

NOTE TO FILE

JBA Project Code	W21-0944
Contract	Afan Lido, Aberavon, Port Talbot, FCA
Client	Persimmon Homes West Wales
Date	8 April 2021
Author	Katie Corbett BSc MSc
Reviewer	George Baker BEng AIEMA CEnv IEng MCIWEM C.WEM
Subject	Afan Lido - Flood Consequence Assessment

1 Introduction

JBA Consulting have been commissioned to undertake a Flood Consequence Assessment (FCA) to assess the flood risk to a proposed development site in Aberavon, Port Talbot. The completion of an FCA was recommended by Natural Resources Wales (NRW) following a statutory pre-application consultation¹. Specifically, NRW raised concerns that the site may be at risk of tidal flooding in the future due to climate change.

1.1 Proposed Development Site

The proposed development site is in Aberavon, approximately 100 meters from the coastline (Figure 1-1). The site is split into two plots (north and south), divided by Channel View road. Together they cover 3ha.

The surrounding area is largely residential. There are a few retail units and sports pitches adjacent to the northern plot, and a school adjacent to the southern plot. The Princess Margaret Way runs parallel to the site's south-west boundary; grassland separates the road from the coastline. The entrance to Port Talbot dock is situated along the coastline, approximately 0.7km south-east of the site.



Figure 1-1: Location of proposed development site

The proposal is a residential development consisting of 113 houses and 24 apartments (Figure 1-2). The northern plot was formerly the Afan Lido and is currently not in use, whilst the southern plot has been used recently for car parking.

¹ Letter from NRW: Statutory Pre-Application Consultation. Ref: CAS-133756-M6K2 (Jan 2021)

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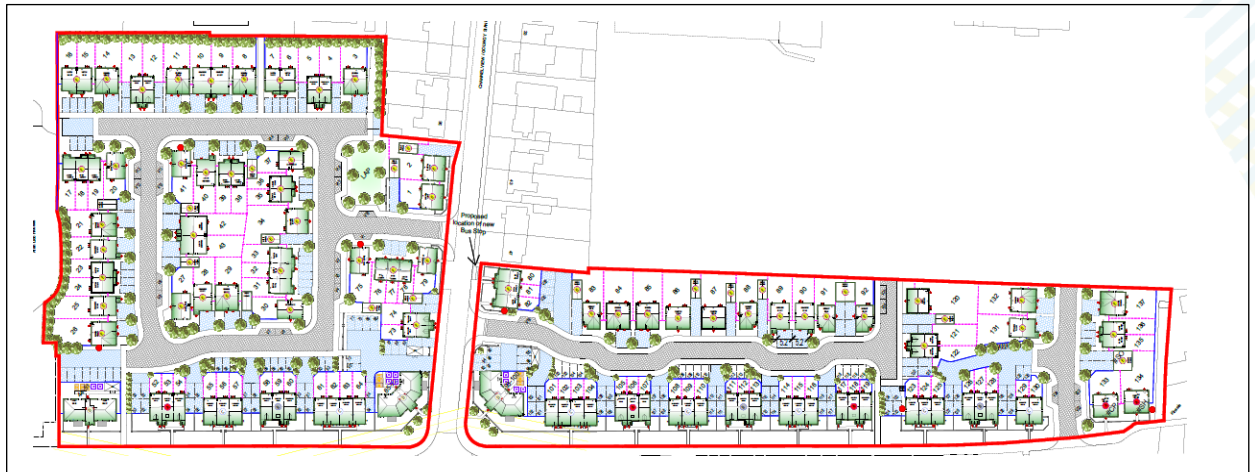


Figure 1-2: Proposed site plan

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2 Planning Policy Requirements

2.1 DAM Zoning

TAN-15 was introduced in 2004 by the Welsh Assembly Government. It is technical guidance related to development planning and flood risk using a sequential characterisation of risk based on the Welsh Government's Development and Flood Risk Advice Map (DAM). The DAM is used to trigger different planning actions based on a precautionary assessment of flood risk. Figure 2-1 shows that the proposed development site is within Zone A of the DAM. Zone A is described as areas "considered to be at little or no risk of fluvial or tidal flooding".

Figure 1 of TAN15 states that Zone A is "Used to indicate that justification test is not applicable and no need to consider flood risk further." This is further restated in Section 9 of TAN15. Consequently, a Flood Consequence Assessment in the normal sense is not required, as the Justification Test does not apply.

Notwithstanding the above, as highlighted by NRW, it is reasonable to consider how the tidal flood risk may increase over the lifetime of the proposed development due to climate change to consider the long-term sustainability of development. Therefore, Sections 3 and 4 present a precautionary assessment of tidal flood risk including the effects of climate change, to demonstrate the suitability of the proposed development site for residential development.



Figure 2-1: Development and Flood Risk Advice Map (DAM)

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3 NRW Flood Maps

3.1 Flood Risk Assessment Wales

NRW's Flood Risk Assessment Wales (FRAW) mapping describes the present-day tidal flood risk in Aberavon. Figure 3-1 shows the proposed development site is not currently at risk from the sea, indicating that it remains flood free in the 0.1% AEP event.



Figure 3-1: FRAW tidal flood risk map

3.2 Draft Flood Map for Planning

As part of updates to TAN-15, Welsh Government are undertaking consultation and development work on a new Flood Map for Planning. Currently in the draft stage, the new Flood Map for Planning will incorporate projections for how climate change will affect flood risk over the next century. This will replace the current Development Advice Map, which shows only the present-day risk of flooding. The proposed flood map presents three flood risk bands:

- Zone 1: greater than 1:1000 annual chance of flooding; no flood risk constraints to development.
- Zone 2: between 1:1000 and 1:100 (1:200 sea) annual chance of flooding; all types of development subject to TAN 15 tests and a Flood Consequences Assessment required.
- Zone 3: less than 1:100 (1:200 sea) annual chance of flooding; no highly vulnerable development; less vulnerable development subject to TAN 15 tests and a Flood Consequences Assessment required.

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Zones 2 and 3 are based on 'undefended' flood modelling. This creates a picture of the worse-case scenario by assuming no flood defences. Defended area are also identified, designating if an area benefits from flood defences.

Figure 3-2 shows the draft Flood Map for Planning flood zone extents in Aberavon. The proposed development site is within Zone 1, indicating the site is unlikely to be at risk of tidal flooding over its lifetime. As such under the Draft TAN15 the requirement for an FCA would also not be triggered.

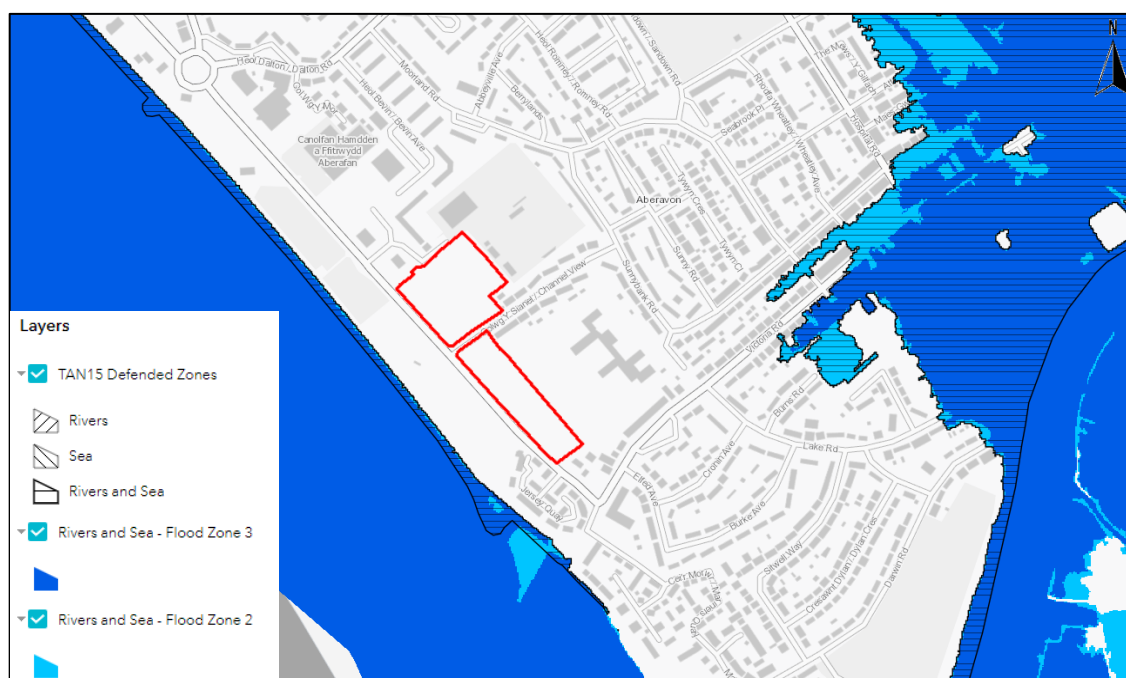


Figure 3-2: Draft Flood Map for Planning

3.3 Shoreline Management Plan Policies

There is currently a seawall with a sloping rock revetment along the Aberavon frontage. The Shoreline Management Plan 2² (SMP2) policies for the Aberavon frontage are presented in Table 3-1. The Hold the Line policy confirms that the defended coastline position will be maintained in the short-, medium- and long-term epochs. This will help to safeguard the frontage from the risks of flooding and erosion up to 2105.

² Swansea to Camarthen Bay Shoreline Management Plan 2:
[https://www.npt.gov.uk/ldpexamination/SWW03%20Shoreline%20Management%20Plan%202%20Main%20Document%20\(2012\).pdf](https://www.npt.gov.uk/ldpexamination/SWW03%20Shoreline%20Management%20Plan%202%20Main%20Document%20(2012).pdf)

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Table 3-1: SMP2 policies for the Aberavon frontage

Epoch	SMP2 policy
Short-term (2005 to 2025)	Hold the Line
Medium-term (2025 to 2055)	Hold the Line
Long-term (2055 to 2105)	Hold the Line

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4 Extreme Sea Level Predictions

The predicted extreme sea levels have been calculated for Aberavon for the present-day (2021) and in the future accounting for 100 years of climate change (2121). This has been based on the latest guidance^{3, 4} and the best available data. The predicted levels for five return periods are shown in Table 4-1.

In Figure 4-1, ground levels have been compared to the extreme sea level prediction for the 0.1% AEP event plus 100 years of climate change (7.81m AOD). The site levels are shown to be significantly above this estimate of extreme sea level.

Figure 4-2 presents a more detailed map of the ground levels in Aberavon. Currently the levels across the proposed development site range between approximately 9-11m AOD. Figure 4-3 presents a cross sectional profile of ground level, including the 0.1% AEP event plus 100 years of climate change water level (7.81m AOD). This illustrates graphically how the proposed development site is situated well above the predicted extreme sea level.

Table 4-1: Maximum sea levels* (m AOD) for 2021 and 2121.

	T5	T50	T100	T200	T1000
Present-day (2021)	5.80	6.16	6.27	6.38	6.69
With 100 years of climate Change (2121)	6.92	7.28	7.39	7.50	7.81

*Uplifted from 2017 base year to 2021.

3 Guidance for Flood Consequence Assessments: Climate Change Allowances (Welsh Government, 2016)

4 Coastal flood boundary conditions for the UK: update 2018. User guide (EA, 2019)

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Figure 4-1: Ground levels compared to the extreme sea level prediction for the 0.1% AEP event plus 100 years of climate change (7.81m AOD)

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Figure 4-2: 1m LiDAR in Aberavon

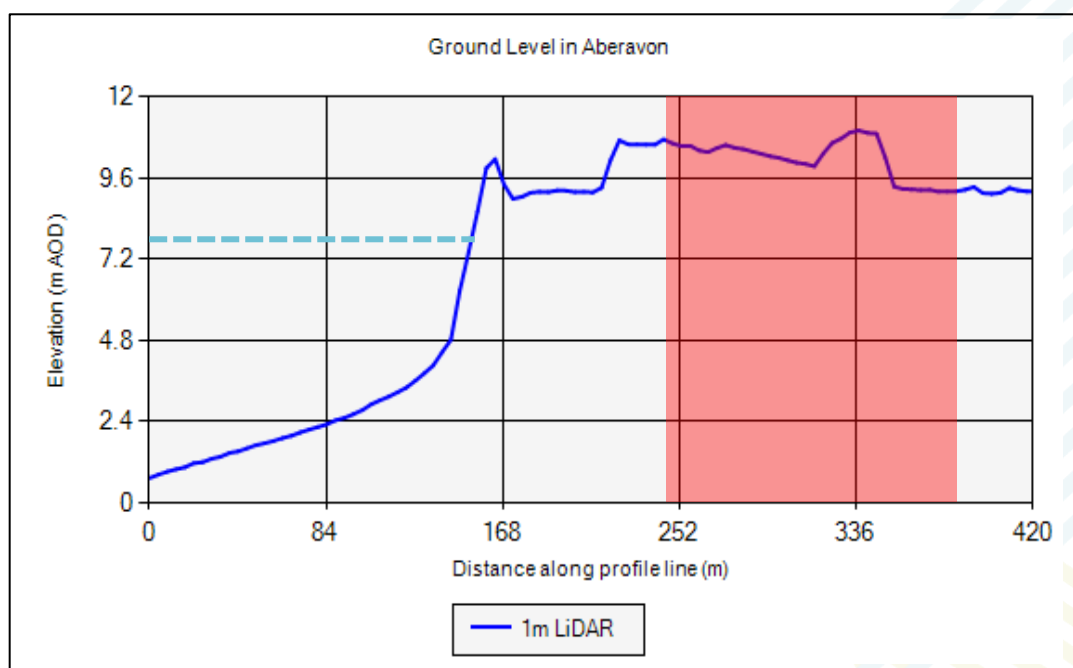


Figure 4-3: LiDAR profile showing a water level of 7.81m AOD (blue dash) and the proposed development site position (red).

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5 Conclusions

JBA Consulting have undertaken a Flood Consequence Assessment (FCA) of the proposed Afan Lido development site in Aberavon. This has been completed on the recommendation of Natural Resources Wales (NRW) following a statutory pre-application consultation. Specifically, NRW raised concerns that the site may be at risk of tidal flooding in the future due to climate change.

The FCA has assessed the Development Advice Map (DAM), Flood Risk Assessment Wales (FRAW) map, draft Flood Map for Planning, Shoreline Management Plan policies, and extreme sea level and climate change predictions.

The proposed development site is not considered to be at risk of tidal flooding in the present-day or over a 100-year lifetime of development. On this basis, a full FCA or further consideration of flood risk is not required.

The key findings of the assessment area detailed below:

- The proposed development site is within Zone A of the DAM. Zone A is described as areas "considered to be at little or no risk of fluvial or tidal flooding" and "Used to indicate that justification test is not applicable and no need to consider flood risk further".
- NRW's Flood Risk Assessment Wales (FRAW) mapping describes the present-day tidal flood risk in Aberavon. It shows the proposed development site is not currently at risk from the sea, indicating that it remains flood free in the 0.1% AEP event.
- The draft Flood Map for Planning incorporates projections for how climate change will affect flood risk over the next century. The proposed development site is within Zone 1. Within this zone there is "greater than 1:1000 annual chance of flooding and no flood risk constraints to development". This indicates that the site is unlikely to be at risk of tidal flooding over its lifetime.
- There is a seawall and sloping rock revetment along the Aberavon frontage. The Shoreline Management Plan policies for the Aberavon frontage are Hold the Line for the short-, medium- and long-term epochs. This confirms that the defended coastline position will be maintained, therefore minimising the coastal flood and erosion risk to the proposed development site.
- The predicted extreme sea levels have been calculated for Aberavon for the present-day (2021) and in the future accounting for 100 years of climate change (2121). Ground levels from 1m LiDAR data have been compared to the extreme sea level prediction for the 0.1% AEP event plus 100 years of climate change (7.81m AOD). The site levels are shown to be significantly above this estimate of extreme sea level and therefore not at risk over the lifetime of the proposed development.