The Great Grid Upgrade

Sea Link

Sea Link

Volume 9: Examination Submissions

Document 9.122: Surface Water Flood Risk and Climate Change - Technical Note

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Executive Summary

Ex1.1 Purpose of this Report

Ex1.1.1 National Grid Electricity Transmission plc (here on referred to as the Applicant) is making an application for development consent to reinforce the transmission network in the South East and East Anglia. The Sea Link Project (hereafter referred to as the 'Proposed Project') is required to accommodate additional power flows generated from renewable and low carbon generation, as well as an addition to new interconnection with mainland Europe. The reinforcement would be achieved via the construction and operation of a High Voltage Direct Current (HVDC) Link between the proposed Friston substation in the Sizewell area of Suffolk and the existing Richborough to Canterbury 400 kV overhead line close to Richborough in Kent.

Ex1.1.2 This report has been produced to support the application for development consent and the accompanying Environmental Statement under the Planning Act 2008. In **Application Document 9.23 Draft Statement of Common Ground Between National Grid Electricity Transmission and the Suffolk County Council [REP3-062]** there is currently a matter under discussion linked to pluvial (surface water) flooding.

Ex1.1.3 This note presents and interprets information to address Suffolk County Council's request to provide surface water climate change flood maps. Mapping and interpretation for the Kent Onshore Scheme is also provided.

Ex1.2 Summary of the Assessment

Ex1.2.1 Data from the Environment Agency National Flood Risk Assessment 2 (NaFRA2) dataset has been used to inform the assessment.

Ex1.2.2 Comparisons of present day and future flood mapping demonstrate that there is very limited and localised change in the future surface water flooding extents and risk profiles of the land where permanent above ground infrastructure would be situated. The operational Suffolk and Kent Onshore Schemes are concluded to be at low risk of surface water flooding and the drainage that would serve the operational development would be designed with an allowance for future climate change.

Ex1.2.3 This assessment supplements the information provided within **Application Document 6.8 Flood Risk Assessment [APP-292]** and does not alter the conclusions of the FRA.

1. Introduction

1.1 Purpose of this report

1.1.1 In the Statement of Common Ground between the Applicant and Suffolk County Council **Application Document 9.23 Draft Statement of Common Ground Between National Grid Electricity Transmission and the Suffolk County Council [REP3-062]** there is currently a matter under discussion linked to pluvial (surface water) flooding.

1.1.2 Suffolk County Council notes '*Whilst the new national flood maps have been used for pluvial flood risk, they only appear to show the predicted flood risk now and haven't shown the predicted pluvial flood maps with climate change*'.

1.1.3 This note therefore presents and interprets the surface water climate change flood maps, providing information to address Suffolk County Councils' request. Mapping and interpretation for the Kent Onshore Scheme is also provided.

2. Surface Water Flood Mapping

2.1 Data Sources

2.1.1 The assessment of surface water flood risk to the Suffolk and Kent Onshore Schemes, presented in **Application Document 6.8 Flood Risk Assessment [APP-292],** was made with reference to the Environment Agency Risk of Flooding from Surface Water Map, part of the NaFRA2 dataset (Environment Agency, 2025). This was supplemented in Suffolk, by outputs from the Friston Surface Water Flood Study (BMT, 2020). This is a detailed study of surface water flood risk in the locality of Friston, informed by more spatially refined hydraulic modelling.

2.1.2 Figures in Appendix A of **Application Document 6.8 Flood Risk Assessment [APP-292]** present the 'present day' high, medium and low risk surface water flood zones for the Suffolk and Kent Onshore Schemes. These zones define land at risk of flooding in the following rainfall events:

- High risk - 3.3% (1 in 30) or greater annual chance rainfall event;
- Medium risk - between a 1% (1 in 100) and 3.3% (1 in 30) annual chance rainfall event; and
- Low risk - between 0.1% (1 in 1000) and 1% (1 in 100) annual chance rainfall event.

2.1.3 The NaFRA2 dataset also provides mapping for future scenarios, based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5. The central allowance for the 2050s epoch (2040-2060) is presented for risk of flooding from surface water.

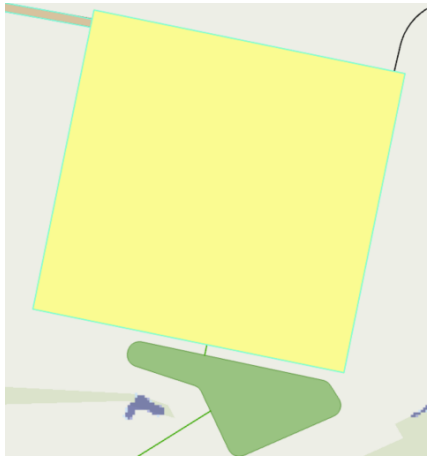
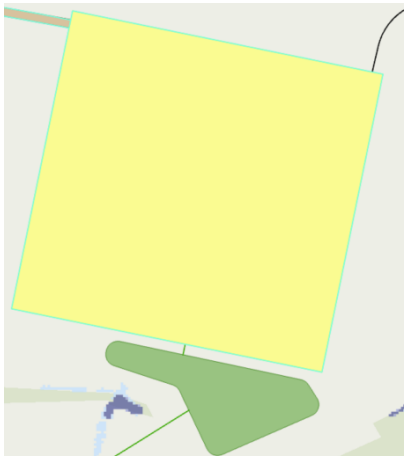
2.2 Future Surface Water Flood Risk to the Project

2.2.1 Section 4.4 of **Application Document 6.8 Flood Risk Assessment [APP-292]** presents an assessment of surface water flood risk to the Proposed Project during operation.

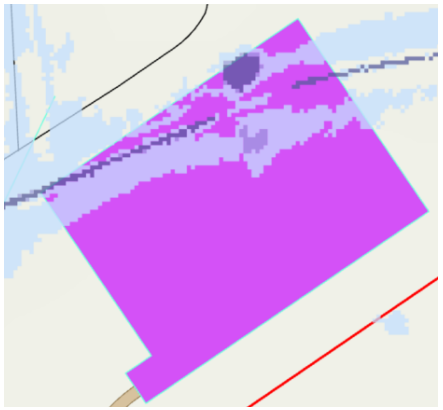
2.2.2 The assessment focuses on the above ground components of the Suffolk and Kent Onshore Schemes, primarily the proposed substations and converter stations and their permanent access routes, in addition to the proposed overhead line works in Kent. Most other Proposed Project's components during the operational phase would be underground and therefore would have no vulnerability to, or potential to impact on, future surface water flood risk.

2.2.3 Table 2.1 presents a comparison of the present day and future surface water flood extents for key elements of the Suffolk Onshore Scheme. An overview of surface water flooding extents for all land within the Suffolk Onshore Scheme Order Limits is provided in Figure A1 in Appendix A and for ease of reference extracts of this overview plan are presented in the table.

Table 2.1 Summary of future pluvial flood risk for key areas of the operational Suffolk Onshore Scheme[1]

Project Component	Present Day Risk	Future Risk (with climate change)	Commentary
Saxmundham Converter Station - construction footprint within the yellow box, with an adjacent surface water drainage feature represented by the green shape (Figure A1 Box A)*			As illustrated, the proposed Saxmundham Converter Station site is at very low risk of surface water flooding in the present day. There is no change to the risk profile when accounting for future climate change.
Saxmundham Converter Station permanent access route – linear access route shown in orange, bellmouth in grey and the Fromus bridge and its approaches in orange (Figure A1 Box B, C, D)*			There is no anticipated future change to the extent or degree of flood risk along the majority of the permanent access route to the Converter Station (which is at very low risk). There is an area at high and medium present day risk in the vicinity of the proposed new bridge crossing of the River Fromus. The future risk in this location is very similar, with very marginally larger

[1] A key defining the Project components displayed in the tabulated images is provided in Figure A1 in Appendix A.

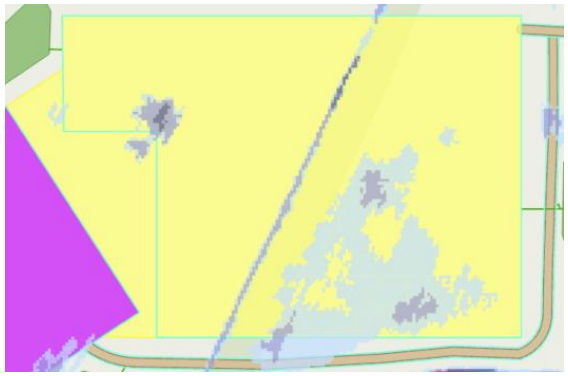
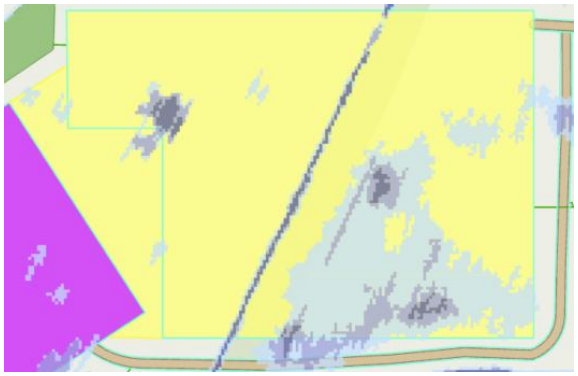
Project Component	Present Day Risk	Future Risk (with climate change)	Commentary
			extents and a small increase in coverage by the high risk zone. The bridge crossing and its approaches however would be elevated, and the access route would not be at risk of flooding.
Friston Substation – construction footprint within the pink box (Figure A1 Box E)*			In the present day scenario, the Friston Substation site is at very low risk of surface water flooding, with the linear feature shown representing a land drain that will be infilled and replaced by the proposed drainage system for the Substation. In the future scenario the pale blue extent represents a low risk of surface water flooding, however, is not representative, given that the land drain would be infilled and the Substation would be served by an operational drainage system.

*Locations illustrated in Figure A1 in Appendix A, which provides an overview of the whole of the Suffolk Onshore Scheme Order Limits.

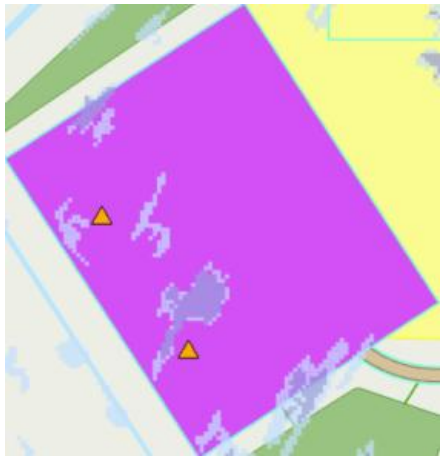
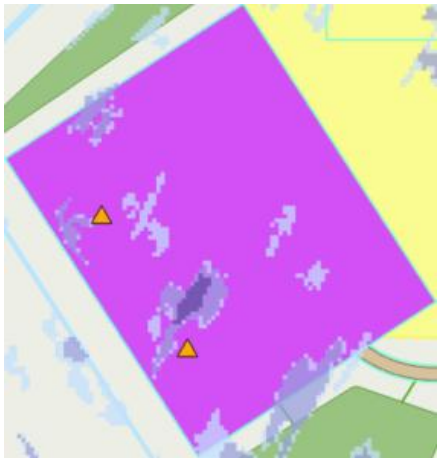
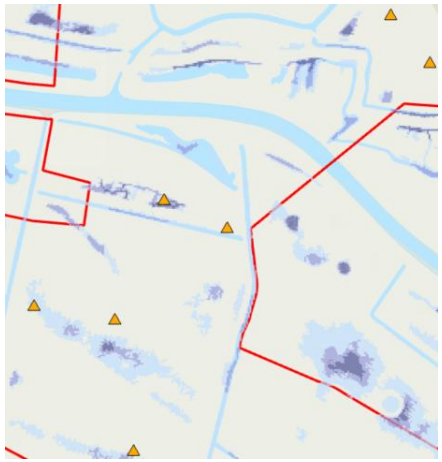
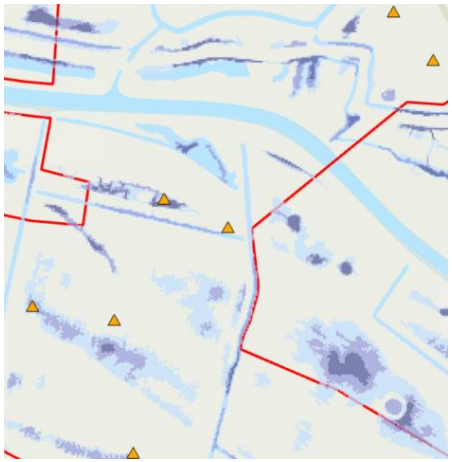
2.2.4 The comparison presented above therefore demonstrates that there is very limited and localised change in the future surface water flooding extents. The operational Suffolk Onshore Scheme would be at low risk or designed to be resilient to this form of flooding.

2.2.5 Table 2.2 presents a comparison of the present day and future surface water flood extents for key elements of the Kent Onshore Scheme. An overview for all land within the Kent Onshore Scheme Order Limits is provided in Figure A2 in Appendix A.

Table 2.2 Summary of future pluvial flood risk for key areas of the operational Kent Onshore Scheme[2]

Project Component	Present Day Risk	Future Risk (with climate change)	Commentary
Minster Converter Station – construction footprint within the yellow box (Figure A2 Box F)*			The comparison shows that future risk in this location is very similar to present day, with marginally larger extents and a small increase in coverage by the high and medium risk zones. However, future flood risk is not representative, given that the linear land drain crossing the site would be infilled and its function would be provided by the operational drainage system of the Converter Station.
Minster Converter Station permanent access route – linear access route in orange, bellmouth in grey (Figure A2 Box G)*			The access route is largely at very low risk of surface water flooding in the present day and future scenarios, with no change in future flood risk.

[2] A key defining the Project components displayed in the tabulated images is provided in Figure A2 in Appendix A.

Project Component	Present Day Risk	Future Risk (with climate change)	Commentary
Minster Substation - construction footprint within the pink box, orange triangles showing pylons (Figure A2 Box H)*			Within the proposed footprint of the Minster Substation there is very limited change to the surface water flood extents and risk profile in the future scenario. It is also noted that the Substation would be served by an operational drainage system and so the future flood extents are not representative.
Pylons in proximity to the River Stour - orange triangles (Figure A2 Box I)			In the vicinity of the work to existing pylons and at sites where new pylons would be constructed, there is very limited change to the extent and degree of surface water flood risk.

*Locations illustrated in Figure A2 in Appendix A, which provides an overview of the whole of the Kent Onshore Scheme Order Limits.

2.2.6 The comparison presented above therefore demonstrates that there is very limited and localised change in the future surface water flooding extents. The operational Kent Onshore Scheme would be at low risk or designed to be resilient to this form of flooding.

2.3 Surface Water Flood Risk Management

2.3.1 As outlined in good practice measure W11 in **Application Document 9.83 (B) Outline Code of Construction Practice [REP4-232]**, surface water drainage from permanent infrastructure would be managed and treated using SuDS designed in accordance with the requirements of the National Standards for SuDS (Defra, 2025) and relevant local guidance, to include allowances for climate change in accordance with current Environment Agency guidelines (Environment Agency, 2022). These SuDS would be maintained over the lifetime of the Proposed Project.

2.3.2 By conforming to the design standards, the drainage infrastructure would provide the storage necessary to achieve discharges at greenfield rates across the Proposed Project. Therefore, there would be no impact on the rainfall runoff regime or surface water flood risk during operation of the Proposed Project.

3. Conclusions

3.1.1 Predicted pluvial flood maps with climate change from the NaFRA2 dataset have been presented for Suffolk and Kent, fulfilling the request from Suffolk County Council to provide this information.

3.1.2 The data has been compared with the present day surface water flood maps which were provided in Appendix A of **Application Document 6.8 Flood Risk Assessment [APP-292].**

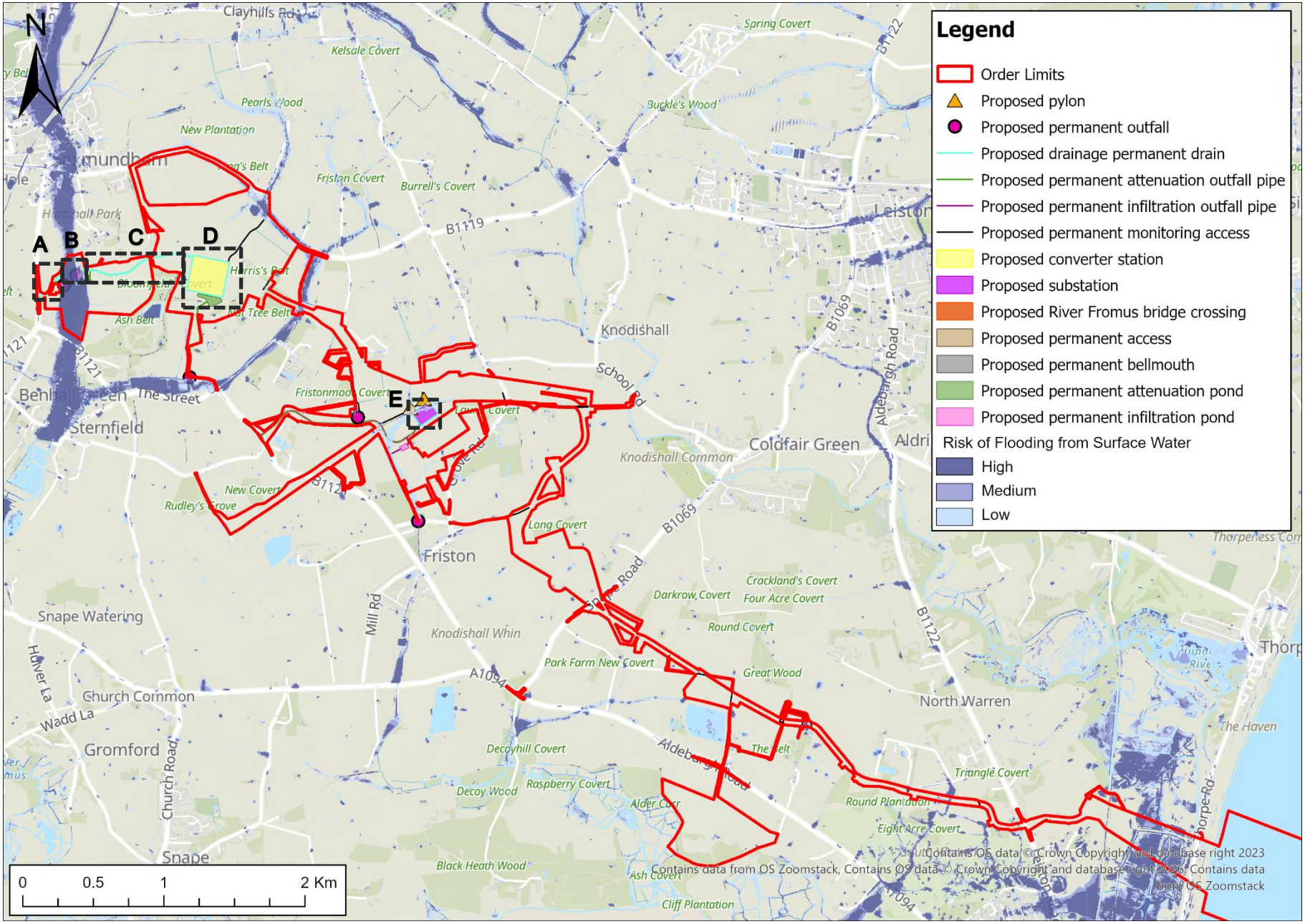
3.1.3 The comparisons demonstrate that there is very limited and localised change in the future surface water flooding extents and risk profiles of the land where permanent above ground infrastructure would be situated. There are therefore no practical consequences associated with the minor increases in future flood risk from this source. The operational Suffolk and Kent Onshore Schemes are concluded to be at low risk of surface water flooding and the drainage that would serve the operational development would be designed with an allowance for future climate change.

3.1.4 The assessment within and conclusions of the **Application Document 6.8 Flood Risk Assessment [APP-292]** remain valid and are not affected by the information presented herein.

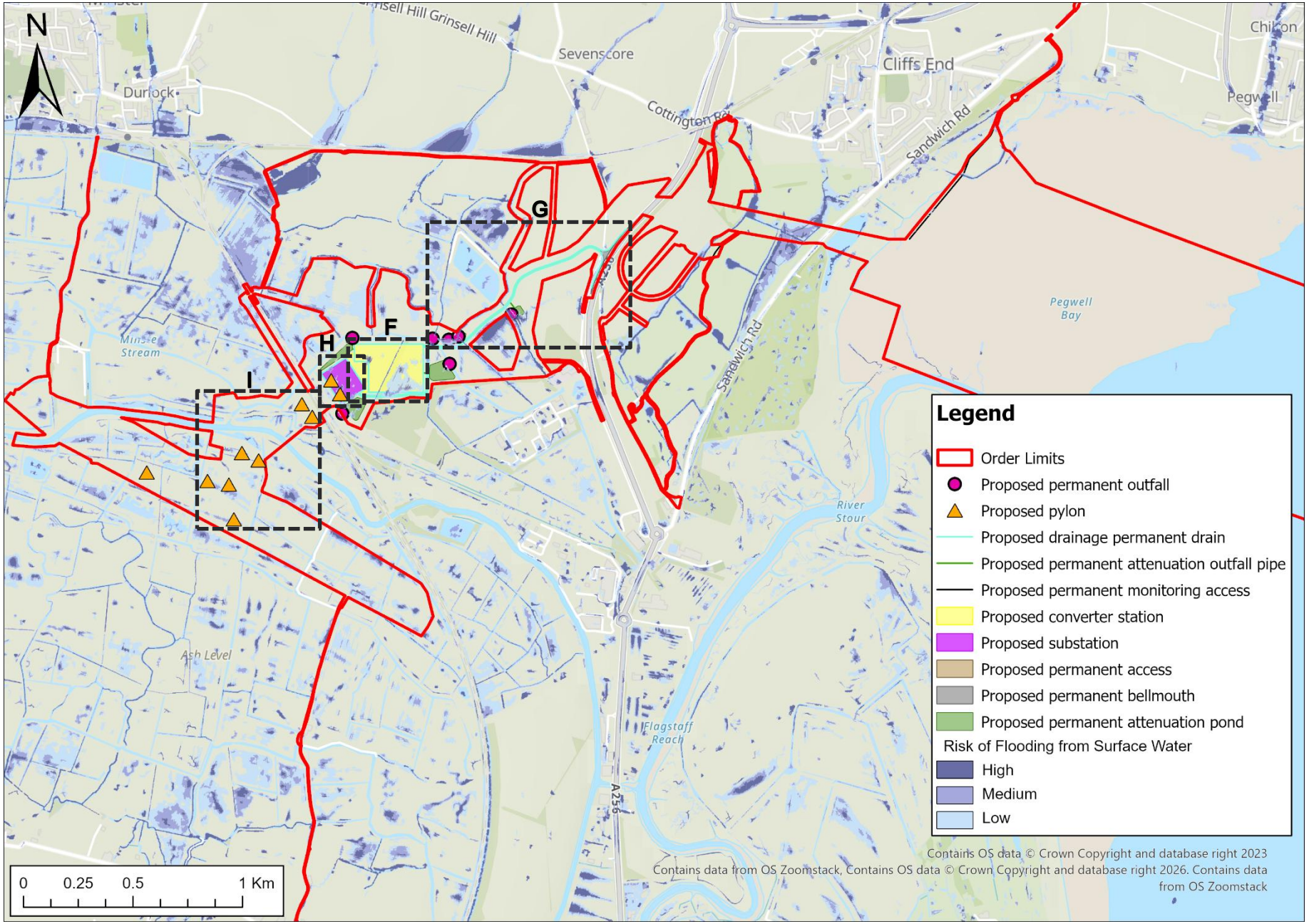
References

BMT (2020) Friston Surface Water Flood Study
Defra (2025) National Standards for SuDS. Accessible online at: https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds
Environment Agency (2022) Flood risk assessments: climate change allowances. Accessible online at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Appendix A Figures



Appendix Plate A.1 Suffolk Onshore Scheme surface water flood map with climate change



Appendix Plate A.2 Kent Onshore Scheme surface water flood map with climate change

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