

## **Environment Agency Note: Flood Defence Requirements**

### **Introduction**

The [Thames Estuary 2100 Plan](#) sets out how the Environment Agency and our partners can work together to manage tidal flood risk in the Thames Estuary. The climate emergency is the biggest challenge of our time. Temperatures are increasing and sea levels are rising faster than ever before. Now more than ever, we need to plan and act if we are going to adapt to these changes and create resilient communities in the Thames Estuary.

Climate change, ageing flood defences and population growth mean tidal flood risk will increase over time, unless this risk is carefully managed. The Thames Estuary 2100 Plan will ensure we continue to protect 1.4 million people, £320 billion worth of property and critical infrastructure from increasing tidal flood risk.

The Thames Estuary 2100 Plan aims to do more than manage flood risk. The flood walls and embankments are an intrinsic part of the Thames landscape. As we carry out flood defence works there will be other opportunities. These include creating better access for communities to the river, creating habitat and enhancing the social, economic and commercial benefits the river provides.

The Plan aims to:

- manage the risk of flooding to people, property and the environment
- adapt to the challenges of climate change
- ensure sustainable and resilient development in the floodplain
- protect the social, cultural and commercial value of the tidal Thames, tributaries and floodplain
- enhance and restore ecosystems and maximise benefits of natural floods

### **TE2100 requirements for Canvey Island**

Canvey Island is in TE2100 action zone 7. The flood risk management policy is to "keep up with climate change and land use change to prevent an increase to the existing flood risk".

Indicative flood defence raising requirements are as follows:

- About 0.3m in 2040 (to a level of 6.7m AOD)
- A further 1.4m in 2070 (to a level of 8.1m AOD)

These increases depend on the rate of sea level rise. The increase in 2070 is likely to be carried out in stages depending on the estimated residual life of the defences and the rate of sea level rise at that time.

Land will be needed for maintaining, repairing, raising and replacing fixed flood defences. This may be considered in the following categories:

- Land for vehicle access to permit maintenance and repair of defences.
- Allowing space for construction plant to operate adjacent to the defences
- Land for raising defences including achievement of wider objectives

Vehicular and plant access to the flood defences for inspection and repair work is essential to allow the defences to be adequately inspected and maintained. Where existing defences do not have an access route at present, a vehicle access route should be provided as opportunities arise (for example, where redevelopment takes place). This would facilitate an improved inspection, maintenance and repair regime. This in turn would help to ensure that the defences are kept in good condition and reduces the chances of failure under load during surge tide events.

Engineering designs for raised defences were developed in TE2100 Phase 3 Study 4.2. These included a 'low raise', which is likely to be required before 2100, and a 'high raise', which will be required during the life of the defences if the sea level rise exceeds current Government estimates.

An example of an existing defence (on Canvey Island) and the two stages of raising are shown on Figures 3 (a), (b) and (c) respectively. The designs are based on the assumption that the defence raising is within the 'footprint' of the existing defence.

The amount of raising for these designs was 0.7m and 2.5m respectively. These are greater than the required raising amounts of 0.3m in 2040 and a total of 1.7m in 2070. However they indicate the types of works that might be required. Figure 3(a) Cross section of existing defences on the south side of Canvey Island Figure 3(b) Proposed construction works required for low level raising Figure 3(c) Proposed construction works required for high level raising.

In this example, the 'low raise' can be accommodated with relatively small changes to the existing defence profile. Thus the defence raising required in 2040 (of about 0.3m) should be achievable without changing the footprint of the defences. However the 'high raise' design creates a high and very unattractive concrete wall.

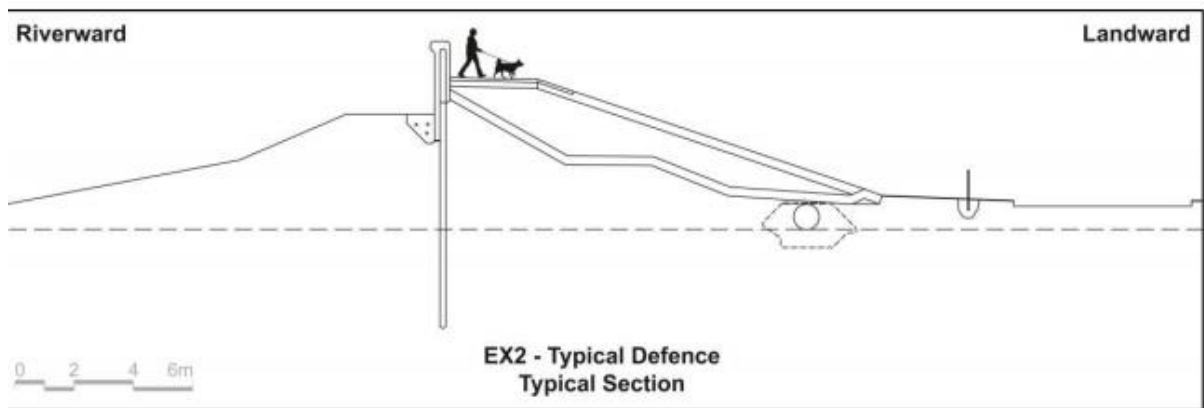


Figure 3(a) Cross section of existing defences on the south side of Canvey Island

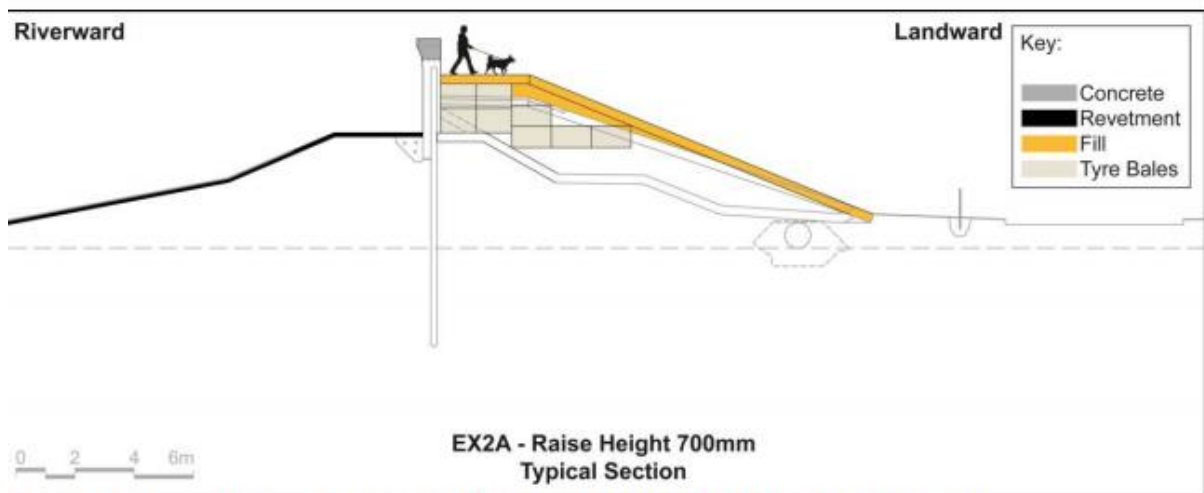


Figure 3(b) Proposed construction works required for low level raising

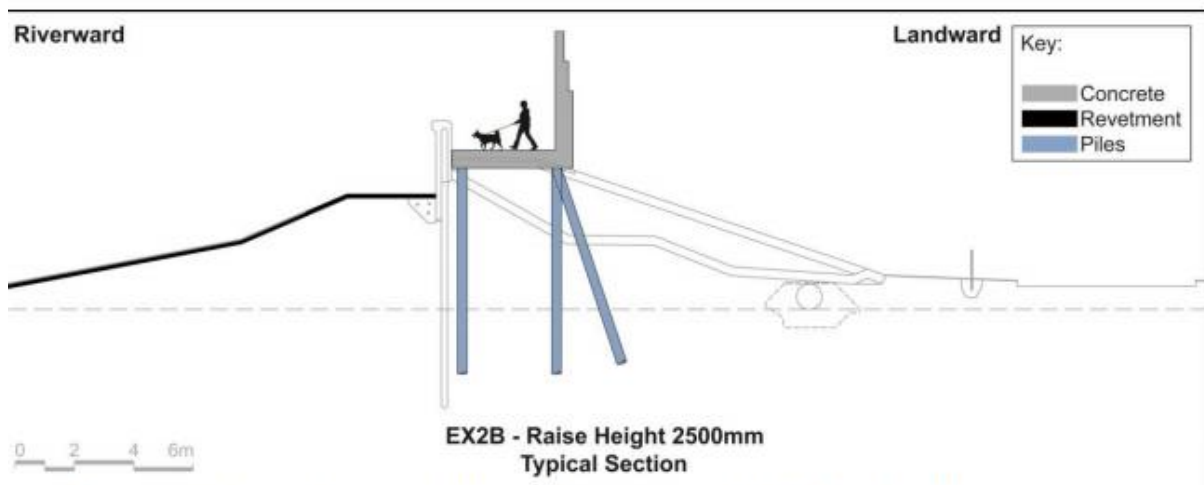


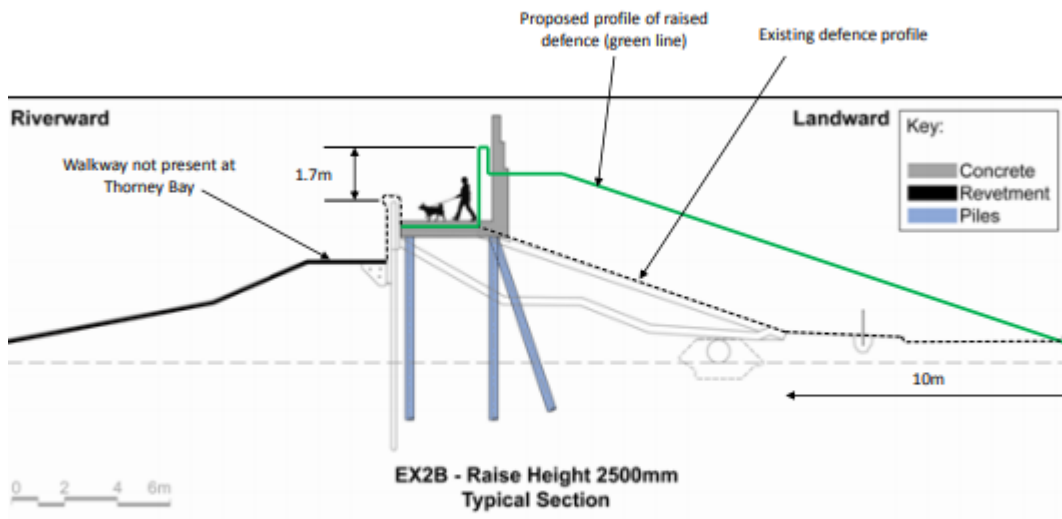
Figure 3(c) Proposed construction works required for high level raising

Landscaping and other improvements would be needed to make the design acceptable from landscape and public amenity viewpoints. This in turn will require additional space. 3.3 Achievement of wider objectives

When defences are improved (including repairing and raising), TE2100 requires that opportunities should be taken to achieve wider objectives including:

1. Public access along the defences for pedestrians and cyclists
2. Public access to the estuary for views and recreation purposes
3. Improvements to the landscape
4. Improvements to local habitats and biodiversity

These improvements require space. Local designs will be affected by the amount of available space but wherever possible space should be created both to improve access and improve the quality of the riverside. Figure 4 shows a sketch design that would achieve the 2070 defence raising requirement and would also achieve wider objectives 1, 2 and 3 listed above. This would require an additional width of 10m, as indicated on the Figure.



## Conclusions

The majority of Canvey Island lies below the level of a spring tide in the adjacent estuary. Therefore the sea defence structures are critical for maintaining the future sustainability of the whole island which is why the TE2100 Plan's flood risk management policy for the island is to "keep up with climate change and land use change to prevent an increase to the existing flood risk".

Paragraph 157(b) of the NPPF clearly indicates that Plans should support safeguarding objectives for current and future flood risk management. We believe that is important and helpful to front-end these issues as a potential constraint through the Local Plan process in order that the Environment Agency can be

involved in discussions with the planners and developers of sites located close to the current flood defences in the pre-planning stage rather than discovering post-application that there are conflicts with development design or land use proposals in areas close to the defences. In this way we can help facilitate the developer's proposals with our own and to avoid costly conflicts before development designs advance which is of benefit to both parties.

Future defence requirements are set out in the TE2100 plan. To ensure adequate land is safeguarded so as not to inhibit future defence raising and widening a policy detailing that a 'no build zone' of 19m should be maintained landward from the toe of the existing tidal defences should be considered. This would allow for a 10m footprint to cater for future raising works in 2040 and 2080, as well as ensure we have the room to construct new defences as well as the space to carry out future maintenance of both the current and raised defences.

During the Castlepoint Local plan examination, the need for a 19m zone to allow for defence raising and maintenance was questioned. It was discussed as to whether more flexibility could be considered within this policy. Each development, is unique and we recognise a need to balance the needs of development against the risk posed by increased flood risk. With this in mind we would reflect that the 19m zone is a maximum amount of space required to improve flood infrastructure and have proposed the following which we hope may assist.

The supporting text that currently reads:-

18.25

In order for the sea defences to be improved on Canvey Island it is necessary for land adjacent to these defences to be left free from development as far as possible to provide the space for taller defences with a larger footprint. Accessibility is also essential in delivering such improvements. The Environment Agency has advised that approximately 19m should be left free from development for this purpose. This enables the delivery of well-designed and landscaped defences that not only ensure the future safety of residents but are also attractive and contribute to the quality of the environment

We feel this could be amended to read:-

In order for the sea defences to be improved on Canvey Island it is necessary for land adjacent to these defences to be left free from development as far as possible to provide the space for taller defences with a larger footprint. Accessibility is also essential in delivering such improvements (both for facilitating the construction of new defences as well as for the access to maintain and inspect and repair the defences over their lifetime) The Environment Agency has advised that a maximum of 19m as measured from the landward edge of the current sea defence structure should be left free from development for this purpose, although there may be some flexibility for lesser distances free from development in some locations.

Developers are encouraged to enter into discussions with the Environment Agency at a very early stage when formulating development proposals close to these areas to avoid the potential for costly development design and layout revisions or to avoid the risk of having a flood risk permit application refused by the Environment Agency. The local plan's safeguarding provision helps to enable the delivery of well-designed and landscaped defences that not only ensure the future safety of residents but are also attractive and contribute to the quality of the environment and will reflect the clear aspiration in National Planning Policy Framework for plans to safeguard land required that is required, or is likely to be required for current or future flood management.