

Gravesham Borough Council
Development Control
Civic Centre Windmill Street
Gravesend
Kent
DA12 1AU

Our ref: KT/2021/128685/03-L01
Your ref: 20210757
Date: 11 November 2022

Dear Rebecca

Redevelopment of the site and conversion of the existing building to provide 27 residential units (6 x 1 bed, 12 x 2 bed and 9 x 3 bed) with associated landscaping, parking and vehicular access.

Custom House, The Terrace, Gravesend, Kent DA12 2BW

Thank you for consulting us on the above application. **We maintain our objection to the proposal for the reasons set out below.**

Fisheries, Biodiversity and Geomorphology

We maintain our objection set out in our letter dated 25 October 2022 as no further information to address this has been submitted.

Flood Risk

We maintain our objection to the proposed development as the proposed repair works, to the tidal flood defence, would not provide the required level of protection for the proposal's design life.

Overcoming Our Objection

Our objection refers to the following key points, which the applicant needs to address:

- Explain why the entire length of the applicant's tidal flood defence will not be raised to 8.00metres Above Ordnance Datum (AOD) - the level required for a residential development to meet the requirements of the Thames Estuary 2100 Plan (TE2100).
- Carry out sufficient testing of the tidal flood defence to provide a representative sample of the asset's condition to support any proposal which includes retaining the existing flood defence in part or full.
- Detail how the proposed concrete coating could provide a 100 year design life.
- Leave a 1.2 metre wide exclusion zone as an absolute minimum to the tidal flood defence to allow space for inspection. Additionally, retain additional

space for minor maintenance and major renewal of the flood defence asset. The applicant should detail what space would be required for the agreed flood defence.

Further information on Flood Defence

In general, we support the proposed works to provide a new defence, with a 100 year design life and 8.00mAOD crest level to the north west of the site. We also support the proposed removal of the flood gate and the construction of a continuous section of flood wall in place.

However, we object to the proposal due to the lack of satisfactory evidence that the main section of flood wall (sheet pile encased in masonry) can support future raising to 8.00mAOD and for the asset to have a minimum of 100 years residual design life as suggested by the applicant.

The submitted reports provide minimal information regarding the improvement works to the sheet pile and masonry defence. The "Remedial Works Report" (dated May 2022), drawing 'Proposed Site Sections EA Requirements' (drawing No. 036) indicates that 100 mm of concrete cover will be applied to the below ground sheet pile to a depth of 2.5m. The revised documents do not provide any additional information regarding the reinforcing of 40 year old sheet pile to provide an additional 100 year service life. The 'Delivery Methodology' (reference: F530, issue 1.1, dated: 12/04/2022) details how the exposed sheet pile defence will be replaced, outlines that the flood gate will be infilled/replaced; sets out how the capping beam will be added to 2040 level and briefly mentions raising to 8.00mAOD. However, this methodology does not detail the sheet pile protection works.

Other tidal flood steel sheet pile defences have previously been protected by concrete cover. However, this requires a specialised product to account for the flexing of tidal defences. It is considered very unlikely that the proposed 100mm concrete cover would remain attached to the defence for the design life. It should be noted, that flexible concrete products are not considered to have a 100 year design life. Once the concrete is applied, the sheet pile would be very difficult to assess and a failure would be harder to anticipate. In summary, adding concrete cover, to the sheet pile, is very unlikely to protect the structure as indicated.

The revised "Steel Sheet Pile Analysis" (by ctp consulting engineers) includes tables for the section modulus after 100 years with concrete protection. This implies that there would be zero corrosion to the sheet pile once encased in concrete. Steel imbedded in concrete is still susceptible to corrosion, for example, from chloride ingress. Added to this, the supplied section loss analysis is unlikely to be representative of the entire defence; 13 samples from two locations are provided to assess the condition of a 30m defence. It is likely that the sheet pile is far corroded than has been so far observed due to the variability of such corrosion rates across a structure.

The applicant has provided an engineering report based on limited testing of the corroded sheet pile defence. Very little detail is provided concerning the defence repairs and the suggested method would not provide the required design life but would significantly inconvenience future assessment of the defence's condition.

Please note that we have further comments to make should the above objections be overcome.

Advice to LPA If you are minded to approve the application contrary to this advice, we request that you contact us to allow further discussion and/or representations from us in line with the Town and Country Planning (Consultation) (England) Direction 2009. In particular we would impose planning conditions for flood and coastal risk management, for the protection of groundwater and to deal with land affected by contamination.

Please do not hesitate to contact us should you require any further information.

Yours faithfully

Ms Laura Edwards

Planning Advisor

Direct dial 02084749079

Direct e-mail KSLPLANNING@environment-agency.gov.uk