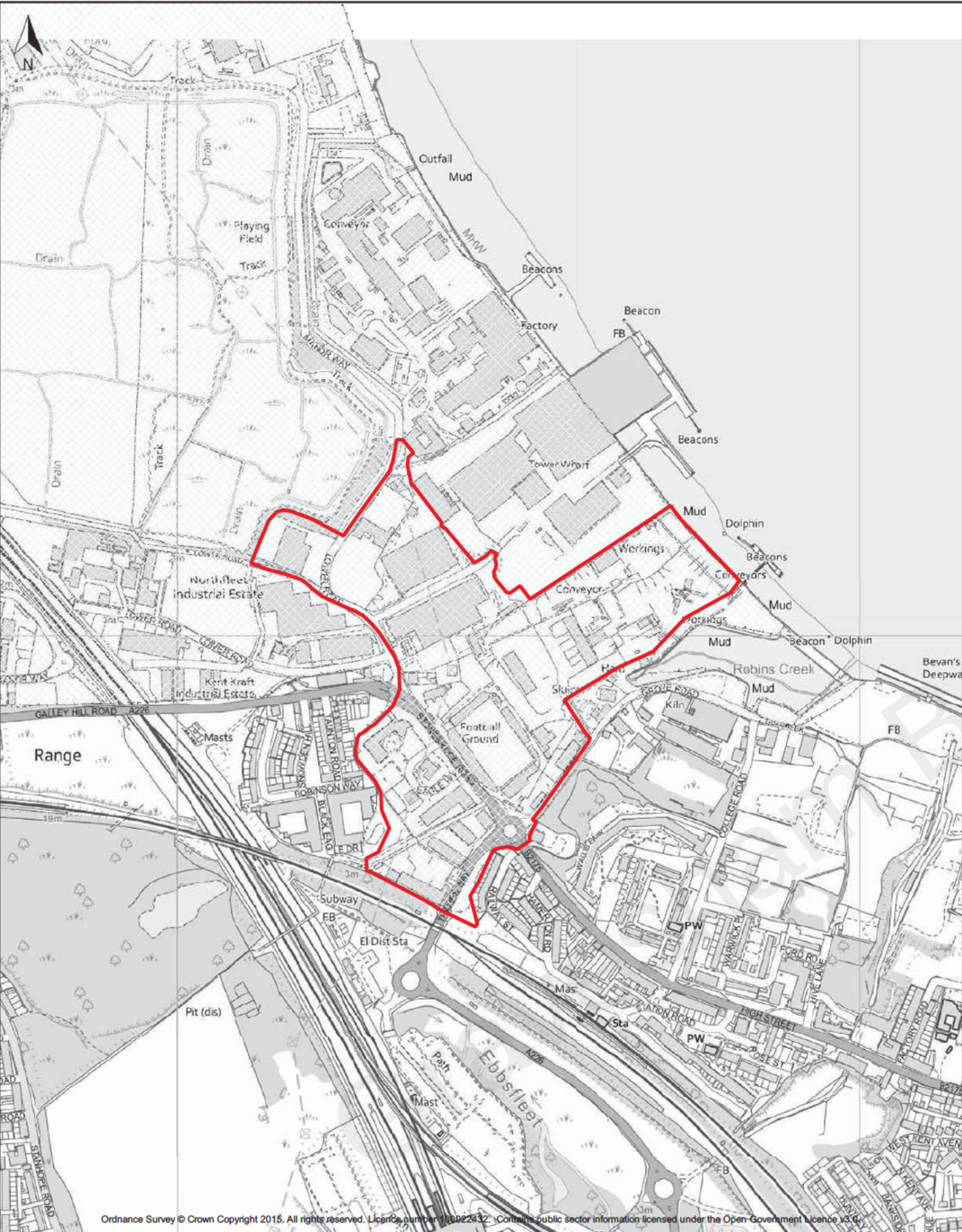




**Key**

- Red Line Boundary
- Historic Flood Extent

Figure 3.3: EA's Historic Flood Extent Map

Client: Northfleet Central 1 Ltd

Project: Northfleet Harbourside, Gravesham

Project No.: C2402

**RMA**

ENVIRONMENTAL

|       |    |         |    |      |               |       |                |
|-------|----|---------|----|------|---------------|-------|----------------|
| Drawn | RT | Checked | NY | Date | 2 / 09 / 2022 | Scale | 1 : 5,000 @ A3 |
|-------|----|---------|----|------|---------------|-------|----------------|



**Key**

- Red Line Boundary
- Tidal Breach Flood Levels (mAOD)
- Less than 5.0
- 5.0 - 5.1
- 5.1 - 5.2
- 5.2 - 5.3
- 5.3 - 5.4
- 5.4 - 5.5
- 5.5 - 5.6
- 5.6 - 5.7
- 5.7 - 5.8
- 5.8 - 5.9
- 5.9 - 6.0
- 6.0 - 6.1
- 6.1 - 6.2
- Greater than 6.2

Figure 3.4: EA's 0.5% AEP Tidal Breach Flood Levels in the Year 2115

Client: Northfleet Central 1 Ltd

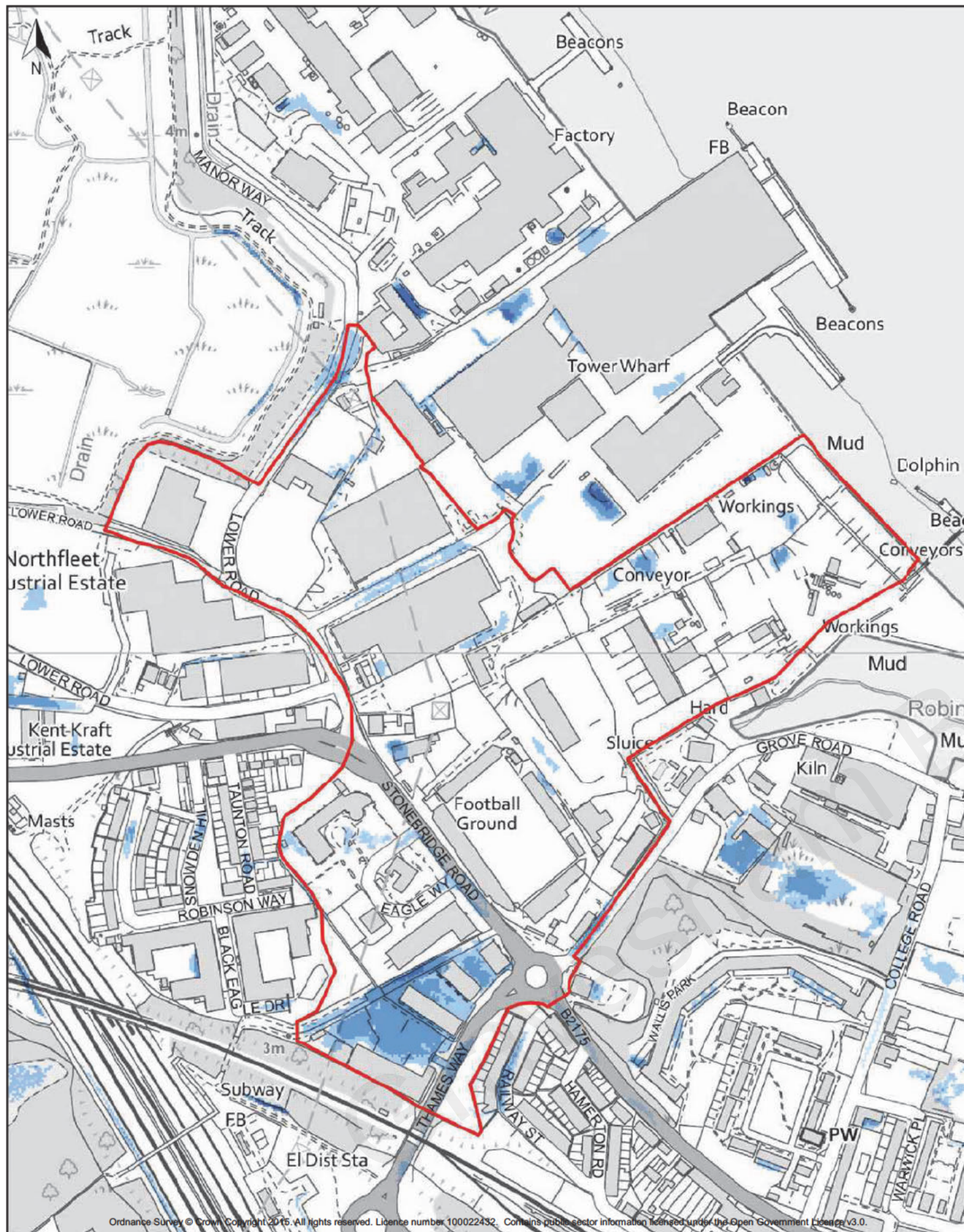
Project: Northfleet Harbourside, Gravesham

Project No.: C2402

**RMA**

ENVIRONMENTAL

|       |    |         |    |      |               |       |                |
|-------|----|---------|----|------|---------------|-------|----------------|
| Drawn | RT | Checked | MS | Date | 2 / 09 / 2022 | Scale | 1 : 2,500 @ A3 |
|-------|----|---------|----|------|---------------|-------|----------------|



**Key**

Red Line Boundary

Flood Depths

Below 150 mm

150 mm - 300 mm

300 mm - 600 mm

600 mm - 900 mm

900 mm - 1200 mm

Over 1200 mm

Figure 3.5: EA's Medium Surface Water Flood Depth Map

Client: Northfleet Central 1 Ltd

Project: Northfleet Harbourside, Gravesham

Project No.: C2402

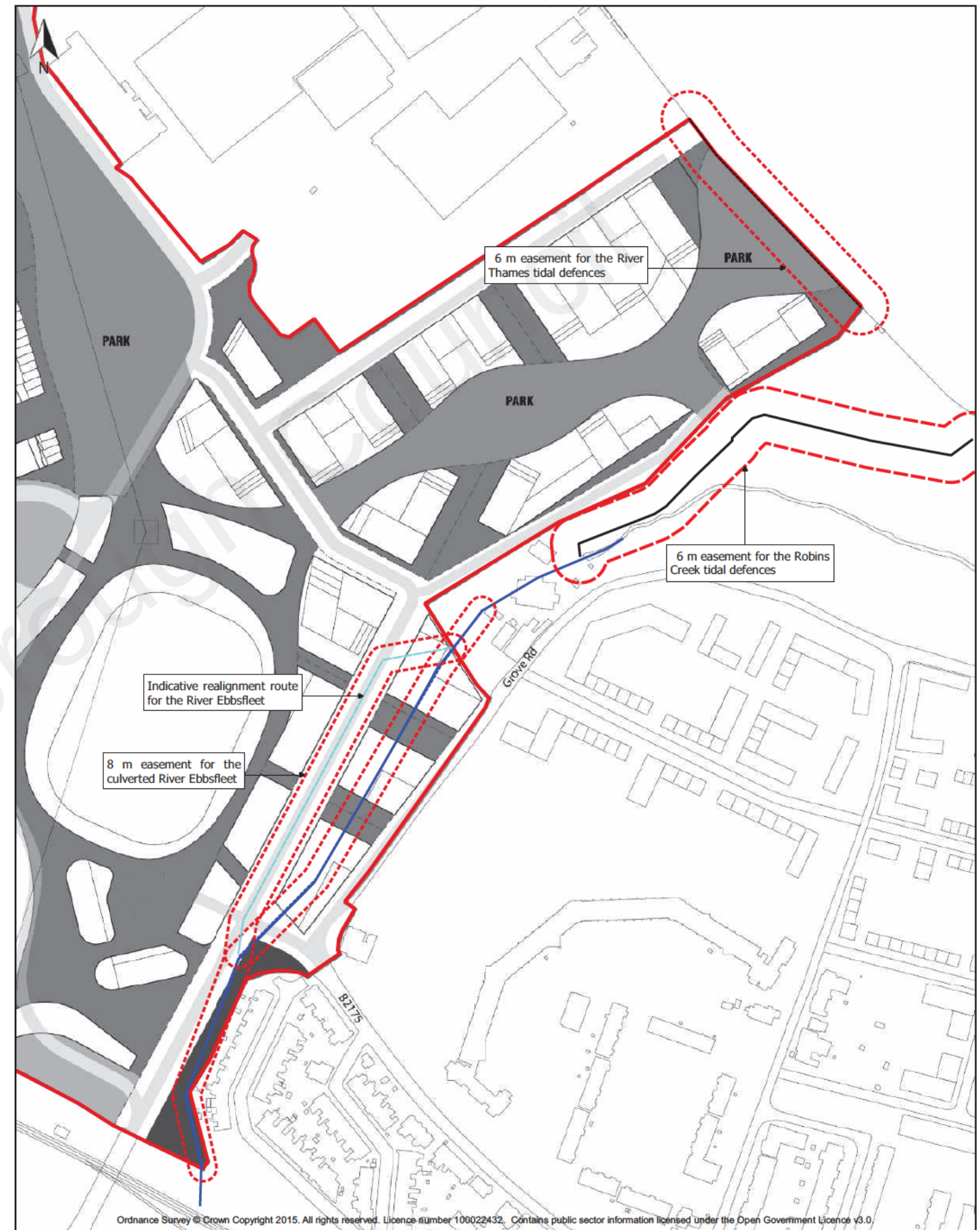


Drawn: RT

Checked: NY

Date: 2 / 09 / 2022

Scale: 1:3,000 @ A3



**Key**

Red Line Boundary

EA's Indicative Ebbsfleet Route

Indicative Realignment Route

Flood Defences

Buffers

Figure 3.6: Defence Easements and Indicative Realignment

Client: Northfleet Central 1 Ltd

Project: Northfleet Harbourside, Gravesham

Project No.: C2402



Drawn: RT

Checked: MS

Date: 2 / 09 / 2022

Scale: 1:2,000 @ A3

## ***Appendix A: Proposed Development Layout***

Gravesham Borough Council



- Site boundary (18.3 Ha)
- Park
- Public Realm within plots
- Pocket Park
- Pocket Park within Plots

Northfleet Central 1 Ltd

client  
Northfleet Central 1 Ltd

Kuflik Stadium  
Stonebridge Road  
Kent, DA11 9GN

T +965 2299 6515



client  
KEH Group

Landmarque Property Group

Sahya Complex  
Kilbarrack Road, Dublin 2, Ireland

Shannon Road  
Kuala Lumpur

@ 0060 32066 6564  
info@unstudio.com

T +353 (0) 1 255 1560



masterplanner / architect

Stadhouderlaan 113

P.O. Box 75381

1070 AJ Amsterdam

The Netherlands

T + 31 (0) 20 570 20 40

F + 31 (0) 20 570 20 41

info@unstudio.com

www.unstudio.com

project name  
Northfleet Harbourside

location  
Northfleet, UK

phase  
Preliminary Masterplan

status  
A1

date  
29-07-2022

revision  
R00

drawing code  
NFH-UNS-MAST-DR-1012

title  
Public realm

description / disclaimer

15<sup>th</sup> August 2022

Sustainable Places  
Environment Agency

Via email

Our Ref: RMA/LC2402 – Northfleet Central EA Consultation

Dear Enquiries,

**RE: PROPOSED REDEVELOPMENT OF LAND AT GROVE ROAD IN NORTHFLEET, KENT  
DA11 9AX – EA PRELIMINARY OPINION REQUEST**

RMA have been commissioned to prepare a Flood Risk Assessment (FRA) and drainage strategy for an outline planning application for a proposed redevelopment scheme on land at Grove Road in Northfleet, Kent. We are writing to the EA to request a formal preliminary opinion with regard to hydrology and flood risk.

The site comprises a mix of industrial warehouses and yards as well as Ebbsfleet football stadium. The site extends to an area of 19.03 hectares (ha) and is located at National Grid Reference TQ 61539 75079 (refer to Figure 1). The River Thames and associated flood defences are located along the north-eastern site boundary. The River Ebbsfleet is culverted within the site along the southern part of the eastern boundary and flows in a northerly direction into Robins Creek and then into the River Thames. There are flood defences along Robins Creek to the north-east of the site.

According to LiDAR data and the spot levels within the site, the majority of the site slopes in a southerly direction towards the south-eastern corner, although the western part of the site slopes in a northerly direction. The south-eastern corner and the northern part of the site slope in a northerly direction towards the River Thames (refer to Appendix A).

The redevelopment of the site will include phased demolition and redevelopment of 3,500 residential units, leisure facilities, football club facilities for Ebbsfleet Football Club, retail and employment uses, community uses, creation of new public spaces, landscaping and associated works. The indicative block plan for the proposed development is included as Appendix B. The Gravesham Local Plan identifies that the site is located within the Northfleet Embankment and Swanscombe Peninsula East Opportunity Area and within the Grove Road and Lower Ebbsfleet Area (sub-area 1.3) which '*has the potential for residentially-led regeneration*'. The site proposes a residential-led development in line with the Opportunity Area requirements.

#### Appropriate Easements

The proposed buildings including the structural support of any buildings/structures along the northern boundary will be set back more than 16 m from the River Thames defences and the Robins Creek defences (refer to Figure 2) and structural supports for buildings and structures will be completely separate of any river wall supports. This therefore, provides an appropriate easement that is free from buildings to allow for access and maintenance of the flood defences and the potential future upgrade of the defences in line with the Thames Estuary 2100 Plan.

The River Ebbsfleet is a culverted watercourse that flows through the site along the eastern boundary. It is important to note that a number of existing buildings are located above this culvert. Where possible, the redevelopment project will ensure that an 8 m easement either side of the culvert is provided that is free from any built development. However, due to design constraints, the proposed development includes three blocks to the eastern extent of the site that are proposed to overlie the route of the culvert. In order to ensure there is suitable access for future management of the culvert,

## Appendix B: EA Consultation

it is proposed to provide additional manholes either side of the proposed buildings to allow for access for maintenance and inspection. As well as this the scheme will commit to a management regime of the culvert which will include regular inspection of the culvert, repairs and removal of any debris where required. These measures will be written into the Design Code submitted with the planning application to ensure that the detailed design that comes forward (subject to Reserved Matters Applications) includes such measures. It's important to note that a surface water drainage strategy will be provided as part of the planning application, this will ensure that any discharge to the Ebbsfleet will be at a reduced rate when compared to the existing site prior to discharging into the culvert, thus providing a betterment in capacity of the culvert. This will be detailed in the surface water drainage strategy.

### Flood Levels and Floor Levels

From reviewing the EA's flood map for planning, the majority of the site lies within defended Flood Zone 3 and there are small areas of Flood Zone 2 throughout the site. The site is within an area benefitting from flood defences along the River Thames. Detailed flood data has been received from the EA. The River Ebbsfleet Model (Capita URS, 2015) indicates that the site is located within fluvial Flood Zone 1 as it is not affected by the 1% AEP plus 35% climate change or 0.1% AEP flood events (refer to Figure 3).

The Thames Tidal Downriver Breach Inundation Modelling Study 2018 indicates that the site is located within the modelled breach zone for the 0.5% AEP and the 0.1% AEP events (refer to Figure 4). The 0.5% breach flood level in the year 2115 varies from 5.08 mAOD along the western boundary in the area of Lower Road to a level of 6.11 mAOD in the north along the bank of the River Thames and, therefore, the flood levels vary across the site (refer to Figure 5). The flood depths during the 0.5% breach event in the year 2115 vary between 0.004 m located along Stonebridge Road and the eastern boundary and 3.19 m in the south-eastern corner (refer to Figure 6).

It is proposed that the residential uses will be located on the first floor and above (i.e. a minimum floor level of approximately 6.82 mAOD). Therefore, all of the proposed residential units will be raised at least 300 mm above the design breach levels.

Figure 7 shows a number of blocks where 'more vulnerable' land uses, which may comprise nursery/creche or medical facilities given the flexible use (Use Class E) sought for approval for some development plots, and hotel located at ground level and below the breach level. Although these areas will be below the design flood level, they will include internal safe access/egress to an area above the flood level should a breach flood event occur. The hotel use will locate all of the sleeping accommodation above the design flood level.

Where possible, the ground floor Finished Floor Levels (FFLs) will be raised 300 mm above the breach levels. However, given that significant flood depths may occur in some areas of the site (refer to Figure 7), it will not be possible to raise the ground floor FFLs 300 mm above the breach levels in all areas. As such, in the lower parts of the site, where it is not possible to raise the ground floor 300 mm above the breach levels, it is proposed to incorporate flood resilience measures with the aim of providing additional protection.

The EA's Thames Tidal Breach Hazard Mapping indicates that the safe access/egress route along Stonebridge Road to the east has a 'very low hazard' rating, the route along Galley Hill Road has a maximum hazard rating of a 'danger for most' and the route along Thames Way and Lower Road has a maximum hazard rating of a 'danger for all' (refer to Figure 8). However, should sufficient flood warning be given, it would be possible to evacuate occupants of the site to land located outside of the breach zone, which is situated adjacent to the eastern boundary along Stonebridge Road, approximately 35 m to the west of the site along Galley Hill Road, approximately 150 m to the south-east of the site along Thames Way and approximately 650 m to the north-west of the site.

Should sufficient flood warning not be possible, then an internal safe refuge would be available within each unit with a floor level at least 300 mm above the 0.5% breach flood levels in the year 2115. Additionally, safe refuge areas would be available on the podium levels. On this basis, it is concluded that future occupants of the development would be safe in the event of a tidal breach flood event for the operational lifetime of the development.

Part of the site proposal includes a raised podium area as shown within the plan included within Appendix B; the raised area is the yellow area around the football stadium. This area is a continuous raised structure with an approximate level of 10.62 mAOD (approximately 5.35 m above the design flood level for that area). This area will provide an area of safe refuge above the design flood level should the design flood event occur.

### Infiltration

The bedrock geology of the Chalk Formation is classified by the EA as a Principal Aquifer. When reviewing online EA data sources, it is confirmed that the site is located within a Zone 2 outer protection zone groundwater Source Protection Zone (SPZ). A Phase 1 Land Contamination Assessment (LCA) has been undertaken for the site which shows that the land uses on site have included (but are not limited to) cement works, a windmill, football ground, tramway and railway tracks, ponds, depots, industrial estates, electrical substations and garages. Given the extensive industrial land uses present on site, the likelihood of contaminants such as metals, asbestos, Polycyclic Aromatic Hydrocarbons (PAHs) and other hydrocarbons cannot be ruled out. Similarly, there are a number of historic and existing potentially contaminative land uses within a 250 m radius of the site including electricity substations, wharfs, historical tanks and depots.

Consultation with the LPA has identified that *'The BGS information also shows that for this area there is a very significant potential for one or more geohazards associated with infiltration. The underlying geology of Upper Chalk can present a significant soluble rock hazard'*.

Therefore, it is considered that infiltration-based SuDS features would not be appropriate for this site. The drainage strategy will focus on a strategy where part of the site discharges at an attenuated rate to the River Ebbsfleet with the remainder discharging at an unattenuated rate to the River Thames.

The above measures will be detailed in a Flood Risk Assessment and Surface Water Drainage Strategy that will be submitted as part of the planning application for this site, In the mean time it would be appreciate if the EA could clarify the following points:

- the acceptability of the maintenance buffers proposed alongside the River Thames and Robins Creek flood defences;
- the acceptability of the mitigation measures proposed in relation to the access and building locations associated with the River Ebbsfleet culvert;
- the acceptability of the proposed land uses within the site and comments on the appropriateness of the proposed finished floor levels for 'less vulnerable' and 'more vulnerable' elements of the development;
- comments on the suitability of infiltration-based SuDS in relation to groundwater sensitivity and existing contamination risk; and
- whether the EA can provide any information on the condition and residual life of the current flood defences on site as well as any information on the condition of the culvert and any outfalls that may be present.

I trust that the information supplied in this letter is sufficient to allow you to prepare a preliminary opinion; however, should you have any further questions or comments, please do not hesitate to contact me.

Yours sincerely



**Melissa Seymour**  
Senior Consultant

**Encs:** Figure 1 – Site Location Plan  
Figure 2 – Easement Buffers Post-development  
Figure 3 – EA's Fluvial Flood Extents  
Figure 4 – EA's 0.5% AEP Tidal Breach Flood Extents  
Figure 5 – EA's 0.5% AEP Tidal Breach Flood Levels in the Year 2115  
Figure 6 – EA's 0.5% AEP Tidal Breach Flood Depths in the Year 2115  
Figure 7 – More Vulnerable Development Mitigation  
Figure 8 – Flood Hazard Ratings during the Design Breach Flood Event  
Appendix A – Topographical Survey  
Appendix B – Indicative Block Plan

creating a better place



Northfleet Central 1 Limite  
Stonebridge Road  
Northfleet  
Gravesend  
DA11 9GN

**Our ref:** KT/2022/129955/02-L01  
**Your ref:** ENVPAC/1/KSL/00566

**Date:** 20 September 2022

Dear Sir/Madam

**THE REDEVELOPMENT OF THE SITE WILL INCLUDE PHASED DEMOLITION AND REDEVELOPMENT OF 3,500 RESIDENTIAL UNITS, LEISURE FACILITIES, FOOTBALL CLUB FACILITIES FOR EBBSFLEET FOOTBALL CLUB, RETAIL AND EMPLOYMENT USES, COMMUNITY USES, CREATION OF NEW PUBLIC SPACES, LANDSCAPING AND ASSOCIATED WORKS.**

**LAND AT GROVE ROAD IN NORTHFLEET, KENT, DA11 9AX**

Thank you for consulting us. Having reviewed the submitted report ('Northfleet Central EA Consultation', reference: RMA/LC2402, dated: 15th/08/2022) we **object** to the proposed development.

**Tidal Thames defence raising**

The referenced report does not include any consideration for the condition, residual design life and required raising of the site's Tidal Thames flood defences.

As the development has a 100 year design life, the proposal must demonstrate that the site's flood defences will provide the required degree of protection for this design life. The Thames Estuary 2100 Plan (TE2100) sets out the required flood defence crest level to maintain a sufficient standard of protection whilst accounting for the impacts of climate change. For this site, the tidal defences must be raised to a crest level of 8.00mAOD by 2070. Due to the requirement for the development to apply a 100-year design life, a proposal for the raising of the tidal defences to 8.00mAOD must be included as part of the development.

In addition to providing defence raising, it must be shown that the defence has a design life of 100 years. This would require that, either a new flood defence is constructed or that it can be demonstrated that the existing flood defence could be raised to a minimum of 8.00mAOD and provide the required degree of protection for at least the developments design life. Any proposal which included the existing river wall would have to demonstrate sufficient residual design life of the asset through an extensive series of surveys and testing. It is our experience that such defences rarely have sufficient design life and a new asset would likely be required to meet the

Environment Agency  
Orchard House Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH  
Customer services line: 03708 506 506  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)  
[www.gov.uk/environment-agency](http://www.gov.uk/environment-agency)



requirements of the National Planning Policy Framework (NPPF).

Any proposal for defence raising and/or a new defence should consider how the defence line would integrate with the defence line immediately up and downstream of the site. It should be noted that Robins Creek and much of the Northfleet river frontage is currently under development.

If a retreated defence is proposed, the development should seek opportunities to provide additional outcomes such as by creating inter-tidal habitat. If a realigned defence relies on the existing river wall (for example, to form part of the defence's toe) then the river wall must be considered part of the overall flood defence line and should be demonstrated to have at least 100 years residual design life following the development.

#### **Proximity to main River and Tidal flood defence assets**

Figure 2 ('Easement Buffers Post-development') of the referenced report indicates that development would not only encroach within the required easement distances, but would also include building over the culverted Main River Ebbsfleet. This would create an unacceptable degree of risk to the culvert during construction in addition to likely reducing the residual design life of the main river asset.

We would object to any proposal which featured encroachment to within 8 metres of a main river or 16 metres of a tidal river and associated assets.

It should be noted that flood defence assets (such as flood walls and culverts) often feature buried elements. These should be surveyed to determine the most landward extent of the asset and the easement values measured from these points.

The current condition of the river Ebbsfleet culvert is not accurately known. It would be the riparian owner's responsibility to provide repairs and maintenance. Due to the 100-year design life of the proposed development, it is very unlikely that the culvert would provide the required standard of protection for this period. Deculverting of the River Ebbsfleet must be considered as part of this proposal. Where, existing structures prevent daylighting of the culvert, we would likely support redirecting of the channel. Where parts of the culvert must remain in place, a 100-year residual design life for such assets, would again be required.

The downstream side of the river wall features a flood gate. We would require confirmation regarding the developments use of this feature. Flood gates form a weakness within a flood defence and we would look for this to be fully decommissioned; replacing the flood gate with a section of flood defence which should feature a crest level of no less than 8.00mAOD.

#### **Flood Modelling**

We have carried out catchment level modelling of the main river Ebbsfleet in 2015. The existing model indicates a very low level of flood risk to the site. However, this is likely to be inaccurate and the model should not be used as the only assessment of fluvial flood risk at this site. A site-specific flood risk model must be submitted with

any planning application to demonstrate that the site can be considered sufficiently safe from flood risk whilst not displacing flood risk to the surrounding area. This should consider fluvial and tidal flood risk in addition to surface water. A site-specific flood model should consider options for deculverting of the river Ebbsfleet and the resulting change in flood risk to the site.

#### **Insufficient Freeboard to the modelled climate change level**

Figure 7 of the report ('More Vulnerable Development Mitigation') indicates that the site would feature more vulnerable development with finished floor levels (FFL) set below the design flood level. This does not follow a sequential method and would not meet the requirements of the exception test.

Finished floor level of more vulnerable units should be set no lower than 600mm above the design flood level for the site. Where flood levels vary across the site, the supporting FRA should indicate why a given value was chosen. The design flood level for this proposal would be either: the downstream Tidal Thames Breach level for the year 2100 or the fluvial 1% Annual Exceedance Probability (AEP) flood level with allowance for climate change, whichever is highest. In the case of fluvial flood risk, a freeboard of 300mm would be consistent. As previously noted, site specific flood modelling would likely be required for this site to better represent fluvial flood risk.

We recommend that the ground floors of the proposed development are used for less vulnerable usage; limiting more vulnerable usage to the first floor and above. We further recommend that the finished floor level for all ground floors is raised to 600mm above the design flood event to reduce the impact of flooding from all sources. It is recommended to raise land levels across much of the site to provide the mentioned FFL levels. This would provide a high level of protection. To enable such raising, tunnel spoil may be possible to source from projects such as HS2.

#### **Adjacent Development**

Much of the Northfleet area is undergoing development. We recommend that the developer seeks opportunities to communicate with neighbouring developments and planning authorities, notably, Ebbsfleet Development Corporation (EDC). This may provide efficiencies for the development especially with regards to flood defence raising, deculverting and flood modelling.

We would require confirmation of the relationship of the applicants site and the Robins Creek. As part of this, please confirm the offset between the red line boundary and the creek defence and the nearest element of the creeks wall.

Yours faithfully

**David Sankar**  
**Planning Advisor**

Melissa Seymour

**From:** Melissa Seymour  
**Sent:** 23 September 2022 10:45  
**To:** Enquiries, Unit  
**Cc:** Abbey Musker; Jack Douglas; Rosie Tutton; Gary Cooper; Jon Bradburn; Polly Mason  
**Subject:** FW: Cost Recovered Advice: Northfleet (Harbourside) Project : ENVPAC/1/KSL/00566  
**Attachments:** ENVPAC\_1\_KSL\_00566\_NORTHFLEET.pdf; Figure 10 Indicative Realignment Route.pdf

Good Morning David,

Firstly, many thanks for providing the comments on the scheme at Northfleet. I have provided a response to each of the four many queries you raised below and given the timeframes and planning application submission being imminent, I would welcome a phone discussion to chat through our responses.

- 1. Tidal Defence Upgrades:** *The River Thames tidal flood wall is located outside of the Northfleet's developments red line boundary and therefore these defences are not located within the Applicants control and any future upgrades to the defences are not included within the proposed development outline application. However, futureproofing of the site and the flood defences has been duly considered in the development design, with the inclusion of a 19m set back (standard being 16m) that is free from any built development in the northern extent of the site up to the northern boundary. There is commitment within this application to provide new flood defences within the 19 m set back to meet the Thames Estuary 2100 (TE2100) standards that is required. Given the outline nature of the proposal, details with regards to the design, existing condition of the current defences and structure will be provided at reserved matters stage.*
- 2. Culvert location** *Presently, due to the lack of information and documentation, including specific and clear as-built survey information of the culvert, coupled with the inaccessibility of the area in question, the exact alignment of the culvert is currently unknown. The current alignment shown on Figure 10 is taken from EA main river spatial data and this shows buildings overlaying part of the culvert. Given the outline nature of the proposed scheme, a detailed culvert survey will be undertaken at reserved matters stage (controlled by a suitably worded planning condition). This is considered a reasonable, proportionate approach given the flexibility within the design. However, an indicative resolution is proposed which includes the diversion of the culvert along the road to the west of the site, as shown within the attached indicative Figure 10. The realignment details would be confirmed following a detailed survey of the culvert to understand its depth, width and conditions and this would stipulate any realignment route. This approach would provide a betterment when compared to the existing scenario as there will be opportunities to widen the culvert, increasing its capacity thereby reducing flood risk. This approach would also ensure that there is a suitable 8m easement predominantly free of built development to allow for access and maintenance. Opportunities for de-culverting and partial decelerating will also be considered following the culvert survey that will be undertaken at reserved matters stage.*
- 3. Flood Model –** *The River Ebbsfleet Flood model (2015) was provided to us by the Environment Agency when we requested the product 4 data for the FRA on 18<sup>th</sup> July 2022. It was not stipulated at the time that this was inappropriate to use for this site and should have been highlighted. The 2015 model is an upgrade to the previous 2005 model which was considered inappropriate and the 2015 model is understood to include the culvert within the model and therefore it would be good to understand how and where the model is considered inappropriate. As committed to in Point 2 above, given the outline nature of the proposed scheme, a detailed culvert survey will be undertaken at reserved matters stage (controlled by a suitably worded planning condition), and on receipt of this, the model can be updated to validate the 2015 model with the culvert survey. It's important to note that the current 2015 model includes both the 1% AEP plus 35% climate change allowance and the 1% AEP event plus 70% climate change allowance and for both of these scenarios, the site is not affected by flooding. When reviewing the EAs most recent climate change*

*allowances guidance that were updated in July 2021, for a 'more vulnerable' development at this site we are required to use a climate change allowance of just 27% for the 1% AEP scenario. This suggests that the current model assesses a worst-case scenario and shows our site would not be affected by flooding for a much higher climate change allowance (i.e. 35 % and 70%). It is considered that the realignment of the culvert and increase in capacity of the culvert will provide a betterment in flood risk terms and therefore will not create an increase in fluvial flood risk at the site at shown within the 2015 model.*

- 4. Flood levels and Floor Levels –** *All Finished Floor Levels of 'more vulnerable' development will be raised 600 mm above the tidal breach 2100 flood level for each building. There will be some areas where reception areas and entrances will be required to be located at ground level, below the flood level, however the sensitive areas of these land uses will be raised above the flood levels where appropriate. The EAs comment regarding raising ground floor levels above the flood level is not possible given the extent of flood depths at the site and amount of ground raising required which would result in massive implications on all other technical disciplines at the site. Raising the 'more vulnerable' elements above the flood level is considered to be feasible and appropriate for the residual flood risk at the site.*

I am hopeful that the above responses to your comments are acceptable and would allow for the EA to accept the application going forward and look forward to a discussion on these prior to the application begin submitted next week.

Should you require any further information in the meantime, please do not hesitate to get in touch.

Kind Regards,  
Melissa Seymour

(m) 07808 645 365

---

**From:** KSLPlanning <KSLPLANNING@environment-agency.gov.uk>  
**Sent:** 20 September 2022 15:14  
**To:** Melissa Seymour <Melissa.seymour@rma-environmental.co.uk>  
**Subject:** Cost Recovered Advice: Northfleet (Harbourside) Project : ENVPAC/1/KSL/00566

Hi Melissa

Please see attached

Kind Regards

David Sankar

Sustainable Places Planning Advisor (Kent)  
Environment Agency,  
Kent, South London and East Sussex Area

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

## Appendix C: LLFA Consultation

**From:** [REDACTED]  
**Sent:** 14 September 2022 16:56  
**To:** [REDACTED]  
**Subject:** FW: enquiry NORTHFLEET  
**Attachments:** RE: ENQUIRY: Northfleet ; Kent Pre-application advice 2021.pdf

**From:** [REDACTED]  
**Sent:** 01 August 2022 11:56  
**To:** [REDACTED]  
**Subject:** RE: enquiry NORTHFLEET

Hi Melissa

I have not heard back from Rebecca Ellsmore at Ebbsfleet Development Corporation so at present this work has not started. An acknowledgement was sent, see attached, for the site known as Grove Road.

However on review this morning I note the red line boundary is to the East of Grove Road/ Robin's Creek. This is not within the Ebbsfleet Garden City boundary and previous comments may not apply. I believe this site has been referred to as Northfleet Harbourside, I would be grateful if you could confirm this.

Please see below for our preliminary opinion advice.

Dear Melissa Seymour

Thank you for consulting us with your proposal.

Please find attached our pre-application advice note which provides information and guidance about issues within our remit at the planning application stage. Please note, in addition, that Robin's Wharf is an operational wharf and is safeguarded for minerals transportation in the KCC minerals and Waste Local Plan. There is also a culverted WWTW outfall to the east of your site boundary.

Current arrangements for the River Ebbsfleet mean that the river is not tidal, but is tidelocked when the Thames is in full tide.

If, following a review of the information attached, you decide that you do wish to obtain more detailed pre-application advice from us, please contact us via the e-mail address shown below to enquire about the cost recovery service we offer for detailed pre-planning advice.

Kind regards

Sophie Page

**Sophie Page**  
**Planning Specialist**  
Sustainable Places Kent and South London  
Environment Agency

[REDACTED]  
Environment Agency, Orchard House, Endeavor Park, London Road, Addington, Kent, ME10 5SH  
Please note I am currently working from home.

Working days: Monday to Thursday 9.30 – 15.30

---

**From:** [REDACTED]  
**Sent:** 01 August 2022 08:44  
**To:** [REDACTED]  
**Cc:** [REDACTED]  
**Subject:** RE: ENQUIRY: Northfleet

Good Morning,

Please can you advise when we are likely to receive a response to the below?

Kind Regards,  
Melissa

---

**From:** [REDACTED]  
**Sent:** 29 June 2022 09:30  
**To:** [REDACTED]  
**Cc:** [REDACTED]  
**Subject:** ENQUIRY: Northfleet

Dear Kent, South London and East Sussex Planning Team,

We are working on the FRA and surface water drainage strategy for the redevelopment of land at Grove Road in Northfleet, Kent, DA11 9AX (National Grid Reference – TQ 61539 75079). The indicative red line boundary is attached. Ebbsfleet, a 'main river', is culverted along the eastern boundary of the site and the River Thames is located along the north-eastern boundary of the site.

Please can you confirm the required development easements required for this culverted main river (Ebbsfleet) and for the River Thames.

The site is proposing to discharge into Ebbsfleet in the south and surface water flow from the development does not need to be restricted in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (DEFRA, 2015), as where the drainage system discharges to a surface water body that can accommodate uncontrolled surface water discharges (e.g. sea, tidal waters of rivers), the peak flow standards and volume control technical standard need not apply. The Ebbsfleet is tidally influenced at this point and, therefore, surface water runoff from the development does not need to be restricted. Please confirm that this would be acceptable to the EA.

It would also be good to understand if the EA hold any survey data of the section of Ebbsfleet that is culverted through the site that is available to share.

Kind Regards,  
Melissa

**Melissa Seymour**  
Senior Environmental Consultant

ENVIRONMENTAL PLANNING - FLOOD RISK ASSESSMENT | DRAINAGE | ENVIRONMENTAL IMPACT ASSESSMENT | WATER QUALITY | PHASE 1  
CONTAMINATION | UTILITIES APPRAISAL



**Website:** [www.rma-environmental.co.uk](http://www.rma-environmental.co.uk)

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

This e-mail and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you are not the intended addressee, or the person responsible for delivering it to them, you may not copy, forward disclose or otherwise use it or any of it in any way. To do so may be unlawful. If you receive this e-mail by mistake, please advise the sender immediately.



Please consider the environment before printing this email

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.



**Genna Henry**  
**Gravesham Borough Council**  
Civic Centre  
Windmill Street  
Gravesend  
Kent  
DA12 1AU

**Flood and Water Management**

Invicta House  
Maidstone  
Kent  
ME14 1XX

**Website:** [www.kent.gov.uk/floodir](http://www.kent.gov.uk/floodir)

**Email:** [suds@kent.gov.uk](mailto:suds@kent.gov.uk)

**Tel:** 03000 41 41 41

**Our Ref:** GBC/2022/091379

**Date:** 25 August 2022

**Application No:** 20220852

**Location:** Land Surrounding Ebbsfleet United Football Club, Bounded By Lower Road, Railway Line, Grove Road And The River Thames, Northfleet, Gravesend,

**Proposal:** Request for Scoping Opinion pursuant to Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 in respect of a proposed outline planning application with all matters reserved, except for means of access, for a mixed-use redevelopment involving the demolition of existing buildings and structures including site preparation/remediation works, and the development of up to 3,500 residential units (Use Class C3), up to 55,000 sq.m (GEA) of Use Class E including up to 32,000 sq.m (GEA) floorspace for retail, food, and beverages and up to 18,000 sqm (GEA) office floorspace, up to 15,000 sq.m (GEA) floorspace for a new 8,000-seater football stadium with associated business and leisure facilities, up to 20,000 sq.m (GEA) floorspace for a hotel (Use Class C1), up to 4,000 sq.m (GEA) floorspace for community uses (Use Class F), delivery of circa 3.8 hectares of open space and the realignment of the A226 Galley Hill Road / Stonebridge Road. Redevelopment of the site will also include some sui generis uses, with hard/soft landscaping, canal and cycle parking, highways works, infrastructure provisions with ancillary works.

Thank you for your consultation of the above referenced planning application. Kent County Council as Lead Local Flood Authority have reviewed the EIA Scoping Opinion Request report (July 2022) prepared by Trium Environmental Consulting and raise no objections or requirements for surface water drainage at this stage.

The LLFA understand from the Water Resources and Flood Risk Chapter (including surface water drainage), that these considerations are taken out of the EIA Scoping Opinion and will instead be covered in a separate report as part of any future planning submission. We accept this approach and will await for those details to be provided as part of a formal planning application.

The LLFA acknowledge statements 409, 424 and 428 in regards to adhering to national and local planning guidance, incorporation of SuDS measures into the development and further consultation with the LLFA will be undertaken to discuss flood risk.

In addition to those policies referenced in statement 409, the LLFA would request the following KCC Policies are considered for designing a future surface water drainage scheme:

- Kent County Council's Drainage and Planning Policy Statement (2019)

- Kent Design Guide Making it Happen- Appendix C2 Drainage Systems

This response has been provided using the best knowledge and information submitted as part of the planning application at the time of responding and is reliant on the accuracy of that information.

Yours faithfully,

**Daniel Hoare**  
Flood Risk Project Officer  
Flood and Water Management



Melissa Seymour

**Flood and Water Management**

Invicta House  
Maidstone  
Kent  
ME14 1XX

**Website:** [www.kent.gov.uk/flooding](http://www.kent.gov.uk/flooding)

**Email:** [suds@kent.gov.uk](mailto:suds@kent.gov.uk)

**Tel:** 03000 41 41 41

**Our Ref:** NON/2022/090788

**Date:** 14 July 2022

**Application No:** pre app

**Location:** Land at Grove Road in Northfleet, Kent, DA11 9AX

**Proposal:** Outline application for a mixed-use development on the 19 ha site

Thank you for your enquiry in relation to the above site.

We have reviewed our records that we hold for your site and we can provide you with the following information:

**Site Conditions**

The site conditions identified from mapping show the underlying geology as Upper Chalk with groundwater likely to be seated at less than 3m below the ground surface, which may be subject to seasonal variation.

British Geological Survey mapping available to the [LLFA](#) notes that this area of interest suggest that the bedrock permeability is likely to be free draining, but seasonal variation should be investigated.

The site is situated within a [SPZ2](#) zone indicating the groundwater may be vulnerable to contamination, risks associated with transport of contaminants to ground water should be considered prior to any suds installation and appropriate treatment.

Flood Zone mapping provided by the Environment Agency shows that the location is listed as being within flood zone 2 and a majority of the site also within flood zone 3. Please refer to the Environment Agency for further guidance.

Surface water flood mapping provided by the Environment Agency appears to show that this area may be susceptible to surface water flooding in some areas.

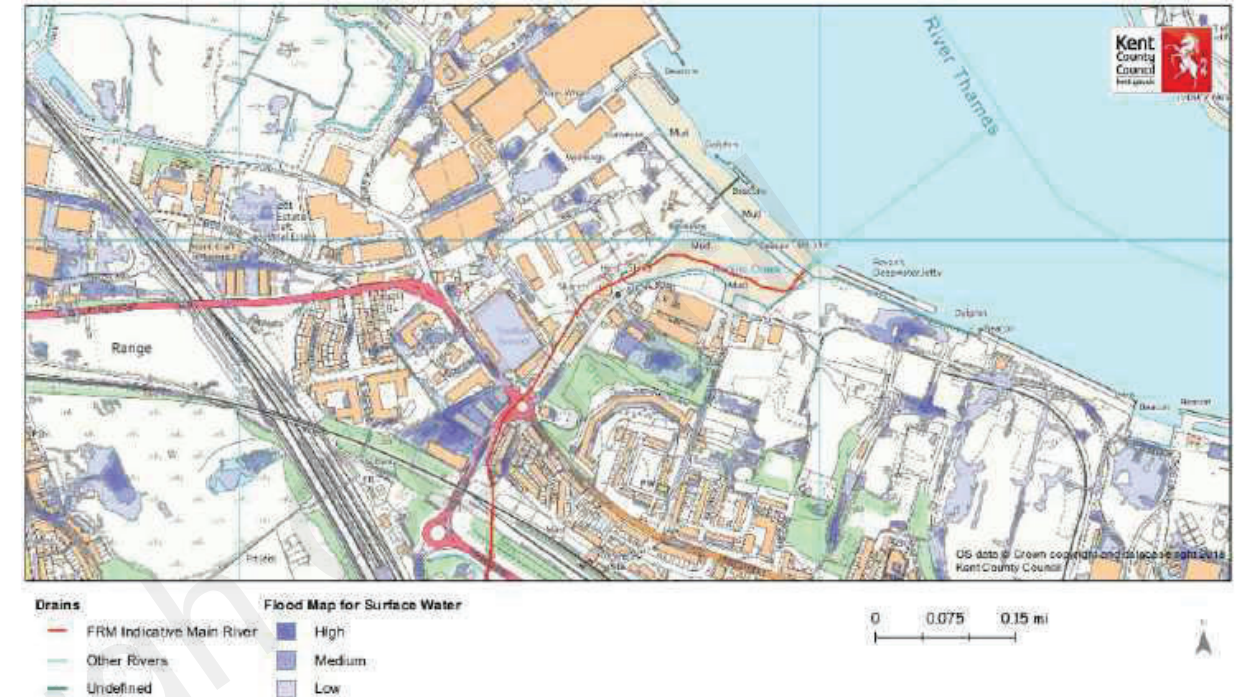


Figure 1: Surface water flood mapping overlain with Ordnance Survey map to show areas identified as at risk from surface water flows

EA National Flood Risk Assessment shows that this area is at low to medium risk of flooding from rivers, the sea, groundwater, reservoirs, and surface water.

Figure 2 below shows the location highlighted as at risk on the National Flood Risk Register:

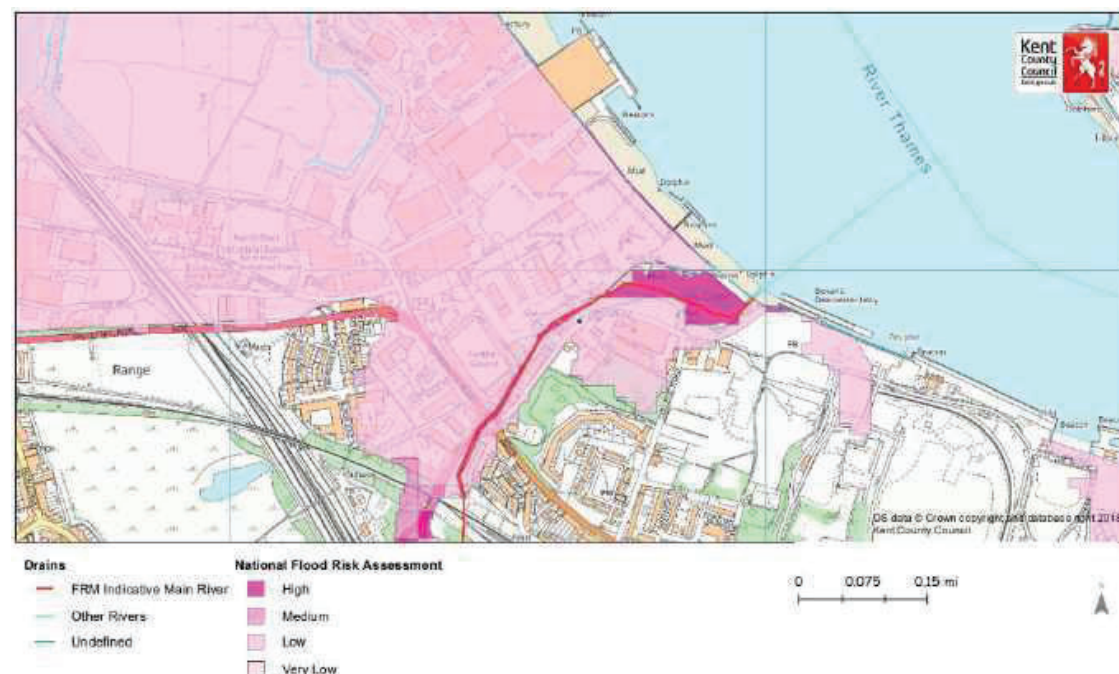


Figure 2: Surface National Flood Risk mapping overlain with Ordnance Survey map to show areas identified as at risk from surface water flows

### Historic flood events

An extensive flood history search from our highway database has been undertaken of the roads and surrounding areas. Our database records reports of flooding to the highway only, unless additional information is provided. KCC do not keep records or details of private assets. A breakdown of the flood events can be found below:

#### THAMES WAY

- Multiple reports along Thames Way specifically underneath the bridge of flooding during and after rainfall causing problems for traffic and pedestrians spanning between 19/12/2019 and 17/06/2021.
- Multiple reports of flooding along Thames Way between 13/01/2013 and 17/06/2021.
- Multiple reports along Thames Way of blocked gullies/ beany blocks spanning between 18/09/2013 and 14/01/2021.
- Report on 13/06/2016 of a blocked drain on Thames Way outside number 33. During heavy rainfall water has gone into the property damaging the walls.

#### STONEBRIDGE ROAD

- Multiple reports on Stonebridge Road of blocked drains/ gullies spanning between 23/02/2009 and 15/03/2022.
- Report on Stonebridge Road outside the football club of 1ft deep flood hiding a hole in the road on 30/11/2009.

- Report on the junction between Stonebridge Road, Lower Road, and Gally Hill Road of a burst water main flooding the road on 21/10/2010.
- Report on Stonebridge road of damaged beany blocks on roundabout contributing to flooding issues on 26/02/2020.

#### EAGLE WAY

- Eagle Way before and after the stadium and roundabout report of the path/ road going across full of water and weeds on 05/11/2021.
- Multiple reports on Eagle Way spanning between 11/07/2021 and 01/09/2021 of remedial works being carried out to blocked gullies.

#### GROVE ROAD

- Multiple reports on Grove Road of Kerbs/ beany blocks broken, and drainage blocked due to vehicle overrun spanning between 18/02/2019 and 02/09/2021.
- Multiple reports on Grove Road of blocked Gullies spanning between 16/12/2011 and 19/05/2022.
- Multiple reports of flooding on Grove Road spanning between 12/06/2017 and 27/12/2021.

#### LOWER ROAD

- Multiple reports of flooding on Lower Road around the industrial units spanning between 11/10/2013 and 16/06/2020 possibly due to blocked drains/ gullies. however it appears that the highways team have carried out remedial works to ease the surface water flooding at this location.
- Multiple reports of blocked drains/ gullies on Lower Road spanning between 11/10/2013 and 14/01/2021, however it appears that the highways team have carried out remedial works to ease the surface water flooding at this location.

### Local surface water features and drainage assets

The River Ebbsfleet is culverted through the site and is classified as Main River, any works within 8m of this culvert may require a permit to work from the Environment Agency and we would recommend contacting them at your earliest convenience further information can be found here: Check if you need permission to do work on a river, flood defence or sea defence - GOV.UK ([www.gov.uk](http://www.gov.uk)) or you can email them at [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

Further to this a wall is also present running along the northeastern boundary of the site that the Environment Agency are responsible for.

Figure 3 below shows the approximate route of the River Ebbsfleet along the eastern boundary of the site:

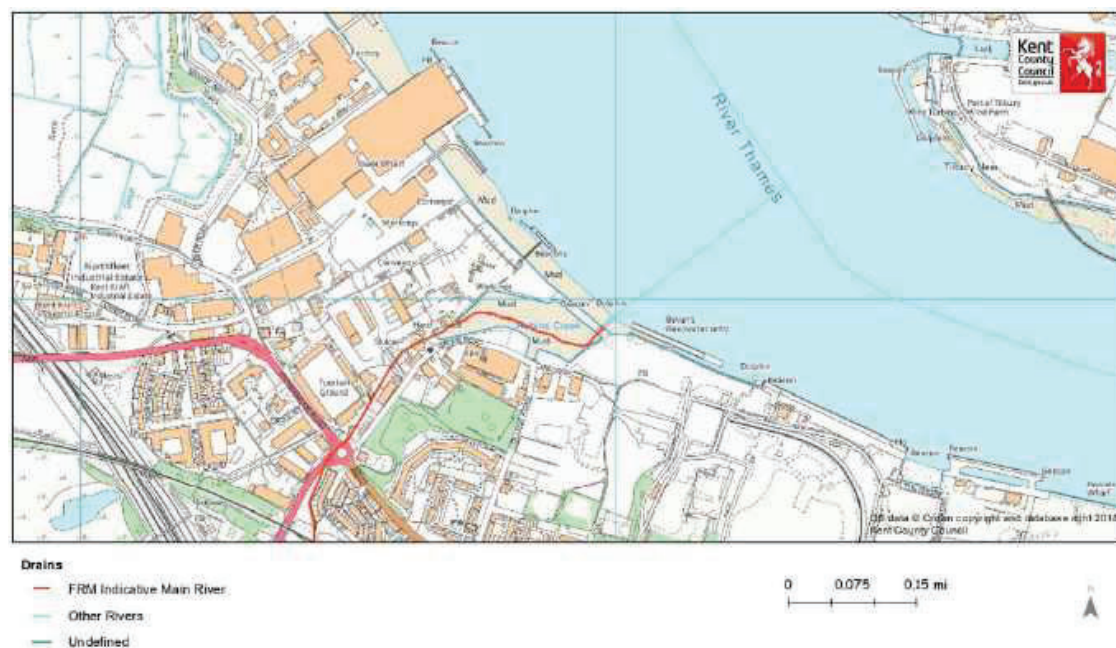


Figure 3: River Ebbsfleet flowing through site, assumed to be culverted given location.

If there are any OWC's within the site or on the boundary in addition to the River Ebbsfleet, these would be classed as Ordinary Watercourse under Land Drainage Act 1991 and Land Drainage consent may be required for the proposed development.

Please note that any feature capable of conveying water can be considered to fall under the definition of an 'ordinary watercourse' and we would urge the applicant to contact us prior to undertaking any works that may affect any watercourse/ditch/stream or any other feature which has a drainage or water conveyance function. Any works that have the potential to affect the watercourse or ditch's ability to convey water will require our formal flood defence consent (including culvert removal, access culverts and outfall structures). Please contact flood@kent.gov.uk for further information.

Our records also show that other drainage assets present on site are a number of foul sewer lines and a surface water sewer towards the south of the site along Stonebridge Road and Eagle Way shown on figure 4 below:

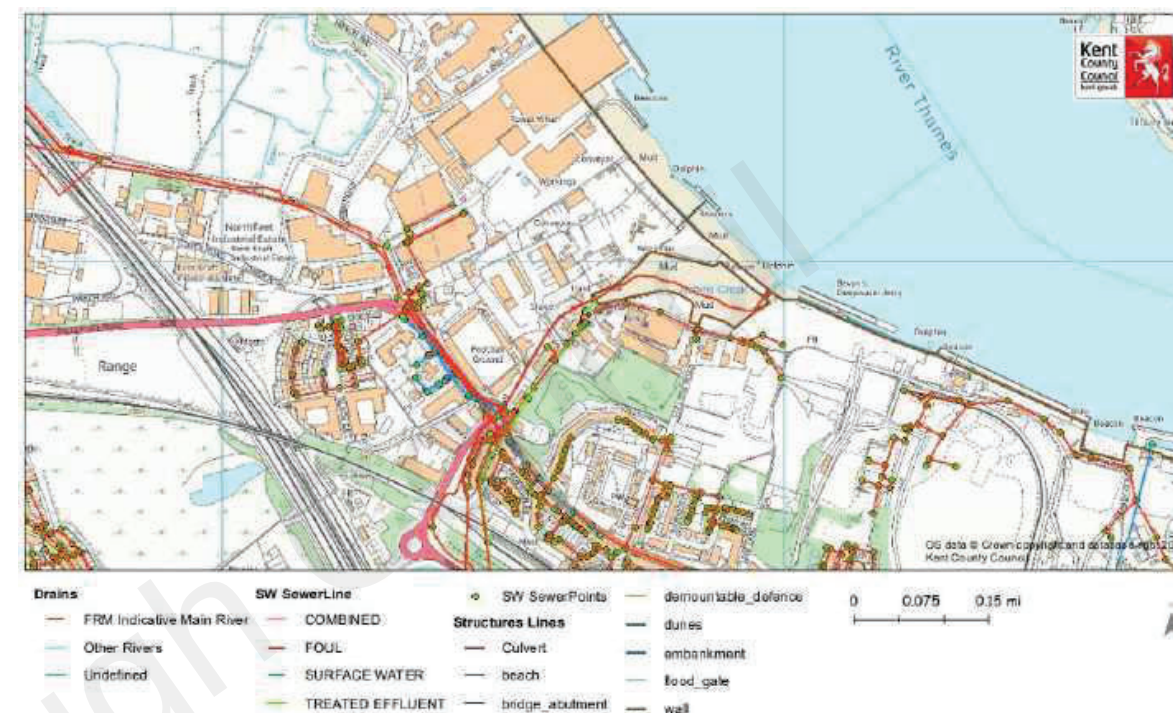


Figure 4: Sewer lines and points flowing through site.

### Other identified flood issues or ground conditions

The BGS information also shows that for this area there is a very significant potential for one or more geohazards associated with infiltration.

The underlying geology of Upper Chalk can present a significant soluble rock hazard. The BGS website indicates that over part of the site the risk of soluble rocks is present, it is recommended that the site investigation should consider whether the potential for or the consequences of ground instability are significant. It is strongly advised that a full ground investigation is undertaken to ascertain the rate of infiltration across the site should works be proposed. The infiltration testing should be undertaken in accordance to BRE:365 standard, with the main requirement being for three tests to be undertaken at the location of any proposed soakaways or infiltration basin.

Ground instability is a risk that should be managed appropriately. Kent County Council guidance recommends separation distances that reflect the depth of the drainage measures i.e. 5m for conventional soakaways and 10m for deep bored soakaways. The CIRIA report C574D "Engineering in Chalk" recommends specifically:

- in areas where dissolution features are known to be prevalent, soakaways should be avoided, if at all possible, but if unavoidable, should be sited at least 20 m away from any foundations.
- Where the chalk is of low density, or its density is not known, soakaways should be site at least 10 m away from any foundations
- Where the chalk is of medium density (or higher), the closest part of the soakaway should be at least 5 m from any foundation.