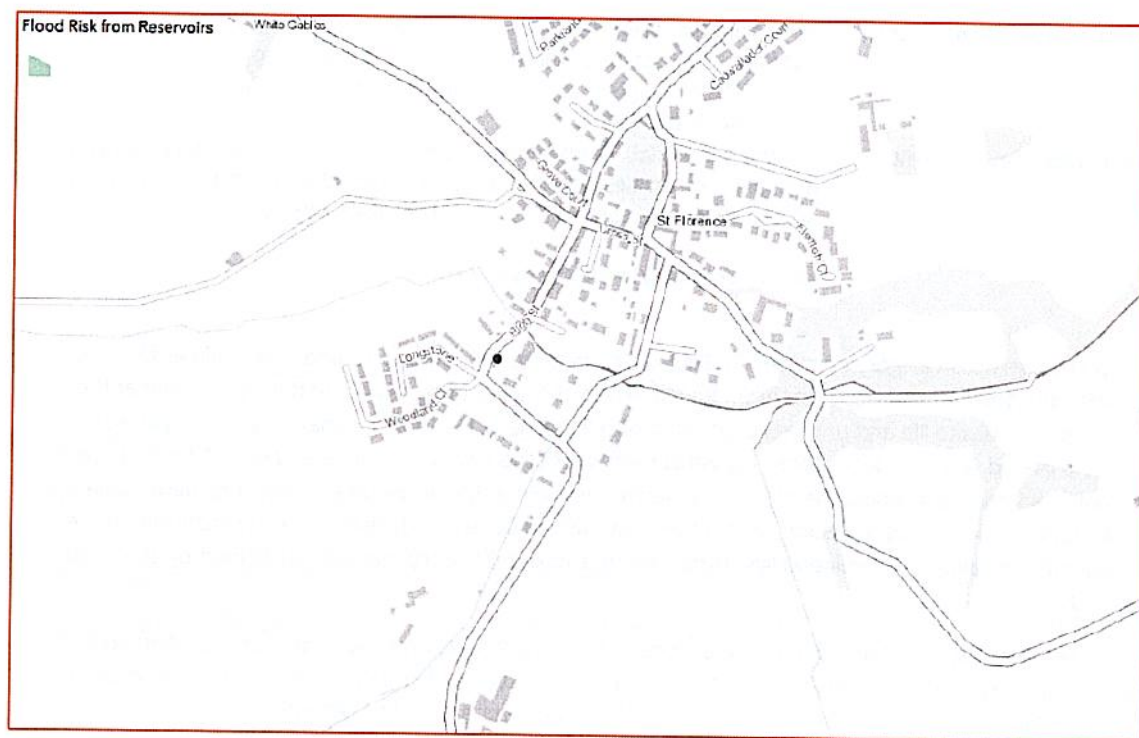


Figure 12: Extract from Natural Resources Wales Flood Risk from Reservoirs Map (Source: NRW)

Flood Risk Management Measures

Vulnerability to flooding:

TAN15 classifies property usage by vulnerability to flooding.

Post development, the site will become a "*highly vulnerable development*" throughout, as the application is for the Change of use of existing barn to full residential cottage.

Particular flooding consequences may not be acceptable for particular types of development. For example, allowing residential development in areas which are subject to high risks of flooding can result in a traumatic impact on people's lives. The precautionary framework identifies the vulnerability of different land uses to flooding, and for this purpose, development has been subdivided into three categories:

Development category	Types
Emergency services	hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood
Highly vulnerable development	all residential premises (including hotels and caravan parks), public buildings (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites
Less vulnerable development	general industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites

Table 2: Vulnerability to flooding categories

The Emergency Services category describes facilities which need to be operational and accessible at all times. Highly vulnerable development describes development where the ability of occupants to decide on whether they wish to accept the risks to life and property associated with flooding, or be able to manage the consequences of such a risk, is limited. It also includes those industrial uses where there would be an attendant risk to the public and the water environment should the site be inundated. Less vulnerable development describes development where the ability of occupants to decide on whether they wish to accept such risks is greater than that in the highly vulnerable category. The vulnerability attributed to a mixed use proposal will be defined by the most vulnerable use.

There are uses which are considered to be exceptions to the general rule, and have not been classified above, because they are required in a fluvial, tidal or coastal location by virtue of their nature. These include boatyards, marinas, essential works required at mooring basins, and development associated with canals.

Physical Design Measures:

In accordance with section A1.14 of TAN15 there is a frequency threshold of flooding below which flooding of development should not be allowed. The following table, taken from TAN15, provides indicative guidance as to what the frequency threshold could be for different types of development in terms of annual probability of occurrence:

Type of development	Threshold frequency	
	Fluvial	Tidal
Residential	1%	0.5%
Commercial / retail	1%	0.5%
Industrial	1%	0.5%
Emergency services	0.1%	0.1%
General Infrastructure	1%	0.5%

Table 3: TAN15 Flood frequency thresholds

The site is located predominantly within Flood Zone A, with a small part of the site shown to be within Flood Zone C2.

The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2.

NRW have previously commented on the application for change of use of the existing barn to full residential cottage on 29 January 2024:

"We have no objection to the proposed development as submitted and provide the following advice.

We note that the proposal involves the change of use of an existing barn to a 2-bed cottage. The barn is attached to the existing house and is considered ancillary to the main house. Given the nature of the proposed development (and in the absence of a flood consequences assessment) we consider the proposals could be acceptable, subject to the developer being made aware of the potential flood risks and advised to install flood-proofing measures as part of the development.

In areas at risk of flooding, we recommend that consideration be given to the incorporation of flood resistance/resilience measures into the design and construction of the development. These could include flood barriers on ground floor doors, windows and access points, implementation of suitable flood proofing measures to the internal fabric of the ground floor and locating electrical sockets/components at a higher level above possible flood levels.

Applicant may wish to undertake a Flood Consequences Assessment (FCA) for their own benefit, to explore suitable options for any proposed flood proofing measures."

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the property, in consultation with the Local Authority building control department. These measures can include the following:

- Waterproof screed used on floors;
- Closed-cell foam used in wall cavities;
- Waterproof ground floor internal render;
- External walls rendered resistant to flooding;
- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Ground floor electrical main ring run from ground floor level; and on separately switched circuit from first floor;
- Electrical incomer and meter situated at high level (at least 600mm above floor level) at ground floor level;
- Boilers, control and water storage / immersion installed at high level (at least 600mm above floor level) at ground floor level;
- Gas meter installed at high level (at least 600mm above floor level) at ground floor 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;

- Built-in furniture units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;
- Stairs of solid hardwood construction with wood faces treated to resist water penetration.

Given that the proposed development is for the change of use of the existing building, it is not possible to raise existing floor levels.

It is recommended that flood proof doors and windows are installed for all external doors and windows at ground floor level. Demountable flood defence barriers to 600mm to defend ground level doorways and low windows could be used if flood doors are not practical or other planning constraints prevent it.

Internal access will be maintained from the ground floor to the first floor, to provide an area of safe refuge.

Safe Escape:

TAN 15 requires a route of safe escape for all residents and uses to be provided from new residential properties in Flood Zone C.

Type of development	Maximum depth of flooding (mm)	Maximum rate of rise of floodwaters (m/hr)	Maximum speed of inundation of flood risk area (hrs)	Maximum velocity of floodwaters (metres/sec)
	Property Access			Property Access
Residential (habitable rooms)	600 600	0.1	4	0.15 0.3
Commercial & Retail	600 600	0.3	2	0.15 0.3
Industrial	1000 1000	0.3	2	0.3 0.45
Emergency Services	450 600	0.1	4	0.15 0.3
General Infrastructure	600 600	0.3	2	0.3 0.3

Table 4: TAN15

Table A1.15 shows the threshold frequency beyond which proposed development would be expected to flood under extreme conditions (1:1000 year event). For new residential development a maximum flood depth of 600mm would be allowance at the property and for the site access.

The site is situated entirely outside of Rivers and Sea Flood Zone 3, and the majority of the site is shown to be entirely outside of DAM Flood Zone C2. The whole site is entirely outside of Surface Water Flood Zones 2 and 3.

As such, based on the definitions within TAN15 safe escape from the site can be provided within the tolerances allowed.

The whole escape route is shown to be situated within Flood Zone A.

The proposed safe escape route can be seen in the figure below. It is entirely within Flood Zone A (and outside of Flood Zones 2 and 3) and away from the source of flooding.

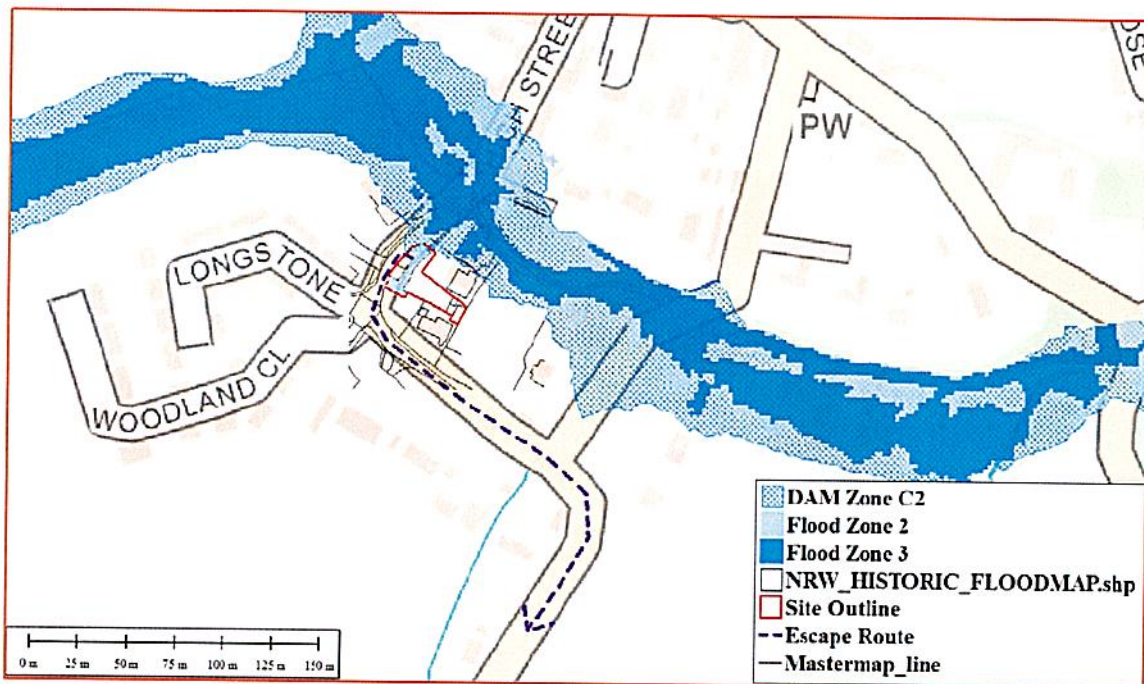


Figure 13: River and Sea Flood Zones, and DAM Flood Zones and Proposed Safe Escape Route (Source: NRW Flood Zones, OS Mapping)

Safe escape will be provided by a formal flood warning and evacuation plan, which will be prepared in liaison with the Emergency Planners and tied in with the existing Emergency Plans for the area.

In the case of an extreme flood event without warning, residential occupants and users should seek refuge on the first floor of the building. Internal access will be maintained from the ground floor to the first floor, to provide an area of safe refuge.

Owners, occupants and tenants should follow the warning and evacuation procedure detailed in the following section.

Flood Alert/Warnings:

The NRW 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 applicant has agreed to implement a flood warning and evacuation plan post development, and subscribe to the NRW's flood warning service. It should be noted that while the site itself does not fall within a NRW flood warning or flood alert area, the applicant should sign up to the nearby Flood Alert Area: North and west Pembrokeshire (Rivers on the north and west coast of Pembrokeshire) flood alert area.

The site is close to a NRW Flood Alert Area for South Pembrokeshire. NRW issue flood warnings to specific areas when flooding is expected. It is recommended that the applicant registers online with the free NRW Floodline Warnings Direct service at <https://www.fws.environment-agency.gov.uk/app/olr/home?style=NRW&lang=en> to receive flood warnings by phone, text or email.

Flood Warning:

The flood warning service has three types of warnings that will help you 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.

Table 5: Flood Warnings

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:

- Find out if you are at risk of flooding.
- Find out if you can receive flood warnings.
- 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 such as pets, cars, furniture, and electrical equipment.
- Know how to turn off gas, electricity and water supplies
- 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.
- Consider buying flood protection products such as flood boards and airbrick covers to help reduce flood water getting into your property.

During a flood:

- Tune into your local radio station on a battery or wind-up radio.
- Fill jugs and saucepans with water.
- Grab your flood kit - if you have prepared one.

- Collect blankets, torch, first aid kit, medication and food.
- Move important documents, personal items, valuables, and lightweight belongings upstairs or to high shelves.
- Raise large items of furniture, or put them in large bags if you have them.
- Move people, outdoor belongings, cars and pets 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, if you have them, for example flood boards, airbrick covers, sandbags.
- Put plugs in sinks and baths. Weigh them down with a pillowcase or plastic bag filled with soil.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths.
- Move your family and pets upstairs or to a high place with a means of escape.
- 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, central heating and water checked by qualified engineers before switching them back on.

Off-Site Impacts

Floodplain storage:

TAN15 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 located predominantly within Flood Zone A, with a small part of the site shown to be within Flood Zone C2.

The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2.

The proposal is for the change of use of the existing building.

As such, there will be no unacceptable loss of flood storage post development.

Surface Water Drainage Strategy:

From 7 January 2019, all new developments of more than 1 dwelling house or where the construction area is 100m² or more, will require Sustainable Drainage Systems (SuDS) for surface water.

The proposal is for the change of use of the existing building. As such, it is understood that the proposed development does not provide an increase in impermeable surface of more than 100m². As such, there will be no change to the existing drainage arrangements for the site.

Conclusion

Unda Consulting Limited have been appointed by Philip Walters (hereinafter referred to as "the applicant") to undertake a Site Specific Flood Consequence Assessment (FCA) for Planning at Bumlbers, High Street, St Florence, Tenby, SA70 8LN (hereinafter referred to as "the site"). The FCA has been undertaken in accordance with Technical Advice Note 15 (TAN 15) and the associated technical guidance.

The proposal is for the Change of use of existing barn to full residential cottage.

The site comprises of an existing barn outbuilding, adjoining a dwelling known as 'Bumlbers'.

The site has current and valid planning permission for conversion of the existing barn to holiday let accommodation. (Pembrokeshire County Council Planning Reference 22/0272/PA).

Post development, the site will become a "*highly vulnerable development*" throughout, as the application is for the Change of use of existing barn to full residential cottage.

The site is located predominantly within Flood Zone A - Considered to be at little or no risk of fluvial or tidal/coastal flooding, with a small part of the site shown to be within Flood Zone C2 - Areas of the Floodplain without significant flood defence infrastructure.

The site is approximately 28m to the south of the River Ritec.

The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2. As such, the risk of fluvial flooding is shown to be partially within areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from rivers in a given year, including the effects of climate change, but entirely outside of areas with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.

Modelled flood levels and flood extents have been requested from the NRW as part of a flood data request. It is understood that the flood map in this area is based on a nationally generated JFLOW model. JFLOW modelling uses LIDAR data to generate flood outlines with assumptions made about the channel capacity. This modelling was carried out for the production of flood extents only, and is not suitable for detailed site-specific assessments.

NRW have provided no records of historical flooding having affected the site. It is understood that Tenby has flooded previously from the River Ritec in December 2012.

The Flood Risk from Surface Water and Small Watercourses map shows the site to be entirely outside of areas of High, Medium and Low Risk.

The Flood Map for Planning shows the site to be entirely outside of the Surface Water and Small Watercourses - Flood Zone 2 - Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change and Surface Water Flood Zone 3 - Areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.

It is understood that local drainage concerns for the village of St Florence are being addressed following heavy rainfall and resultant road flooding. This work includes a commitment to map, clean, jet and repair any drainage system issues from Pembrokeshire County Council highways team.

The risk of flooding posed to the site by groundwater and sewer surcharge would appear to be low.

The site is shown to be outside of the maximum extent of flooding from reservoirs.

Post development, there will be no unacceptable loss of floodplain storage.

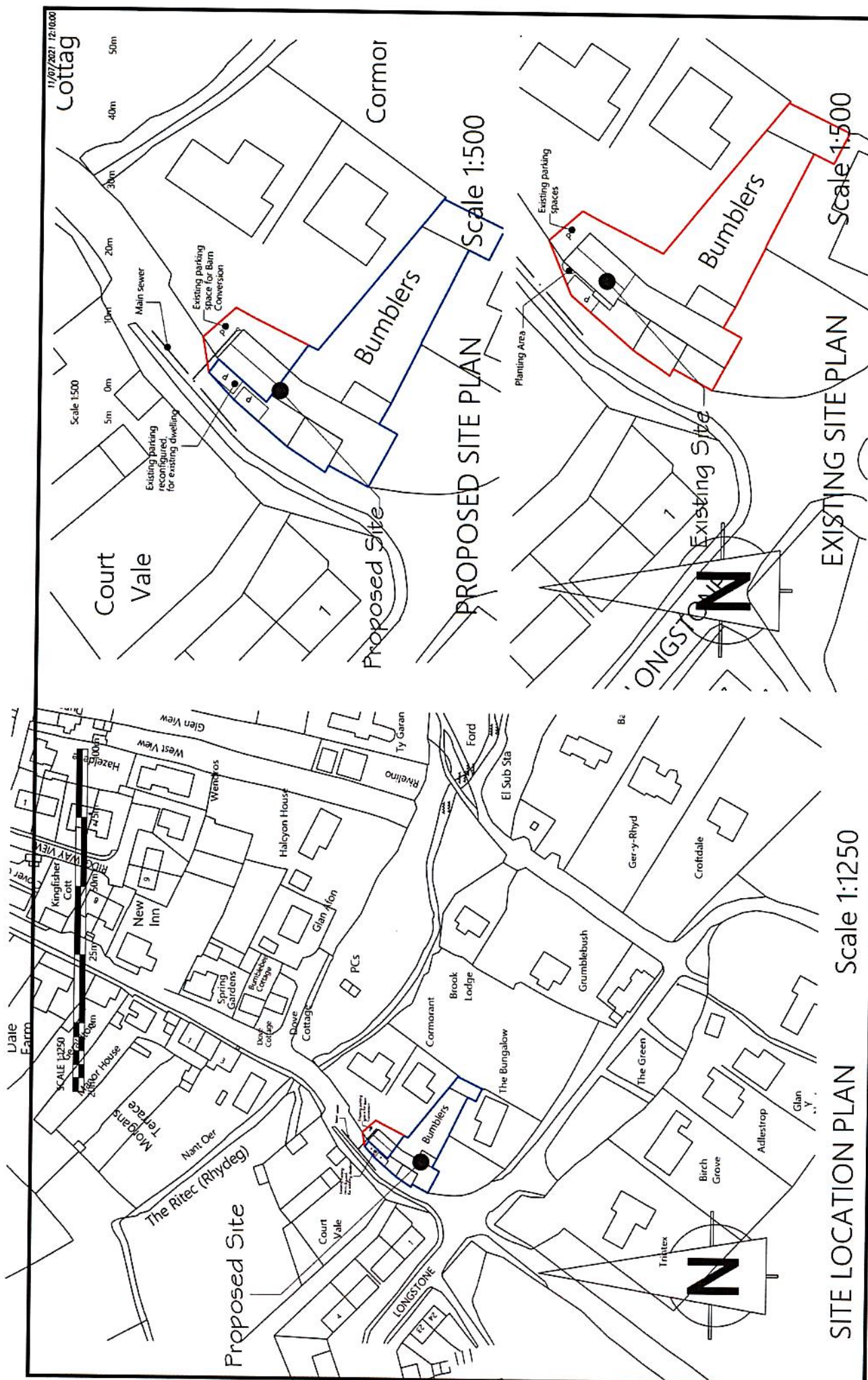
In summary:

- The site is located predominantly within Flood Zone A, with a small part of the site shown to be within Flood Zone C2.
- The site is approximately 28m to the south of the River Ritec.
- The site is shown to be entirely outside of Rivers and Sea Flood Zone 3, but partially within Flood Zone 2.
- No modelled flood levels are available from NRW.
- Site outside NRW historic records of flooding.
- The Flood Risk from Surface Water and Small Watercourses map shows the site to be entirely outside of areas of High, Medium and Low Risk.
- The Flood Map for Planning shows the site to be entirely outside of the Surface Water and Small Watercourses – Flood Zone 2 and Surface Water Flood Zone 3.
- Risk of groundwater and sewer surcharge flooding would appear to be low.
- Proposal is for the change of use of existing building.
- "Highly vulnerable" development throughout (residential).
- Safe escape can be provided entirely within Flood Zone A, outside of Rivers and Sea Flood Zones 2 and 3 and Surface Water and Small Watercourses Flood Zones 2 and 3.
- Safe refuge is provided on the first floor of the property.
- Internal access will be maintained from the ground floor to the first floor to provide an area of safe refuge.
- Flood proofing of the building will be incorporated as appropriate.
- A flood warning and evacuation plan will be implemented post development.

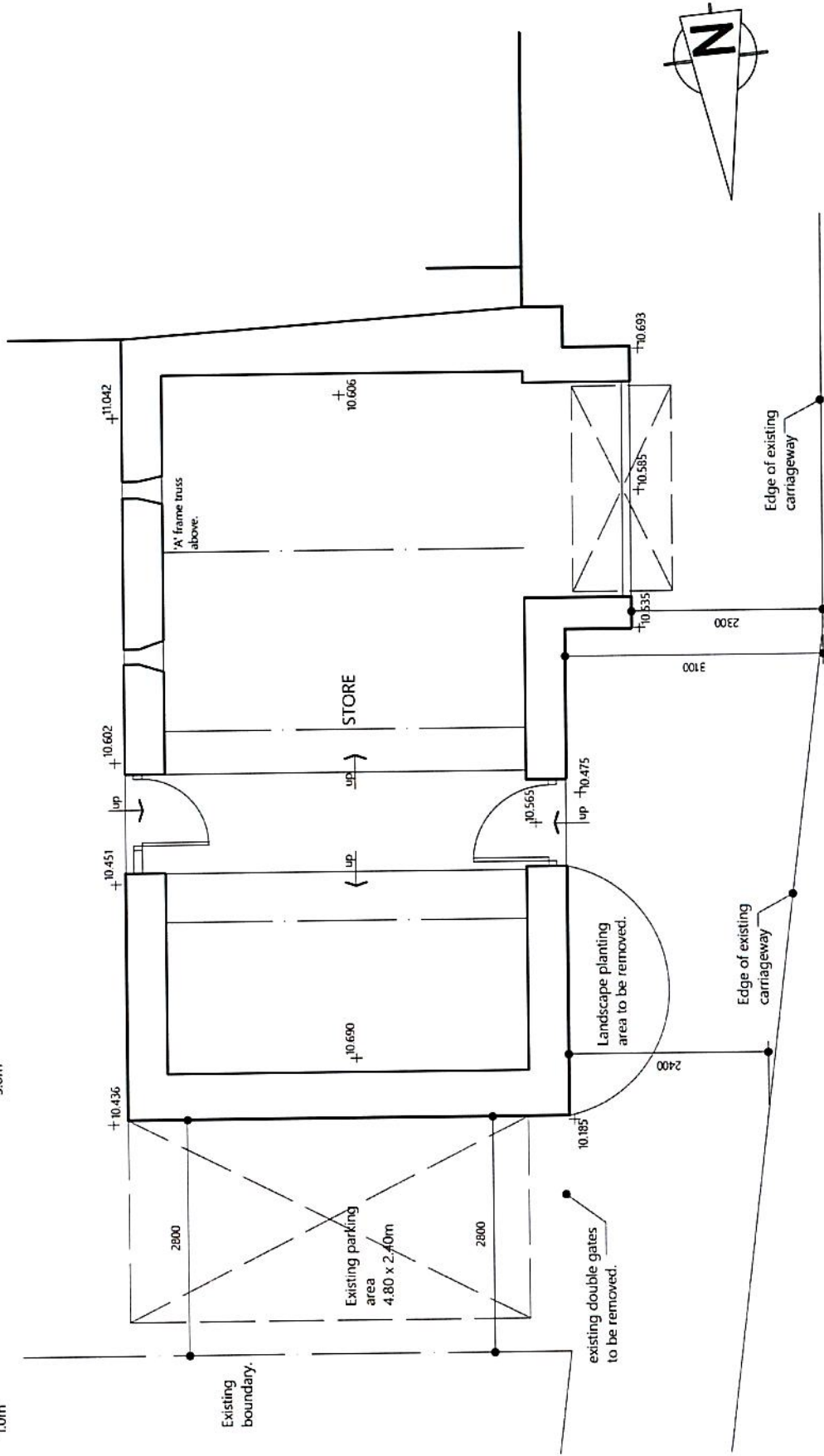
Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Appendix

- Plans and Drawings.

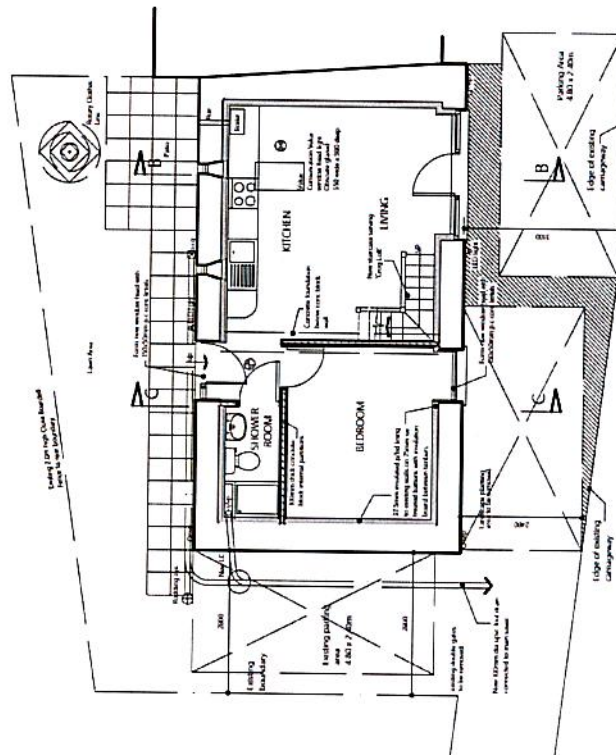


D Hywel Rees Ltd MRICS FCIOB CHARTERED SURVEYOR Building Design and Planning Consultant Unit 6, Tindle House, Warren Street, Tenby, Pembrokeshire SA707JY Email: info@hywelrees.co.uk Mobile:		RICS CHARTERED SURVEYOR	Drawing Title: EXISTING & PROPOSED LOCATION & SITE PLANS Client: Mr. Philip Walters	Project: PROPOSED CONVERSION OF EXISTING BARN TO FULL RESIDENTIAL ACCOMMODATION BUMBLERS COTTAGE, HIGH STREET, St FLORENCE, TENBY, PEMBROKESHIRE, SA70 8LN
Scale: 1:1250 & 1:500	Date: DECEMBER 2023	Drawing Number: DHR/22/05/11		

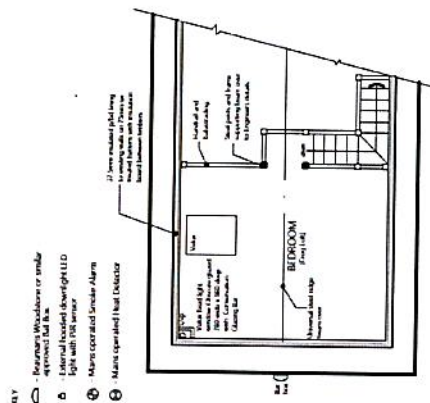


EXISTING GROUND FLOOR PLAN

D Hywel Rees Ltd MRICS FCIOB CHARTERED SURVEYOR Building Design and Planning Consultant Unit 6, Tindie House, Warren Street, Tenby, Pembrokeshire SA707JY		Scale: 1:50 Date: DECEMBER 2023	Drawing Title: EXISTING GROUND FLOOR PLAN	Project: PROPOSED CONVERSION OF EXISTING BARN TO FULL RESIDENTIAL ACCOMMODATION BUMBLERS COTTAGE, HIGH STREET, ST FLORENCE, TENBY, PEMBROKESHIRE, SA70 8LN
	Email: info@hywelrees.co.uk Mobile:	Drawing Number: DHR/22/05/12	Client: Mr. Philip Walters	



PROPOSED GROUND FLOOR PLAN



PROPOSED FIRST FLOOR PLAN



 D Hywel Rees Ltd MRICS FCIQB CHARTERED SURVEYOR <i>Building Design and Planning Consultant</i> Unit 6, Tindle House, Warren Street, Tenby, Pembrokeshire SA707JY	Scale: 1:100		Drawing Title: PROPOSED FLOOR PLANS - GARDEN AREA	Project: PROPOSED CONVERSION OF EXISTING BARN TO FULL RESIDENTIAL ACCOMMODATION BUMBLERS COTTAGE, HIGH STREET, St FLORENCE, TENBY, PEMBROKESHIRE, SA70 8UN
	Date: DECEMBER 2023		Client: Mr. Philip Walters	
	Drawing Number: DHR/22/05/19			
	Email: info@hywelrees.co.uk Mobile:			



**Cyfoeth
Naturiol
Cymru
Natural
Resources
Wales**

Ein cyf/Our ref: CAS-247978-V5P9
Eich cyf/Your ref: 23/0805/PA

Pembrokeshire County Council
County Hall
Haverfordwest
Pembrokeshire
SA61 1TP

Dyddiad/Date: 19 February 2024

Annwyl Syr/Madam/Dear Sir/Madam,

BWRIAD/PROPOSAL: Proposed change of use of existing barn to full residential 2 bedroom cottage.

LLEOLIAD/LOCATION: Barn a Bumlars, High Street, St Florence, Tenby, Pembrokeshire, SA70 8LN.

Thank you for consulting Cyfoeth Naturiol Cymru (CNC)/Natural Resources Wales (NRW) about the above, which we received on 29 January 2024.

We have no objection to the proposed development as submitted and provide the following advice.

Flood Risk

Our Flood Risk Map confirms the application site lies just within Zone C2 of the Development Advice Maps (DAM) as contained in Technical Advice Note (TAN) 15: Development and Flood Risk (2004). The Flood Map for Planning identifies the application site to be at risk of flooding and falls into Flood Zone 2 Rivers.

We note that the proposal involves the change of use of an existing barn to a 2-bed cottage. The barn is attached to the existing house and is considered ancillary to the main house. Given the nature of the proposed development (and in the absence of a flood consequences assessment) we consider the proposals could be acceptable, subject to the developer being made aware of the potential flood risks and advised to install flood-proofing measures as part of the development.

In areas at risk of flooding, we recommend that consideration be given to the incorporation of flood resistance/resilience measures into the design and construction of the development. These could include flood barriers on ground floor doors, windows and access points, implementation of suitable flood proofing measures to the internal fabric of the ground floor and locating electrical sockets/components at a higher level above possible flood levels. The

Applicant may wish to undertake a Flood Consequences Assessment (FCA) for their own benefit, to explore suitable options for any proposed flood proofing measures.

We refer the applicant to our [website](#) for further advice and guidance is available. Additional guidance including the leaflet "Prepare your Property for flooding" can be found [here](#).

The developer can also access advice and information on protection from flooding from the ODPM publication 'Preparing for Floods: Interim Guidance for Improving the Flood Resistance of Domestic and Small Business Properties', can be found [here](#).

If you have concerns regarding matters that we cannot advise you on, such as emergency plans, procedures and measures to address structural damage that may result from flooding, you should consider consulting other professional advisors on the acceptability of the developer's proposals.

Protected Species

We note that the bat report submitted in support of the above application ('Bat Surveys – Barn at Bumlars, High Street, St Florence, Pembrokeshire' by Kite Ecology, dated June 2022) has identified that bats were not using the application site. We therefore have no comment to make on the application as submitted in terms of bats.

Other Matters

Our comments above only relate specifically to matters included on our checklist, *Development Planning Advisory Service: Consultation Topics* (September 2018), which is published on our [website](#). We have not considered potential effects on other matters and do not rule out the potential for the proposed development to affect other interests.

We advise the applicant that, in addition to planning permission, it is their responsibility to ensure they secure all other permits/consents/licences relevant to their development. Please refer to our [website](#) for further details.

Advice for the Developer

Construction and demolition activities can give rise to pollution and so it is important that appropriate provisions are in place to manage dust, silt, surface water and the storage of waste during the construction phase. You should take any precaution to prevent contamination of surface water drains and local watercourses. All works at the site must be carried out in accordance with GPP5, 'Works and maintenance in or near water' and PPG6, 'Working at construction and demolition sites' which is available on the following website: <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>

If you have any queries on the above, please do not hesitate to contact us.

Yn gywir / Yours faithfully

Scott O'Connor

Cynghorydd - Cynllunio Datblygu/Advisor - Development Planning
Cyfoeth Naturiol Cymru/Natural Resources Wales

E-bost/E-mail: swplanning@cyfoethnaturiolcymru.gov.uk
Ffôn/Phone: 03000 65 4183

Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi./Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.

