

Francis Sant

Proposed Extension to Pontardawe RFC Clubhouse Flood Consequence Assessment Report

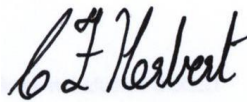


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Signed



Date

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1 INTRODUCTION

It is proposed to extend the Pontardawe RFC clubhouse, however, the building lies in a C1 flood zone, as defined by the Development Advice Maps (see Figure 1.1) referred to in Technical Advice Note 15 (Development and Flood Risk - TAN 15). This means that the existing less vulnerable building is considered to be at risk of flooding during at least the 1 in 1000 year event but is afforded protection from significant and recognised defences.

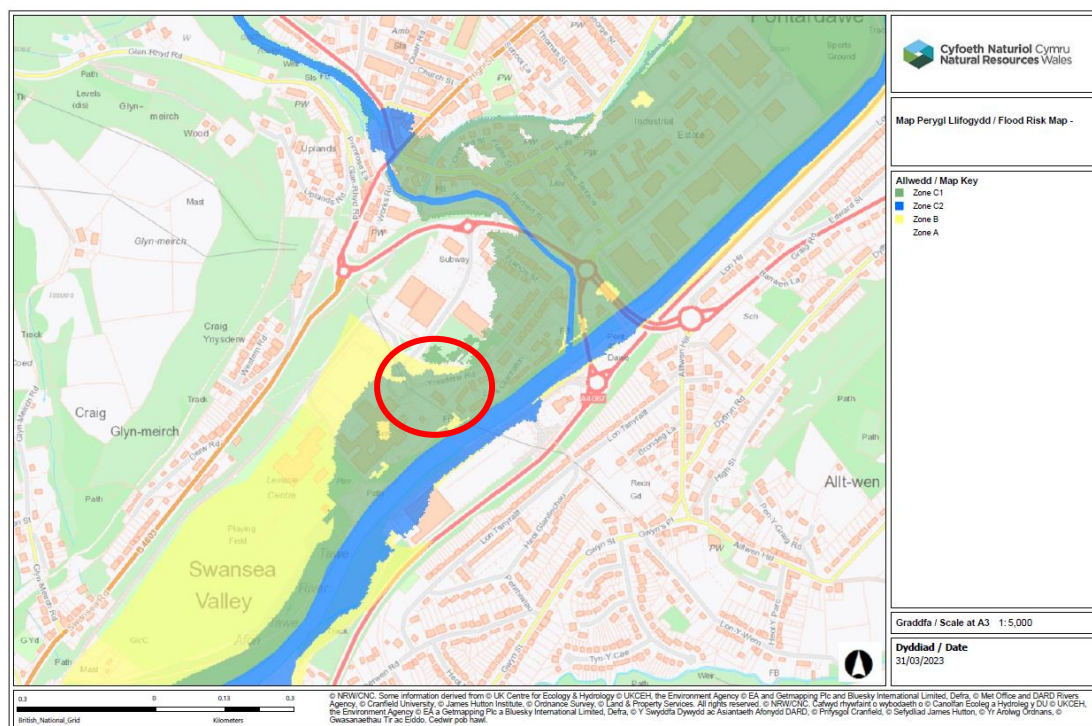


Figure 1.1 - Development Advice Flood Map

The Development Advice Maps are based on Natural Resources Wales flood maps (see Figure 1.2) supplemented by sediment data, held by the British Geological Survey (BGS), of historical flooding. The maps adopt the precautionary principle and are based on the best known information available at the time. However, a detailed examination of a site can refine an area's risk of flooding.

Considering the proximity of the site to Afon Tawe and the Afon Clydach it is possible that the development could be at risk from fluvial flooding, particularly when taking climate change into consideration. As such, the client has requested that a Flood Consequence Assessment is prepared to evaluate the risk. The assessment should be in accordance with the requirements of Section 7 and Appendix 1 of TAN 15. Francis Sant have been employed to undertake this task.

This document summarises the work undertaken as part of the study. Section 2 of the report gives a description of the surrounding area while the risk of flooding from various sources is considered in Section 3. Possible flood proofing measures are discussed in Section 4 and the conclusions and recommendations of the study are provided in Section 5.

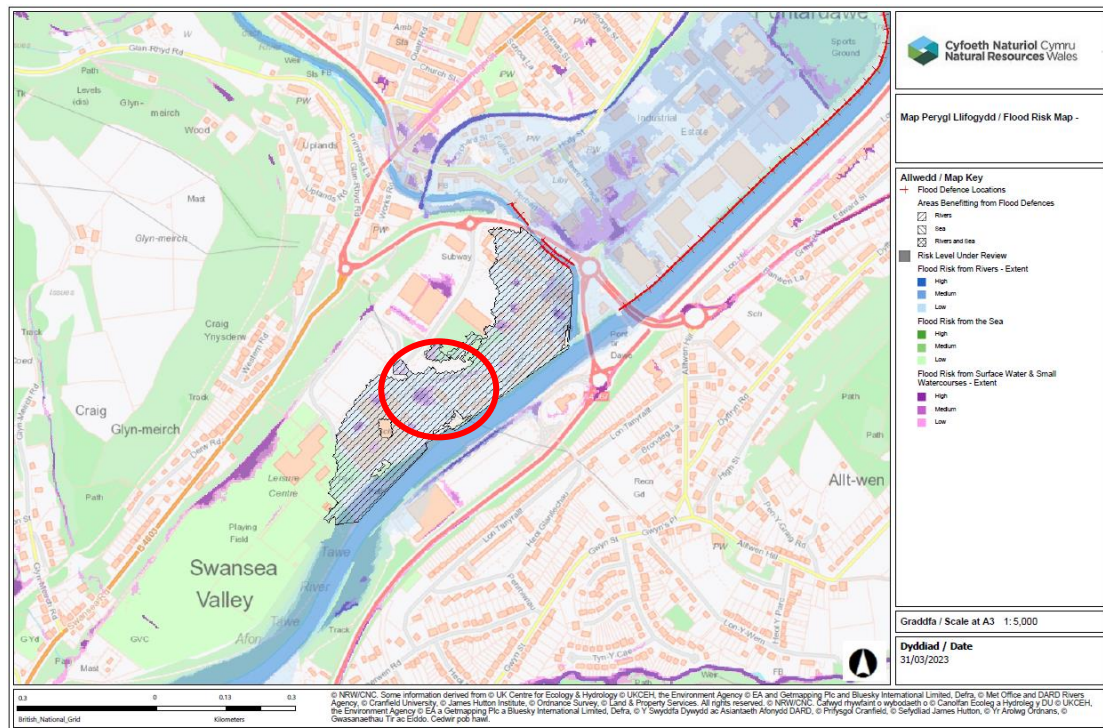


Figure 1.2 – NRW Flood Risk Assessment Map

2 DEVELOPMENT

The proposed development (coordinates 272145, 203575) is located off Ynisdew Road on the southern side of Pontardawe (see Figure 2.1 to 2.3 and Plate 2.1). It lies in a mixed use area with a supermarket some 100m to the north while Ysgol Gyfun Cwmtawe (Cwmtawe Comprehensive School) lies some 50m to the south west. There are houses some 25m to the east. Afon Tawe is some 60m to the south east while Afon Clydach is some 300m to the north east.



Figure 2.1 – Location Plan

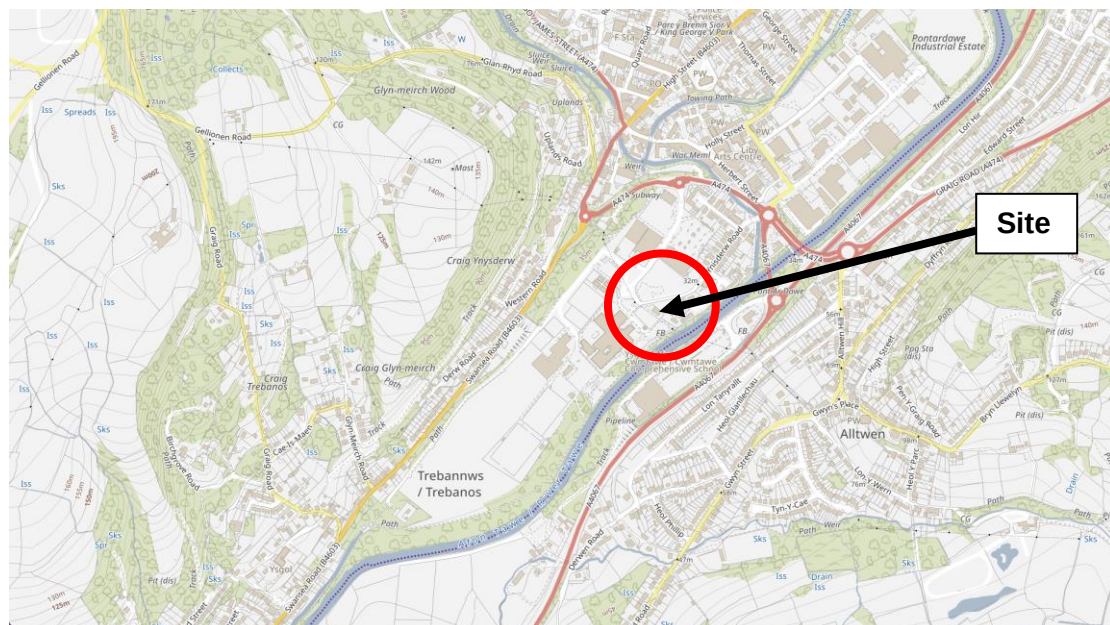


Figure 2.2 – Plan of Area

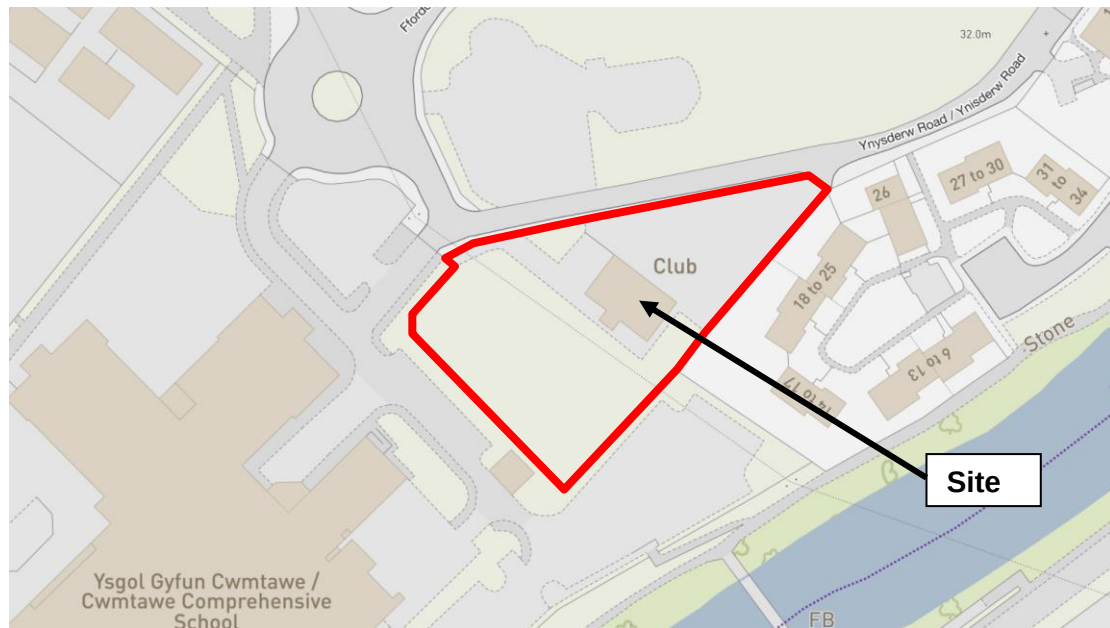


Figure 2.3 – Plan of Site

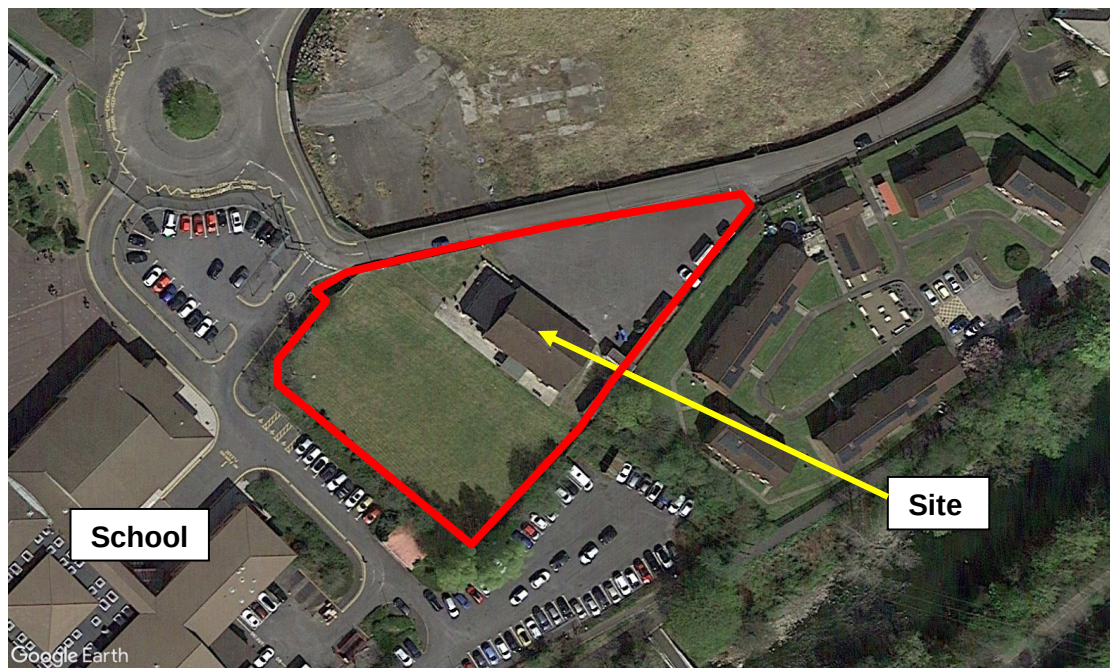


Plate 2.1 – Aerial View of Site

Proposal

It is proposed to extend the existing building in a south easterly direction to accommodate a function room and a new toilet area (see Figures 2.4 to 2.10). In addition, a storage room will be added on the first floor which could also provide a place of refuge in an event. To the north westerly side of the building the Lounge bar will be extended replacing the existing sheltered area on the patio.

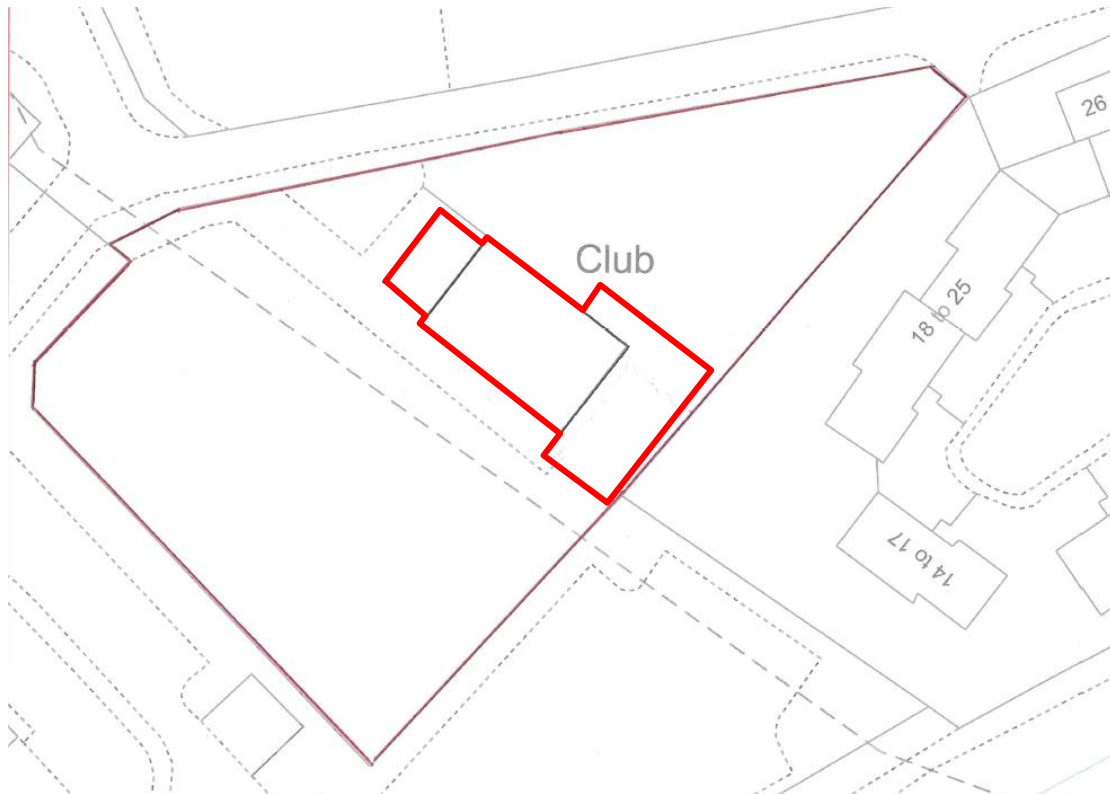


Figure 2.4 – Plan of Site

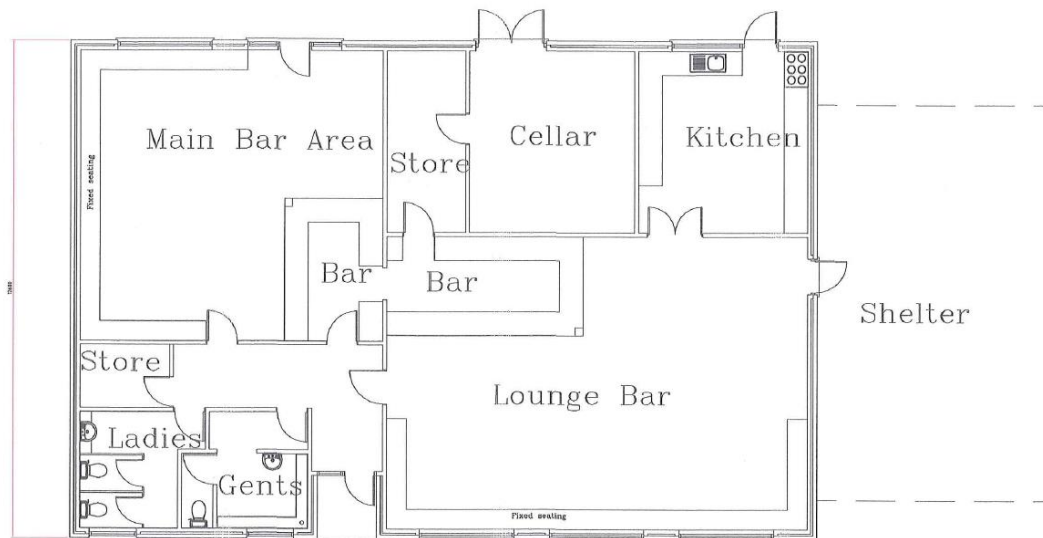


Figure 2.5 – Existing Floor Plan of The Clubhouse



Figure 2.6 – Existing Elevations of The Clubhouse

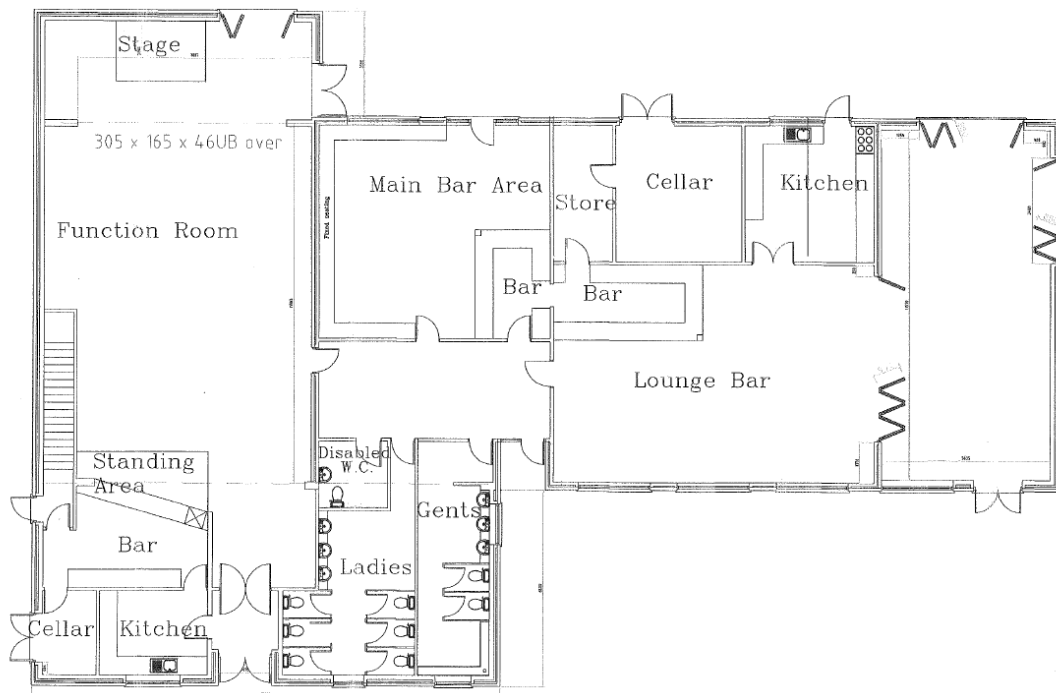


Figure 2.7 – Proposed Ground Floor Plan of the Clubhouse

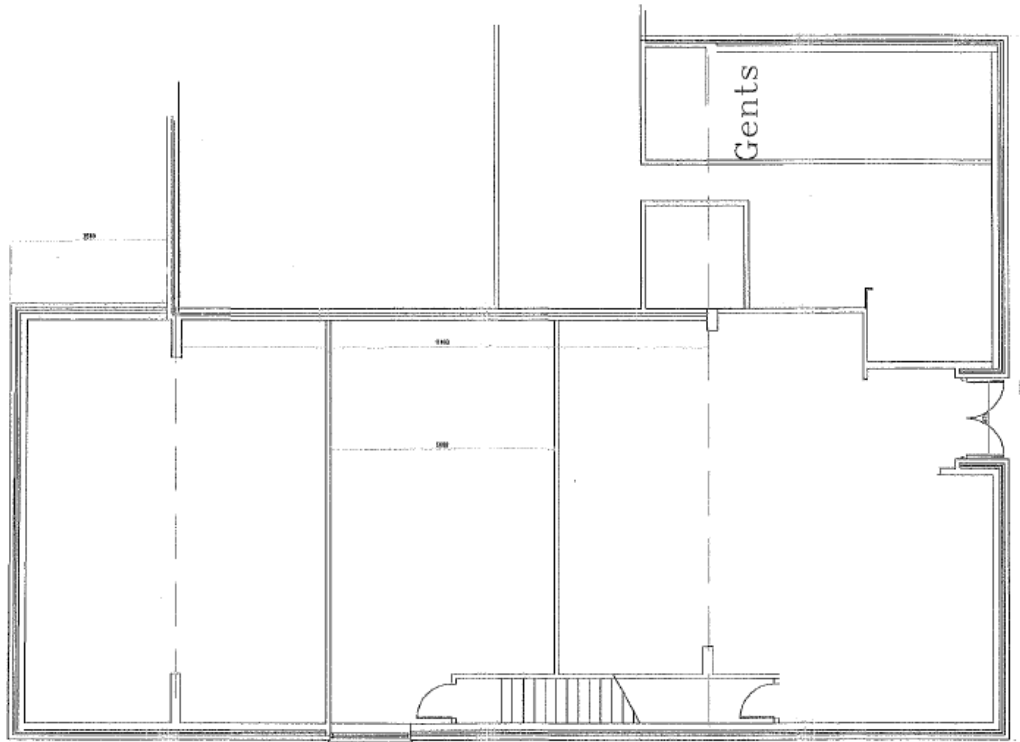
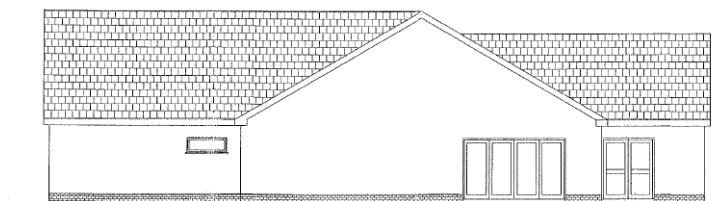


Figure 2.8 – Proposed First Floor Plan of the Clubhouse



NORTH EAST ELEVATION



NORTH WEST ELEVATION

Figure 2.9 – Proposed North East and North West Elevations



Figure 2.10 – Proposed South East and South West Elevations

Topography

Lidar data (see Figures 2.11) show that the site levels range between 32.4m AOD and 32.8m AOD with the ground around the development generally set at 32.6m AOD.

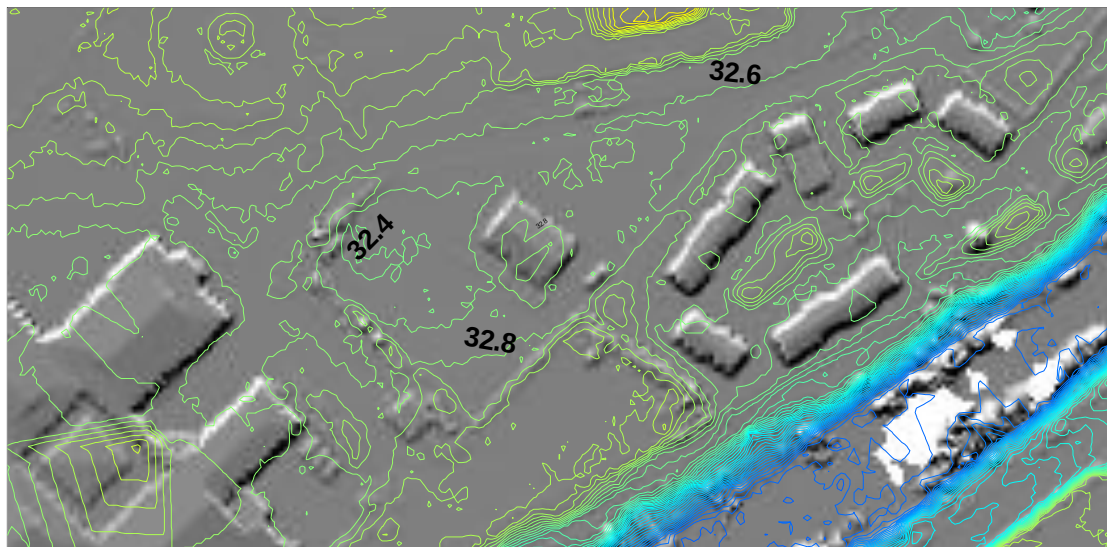


Figure 2.11 – Lidar Data for the Site

3 FLOOD RISK

Flooding can occur from several sources, some of which are considered in this section. The Flood Risk Assessment map (see Figure 3.1), produced by Natural Resources Wales, indicates that the development is expected to remain flood free during a Q100 year event but potentially could be at risk during a fluvial Q1000 event although afforded protection by recognised significant defences. However, the map does not take climate change into consideration.

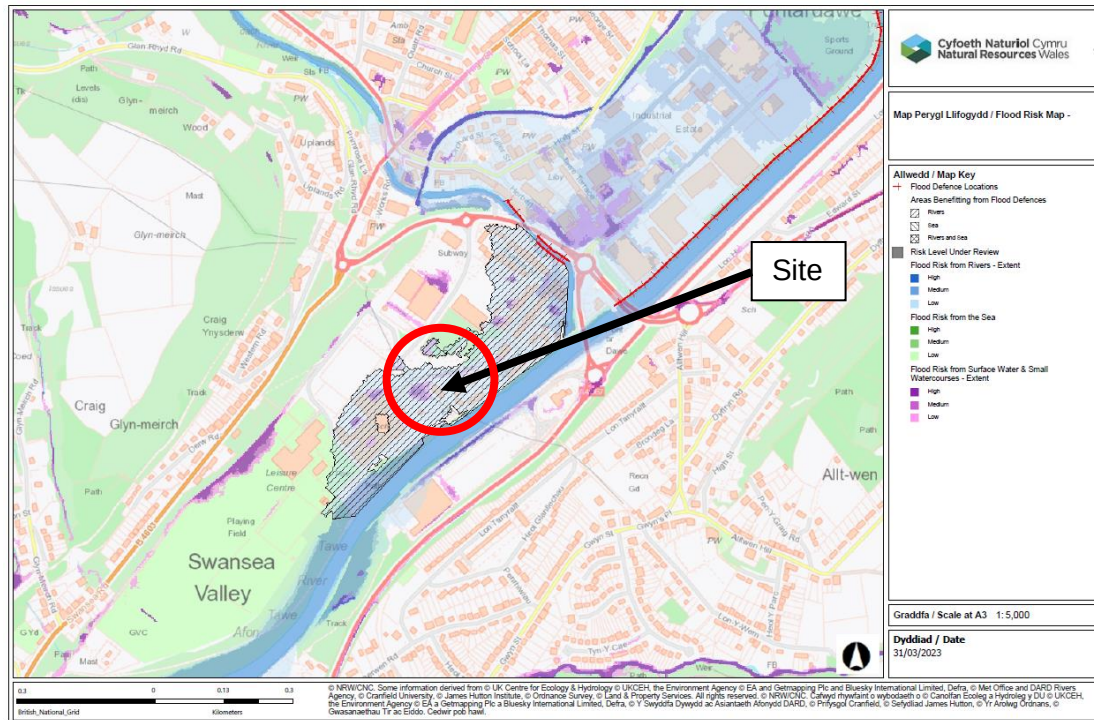


Figure 3.1- NRW Flood Risk Assessment Map

3.1 Fluvial

NRW's Flood Map For Planning, which allows for climate change, also indicates that the development is expected to remain **flood free** during a fluvial 1 in 100 year event but could be at risk during a 1 in 1000 year event (see Figure 3.2). By considering topography across the valley, and the areas expected to remain flood free during such an event, by inspection the flood depth at the site could be in the region of 1m.

The storage units, currently on site, will be removed as part of the development, partially compensating for any loss of flood storage capacity.

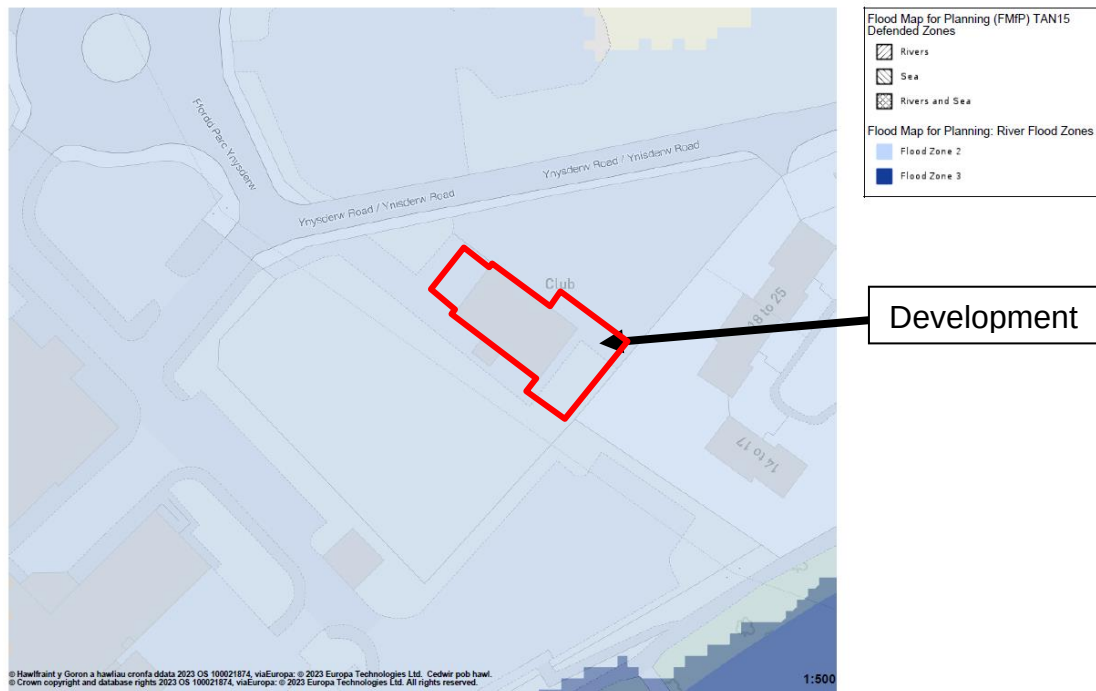


Figure 3.2 – River Flood Map For Planning

3.2 Tidal

The site is not considered to be at risk from tidal flooding.

3.3 Surface Water

The Surface Water Flood Map For Planning suggest that, generally, the development is not expected to be at risk from surface water flooding even during the Q1000 event (see Figure 3.3). There is, however, an area of slightly lower land directly west of the building where the water could pool during both the Q100 and Q1000 events. Nevertheless, most of the development will be on the eastern side of the building and the finished floor level will be higher than the level of the flood water.

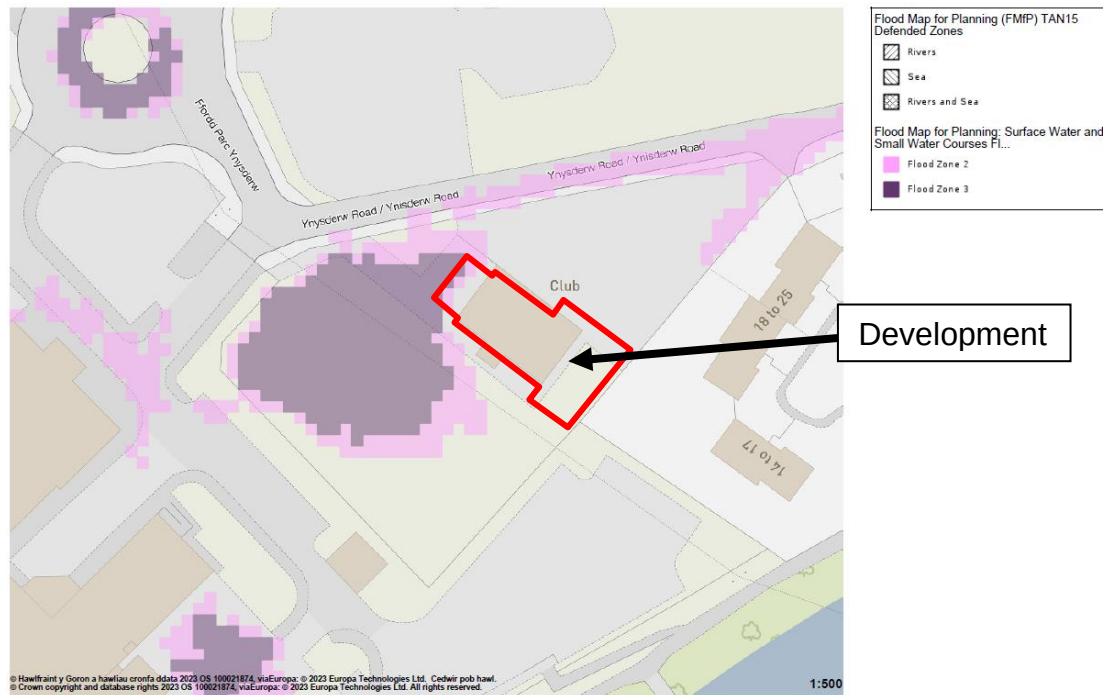


Figure 3.3 – Surface Water Flood Map For Planning

3.4 Sewage Backflow.

Care should be taken to ensure that water from the foul / combined sewer system is unable to back up into the building and consideration should be given to installing a none return valve.

3.5 Sustainable Drainage

The rainwater should be drained using a sustainable system, in accordance with the Welsh Government Standards and the SUDS manual. As the development is greater than 100m², SAB approval will need to be applied for.

3.6 Reservoir Failure

The Development is not considered at risk from Reservoir Failure.

3.7 Ground Water

The superficial geology for the area consists of Clay, Silt, Sand, Clay from Alluvium overlying a bedrock geology of Sandstone from the Brithdir Member (see Figure 3.4 and 3.5). When also taking the terrain into account the risk of groundwater flooding is considered to be medium.

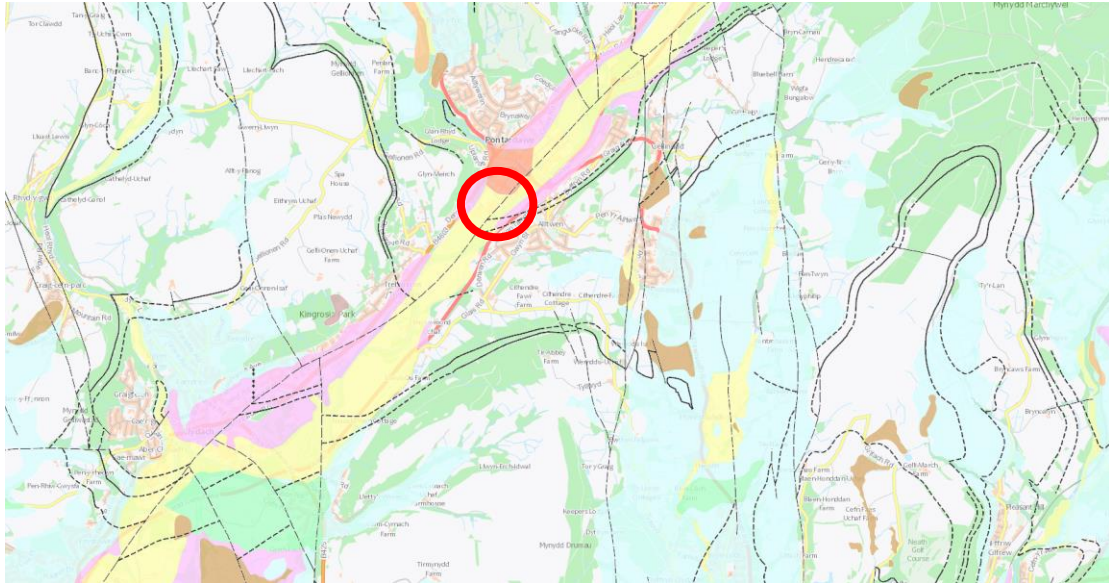


Figure 3.4 – Superficial Geology

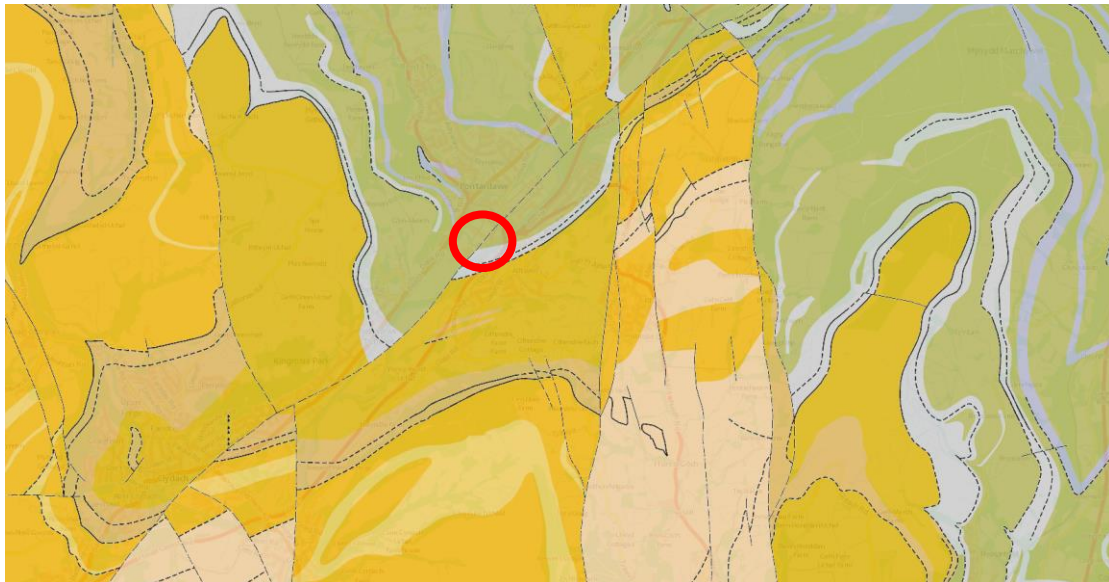


Figure 3.5 – Bedrock Geology

4 FLOOD PROOF MEASURES

Section 3 indicates that the development could be at risk of flooding during a Q1000 fluvial event. Flooding can result in the need for expensive repairs. As well as the direct damage caused to a development, flooding can impact in many other, and possibly more stressful, ways. The inconvenience of cleaning up the clubhouse and the loss of memorabilia can be distressful. There are methods, however, to limit and mitigate against the consequence of flood damage. Some of these are discussed in this section and should be considered as part of the development where applicable.

Water can enter a building:

- Around the edges of closed doors;
- Through airbricks;
- Backflow through overloaded sewers;
- Seepage through walls especially cracks;
- Seepage through the ground;
- Around cable / services entrance into the building.

Dryproofing - Preventing the water from entering the building.

In the first instance it is possible to take measures to prevent the ingress of water (dryproof).

- There are several propriety barriers available, however, these can be expensive. If desirable, it might be possible to ensure that the walls of the building are able to act as a barrier themselves. Care should be taken to ensure that the pointing and any external plastering are kept in good order and that all cracks and gaps around cables and ducts entering the building are sealed;
- Providing temporary covers to any low air vents. These covers should be removed once the risk of flooding is over. Preferably, however, the air vents should be located higher up on the walls;
- Erecting a temporary barrier in front of any external doors or installing flood protection doors;
- Installing a valve allowing the sewer system to be shut preventing any back flow.

Wetproofing – Limiting the damage once water has entered a building.

It may not be feasible to eliminate the risk of flooding, however, it is possible to limit the damage that the water can cause once in the building (wetproof). Where appropriate the following could be considered:

- Move valuable items to a higher level;
- Have solid concrete floors. Suspended floors are more difficult to clean and dry underneath;
- Have tiled floors or removable rugs in place of fitted carpets especially in the kitchen and bathrooms;
- Use water resistant render and plaster for walls;
- Use ceramic tiles for wall coverings especially in the kitchens and bathrooms;
- Avoiding timber frame construction. These are expensive to repair and dry;
- Use non water absorbing insulation;
- Use corrosion resistant fittings such as galvanised or stainless steel in place of mild steel;

- Ensure that electric cables are fed from above. Also keep sockets away from the floor level;
- Apply an appropriate damp proof course;
- Install fridges and freezers with motors high up from the floor;
- Install solid internal and external doors, effectively sealed;
- Avoid storage heaters;
- Ensure boilers are off the ground.

A flood response plan should be prepared for the clubhouse. All members and visitors should be made aware of the flood risk and what actions to take during an event. It is important to also have as much warning as possible to allow the flood response plan to be followed safely. If available, this can be achieved by registering on the flood warning scheme provided by NRW (see Figure 4.1).

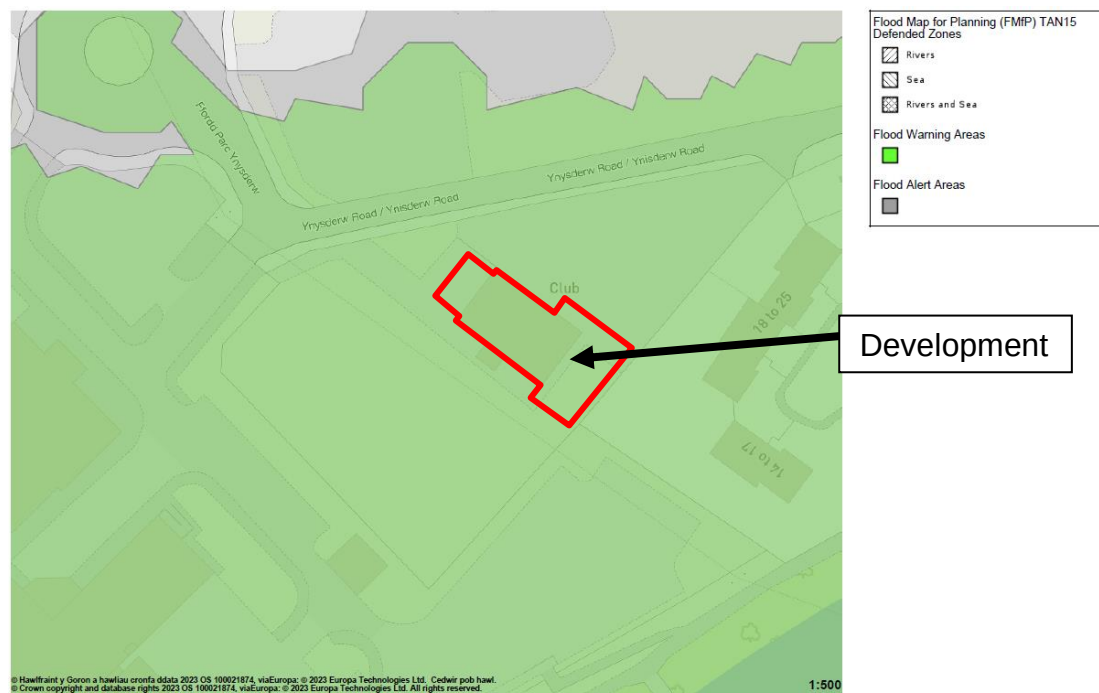


Figure 4.1 - Flood Warning Area

5 CONCLUSION AND RECOMMENDATIONS

It is proposed to extend the Pontardawe RFC clubhouse, however, the building lies in a C1 flood zone and the client wishes to assess the risk and consequence of flooding.

The study showed that the development is not at risk from tidal flooding or flooding from reservoir failure and the risk of ground water flooding is considered to be medium. Although the development may not be affected surface water is expected to pool on lower ground to the west of the building during both the Q100 and Q1000 events.

The development is also not at risk of fluvial flooding during a Q100 event and taking climate change into consideration. However, during the Q1000 event the development could be at risk with flood depths potentially reaching around 1m. The removal of storage units will partially compensate for any loss of flood storage capacity and the provision of a first floor will provide a place of refuge during an event, reducing the risk to life and providing betterment.

A sustainable rain water drainage system will need to be incorporated into the proposals, in accordance with the Welsh Government Standards and the SUDS Manual. As the development area is greater than 100m² SAB approval will be required.

Recommendations

In developing the site, it is recommended that:

- Wet proofing measures, as identified in Section 4, are included in the development where possible.
- The finished floor level of development is set 150mm above the adjacent ground.
- A sustainable rain water drainage system is incorporated into the scheme.
- SAB approval is applied for.
- A non return valve is considered on the foul sewer system.
- An emergency evacuation plan is prepared, maintained and effectively disseminated to all future occupiers.
- If available, the property is registered on the flood warning scheme provided by NRW.