



Updated Flood Risk Assessment (in response to EA Objections)

1.0 Site Flood Risk

- 1.1 The site is located within Flood Zone 3b, functional floodplain, at a high risk of flooding from the River Calder. There is an extensive history of flooding from the River Calder on the site, which most recently flooded in October 2023. The highest flood levels recorded on site were during the December 2015 floods. Based on river levels and locally observed and recorded on site, the site is known to have flooded to a maximum depth of 100mm during these floods.
- 1.2 The fluvial flood risk to the site will increase with climate change. Based on taking a precautionary approach, in line with NPPF, it is anticipated peak river flows will potentially increase by +20%. However, NPPF also goes on to explain that the sensitivity testing of the flood map produced by the Environment Agency, using the 20 per cent increase from 2025 to 2115 allowance for peak flows, suggests that changes in the extent of inundation are negligible in well-defined floodplains, but can be dramatic in very flat areas. The site is located within a well-defined floodplain, which is defined by the topography of the site and surrounding land. It is also defined by the adjacent road (A644), which falls outside of the site boundary. Based on taking a conservative approach, it is anticipated that flood levels observed could potentially increase to depths of 400mm on site with climate change.
- 1.3 There is no flood risk to the site from any other sources of flooding; sea, groundwater, surface water or water / sewer mains. This is based on site location, ground geology, topography and location of local services. Fluvial flood risk from the River Calder is the primary flood risk source.

- 1.4 While the fluvial flood risk is high, this risk is being mitigated appropriately and the proposed development will not increase flood risk to others. This is explained further below.

2.0 Existing Site Development

- 2.1 The existing site comprises of 4 storage containers, on a grass field. Access to the site via the A664 and cars currently park directly on the grass. There are no hard standing areas.

3.0 Proposed Site Development

- 3.1 The proposed site comprises keeping the existing 4 storage containers. The only change to these storage containers is that they will be anchored down to ensure during flood conditions they do not move and create flood risk elsewhere. This is providing betterment.
- 3.2 The additional, proposed development is a drying / changing room and a coaching facility. These will be provided in 2 additional cabin buildings. Both these cabin buildings will be raised off the ground by concrete plinths, which they will also be anchored to. The cabins will be raised to a minimum level of 450mm above ground level, using these plinths. It is estimated there will be 10 plinths required to support these 2 cabins, which will be confirmed by the ground investigations. The ground investigations and detailed design will also inform if these plinths are located above or below ground level and supported by joists. While this is still to be confirmed, any impact in terms of an increase in hardstanding area on the site will be minimal. The impact of this will be negligible in terms of flood risk.
- 3.3 There is no land raising proposed as part of the development, except for the creation of a ramp to allow for disabled access (Kirklees planning requirement).
- 3.4 Access to the site will remain via the A664, there will be no change to the access arrangement. The site will remain a grass field. Car parking will be provided more formally using grasscrete, but this is a fully permeable material that is used for projects in the water environment (e.g. flood defences).
- 3.5 The additional cabins will not be connected to any services, clean water, sewers, or the national grid. There will be no running water or sewerage on the site. Electric will be provided to the cabins by PV panels installed on the roof of the cabins.
- 3.6 The proposed changes to the site will improve the recreational use of the site for Pennine CRC "the Club". Not only will it allow the storage of all types of canoes, kayaks and equipment (as it currently does in the containers), it will provide additional changing and coaching facilities for the club and national canoeing events.

4.0 Flood Zone 3 Location & Planning Policy

- 4.1 The site is located in Flood Zone 3b. As a result, the Sequential and Exception Tests are required.
- 4.2 The proposed site development is classified as water compatible under NPPF, as it falls under the following classifications:
- Water-based recreation (excluding sleeping accommodation).

- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- 4.3 Based on the principles of the Sequential Test, locating the proposed development in Flood Zones 1 & 2 has been considered. Based on the site already being used by the Club in Flood Zone 3b, it is not considered practical or reasonable to locate the proposed additional cabins in a different location. Furthermore, the proximity of the River Calder is why the site is has been selected for use by the Club. Access to the river is provided by an existing jetty on the River Calder. This is located outside the site boundary, but within easy reach of the site for transporting canoes and kayaks (50m).
 - 4.4 The Exception Test is required in this case, as the site is located in Flood Zone 3b.
 - 4.5 The proposed development meets the needs of the Exception Test. The proposals included as part of the proposed development will ensure the development can safely mitigate itself against flooding. The proposals also ensure that the proposed development won't increase the flood risk of others offsite.
 - 4.6 The proposed development will safely mitigate itself from flooding in a number of ways. The proposed cabin buildings will be raised by a minimum level of 450mm above ground level by plinths. This is above the highest recorded flood level on site of 100mm and allows for an increase in flood levels based on climate change. The cabins will also allow water ingress, if high flood levels are experienced on site in the future. The cabins are also designed to be flood resilient, to reduce the consequences of flooding and facilitate recovery from the effects of flooding sooner. This includes the use of water-resistant materials for floors, walls and fixtures and locating electrical controls, cables and appliances at a high level.
 - 4.7 Neither the existing containers or the proposed cabins are designed to be flood resistant. Both will flood if flood levels exceed the levels they are located at on the site. This reduces the risk associated with water pressure damage and the risk of these containers and cabins being transported by flood waters. To further mitigate the risk of these containers and cabins being transported during flood conditions, all the containers and cabins will anchored to the ground.
 - 4.8 To ensure safe use of the site, the chairman and committee of the Canoe Club will be signed up the EA's Flood Warning Service (as they currently are). Based on the flood mechanisms on site, in terms of onset of flooding, depths and velocity of flood water, there is sufficient time evacuate the site safely in the event of flood event and the risks to site users can be managed safely. Site users will be able to evacuate the site using the A644 access to the site. Based on the nature and use of the site, a formal evacuation plan is not considered necessary or appropriate.
 - 4.9 Access to the site is via a gate from the A644, which is locked unless the site is being used by the Club. Access to the site is restricted and managed by the Club, providing additional safety and control measures in times of flood. During a flood event, access to the site will be closed by the chairman or committee members of the Club.
 - 4.10 The proposed development will not increase flood risk elsewhere. To ensure this:

- The two proposed additional cabin buildings will be raised off the ground by plinths, which they will also be anchored to. The cabins will be raised to a minimum level of 450mm above existing ground level.
- There is no land raising proposed as part of the development, except for the creation of a ramp to allow for disabled access (Kirklees planning requirement).
- The proposed cabins and existing containers will be anchored to the ground to ensure they don't move in flood conditions. As a result they will not impede flood flows or lead to blockages in the watercourse.
- The proposed cabins and existing containers will also be flood resilient, allowing water in, so floodplain flows or storage will not be impacted. Compensatory floodplain storage is therefore not required in this case.
- The site will remain a grass field. Car parking will be provided more formally using grasscrete, but this is a fully permeable material that is used for projects in the water environment (e.g. flood defences).
- The addition of plinths to support the cabins may reduce the amount of grass (i.e. greenfield area) very marginally. This will be confirmed following ground investigations and detailed design, but any change will be minimal and the impact in terms of flood risk negligible.