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Flood Risk Assessment (FRA):

Stoneyard

Porth Mellon, St. Mary's, Isles of Scilly

December 2022



Contents

1. Introduction	1
2. Development site	1
3. Development proposals.....	1
4. Sequential Test.....	2
5. Exception Test	3
6. Site specific flood hazards	3
Tidal flooding.....	3
Fluvial flooding	4
Surface water flooding	4
Groundwater flooding.....	4
7. Flood Risk Management	4
Flood control measures.....	4
Flood mitigation measures.....	5
8. Conclusions	6
Appendix A – Flood map for planning.....	7
Appendix B – Flood modelling output.....	10

1. Introduction

Teignmouth Maritime Services Ltd. (TMS) have been appointed by the Council of the Isles of Scilly (CIOS) as principal contractor to undertake Flood and Coastal Defence works on the Islands of St. Mary's, St. Agnes, Bryher and St. Martin's, under the Climate Adaption Scilly programme.

The works will be carried out over a period of approximately 52 weeks, spanning 2 summer seasons. During these summer seasons particularly, the visitor accommodation facilities on the islands are almost fully booked circa 2 years in advance.

Whilst TMS will aim to utilize local workers where possible, we will need to provide accommodation for a number of specialist Marine Operatives, Site Engineers and Project Managers during the works. TMS propose to provide temporary portable accommodation units to house the transient workers for the duration of the contract works.

Following discussion with the CIOS, the best site for this temporary accommodation to be located was determined to be a site known as "Stoneyard", which is currently leased to the CIOS from the Duchy of Cornwall.

2. Development site

The proposed development site is located at Stoneyard, Moor Well Lane, Porth Mellon, TR21 0JY [Grid ref. 90884, 10610] and is currently a brown field site used as an adhoc storage for rock.

Looking over the lifetime of the proposed development, the site lies within Flood Zone 3 and therefore a Flood Risk Assessment (FRA) is required.

3. Development proposals

The development proposal for the above site is to install prefabricated 'portable' accommodation units (PAU), commonly known by the tradename "Bunkabin", plus a communal kitchen PAU and a portable steel storage unit (to be used as a drying room and secure store) on a temporary basis, for a period of up to 2 years whilst the coastal defence works are undertaken.

The proposed development is therefore classified as "Water-compatible development" as it falls in under the description of 'Essential ancillary sleeping or residential accommodation for staff required by uses in this category', with the works being 'Flood control infrastructure'.

The lifetime of the proposed development is assumed to be **2 years** (temporary accommodation specifically related to contract works).

4. Sequential Test

In accordance with Table 2 of the Flood Risk and Coastal Change Guidance, with the site in Zone 3a and categorised as Water-compatible, a Sequential Test is to be used to demonstrate that the site has been selected to avoid flood risk.

Can development be allocated in areas of low flood risk both now and in the future? (Level 1 Strategic Flood Risk Assessment)



It is understood that the current Local Plan was developed prior to the defining of Flood Zones and is therefore not supported by a Strategic Flood Risk Assessment.

Therefore, we have to assume that as the current zoning puts the site into Zone 3, this first stage is not automatically passed.

Other sites have been considered for the temporary accommodation to be located on the island of St. Mary's however those other sites which are available are green field locations generally, without suitable infrastructure (power, water, telecoms) to support the temporary development.

The Stoneyard site has been chosen as it can be supported with power, and water services from the adjacent Industrial Estate and Council waste handling facility. In addition as the works are of a marine nature and therefore working hours will follow the tidal pattern, with the nearest neighbouring properties being industrial in nature, any noise disturbance from our staff coming and going will have very little impact on residential properties.

Can development be allocated in areas of medium flood risk both now and in the future? (Level 2 Strategic Flood Risk Assessment) – lowest risk sites first



Again without the supporting Strategic FRA and the site being considered in Zone 3, which is considered a zone of high risk of flooding, that this test is also negative.

Can development be allocated within the lowest risk sites available in areas of high flood risk both now and in the future?



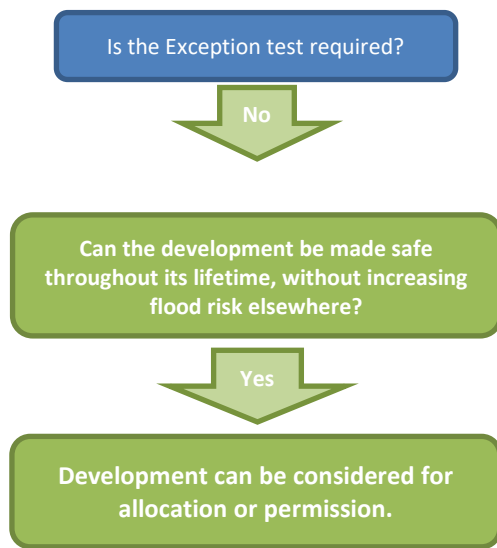
There has been extensive flood modelling undertaken on behalf of the Environment Agency (EA), by JBA in 2019.

This modelling demonstrates that the selected site is not within an area at risk of flooding for the 1 in 50, 1 in 100 or 1 in 200 year events, please see Appendix 2 for pictorial output from the modelling.

Progress to Diagram 3



Therefore we consider the answer to this question to be YES.



Based on the categorisation of Water-compatible development and that the site has a very short (2 year) expected lifetime, Table 2 says that an Exception test is NOT required

The temporary nature of this proposed development and the use of modular PAU for the development mean that the development proposals can be made safe throughout the short (2 year) expected lifetime without increasing flood risk elsewhere.

5. Exception Test

The development is considered Water-compatible and therefore only requires the Sequential test to be carried out. Please see Flood Control Measures & Flood Mitigation Measures sections below for details on how the development will be safe and not increase flood risk elsewhere.

6. Site specific flood hazards

The proposed development site lies within Flood Zone 3 with the main risk of flooding coming from a tidal (sea) source. The site is not considered at potential risk from surface water or groundwater flooding.

Tidal flooding

Flood model data for the site suggests that over the lifetime of the development, flood depths of around 0.00m can be expected within the development site boundary. The modelling shows flood water immediately adjacent to the proposed development site which will be of less than 0.5m depth and of low velocity. Flooding of this nature is likely to cause less than danger for some according to table 13.1 of FD2320.

According to the 2019 modelling the form of flooding is from overtopping of coastal margins by high seas. Flooding to land to the South and East of the proposed development originates at Old Town Bay and Porthloo. Flooding to the north of the Porth Mellon Industrial Estate originates from Porth Mellon.

No flood velocity is expected through any part of the site because any flooding is the distal extent of water ponding following coastal overtopping. Flood waters are expected to spread slowly about 650m from Old Town Bay in the South, about 900m from Porthloo to the North-east and more quickly about 65m from

Porth Mellon in the North following a series of high Spring tides in storm conditions. The spread of water from the south is likely to take several hours to arrive because the seawater would need to travel through narrow ditch drainage systems and spread out through the vegetated marshes of the Lower Moors as the tide rises.

Flooding would be tidally locked until the high tide has fallen. Flood waters would drain back to the sea through the leat outlet at Old Town Bay and through the entrance to Porth Mellon beach and the stormwater drainage system from the road at Porth Mellon onto the beach. The tidal range is approximately 5m on the Isles of Scilly, so the period over each high tide when tidal locking may occur would be relatively short, probably 2 to 3 hours.

Fluvial flooding

There is no significant fluvial flooding source on the island and therefore flooding from this source is considered to be highly unlikely.

Surface water flooding

Surface water at the site is currently managed by percolation into the non-metalled surface, and excess run-off into drainage ditches to the west and north of the proposed development site. The proposals for surface water management are to remain unchanged, with surface water being discharged from the roofs of the PAU to ground and allowed to infiltrate to ground or run-off to the drainage ditches. The hard-surface roofs are a very small percentage of the otherwise permeable ground area of the site and therefore it is considered that there will be negligible effect on the surface water system.

Groundwater flooding

Ground water is considered unlikely to contribute to the modelled flood extents.

7. Flood Risk Management

This section describes how this development will be safe from flooding over its short 2 year lifetime, and details how any off-site impacts will be prevented. It will advise how any residual risks to the site will be managed for the duration of its lifetime.

Flood control measures

Whilst the flood modelling indicates that flooding will not occur on the proposed development site within the 2 year lifetime of the proposed development, the following measures will be implemented to safeguard the development and people using the facilities, along with ensuring the development does not pose any additional flood risk elsewhere.

- The portable accommodation units 'Bunkabins' will be raised off the ground approximately 600mm on 4 steel 'jack-legs'. The units will be accessed by steps.
- There will be no change to the site ground conditions with the permeable stone surface retained.
- Surface water from the roofs of the PAUs will be directed to discharge on the ground to percolate into the existing porous surface.
- Two sewage holding tanks will be located underneath the PAUs thus not increasing the hard surface area. These will have a footprint of approximately 7.5m² and a volume of just over 4m³ each (900gallon).

Should the site flood during the lifetime of the development, the displacement of flood water from these two sewage holding tanks will be so insignificant that it would be unmeasurable. The area of the tanks is around 1.3% of the development site area, therefore for every 1mm of flood water, it would raise the flood water on the rest of the development site by 0.013mm. In reality this would be significantly lower again as this crude assessment ignores the fact that any flood water would spread over a much larger area of the Lower Moors initially as well.

Flood mitigation measures

This section should include information about any flood mitigation measures, such as flood resistant and resilient construction techniques, subscription to the Environment Agency flood warning service, reference to a "Site Flood Plan" for the development etc.

As the above assessments have identified, whilst the modelling indicates that over the 2 year lifetime of this proposed temporary use development, the site is not expected to flood, the Flood Map still zones the site within Flood Zone 3. Therefore in addition to the above development measures to control flood risk, the following mitigation measures shall be included to control any residual risks from flooding.

- The site will register with the EA flood warning service
- Site services, particularly electrical facilities shall be located off the ground level, and even above the raised floor level of the units.
- An Emergency Evacuation Plan shall be provided to the residents of the units. This plan has identified both vehicular (shown in blue on the attached modelling extracts contained in Appendix 2) and pedestrian (shown in brown on the attached modelling extracts contained in Appendix 2) escape routes:-
 - Vehicular access / egress route 1 – shall be through the waste site to the South-west of the site then up Jackson's Hill, an elevated street.
 - Vehicular access / egress route 2 (primary fire or ambulance route) – shall similarly be through the waste site, then along the Porth Mellon access road. Whilst the flood modelling indicates this access road would be flooded, the 1:200 year event depth is less than 200mm, with low velocity and therefore be feasible for these larger vehicles.

- Pedestrian route 1 – North over the footbridge, passing beside Richard Hand Haulage buildings, into the Porth Mellon Industrial Estate and then East through the estate to the main road a The Store.
- Pedestrian route 2 - South-westerly through the waste site, then Southerly towards the School and Hugh Town along the existing public footpath.
- Construction materials for the project delivery will be stored locally to the specific work sites, including COSHH substances.

8. Conclusions

This FRA concludes that EA flood modelling undertaken by JBA in 2019 demonstrates that the proposed development of a 2 year long temporary change of use of Sui Generis land known as The Stoneyard, behind Porth Mellon Industrial Estate and adjacent to the waste management site, to allow the placement of portable accommodation units for workers engaged on Flood and Coastal Defence works during the contract works, will not be at risk of being itself flooded, nor will it risk effecting flooding elsewhere as a result of its temporary use.

The development is proposed to solely facilitate construction of essential coastal defences that have been designed to reduce the risk of tidal flooding and flood impact from climate change, to the residents and commercial enterprises on St. Mary's, St. Agnes, Bryher and St. Martin's.

The use of portable accommodation units raised off the ground on jack-legs will ensure that the development is safe should a flood event occur that is outside the modelling, and an evacuation plan by vehicle or foot will be provided to ensure the workforce's safety should this event occur.

Appendix A – Flood map for planning



Flood map for planning

Your reference	Location (easting/northing)	Created
Stoneyard	90906/10635	31 Aug 2022 19:32

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

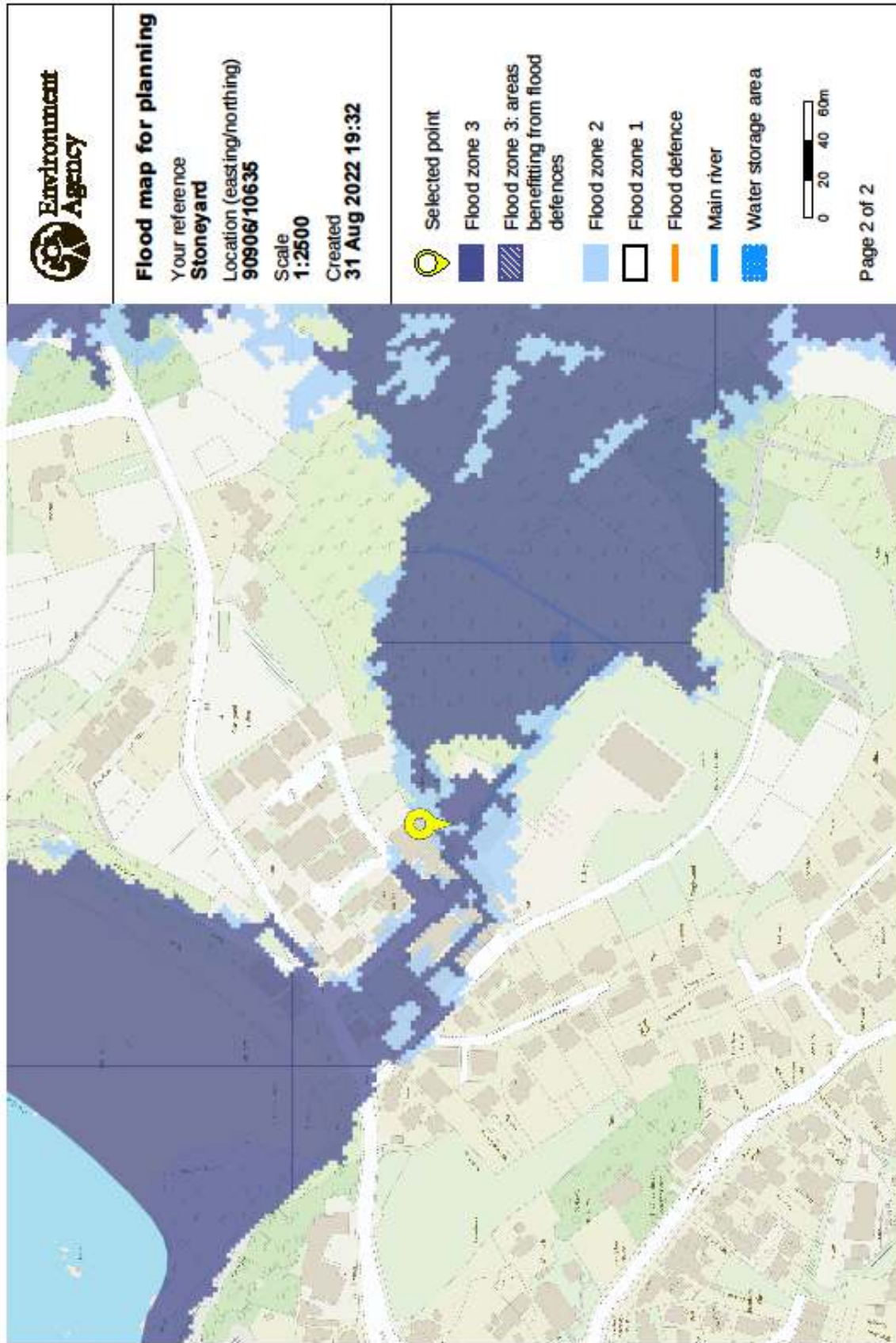
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>



Appendix B – Flood modelling output

The following pages show the output from modelling undertaken by JBA in 2019 on behalf of the EA.

The proposed development site has been outlined in RED

Pedestrian access / egress routes for emergency planning are shown in light BLUE

Vehicular access / egress routes for emergency planning are shown in BROWN

Flood extents are identified on the extracts



