ARDS AND NORTH DOWN BOROUGH COUNCIL

4 June 2025

Dear Sir/Madam

You are hereby invited to attend a hybrid meeting (in person and via Zoom) of the Environment Committee of Ards and North Down Borough Council in the Council Chamber, 2 Church Street, Newtownards on **Wednesday, 11 June 2025** commencing at **7.00pm.**

Yours faithfully

Susie McCullough
Chief Executive
Ards and North Down Borough Council

A G E N D A

1. Apologies

2. Declarations of Interest

Reports for Approval

3. Response to Notice of Motion - Donaghadee Sea Defenses (Report attached)
   - RPS Consulting will present on the key findings.

4. Street Naming – Quarry Mews (Report attached)

5. Street Naming – Priory Gate, Holywood (Report attached)

6. Fly-Tipping Statutory Enforcement Provision (Report attached)

Items Delegated for Approval

7. Grant/Variation of an Entertainments Licence (Report attached)

Reports for Noting

8. Northern Ireland Local Authority Municipal Waste Management Statistics, Q3 October to December 2024 (Report attached)

9. Christmas Lighting 2025 (Report attached)

10. Sustainable Energy Management Strategy Update, Q4 2024-25 (Report attached)

11. Q4 NET Activity Report (1 January 2025 to 31 March 2025) (Copy attached)

12. Response from Minister for Infrastructure regarding Off Street Parking Order (Report attached)

13. Evaluation of the Impact of the Licensing of Pavement Cafés Act (Northern Ireland) 2014 (Report attached)

14. Response to Notice of Motion - Letter from DAERA Minister on XL Bully Dogs (Report attached)

15. Notice of Motion submitted by Councillor Morgan and Councillor Irwin

This Council is pleased with the recycling rates for waste that have been achieved in the Borough, however there are currently limited facilities to recycle litter. This sends out a poor message to our residents and visitors. This Council asks that officers bring back a report that explores how, and when recycling litter bins could be introduced to the Borough. Indication of costs should be included.

16. Any Other Notified Business

*****ITEMS 17-18 IN CONFIDENCE*****

Reports for Approval

17. Action by Council – High Hedges Act (NI) 2011 (Report attached)

18. Extension of Current Contractual Arrangements for the Treatment and Recycling of Street Sweepings (Report attached)

MEMBERSHIP OF ENVIRONMENT COMMITTEE (16 Members)

Alderman Armstrong-Cotter	Councillor Harbinson (Vice Chair)
Councillor Ashe	Councillor Irwin
Councillor Blaney	Councillor Kendall (Chair)
Councillor Boyle	Councillor Kerr
Alderman Cummings	Alderman McAlpine
Councillor Cathcart	Councillor McLaren
Councillor Douglas	Councillor Wray
Councillor Edmund	

ITEM 3

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Head of Assets and Property Services
Date of Report	14 April 2025
File Reference	62704 / NOM 616
Legislation	
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Response to Notice of Motion - Donaghadee Sea Defenses
Attachments	Appendix 1 - Donaghadee Coastal Flood Survey April 2025

Background
Members will recall that in April 2024, the Council agreed the following Notice of Motion:

"That this Council recognises the significant opportunities which the redevelopment of Donaghadee Harbour could bring to the local economy in terms of leisure sailing and tourism and thus instructs officers to work with local groups to scope potential operational facilities which could enhance the offering in the Harbour and further brings back a feasibility report on the various options, including costings and possible funding streams.

Further, that this Council recognises the issues associated with high winds and coastal change and reviews the original 2020 Harbour Study conducted by RPS including the necessity for an offshore breakwater and agrees to bring back a report in time to be presented to Council in September 2024, outlining the budget required

Not Applicable

to undertake this work, any key considerations, next steps and identify which stakeholders would need to be involved."

An update report was presented to the Council in September 2024 providing information on works completed to date.

"Officers met with representatives from the Sailing Club and other relevant groups on 9 May and discussed a number of potential small-scale operational improvements to the harbour. Officers felt the meeting was productive and a number of low or no-cost improvements have been implemented."

To address the second part of the NoM concerning the review of the RPS report, the September update report also proposed some questions that would be put to the Consultants and form the scope of a subsequent technical report.

In November 2024 it was reported to Members that The Council had received confirmation from the Secretary of Levelling Up, Housing and Communities, that the Council had been allocated the funding (£21,100) required to undertake the 'Phase 1' further investigation work as set out in the September report to Committee, from the UK Shared Prosperity Fund.

This report aims to update Members on the findings of the RPS Phase 1 report and outline potential next steps.

Key Points from the RPS Report
The full report is attached at Appendix 1 for Members information; however, the key points are summarised below.

2.1. The efficacy of the offshore breakwater at protecting the town's shoreline

Given the content of the report by Donaghadee Community Development Association (DCDA) that prompted the Notice of Motion, and the nature some of the comments made at Environment Committee in relation to the need to protect homes and businesses, it was clear to officers there was a belief that the offshore breakwater (fig1) would protect the shoreline of Donaghadee. However, this was not the original design intent. Rather, its sole focus was improving tidal conditions within the Harbour itself. Therefore, it was essential that the primary focus of the review should be in characterising the coastal flood risk to Donaghadee with a view of developing effective flood relief measures rather than be limited to refining the plan for an offshore breakwater.

Not Applicable

Fig. 1

When considering which specific areas of shoreline that are “at risk” the RPS report refers to the “inner parade/East of Lemon’s Wharf” and “outer parade/West of Lemons wharf” so these areas are identified below and referred to throughout this report, for consistency.

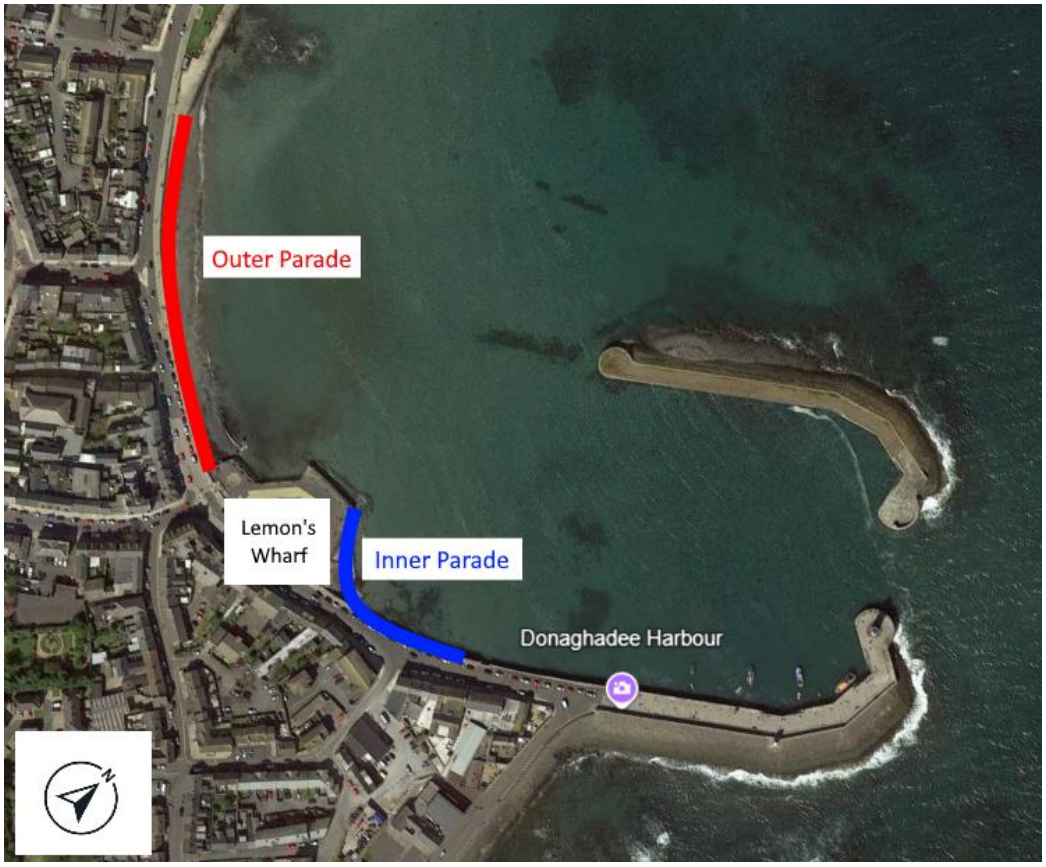

Fig 2

Not Applicable

The limited effects of the offshore breakwater in protecting homes and businesses within the Inner and Outer parade is described on page 40 of the report, within table 5.1, excerpt below.

Element	"Inner Parade", East of Lemon's Wharf	"Outer" Parade, West of Lemon's Wharf
Offshore Breakwater only	Reduction in wave climate would likely reduce wave overtopping to within tolerable limits. No reduction in tidal inundation without modification to the coastline.	No change
Jetty Extension only	Increase in wave climate would increase wave overtopping	Slight increase in wave climate would marginally increase wave overtopping
Offshore Breakwater and Jetty Extension (Full 2015 Masterplan Scheme)	Reduction in wave climate would likely reduce wave overtopping to within tolerable limits. No reduction in tidal inundation without modification to the coastline.	

2.2 Characterising the coastal flood risk to Donaghadee

Page 59 of the report summarises the flood risk and indicates that:

- Whilst the initial harbour plan developed as part of the initial Donaghadee Harbour study (RPS, 2020) and illustrated in Figure 1 improves wave conditions within the harbour as per the study objectives, **the scheme does not reduce coastal flooding from tidal inundation and only partially reduces the potential of flooding caused by wave overtopping**.
- **Under existing conditions, coastal flooding from tidal inundation is unlikely to be a significant issue**, with only Lemon's wharf being at risk. However, given the lack of built assets at risk here or in the surrounding area, **there is unlikely to be an economic justification for extensive flood relief measures**.
- Under **future climate conditions**, sea level rise increases the risk of coastal flooding with **many commercial and residential premises along the "Inner" Parade and half of the "Outer" Parade becoming vulnerable to tidal inundation**.
- Based on present day conditions, the risk of mean wave overtopping across all examined sections is considered "tolerable" for all sections examined during a 1 in 1 year return period event. **During a 1 in 50-year return period event, only the overtopping at some sections is considered tolerable, whilst overtopping discharge rates exceeds tolerable conditions across all sections during a 1 in 200-year return period scenario.**
- Advanced Computational Fluid Dynamic (CFD) modelling demonstrated that the maximum wave overtopping rates exceeded tolerable conditions by up to a factor of x4 across examined sections during a 1 in 200-year return period event.

Thus, whilst there is not a significant risk of coastal flooding across the study area based on present day conditions, wave overtopping during extreme events result in

Not Applicable

discharge rates which are considered unacceptable in context of pedestrians, vehicles and structures.

Having identified this risk, the next section of the report examines options to reduce wave overtopping rates during an extreme 1 in 200 return period storm event based on present day conditions, to within acceptable thresholds.

2.3 Developing effective flood relief measures

Having identified the risk associated with wave overtopping, RPS considered various coastal management measures to reduce overtopping rates to within tolerable limits. Options considered and the supporting rational for the areas to the west and east of Lemon's Wharf are summarised below:

West of Lemon's Wharf (Outer Parade):

- Rock Armour Revetment: The revetment structure can effectively dissipate wave energy and momentum to reduce overtopping.
- Recurve Seawall: Can deflect up-rushing water seawards as waves impact the seawall. A recurve already provides effective protection for a Section of the coast further west; thus a recurve option here would effectively continue this existing defence.

East of Lemon's Wharf (Inner Parade):

- Rock Armour Revetment: Similar to the west, aimed at mitigating wave impacts.
- Recurve Seawall: As with the west, this can deflect waves on impact. This option requires less space on the foreshore, which may be important as the land in this area is privately owned.
- New Promenade: Proposed to enhance public access, with an additional area for public amenity, while increasing the distance from the waterfront to sensitive receptors, thereby providing additional flood protection.

Potential Solutions
Advanced modelling was again undertaken to test the effectiveness of these options at both locations for relevant conditions.

This "proof of concept" analysis found that:

- To the west of Lemon's Wharf, both options were found to significantly reduce wave overtopping, with the rock armour solution providing a better reduction in overtopping rates. The initial design of the recurve seawall could be refined to achieve a similar level of performance. A recurve seawall would be the preferred option for this area given that it would tie in with the recently constructed scheme further west and occupy less space on the foreshore than a rock armour revetment option.

Not Applicable

Image of existing recurve seawall at the outer Parade, west of lemons wharf, under construction in 2015, photo by Moore Concrete

- To the east of Lemon's Wharf, both a rock revetment and recurve seawall were found to significantly reduce wave overtopping. Whilst the recurve seawall was found to be more effective, RPS identified limitations of the modelling approach which effectively assesses overtopping on a one-dimensional basis whereas the processes in this area are highly two dimensional (i.e., waves can approach from different oblique angles and result in wave focusing).

Recognising this limitation, it was RPS's view that aside from significantly increasing the dimensions of a rock armour revetment option, the most effective solution would be to increase the extent of the existing promenade by reclaiming a localised section of the foreshore which would extend from Kelly's Steps to Lemon's Wharf.

This option would increase the distance between the point of wave overtopping to vulnerable receptors, including the footpath, road and nearby buildings.

Example of oblique waves becoming "focused" and running along the existing sea defence at the inner parade, east of lemons wharf.

Not Applicable

This area would provide enhanced recreational benefits during normal conditions and be allowed to overtop and partially flood during extreme conditions, similar to Lemon's Wharf. In doing do, the reclaimed area / promenade feature would provide important flood mitigation to the surrounding area.

Given that this parcel of land is understood to be under private ownership, it would be critical to engage with local landowners and other relevant parties to reach an agreement on the extent of reclamation. Whilst this is beyond the scope of this study, an indicative area that could be reclaimed to achieve these objectives is illustrated in green, below.

It is noted that additional modelling would be required to refine the preferred option and to inform the engineering design and associated capital costs estimates. Preliminary estimates indicate that subject to detailed design and additional modelling, the capital costs associated with the recurve wall option to the west and the new promenade option to the east of Lemon's Wharf would equate to *c.* £0.5 mil and £3.5 mil respectively. Any development in either location would require consultation with relevant statutory authorities as well as marine and planning consent.

Conclusion

Officers would conclude the following points from this report:

1. The outer breakwater originally suggested in the 2020 report was intended to improve the tidal conditions within the Harbour only and would "not reduce coastal flooding from tidal inundation and only partially reduce the potential of

Not Applicable

flooding caused by wave overtopping". Therefore, with cognisance of the limited wider benefits in protecting the town's homes and businesses, there is unlikely to be an economic justification for this project.

2. There would appear to be a need arising to provide some protection to the inner parade, east of Lemons Wharf, however this would require the acquisition of land from a third party.
3. There would also appear to be a need arising to provide some protection to the outer parade, west of Lemons Wharf.

The Department for Infrastructure (DfI) has overall responsibility for flood risk management and policy in Northern Ireland, with the Department's Rivers Agency having the following amongst its key objectives:

- reduce the number of properties currently at risk of flooding from rivers and the sea
- maintain flood defence and drainage infrastructure in a satisfactory condition

Given the conclusions of the AECOM report, of the not insignificant risk of flooding caused by wave overtopping at both the inner and outer parades in Donaghadee, it is proposed that the Council should now proceed to share these findings with the Department and lobby for the progression of enhanced coastal protection schemes along the lines of those outlined in the report.

RECOMMENDATION

It is recommended that the Council writes to the Department for Infrastructure Rivers Agency, sharing the findings of the study undertaken by AECOM, and asking that enhanced coastal defence schemes be progressed for the inner and outer parades in Donaghadee. An update report to be brought back to Council within 6 months.

Funded by UK Government

This project was funded by the UK Shared Prosperity Fund (UKSPF) and delivered by Ards and North Down Borough Council.

Ards and North Down Borough Council

MAKING COMPLEX EASY

A TETRA TECH COMPANY

DONAGHADEE COASTAL FLOOD STUDY

IBE2319
02 April 2025
P02

rpsgroup.com

REPORT

Document status

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Approval for issue

K.Calder  02 April 2025

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REPORT

EXECUTIVE SUMMARY

Following the development of preferred plan to improve hydraulic conditions within Donaghadee Harbour in 2020, RPS were commissioned by Ards and North Down Borough Council (ANDBC) to assess and quantify the risk of coastal flooding along the main frontage in the town. A bespoke hydraulic modelling programme was therefore undertaken to characterise the flood risk associated with both tidal inundation and wave overtopping based on existing and future climate conditions.

Whilst tidal inundation was not considered a significant issue under present day conditions, it was found that rising sea levels[1] associated with climate change could pose a risk to commercial and residential premisses during extreme storm conditions. However, there was unlikely to be an economic justification for extensive flood relief measures based on present-day risks.

Wave overtopping however was found to exceed tolerable conditions in some areas during 1 in 50 year return period conditions, and in all areas during 1 in 200 year return period conditions.

Recognising this health and safety risk in context of pedestrians, vehicles and structures, RPS assessed the effectiveness of various options to reduce wave overtopping to the east and west of Lemon's Wharf including rock armour revetments, recurve seawalls and land reclamation. This assessment found that:

- To the **west of Lemon's Wharf**, both a rock armour revetment and recurve seawall option significantly reduced wave overtopping, with the rock armour performing slightly better. The recurve seawall was identified as the preferred solution for this area given it would tie in with a recently constructed recurve defence constructed further west, have a relatively small footprint on the foreshore and be refined to further improve performance,
- To the **east of Lemon's Wharf,** both a rock revetment and recurve seawall were found to significantly reduce wave overtopping. Whilst the recurve seawall was found to be more effective, concerns were raised about the potential for oblique waves "focusing" at the corner of Lemon's Wharf and creating very high overtopping rates even with a recurve seawall in place.
    - Recognising this limitation, it was RPS' view that aside from significantly increasing the dimensions of a rock armour revetment option, the most effective solution would be to increase the extent of the existing promenade by reclaiming a localised section of the foreshore.

Given the "*proof of concept*" nature of this study, additional modelling would be required to refine the preferred option and to inform the engineering design and associated capital costs estimates.

Preliminary estimates indicate that subject to detailed design and additional modelling, the capital costs associated with the recurve wall option to the west and the new promenade option to the east of Lemon's Wharf would equate to *c.* £0.5 mil and £3.5 mil respectively. Any development in either location would require consultation with relevant statutory authorities and marine and planning consent.

[1] Sea Level Rise due to Climate Change of +0.29m by 2080 based on Medium Emissions Scenario (RCP 4.5), 50 %'ile as per DfI guidance

1 INTRODUCTION

1.1 Background

In April 2017, RPS were appointed by Ards and North Down Borough Council (ANDBC) to undertake a feasibility study to consider strategic options to improve wave conditions within the existing harbour and the area adjacent to the harbour (between the North Quay and the Slipway). The options considered were identified in the 2015 Town Masterplan (AECOM, 2015) and included:

- Provision of an outer breakwater beyond the harbour entrance, to provide additional shelter and improve vessel access to the harbour.
- Connection of the North Quay to Lemon's Wharf, to reduce siltation from the rear of the North Quay, to encourage the natural development of a sandy beach area to the north of the harbour and to extend the existing promenade and amenity area.
- Additional reclamation at the Commons, for commercial/leisure use.
- Potential harbour development works, to facilitate the future provision of pontoon berths.

This study concluded that the preferred option which would best achieve suitable wave conditions within the existing harbour should include the following series of measure:

- The construction of an outer breakwater,
- The extension of the North Quay from Lemon's Wharf, and
- Harbour deepening to accommodate a pontoon berthing facility.

The preferred "Potential Harbour Development Plan" as identified in this study is illustrated in Figure 1-1 overleaf. Having developed this plan, RPS liaised with the Department of Agriculture, Environment and Rural Affairs (DAERA) to identify considerations, requirements and potential issues in relation to obtaining relevant consents to carry out development works.

The outcome of this process is described in the preceding Feasibility Report (RPS, 2020), which was issued to ANDBC in early 2020.

Figure 1-1: Donaghadee Harbour Study, Potential Harbour Development Plan (IBM0725-0001)

1.2 Donaghadee Town Centre Masterplan Review

Between 2022 and 2023 a review of the Masterplan was undertaken. The resultant Donaghadee Town Centre Masterplan Review (The Paul Hogarth Company, with McGarry Consulting, 2023) identified four core priorities linked to the harbour, titled "*Reawakening the Harbour*". The proposed actions to achieve this objective included:

- A partnership working to establish a programme of events throughout the year to activate the harbour in collaboration with the community-led approach,
  - Raising the profile of the harbour for future funding opportunities,
- Sourcing funding to delivery restoration and infrastructure improvements (subject to Business Case / economic viability),
  - Opportunity to promote Donaghadee as a destination to visiting boats.

In summary, the redevelopment of the harbour remained a key priority of the Masterplan Review. However, it is also apparent that substantial investment would be required.

The lifespan on this updated town masterplan has been agreed to be 8 years (i.e., up to 2030). The document is to be considered "live", with regular reviews and updates. At the halfway stage, in 4 years, a major review and update will be carried out. At the end of the lifespan, in 2030, it has been recommended that new "place plans" be commissioned.

1.3 Further Technical Queries

Upon review of the Feasibility Study and in context of the Masterplan Review, ANDBC raised additional technical queries which included:

1. Was the extensive "*Potential Harbour Development Plan*" (as illustrated in Figure 1-1) necessary and what are the long-term consequences should this proposal not be implemented?
2. What effect would the proposed development have on the Harbour and the Parade during storms and would rising sea levels associated with climate change modify these effects?
3. What are the limitations of the breakwater, i.e. does it protect against rising sea levels or wave overtopping during certain conditions? If so, what are these conditions and how likely are they?
4. For the breakwater to be effective, what is the maximum height above the high-water mark?
5. Could the 3D visuals be updated to show how this would look from various angles at low/high water?
6. Can the construction costs for the natural and pre-cast rock armour elements be reviewed and updated based on current market conditions?

In June 2024, RPS provided ANDBC with a proposed scope of works, based on a phase approach, to address these queries. The scope of works under Phase 1 included:

- Updating 3D visuals representations of the preferred "Potential Harbour Development Plan" (see Figure 1-1),
- Updating construction costs based on current market conditions,
- Undertaking hydraulic modelling to assess tidal inundation and overtopping based on the following scenarios:
  - 1 in 1, 1 in 50 and 1 in 200 year return period storm events,
  - Both with and without Sea Level Rise,
  - With the existing baseline conditions and the proposed development.
- A review of study outcomes including any potential upgrade or development works and the provision of a Consenting Strategy

Subject to the findings of Phase 1, the scope of works for Phase 2 included:

- The preliminary design and assessment of suitable coastal defence measures to mitigate the coastal flood risk identifies in Phase 1.
- A full economic assessment.
- Further consultation, and additional planning and/or consent support.

1.4 Revised Scope of Works

RPS were appointed by ANDBC to undertake Phase 1 of the proposal as described above in November 2024. However, following a meeting between RPS and ANDBC on 28th January 2025, ANDBC noted that the primary focus of additional work should be in characterising the coastal flood risk to Donaghadee with a view of developing effective flood relief measures rather than refining the harbour development plan. Despite this, it was agreed that the revised scope of works should also consider the potential flood mitigation benefits associated with the breakwater and extension of Lemon's Wharf as identified in the initial harbour development plan.

Based on this meeting, it was agreed that the scope of works be revised to include:

- Update cost estimates for the original proposal based on current market conditions.
- Characterising the extreme inshore wave climate and quantifying the coastal flood risk associated with tidal inundation and wave overtopping for extreme events with and without climate change.
- Determining the effectiveness (or lack thereof) of the initial proposal in reducing the wave climate along vulnerable sections of the coastline.

- Identifying potential measures to reduce coastal flooding, with a particular emphasis on reducing wave overtopping. This could involve options such as the construction of seawalls, rock armour revetment or similarly effective options.
- Produce artist's impressions of the proposed flood relief measures.
- Provide cost estimates for coastal flood protection measures.
- Outline how any proposal aligns with current flood protection policy and identifying a future pathway regarding the relevant statutory consenting process.

RPS's proposal of the revised Scope of Works as described above was accepted by ANDBC in January 2025 with this feasibility report describing the resultant technical work and outcomes of the study.

2 FLOOD POLICY

The most up to date guidance on flood risk in Northern Ireland is the Department for Infrastructure's (DfI's), "Technical Flood Risk Guidance in relation to Allowances for Climate Change in Northern Ireland" (Department for Infrastructure, 2019). This guidance:

- Sets out DfI Roads and NI Water's approaches to Climate Change in design of their respective Road Drainage and Storm Drainage systems,
- Sets out DfI Rivers approach to Climate Change in Flood Risk Management,
- Addresses the issue of a suitable future epoch, or time period, on which to base allowances for Climate Change for Development Planning and Flood Risk Management purposes. This identifies sea level rise projections for 2080 as the most suitable standard of protection for the design of Flood Risk Management measures.

A screening form was published in May 2024 for updates to this guidance, which is based on the 2009 United Kingdom climate projections (UKCP09) to take account of the updated 2018 UK climate projections (UKCP18).

Based on correspondence in 2025, DfI that this study should "*follow current guidance while also consider an assessment using the newer UKCP18 datasets. Typically, standard studies adopt the 50th percentile, whereas studies of strategic importance also incorporate the 95th percentile.*"

For this study, RPS have therefore referred to future sea level rise projections for 2080 as described by UKCP18 based on the 50th %'ile when assessing flood risk under future climate conditions

2.1 Guidance on allowances for Climate Change in undertaking Hydrological and Hydraulic modelling/design – Coastal

The DfI 2019 guidance notes that coastal flooding is generally governed by the following key coastal processes:

- Predicted astronomical tide,
- Storm surge residual,
- Wave / fetch effects,
- Local bathymetric and topographic effects.

As described in later sections of this report, these processes were accounted for in the bespoke modelling programme undertaken for this study by assessing 1) coastal flooding caused by tidal inundation (i.e., tides and storm surge) and 2) wave overtopping (i.e., wave effects and local bathymetry and topography conditions).

2.1.1 Climate Change

DfI provides 'Tidal Hazard' information for both 'Present Day' and estimated 'Climate Change' coastal levels. The recommended climate change scenario for flood risk assessment is 50th %'ile for the 2080 epoch (Medium Emissions). The DfI guidance notes that:

"Where a strategically important development is being designed or assessed for climate impacts or, where risk to life or major economic losses could occur should design levels be overtopped, it may be more precautionary to use allowances based on a higher percentile. In these circumstances it is therefore recommended that a 'sensitivity test' be undertaken based on a higher 95 percentile Relative Sea Level to determine whether there are any 'cliff-edge' effects where the flooding consequences may suddenly become extremely severe. If this test yields potentially severe effects, adoption of the higher level of confidence is advised for the proposed development. An example is the major redevelopment of Belfast's Titanic Quarter which bounds on Belfast Lough, which is susceptible to tidal surge conditions and comprises important new commercial, domestic and tourism developments."

Given that Donaghadee is not considered a strategically important development, the future flood risk for this study area has been assessed for the 2080 epoch, Medium Emissions scenario initially considering the 50 percentile Relative Sea Level.

2.1.2 Freeboard

The DfI guidance states that a freeboard allowance of up to 600mm is usually included for the design of coastal flood defences. This allowance is to cover uncertainty in estimation of design sea levels, uncertainty of wave and spray action and uncertainty with local bathymetric process (e.g. reflection and shoaling) etc.

A freeboard allowance will not be included within the models. This would be added to the design height of any proposed defence, or included within a Flood Risk Assessment. It is acknowledged in the guidance that for practical reasons an allowance for freeboard may not be fully achievable in all design circumstances.

2.1.3 Projected change in storm surges

The DfI guidance states,

"The projected long-term future trends in storm surge in UKCP09 are physically small everywhere around the UK and in many places can be accounted for by natural variability. The surge level expected to be exceeded on average once in 2, 10, 20 or 50 years is not projected to increase by more than 9cm by the year 2100 anywhere around the UK coast (not including the mean sea level change).

Therefore, in accounting for storm surge in coastal assessments and designs, there are no specific allowances recommended for Climate Change except to ensure that designs / Flood Risk Assessments include a rigorous assessment of the coastal extreme water level(s)."

2.2 Design Working Life of structures and appropriate return period storm events

Design Working Life is defined within the Eurocodes and British Standards as the, *"assumed period for which a structure or part of it is to be used for its intended purpose with anticipated maintenance but without major repair being necessary".*

The design working life for any additional marine structures to aid flood protection may come under the recommendations contained within BS 6349-1-1 (BSI, 2013) Table 1, reproduced in Table 2.1.

A 50 year design working life was considered appropriate for works in a small commercial harbour like Donaghadee.

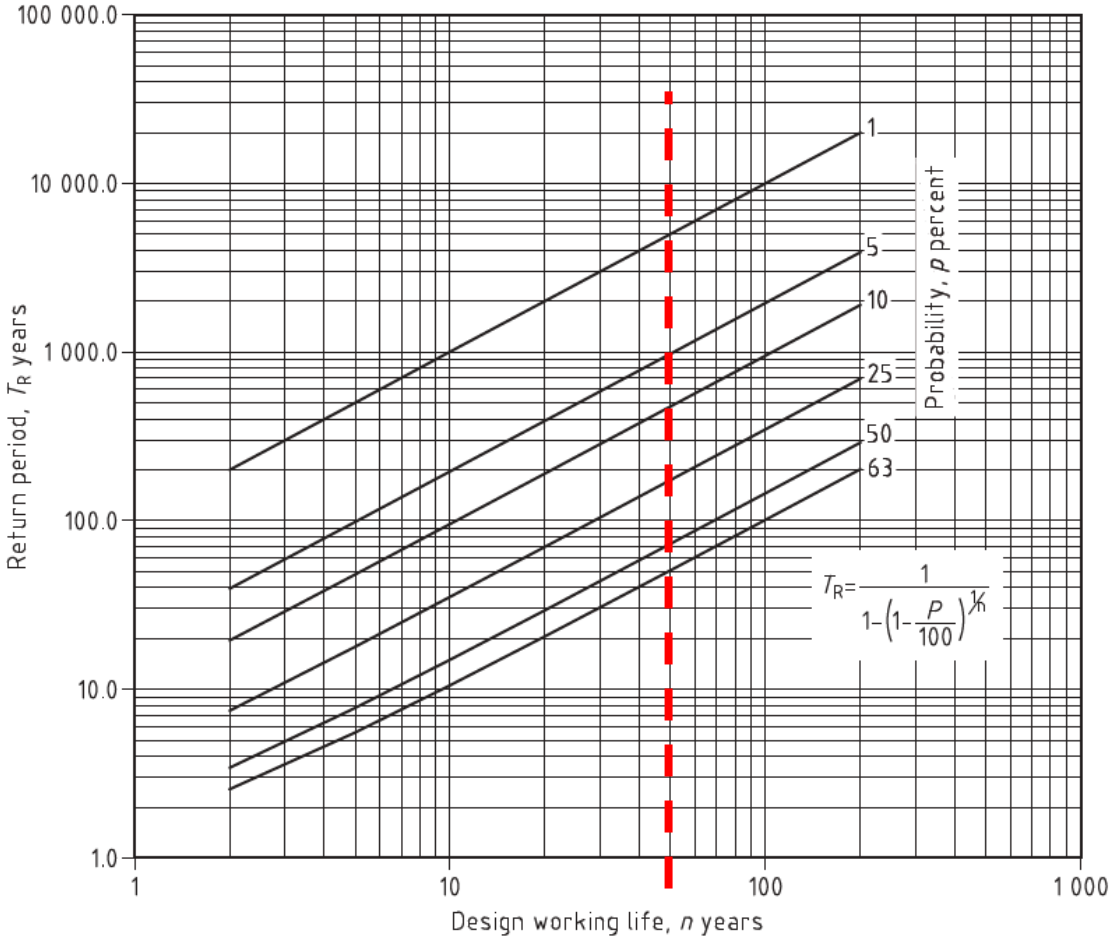
Table 2.1: BS 6349-1-1:2013, Indicative Design Working Life Categories for maritime works

Design working life category	Indicative design working life (years)	Examples
1	10	Temporary structures
2	10 to 25	Structural parts designed to be replaceable within a structure or facility of longer design working life
3	15 to 30	Structures dedicated to non-renewable natural resources, petrochemicals or similar industrial or commercial applications (such as open-piled jetties, mooring and berthing dolphins, Ro-Ro linkspans)
4	50	Common port infrastructure for commercial and industrial ports including reclamation, shore protection, breakwaters, quay walls
5	100	Common port infrastructure including breakwaters for ports of nationally-significant strategic or economic value. Infrastructure for regional flood defence or coastal management infrastructure

Figure 2-1 is based on Figure 1 from BS 6349-1-2 (BSI, 2016+A1:2017), presenting the relationship between design working life, return period and probability of an event exceeding the normal average.

Within the code it is assumed for the stated partial load factors that the characteristic values of environmental actions are based on a return period equal to the design working life of the structure, but not less that 50 years for persistent situations. Though it also states that, "*In general, the return period of the design event exceeds the design working life. However, the design event can be exceeded in any given year by a higher magnitude event (lower probability/longer return period), and the consequences of this should be taken into account*".

If a 50 year return period event was considered for a 50-year design working life structure, this would represent a 63% probability of that event occurring during the design life. A 200 year return period storm event would combine with a 50 year design life at a 50% probability of that event occurring during the design life. This may represent a reasonable combination.



NOTE T_R *is the return period of a particular extreme condition in years. p is the probability of a particular extreme condition occurring during design working life n years.*

Figure 2-1: BS 6349-1-2, Relationship between design working life, return period and probability of an event exceeding the normal average

3 DATA AND ANALYSES

3.1 Extreme Water Levels

Extreme water levels have been taken from the Environment Agency's Coastal Flood Boundary, Coastal Design Sea Levels. These are taken from the closest chainage, just offshore of Donaghadee Harbour, (54.65° N, 5.50° W). Table 3.1 presents Highest Astronomic Tide (HAT) and the extreme water levels relative to Ordnance and Chart Datums, for a range of return periods from 1 to 10,000 years.

Ordnance Datum (OD) is within 20mm of Mean Sea Level (MSL) in this area.

Table 3.1: Coastal Flood Boundary, Coastal Design Sea Levels © Environment Agency copyright and/or database right 2016. All rights reserved

Return Period (years)	Water Level (mOD)	Water Level (mCD)
HAT	2.27	4.53
1	2.41	4.67
2	2.51	4.77
5	2.65	4.91
10	2.75	5.01
20	2.87	5.13
25	2.9	5.16
50	3.01	5.27
75	3.08	5.34
100	3.12	5.38
150	3.18	5.44
200	3.23	5.49
250	3.26	5.52
300	3.29	5.55
500	3.38	5.64
1,000	3.5	5.76
10,000	3.97	6.23

3.2 Wind Climate

Design over water wind speeds were developed for 15° sectors from 315 to 180°. These sectors represent the directions from which waves can approach the study area from. Whilst the 165° and 180° directional sectors do not generally produce wind waves that can reach the harbour, swell waves from these directions can disperse into the study area, hence their inclusion in this assessment. Each directional sector was assessed using the approach outlined in the UK National Annex to BS 1991-1-4 (BSI, 2005+A1:2010).

Firstly, a basic 1 in 50 year mean hourly wind speed was taken and factored for each directional sector. This data was then converted to an overwater wind speed based on the fetch length. The duration of the required event for wind waves to fully develop over the fetch length was then calculated. Finally, this allowed the design wind speed for various return periods to be calculated. The extreme overwater wind speeds used to define the spectral wave model and thus overtopping conditions are tabulated in Table 3.2.

Table 3.2: Overwater Design Wind Speeds for various return periods and sectors at Donaghadee

Return Period (Years)	Directional Sector (Degrees) Wind Speed (m/s)															
	0	15	30	45	60	75	90	105	120	135	150	165	180	315	330	345
0.1	14.2	13.7	14.3	14.1	13.7	13.5	12.5	12.8	13.6	14.1	14.0	14.2	14.3	15.2	16.4	14.5
0.2	15.2	14.8	15.4	15.1	14.7	14.5	13.4	13.7	14.6	15.1	15.1	15.3	15.3	16.3	17.6	15.6
0.5	17.0	16.1	16.8	16.5	16.1	15.8	14.7	15.0	15.9	16.5	16.4	16.7	16.7	17.8	19.2	17.0
1	18.0	17.1	17.8	17.6	17.1	16.8	15.6	15.9	17.0	17.6	17.5	17.8	17.8	19.0	20.4	18.1
2	19.1	18.2	18.9	18.6	18.1	17.8	16.5	16.9	18.0	18.6	18.5	18.8	18.9	20.1	21.7	19.2
5	20.5	19.5	20.3	20.0	19.5	19.2	17.8	18.2	19.3	20.0	19.9	20.3	20.3	21.6	23.3	20.6
10	21.5	20.6	21.4	21.1	20.5	20.2	18.7	19.1	20.3	21.1	21.0	21.3	21.4	22.7	24.5	21.7
20	22.6	21.6	22.5	22.2	21.5	21.2	19.7	20.1	21.4	22.1	22.1	22.4	22.4	23.9	25.8	22.8
50	24.0	23.0	23.9	23.6	22.9	22.5	20.9	21.4	22.7	23.5	23.4	23.8	23.9	25.4	27.4	24.2
100	25.1	24.0	25.0	24.6	23.9	23.5	21.8	22.3	23.7	24.6	24.5	24.9	24.9	26.5	28.6	25.3
200	26.1	25.1	26.1	25.7	25.0	24.6	22.8	23.3	24.8	25.7	25.6	26.0	26.0	27.7	29.9	26.4

3.3 Sea Level Rise

The time-mean sea level anomaly taken from the Met Office's UKCP18 for a location close to Donaghadee is tabulated in Table 3.3 for the scenarios described in Section 2.1.1. Data is also presented for reference, for the 2100 epoch – which represents the end of the current predictions.

A time-mean sea level anomaly refers to the local sea-level change experienced at a particular location over a specified time period. Comparing the current average level with the long-term future average. The centre of the area covered by this prediction is 54.72° N 5.58° W.

As summarised below, the projected sea level rise at Donaghadee by 2080 for the purpose this assessment equates to 0.29m. The 95th percentile is included for reference.

Table 3.3: Sea Level Rise Predictions for Donaghadee, Data from the Met Office UKCP18

Epoch (year)	Sea Level Rise, Medium Emissions Scenario (RCP 4.5)	
	50th Percentile	95th Percentile
2080	**0.29**	0.49
2100	0.37	0.66

3.4 Joint Probability Analysis

The level of exposure of any shoreline to wave action is governed primarily by the local tidal regime as the maximum height of any incident wave is a function of water depth. As incident waves are limited by water depth, larger waves tend to break further offshore. However, beaches often experience large irregular increases in water levels called surges. These surge events increase the local water depth allowing larger waves to reach the shore and expose more landward sections of the shore to wave attack. It is the combination of high waves with high water levels that is particularly important in nearshore processes including wave overtopping.

A joint probability analyses of wind speeds with water levels were undertaken using techniques and methods derived during the JOIN-SEA project (Defra/Environment Agency, 2005). Wind speeds were compared, as these are the main driver for wave development in this area. This method involves selecting a correlation coefficient between each pair of variables and using the associated tools to derive matched combinations of known Annual Exceedance Probability (AEP) events.

Once an appropriate correlation coefficient was selected for each direction, the relevant set of AEP water levels (see Table 3.1) and wind speeds derived using the Eurocode method (see Table 3.2), were input into the JOIN-SEA spreadsheet for analysis. Combinations of wave heights and water levels for joint AEPs of 100%, 20%, 10%, 5%, 2%, 1%, 0.5% and 0.1% were derived for each relevant 15° directional sector at the selected offshore location. A sea level rise allowance was also considered in separate analyses.

The output of this analyses produced a combination of water levels and wind conditions that represented a range of return period storm events, from a 1 in 1 up to a 1 in 200 year return period storm event. Figure 3-1 illustrates the outcome of the analysis for wind speed and water level, not considering sea level rise.

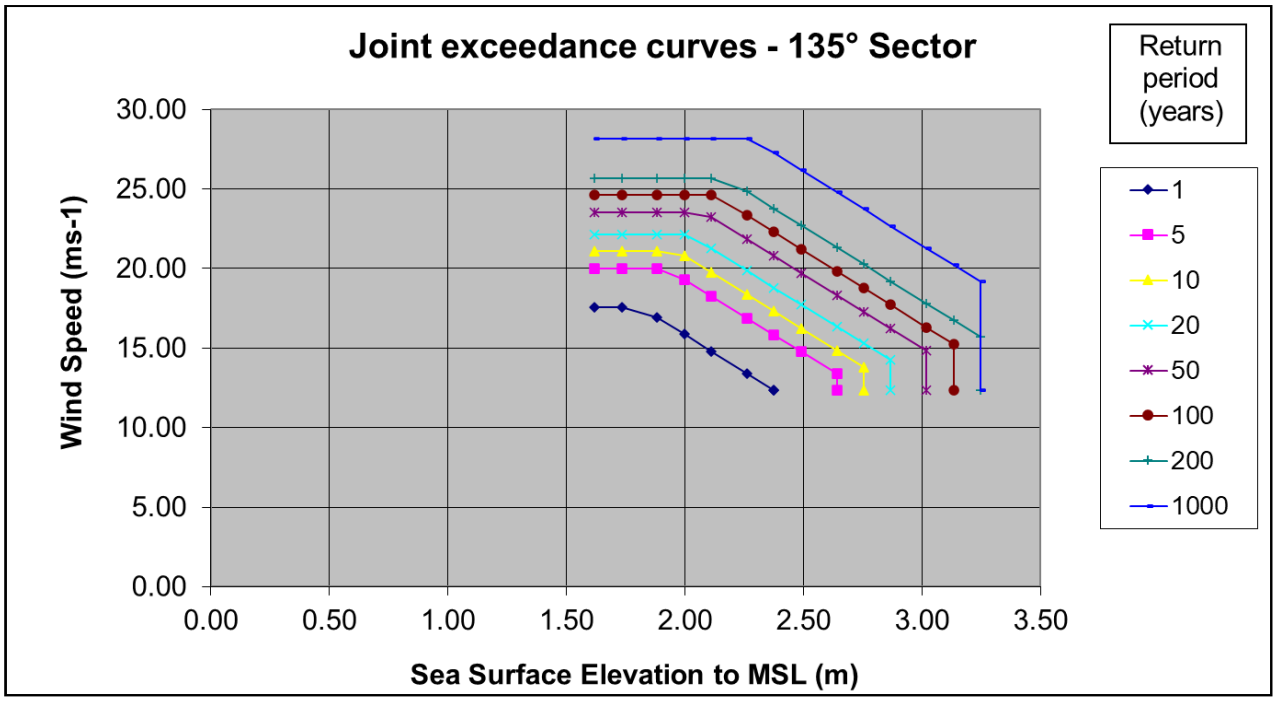


Figure 3-1: Joint Exceedance Curves for 135° sector, Wind Speed and Water Level

3.5 Computational Models

3.5.1 Modelling Overview

RPS utilised the MIKE 21 numerical modelling software package developed and supplied by DHI to assess coastal processes across the study areas. This was achieved by developing a range of two-dimensional numerical models for Donaghadee.

These models were used in conjunction with hydrographic and topographic survey data to evaluate the following:

- The existing tidal flow regime,
- The extreme inshore wave climate,
- Coastal flooding caused by tidal inundation, and
- Coastal flooding caused by wave overtopping.

3.5.2 Coastal Process Modelling Software

A suite of coastal process models, utilising the MIKE software developed by DHI, was used to assess the coastal processes within the study area. The MIKE system is a state of the art, industry standard, modelling system, based on a flexible mesh approach. This software was developed for applications within oceanographic, coastal and estuarine environments.

A brief synopsis of the MIKE system and modules used for this assessment is outlined below:

1. **MIKE 21 FM system –** This is a flexible mesh modelling system, used to simulate the mutual interaction between currents, waves and sediment transport by dynamically coupling the relevant modules in two dimensions.
2. **The Hydrodynamic (HD) module –** This module is capable of simulating water level variations and flows in response to a variety of forcing functions in lakes, estuaries and coastal regions. The HD Module is the basic computational component of the MIKE 21 Model system providing the hydrodynamic basis for the Sediment Transport and Spectral Wave modules. The Hydrodynamic module solves the two-dimensional incompressible Reynolds averaged Navier-Stokes equations subject to the assumptions of Boussinesq and hydrostatic pressure. Thus, the module consists of continuity, momentum, temperature, salinity and density equations. In the horizontal domain, both Cartesian and spherical coordinates can be used.
3. **The Spectral Wave (SW) module –** This module simulates the growth, decay and transformation of wind generated waves and swell waves in offshore and coastal areas and accounts for key physical phenomena including wave generation, dissipation, refraction, shoaling and wave-current interaction.

As described in further detail overleaf, it was necessary to develop two separate numerical models for this study. The first model was developed to assess the tidal regime and extreme waves at Donaghadee and covered the whole north channel from Islandmagee to beyond Portpatrick to the North and from Ballyhalbert

to beyond Port Lagan at the South. The second model was used to assess tidal inundation and therefore extended *c.* 2km seaward of Donaghadee and landward to the *c.* +7.5m contour.

3.5.3 Tide and Waves Model

The models used to assess the coastal processes at Donaghadee were developed using a range of bathymetric and topographic data sources, including INFOMAR hydrographic surveys, detailed bathymetric surveys around the study area and also a study specific high resolution topographic LiDAR survey undertaken by Six West in 2018 (see Figure 3-2). All datasets were set with the depths relative to Mean Sea Level (MSL) before being input to the MIKE modelling system.

Figure 3-2: High resolution topographic survey undertaken by Six West in 2018

The tide and wave model wave developed utilising flexible mesh technology to provide detailed information on the coastal processes with the mesh size varying from approximately 10km at the boundaries to *c.* 10m at the shoreline. The overall extent and mesh structure of the tide and wave model is shown in Figure 3-3 and Figure 3-4 respectively.

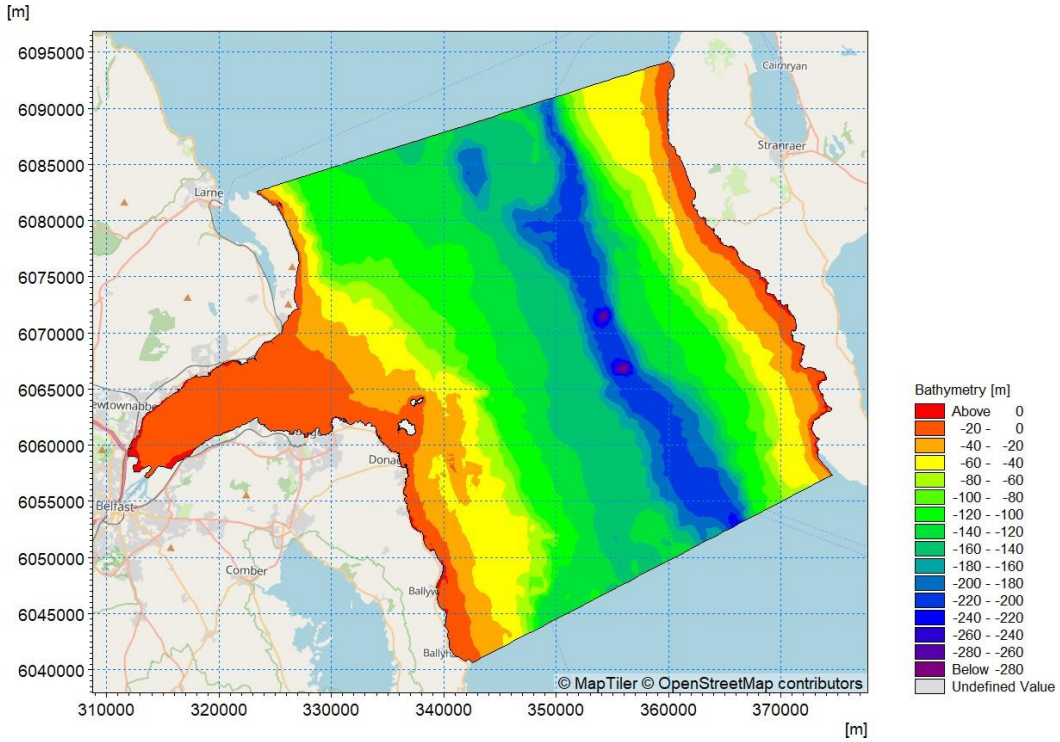


Figure 3-3: Extent and bathymetry of the Donaghadee Tide and Wave model

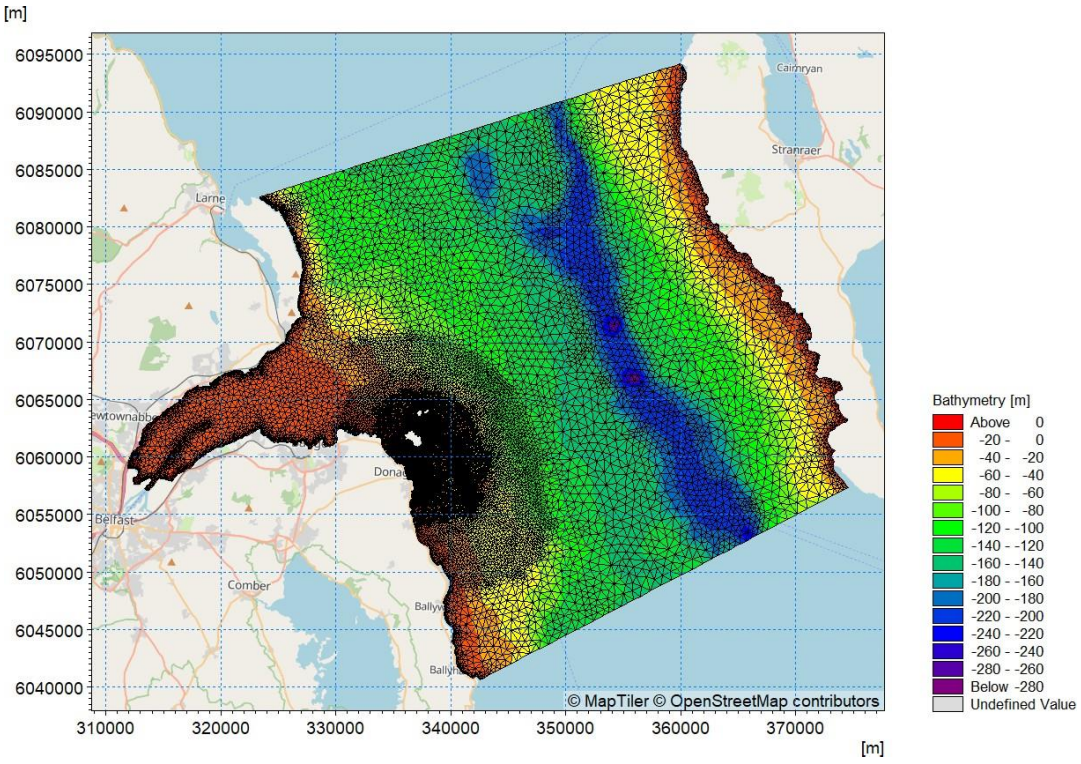


Figure 3-4: Mesh structure of the Donaghadee Tide and Wave model

3.5.4 Tidal Inundation Model

The coastal model described in the previous section was developed so that it could be used to assess the threat of coastal flooding across the study area. This was achieved by ensuring the landward extent of the model in the individual study areas was sufficient to include relevant areas of the hinterland.

Irrelevant areas of the hinterland were determined based on the topography of the study areas, i.e., any areas where the elevation was significantly greater than the most onerous return period event, including the effect of sea level rise. In this instance, areas generally greater than +7.5mOD were excluded from the model to improve computational efficiency.

The model mesh was refined in the regions of most importance to achieve satisfactory model performance. The flexible mesh technology allowed the size of the computational cells to vary across the domain of the model, allowing smaller cells of *c.*4m^2 to be used in areas of rapidly changing topography.

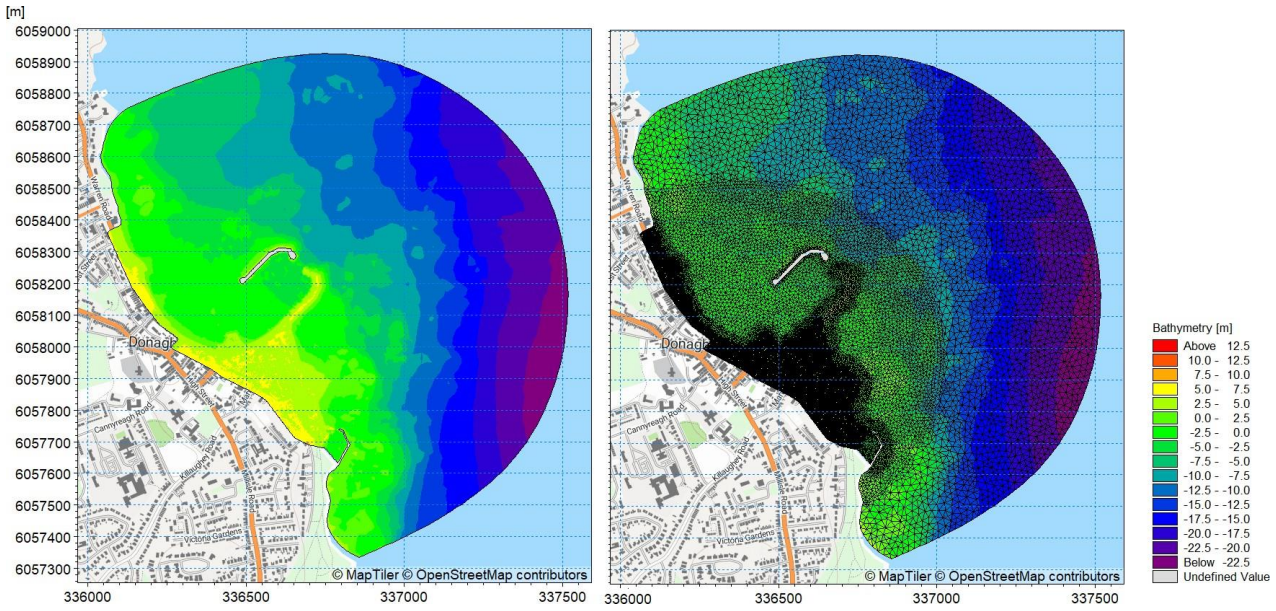


Figure 3-5: Extent and bathymetry (left) and mesh structure (right) of the Donaghadee tidal inundation model

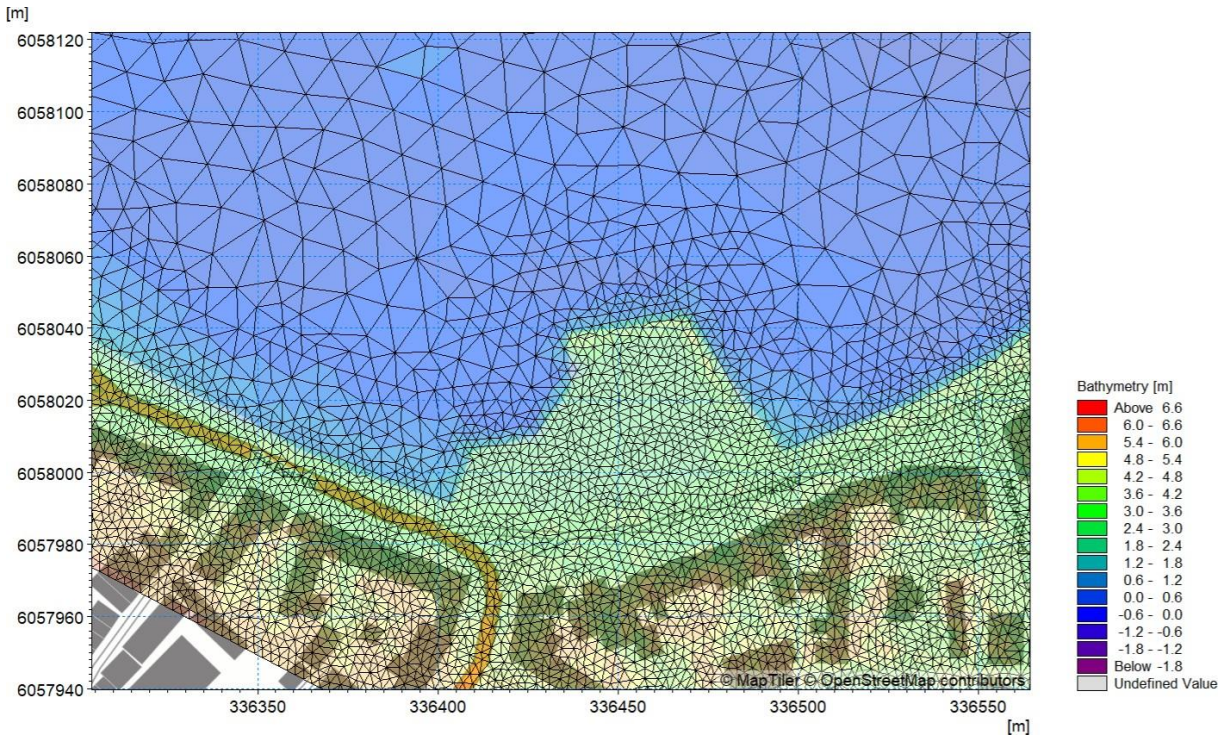


Figure 3-6: High resolution mesh structure of the tidal inundation model around Lemon's wharf

3.5.5 Model limitations

3.5.5.1 DSM vs DTM

At the outset of this study, RPS referred to the NI Coastal Observatory to download the *"3D Coastal Survey - Topographic LiDAR - Digital Terrain Model"* dataset to develop and inform the tidal inundation modelling. Unfortunately, after contacting the responsible team in DAERA, RPS were informed that this data cannot currently be accessed due to ongoing technical issues. This important dataset was therefore unavailable for this study.

As an alternative, RPS instead utilised data from the high-resolution point cloud from a LiDAR survey undertaken by Six West Ltd in 2018 to inform the landward elements of the tidal inundation model. Unfortunately, this data was based on a Digital Surface Model (DSM) as opposed to a Digital Terrain Model (DTM). The difference being that man-made structures and objects appear in a DSM whereas a DTM has these objects and structures removed. In context of tidal inundation flood modelling, these objects can represent artificial barriers to the flow of water and result in an over or underestimation of the flood risk.

The difference between a DSM and DTM in context of Donaghadee is illustrated in Figure 3-7 below.

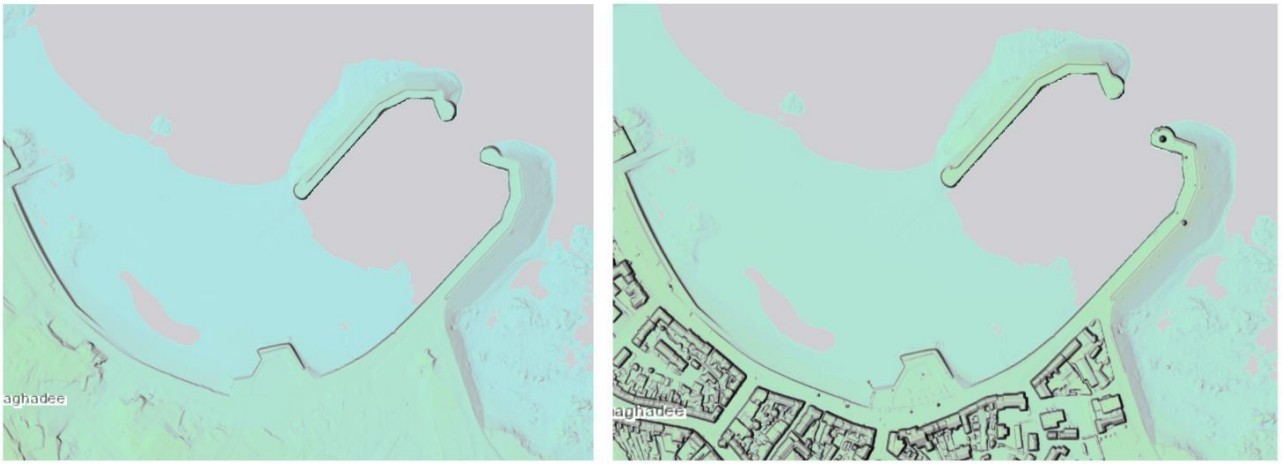


Figure 3-7: DSM (left) vs DTM (right) data for Donaghadee as previewed on the NI Coastal Observatory website, but unavailable to download.

Whilst efforts were made to remove structures within the potential flood plain, it should be noted that the actual extent of flood water may not be fully represented in the modelling presented in the following sections. However, it is important to note that owing to the topography of the local area, most of these structures are actually located slightly above the extreme high water levels, investigated as part of this study, and therefore have minimal effect on the scenarios examined.

3.5.5.2 Drainage flood routes

As illustrated in Figure 3-8 overleaf, there are a series of drainage points along the older sections of the seawalls, either side of Lemon's Wharf. The elevation of these drains varies but are roughly equivalent to a 1 in 150 year return period water level of +3.18mOD. During extreme tides or storm conditions with wave action, water could surge through these gaps and contribute to flooding. These features have not been included in the model due to a lack of specific survey data to define the dimensions and location of the drains.

Figure 3-8: Drainage holes located along the seawall east of Lemon's Wharf

3.5.6 Tidal Boundary Conditions

Tidal boundaries for the Donaghadee model were derived from RPS' Tide and Storm Surge Forecast (TSSF) model of Irish coastal waters, (RPS, 2018). The extent and bathymetry of this model is illustrated in Figure 3-9.

The TSSF model was also developed using flexible mesh technology with the mesh size (model resolution) varying from circa 24km along the offshore Atlantic boundary to circa 200m around the Irish coastline. The tolerance of this model regarding tidal amplitude is ±0.15m.

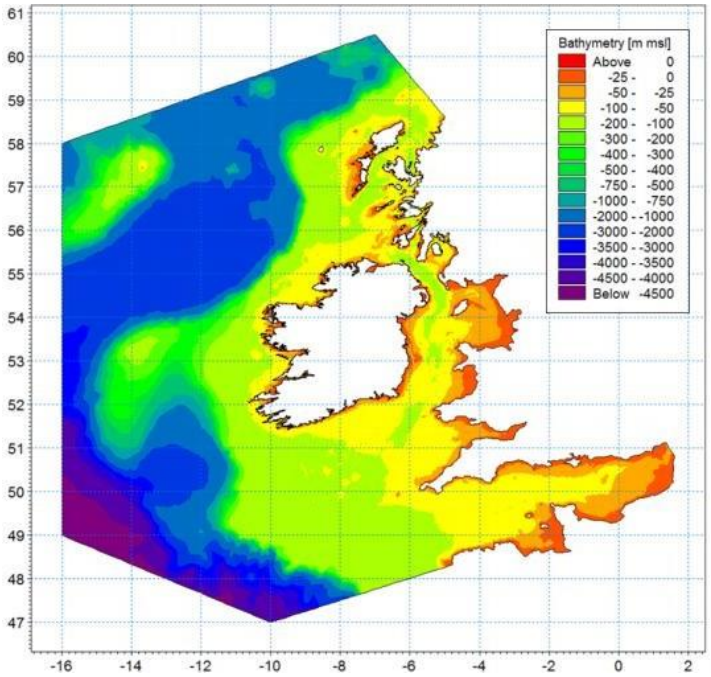


Figure 3-9: Extent and bathymetry of RPS' Irish Seas Tidal and Storm Surge model

4 WAVE TRANSFORMATION MODELLING

The offshore wave climate was transformed to inshore using the DHI MIKE21 Spectral Wave (SW) Flexible Mesh model. This is a third generation spectral wind-wave model with two modes of operation, using either the directional decoupled parametric or fully spectral formulations. The SW module describes the propagation, growth and decay of waves in nearshore areas and can take account of the effects of refraction and shoaling due to varying depth, local wind generation and energy dissipation due to bottom friction, white capping and wave breaking. It may also include non-linear wave-wave interaction, wave-current interaction and the effect of time varying water depth and flooding and drying. The SW model has an optimal degree of flexibility in describing bathymetry and ambient flow conditions due to the use of a depth-adaptive and boundary-fitted unstructured mesh.

The bathymetry and extent of this model is shown in Figure 4-1. The inshore region of this model was developed using the detailed bathymetry, to Mean Sea Level (MSL), collected by Six-West and additional detail from Admiralty Surveys. Figure 4-2 shows the detailed mesh in the area of interest. Larger models to the north and south were used to generate the boundary conditions for the model shown in Figure 4-1.

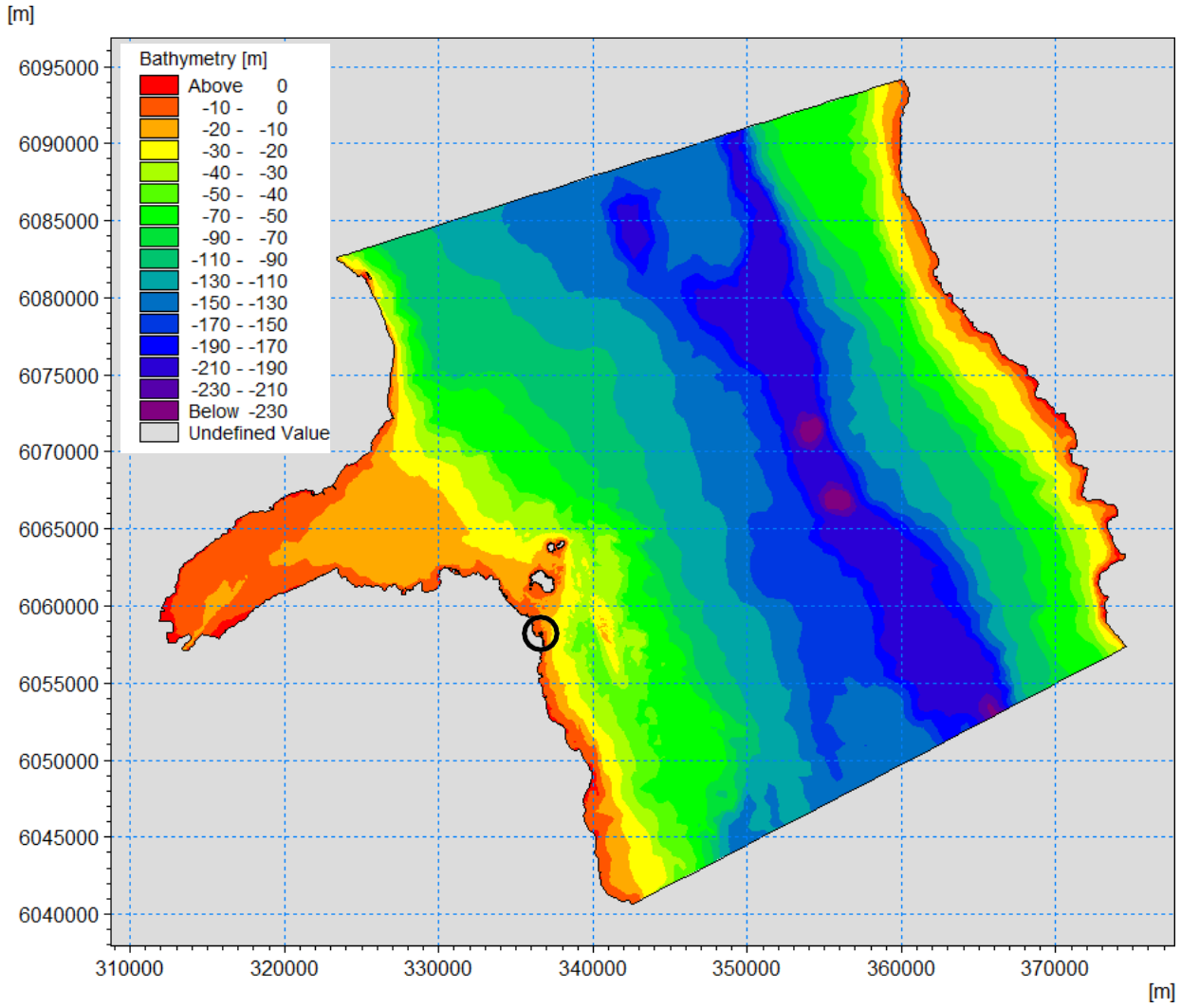


Figure 4-1: Extent and MSL bathymetry of wave transformation model for Donaghadee Harbour, Donaghadee circled

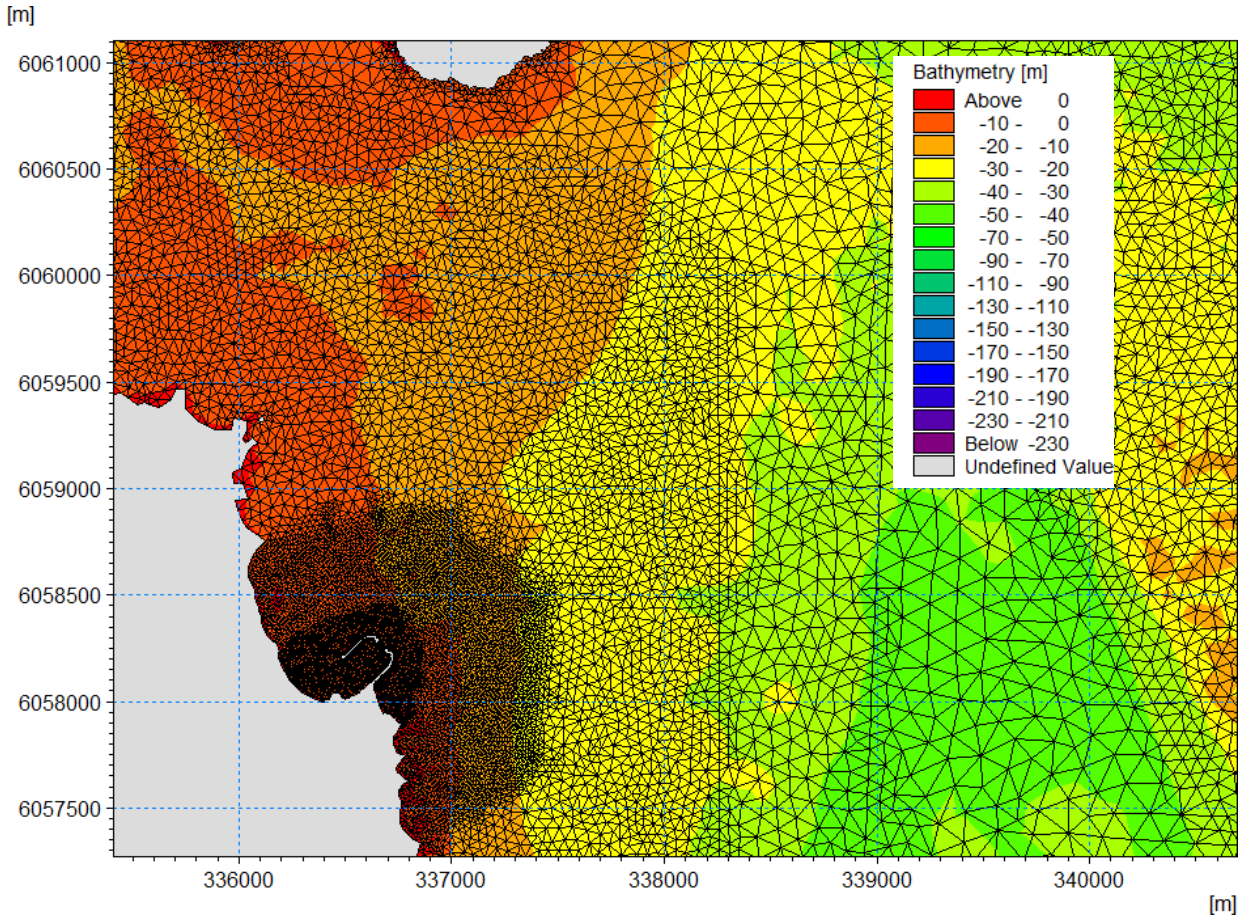


Figure 4-2: MSL Bathymetry and mesh of detailed area of wave transformation model for Donaghadee Harbour

To identify the most arduous conditions at the site, wind and water level conditions representing 1 in 1, 50 and 200 year return period storm events from directions 0° to 180° and 315 to 345°, were then simulated and applied to the model, with and without Sea Level Rise (SLR).

Results were then extracted in the locations of interest outside the harbour entrance and to the north along the parade. The modelling undertaken previously, and summarised in Section 5, utilised a Boussinesq type model – which is required to accurately assess harbour disturbance.

“The Inner” Parade herein refers to the section of the Parade to the east of Lemon’s Wharf, that is within the harbour walls whilst the “Outer” Parade refers to the section to the west of Lemon’s Wharf, leading to the public slipway. Approximately half of the “Outer” Parade, nearest the slipway, has a raised walkway along the shore, separate to the footpath alongside the road. The section to Lemon’s Wharf has a seawall abutting to the footpath.

The 1 in 200 year return period storm event without SLR was run first. Figure 4-3 and Figure 4-4 show H_{m0} wave heights from 30, 75, 135, and 150° sectors, under those conditions.

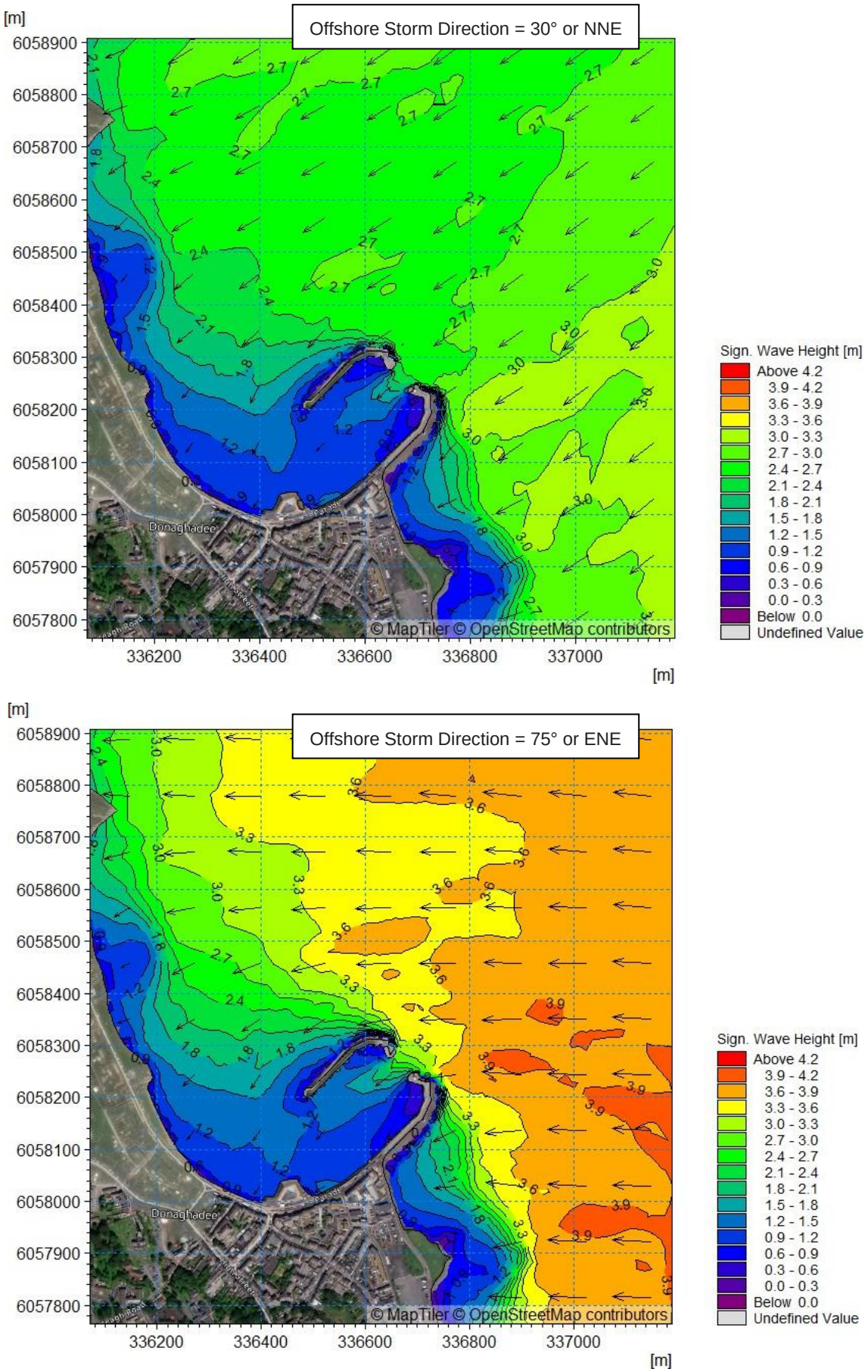


Figure 4-3: H_{m0} Wave Heights at Donaghadee from 1 in 200 year return period storm events from 30 and 75°

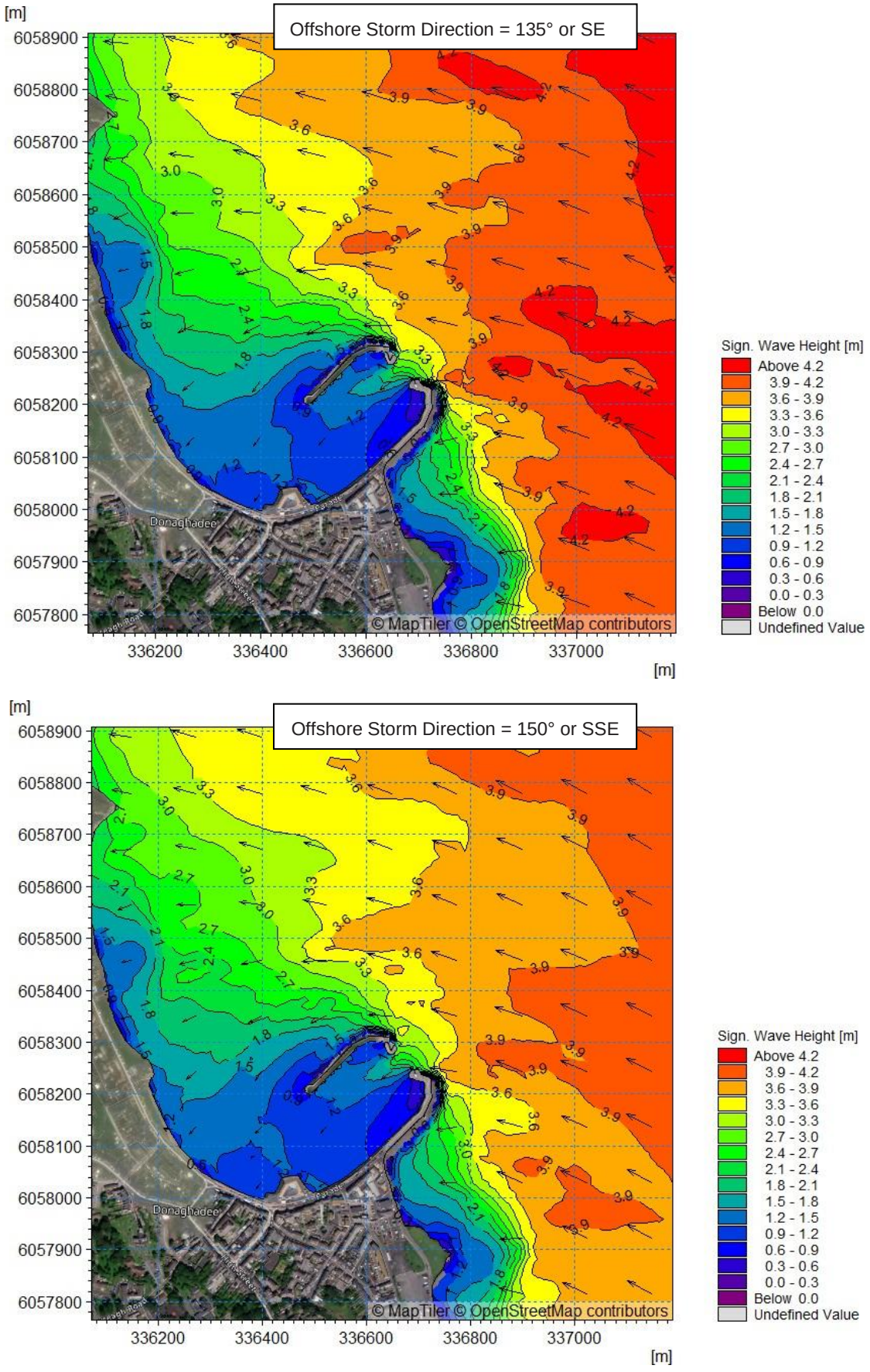


Figure 4-4: H_{m0} Wave Heights at Donaghadee from 1 in 200 year return period storm events from 135 and 150°

Based on this modelling work, the 135° offshore storm direction (south easterly sector) was found to produce the worst wave climate, from the 1 in 200 year return period event, in the area outside the harbour walls. The worst-case wave climate along the “Outer” Parade, also occurred under the offshore storm from the 135° sector.

Having identified the critical directional sector, the 1 in 1 and 1 in 50 year simulations were then undertaken followed by all relevant return periods events, with the effects of SLR included. Figure 4-5 shows H_{m0} wave heights from the 30° offshore storm direction, under a 1 in 1 year return period event, with and without SLR. Figure 4-6 shows H_{m0} wave heights from the 45° offshore storm direction, under a 1 in 50 year return period event, similarly.

It was found that the 135° produced the most severe climate outside the harbour entrance, except under a 1 in 1 year return period storm, whereby conditions during a 75° storm direction were marginally worse.

The effects of Sea Level Rise were found to impact the worst case direction of storms more significantly along the “Outer” Parade. With the additional water depth in this shallow beachy area, the storms from the NE sector, 30 to 75°, in some cases produced a more significant wave climate. Similarly in the lower return period storms of 1 in 1 and some 1 in 50 year return period events, the NE sector in some cases produces a more severe wave climate.

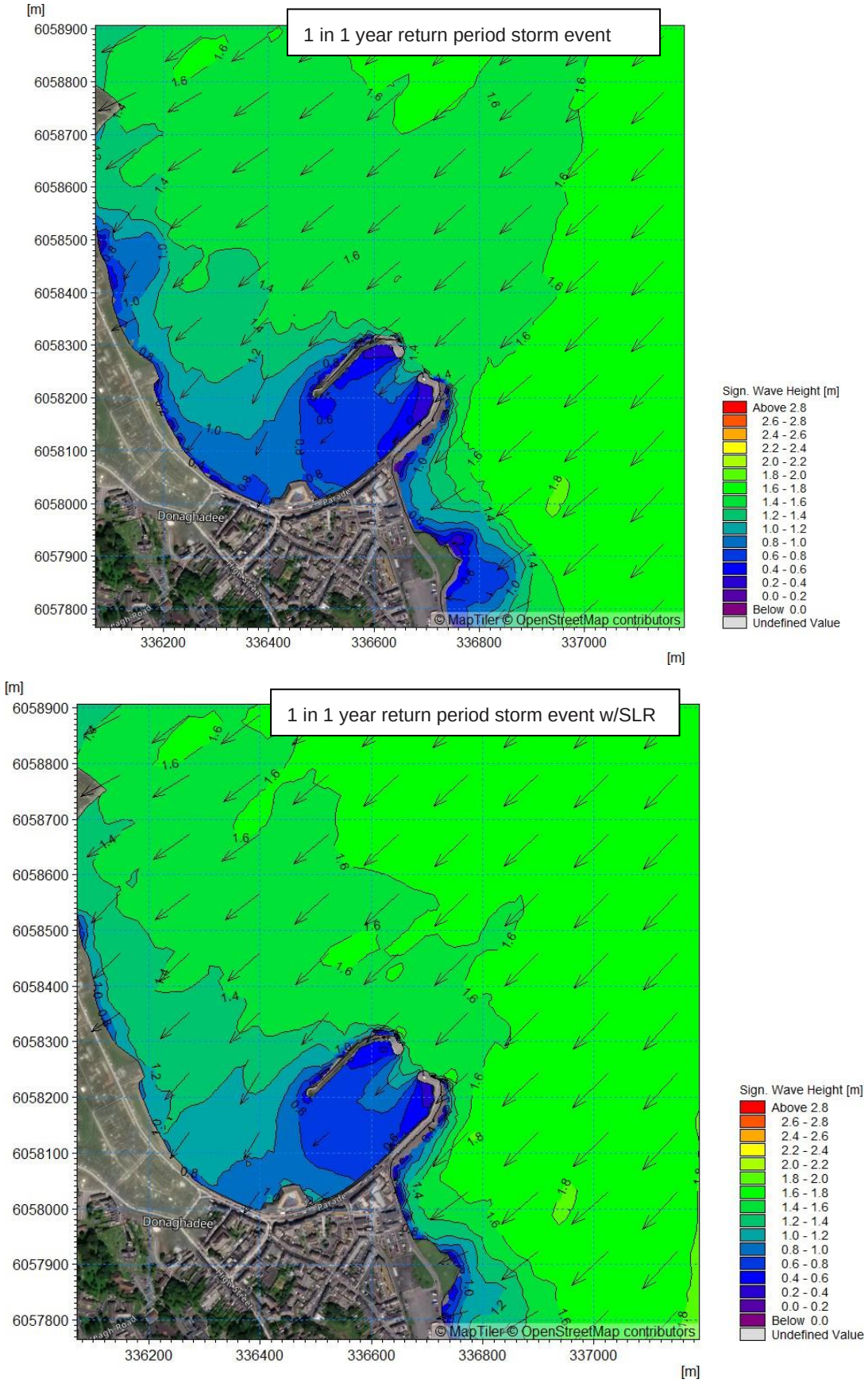


Figure 4-5: H_{m0} Wave Height Plots at Donaghadee Harbour from 1 in 1 year return period storm events from 30°, without (L) and with (R) sea level rise

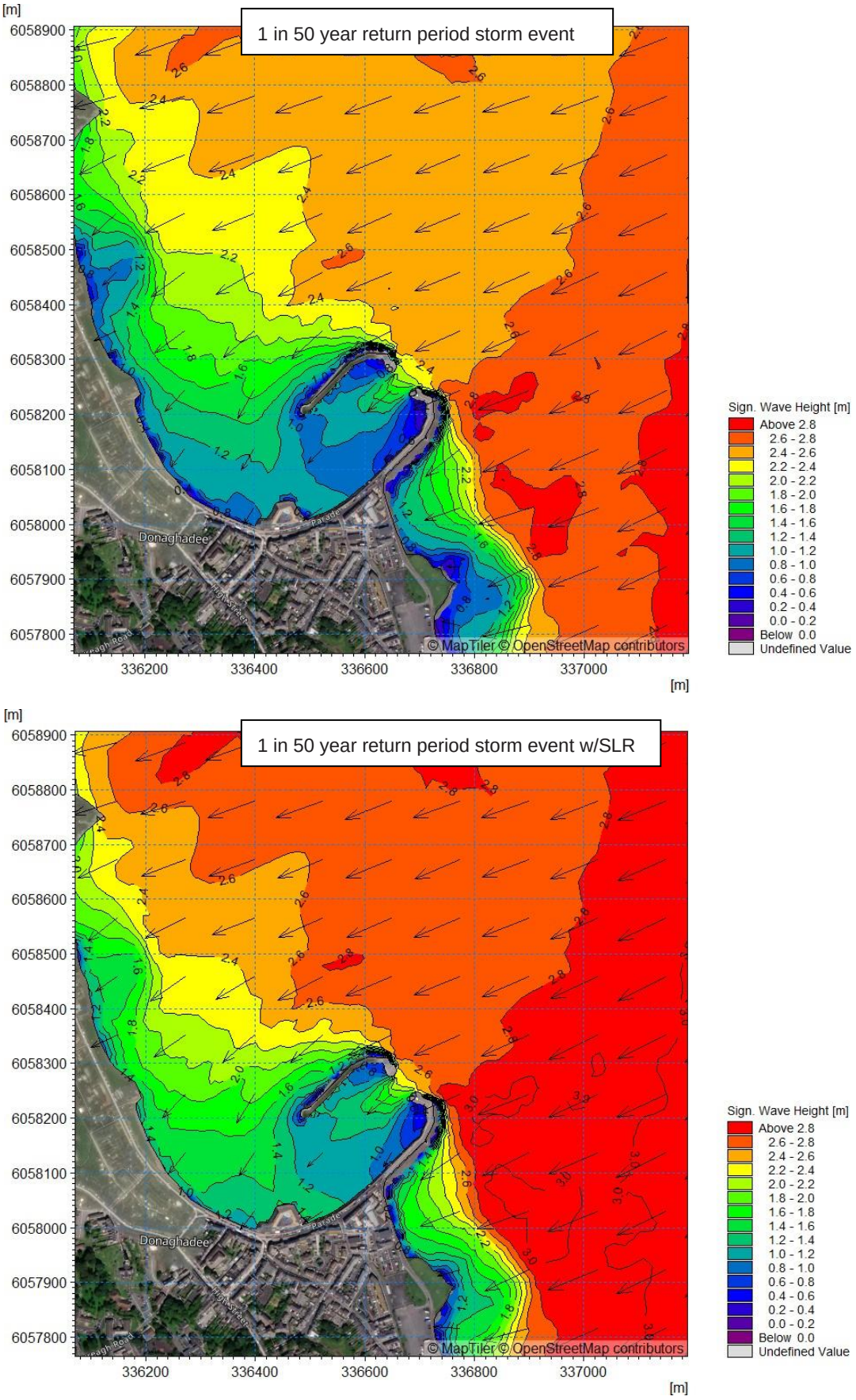


Figure 4-6: H_{m0} Wave Height Plots at Donaghadee Harbour from 1 in 50 year return period storm events from 45, without (L) and with (R) sea level rise

4.1 Wave Transformation Modelling Results

Table 4.1 presents a summary of the wave transformation modelling results. Results have been extracted at three locations, one to represent the "Inner" Parade, and two along the "Outer" section of the Parade, see Figure 5-7. The results from the worst case direction, at each location, for each simulation are presented. A second direction is presented when the results are similar, to ensure the worst case conditions for flooding are considered.

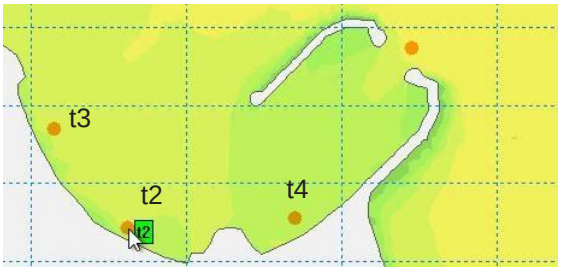


Figure 4-7: Locations of wave transformation results

These inputs to these models, were taken from the Joint Probability Analysis described in Section 3.4. Five combinations of water levels (WL) and wave conditions were examined with the table below presenting the highest modelled wave height scenario, and also highest modelled water level conditions (in the row below). The wave parameters extracted are Significant Wave Height, H_{m0} (m) and Spectral Wave Period, $T_{m-1,0}$ (s).

Table 4.1: Summary of Results of Wave Transformation Modelling

Storm simulation	"Inner" Parade (t4)				Near "Outer" Parade (t2)				Far "Outer" Parade (t3)			
	Direction	WL mOD	Hm0 m	Tm-1,0 s	Direction	WL mOD	Hm0 m	Tm-1,0 s	Direction	WL mOD	Hm0 m	Tm-1,0 s
200stm with SLR	45deg	2.57	1.34	6.5	45deg	2.57	1.37	6.7	135deg	2.95	1.60	8.7
		3.06	1.13	5.6		3.06	1.30	5.8		3.44	1.38	8.2
	75deg	2.57	1.28	7.0	0deg	2.57	1.36	6.8				
		3.06	1.15	6.4		3.06	1.27	6.0				
50stm with SLR	45deg	2.57	1.20	6.1	45deg	2.57	1.31	6.3	75deg	2.57	1.49	6.7
		3.06	0.99	5.2		3.06	1.14	5.4		3.06	1.38	5.9
					30deg	2.57	1.31	6.3	135deg	2.83	1.46	8.4
						3.06	1.14	5.5		3.33	1.18	7.8
1stm with SLR	30deg	2.57	0.82	4.9	30deg	2.57	0.99	5.2	30deg	2.57	1.17	5.2
		3.06	0.64	4.2		3.06	0.69	4.3		3.06	0.81	4.3
200stm	45deg	1.62	1.18	6.6	135deg	2	1.12	9.1	150deg	2.11	1.36	10.0
		2.11	1.00	5.7		2.49	1.05	8.8		2.64	1.22	9.5
	135deg	2	1.09	8.9								
		2.49	0.99	8.3								
50stm	45deg	1.62	1.07	6.1	135deg	1.88	1.04	8.5	135deg	1.88	1.24	8.5
		2.11	0.87	5.3		2.38	0.92	8.0		2.38	1.22	7.8
	75deg	1.62	1.03	6.7					150deg	2	1.26	9.2
		2.11	0.87	6.0						2.49	1.07	8.5
1stm	45deg	1.62	0.72	4.9	30deg	1.62	0.84	5.3	30deg	1.62	0.98	5.3
		2.11	0.54	4.1		2.11	0.66	4.4		2.11	0.78	4.4

5 EFFECT OF 2015 MASTERPLAN ON WAVE CONDITIONS

As described in the Donaghadee Harbour Development, Technical Feasibility Study, modelling was undertaken to assess the suitability of a breakwater structure, and the extension of Lemon's Wharf to the North Quay. The aim of this modelling was to assess the impact of the development on the wave climate in the harbour and ensure the required improvements were delivered by the scheme.

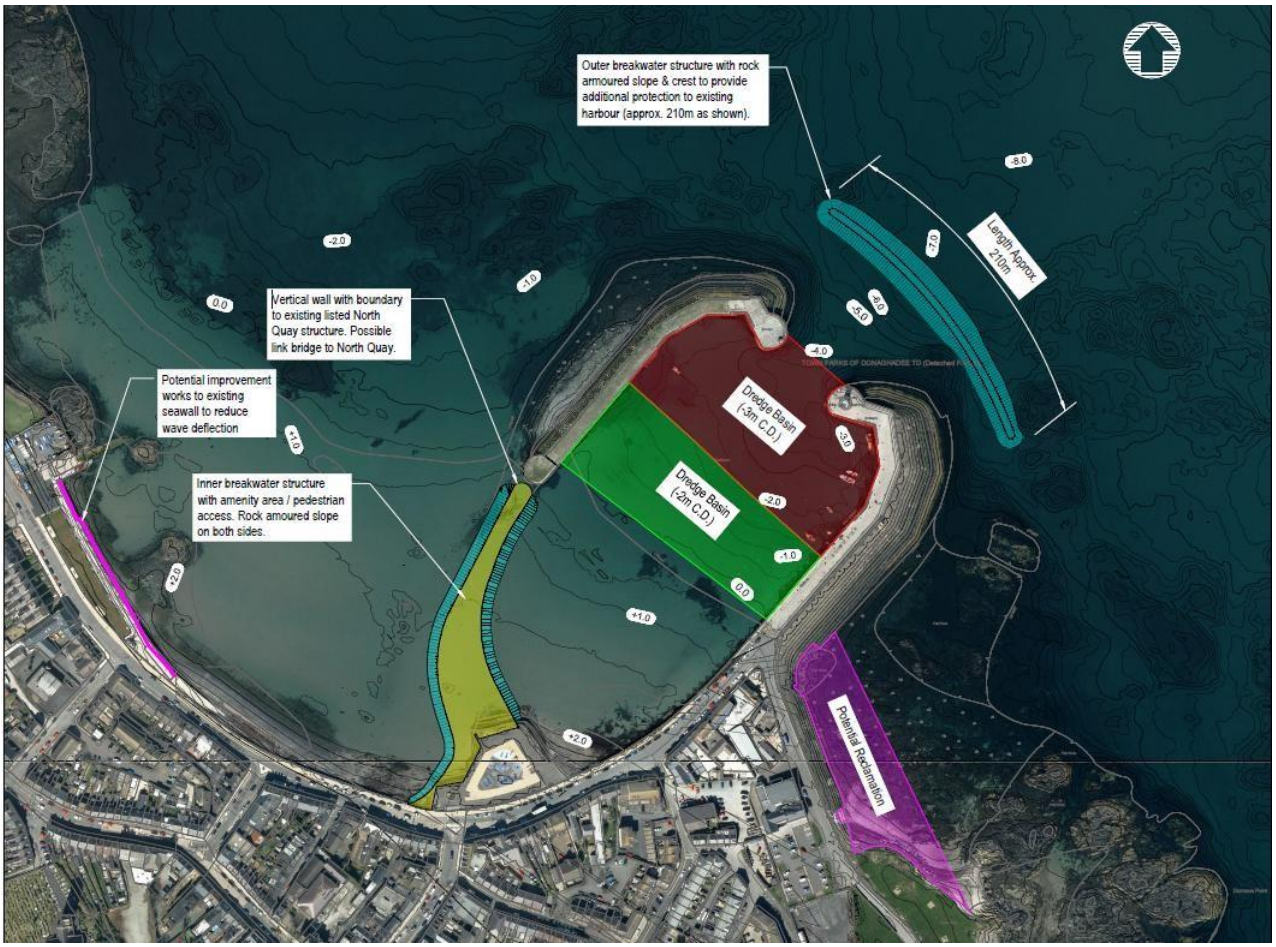


Figure 5-1: Donaghadee Harbour Study, Potential Harbour Development Plan (IBM0725-0001

This small scale harbour disturbance modelling was undertaken using the advanced Boussinesq wave model MIKE 21 BW with a fine rectangular grid. The boundary wave data for the Boussinesq wave modelling was taken from the results of the MIKE 21 Spectral Wave (SW) wave model simulations, used to transform the offshore wave climate into the inshore. The extent of the harbour disturbance model is shown in Figure 5-2.

RPS reviewed the output from these initial simulations to determine if the scheme delivered any flood mitigation benefits beyond the development.

The following sections examine the influence of various individual elements of the 2015 Masterplan on the inshore wave conditions, with reference to coastal flooding caused by wave overtopping.

A summary of the 2015 Masterplan Elements, in the context of flood risk, is included in Section 5.3.

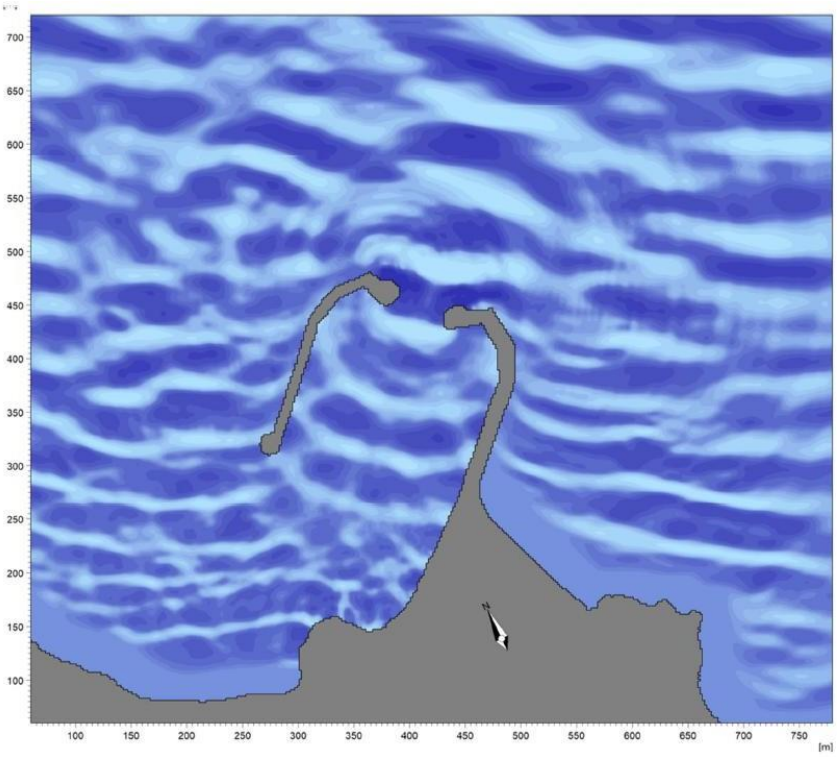


Figure 5-2: Extent of Harbour Disturbance Models

5.1 Offshore Breakwater

Figure 5-3 and Figure 5-4 show wave heights under a 1 in 50 year return period storm event from 15 and 135° respectively. The left hand image shows the existing harbour arrangement, the right presents the wave climate with a curved offshore breakwater in place.

The wave climate within the harbour is significantly improved under both critical storm directions. Reducing exposure from both the North-East and South-East sectors. With the breakwater in place, wave heights within the harbour basin under the 1 in 50 year return period event reduce from over 1.0m, to 0.2 to 0.4m.

The reduction in wave height will primarily be of benefit to vessels berthed within the harbour basin. However, there is also a reduction in incident wave heights at the section of the Parade to the east of Lemon's Wharf. Whilst this would reduce overtopping in this area, it would not reduce the flood risk as a result of tidal inundation.

Noting that this model is designed for considering wave heights and disturbance patterns within the harbour and is not expected to give accurate results outside this area. The section of the Parade to the west of Lemon's Wharf is known to be sheltered by the existing Harbour (with or without the curved breakwater) from storms from the SE (135°). However, storms from the NE sector (15°) can still directly impact on this area. The construction of an offshore breakwater would in no way improve the wave climate on this section to the west of Lemon's Wharf.

If there is no motivation to improve the wave climate within the Harbour, constructing an offshore breakwater may not be the preferred solution. Whilst a breakwater option would reduce wave overtopping along the

eastern section of the Parade, it would not prevent tidal inundation, and the section to the west of Lemon's Wharf would remain exposed.

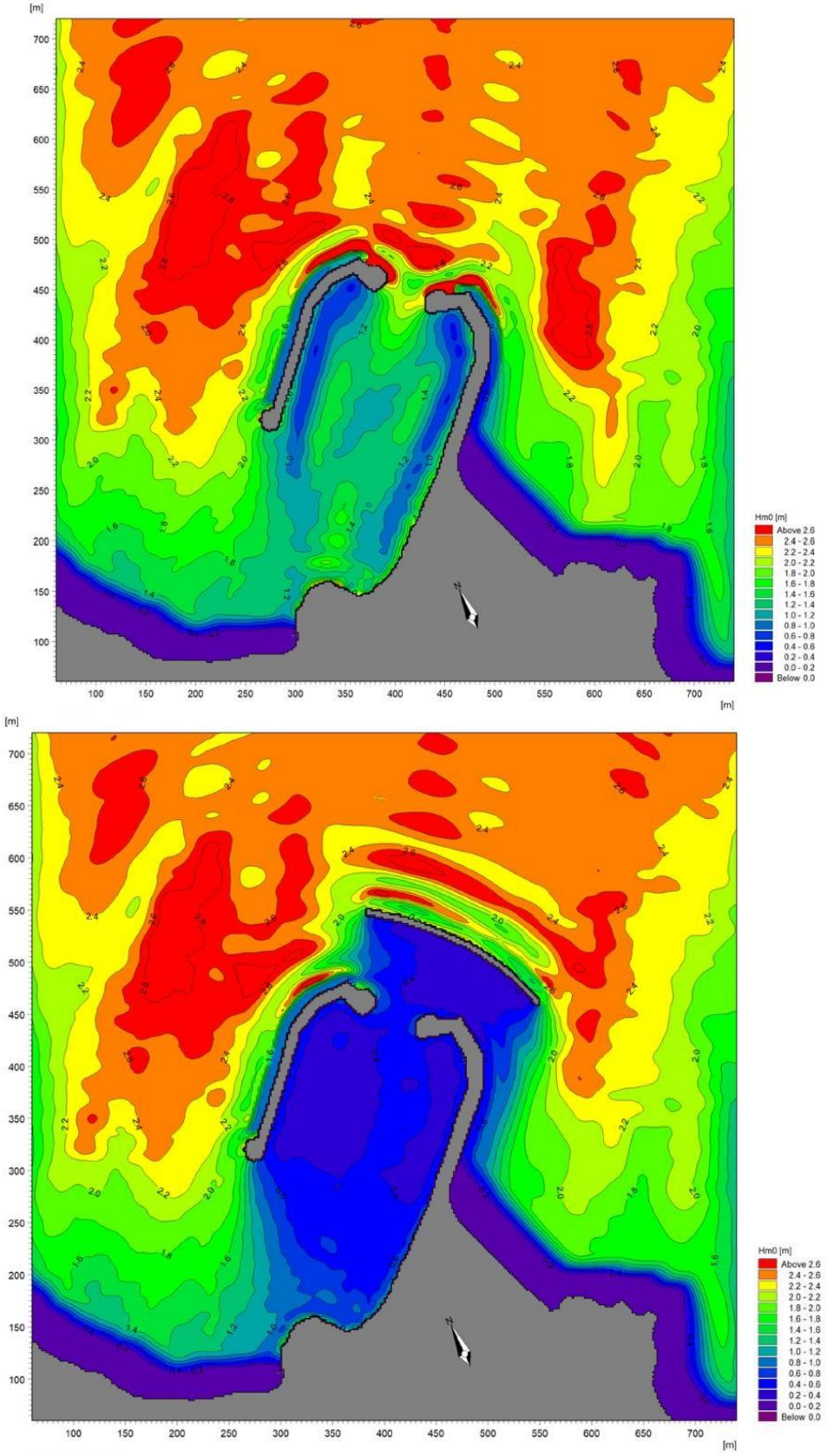


Figure 5-3: 1 in 50 year return period storm from 15° - wave height comparison, with and without breakwater

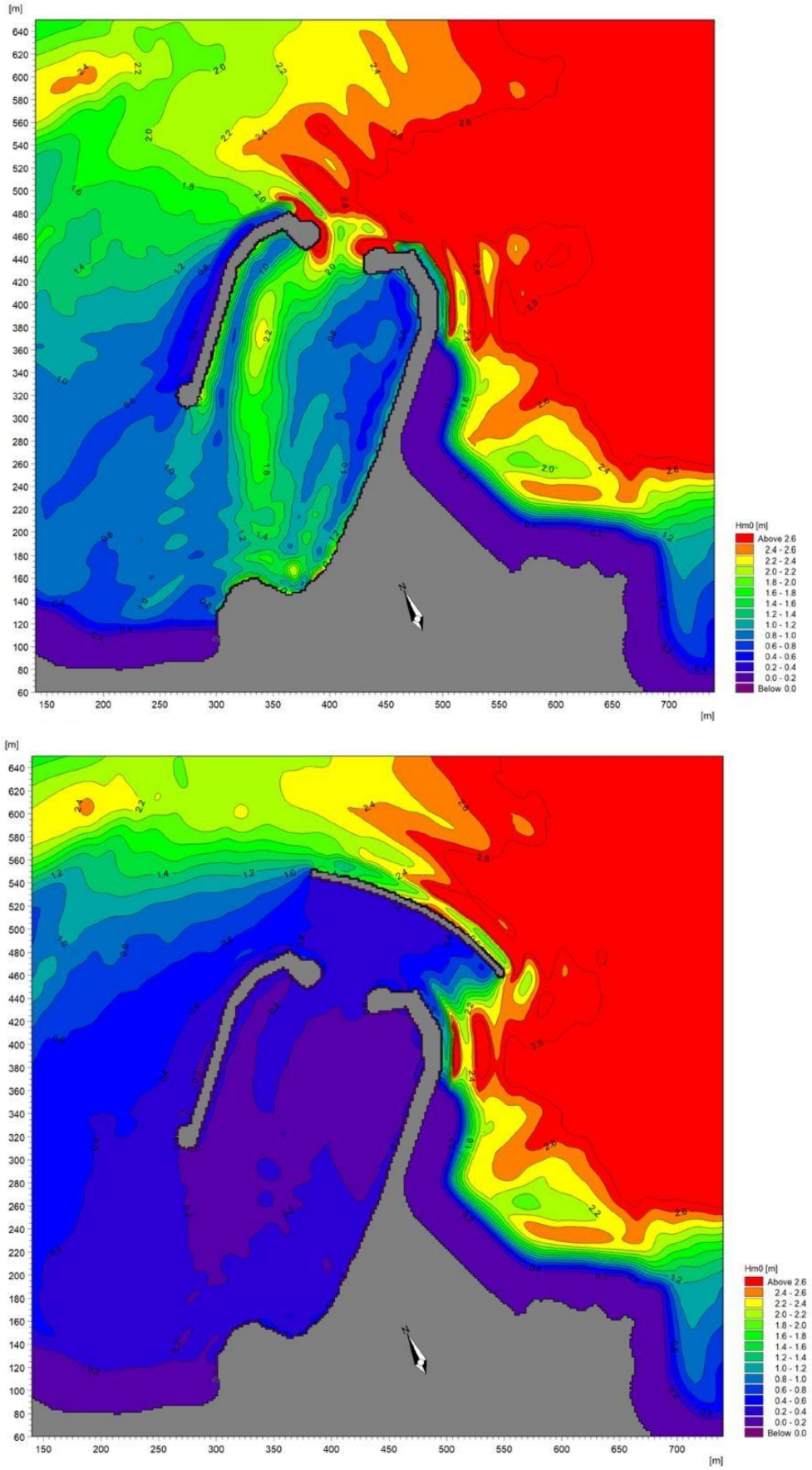


Figure 5-4: 1 in 50 year return period storm from 135° - wave height comparison, with and without breakwater

5.2 Lemon's Wharf to North Quay Connection

Figure 5-5 and Figure 5-6 show wave heights under a 1 in 50 year return period storm event from 15 and 135° respectively. The left hand image shows the existing harbour arrangement, the right presents the wave climate with a solid structure between Lemon's Wharf and North Quay, no offshore breakwater is modelled in this scenario.

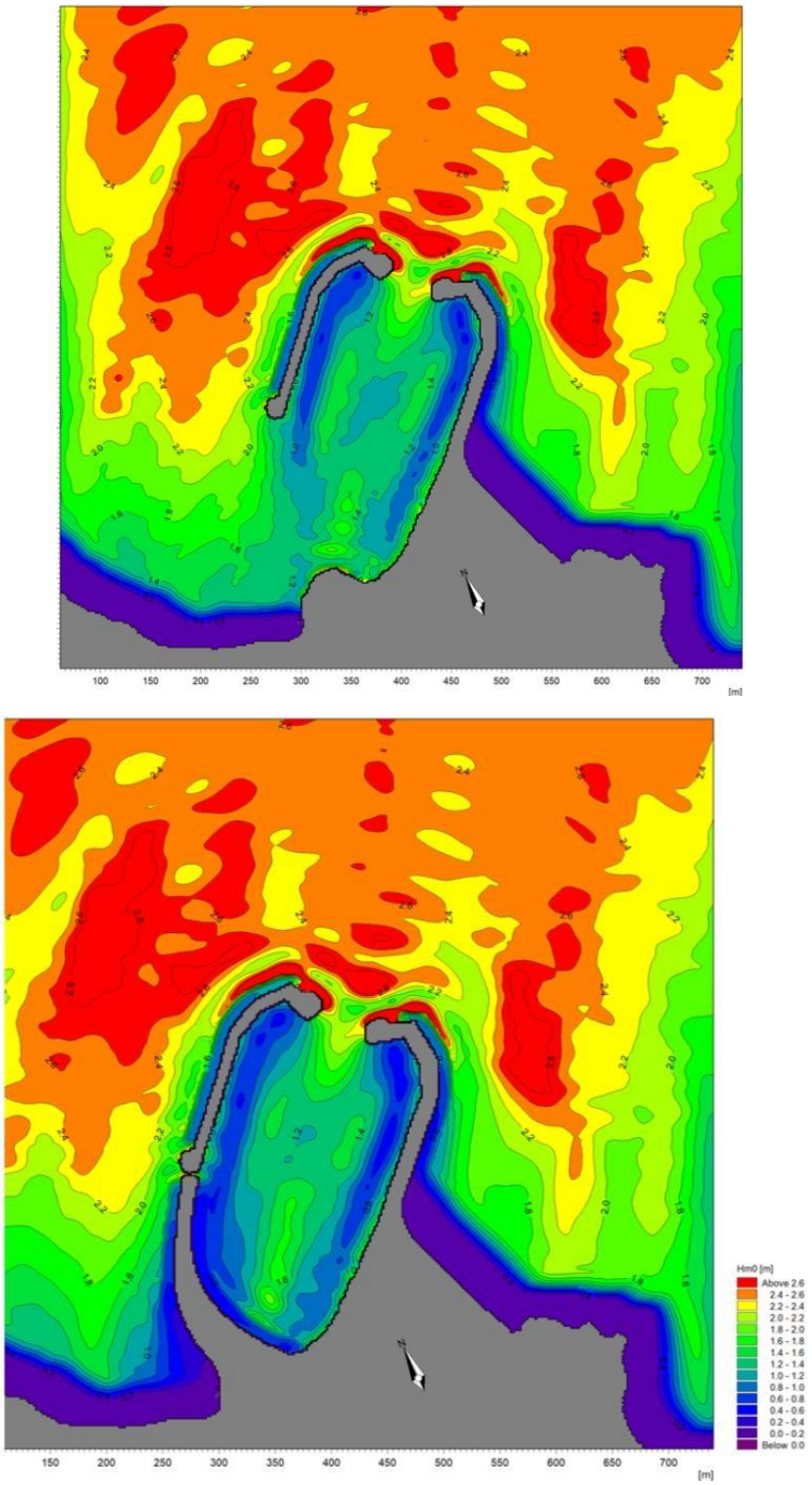


Figure 5-5: 1 in 50 year return period storm from 15° - wave height comparison, with and without jetty extension

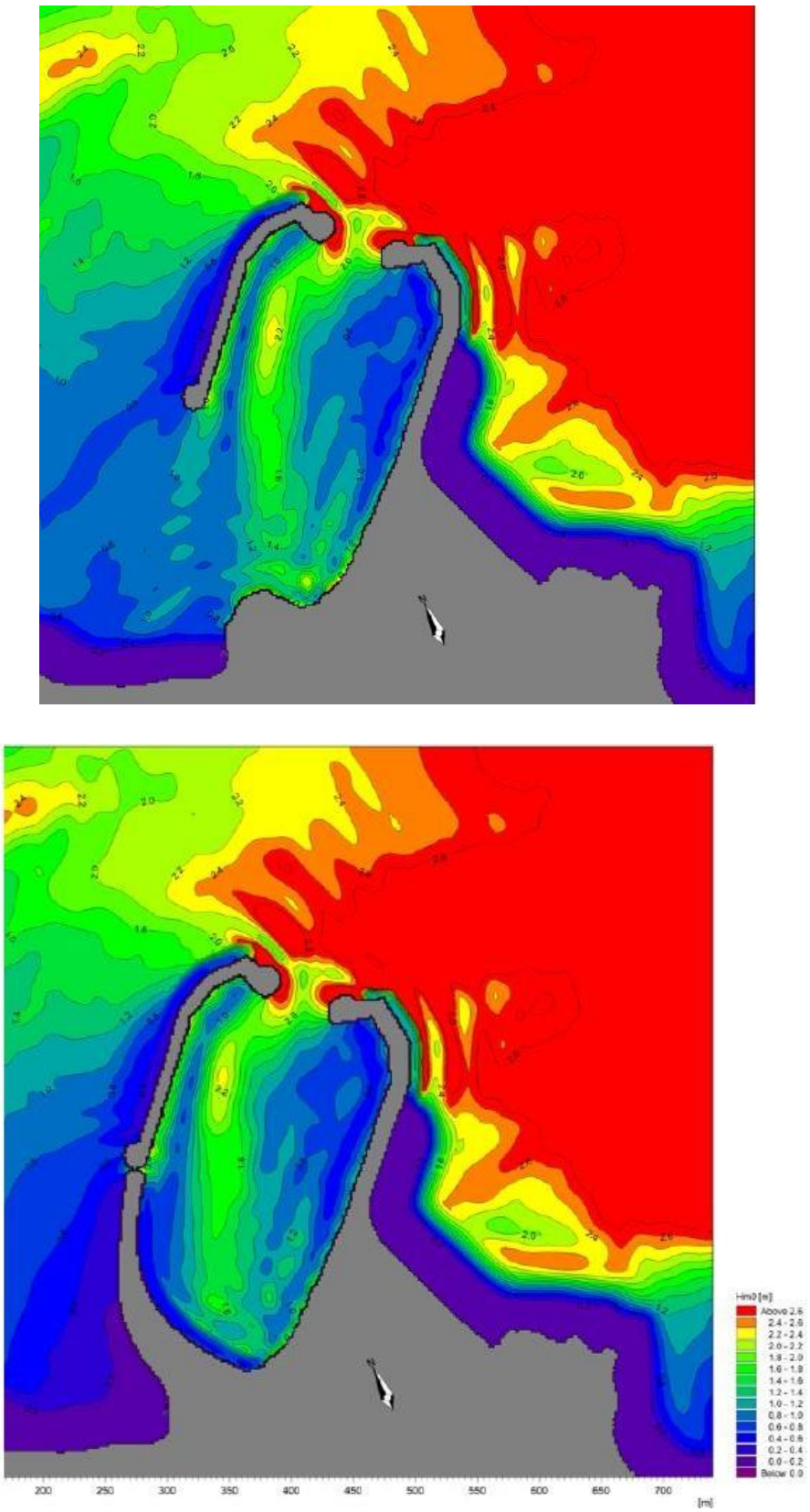


Figure 5-6: 1 in 50 year return period storm from 135° - wave height comparison, with and without jetty extension

Based on the results of these simulations, the wave climate within the harbour was found to be significantly worse under both critical storm directions. With the jetty extension in place, the harbour becomes a basin which becomes affected by resonance. This can be seen along the section of the Parade to the east of

Lemon's Wharf, where a standing wave pattern is visible in the wave heights. The tongue of higher wave heights can be seen to extend further into the basin with the jetty extension.

If the jetty extension was added, without the offshore breakwater, the resonance pattern observed within the basin would indicate that the incident wave heights are increased along the Parade to the east of Lemon's Wharf.

Noting again that this model is designed primarily for considering wave heights and disturbance patterns within the harbour, the wave climate along the section of the Parade to the west of Lemon's Wharf while sheltered by the existing Harbour from storms from the SE, is subject to a more severe wave climate under storms from the NE sector (15°), with the jetty extension in place.

While the jetty extension would provide areas of public amenity and recreation, and over the longer term, the beach to west may also develop. The construction of the jetty extension without the offshore breakwater would worsen the wave climate along the Parade generally.

5.3 Summary of 2015 Masterplan Effects on Wave Climate

Table 5.1 compares the effects of the various elements from the2015 Masterplan on the wave climate along the "Inner" and "Outer" Parade sections. As noted in this table, whilst some options reduce flood risk caused by wave overtopping, additional modification to the coastline would be required to mitigate tidal inundation.

Given that the 2015 Masterplan does not fully mitigate the coastal flood risk along the full length of the Parade, as summarised in Table 5.1, RPS have characterised the coastal flood risk and considered mitigation measures as described in the following sections of this report.

Table 5.1: Summary of effect on wave climate at "Inner" and "Outer" Parade of 2015 Masterplan Elements

Element	"Inner Parade", East of Lemon's Wharf	"Outer" Parade, West of Lemon's Wharf
Offshore Breakwater only	Reduction in wave climate would likely reduce wave overtopping to within tolerable limits. No reduction in tidal inundation without modification to the coastline.	No change
Jetty Extension only	Increase in wave climate would increase wave overtopping	Slight increase in wave climate would marginally increase wave overtopping
Offshore Breakwater and Jetty Extension (Full 2015 Masterplan Scheme)	Reduction in wave climate would likely reduce wave overtopping to within tolerable limits. No reduction in tidal inundation without modification to the coastline.	

6 PRELIMINARY FLOOD RISK

6.1 Background

Coastal flooding can cause damage to homes and businesses, along with damage to and loss of service from infrastructure, such as water supply or roads. Flooding can also impact on the environment by damaging or polluting habitats and damaging cultural heritage assets. Quantifying the flood risk in an area is therefore a crucial first step in developing any flood mitigation strategies.

The following section of this report quantifies the potential coastal flood risk from both combined tide and surge (Mechanism 1 of coastal flooding) and wave overtopping (Mechanism 2 of coastal flooding).

6.2 Methodology

6.2.1 Mechanism 1 – Combined Tide and Surge

Owing to the relatively low-lying nature of some sections of the coastal hinterland within the study area (for example Lemon's Wharf), the effect of combined tide and surge activity has the potential to represent a considerable flood risk. The method used to assess this flooding mechanism is described below.

The flood model described in Section 3.5.4 was constructed with a single seaward boundary, meaning that it was possible to simulate specific tidal levels across the study area by applying a single sinusoidal surface elevation curve to this boundary. This allowed temporally varying water levels to be used to represent the coastal influence at the study sites, which is important in coastal flood studies where the inundation is temporally constrained due to the normal tidal fluctuations. The tidal boundary was applied as a Flather boundary which specified both surface elevations and tidal velocities. These parameters varied along the boundary and with each timestep.

Suitable representative tidal boundary conditions were extracted from the Irish Seas Tidal and Storm Surge Model as described earlier in Section 3.5.6. The boundaries for this assessment were derived from data extracted over a series of typical spring tides. The surface elevations were then adjusted to achieve the extreme water levels described in the Environment Agency's Coastal Flood Boundary in Table 3.1, both with and without SLR. These levels are summarised in Table 6.1.

Table 6.1: Water Levels for Tidal Inundation

Return Period (years)	Water Level (mOD)	Water Level (mCD)
200	3.23	5.49
200 with SLR to 2080	3.52	5.78

The inclusion of a temporal element within a detailed assessment of tidal flood risk is vital due to the relatively rapid variation in even extreme tidal levels, associated with the normal astronomical fluctuation in tidal levels. In general, this limits the duration of exposure and consequently the volume of water that can enter vulnerable areas.

RPS' experience of detailed coastal flooding modelling is that it's seldom sufficient to model a single tidal cycle, as extreme tidal surges often persist over multiple tidal cycles. Consequently, the most onerous tidal flooding is normally a result of the accumulation of flood waters entering the area over multiple tidal cycles. For this reason, coastal flood modelling was undertaken over several days and tidal cycles.

6.2.2 Mechanism 2 – Wave Overtopping

An additional source of potential coastal flooding is from wave overtopping (i.e., flood mechanism 2).

The second edition of the EurOtop "Manual on wave overtopping of sea defences and related structures" (J.W. van der Meer, 2018) describes methods to predict wave overtopping at coastal structures. The manual recommends two approaches to the determination of overtopping rates at coastal structures. The first is a series of empirical methods to represent the physics of the overtopping process in a series of equations that relate the main overtopping response parameter to key wave and structure parameters.

The second is an Artificial Neural Network (ANN) tool to predict mean overtopping discharges for a range of structure geometries, defined by several hydraulic and geometrical parameters. The ANN tool http://overtopping.ing.unibo.it/overtopping/ (Formentin S.M., 2017) (Zanuttigh B., 2016) (J.W. van der Meer, 2018) is based on a large extended database that contains results from more than 13,000 physical model tests. For the purposes of this study, RPS utilised the online ANN tool to predict the mean overtopping rates of 4 profiles at various flood defences along the study area.

Whilst this tool does not provide uncertainty margins for wave overtopping assessments, a measure of "validity" is provided by the ANN tool. This measure is based on an extensive training dataset upon which the tool has been developed. The results presented in the following section of this report all fell within the domain of validity. Nevertheless, it is important to note that overtopping rates experienced at Donaghadee may vary to those reported, subject to the nature and intensity of prevailing storm events.

To assess the overtopping risk for various sections, RPS utilised the extreme wave information presented in Section 4.1 of this report, in conjunction with the geometry of the existing defences. Example of the geometries and defences are shown in Figure 6-1 and Figure 6-2.

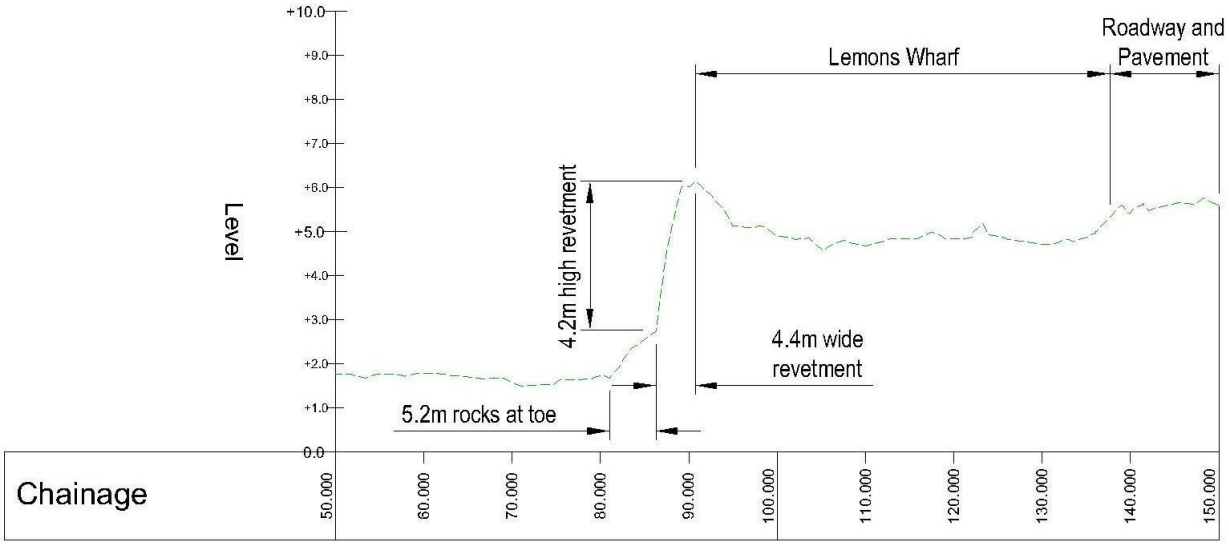


Figure 6-1: Section Through model of topography at Lemon's Wharf (to mCD)

Figure 6-1 shows a section through Lemon's Wharf, where a thick wall is present on the seaward side, giving an increased crest level, above that of the low-lying pavement. The wall here is reasonably steep, with some rocks visible around the toe.

Figure 6-2 shows a similar section through the Outer Parade, where there is only a low wall between the roadway and the water. This section has a much more sloping beach profile, with sand piled up over the end of the slipway and the protruding rocks.

To be conservative, where it appears the bed material is primarily sand, which is likely to move around with the seasons, the bed level has been reduced to account for this.

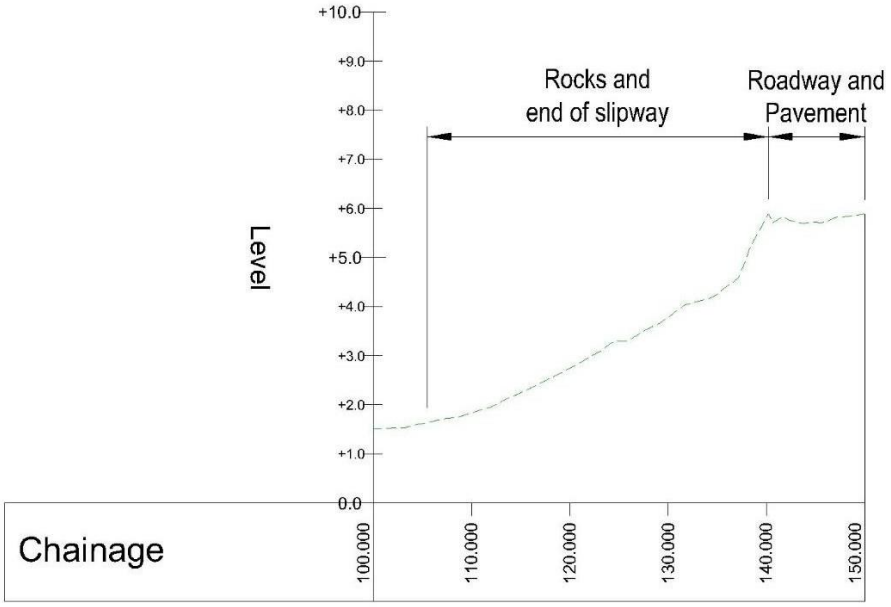


Figure 6-2: Section Through model of topography at Outer Parade (to mCD)

6.3 Combined Tide and Surge risk at Donaghadee

6.3.1 1 in 200 year return period event with no climate change

Figure 6-3 presents the 1 in 200 year return period tidal inundation event. This shows the time step with the greatest level of inundation, from the series of spring tidal cycles which were scaled to the 1 in 200 year return period level and applied to a MIKE 2D HD model.

Model outputs demonstrated that Lemon's Wharf becomes inundated via tidal water propagating landward from the current beach access to the east and from the western side, where only railings are present, no wall. The inundation extends to some of the neighbouring low sections of road but would not impact any of the nearby residential or commercial buildings.

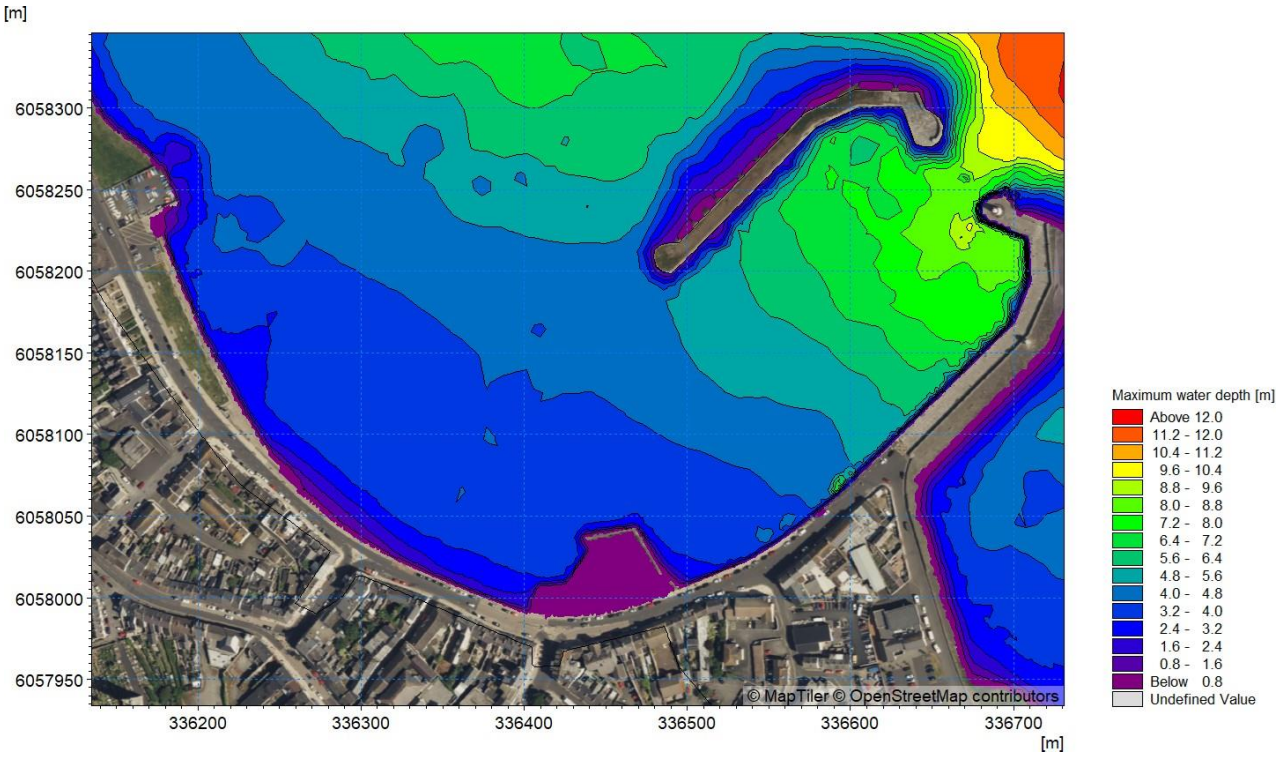


Figure 6-3: Tidal inundation (total water depth) due to storm surge activity during a present day 1 in 200 year return period storm event – Extreme water level = 3.23mOD

This simulated output was then compared to the high-resolution survey data which is presented in Figure 6-4 in which the surveyed points with levels between 0 and +3.23mOD are shaded in bright colour. This represents the areas which would be liable flooded under a present day 1 in 200 year return period storm event.

Given that the results are very similar to those from the MIKE 2D HD model, this simplified approach was used to examine other sea level / storm conditions owing to the higher resolution of the data. However, it is important to note that low lying areas set back from the coast may appear vulnerable to coastal flooding based on vertical levels alone but in reality would not flood given the lack of a flood pathway, i.e., potential flood water would be blocked by a defence or other infrastructure. Given that the multiple open drainage points along these defences as described in Section 3.5.5.2 effectively create flood routes, this method of utilising the survey data to examine flood risk is considered an acceptable proxy.

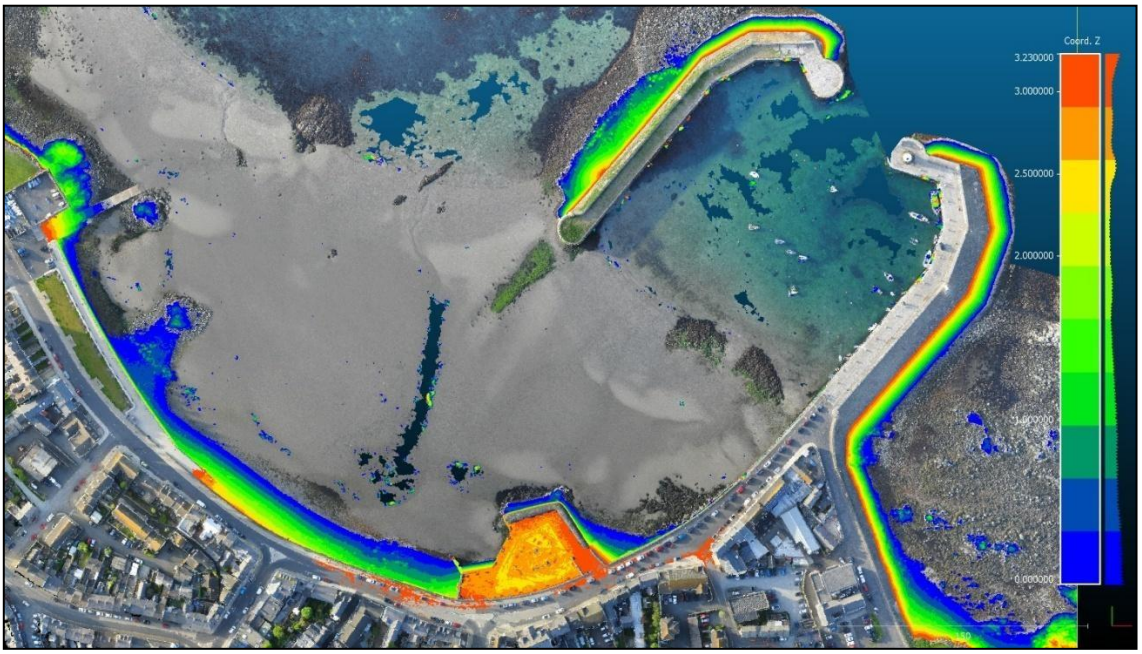


Figure 6-4: Surface elevation <=3.23mOD colorised based on high resolution LiDAR data

6.3.2 1 in 200 year return period event with Climate Change

Figure 6-5 presents the survey data with levels between 0 and +3.6mOD shaded in bright colour. This scenario represents the 1 in 200 year return period event, with the effects of Sea Level Rise, due to Climate Change added, i.e., water levels increased by +0.29m.

As illustrated in Figure 6-5, the potential extent of tidal inundation now spreads from Lemon's Wharf across the road and will likely impact many of the houses and premises along the "Inner" Parade and half of the "Outer" Parade nearest Lemon's Wharf. The flood water could propagate back to Copeland Distillery and surrounding streets which are also of a lower elevation relative to the extreme water level.

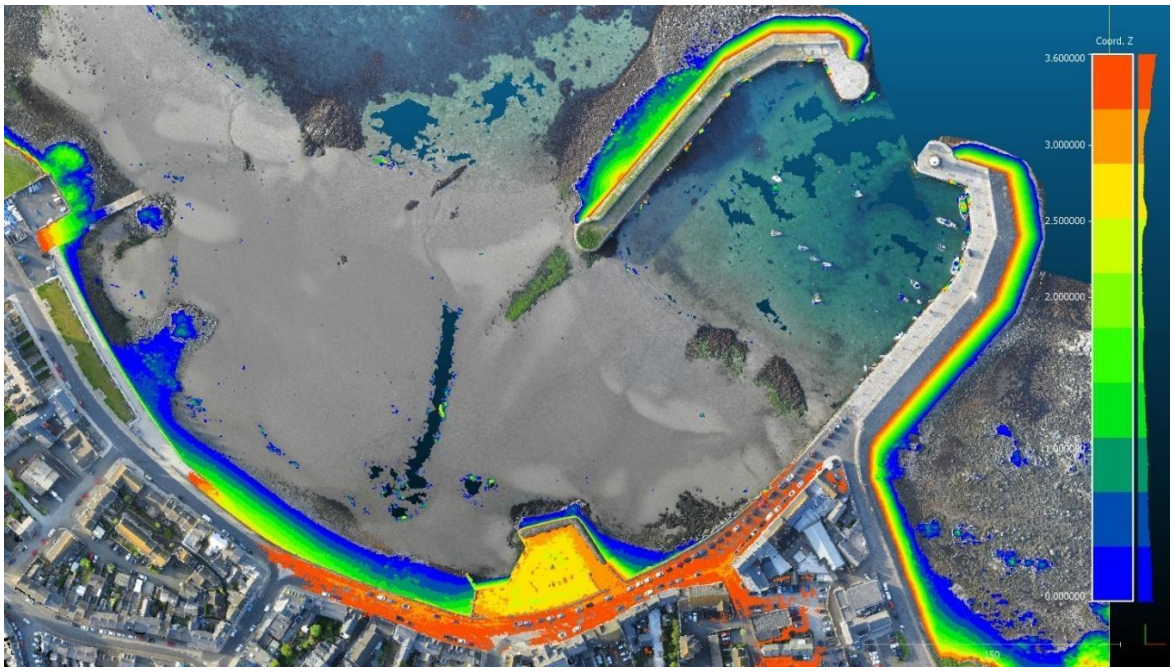


Figure 6-5: Surface elevation <= 3.60mOD colorised based on high resolution LiDAR data

6.4 Wave Overtopping risk at Donaghadee

Having determined that there is no significant risk of tidal inundation to the study area under present day conditions, the next stage of this study considered the potential impact of wave overtopping in the harbour area. Overtopping was assessed at four representative chainages, shown in Figure 6-6:

- **Chainage 100** represents the most sheltered, “Inner” Parade area.
- **Chainage 200** represents Lemon’s Wharf.
- **Chainage 400 and 600** represent the near and far sections of the “Outer” Parade respectively.

Chainages 100 and 400 have low level walls, separating the sea from the pavement.

Lemon’s Wharf features a higher and thicker seawall around the northly and easterly perimeters. It is set back from the road and pavement, by the width of the wharf, and is the lowest lying level in the vicinity. The westerly side of Lemon’s Wharf has only railings separating it from the sea. Based on anecdotal evidence, it is known that Lemon’s Wharf is inundated approximately once a year. Whilst this can cause some short-term disruption, it is generally accepted that this area performs an important function in reducing wave energy and flooding to the surrounding area and doesn’t cause considerable concern given that no built assets are impacted.

Chainage 600 is at the most exposed location, here the Parade has no wall, only an open fence to separate pedestrians from the sea. The walkway is setback from the road and pavement by the green space.

Figure 6-6: Locations of representative sections for overtopping

6.5 Tolerable wave overtopping thresholds recommended by Eur0top

Most sea defence structures are constructed primarily to limit overtopping volumes that might otherwise cause flooding. Over a storm or tide, the overtopping volumes that can be tolerated are site specific and depend on the size and use of the receiving area amongst other factors.

However, the Eur0top manual recommends that designers and coastal managers consider the effects of overtopping in context of the following four general categories:

- Damage to defence structures,
- Direct hazard of injury or death to people,
- Damage to property, operation and / or infrastructure,
- Low depth flooding.

While it is not possible to give unambiguous or precise limits to tolerable overtopping for all conditions. Eur0top offers some guidance on tolerable mean discharges and maximum overtopping volumes for a range of circumstances or uses. However it notes that these limits may be adopted or modified depending on the circumstances and uses of the site.

Tolerable overtopping limits for the categories summarised above are provided in Eur0top for two different wave overtopping flow parameters. These parameters are the:

- Mean overtopping discharge, q (l/s per m),
- The individual maximum overtopping volume, V_{max} (l per m).

The V_{max} flow parameter is important when considering tolerable overtopping rates, as while many small waves can result in considerable mean overtopping discharge, one large individual wave over the same period could create very dangerous conditions but with a much lower mean overtopping rate. This concept is illustrated in Figure 6-7 overleaf.

In recognition of the different safety categories, the Eur0top manual provides a range of tolerable wave overtopping thresholds for structural design, property behind coastal defences and for people and vehicles. This information has been presented in Table 6.2 to Table 6.4 respectively.

It should be noted that tolerable wave overtopping discharge rates are the same for all return period events, i.e. tolerable volume of overtopping does not increase with return period, as the risk to people, property and structures is independent of a storm return period.

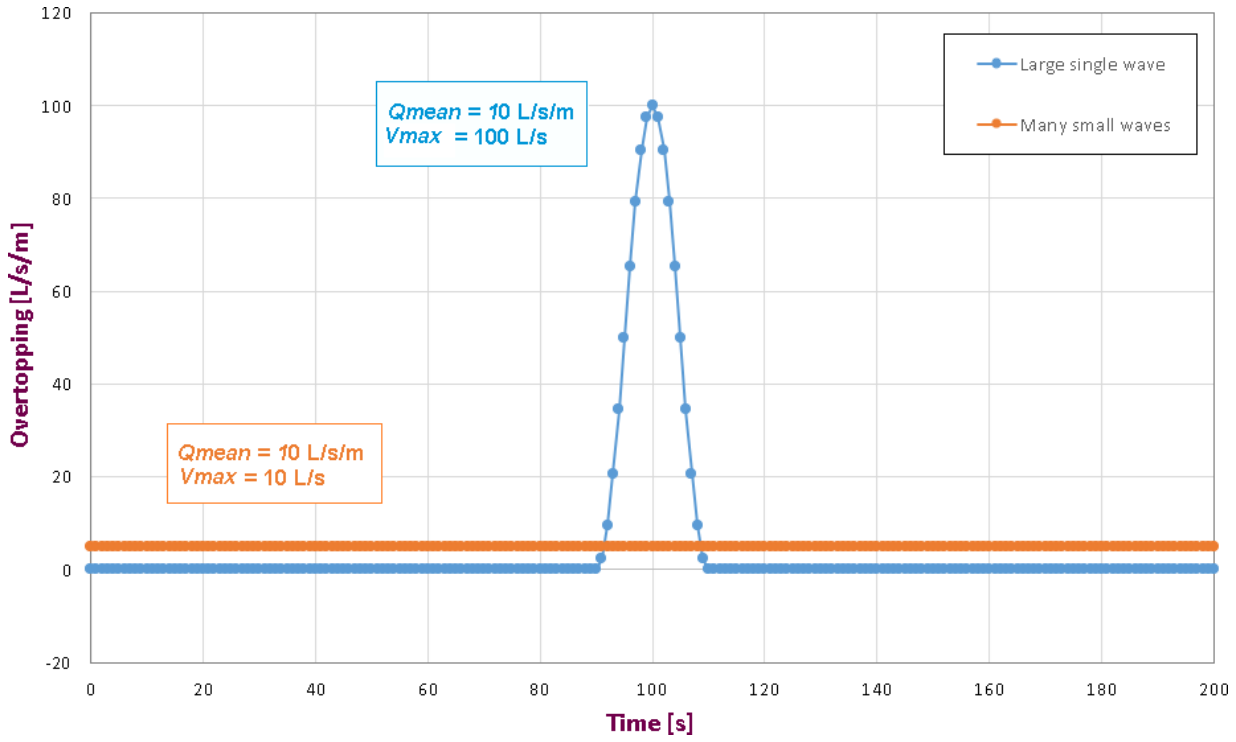


Figure 6-7: Two wave events with the same average overtopping rates (i.e. q_{mean}) but different maximum overtopping rates (i.e. V_{max})

Table 6.2: Limits for overtopping for structural design (Eur0top, 2018)

Hazard type and reason	Mean discharge q (l/s per m)	Max volume V_{max} (l per m)
Rubble mound breakwaters; H_{m0} > 5 m; no damage	1	2,000-3,000
Rubble mound breakwaters; H_{m0} > 5 m; rear side designed for wave overtopping	5-10	10,000-20,000
Grass covered crest and landward slope; maintained and closed grass cover; H_{m0} = 1 – 3 m	5	2,000-3,000
Grass covered crest and landward slope; not maintained grass cover, open spots, moss, bare patches; H_{m0} = 0.5 – 3 m	0.1	500
Grass covered crest and landward slope; H_{m0} < 1 m	5-10	500
Grass covered crest and landward slope; H_{m0} < 0.3 m	No limit	No limit

Table 6.3: Limits for overtopping for property behind defences (Eur0top, 2018)

Hazard type and reason	Mean discharge q (l/s per m)	Max volume V_{max} (l per m)
Significant damage or sinking of larger yachts; H_{m0} > 5 m	>10	>5,000 – 30,000
Significant damage or sinking of larger yachts; H_{m0} = 3-5 m	>20	>5,000 – 30,000
Sinking small boats set 5-10 m from wall; H_{m0} = 3-5 m Damage to larger yachts	>5	>3,000-5,000
Safe for larger yachts; H_{m0} > 5 m	<5	<5,000
Safe for smaller boats set 5-10 m from wall; H_{m0} = 3-5 m	<1	<2,000
Building structure elements; H_{m0} = 1-3 m	≤1	<1,000
Damage to equipment set back 5-10m	≤1	<1,000

Table 6.4: Limits for overtopping for people and vehicles (Eur0top, 2018)

Hazard type and reason	Mean discharge q (l/s per m)	Max volume V_{max} (l per m)
People at structures with possible violent overtopping, mostly vertical structures	No access for any predicted overtopping	No access for any predicted overtopping
People at seawall / dike crest. Clear view of the sea. H_{m0} = 3 m H_{m0} = 2 m H_{m0} = 1 m H_{m0} < 0.5 m	 0.3 1 10-20 No limit	 600 600 600 No limit
Cars on seawall / dike crest, or railway close behind crest H_{m0} = 3 m H_{m0} = 2 m H_{m0} = 1 m	 <5 10-20 <75	 2000 2000 2000
Highways and roads, fast traffic	Close before debris in spray becomes dangerous	Close before debris in spray becomes dangerous

6.6 Tolerable wave overtopping thresholds used for this study

To simplify the tables and thresholds presented in the previous section, RPS developed project specific thresholds for Donaghadee based on the information in the Eur0top manual, findings of critical overtopping discharge rates derived from United States Army Corps of Engineers publications (Hughes, 2013) and RPS' own engineering judgement.

As detailed in Table 6.5, the acceptable mean discharge volumes for pedestrian safety decreases with wave height. This is because small waves only give small overtopping volumes with each wave, whereas large waves may give many cubic metres of overtopping water in one wave and thus be of higher risk. In that sense mean tolerable overtopping rates have been coupled with wave heights as recommended in Eur0top.

Table 6.5: Tolerable wave overtopping thresholds used for the Donaghadee wave overtopping study

Hazard Type	Incident Wave Height H_s (m)	Mean discharge q (l/s per m)	Max volume V_{max} (l per m)
Acceptable thresholds for Pedestrians	1.00	20.00	600.00
	1.25	8.00	
	1.50	4.00	
	1.75	2.00	
	2.00	1.00	
	2.25	0.60	
	2.50	0.45	
	2.75	0.37	
	3.00	0.30	
Acceptable thresholds for property behind defences	1 - 3	1.00	1000.00
Acceptable thresholds for Structural Safety	1 -3	5.00	3000.00

6.7 Eur0top ANN

To assess overtopping, RPS first utilised the industry standard Eur0top Neural Network (NN). Simplified geometries were used which accounted for the approaching foreshores and crest levels to match the top of the walls, and bed levels to represent a typical annual low toe level of each wall.

Events representing 1 in 1, 50 and 200 year return period storm events were assessed, both with and without SLR.

Figure 6-8 shows a plot from the output of the calculated overtopping discharge rates at the four chainage locations, under the six simulated storm conditions. It should be noted that the wave conditions that produced the greatest overtopping discharge did not usually occur at the highest water level which demonstrated that these sections could be vulnerable to overtopping even with modest tide levels if wave conditions were onerous enough. For reference, based on an approaching wave height of *c.* 1.5m as experienced at Donaghadee, the tolerable rate of overtopping equates to 4 L/s/m per m, with a maximum volume of 600 l per m (note that the NN approach does not produce a V_{max} output.)

Based on present day conditions, overtopping rates for a 1 year return period storm event is considered "tolerable". During a 1 in 50 year return period event, only the overtopping at Chainages 100 and 200 is considered tolerable. Wave overtopping exceeds the tolerable limits across all chainages during a 1 in 200 year return period storm event.

Under future sea level rise conditions, even the 1 year return period storm event exceeds the tolerable discharge rate at all but Chainage 200.

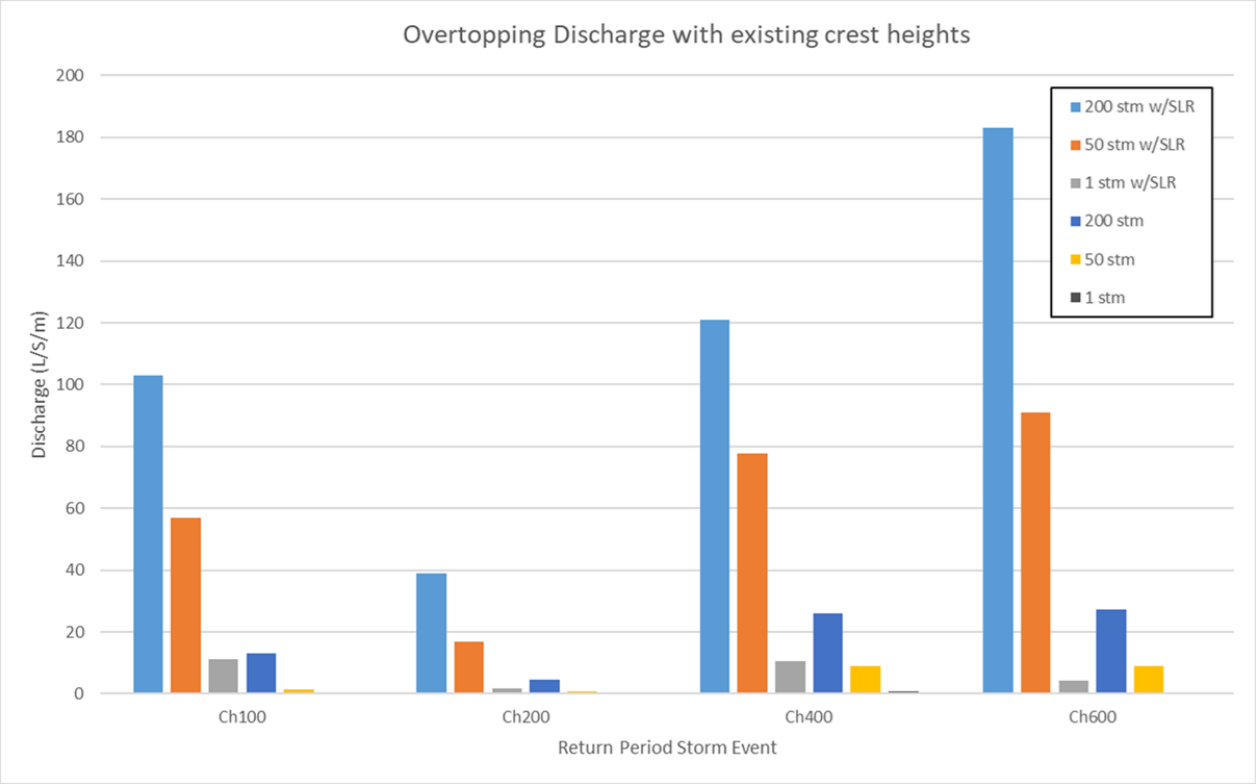


Figure 6-8: Plot of Overtopping Discharges at Chainages 200 – 600 during various extreme storm conditions applied

When coastal defence structures to mitigate wave overtopping were considered in the Eur0top NN model, results became unstable and increased uncertainty associated with the corresponding results. Recognising this as a significant limitation, RPS therefore utilised advanced in-house Computational Fluid Dynamic (CFD) modelling techniques to examine wave overtopping in detail. Owing to the accuracy associated with this approach, CFD modelling is very computational expensive and is considered akin to undertaking real-world physical model testing.

A summary of RPS' workflow in context of this overtopping assessment is illustrated in Figure 6-9 below.

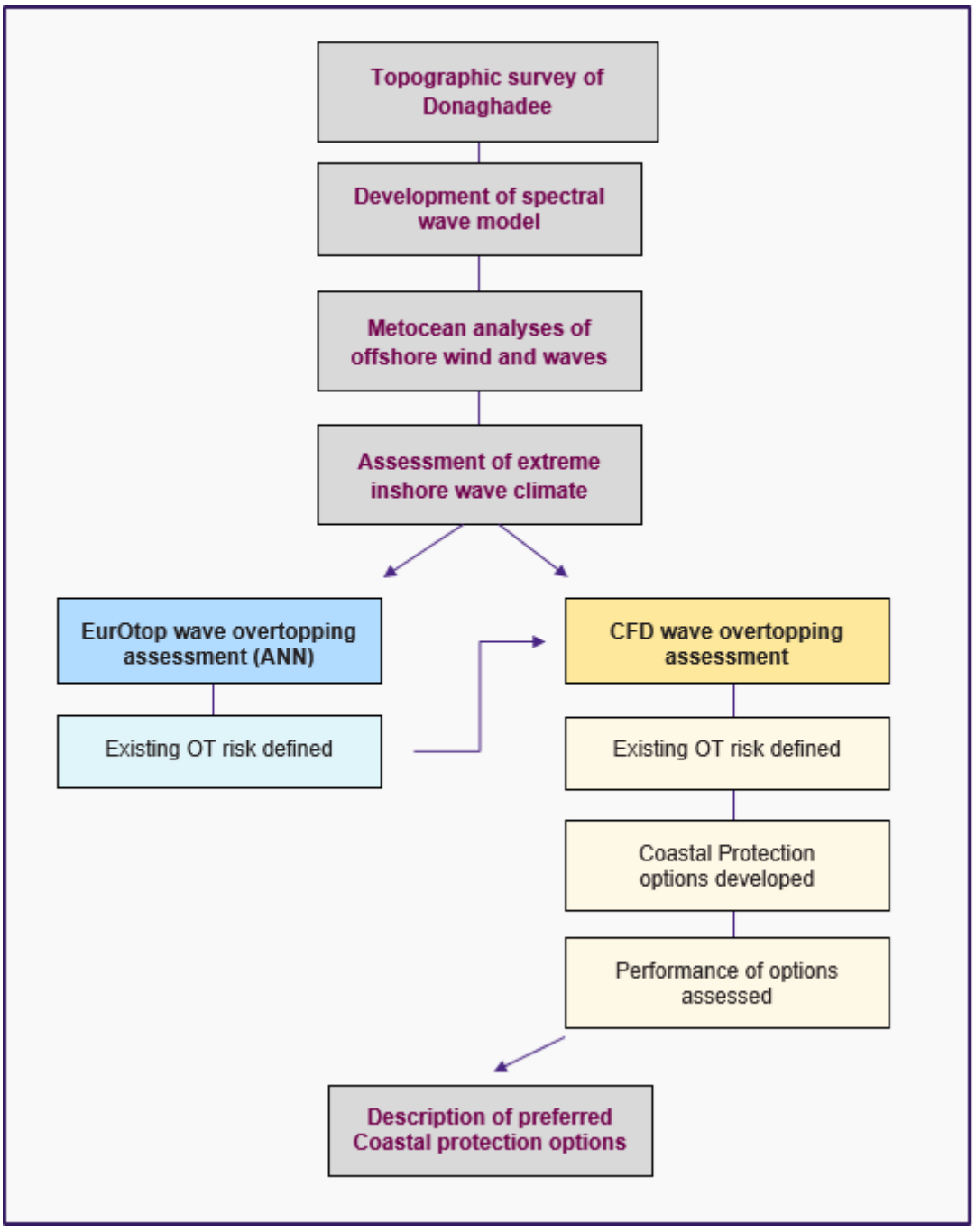


Figure 6-9: Summary of the wave overtopping workflow for the Donaghadee coastal flood risk study

6.8 CFD Modelling Software

Recognising the limitations of the Eur0top NN approach to calculate wave overtopping, RPS utilised a state of the art Computational Fluid Dynamics model (CFD) called IH-2VOF to quantify this flood risk. This software was developed by the Environmental Hydraulics Institute "IHCantabria" in Spain. The model calculates a fluid's motion by solving the Reynolds Averaged Navier-Stokes (RANS) equations in two dimensions. Flow through porous media is solved using the Volume-Averaged RANS (VARANS) equations, which integrates the RANS equation over a control volume related to the porosity of the material.

A range of academic studies have found that the IH-2VOF performs very well and is a good alternative to physical model testing for wave overtopping which is time consuming and costly ((Losada, 2008); (Neves, 2008), (Pilechi, 2018)). More information on these studies can be found in Appendix A.

6.8.1.1 CFD Modelling Approach

Wave overtopping was assessed using a random wave series, with duration 900s. The benefit of using a random wave series compared to a regular wave is two-fold:

1. Using a random wave series means that turbulent wave interactions at the toe of each structure such as wave reflections and wave breaking can be simulated and assessed. This is an important factor as two random waves can meet and interact to form a much larger wave than generally expected and thus result in significantly more overtopping.
2. By running the simulation for 900s, a wider range of wave conditions can be tested. This increases confidence in the performance of any proposed option.

6.8.1.2 Model boundary condition data

RPS used the extreme inshore wave climate described in Table 4.1 to produce random JONSWAP spectra wave conditions for each CFD model. Each boundary file represented a random 900s period of a storm, at peak high water for the relevant return period event. See a typical example in Figure 6-10.

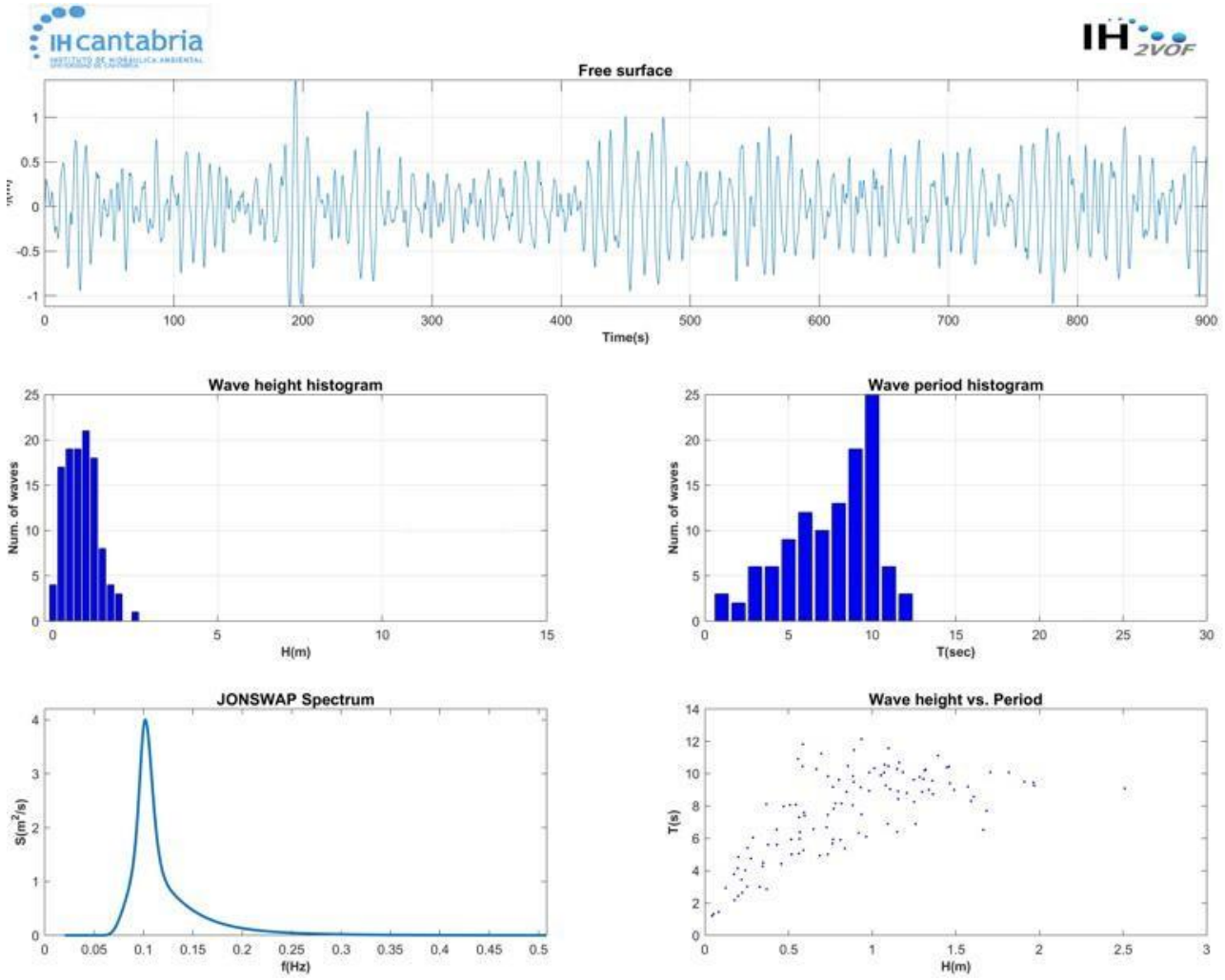


Figure 6-10: A typical 900 second random wave spectra used as a boundary condition to inform the CFD wave overtopping assessment

6.8.2 Overtopping west of Lemon's Wharf, "Outer Parade"

A present day 1 in 200 year return period simulation was run for Chainage 400, the near "Outer" Parade, where a low level wall is present between the pavement and the sea. A gently sloping beach abuts the wall, and overlies the top of the slipway, as shown in the modelled mesh in Figure 6-11.

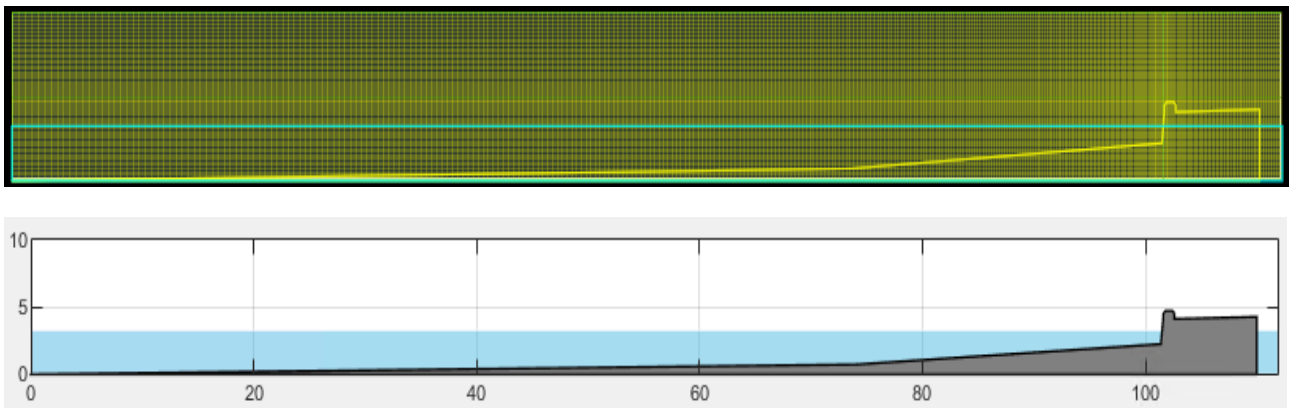


Figure 6-11: High resolution mesh structure (top) and water level setup for the profile used to assess overtopping West of Lemon's Wharf

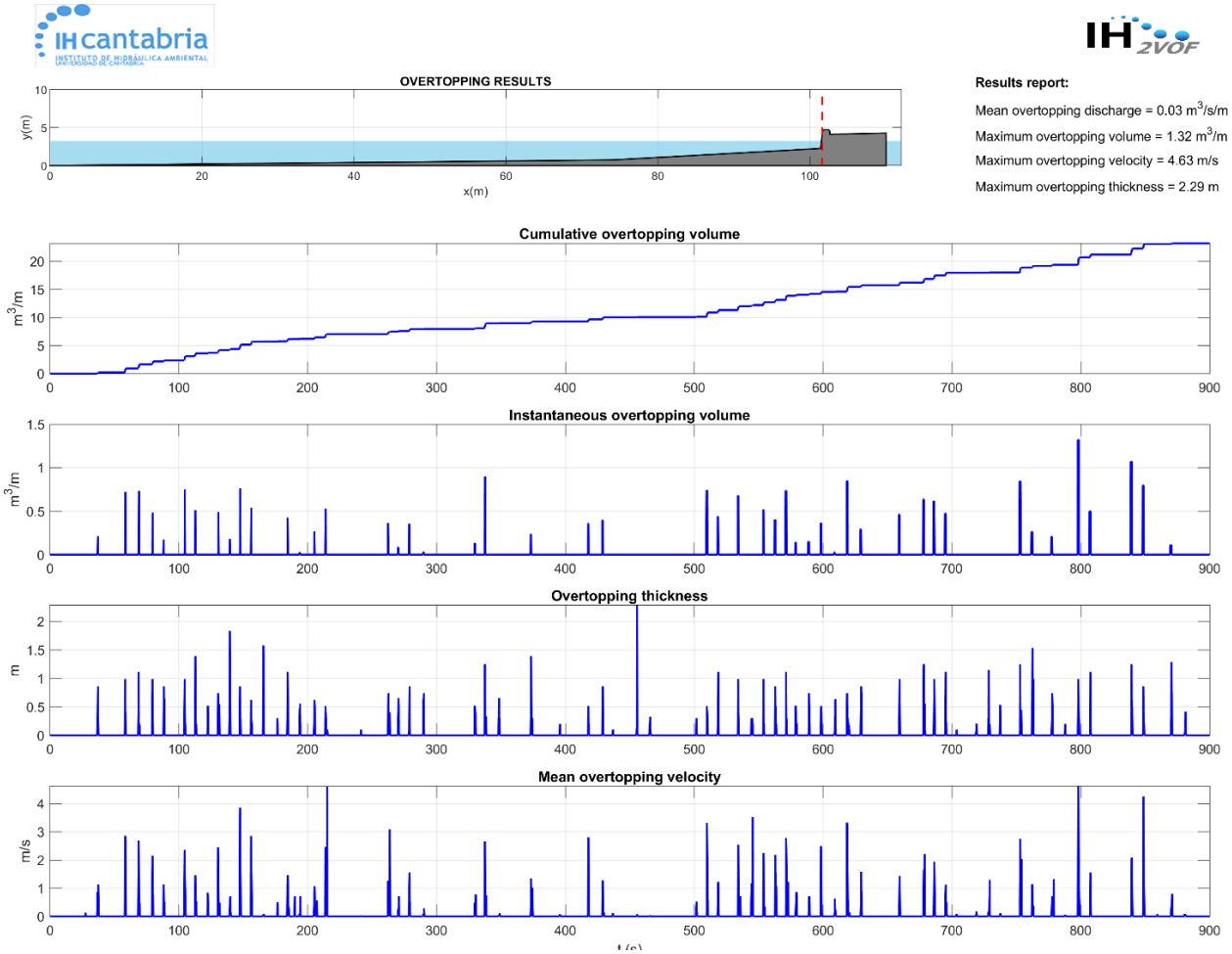


Figure 6-12: Wave overtopping conditions west of Lemon's Wharf during present day 1 in 200 year storm event

Table 6.6 shows the primary input parameters and wave overtopping results for Chainage 400 under the present day, 1 in 200 year return period storm event. The average overtopping rate of 25.8 L/s/m is comparable to the NN output mean discharge of approximately 25l/s per m.

This is above the tolerable limit of 4 L/s/m. The maximum overtopping rate also exceeds the tolerable threshold by a factor of 3.

Figure 6-12 presents the overtopping conditions during the simulation whilst Figure 6-13 illustrates an extract from the model showing the instantaneous wave overtopping of the structure.

Table 6.6: Primary input parameters and wave overtopping results, west of Lemon's Wharf

Parameter	Value
Return period	1 in 200 year – Current Climate
Significant wave height [m]	1.15
Peak wave period [s]	9.02
Water Level [mOD]	2.26
Average overtopping rate [L/s/m]	25.8
Max Overtopping volume [L/m]	1,321

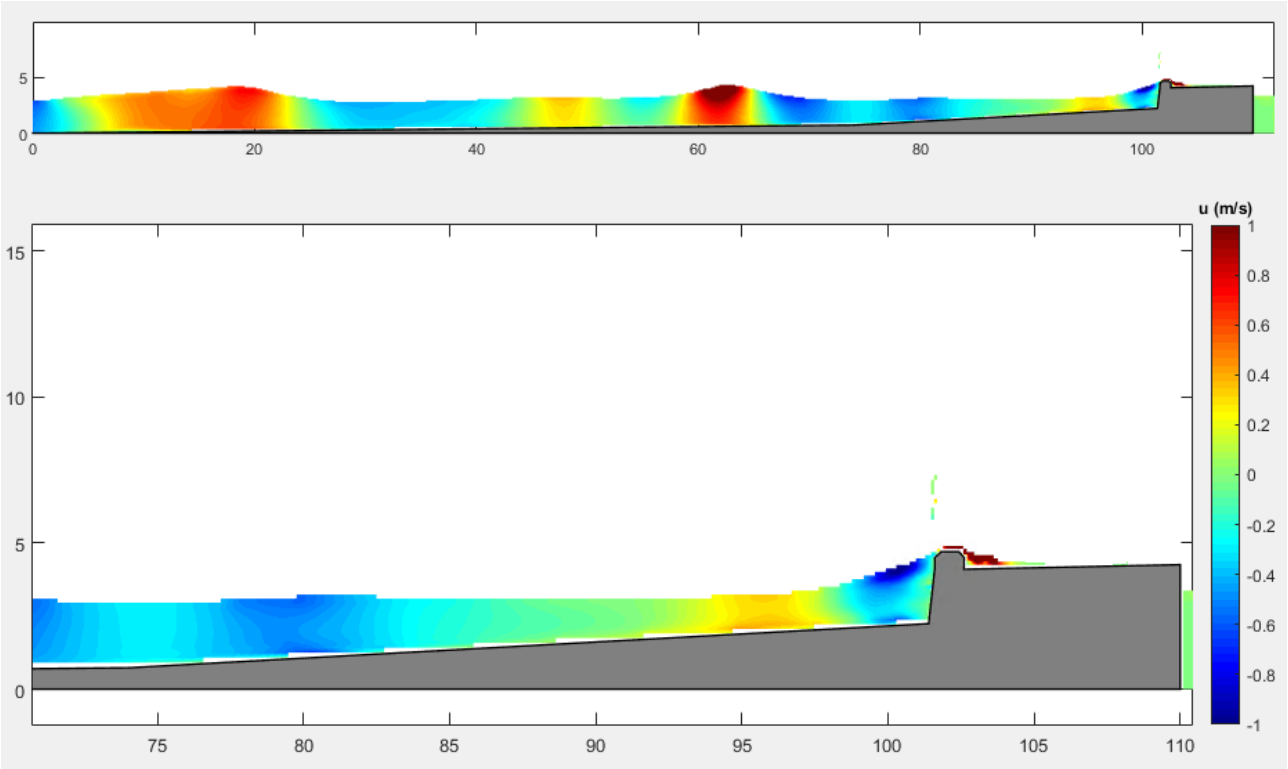


Figure 6-13: Instantaneous wave overtopping west of Lemon's Wharf at t= 131s during a 1 in 200 year storm event

6.8.3 Overtopping east of Lemon's Wharf, "Inner" Parade

A 1 in 200 year return period simulation was also run for Chainage 100, the "Inner" Parade, where a low level wall is also present between the pavement and this more sheltered area of the harbour. An almost level foreshore abuts the wall, as shown in the modelled mesh in Figure 6-14.

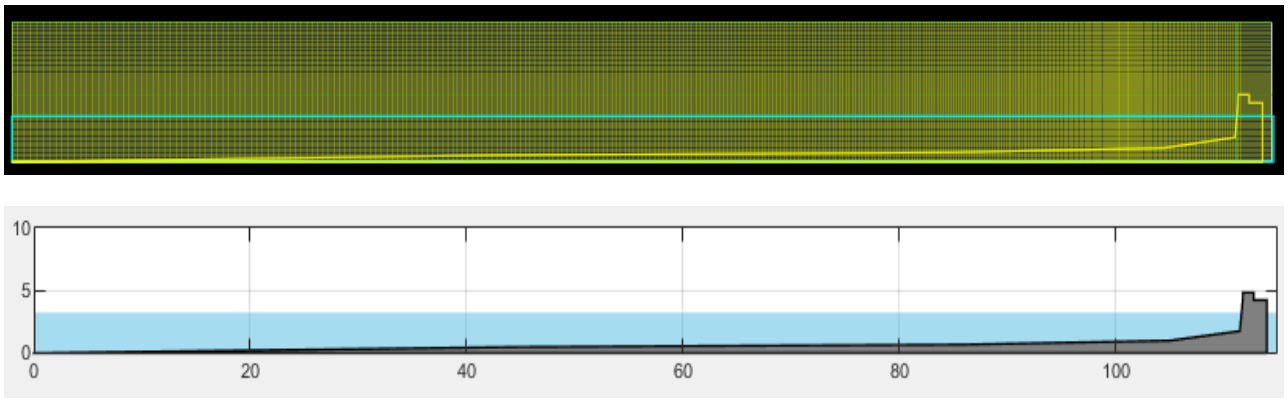


Figure 6-14: High resolution mesh structure (top) and water level setup for the profile used to assess overtopping East of Lemon's Wharf

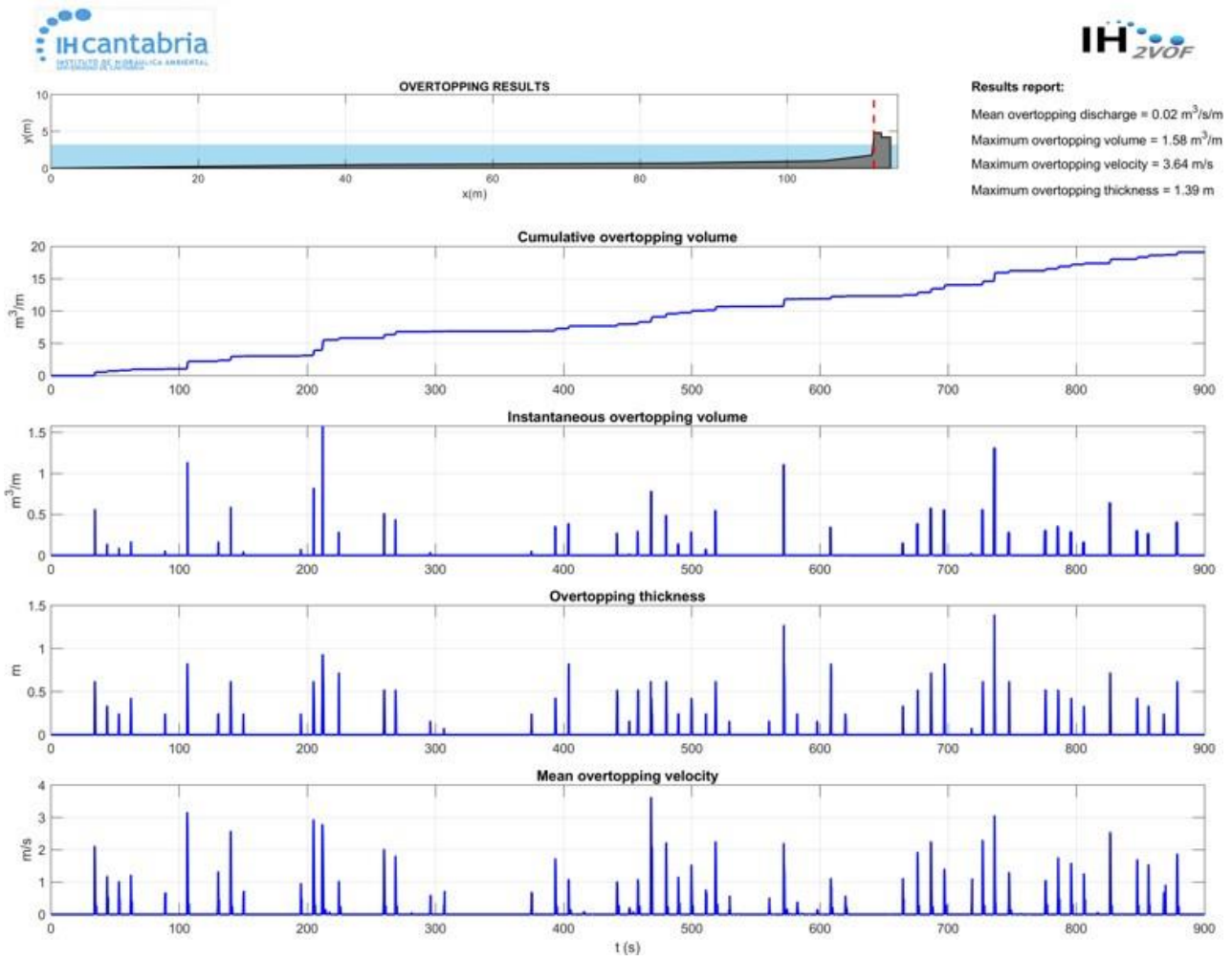


Figure 6-15: Wave overtopping east of Lemon's Wharf during present day 1 in 200 year storm event

Table 6.7 shows the primary input parameters and wave overtopping results for Chainage 100 under the present day, 1 in 200 year return period storm event. The average overtopping rate of 21.2 L/s/m significantly exceeds the allowable thresholds for buildings and pedestrians. The maximum overtopping also exceeds the maximum allowable threshold by 4.

Figure 6-15 presents the overtopping conditions during the simulation and Figure 6-16 shows an extract from the model, with the instantaneous wave overtopping captured.

Table 6.7: Primary input parameters and wave overtopping results, east of Lemon's Wharf

Parameter	Value
Return period	1 in 200 year – Current Climate
Significant wave height [m]	1.41
Peak wave period [s]	10.05
Water Level [mOD]	2.26
Average overtopping rate [L/s/m]	21.2
Max Overtopping volume [L/m]	1,578

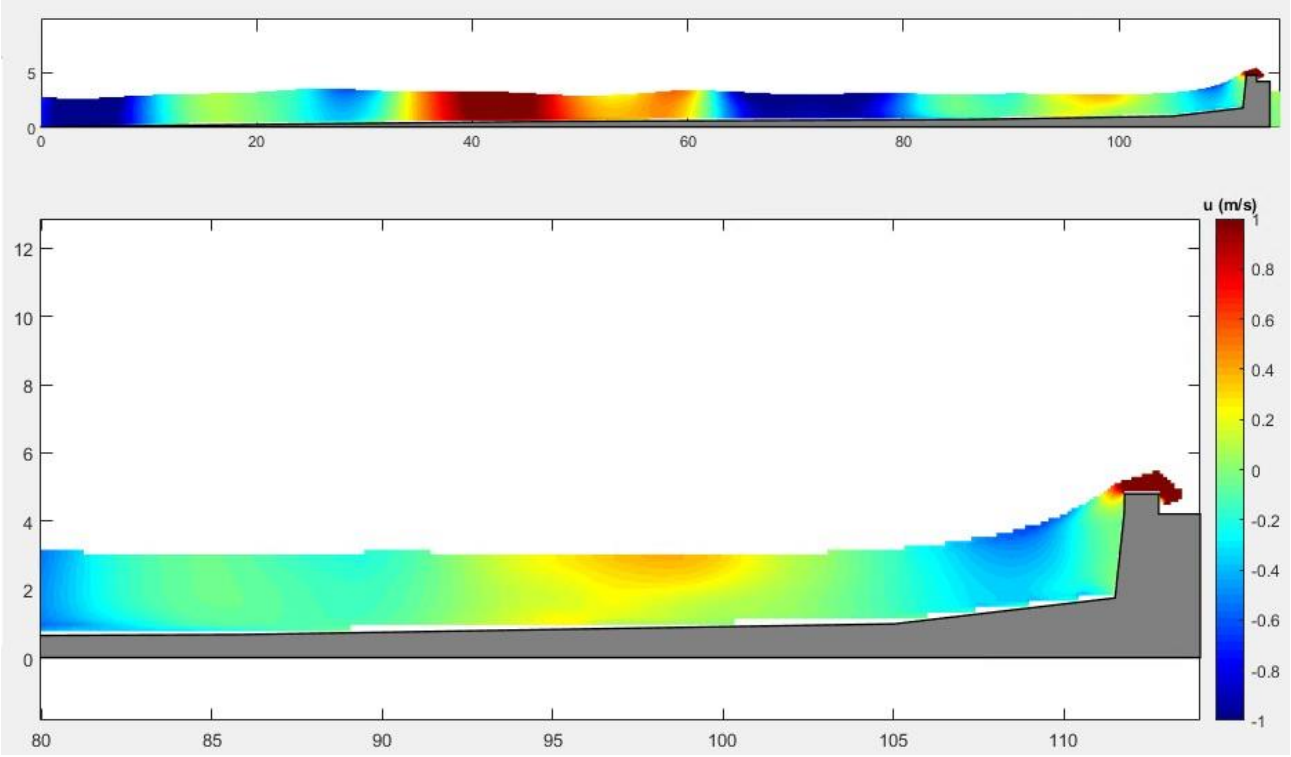


Figure 6-16: Instantaneous wave overtopping east of Lemon's Wharf at t= 106s during a 1 in 200 year storm event

7 DEVELOPMENT OF OPTIONS

The work described in the previous Sections of this report have indicated that:

- Whilst the initial harbour plan developed as part of the initial Donaghadee Harbour study (RPS, 2020) and illustrated in Figure 1-1 improves wave conditions within the harbour as per the study objectives, the scheme does not reduce coastal flooding from tidal inundation and only partially reduces the potential of flooding caused by wave overtopping.
- Under existing conditions, coastal flooding from tidal inundation is unlikely to be a significant issue, with only Lemon's wharf being at risk. However, given the lack of built assets at risk here or in the surrounding area, there is unlikely to be an economic justification for extensive flood relief measures.
- Under future climate conditions, sea level rise increases the risk of coastal flooding with many commercial and residential premises along the "Inner" Parade and half of the "Outer" Parade becoming vulnerable to tidal inundation.
- Based on present day conditions, the risk of mean wave overtopping across all examined sections is considered "tolerable" for all sections examined during a 1 in 1 year return period event. During a 1 in 50 year return period event, only the overtopping at some sections is considered tolerable, whilst overtopping discharge rates exceeds tolerable conditions across all sections during a 1 in 200 year return period scenario.
- Advanced Computational Fluid Dynamic (CFD) modelling demonstrated that the maximum wave overtopping rates exceeded tolerable conditions by up to a factor of x4 across examined sections during a 1 in 200 year return period event.
- Thus, whilst there is not a significant risk of coastal flooding across the study area based on present day conditions, wave overtopping during extreme events result in discharge rates which are considered unacceptable in context of pedestrians, vehicles and structures.
- Having identified this risk, this Section of the report examines options to reduce wave overtopping rates during an extreme 1 in 200 return period storm event, based on present day conditions, to within acceptable thresholds which are described in detail in Section 6.5 and 6.6.

At a high level, options to reduce overtopping traditionally involves disrupting the wave as it approaches to the structure to dissipate wave energy. Such options can include, but not be limited to:

- Construction of a rock armour revetment to effectively dissipate wave energy and momentum to reduce overtopping.
- Increasing the crest level of the wall. Whilst this option can significantly reduce overtopping volumes, it is important to ensure that pedestrians can maintain a clear view of the sea so that overtopping events can be anticipated. Without a clear view, the danger becomes much greater, as the overtopping comes without warning. A glass wall can be a good solution to this problem, allowing the wall height to be increased without interrupting the sea view. An example glass flood wall is

shown in Figure 7-1. In respect of Donaghadee it could be possible to increase the height of most of the existing defences by installing a glass wall on top.

- Constructing a recurve seawall can deflect up-rushing water seawards as waves impact the seawall. An example of this solution can be seen along the newer section of the promenade at Donaghadee as shown in Figure 7-2

Alternatively, it is possible to increase the distance between the point of wave overtopping and the receptor at risk. This can achieved by increasing the berm width by constructing a new promenade style feature much like at Lemon's Wharf, or the existing newer section of Promenade along the far "Outer" Parade.

The following sub-sections will assess potential options both to the West and East of Lemon's Wharf. Specifically, to the west of Lemon's Wharf, the effectiveness of both a revetment and recurve wall were considered. Whilst it would also be possible to increase the berm width at this location, the existing slipway would also need realigned which would require some extra construction work. Aesthetically, the recurve option could be designed to tie in with the existing recurve wall.

To the East of Lemon's Wharf, a recurve wall, revetment structure and increasing the berm width were all considered. However, it should be noted that the foreshore in this area is privately owned and may need to be purchased to facilitate any of these options.

Figure 7-1: Image of Glass Flood Wall, by MM Engineering

Figure 7-2: Image of existing recurve seawall in Donaghadee, under construction in 2015, photo by Moore Concrete

7.1 Potential Options west of Lemon's Wharf, "Outer" Parade

7.1.1 Rock armour revetment

The first option considered to mitigate overtopping along the "Outer" Parade, to the west of Lemon's Wharf was a rock armour revetment, shown in Figure 7-3. This initial test examined a revetment constructed at a slope of 1:2, two layers of rock with a $D_{n,50}$ = 0.8m, and a permeable core. The simulated overtopping conditions are presented in Figure 7-4.

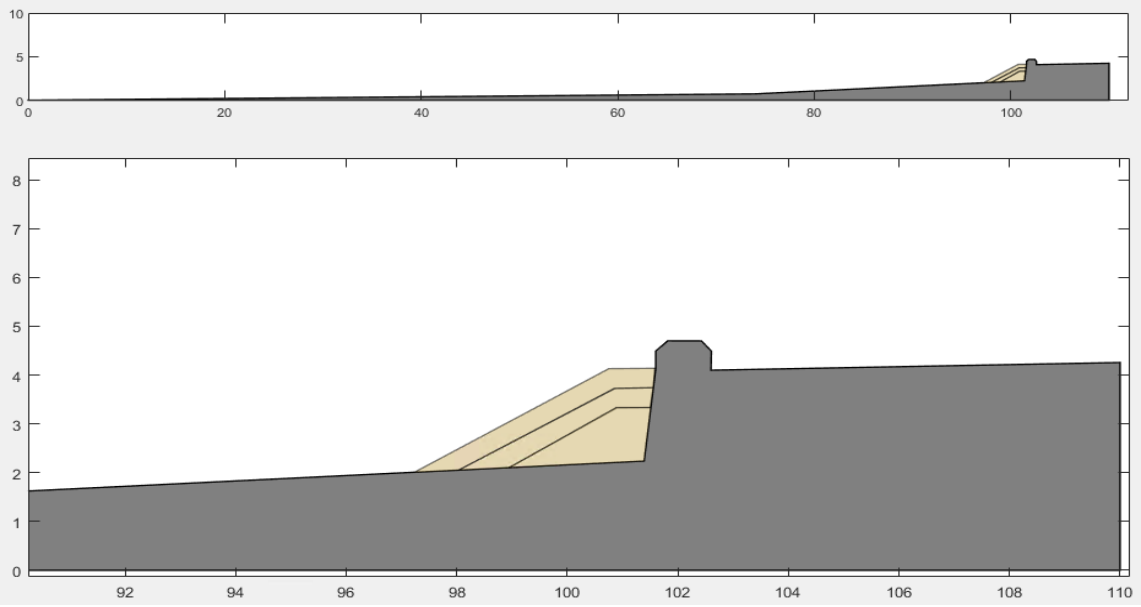


Figure 7-3: Geometry west of Lemon's Wharf with rock armour revetment in model

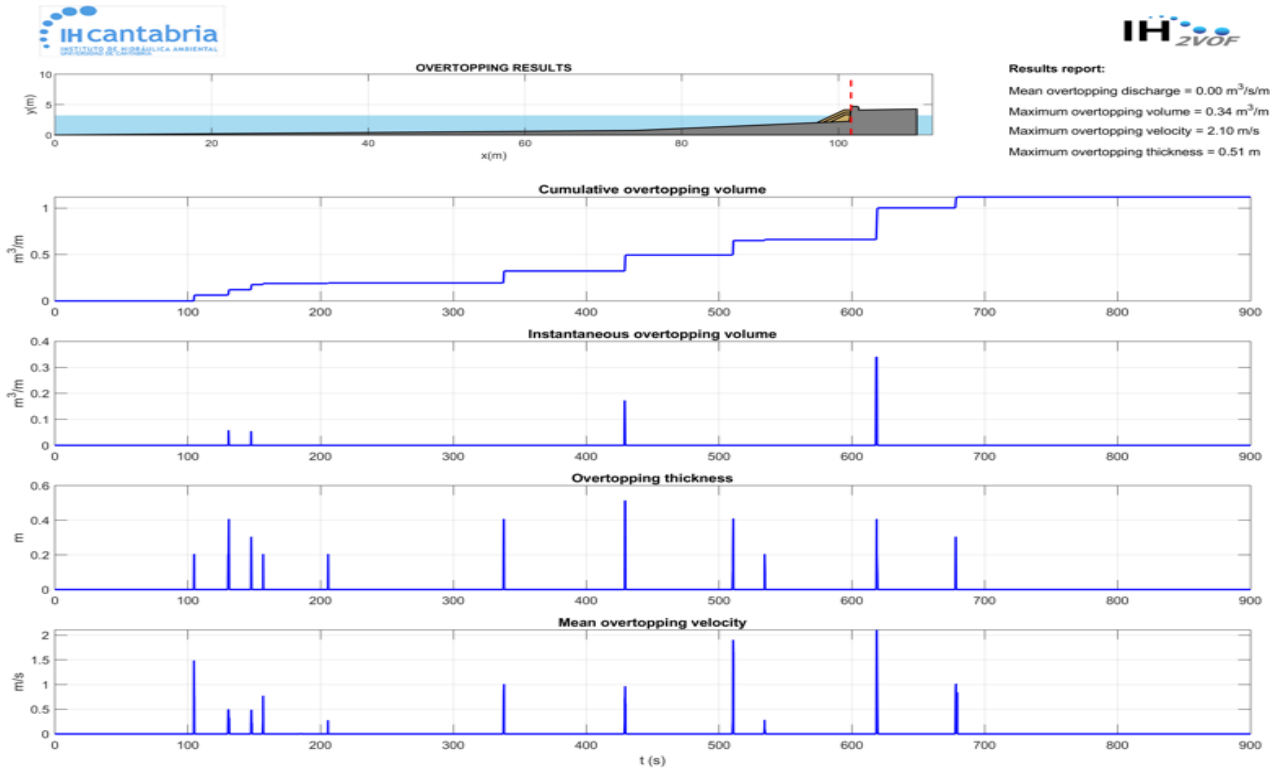


Figure 7-4: Wave overtopping conditions west of Lemon's Wharf with rock armour revetment during present day 1 in 200 year storm event

Table 7.1 summarises the results of the wave overtopping simulation for the rock armour revetment option based on a 1 in 200 year return period storm event under present day conditions.

This option significantly reduces the mean overtopping rate from 21.2 L/s/m to 1.24 L/s/m and the maximum overtopping volume from 1,578 to 34 L/m. Both metrics are below the tolerable rates for pedestrians, vehicles and structures.

Figure 7-5 shows an extract from the model, with the instantaneous wave overtopping captured.

Table 7.1: Primary input parameters and wave overtopping results, west of Lemon's wharf with rock armour revetment

Parameter	Value	
Return period	1 in 200 year – Current Climate	
Option	Existing	Rock armour revetment
Significant wave height [m]	1.15	
Peak wave period [s]	9.02	
Water Level [mOD]	2.26	
Average overtopping rate [L/s/m]	21.2	1.24
Max Overtopping volume [L/m]	1,578	34

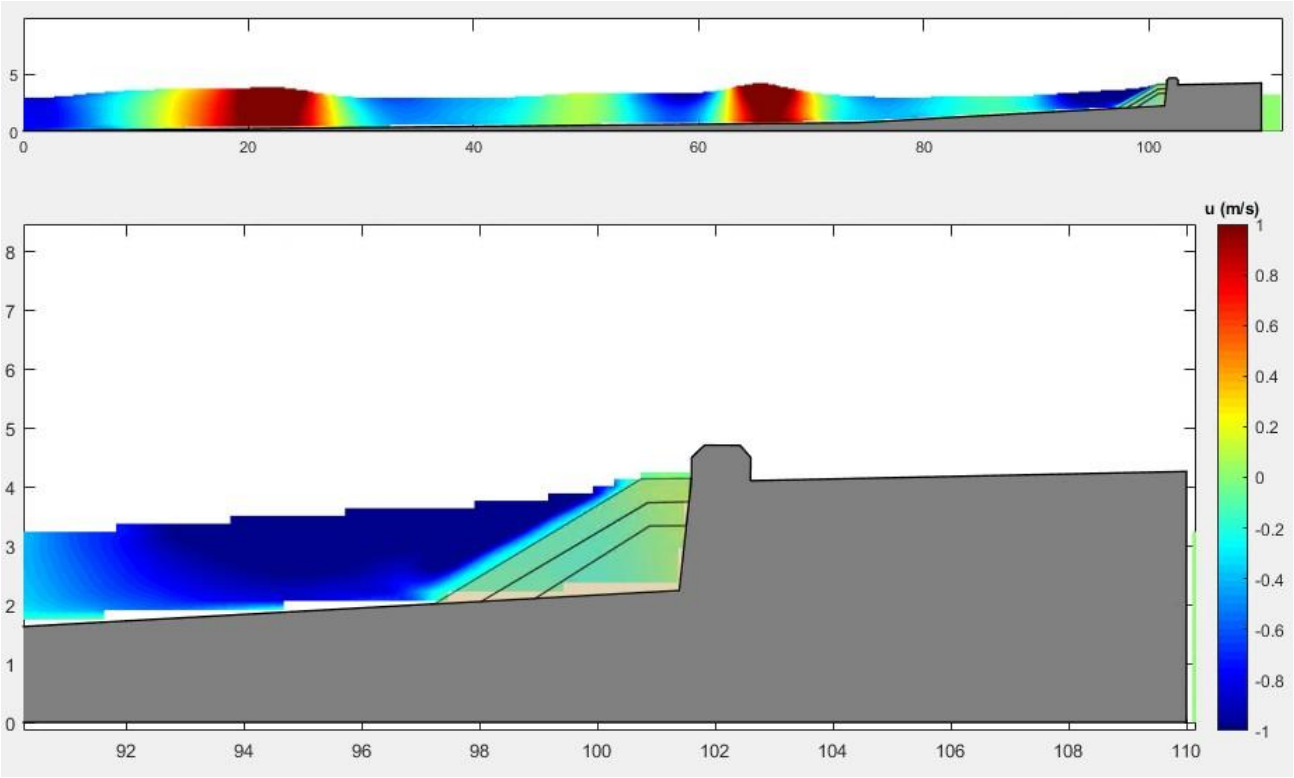


Figure 7-5: Instantaneous wave overtopping west of Lemon's Wharf with rock armour revetment at t= 131s during a 1 in 200 year storm event

7.1.2 Recurve seawall

The second option considered along the "Outer" Parade west of Lemon's Wharf was a recurve seawall as shown in Figure 7-3. This would be similar to a continuing the existing recurve wall along this section. The simulated overtopping conditions are presented in Figure 7-7. Figure 7-8 shows an extract from the model, with the instantaneous wave overtopping captured.

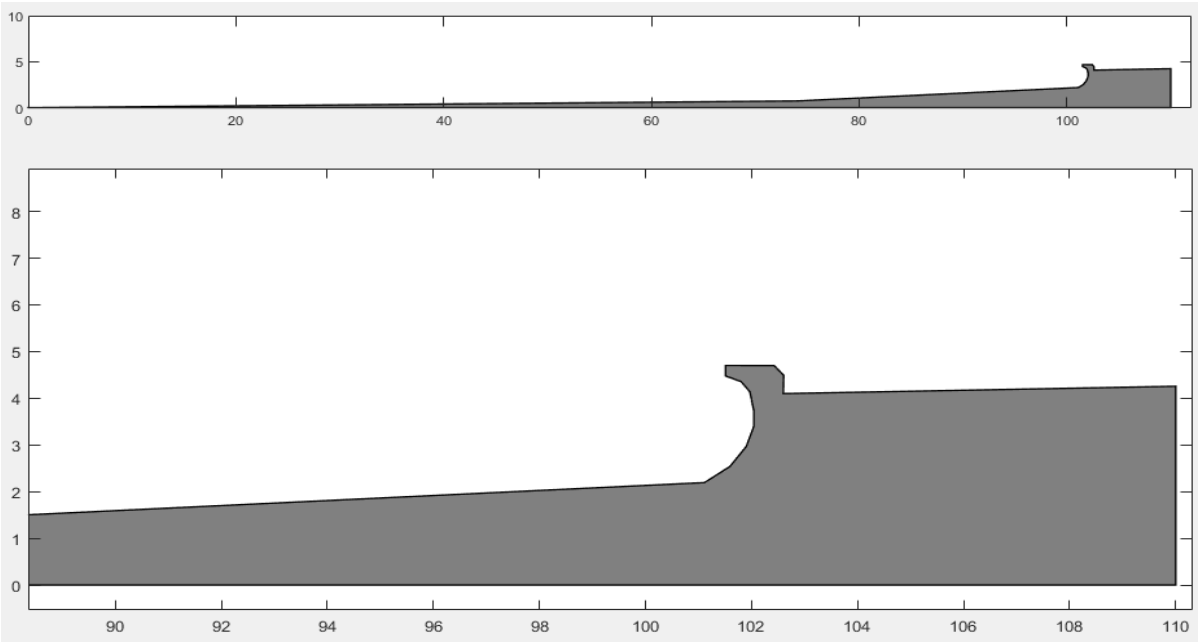


Figure 7-6: Geometry west of Lemon's Wharf with recurve seawall in model

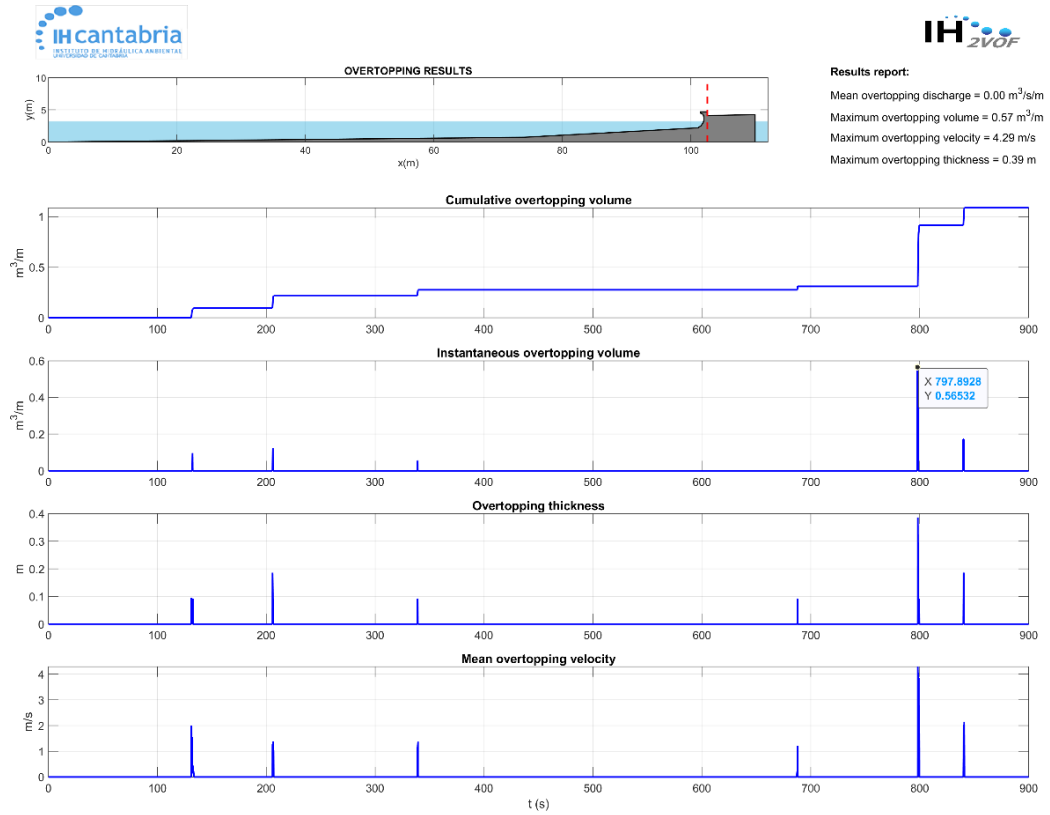


Figure 7-7: Wave overtopping conditions west of Lemon's Wharf with recurve seawall during present day 1 in 200 year storm event

As summarised in Table 7.2 below, the recurve seawall option results in a similar reduction of mean wave overtopping discharge rates relative to the rock revetment option, from 21.2 L/s/m to 1.21 L/s/m. However, this option was not *as effective* in reducing the maximum overtopping, with rates being reduced from1,578 L/m to 565 L/s as opposed to just 34 L/m with the revetment option. Both metrics are below the tolerable rates for pedestrians, vehicles and structures.

Importantly, this initial work demonstrates that this option is feasible and that the performance could be further improved in respect of reducing wave overtopping through additional detailed modelling and design which is beyond the scope of this feasibility study.

Table 7.2: Primary input parameters and wave overtopping results, west of Lemon's Wharf with recurve seawall

Parameter	Value		
Return period	1 in 200 year – Current Climate		
Option	Existing	Revetment	Recurve Seawall
Significant wave height [m]	1.15		
Peak wave period [s]	9.02		
Water Level [mOD]	2.26		
Average overtopping rate [L/s/m]	21.2	1.24	1.21
Max Overtopping volume [L/m]	1,578	34	565

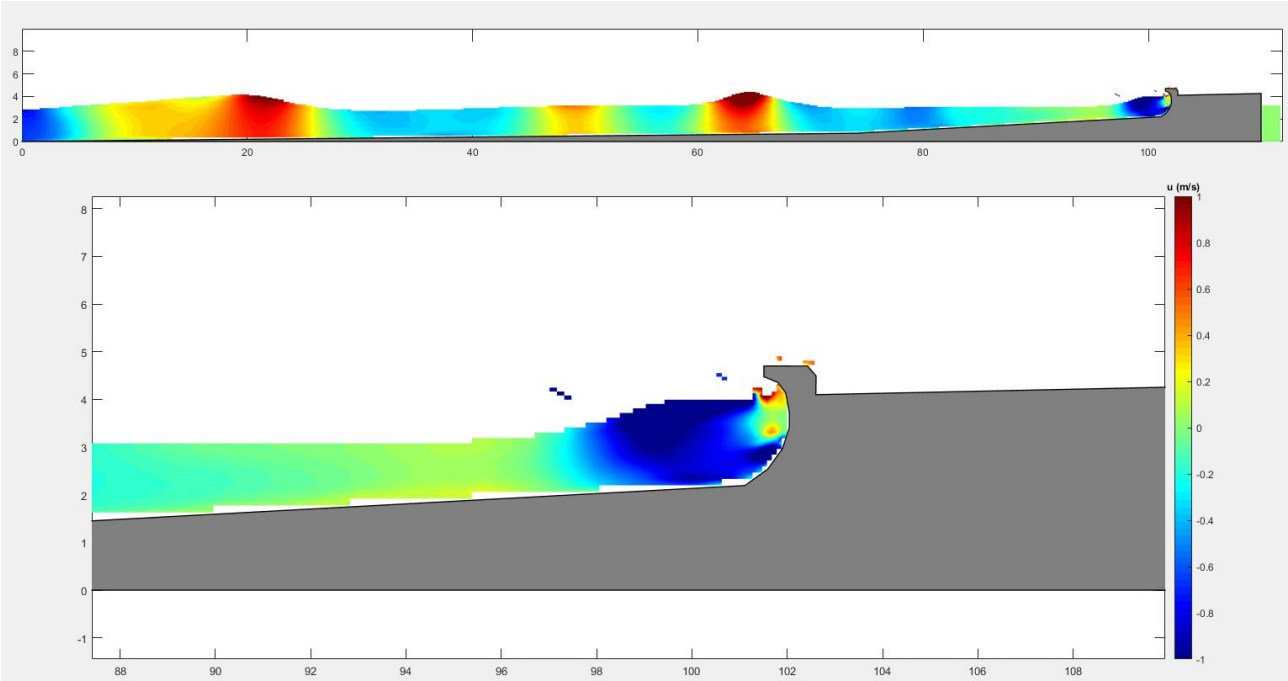


Figure 7-8: Instantaneous wave overtopping west of Lemon's Wharf with recurve seawall at t= 131s during a 1 in 200 year storm event

7.2 Potential Options east of Lemon's Wharf

7.2.1 Rock armour revetment

The first option considered along the "Inner" Parade to the east of Lemon's Wharf was a rock armour revetment with a 1:1 slope and constructed with a double layer of primary rock armour with a $D_{n,50}$ of 0.8m and a permeable core as schematised in Figure 7-9. The simulated overtopping conditions are presented in Figure 7-10 whilst Figure 7-11 illustrates an instantaneous output from the simulation.

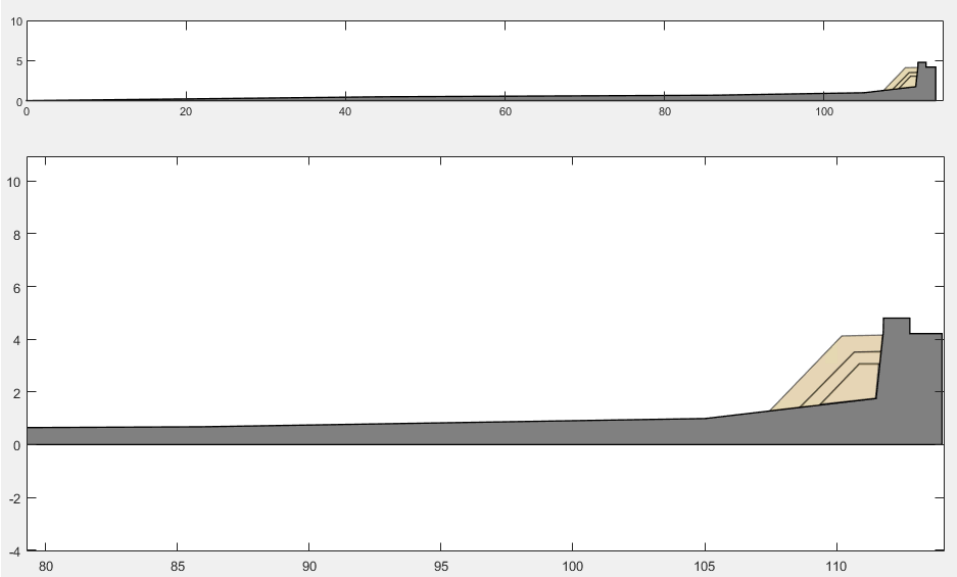


Figure 7-9: Geometry east of Lemon's Wharf with rock armour revetment in model

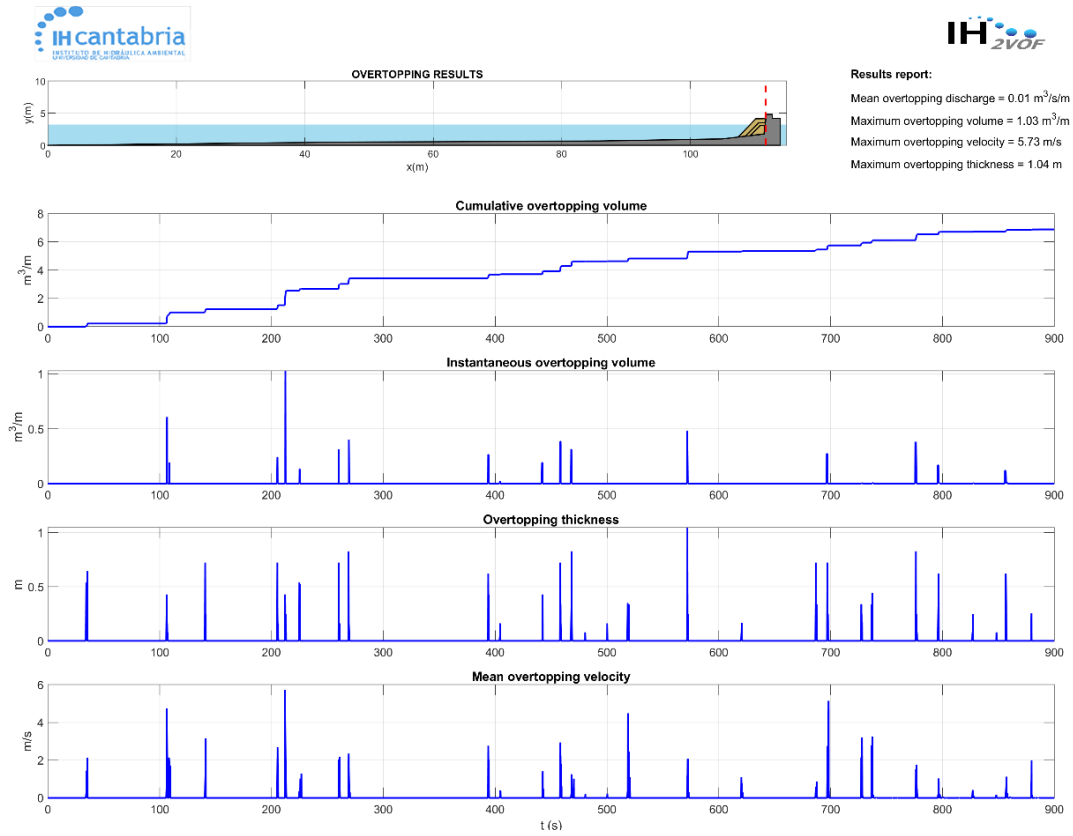


Figure 7-10: Wave overtopping conditions east of Lemon's Wharf with rock armour revetment during present day 1 in 200 year storm event

As summarised in Table 7.3, the rock armour revetment option at this location reduces the mean overtopping rates from 21.2 to 7.6 L/s/m. This option also reduces the maximum wave overtopping from 1,578 L/m to 1,031 L/m. Whilst this is a significant reduction, it still exceeds the tolerable rates for pedestrians, vehicles and structures.

Table 7.3: Primary input parameters and wave overtopping results, east of Lemon's wharf with rock armour revetment

Parameter	Value	
Return period	1 in 200 year – Current Climate	
Option	Existing	Rock armour revetment
Significant wave height [m]	1.41	
Peak wave period [s]	10.05	
Water Level [mOD]	2.26	
Average overtopping rate [L/s/m]	21.2	7.6
Max Overtopping volume [L/m]	1,578	1,031

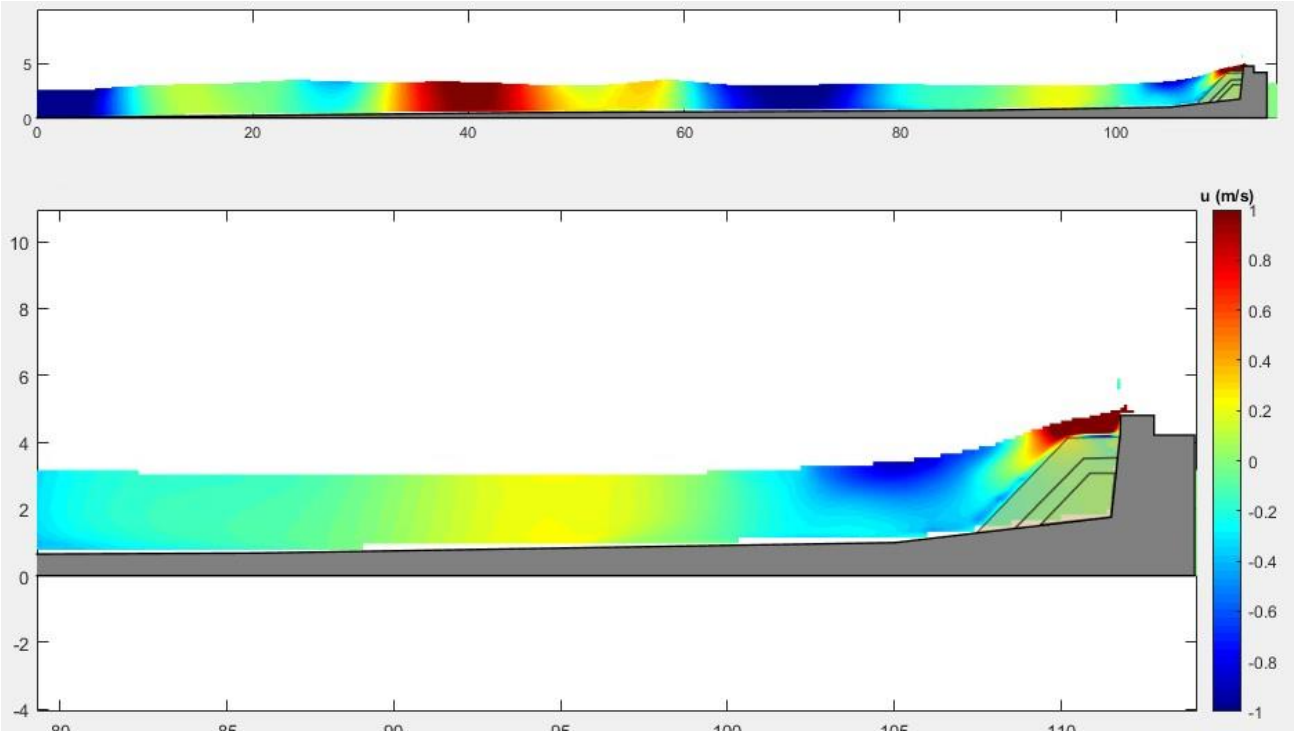


Figure 7-11: Instantaneous wave overtopping east of Lemon's Wharf with rock armour revetment at t= 131s during a 1 in 200 year storm event

7.2.2 Recurve seawall

The second option considered along the "Inner" Parade to the east of Lemon's Wharf was a recurve seawall as schematised in Figure 7-12. The simulated overtopping conditions are presented in Figure 7-13 whilst Figure 7-8 presents an instantaneous output from the model simulation.

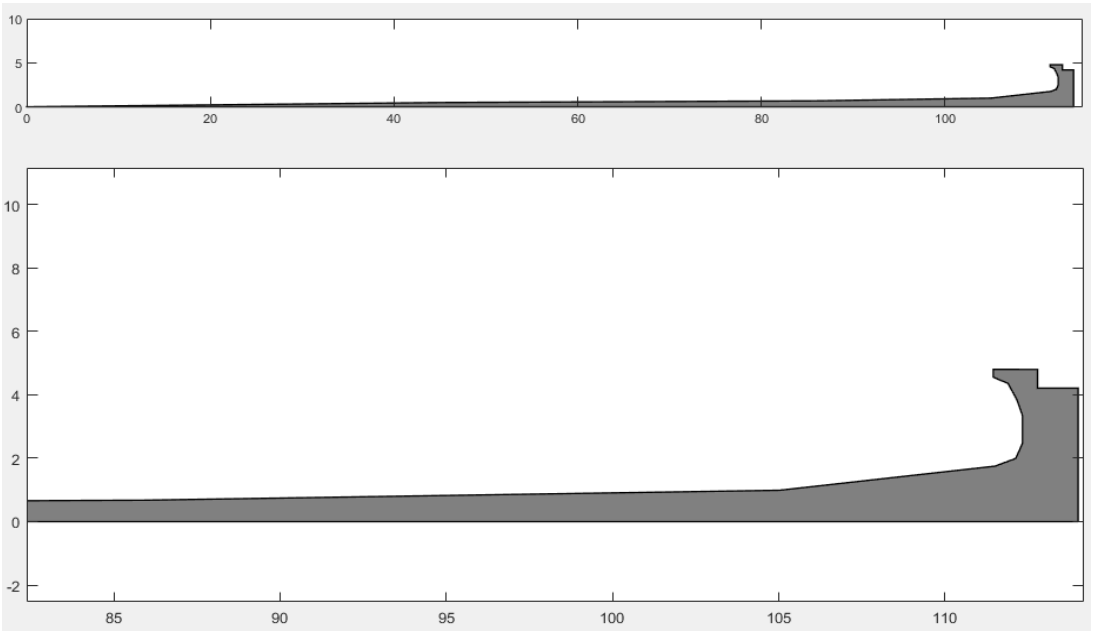


Figure 7-12: Geometry east of Lemon's Wharf with recurve seawall in model

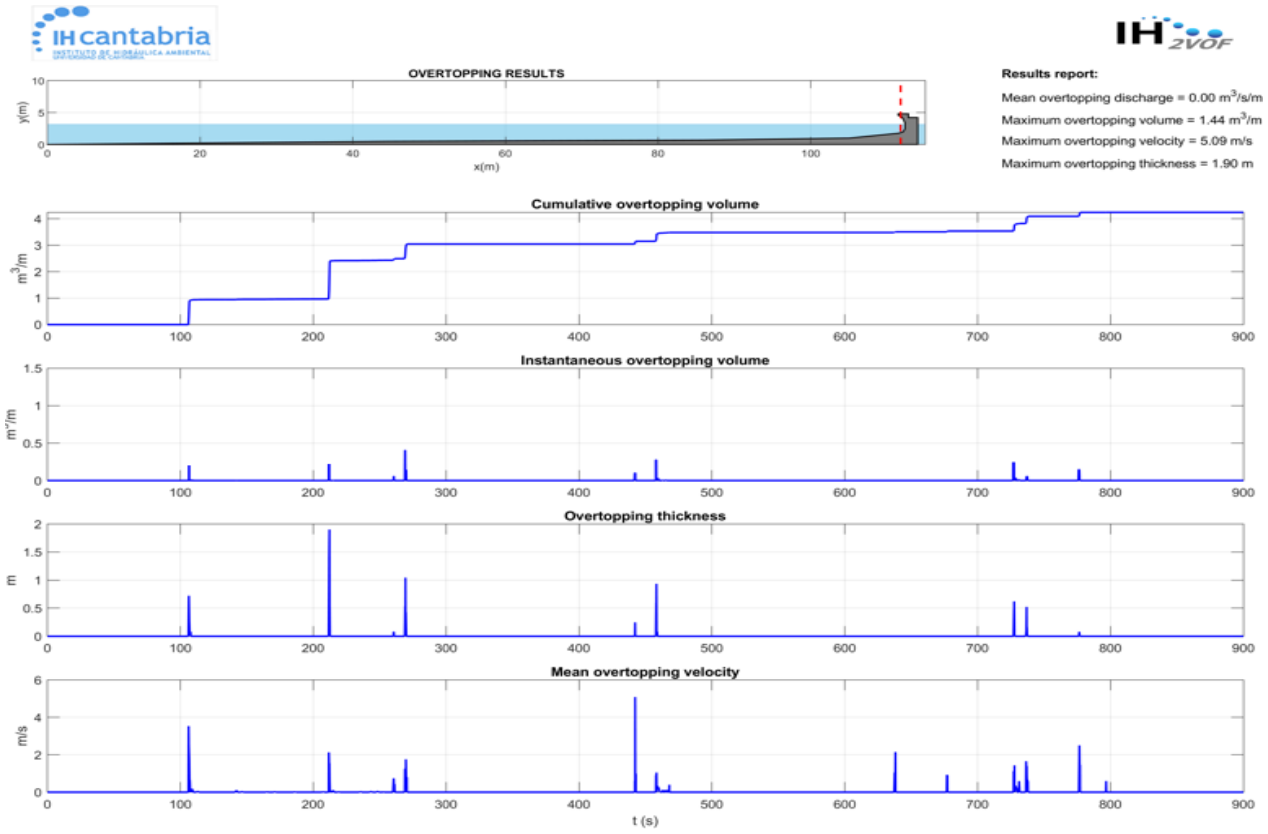


Figure 7-13: Wave overtopping conditions east of Lemon's Wharf with recurve seawall during present day 1 in 200 year storm event

As summarised in Table 7.4, the recurve option significantly reduced the mean overtopping volume from 21.2 L/s/m to 3.68 L/s/m, whilst maximum overtopping was reduced from 1,578 L/m to 390 L/m. Both metrics are within the tolerable rates for pedestrians, vehicles and traffic.

It should be noted that whilst this 1D test of a recurve option indicates that it could be effective, that given the orientation of the coastline at this location, there is a likelihood that waves could become "focused" in this area with the recurve wall effectively deflecting the oblique waves laterally as opposed to deflecting them seaward. This has the potential to create dangerous conditions near the existing stepped access to lemon's Wharf. An example of oblique waves running along the existing structure is shown in Figure 7-15.

Table 7.4: Primary input parameters and wave overtopping results, east of Lemon's Wharf with recurve seawall

Parameter	Value		
Return period	1 in 200 year – Current Climate		
Option	Existing	Rock armour revetment	Recurve wall
Significant wave height [m]	1.41		
Peak wave period [s]	10.05		
Water Level [mOD]	2.26		
Average overtopping rate [L/s/m]	21.2	7.6	3.68
Max Overtopping volume [L/m]	1,578	1,031	390

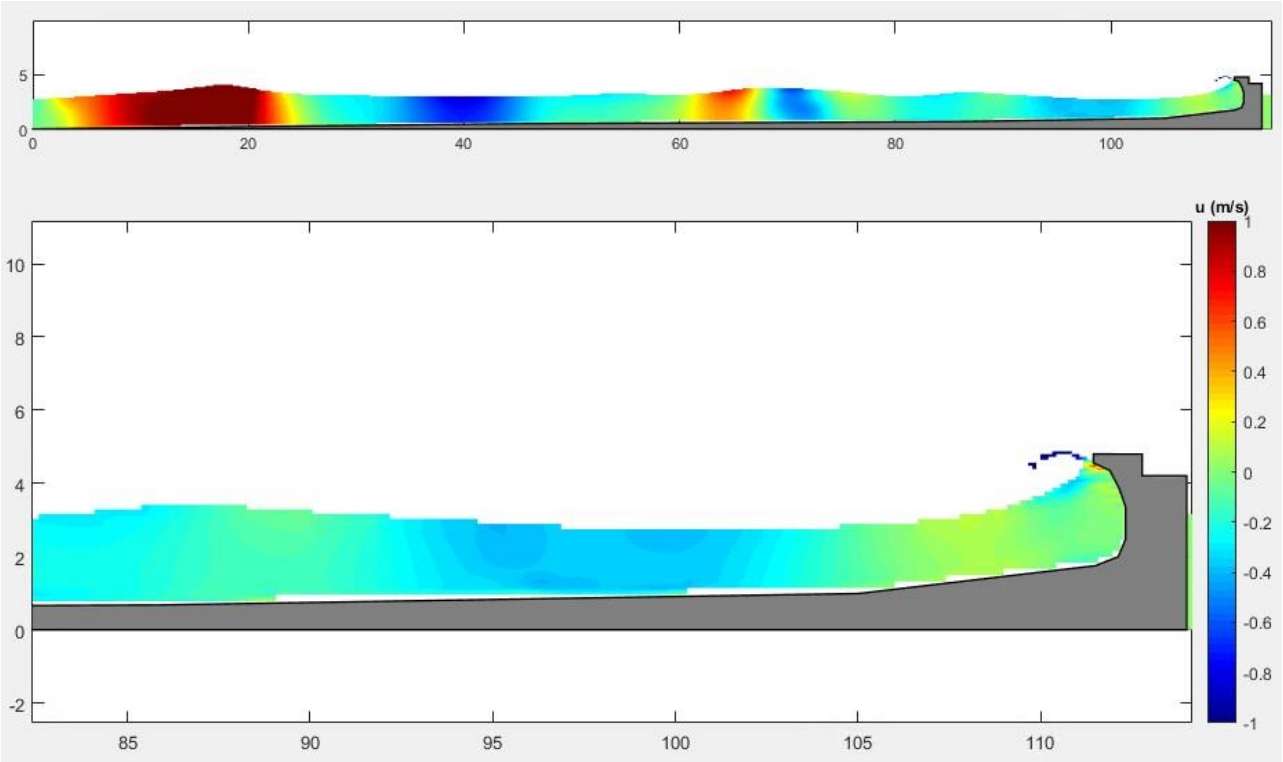


Figure 7-14: Instantaneous wave overtopping east of Lemon's Wharf with recurve seawall at t= 131s during a 1 in 200 year storm event

Figure 7-15: Example of oblique waves becoming "focused" and running along the existing sea defence east of Lemon's Wharf.

7.2.3 New promenade

An alternative option to reduce wave overtopping east of Lemons Wharf would be to reclaim a small area of land to create a promenade which would extend of *c.* Kelly's Steps to Lemon's Wharf. This option would increase the distance between the point of wave overtopping to vulnerable receptors, including the footpath, road and nearby buildings.

This area would provide enhanced recreational benefits during normal conditions and be allowed to overtop and partially flood during extreme conditions, similar to Lemon's Wharf. In doing do, the reclaimed area / promenade feature would provide important flood mitigating to the surrounding area in doing so.

Given that this parcel of land is understood to be under private ownership, it would be critical to engage with local landowners and other relevant parties to reach an agreement on the extent of reclamation. Whilst this is beyond the scope of this study, an indicative area that could be reclaimed to achieve these objectives is illustrated in Figure 7-16.

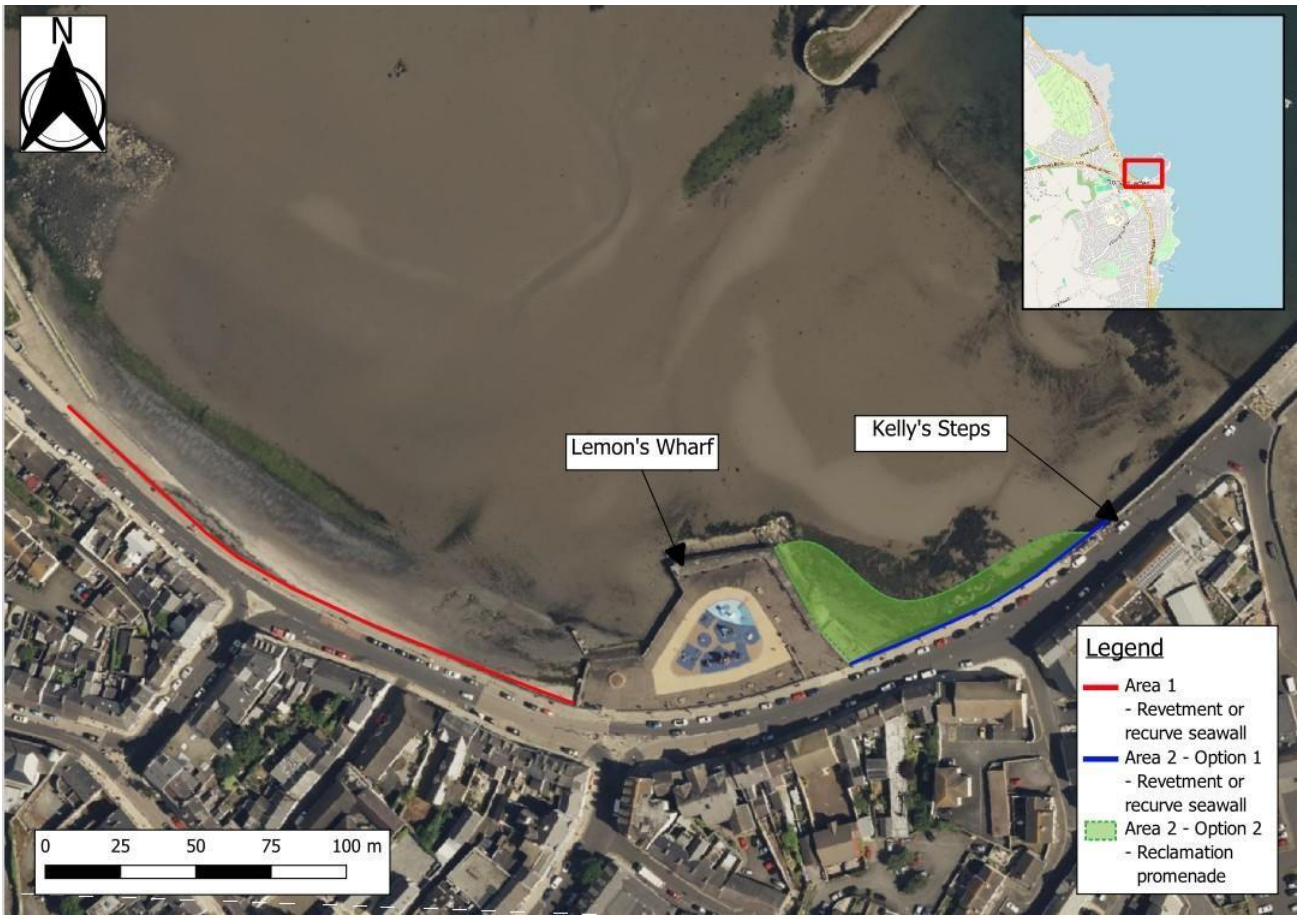


Figure 7-16: Indicative location of a potential land reclamation option to reduce wave overtopping east of Lemon's Wharf.

8 COST ESTIMATES

8.1 Updated Costs for 2015 Masterplan Elements

The text below was included within the previous Technical Feasibility Study report of 2020. The cost estimate values have been updated following review of calculations and enquiries with Contractors and industry specialists. Preliminary cost estimate calculations have been carried out for the refined proposed development concept which includes:

- An Offshore Breakwater beyond the entrance to the harbour.
- An extension to Lemon's Wharf towards the North Quay.
- Harbour basin dredging to accommodate small craft.

The summary output of this calculation is presented in Table 8.1 below which also provides a comparison of estimates based on 2020 and 2025 costs. It will be seen that due to significant increases in inflation over recent years, driven primarily by the pandemic, international conflict and other geo-political drivers that capital costs estimates have increased by a factor of *c.* x3 in the space of five years.

However, it should be noted these cost estimates have been prepared for budgetary consideration only. These estimates could vary significant following detailed design, project specification and in a competitive tendering scenario. Furthermore, the costs of rock armour will vary considerably based on the quantity of rock armour required and the source location.

Table 8.1: Summary of cost estimates associated with the preferred "Potential Harbour Development Plan" as identified in the initial Feasibility Report (RPS, 2020)

Element	Cost estimate based on 2020 market	Cost estimate based on 2025 market
Provision and Construction of Breakwater / Revetment Structures	£5.8M - £8.7M	£16.7M - £27.8M
Harbour Dredging *(Assumes dredging in sands only)*	£0.4M - £0.6M	£0.7M - £1.2M
Preliminaries, Contingency, Fees	£1.9M - £5.8M	£5.2M - £8.7M
Estimated capital cost (£ ex.VAT)	**£8.1M - £12.1M**	**£22.6M - £37.7M**

8.2 Costs for Flood Mitigation Options

Costs have been developed for the Flood Mitigation options laid out in Section 7. These are on the same basis as the updated costs for the 2015 Masterplan Elements, to allow comparative consideration. Preliminaries, Contingency and Professional Fees have all been included, along with budget cost estimates for the required materials, plant and labour.

Sums have been included for excavation to facilitate the construction of the recurve wall, however the approach to the works e.g. from landside or waterside, will alter the final cost. If works are carried out from the landside, a significant amount of traffic management will be required whilst if works are carried out from the waterside, additional permissions and mitigations measures will be required to temporarily occupy the foreshore. Noting that Donaghadee Harbour has been listed as one of seven new official bathing water sites, for monitoring by DAERA during the bathing season, which runs from June 1st to September 15th.

Table 8.2 summarises the budget cost estimates for options along the "Outer" Parade, to the west of Lemon's Wharf. Cost estimates have been provided for rock revetment and recurve seawall options. The estimated capital cost for these options equated to £1.05 mil and £0.45 mil respectively.

Along the "Inner" Parade, to the east of Lemon's Wharf, the options considered includes a rock revetment, recurve seawall and a new promenade. The cost estimates for these options ranged between £0.225 mil and £3.375 mil as summarised in Table 8.3.

As in the preceding section, it should be noted these cost estimates have been prepared for budgetary consideration only. These estimates could vary significant following detailed design, project specification and in a competitive tendering scenario. Furthermore, the costs of rock armour will vary considerably based on the quantity of rock armour required and the source location.

Table 8.2: West of Lemon's Wharf

Parameter	Value	
Option	Rock revetment	Recurve seawall
Length	200m	
Cost per linear metre	£5,250	£2,250
Estimated capital cost (£ ex.VAT)	**£1,050,000**	**£450,000**

Table 8.3: East of Lemon's Wharf – towards Kelly's steps

Parameter	Value		
Option	Rock revetment	Recurve seawall	New promenade
Length	100m		Area: 2,500m²
Cost per linear metre	£5,250	£2,250	£1,350/m²
Estimated capital cost (£ ex.VAT)	**£525,000**	**£225,000**	**£3,375,000**

9 PRELIMINARY ENVIRONMENTAL ASSESSMENT

9.1 Natural Heritage Designations

In addition to examining the hydraulic feasibility of any potential modification to the coastline, it is important that any plan is cognisant of high ecological value of the surrounding area. To that end, this Section of the report presents an overview of the designated sites located within close proximity of the study area. The locations of these designated sites in the context of Donaghadee on both international and national levels are presented in Figure 9-1 and Figure 9-2 respectively, in the following sections.

9.1.1 International Designations

9.1.1.1 Special Areas of Conservation (SACs)

SACs are prime wildlife conservation areas, considered to be important on a European as well as National level. In Northern Ireland, most SACs are in rural areas, although a few sites reach into town or city landscapes, as in the case of the North Channel SAC.

SACs are selected under the Habitats Directive for the conservation of several habitat types, which in Northern Ireland include raised bogs, blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coasts), heaths, lakes, rivers, woodlands, estuaries and sea inlets. The Directive also affords protection to various species of flora and fauna, including Salmon, Otter, Freshwater Pearl Mussel, and Bottlenose Dolphin.

Collectively, these are known as Annex I habitats (including priority types that are in danger of disappearance) and Annex II species (other than birds). SACs form part of the Natura 2000 European Union-wide network of protected areas. Natura 2000 aims to conserve ecosystems (‘habitats’) and species of outstanding conservation importance by applying appropriate measures for their protection and restoration.

There is only one SAC which coincides with the coastline at Donaghadee, that being the North Channel SAC, which covers an area of 1,604 km2 within the eastern coastal waters of Northern Ireland. The site, which consists of mainly coarse and sandy sediments, extends to depths of 150 m into the Irish Sea at its eastern boundary. The primary reason for the site's designation as an SAC relates to the protection of the Annex II harbour porpoise (*Phocoena phocoena*), which utilise the area, with conservation objectives aiming to ensure there is no significant disturbance to the species, or supporting habitats, processes and the availability of prey.

9.1.1.2 Special Protection Areas (SPAs)

Special Protection Areas (SPA) are conservation areas which are important sites for rare and vulnerable birds (as listed in Annex I of the Birds Directive) and/or for regularly occurring migratory species. SPAs are designated under the ‘Birds Directive’ (Council Directive 2009/147/EC - codified version of Directive 79/409/EEC on the Conservation of Wild Birds, as amended).

The marine areas of SPA sites in Northern Ireland include some of the productive intertidal zones of bays and estuaries that provide vital food resources for several wintering wader species. Marine waters adjacent to

breeding seabird colonies and other important areas for sea ducks, divers and grebes are also included in the network.

The remaining areas of the SPA network include inland wetland sites important for wintering waterbirds and extensive areas of blanket bog and upland habitats that provide breeding and foraging resources for species.

Only one SPA overlaps with Donaghadee, that being the Outer Ards SPA, which encompasses an area of 14.10 km^2, extending from Grey Point in the north to Ballyquintin Point to the south. The site mainly encompasses the inter-tidal areas, but with some additional adjoining areas of notable habitat. It includes sand and mud dominated shores, cobble and boulder beaches, together with rocky shores. Offshore islands are also present. Adjoining habitat includes areas of maritime grassland and heath. The site qualifies for designation due to its importance in supporting populations of arctic tern (*Sterna paradisaea*) and golden plover (*Pluvialis apricaria*), with emphasis given to the breeding colony of arctic tern. Wintering populations of golden plover, ringed plover (*Charadrius hiaticula*), and brent goose (*Branta bernicla*).

9.1.1.3 Ramsar sites

Ramsar Sites are designated for the protection of wetland areas (which are important feeding habitats for birds) under the 'Convention on Wetlands of International Importance' which took place in Ramsar, Iran in 1971. In Northern Ireland, all Ramsar sites have also been recognised as SPA and/or SAC areas and so are afforded protection by the European Communities (Birds and Natural Habitats) Regulations 2011.

One site designated under the Ramsar Convention overlaps with the study area, that being the Outer Ards Ramsar site, which coincides primarily with the intertidal waters of the Outer Ards SPA. One of seven Ramsar sites across Northern Ireland, this 11.54 km^2 area is protected under the intergovernmental treaty, in Northern Ireland Ramsar sites are not given specific legislative protection as such but are instead protected through SACs/SPAs.

At least 17 rare or local plant species have been recorded across the range of habitats within the area. The Outer Ards is especially important for the breeding colony of arctic tern, together with the wintering populations of light-bellied brent goose, golden plover, and ringed plover.

Figure 9-1: International designations within the vicinity of the Donaghadee site

9.1.2 National Designations

9.1.2.1 Areas of Special Scientific Interest (ASSIs)

Areas of Special Scientific Interest (ASSI) are protected areas designated under The Environment (Northern Ireland) Order 2002 for their species, habitat and/or geological features. The Outer Ards ASSI has been designated as such due to the coastal flora, fauna and physiography present at the site, with primary focus on its geological features such as the structure, palaeontology and stratigraphy Orlock Bridge, Coalpit Bay and Kearney Point. Consideration of the important coastal plant and animal communities along the coastline has also tied into the site's designation.

9.1.2.2 Other National Designations

Donaghadee also falls within the Ards Peninsula Seascape Character Area (SCA). The Northern Ireland Regional Seascape Character Assessment designated 24 different regional seascape character areas around the coast of Northern Ireland, with the study area being considered within the Strangford, Ards and Lecale Regional Landscape Character Assessment. The Ards Peninsula SCA incorporates the east facing coast of the Ards Peninsula from Ballymacormick Point and the mouth of Belfast Lough, to Ballyquintin Point and the mouth of Strangford Lough. Although still exposed, the eastern coast of the Ards Peninsula represents the most sheltered stretch of open rocky coast in NI. These Seascape Character Areas aim to contribute to the

aims of the European Landscape Convention (Council of Europe, 2000) through promoting the protection, management and planning of the seascape. The Outer Ards Coast Landscape Character Area also overlaps with Donaghadee, being characterised by a gently sloping shoreline, colourful harbour towns, panoramic views and coastal roads by the water's edge.

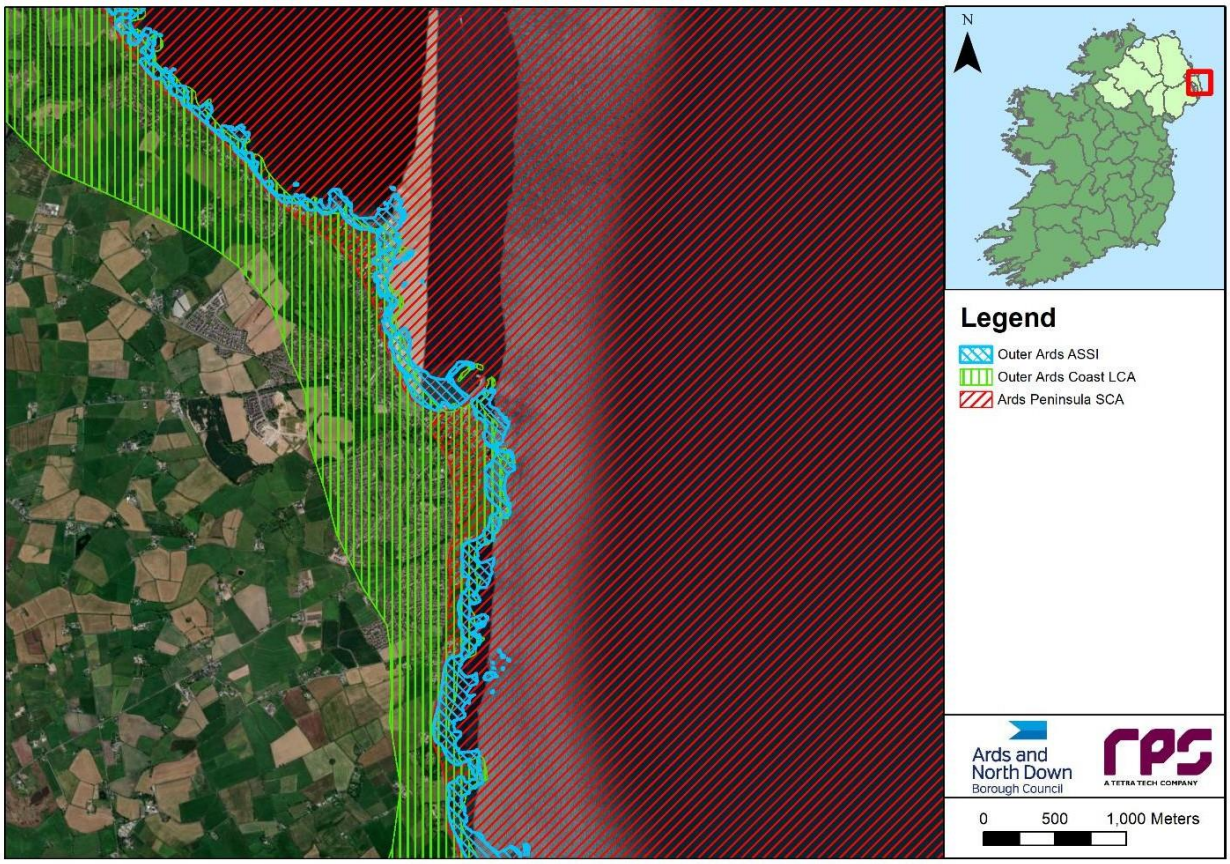


Figure 9-2: National designations within the vicinity of the Donaghadee site

9.2 Built Heritage Designations

9.2.1 Listed Building Status

A number of listed buildings are found on the coastline at Donaghadee. The Department of Communities' Historic Environment Division (HED) *Buildings Database* (Department for Communities, 2024) states the following with regards to the description and setting of the following listed buildings:

- Harbour Piers (Grade B+ Listing): *"Donaghadee Harbour is made up of two piers constructed between 1821 and c.1834, replacing an earlier harbour which had served the port since 1626. The south pier is connected to a 'promontory' and extends from the line of The Parade. It is roughly 277 metres in length and built up on its outer face from local stone (blasted out from the sea bed), with V-jointed Anglesea limestone to its 'smoother' inner face. It is sheltered by a (partly stepped) high rampart on the seaward side and has several sets of steps cut into the inner face, to allow access to boats. On the seaward side of the rampart, roughly half way along the pier, is a fairly recent looking look out post. The pier culminates at its end in a circular 'bastion' on which stands the light house.*

There are limestone capstans to tie the boats and a small crane roughly half way along the pier to the inner side. The north pier is readily accessed from the rocky shore line at low tide, but cut off from land at high tide. It is roughly 250m in length as the south pier and its mirror image in terms of plan, however, because of its position and current lack of use its limestone path is now largely covered in grass, moss and weeds. Like the south pier there are two pairs of stone steps cut into the inner face but there are no posts for tying boats nor any of the other add ons."

- Harbour House (Grade B1 Listing): *"The harbour house is a small-ish two storey, mainly brick built, gabled dwelling, enclosed within a small yard and situated near the south end of the south pier of Donaghadee harbour. The house was built in 1864 for the keeper of Donaghadee lighthouse and it has served in this capacity ever since. Front SE facade has a left of centre panelled door with plain fanlight. To the left is a PVC sash window with vertical astragals, with two similar windows to right of door. The bottom half of the front facade projects slightly at both the front and to the NE gable, with a painted stone course topping the projecting lower half. To the first floor of the front facade are four unevenly spaced windows, as ground floor only slightly smaller. To the left on the ground floor of the NE gable is a timber sheeted door. To the right of this is a single storey gabled outhouse with mono-pitched roof. This gable and the front facade are in red brick with flush stone quoins (now painted). Slim chamfered plinth. The lower half of rear facade and part of the lower half the SW gable are built into the surrounding rubble wall (with the wall projecting), the upper halves are finished in plain render. There is a window, as front, to the first floor left on the rear facade. The roof is gabled with a slight overhang to the eaves and exposed (curved) rafter tails. There are two brick chimney stacks with stone coping, one to the SW gable, the other off centre. The roof has Bangor blue slates. Cast iron rw goods. Rubble wall to NE and SE enclosing yard."*

- Lighthouse (Grade B1 Listing): *"Round, tapering, light house completed in 1834 and situated at the N end of the S pier of Donaghadee Harbour. The tower of the light house is four storeys high and topped with an octagonal 'house' for the lantern itself. The tower is constructed of horizontally grooved (rusticated) Anglesea limestone and is painted white. It rests upon a sturdy curved base (painted black). To the W 'side', and rising up through the base, is the equally sturdy looking doorway with broad plain 'pilasters' on tall thick bases and broad, squat, curved brackets supporting a thick plain entablature. There is a copper dedication plaque in the centre of the entablature, place there when the lantern was converted to electricity in 1934. The panelled door itself is recessed. Around the base are simple wrought iron railings with a gate directly in front of the door. To the N and S 'sides' of the tower are three narrow recessed two pane windows (one each to the ground, first and second floors on both 'sides'). At the top of the tower is a corbelled platform on which rests the lantern house, which itself has a 'battered' base and curved cap. There are wrought iron railings at the edge of the platform. Directly below the corbelling are several tiny recessed windows."*

The HED database states the following with regards to the listing evaluation:

- Harbour Piers: *"Largely intact late Georgian harbour of national interest with two piers constructed in Anglesea limestone with bases and outer sea walls of local rock. The south pier has an equally largely intact light house of 1834 and an original pier crane."*

- Harbour House: *"Good quality and robustly detailed two storey red brick lighthouse keeper's house of 1864."*
- Lighthouse: *"Late Georgian (1834-36) light house of national interest situated on the south pier of Donaghadee Harbour. Due to the rapid decline in the fortunes of Donaghadee as a port during the mid nineteenth century, the harbour (completed in the early 1830s) has largely been left untouched and remains one of the very few intact examples of this period. The light house too has remained largely intact and (as well as its ongoing function as a beacon) remains a valuable element of the whole harbour grouping."*

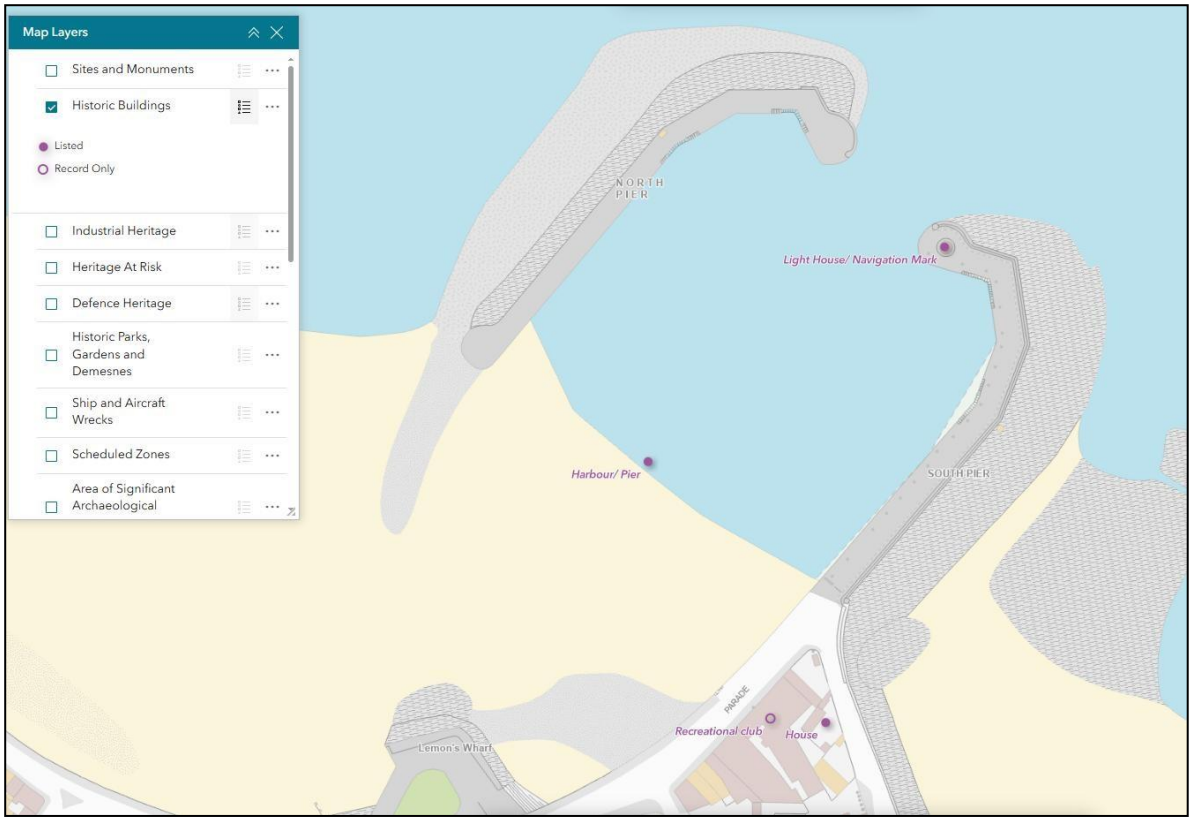


Figure 9-3: Listed Building Sites (HERoNI, 2025)

9.2.2 Industrial Heritage Record

Over 16,000 Industrial heritage features have been identified in Northern Ireland and are protected through legislation and policy, with the most appropriate method of protection being informed on a site by site basis. A number of sites listed on the Industrial Heritage Record are observed across the Donaghadee coastline, as seen in Figure 9-4, namely the lighthouse, harbour and coastguard station.

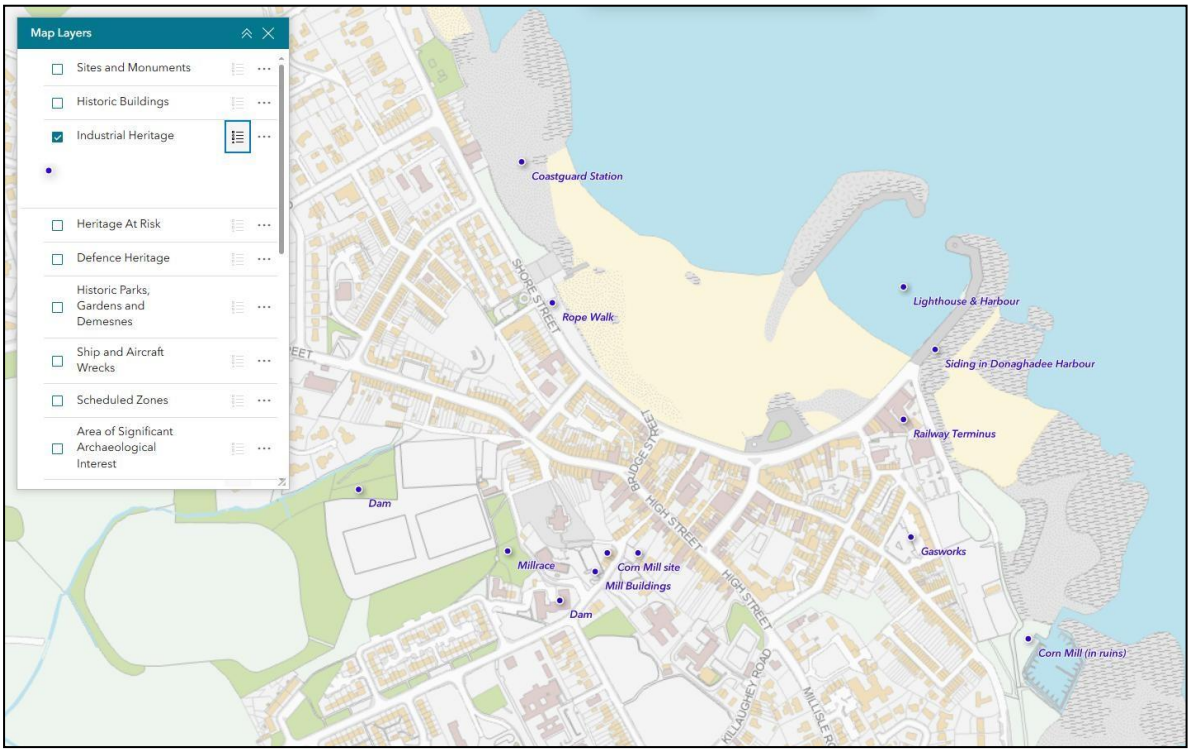


Figure 9-4: Industrial Heritage Sites (HERoNI, 2025)

9.2.3 Defence Heritage

The Historic Environment Division (HED) has culminated a record of sites of interest with respect to NI's defence heritage within The Defence Heritage Record (DHR) The Survey Project 2020-2024 (HED, 2024). In Donaghadee, the coastwatching point on the south pier of the harbour accounts for the only local site on the DHR. The post was constructed in the inter-war years to house auxiliary coastwatchers. Coastwatchers were responsible for maintaining observation of coastal waters, monitoring shipping and curtailing coastal smuggling. This post has been modified during WW2. Steel sheeting with observation slits has been added to provide some protection to the site.

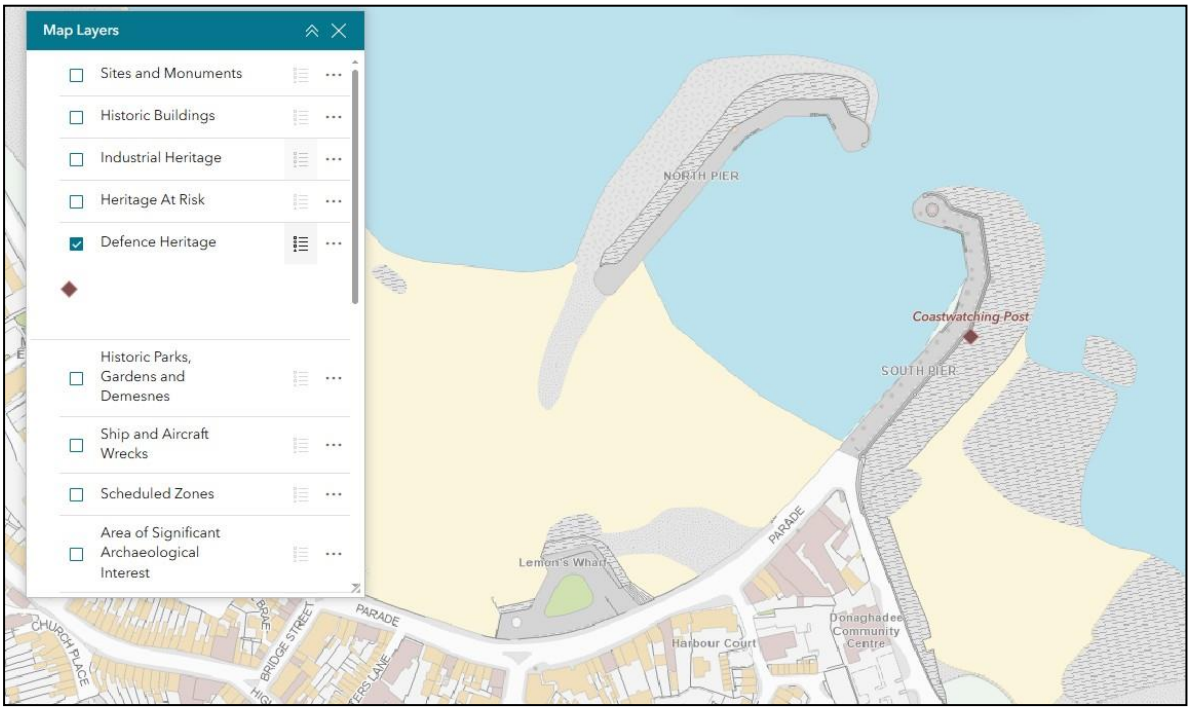


Figure 9-5: Defence Heritage Sites (HERoNI, 2025)

9.2.4 Area of Archaeological Potential

Areas of Archaeological Potential (AAPs) are areas within the historic cores of towns and villages, where, on the basis of current knowledge, it is likely that archaeological remains will be encountered in the course of continuing development and change. One such area is designated for Donaghadee itself, the extents of which can be seen in Figure 9-6.

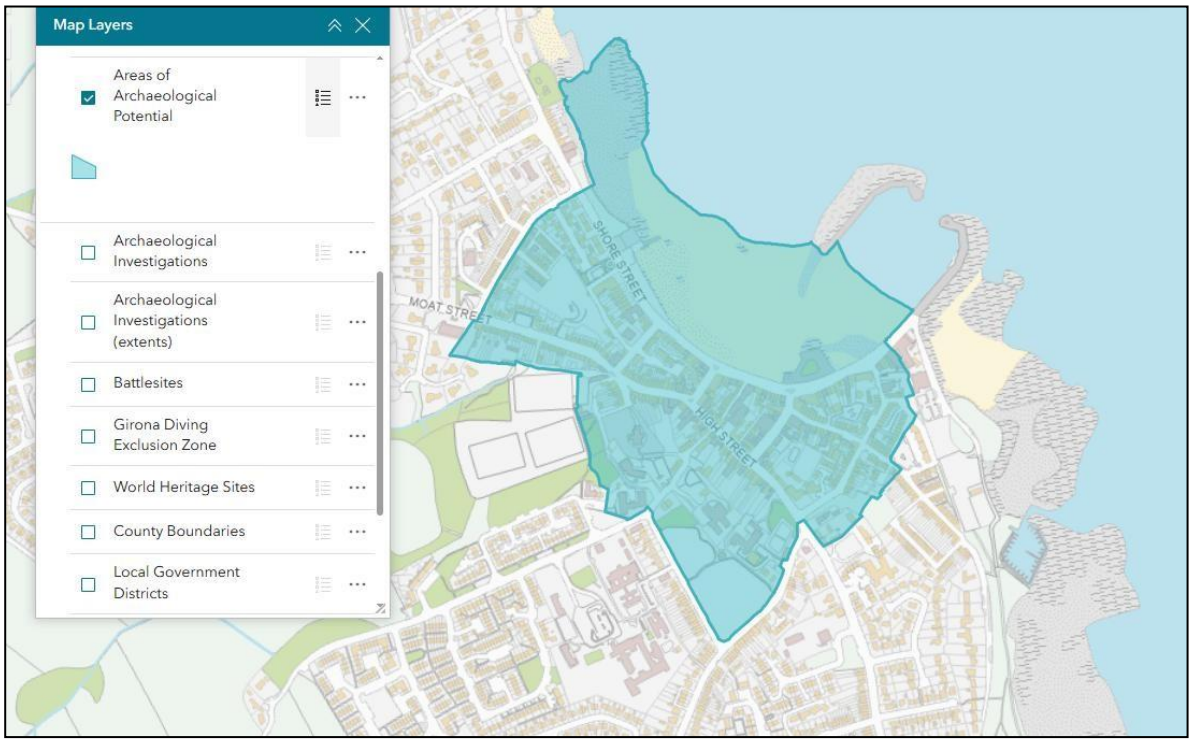


Figure 9-6: Areas of Archaeological Potential (HERoNI, 2025)

10 CONSENTING OVERVIEW

10.1 Planning Requirements

The Planning Act (Northern Ireland) 2011, Part 3, Planning Control, s.23 (1) states the meaning of development as *the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change of the use if any buildings or other land.*

Section 24 (1) states subject to the above Act, planning permission is required for the carrying out of any development of land.

It is important to ensure that the any development along the coastline at Donaghadee complies with the requirements of the Planning Act, and associated legislative requirements including The Planning (Environmental Impact Assessment Regulations (NI) 2015 (‘*the EIA Regulations’)* and The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) (‘*the Habitat Regulations’).*

10.1.1 Permitted Development

Permitted development rights are subject to certain caveats and restrictions as set out in the relevant planning and EIA legislation. Certain types of development can be carried out without the requirement to apply for planning permission. Development which falls into this category is identified as ‘permitted development’. Permitted development rights are defined in subordinate legislation within The Planning (General Permitted Development) Order (NI) 2015 (GPDO).

Under the GPDO, planning permission is granted under the terms of Article 3 for the classes of development described as permitted development in the Schedule to the Order, subject to compliance with the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 and with any relevant restrictions specified in the Schedule.

Furthermore, development is ‘not permitted’ where it would be contrary to any condition imposed by any planning permission or where the development comprises EIA development. A development proposal should be screened against the EIA regulations before permitted development rights can apply.

Further caveats are set out within the Regulations, relative to the siting of the project works within a *sensitive area* (i.e. the AONB and schedule zones) and its status as a listed structure.

Overall, it is considered that permitted development rights would not be applicable to the Project and that full planning consent would be required.

10.1.2 Planning Application

On the basis of the design information as set out in Section 10.1, a full planning application would need to be made to Ards and North Down Borough Council planning authority. Whilst the Planning (NI) Act gives the Department for Infrastructure (DfI) power to call in any application instead of letting it be assessed at local authority level the Project does not meet the criteria as set out within The Planning (Development Management) Regulations (Northern Ireland) 2015.

Acknowledging that Ards and North Down Borough Council are Project client and are actively engaged with the project, a formal Pre-Application Discussion (PAD) submission could be made to the planning authority in order to assist in informing ongoing design, environmental assessment and content of any forthcoming planning submission.

10.1.3 Major Development Status

The Planning (Development Management) Regulations (Northern Ireland) 2015 set out criteria which define a planning application as a 'major development' in accordance with Section 25 of the Planning Act (NI) 2011.

Any works at this location could potentially fall under *Class 9. All other development* and as such would be required to exceed the relevant thresholds in order to constitute a major development. On the basis of the current high level design information, it is considered very unlikely that the any options considered in this report would exceed the thresholds of 5000 m^2 of floorspace or having a site area (i.e. the planning red line) of over 1 hectare.

On the assumption that works would not constitute major development, there would be no requirement to undertake formal Pre-Application Community Consultation (PACC) in advance of any forthcoming planning submission.

Given the local interest in any works however, a public consultation strategy to include for example, an in-person consultation event, may be prudent.

10.1.4 EIA Requirements

On the basis of the high level options described in this document, the potential works does not automatically require an EIA under Schedule 1 of the Regulations; nor would does it fall under Schedule 2 as formally requiring an EIA determination as set out in the Regulations. However, given the location of the within designated sites which constitute *sensitive area*s as defined by Regulations (i.e. ASSI, SAC, SPA etc), an EIA screening opinion should be sought from the planning authority. This could be undertaken as part of the formal PAD process.

10.1.5 Habitats Regulations Assessment

As noted above, the study area is located within the North Channel SAC and Outer Ards SPA, as such any works along the coastline would require a Habitats Regulations Assessment (HRA). A HRA is required when any plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect on a designated ecological European site. European sites are defined as Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC), or Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EC) (the codified version of Council Directive 79/409/EEC (as amended)). SACs and SPAs are collectively known as Natura 2000 sites.

Habitats Regulations Assessment is a staged procedure, entailing up to four possible sequential stages. Stage 1 (otherwise termed a Test of Likely Significance) is a Screening process, which identifies the likely impacts

upon a Natura 2000 site from a project or plan, either alone or in combination with other projects or plans and considers whether these impacts are likely to be significant.

If a straightforward 'no significant effects' cannot be concluded, then following the precautionary principle, a Stage 2 Appropriate Assessment (AA) is necessary. In effect, Stage 2 is the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts is made.

Stage 3 is an Assessment of Alternative Solutions which examines alternative ways of achieving the objectives of the project or plan, that avoid adverse impacts on the integrity of the Natura 2000 site. Where no alternative solutions exist and where adverse impacts remain a Stage 4 Assessment would be required to consider compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

Whilst determining whether any modifications to the coastline at Donaghadee would result in a significant effect on any of the nearby designated European Sites is beyond the scope of this study, it is apparent that any works have the *potential* to impact qualifying features of the North Channel SAC and Outer Ards SPA.

10.2 Environmental Assessment and Supporting Information

Whilst it is not considered likely that any works here would constitute EIA development, any forthcoming planning application will be required to be accompanied by a suite of environmental assessments taking cognisance of the various environmental designations and sensitivities of the study area and the locality.

The formal PAD process will provide a mechanism for both the planning authority and statutory consultees to provide comment on the Project but also assist in defining the extent and scope of environmental assessment and reporting which will be required to supporting the planning application.

In the interim however, Sections 10.1 – 10.1.5 set out a typical scope of work which would be deemed appropriate, to be provided in support of the planning application. Indication is also given where additional consenting elements are required.

It should be noted that appropriate reporting and assessment of coastal modelling and flooding (as set out within this report), relative to the final design, should also be provided in support of the planning application.

10.3 Cultural Heritage

Consultation would be required with the Department for Communities Historic Environment Team to minimise the impact of any proposals on the Historic Built Environment. Ensuring plans don't take away from the various protected and culturally significant structures in Donaghadee is of the utmost importance.

11 CONCLUSION

In April 2017 RPS were appointed by Ards and North Down Borough Council (ANDBC) to undertake a feasibility study to consider strategic options to improve wave conditions within the existing harbour and the area adjacent to the harbour (between the North Quay and the Slipway). The options considered were identified in the 2015 Town Masterplan (AECOM, 2015).

A Feasibility Report (RPS, 2020) issued to ANDBC concluded that the preferred option which would best achieve suitable wave conditions within the existing harbour should include the following series of measures:

- The construction of an outer breakwater,
- The extension of the North Quay from Lemon's Wharf, and
- Harbour deepening to accommodate a pontoon berthing facility.

Whilst the initial harbour plan developed as part of the Feasibility study was found to improve wave conditions within the harbour, queries were subsequently raised regarding how the scheme may affect coastal flooding from tidal inundation and wave overtopping.

To investigate the issue of coastal flooding, and with a view of developing effective mitigation options, RPS were re-commissioned to investigate these topics further.

This report therefore quantifies the potential coastal flood risk from both combined tide and surge (Mechanism 1 of coastal flooding) and wave overtopping (Mechanism 2 of coastal flooding) under existing and future climate conditions for a range of extreme return period events. Regarding the risk associated with tidal inundation, this report found that:

- Under existing conditions, coastal flooding from tidal inundation is unlikely to be a significant issue, with only Lemon's Wharf being at risk. Given the lack of built assets at risk here or in the surrounding area, there is unlikely to be an economic justification for extensive flood relief measures.
- Under future climate conditions, sea level rise increases the risk of coastal flooding with many commercial and residential premises becoming vulnerable to tidal inundation.

In respect of wave overtopping, it was found that:

- Based on present day conditions, the risk of mean wave overtopping across all examined sections is considered "tolerable" during a 1 in 1 year return period event. During a 1 in 50 year return period event, overtopping at only some sections is considered tolerable, whilst overtopping discharge rates exceeds tolerable conditions across all sections during a 1 in 200 year return period scenario.
- Advanced Computational Fluid Dynamic (CFD) modelling demonstrated that the maximum wave overtopping rates exceeded tolerable conditions by up to a factor of x4 during a present day 1 in 200 year return period event.

Thus, whilst there is not a significant risk of coastal flooding across the study area based on present day conditions, wave overtopping during extreme events create conditions that are considered unacceptable in context of the health and safety risk to pedestrians, vehicles and structures.

Having identified the risk associated with wave overtopping, RPS considered various coastal management measures to reduce overtopping rates to within tolerable limits. Options considered and the supporting rational for the areas to the west and east of Lemon's Wharf are summarised below:

West of Lemon's Wharf:

- **Rock Armour Revetment**: The revetment structure can effectively dissipate wave energy and momentum to reduce overtopping.
- **Recurve Seawall**: Can deflect up-rushing water seawards as waves impact the seawall. A recurve already provides effective protection for a Section of the coast further west, thus a recurve option here would effectively continue this existing defence.

East of Lemon's Wharf:

- **Rock Armour Revetment**: Similar to the west, aimed at mitigating wave impacts.
- **Recurve Seawall**: As with the west, this can deflect waves on impact. This option requires less space on the foreshore, which may be important as the land in this area is privately owned.
- **New Promenade**: Proposed to enhance public access, with an additional area for public amenity, while increasing the distance from the waterfront to sensitive receptors, thereby providing additional flood protection.

Advanced modelling was again undertaken to test the effectiveness of these options at both locations for relevant conditions. This "proof of concept" analyses found that:

- To the west of Lemon's Wharf, both options were found to significantly reduce wave overtopping, with the rock armour solution providing a better reduction in overtopping rates. The initial design of the recurve seawall could be refined to achieve a similar level of performance. A recurve seawall would be the preferred option for this area given that it would tie in with the recently constructed scheme further west and occupy less space on the foreshore than a rock armour revetment option.
- To the east of Lemon's Wharf, both a rock revetment and recurve seawall were found to significantly reduce wave overtopping. Whilst the recurve seawall was found to be more effective, RPS identified limitations of the modelling approach which effectively assesses overtopping on a one-dimensional basis whereas the processes in this area are highly two dimensional (i.e., waves can approach from different oblique angles and result in wave focusing).
    - Recognising this limitation, it was RPS' view that aside from significantly increasing the dimensions of a rock armour revetment option, the most effective solution would be to increase the extent of the existing promenade by reclaiming a localised section of the foreshore.

It is noted that additional modelling would be required to refine the preferred option and to inform the engineering design and associated capital costs estimates.

Preliminary estimates indicate that subject to detailed design and additional modelling, the capital costs associated with the recurve wall option to the west and the new promenade option to the east of Lemon's Wharf would equate to *c.* £0.5 mil and £3.5 mil respectively. Any development in either location would require consultation with relevant statutory authorities as well as marine and planning consent.

12 NEXT STEPS

Having identified “proof of concept” measures to reduce wave overtopping to within tolerable limits in respect of health safety to pedestrians, vehicles and structures along the main promenade at Donaghadee, additional work will be required to refine and progress any option. Further work will include, but may not be limited to:

- Procuring detailed topographic survey information of the area to update the hydraulic modelling to account for drainage holes along the existing wall and removing “artificial barriers” created by buildings and other structures which are currently included in the Digital Surface Model (DSM) data.
- Quantifying the coastal flood risk associated with other return period events including 1 in 1, 2, 5, 10, 20 and 100 year return period conditions. Outputs from this work would inform a flood damage curve which would be used to calculate an Average Annual Damage (AAD) value associated with the present-day flood risk.
- Consultation with relevant statutory stakeholders and local residents to get “community buy-in” for the preferred options.
- Refining of the preferred options to maximise performance through additional hydraulic modelling or alternative assessments.
- Producing detailed capital cost estimates for the preferred options
- Using the AAD value described above, an economic appraisal should be undertaken to estimate the benefit cost ratio of the preferred option.

As the study area is located within or in close proximity to a number of environmentally designated sites and protected heritage features, it is unlikely that the high-level options considered in this report could be undertaken as permitted development. As such, a full planning application would be considered necessary and require the supporting environmental studies and assessments summarised below:

- Phase 1 Habitat survey and Ecological Impact Assessment (EcIA)
- Ornithological survey and Ornithological Impact Assessment
- Shadow Habitats Regulations Assessment (sHRA)
- Outline Construction Environmental Management Plan (CEMP)
- Archaeological survey (terrestrial and marine) and heritage impact assessment
- Scheduled Monument Consent
- Listed Building Consent
- Landscape and Visual Assessment (including visualisations)
- Traffic Impact Assessment.
- Formal Pre-application Discussion (PAD) submission
- EIA Screening

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Appendix A Description and review of the IH2VOF Computational Fluid Dynamic modelling system

A.1 Introduction

Wave overtopping is a complex phenomenon that is governed by a range of factors and coastal processes including wave propagation, shoaling and breaking and the type of structure/defence being overtopped. Coastal engineers have traditionally analysed overtopping by assessing these processes using empirical formulas that have been developed based on extensive physical model testing, i.e., EurOtop 2.

However, with the emergence of Computational Fluid Dynamic (CFD) modelling techniques along with the significant advances in computational power over the last decade it is now possible to assess complex and turbulent wave overtopping processes using numerical modelling approaches.

Given this, RPS have used a well-established CFD model developed by the Environmental Hydraulics Institute "IHCantabria" in Spain to examine in detail, the wave overtopping risk at Donaghadee. As described below, the IH2VOFsoftware, has been successfully used over the last decade for a wide range of coastal engineering applications to evaluate the interaction between both regular and irregular waves with various coastal defence structures.

Lara *et al*. (2006) used the model to simulate the generation and propagation of irregular waves over simple slopes as well as irregular wave interaction with submerged porous breakwaters. Losada *et al*. (2008) and Lara *et al*. (2008) used IH2VOF to investigate the hydraulic response, run-up and overtopping of high mound and low mound breakwaters. Guanche *et al*. (2009) simulated the wave pressure distribution and wave loads for stability analysis on different geometries of rubble mound breakwaters under regular and irregular wave conditions.

More recently, the IH2VOF software has been used to undertake advanced studies that have been published in a range of reputable high quality peer reviewed journals including:

- The Journal of Coastal Engineering.
- The Journal of Ocean Engineering.
- The Journal of Fluid Mechanics; and
- The Journal of the International Navigation Association (PIANC)

A comprehensive list of studies that have utilised, calibrated and validated the use of the IH2VOF software is provided in the References section of this appendix. For convenience, RPS have summarised some of the key findings of this body of academic work to demonstrate how the model accurately resolves several key processes including, but not limited to:

- Wave propagation across a model domain, including wave shoaling and breaking.
- The resultant wave overtopping and associated wave forces etc.

A.2 Wave propagation

As waves approach, i.e., propagate towards a shoreline, they enter a depth region in which the wave motions are affected by the seabed. These effects include a reduction in wave speed and wavelength which in turn alters the direction of the wave (refraction) and wave heights (shoaling) with wave energy dissipated by seabed friction and finally wave breaking.

Wave propagation is clearly an important process as it determines the size and properties of a wave before it breaks onto and overtops a coastal defence structure. It is therefore imperative that any CFD model used to assess wave overtopping can accurately replicate this process.

A recent study undertaken by Di Lauro *et al*., 2020, used the IH2VOF to simulate wave overtopping and wave forces on a non-conventional breakwater structure which is illustrated in Figure A.13-1. As part of this study the IH2VOF model was extensively calibrated and validated using data recorded from multiple sensors in a wave tank experimental setup.

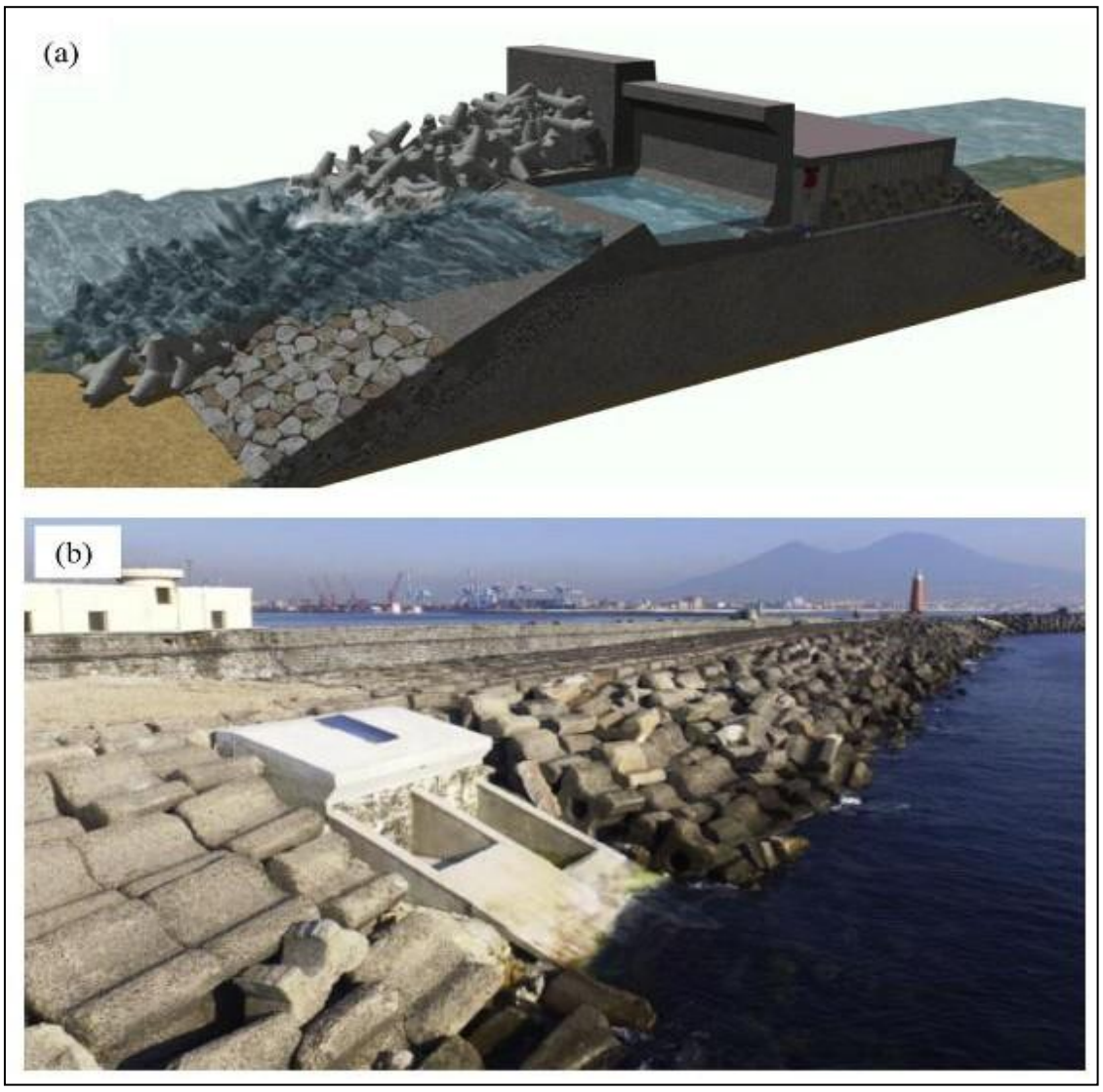


Figure A.13-1: Sketch of the non-conventional breakwater (a) compared with a full-scale device installed in Naples (b) that was tested using the IH2VOF software (Di Lauro *et al*., 2020)

The experimental setup of the non-conventional breakwater within the wave tank and IH2VOF model is summarised in Figure A.13-2 below. It will be seen that this experimental setup included four water level gauges in the main tank to measure surface elevations (i.e., the propagation of waves) and several wave pressure transducers.

As part of this study, nine irregular wave tests were simulated in the wave tank facilities and used to validate the IH2VOF model. For the purposes of demonstrating the suitability of the IH2VOF model for this study, RPS have summarised some key findings from Lauro et al., 2020 below.

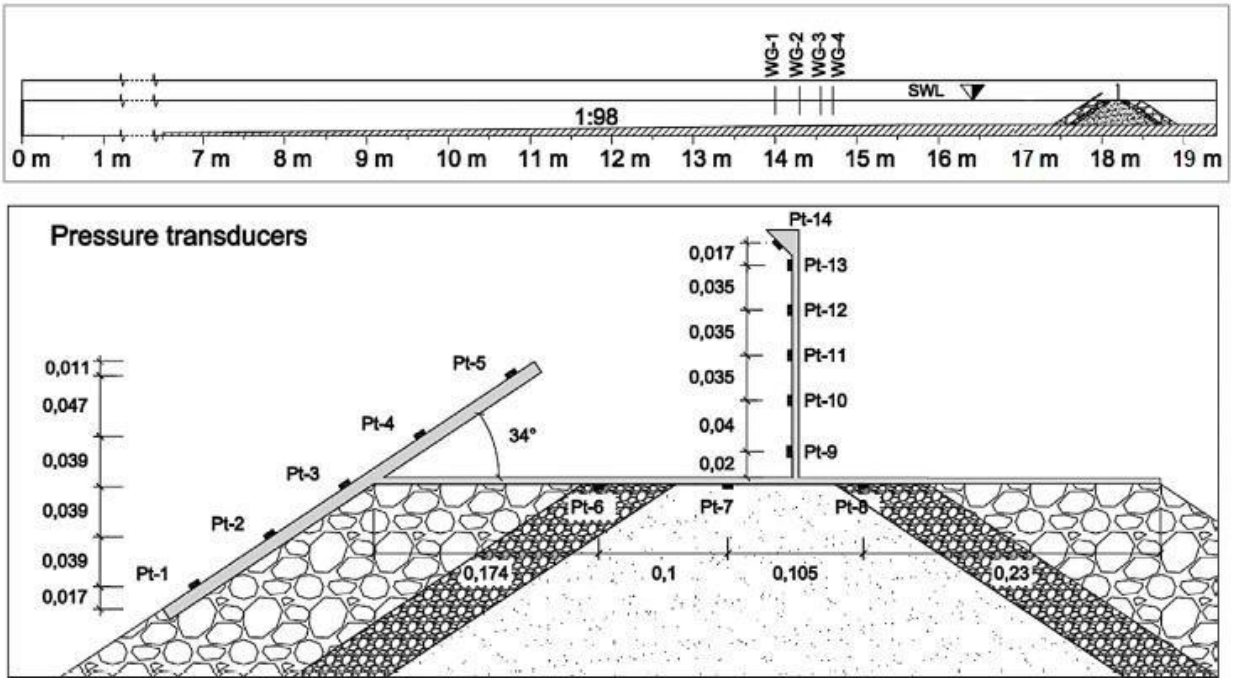


Figure A.13-2: Sketch of the experimental setup as represented in the IH2VOF model and the position of wave gauges in the wave flume (top) and position of pressure transducers (bottom) (Di Lauro *et al*., 2020)

In respect of the IH2VOF model's ability to simulate the propagation of waves, results for the four wave gauges in the wave flume were noted to give very good agreement between the numerical and the experimental data as shown in Figure A.13-3. Comparable results were obtained for all tests simulated as part of this study, with the author reporting good agreement for both, wave phase and height. The overall comparison results of wave surface time series demonstrated that the model replicated the 2D local wave propagation and wave transformation processes, such as wave shoaling and nonlinear interaction between waves in depth-limited wave conditions to a high degree of accuracy.

In summary, the overall comparison of the wave surface elevations in front of the structure was found to be very satisfactory with a mean relative error of less than 10% for all the computed parameters. The author noted that this was considered tolerable, bearing in mind the complex processes involved as well as the non-conventional geometry of the breakwater cross-section.

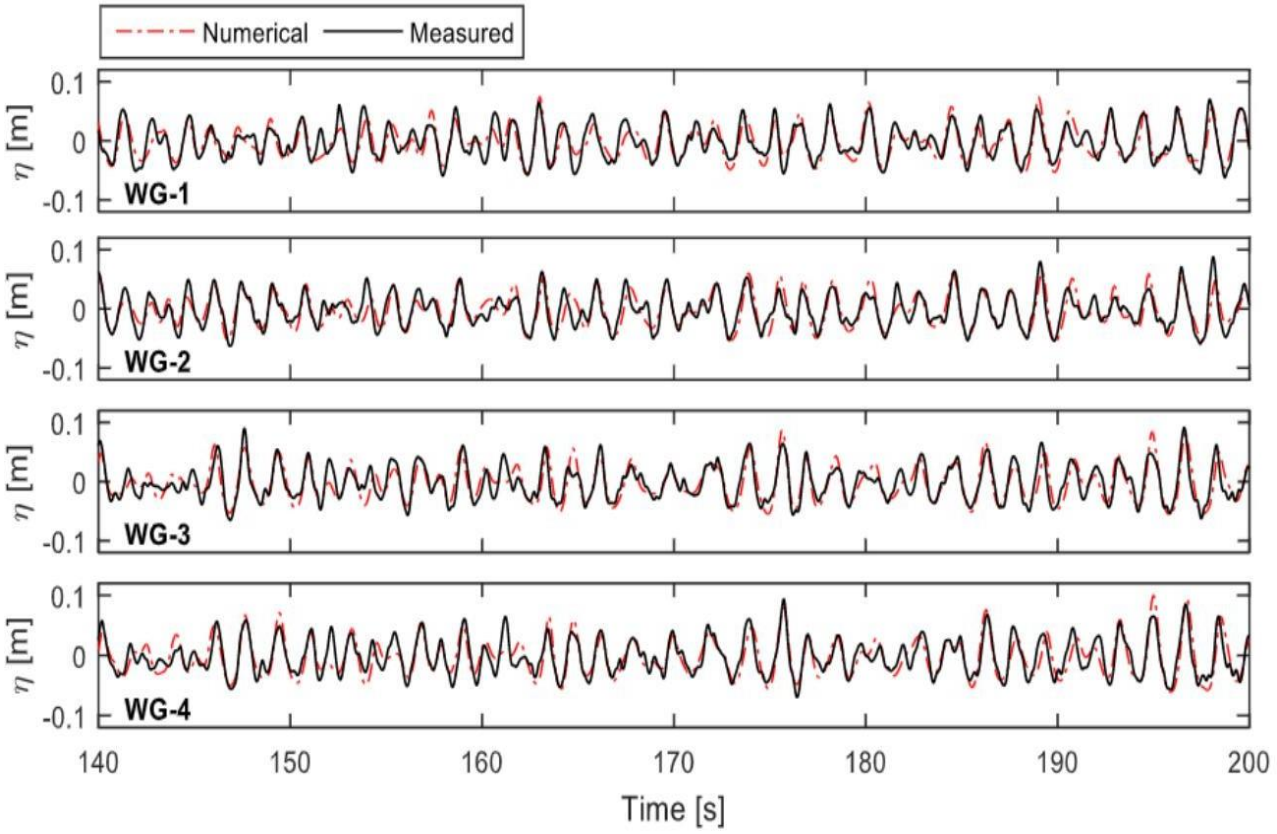


Figure A.13-3: IH2VOF and measured surface elevations at wave gauges 1 – 4 (Di Lauro *et al*., 2020)

A.3 Wave pressure and forces

A correct prediction and evaluation of the wave pressure is crucial for the design of traditional coastal structures.

As can be observed in Figure A.13-4 and Figure A.13-5, the IH2VOF model accurately predicts the pressure across the structure to a very high degree of accuracy. Di Lauro *et al*. noted that the calculated pressure signal is perfectly in phase and magnitude with the measured signal, and only minor discrepancies appear for some waves. The results also demonstrate that the IH2VOF model was able to deal with porous media such as rock armour etc. very well.

The overall comparison of the wave pressure acting on the device can be considered very satisfactory bearing in mind the complexity of the fluid-structure interaction, as well as the non-conventional geometry of the breakwater cross-section.

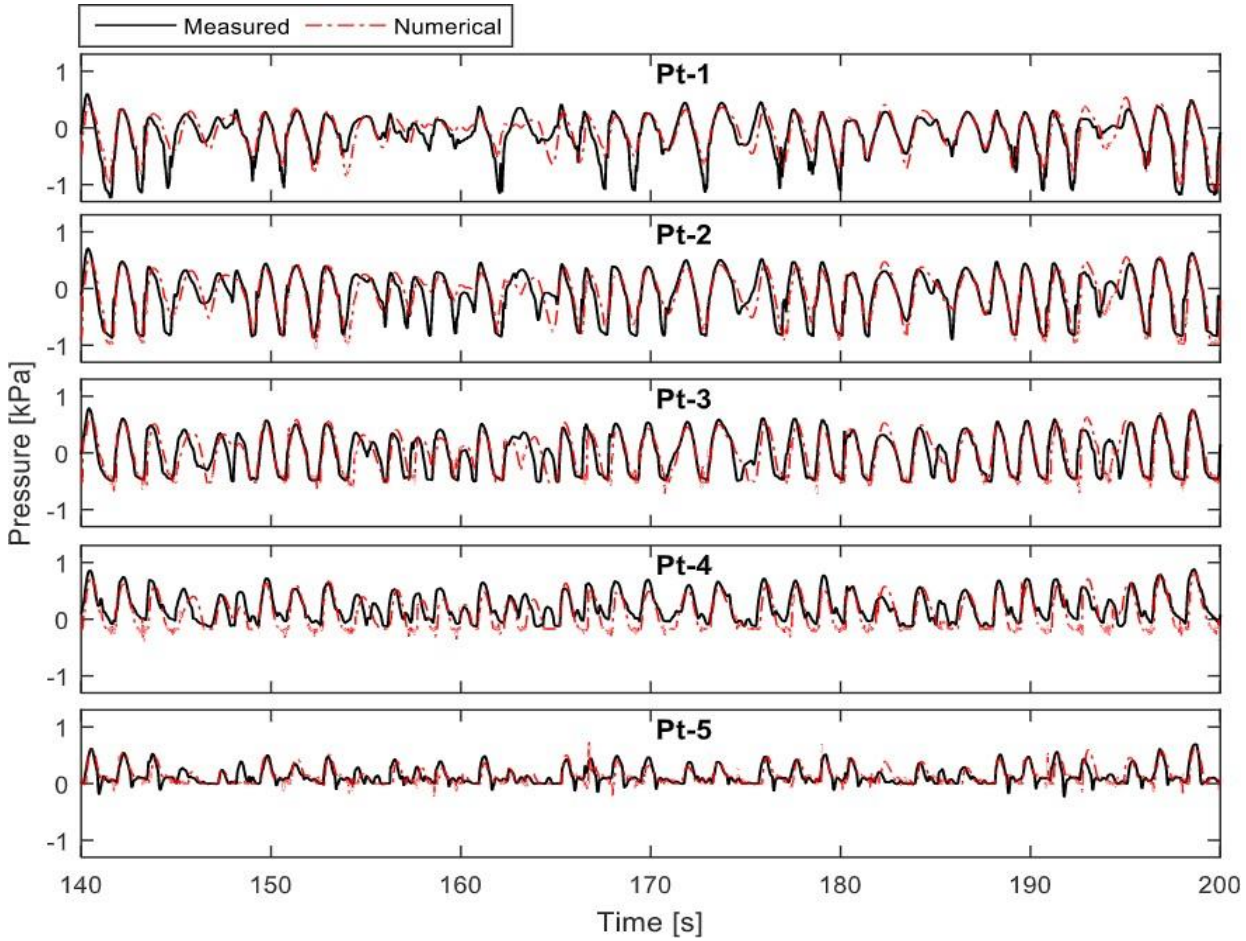


Figure A.13-4: IH2VOF and measured pressures at pressure transducers 1 – 5 (Di Lauro *et al*., 2020)

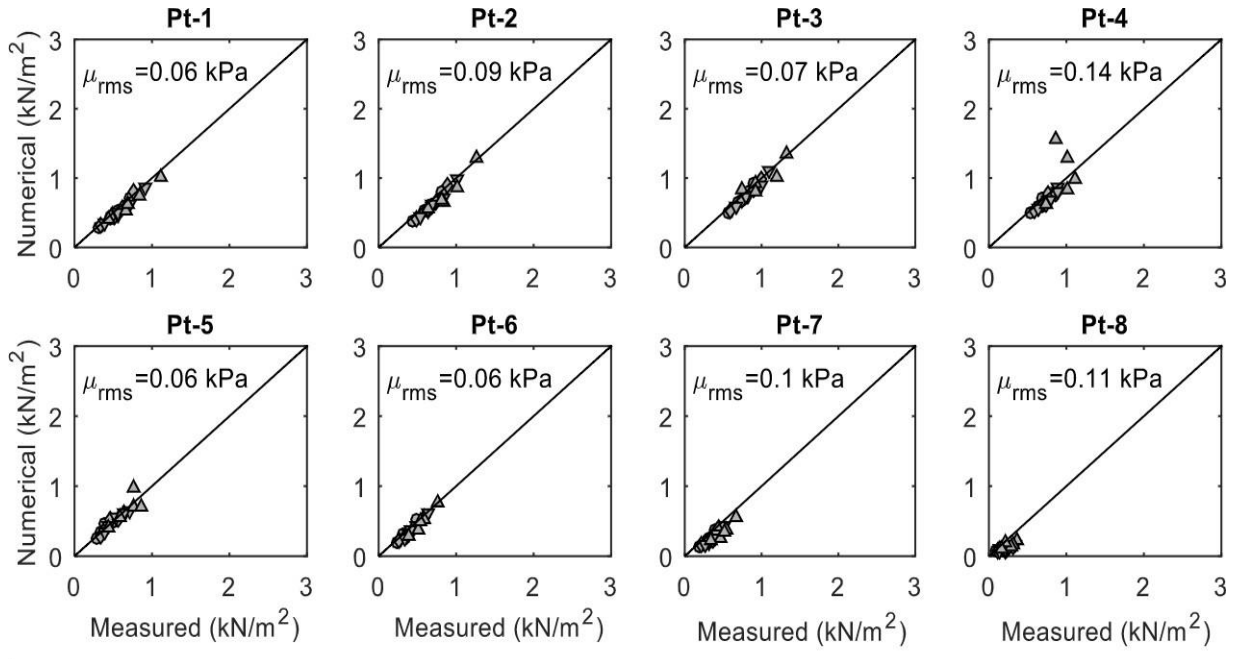


Figure A.13-5: IH2VOF and measured pressures at pressure transducers 1 – 8 (Di Lauro *et al*., 2020)

A.4 Wave Overtopping

Before undertaking any work that involves using CFD methods to assess wave overtopping, it is imperative to ensure that the proposed CFD model is capable of accurately simulating and reproducing complex wave overtopping processes. To this end, RPS have summarised the key findings of a study undertaken by Losada, *et al*., (2008) which analysed the wave overtopping of rubble mound breakwaters using the IH2VOF software.

To evaluate the model's capability to simulate wave overtopping, Losada, *et al*. undertook a series experiments on wave interaction with a rubble mound breakwater using wave tank facilities in the University of Cantabria. The rubble mound breakwater was built to model scale and equipped with 10 wave gauges and 10 pressure transducers as illustrated in Figure A.13-6.

Regular and random wave conditions were considered as part of this study, with a total of 45 tests carried out, including 20 with regular waves and 25 with random waves.

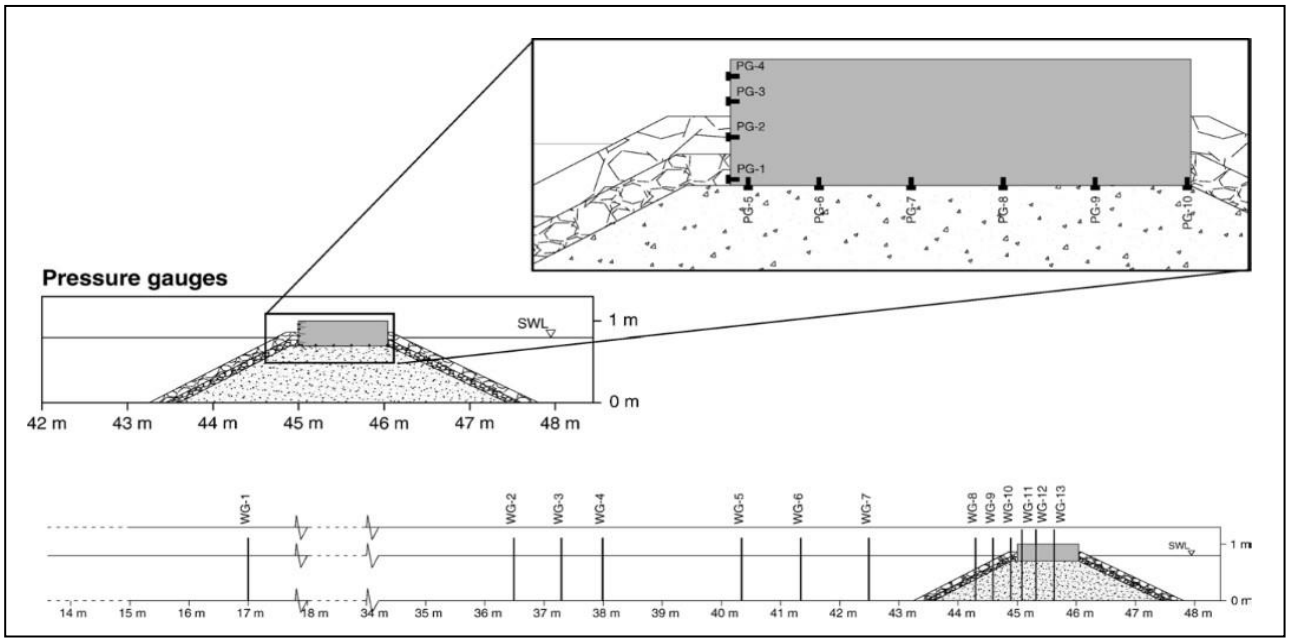


Figure A.13-6: Sketch of the experimental setup as represented in the IH2VOF model and the position of wave gauges in the wave flume (top) and position of pressure transducers (bottom) (Losada *et al*., 2008)

In respect to overtopping based on the regular wave cases, Losada *et al*., found very good agreement between the numerical and experiment accumulated overtopping discharge rates. The comparison between the numerical and experimental average discharge over the simulation period shown in Figure A.13-7 indicates excellent agreement with just a 4.7% error. As also demonstrated in Figure A.13-7, the IH2VOF results gave excellent agreement with the measured average and instantaneous overtopping rates for the irregular wave series, with just an 8.0% error.

All IH2VOF model results were compared to laboratory results for this study. As can be seen in Figure A.13-8, the agreement is also very good for both the time history and average accumulated discharge, proving the ability of IH2VOF to simulate the wave overtopping processes across complicated structures to a high degree of accuracy.

Losada *et al*., amongst others, concludes that the IH2VOF model is a suitable tool for the prediction of the instantaneous discharge and therefore the maximum overtopping event.

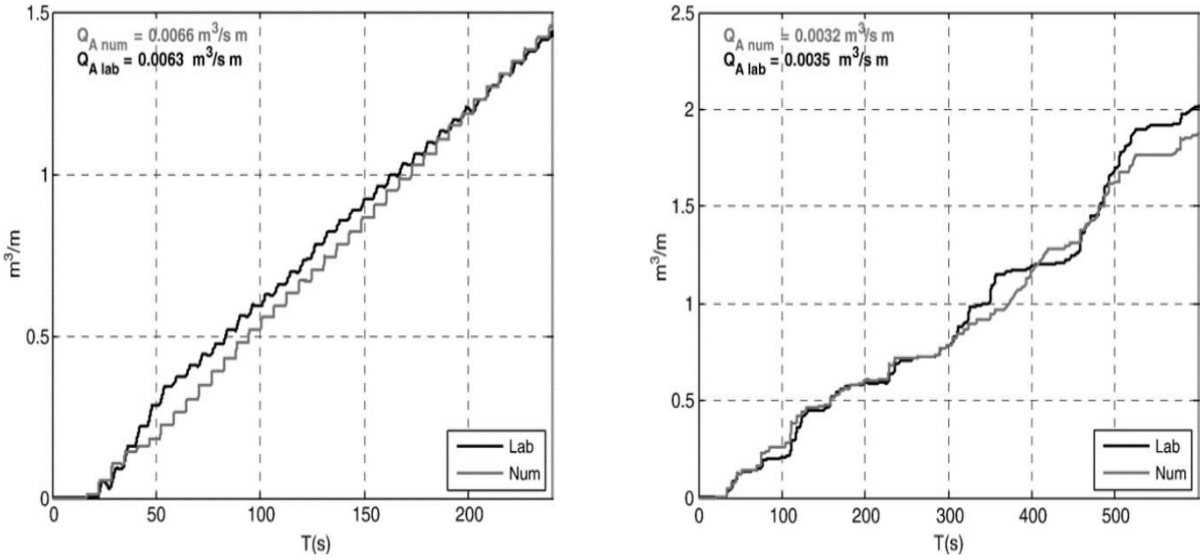


Figure A.13-7: IH2VOF and measured overtopping discharge rates for a regular and irregular wave series (Losada, *et al*., 2008)

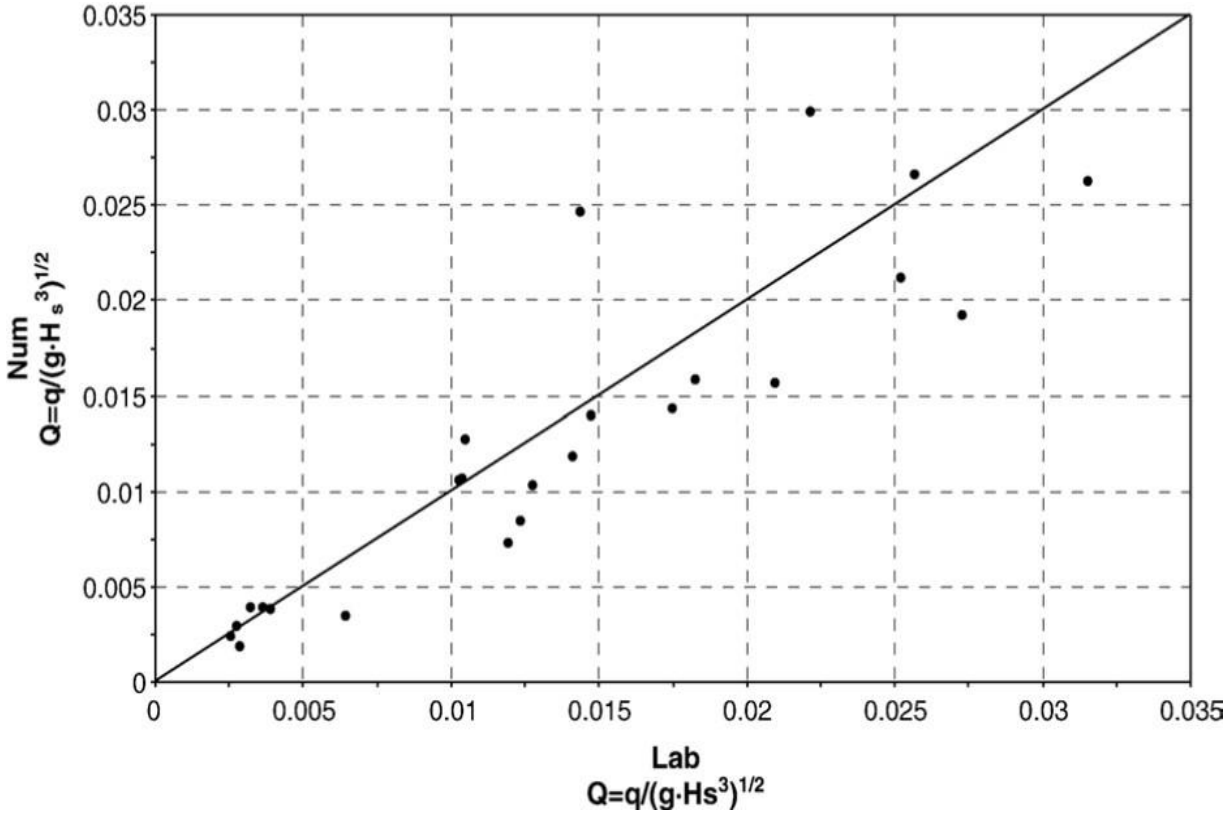


Figure A.13-8: Dimensionless average discharge. Comparison between numerical (predicted) and experimental (observed) values for all the tested cases (Losada, *et al*., 2008)

ITEM 4

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	23 April 2025
File Reference	Fp/2025/0677/MAST / 91200
Legislation	Local Government (Miscellaneous Provisions) (Northern Ireland) Order 1995
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Street Naming - Quarry Mews
Attachments	

A development comprising 22 dwellings is currently under construction on lands at North Road and Quarry Heights, Newtownards.

The developer has requested the name Quarry Mews, which is in keeping with the general neighbourhood and the new development will be accessed off the existing street, Quarry Heights. Three of the houses are accessed directly off North Road, and will be allocated North Road addresses, with the remaining 19 houses accessed from the new street, Quarry Mews.

RECOMMENDATION

It is recommended that the Council adopt the street name of Quarry Mews for this development.

ITEM 5

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	19 May 2025
File Reference	Fp/2022/1807/MAST / 91200
Legislation	Local Government (Miscellaneous Provisions) (Northern Ireland) Order 1995
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Street Naming - Priory Gate, Holywood
Attachments	

A development comprising 11 apartments and 4 townhouses is currently under construction on lands at 2 Priory Park, Holywood

The developer has requested the name Priory Gate, which is in keeping with the general neighbourhood due to the new development being accessed from the existing street, Priory Park, and the neighbouring street serving existing apartments is named Priory Manor.

RECOMMENDATION

It is recommended that the Council adopt the street name of Priory Gate for this development.

ITEM 6

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	29 May 2025
File Reference	92016
Legislation	The Waste and Contaminated Land (Amendment)(2011 Act)(Commencement No. 3) Order (Northern Ireland) 2022
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Fly-Tipping Statutory Enforcement Provision
Attachments	

Further to a report to Council on 16 January 2023 regarding the revision of fly-tipping statutory enforcement provisions.

Officers have powers under Article 4 of Waste and Contaminated Land (NI) Order 1997 to enforce against Unauthorised or Harmful Deposit, Treatment or Disposal, of Waste Offences with a fixed penalty fine of £400 and it had been approved for a discounted fee for payment within 14 days to be set at £300 (discounted). This was approved in January 2023.

Officers also have powers under Article 5 of Waste and Contaminated Land (NI) Order 1997 to enforce offences relating to 'Duty of Care' with a fixed penalty fine of £300. To promote the payment of fixed penalty fines, without recourse to court proceedings for relevant offences, it is recommended that the discounted fee for payment within 14 days be set at £225 (a 25% reduction in line with other fixed penalty discounts).

Not Applicable

RECOMMENDATION

It is recommended that Council approve the Fixed Penalty amount for Article 5 offences ‘Duty of Care’ to be set at £300 (full) and £225 (discounted) in line with other fixed penalty discounts.

ITEM 7

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Head of Regulatory Services (Interim)
Date of Report	05 June 2025
File Reference	90101
Legislation	The Local Government (Miscellaneous Provisions) (NI) Order 1985
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Grant of an Entertainments Licence
Attachments	None

An application has been received for the Grant of an Entertainments Licence as follows:

1. **Picnic in the Park, Ward Park Bandstand, Hamilton Road, Bangor**

Applicant: Keiran Gilmore, Open House Festival, 16 Quay Street, Bangor, BT20 5ED

Days and Hours: Sunday afternoons 3pm – 5pm from Sunday 6th July until Sunday 31st August 2025 inclusive

Type of entertainment: Outdoor musical entertainment

There have been no objections received from PSNI, NIFRS or Environmental Health.

Not Applicable

Applications have been received for the Variation of an Entertainments Licence as follows:

1. **The Ranch, 95 Green Road, Bangor, BT19 7QA**

Change of Licensee to: John Hamilton, 523 Ballycrochan Road, Bangor, BT19 7PY

There have been no other changes to the licence proposed.

2. **Royal North of Ireland Yacht Club, Seafront Road, Holywood, BT18 0BB**

Change of Licensee to: Alanna Thallon, 5 Broomhill Park, Bangor, BT20 5QZ

There have been no other changes to the licence proposed.

3. **Royal North of Ireland Yacht Club Marquee, Seafront Road, Holywood, BT18 0BB**

Change of Licensee to: Alanna Thallon, 5 Broomhill Park, Bangor, BT20 5QZ

There have been no other changes to the licence proposed.

4. **Donaghadee Golf Club, 84 Warren Road, Donaghadee, BT21 0PQ**

Change of Licensee to: Barry Davison, 6 Seahill, Donaghadee, BT21 0SH

There have been no other changes to the licence proposed.

RECOMMENDATION

It is recommended that the Council grants an Entertainments Licence to Picnic in the Park, subject to satisfactory final inspection by Licensing and Regulatory Services, and grants variations of Entertainments Licences as per this report.

ITEM 8

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Head of Waste and Cleansing Services
Date of Report	16 May 2025
File Reference	53042
Legislation	Waste and Contaminated Land (NI) Order 1997
Section 75 Compliant	Yes ☐ No ☐ Other ☒ If other, please add comment below: Not relevant
Subject	Northern Ireland Local Authority Municipal Waste Management Statistics, Q3 October to December 2024
Attachments	

Introduction
The official waste management statistics for the third quarter of 2024/2025 (October to December 2024) have been released by the Northern Ireland Environment Agency.

The aim of this report is to:

1. Report key quarterly waste management performance statistics relative to the same period last year (found in part 1 of the report) and to our baseline comparator year of 2021-22 (found in the KPI section of part 2 of the report), and
2. Provide some detail around operational waste service management activities/actions that have been implemented during the quarter with the aim of improving performance.

Not Applicable

In summary, key indicators have remained positive for this reporting period. However, whilst our HRC recycling performance has steadily improved year on year, the same pattern has not occurred with kerbside services – which, unlike our HRC service, have not been subject to service model reform over the past few years.

1.0 Northern Ireland Local Authority Collected Municipal Waste Management Statistics – October to December 2024

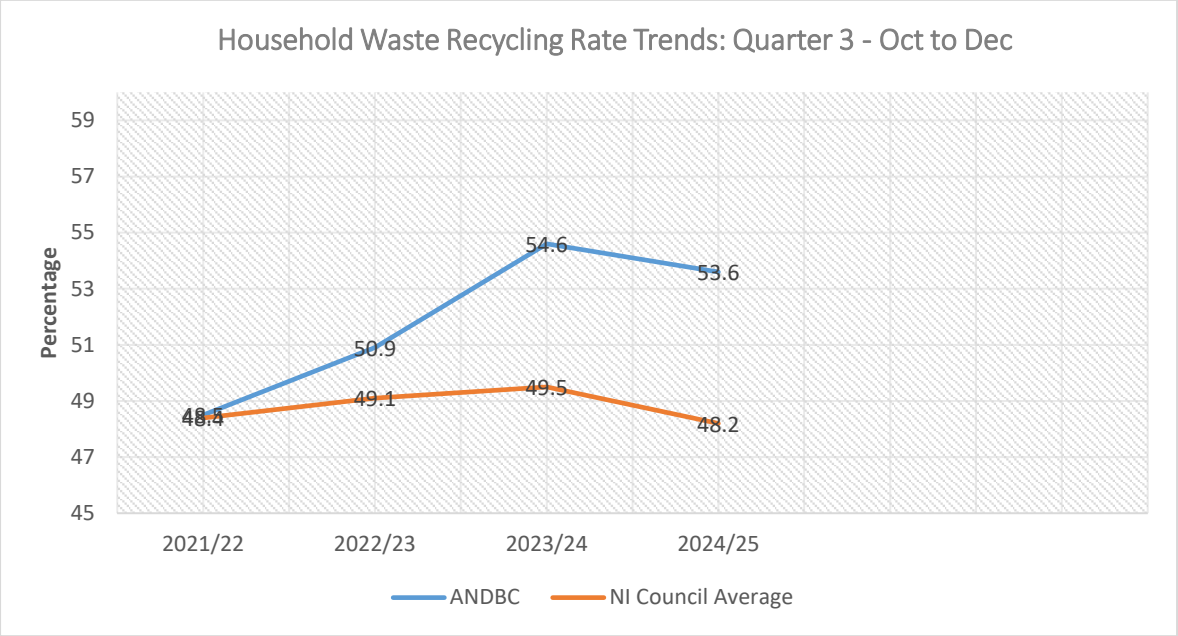
Summary Table of Key Changes Q3 2024-25 v Q3 2023-24

	2023-24	2024-25	Change
Household Waste Recycling Rate	54.6%	53.6%	↓ 1%
Recycling Rate Ranking	3rd	3rd	→ Same
Composting Rate	30.9%	30%	↓ 0.9%
Dry Recycling Rate	23.3%	23.3%	→ Same
Total HRC Waste	4509T	4555T	↑ 1%
HRC Residual/Landfill Waste Received	1376T	1245T	↓ 9.5%
HRC Recycling Waste Received	3133T	3310T	↑ 5.6%
Proportion of HRC Waste Received for Recycling	69.5%	72.7%	↑ 3.2%
Total Kerbside Waste	12940T	13571T	↑ 4.9%
Kerbside Residual Waste Received	5346T	5762T	↑ 7.8%
Kerbside Recycling Waste Received	7594T	7809T	↑ 2.8%
Proportion of Kerbside Waste Received for Recycling	59%	57.5%	↓ 1.5%

The significant headlines contained within the latest DAERA report show that:

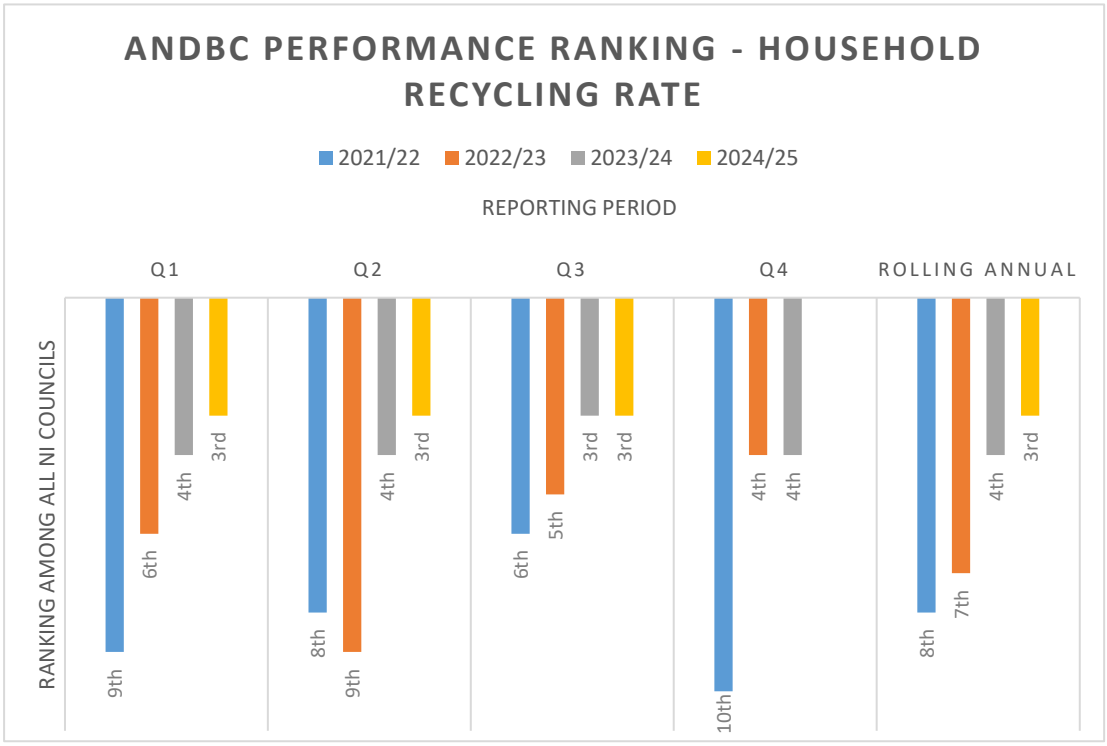
i. Our household waste recycling rate **decreased** slightly by 1% compared to Q3 last year, from 54.6% to 53.6%, although this was less than the average fall across all Councils of 1.3%.

Not Applicable



ii. Our household waste recycling rate of 53.6%, was 5.4% **higher** than the NI average of 48.2%.

iii. We were ranked **third** out of the eleven NI Councils for our household waste recycling rate, the same ranking as the previous year**.**

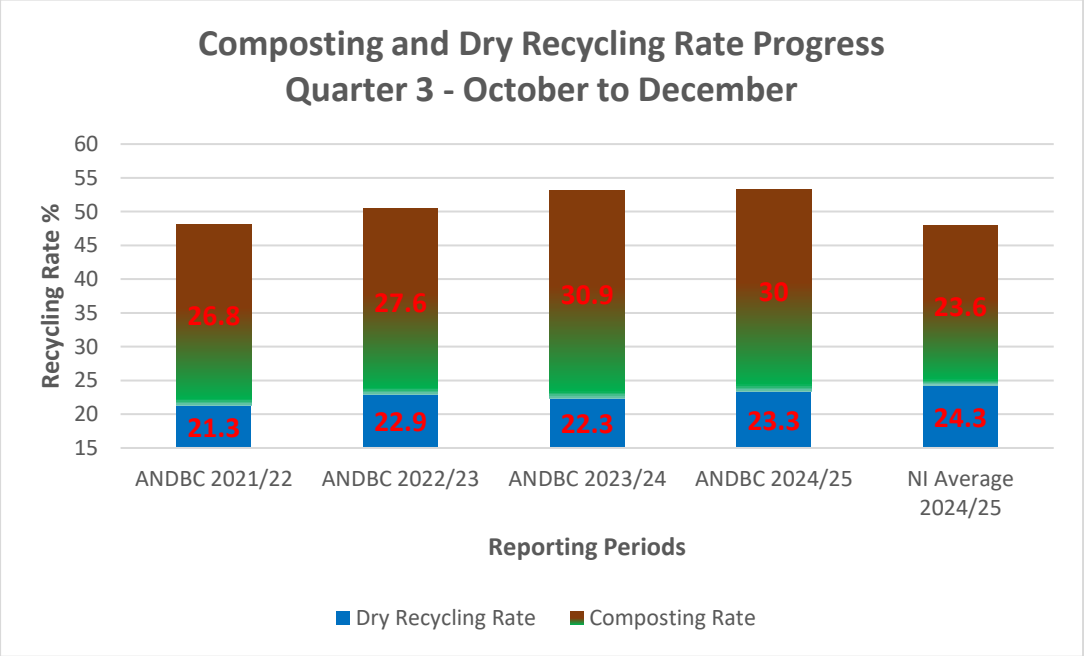


iv. Our household waste composting rate **fell** slightly by 0.9% - from 30.9% to 30. Our household waste dry recycling rate remained the **same**, at 23.3%.

Not Applicable

v. Our household waste composting rate of 30% was 6.4% **higher** than the NI average of 23.6%.

vi. Our household waste dry recycling rate (i.e. recycling of items other than organic food and garden waste) of 23.3% was 1% **lower** than the N.I. average of 24.3%.



vii. Our kerbside recycling capture rate of 73.3% for household compostable waste materials compared to a NI Council average of 62%.

viii. Our **lowest** kerbside capture rate for recyclable materials was for mixed plastics, at 24.6%.

Kerbside Capture Rate for Recyclable Waste Types – October to December		
Recyclable Material	**Kerbside Capture Rate for Recycling %**	**NI Average Kerbside Capture Rate for Recycling %**
Glass	63.7	48.8
Paper & Card	63.8	52.8
Mixed Metals	37	31.6
Mixed Plastics	24.6	23
Organic/Compostables	73.7	62

ix. We ranked 8th in the Council performance table for 'dry' recycling rate and 3rd for composting rate.

Not Applicable

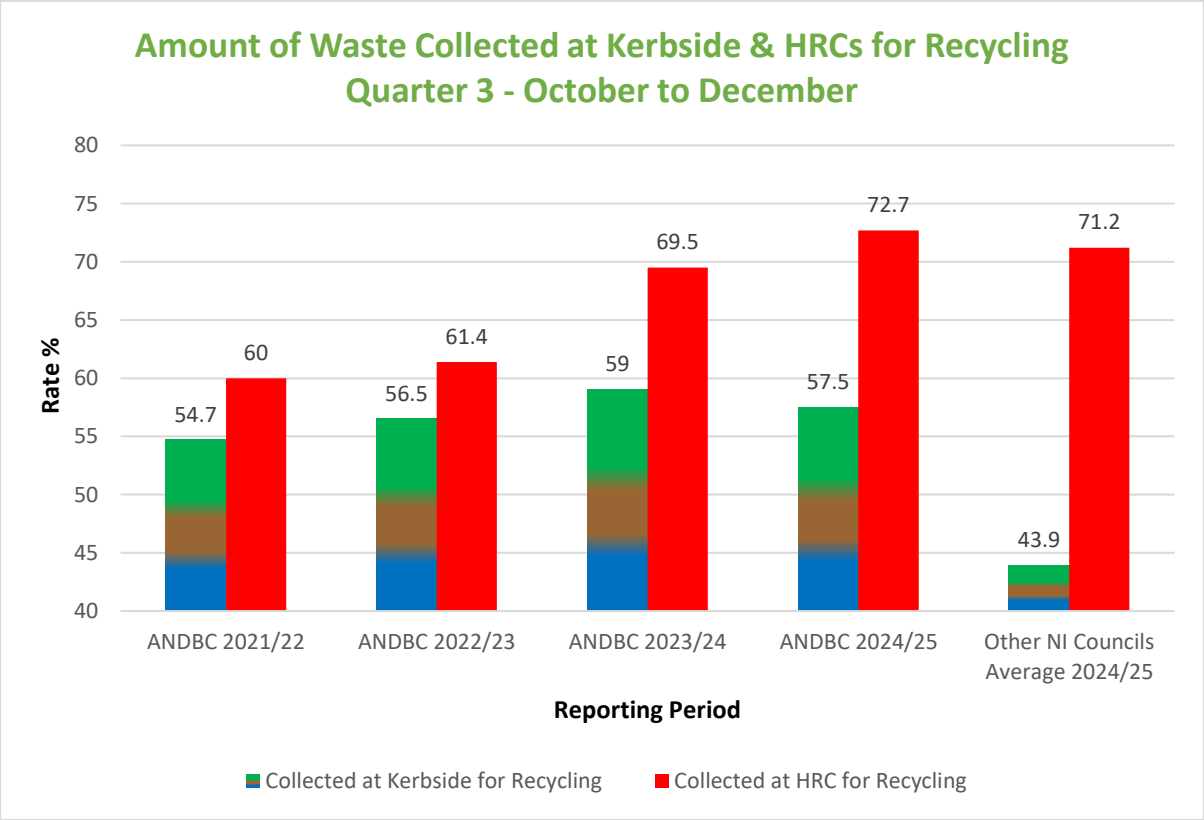
x. We received 10.6% **less** total waste per capita at our HRCs compared to the average for other NI Councils.

xi. We received 15.6% **less** residual/landfill waste per capita at our HRCs compared to the average for other Councils.

xii. The proportion of waste collected at our HRC sites for recycling was **higher** than the average for other Councils – 72.7%, compared to an average rate of 71.2% for other Councils.

xiii. We collected 7.3% **more** waste per capita from homes through our kerbside bin collection services compared to the average for other Councils.

xiv. The proportion of waste collected for recycling through our kerbside bin collection system was significantly **higher** than the average for other Councils – 57.5%, compared to an average of 43.9% for other Councils.



2.0 Operational Performance Improvement Measures

2.1 Marketing and Communications Indicators

MC1 – **53** social media posts were issued, with associated engagement/ management of feedback across Waste and Recycling on ANDBC corporate channels. Topics included Recycling Week, International E-Waste Day, Holiday Bin Collection dates, Christmas Recycling, Service messages and competitions.

Not Applicable

1 x press release issued (22/10/24) [Council Accepts Used Vapes at all Household Recycling Centres - Ards and North Down Borough Council]

MC2 – 9 Bin-Ovation 'News and Info' articles were published, 10 Bin-ovation 'Push Notifications' issued and 2781 Bin-ovation downloads recorded.

MC3 – Officers delivered 13 community and engagement events, talking to over 580 people.

- 5 x Schools/Nursery's
- 1 x Positive Ageing Roadshow
- 1 x Information stall
- 3 x Scout/Brownie groups
- 3 x Other

2.2 Household Recycling Centre Indicators

HRC1 – Volume of blue bin recyclable materials separated from mixed waste by residents on-site: 800,300 litres.

Not Applicable

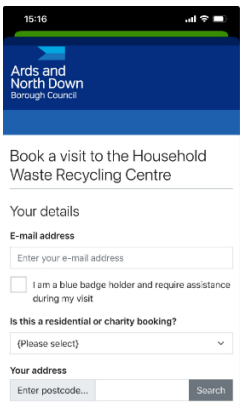
This equates to approximately 33 tons of blue bin waste; whilst this is a relatively modest weight of material, it represents a very large/visible volume of recyclable waste extracted from bags of mixed waste which was initially intended to be placed landfill skips at HRCs. A collateral benefit of this practice of requiring removal of blue bin recyclables from black bags of mixed waste before using the landfill skip is that it should help to 'educate' householders - promoting more efficient separation of waste in the home and greater use of blue bins at the kerbside.

This represents just one type of recyclable waste category which was prevented from entering landfill skips at HRCs as a consequence of our more focused attention to supervision of landfill skip access; many other recyclable waste types will also have been prevented from entering the landfill skips as reflected in KPI, HRC3.

HRC2 – Number of visitors turned away from site: 800
This is a significant number in itself, but it is likely to be the case that a significant number of out of Borough residents will have avoided coming to our sites because of the widely publicised focus upon checking ID for everyone entering and those turned away will in all probability avoid further attempts to enter and use our HRCs; the impact of this will also be reflected in HRC3 and other KPIs.

HRC2a – Number of HRC bookings: 70,843

HRC2b – Average number of HRC visits per household: 0.99 (averaged across the 71,907 households in the Borough)



HRC3 – % change in tonnage of total waste received at HRCs (compared to same period in baseline year 2021-22)

Not Applicable

- We experienced a **33.7% decrease** in the total amount of waste received at HRCs, from 6875T to 4555T.

HRC4 - % change in tonnage of waste received for landfill at HRCs (compared to same period in baseline year 2021-22)

- We experienced a **54.3% decrease** in the amount of waste received for landfill at our HRCs, down from 2727T to 1245T.

HRC5 - % change in tonnage of waste received for recycling at HRCs (compared to same period in baseline year 2021-22)

- We experienced an **20.2% decrease** in the amount of waste received for recycling at our HRCs, down from 4148T to 3310T.

HRC6 - % change in proportion of HRC waste materials collected for recycling (compared to same period in baseline year 2021-22)

- We experienced a **12.7% increase** in the proportion of all waste received at HRCs which was collected for recycling, up from 60% to 72.7%.

2.3 Kerbside Household Waste Collections Indicators

KS1 – Number of recycling alert stickers applied to grey bins (yellow): 2187

KS2 – Number of recycling alert stickers applied to grey bins (amber): 154

KS3 – Number of recycling alert stickers applied to grey bins (red): 76

KS4 – % change in tonnage of total waste collected at kerbside (compared to same period in baseline year 2021-22)

- We experienced a **3.7% increase** in the total amount collected at the kerbside, up from 13,085T to 13,571T.

KS5 - % change in tonnage of grey bin waste collected at kerbside for landfill (compared to same period in baseline year 2021-22)

- We experienced a **2.9% decrease** in the amount of grey bin waste collected, down from 5934T to 5762T.

Not Applicable

KS6 - % change in tonnage of waste collected at kerbside for recycling (compared to same period in baseline year 2021-22)

- We experienced a **9.2% increase** in the amount of waste collected at kerbside for recycling, up from 7151T to 7809T.

KS7 – % change in proportion of kerbside waste materials collected for recycling (compared to same period in baseline year 2021-22)

- We experienced a **2.8% increase** in the proportion of kerbside waste that was collected for recycling, up from 54.7% to 57.5%.

2.4 Summary and Trend Analysis of Indicators

Indicator Reference	Monitoring Period 7 (July 2024 – September 2024)	Monitoring Period 8 (October 2024 – December 2024
MC1 Social media posts	20	
MC2 Print press and online articles	3	
MC3 Engagement events/sessions	12	13
HRC1 Blue bin waste (litres)	640,660	800,300
HRC2 Visitors denied entry	844	800
HRC2a No. of bookings	85,381	70,843
HRC2b Average no. of HRC visits per household in the Borough	1.19	0.99
HRC3 Total HRC waste compared to same period 2021/22	31% Decrease	
HRC4 Landfill skip waste compared to same period 2021/22	52% Decrease	
HRC5 Recycling skip waste compared to same period 2021/22	19% Decrease	

Not Applicable

HRC6 Proportion of HRC waste collected for recycling compared to same period 2021/22	10.8% Increase	
KS1 Yellow warning stickers on grey bins	2837	2187
KS2 Amber warning stickers on grey bins	224	154
KS3 Red warning stickers on grey bins	112	76
KS4 Total kerbside waste compared to 2021/22	No change	
KS5 Grey bin waste compared to 2021/22	12% Decrease	
KS6 Kerbside waste collected for recycling compared to same period 2021/22	10% Increase	
KS7 Proportion of kerbside waste collected for recycling compared to same period 2021/22	4.8% Increase	

2.5 Summary Analysis of Indicators

This report confirms continued improvement in our sustainable waste resource management performance. Following the changes to our waste service model design and the associated education and engagement campaigns, we are experiencing sustained falls in the amount of landfilled waste as well as improved recycling rates relative to the position in our 2021/22 baseline year. During this reporting period, we experienced:

1. Sustained falls in the total amount of landfill waste both at HRCs and kerbside. In total, we received/collected 1,654 tons less of landfill waste at kerbside and HRCs over the 3-month reporting period compared to the same period in the baseline year of 2021/22; at prevailing residual waste disposal cost, **this represented a £191,748 landfill saving (plus other handling and transport cost savings)**.

Not Applicable

2. Falls in the total amount of waste collected at both HRCs and kerbside. In total our municipal waste arisings **fell by 9.6%** compared to the same period in 2021/22; across other Councils waste arisings fell by just **3.8%.**
3. A significant further rise in our recycling rate at HRCs; the percentage of materials collected for recycling at our HRCs rose by **12.7%** compared to the same period in the baseline year of 2021/22. **Our overall Borough household waste recycling rate was 5.1% higher than the same period in 2021/22.**

Whilst the information set out in this report is very encouraging indeed and reflects a lot of hard work and dedication on the part of our waste and recycling teams, we undoubtedly have much further progress to make if we are to have any chance of ultimately reaching the 70% recycling target for 2030 that is laid down in the Climate Change Act (Northern Ireland) 2022. Continued bedding in and ongoing careful management of the new booking system for HRC access, the ongoing review of our kerbside collections model and a future strategic review of our HRC capital assets, will be critical.

It is important to reiterate that further 'step change', sustained improvements in both our HRC and kerbside recycling rates will be required to move us towards the new 70% target.

The graphic at the top of page 3 (Household Waste Recycling Rate Trends) of this report illustrates that whilst we have achieved a significant and steadily growing improvement in our HRC recycling rate over the past 3 years, we have not seen the same pattern in relation to our kerbside recycling rate. This is indicative of the fact that whilst we have developed and implemented a service transformation programme for our HRCs, we have not yet progressed with the implementation of a new kerbside waste collections model.

RECOMMENDATION

It is recommended that the Council notes the report.

ITEM 9

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Head of Assets and Property Services
Date of Report	28 May 2025
File Reference	65281
Legislation	
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Christmas Lighting 2025
Attachments	

Members will be aware of a number of proposals in relation to Christmas lighting/trees in 2025, and this report provides a brief progress update to Members on these.

Bangor Lighting
As per the NoM agreed in April 2025, officers have been tasked with investigating the feasibility of festoon lighting, crossing the road at high level, along Main Street, Bangor. Officers have been liaising with DfI representatives and are currently working through the requirements to apply for necessary DfI approval. Once these set of requirements have been confirmed, officers will prepare a short list of potential lighting options and present them to the City Advisory Group for a decision based on their preference. At this stage however, it is important to note that final approval of an application to DfI is not guaranteed.

Newtownards Artificial Tree
A sum of £20k for an artificial tree for Conway Square was included in budgets as part of the rates setting process. Officers have approached our tendered supplier for

Not Applicable

a quote and a visual representation of the selected tree is included below. The Newtownards Chamber of Trade has been consulted on this proposal and is very supportive of it.

Costs/Specification for this tree are:

- 9.3m Artificial Christmas Tree (Dressed); comes built in sections with lights and baubles pre-installed: £13,950
- Tree topper: £600
- Installation & Removal: £2,000

Total cost £16,550*.

* Note that the installation and removal cost is an annual cost that must be budgeted for in future years.

It should also be noted that the same budget has been included in the 2026 capital plan for a replacement artificial tree for Bangor.

Other Borough Towns
Officers have already begun planning trips to a number of forests in the hope of securing better quality trees for this year. Each year it becomes more difficult to source trees of appropriate size and quality, but by booking early the chances are maximised.

Furthermore, as part of the agreed Notice of Motion relating to lighting enhancements for High Street, Bangor, officers will be working to establish any learning points from the Bangor pilot scheme and will meet with the various Town Advisory Groups (TAGS) to establish potential for improvements in their locations in

Not Applicable

time for Christmas 2026. Budgets to cater for such enhanced schemes will be proposed as part of the 2026/27 estimates process.

RECOMMENDATION

It is recommended that the Council notes the above proposals in relation to the Christmas Lighting planning process.

ITEM 10

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Head of Assets and Property Services
Date of Report	20 May 2025
File Reference	50002
Legislation	Climate Change Act (Northern Ireland)
Section 75 Compliant	Yes ☐ No ☐ Other ☐ If other, please add comment below:
Subject	Sustainable Energy Management Strategy Update Q4 2024-25
Attachments	Appendix 1 - Updated Sustainable Energy Management Strategy Action Plan

Background

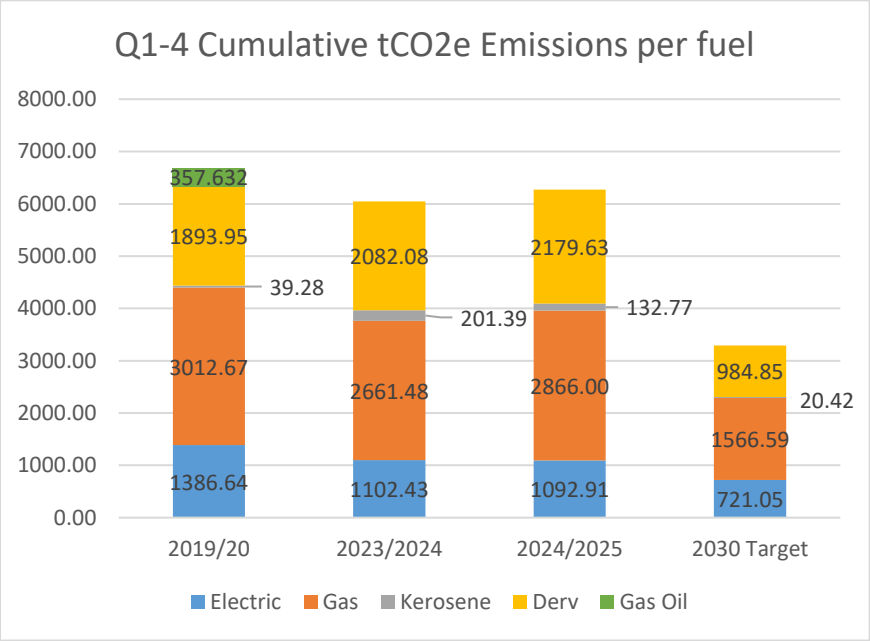
In June 2024 the Council agreed the Sustainable Energy Management Strategy and Action Plan. One of the actions within the Plan was to “Improve governance arrangements to ensure that energy management has effective oversight and accountability within the Council.”

Improving oversight and accountability within the Council for energy management will ensure that consumption performance and the implementation of the Strategy and this action plan will be continuously monitored. Improved monitoring and governance will improve energy performance by ensuring actions are effectively implemented and consumption trends routinely monitored, which should result in reduced consumption, costs, and emissions.

Reporting Periods
This report is part of our ongoing quarterly series, tracking energy consumption against our 2019/20 baseline and highlighting current and upcoming energy-saving initiatives.

Period:	Reported in:
Quarter 1: April to June	September
Quarter 2: July to September	December
Quarter 3: October to December	March
Quarter 4: January to March	June

Energy Consumption for this Period



Electricity

As shown in the graph above, electricity consumption has continued to trend downwards, with a cumulative reduction of 21.2% across Q1–Q4, resulting in a 293.72 tCO_2 emissions reduction compared to our 2019/2020 baseline year.

This progress reflects our ongoing efforts to improve energy efficiency, including the phased replacement of older equipment with modern, energy-efficient alternatives and promoting energy-conscious behaviours among staff.

Q4 also showed a notable reduction compared to the baseline year. We aim to build on this momentum by implementing further energy-saving measures and continuing to raise awareness among both new and existing staff about the importance of energy conservation in helping us meet our 2030 emissions reduction target.

Natural Gas

Natural gas consumption has seen a cumulative reduction of 5% across Q1–Q4, resulting in a 146.67 tCO_2 emissions reduction compared to our 2019/2020 baseline year.

This improvement is largely due to ongoing optimisation efforts, including the review and adjustment of boiler time controls and temperature settings. Additionally, we have been assessing and fine-tuning the Building Management System (BMS) controls and parameters in selected buildings to enhance efficiency.

Kerosene

Kerosene oil stocks are typically procured at the end of Q4 each year in preparation for increased demand during the spring season. This advance stocking ensures adequate supply when usage rises. However, we suspect that kerosene oil stocks ahead of the 2019/20 spring season were not procured as usual, likely due to disruptions caused by the pandemic. These may have included supply chain issues, reduced operational capacity, or shifts in demand forecasting, leading to a shortfall in expected inventories.

Our analysis shows that kerosene consumption has seen a cumulative reduction of 41% across Q1–Q4, resulting in a 68.62 tCO_2 emissions reduction compared to 2023/24. This improvement follows the installation of more efficient boilers and upgraded heating controls.

Our kerosene stock data however shows an apparent increase in kerosene purchased during the past year, compared to the baseline 2019/20 year, for the reasons outlined above.

Diesel

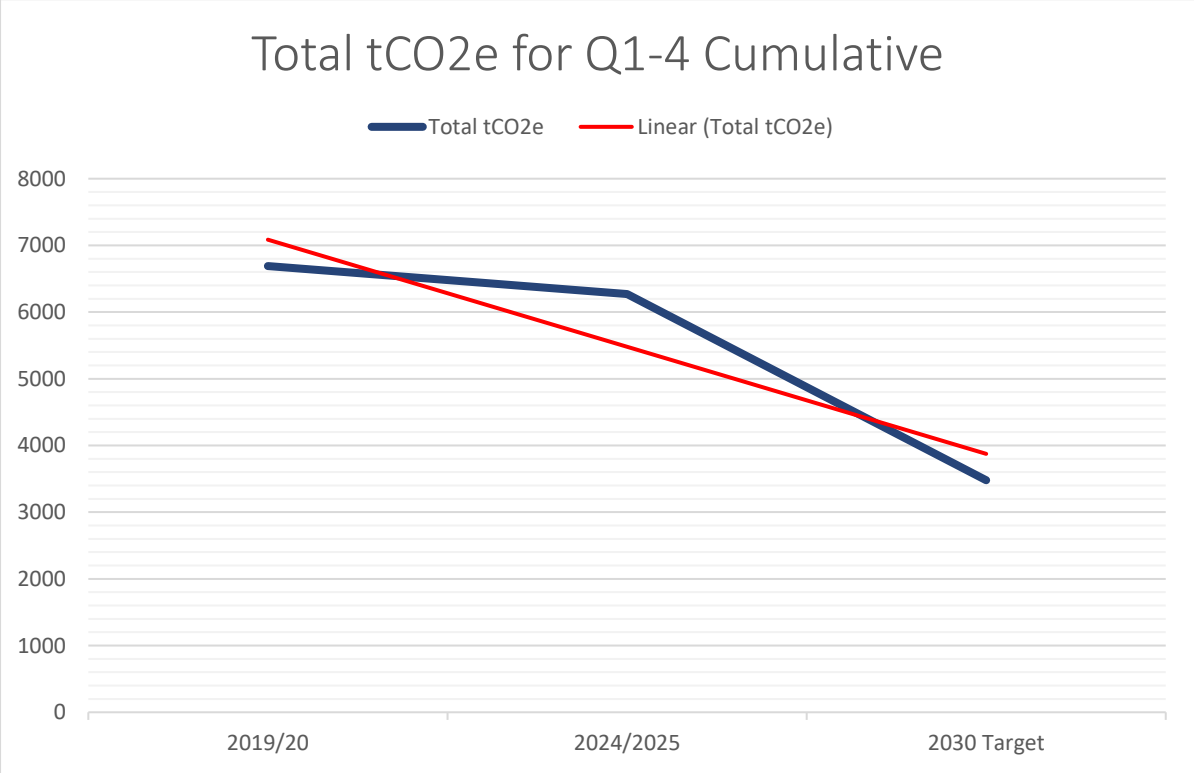
Carbon emissions figures for gas oil (red diesel) used in small plant and Derv (diesel) used in the road fleet have been combined to provide a cumulative total for 2019/20 diesel emission, in line with the 2022 reform on red diesel usage.

Considering the combined reporting of diesel consumption, overall usage has decreased by 3.2% across Q1–Q4, leading to a reduction of 71.95 tCO_2 emissions compared to the 2019/20 baseline year.

Notwithstanding the above situation regarding comparison of 2024/25 with the baseline year of 2019/20, diesel usage has increased over the past year compared to 2023/24. This is primarily due to an additional 38,069 miles travelled by the waste collections service fleet – equating to an additional 26593 litres consumed and 70.87 tCO2 emitted. Fleet operational efficiency measures have been implemented to help offset fuel usage; however, this rise in mileage has directly contributed to the higher fuel consumption identified during 2024/25 compared to the previous year.

Targets and Trends

The graph below illustrates our overall fuel emissions for each reporting period, set against the 2030 target. The linear trendline represents the trajectory required to achieve our 48% emission reduction target by 2030. A modest level of overall progress has been made towards achieving our emissions reduction goals. While we are currently behind the linear trendline target, with continued efforts particularly regarding transition to a greener fleet, officers believe that we will achieve our long-term targets.

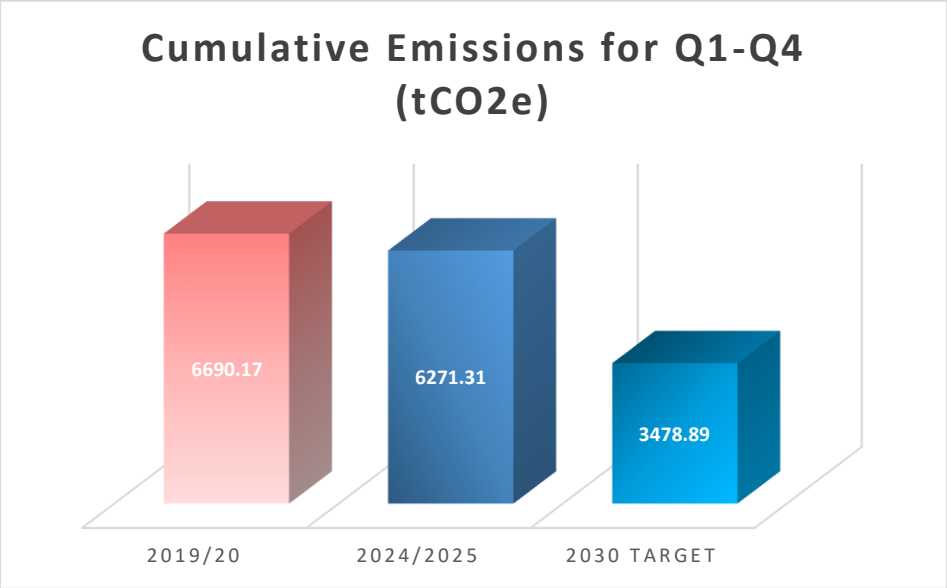


Consumption Costs

The table below presents fuel consumption costs for each year, along with the corresponding unit prices. This allows for a comparison of both usage and changes in market rates over time.

Quarter 4	2019/20	£/unit	2024/2025	£/unit
Utility				
Electric	£223,294	£0.16	£417,662	£0.30
Gas	£412,515	£0.09	£318,444	£0.07
Kerosene	£1,539	£0.42	£14,046	£0.55
Derv	£168416	£1.00	£228,031	£1.15
Gasoil	£14,283	£0.52	N/A	N/A
Total Cost	£820,047		£978,183	

Cumulative and Historic Combined Target for 2024/2025



The chart above illustrates the cumulative emissions totals for Q1–Q4 in our baseline year (2019/20), the current reporting year (2024/25), and our projected target for Q1–Q4 in 2030. To date, we have achieved a 6.2% reduction in emissions compared to the 2019/20 baseline. To meet our goal of a 48% reduction by 2030, a further decrease of approximately 41.74% will be required over the next five years.

Highlights of Energy Saving Initiatives Taken in This Reporting Period

- Controls Maintenance at Londonderry Park and Hamilton Hub.
- LED Lighting Replacement schemes at Community Centres.
- High efficiency boiler replacements to a number of communities properties.
- Early stages of pre-planning for Data Centre at ABMWLC and Aurora for heat recovery to provide free pool water heating.
- Installation of EV charging points for small and medium vans in fleet at NRD now complete.
- Installation of Solar PV panels at both Walled Garden Depot and North Road Depot Portacabin
- Progress started on the project to install 100kWp Solar PV at North Road Depot main building.

Members should refer to the attached updated Sustainable Energy Action Plan for comprehensive updates on all noted actions.

Future Measures Currently Under Consideration/Planning

- Use the Council's monthly newsletter to share energy-saving best practices with staff, encouraging their active participation in further reducing energy consumption.
- Replacement of boilers at various Council properties and upgrade of control systems.
- Lighting control and LED replacement projects at numerous Council properties.

- Solar PV Installation at chosen Council properties.
- Park lighting LED installation.
- Walk-round surveys of properties to examine and review existing controls and settings.
- Surveys of existing buildings for insulation installation to be carried out and implemented.
- Energy targets and KPI's for service unit managers to be agreed for 2025/2026.
- Possible introduction of Automatic Meter Reading (AMR) systems in highest energy consuming buildings.
- Installation of double-glazed windows at Church Street Offices.

RECOMMENDATION

It is recommended that Council notes the latest quarterly sustainable energy management strategy update.

Appendix 1

Ards and North Down Borough Council Sustainable Energy Management Strategy **ACTION PLAN**

This action plan has been divided into the following sections/ themes:

1. Enabling Actions
2. Generic/ Behavioural Actions; and
3. Building Specific Actions

This action plan shall be for a three-year period, after which a revised action plan will be developed with further details.

It is envisaged that the follow up action plan will include more specific actions in terms of buildings and systems improvements i.e. after the actions within this plan related to further detailed surveys and feasibility studies are completed.

This initial action plan focuses on getting the systems, governance, and oversight arrangements in place within the Council to ensure effective sustainable energy management, with some specific actions also included which were identified during the high-level energy surveys.

Further update reports will include costs and timescales for the actions.

The actions presented within each of these sections/ themes are in order of priority and benefit in terms of consumption and carbon emissions reduction potential.

The actions are also classified as follows:

1. Urgent- within 6-9 months of the Actions Plan being endorsed.
2. Short Term- within 12 months
3. Medium Term- -within 24- 36 months

The Action Plan will be subject to annual review. A Progress Report shall be prepared, presented, and approved by Environment Committee.

Enabling Actions

Theme	Priority/ Lead Responsibility	Action	Rationale/ Notes	Benefit	Progress
Enhanced Energy Management Governance	**Urgent** Head of Assets & Property Services Director of Environment	Improve governance arrangements to ensure that energy management has effective oversight and accountability within the Council.	Improving oversight and accountability within the Council for energy management will ensure that consumption performance and the implementation of the Strategy and this action plan will be continuously monitored. Energy Management should be a standing agenda item to allow it to be regularly reviewed through the Council's 'Climate Change Working Group.	Improved monitoring and governance will improve energy performance by ensuring actions are effectively implemented, consumption trends routinely monitored, which should result in reduced consumption, costs, and emissions.	Ongoing
Formal Energy and Carbon Management Policy	**Urgent** Director Of Environment	Develop a formal policy for the Council to include a requirement for space heating to be switched off during a predetermined period during the summer.	Having a formal approved policy will support energy and carbon management efforts as well as demonstrate the Council's commitment to reducing energy consumption and carbon emissions.	Enhanced Reputation (the Policy should be made publicly available) Should support efforts/ actions to reduce consumption, costs, and emissions.	All heating switched off in Council offices between May and September, with the exception of any sporadic period of cold. Policy to be drafted for review and approval
Energy check/ audit programme	**Urgent** Director of Environment	Introduce an energy check/ audit programme to introduce a structured review process for energy and carbon management in prioritised buildings.	Having a programme where energy checks/ audits are completed will proactively monitor performance. Key areas to review during these checks/ audits include: o Time and temperature set points on heating controls and building management systems (e.g. AHUs, boiler heating timers etc.)	Reduced energy consumption and costs A thorough, robust, proactive audit programme has the potential to realise considerable savings in consumption, costs, and emissions. Estimated realistic savings of between 3-5% of energy costs.	Ongoing

			○ Lighting and equipment left on unnecessarily. ○ Out of hours consumption (where aM&T systems have been installed or where half hourly electricity data is available.	<table><tr><td>Savings</td><td>Cost</td><td>Carbon</td></tr><tr><td>3%</td><td>£62k</td><td>124T</td></tr><tr><td>5%</td><td>£104k</td><td>207T</td></tr><tr><td></td><td></td><td></td></tr></table>	
Energy and Carbon Awareness	**Short term** Director of Environment Director of Corporate Services Development and Administration	Development and roll out of an energy and carbon awareness campaign to promote energy efficiency and carbon emissions reduction. Key content could include: ○ Lighting and equipment switch off messaging. ○ Heating set points ○ Other key behavioural messages The campaign should be designed and delivered to the following: ○ All staff, via generic sessions ○ Focussed sessions and materials for prioritised staff/ buildings i.e. those with high consumption e.g. leisure centres. This should be completed to complement the Council's existing Sustainability Communications Programme	Employee engagement in energy efficiency and carbon reduction has many benefits: ○ Energy savings: Saving energy saves money and reduces an organisation's carbon footprint. ○ Employee satisfaction: participation in employee engagement schemes can make employees feel valued. Knowing that their organisation cares about sustainability can improve employee satisfaction and employee retention. ○ Reputation: an employee engagement/ awareness scheme around sustainability shows that an organisation cares about both its employees and the environment. This can improve an organisation's reputation and improve employee attraction. The campaign should comprise information/ training sessions as well as the design and display of awareness messages e.g. posters/ signage with equipment and lighting switch off when not in use. Whilst the priority should be in higher consuming buildings, the messaging should be displayed throughout the Council Estate.	A well implemented employee engagement scheme can lead to energy savings of approximately 5-10%. <table><tr><td>Savings</td><td>Carbon</td></tr><tr><td>5%</td><td>207T</td></tr><tr><td>10%</td><td>414T</td></tr></table> It could also lead to: ○ Employee satisfaction ○ Council reputation The campaign would also support the related commitments and actions within the Council's wider 'Corporate Plan' and 'Roadmap to Sustainability'	Energy Officer to progress development of presentations to the different groups, along with a mandatory e-learning module for all staff with access to a computer for energy efficiency training. Energy Officer has engaged Energy Saving Trust to explore delivery of accredited, high-quality e-learning content Energy consumption figures shared with Leisure and Community Centres to show big users.

Generic/ Behavioural Actions

Theme	Priority/ Responsibility	Action	Rationale/ Notes	Benefit	
Sustainable energy design	**Urgent** Director of Place plus Head of Strategic Capital Unit	Develop a Capital Projects Sustainability Policy to be agreed by Council	Consideration, in particular, should be given to the introduction of specifications which should include the following key criteria, subject to business cases: ○ Zero/ Low carbon technologies ○ Effective zoning e.g. of heating and lighting systems ○ Energy and carbon performance targets e.g. as set out in the BREEAM performance standard. ○ Effective commissioning of key plant and equipment e.g. AHUs, low carbon/ renewable technologies ○ Installation of efficient equipment, fittings, and controls e.g. boiler upgrades, LED lighting, PIR and daylight sensors, smart heating programmers, variable speed drives (VSDs) on pumps etc. Building sustainable structures not only reduces their environmental impact but also offers economic advantages. Sustainable buildings are more efficient and cost less to operate than conventionally built buildings.	Enhanced Corporate Reputation Consumption and carbon emissions reduction and cost savings. Although the upfront costs can be higher for more sustainable new builds and refurbishments, a newly built green asset has been found to have 14% lower operational costs over five years when compared to a conventionally designed and constructed building (World Green Building Council).[1] In addition, the briefing paper 'Assessing carbon emissions in BREEAM' published in 2016 demonstrated that the average CO2 savings for a BREEAM assessed building is 22%, whilst a BREEAM Excellent building is expected to reduce carbon emissions by 33% when compared to conventional builds.	We are implementing lighting controls and LED fittings in properties as and when we can. We are also implementing controls installations in larger consuming buildings to help reduce electric costs. Works completed to install new boilers, hot water vessel and zone valves added to NRD and are commissioned and operational. Future works to be aligned with 10-Year programme for M&E infrastructure renewal

[1] https://bregroup.com/breeam-news/six-ways-to-get-the-most-out-of-breeam/

Existing/ historic energy improvement quotations	**Urgent** Director of Environment	Complete an exercise to gather all energy efficiency related upgrade quotations e.g. LED lighting upgrades, which should then be reviewed with those deemed beneficial taken forward.	During the completion of the review and auditing project, it was advised that quotes had been received in the past which were not taken forward. Such quotes received would include estimated cost savings and payback. Reviewing these and revisiting them where the projects are deemed feasible will result in consumption and cost savings. LEDs are more energy efficient that traditional halogen bulbs. They also last five times longer and use 80% less energy to produce the same amount of light. (Energy Saving Trust)	Consumption and carbon emissions reduction and cost savings should projects be implemented. Considering that lighting can contribute to a third of a building's overall electricity consumption, transitioning to LED lighting is a swift and budget-friendly method to cut costs. For example, a traditional 600×600 4x18w fluorescent fitting, when swapped with a 600×600 30w LED panel, can reduce the related electricity consumption by approximately 55%. In many applications, the volume of fittings in-situ can multiply these savings even further. Adding lighting controls, such as dimming, and PIR sensors can also increase these savings further.	Ongoing Assets & Property progressing car park lighting schemes currently.
Improve energy and carbon performance reporting	**Urgent** Director of Environment	Improve availability of energy consumption and carbon emissions information to high consuming building managers e.g. Leisure Centres	Examples of information which could be provided include: • Monthly reports on consumption and cost • Updates on work being completed e.g. related to actions contained within the action plan	This should promote and compliment energy awareness in the Leisure Centres and a sense of ownership to assist with energy management. Improved high level oversight of energy and	Ongoing Energy dashboard is progressing well. Year against year comparison capable within the dashboard.

		Improve reporting of energy and carbon performance through the Climate Change Working Group		carbon management through the Climate Change Working Group should increase the likelihood of energy improvements being realised.	Sub-dashboards are being created for the different department to easily view their own figures and compare to previous years.
Building insulation	**Short term** Director of Environment	Complete detailed building insulation reviews to identify opportunities to upgrade to improve efficiency	During construction, Council policy has been to typically to install insulation to meet but not exceed, the levels stipulated by the Building Control regulations at that time. These levels have varied over time and older buildings often suffer from inadequate insulation by modern standards. There therefore may be significant opportunities to complete insulation upgrades across the Council to reduce heat loss and improve energy efficiency. Works and reviews should focus in on older buildings and those with higher heating related energy consumption. Improvements to insulation levels in buildings will also increase the potential to lower temperature set points in heating boilers due to the reduction in heat loss from those buildings.	Reduced heating related energy consumption, costs, and carbon emissions. Estimated savings of 10% across 30% of the Council's Estate/ Building Stock heating costs (Natural Gas & Kerosene). Savings • Costs £64.5k • Carbon 255 tonnes	Ongoing Insulation to be upgraded as part of any significant refurbishment project. Energy Officer to carry out building surveys on existing insulation levels and recommendation reports.
Space Planning/Rationalisation	**Short term** Corporate Leadership Team	Develop an effective space rationalisation regime to complement existing work on flexible working arrangements.	Rationalisation of office and other Council space should be prioritised where possible to poorer energy performing buildings. Energy efficiency of existing building stock should be a key consideration for any space rationalisation efforts.	Closing down inefficient buildings/ areas will result in low-cost reduction in energy-related running costs, reducing consumption and carbon emissions	Ongoing as part of corporate centralisation strategy

<table>
<tr><td></td><td></td><td></td><td>No energy efficiency expenditure should be completed on buildings/ areas identified for closure (including those ‘at risk’)</td><td></td><td></td></tr>
<tr><td>Automatic Monitoring & Targeting (a M&T)</td><td>Medium term (Short term for the trial installation)

Director of Environment</td><td>Install an aM&T system in prioritised buildings on key energy supply meters to monitor consumption closely and proactively on a regular basis in targeted buildings.</td><td>aM&T is a key tool to proactively monitor and manage energy consumption.

Having aM&T systems available will vastly improve the Council’s energy management efforts through the timely identification of abnormal consumption patterns allowing them to be investigated and addressed quicker, resulting in reducing unnecessary consumption and costs.

It is recommended that such a system is installed in one trial building to assess suitability e.g. on the main incoming energy supplies in one of the leisure centres.

Linked to the need for dedicated energy management staff/ resource, aM&T systems are effective tools but only where there is enough time for them to be interrogated on a regular basis.

aM&T systems can be purchased outright or can be installed as part of a monthly management arrangement with a specialist consultant who install the system and monitor it on a client’s behalf.</td><td>It is estimated that this technology can help identify energy savings of 4 – 20% or more, with average cost savings of 10-15% being typically realised.

For the Council Estate, estimated carbon reduction would be on the lower side of the typical savings (estimated as 5%-10%) primarily due to the variance in the Estate’s building stock.

<table><tr><td>Savings</td><td>Carbon</td></tr><tr><td>5%</td><td>207T</td></tr><tr><td>10%</td><td>414T</td></tr></table></td><td>Ongoing

Further investigation into most suitable buildings required.

Investigation of costs, energy savings and payback period required for top consuming buildings initially, and then progress to other buildings.

Initial costings required to possibly address within 2025/26 budget.</td></tr>
</table>

Wind Turbine Generator feasibility study	**Medium term** Director of Environment	Complete an options appraisal/ feasibility study on the potential to install wind turbine generators at Council sites.	A specialist consultant should be engaged with knowledge of planning implications to complete such an appraisal/ study.	Increased use of renewable electricity, resulting in reduced grid dependency, cost reduction and carbon emissions reduction	Further investigation required.

Building Specific Actions

Note: buildings referenced in the Action column are presented in order of focus/ priority)

Theme	Priority/ Lead Responsibility	Action	Rationale/ Notes	Benefit	
Building Management Systems	**Urgent** Director of Environment	Complete detailed BMS reviews at the following locations with focus on energy efficiency to assess potential to reduce consumption through time settings, temperature settings, the installation of additional controls etc. ○ Bangor Sportsplex ○ Comber Leisure Centre ○ Town Hall, The Castle	High level reviews of existing BMSs in the locations identified have the potential to reduce energy consumption considerably. By way of example, it was noted that the Air Handling Units (AHU's) associated with the main pool area at Ards Blair Mayne were running 24 hours per day. There is an opportunity here to reduce these 'out of hours' i.e. when the facility is closed, and the pool cover is on. Similarly, there would also be potential to ramp back on the pool recirculation pumps 'out of hours. The completion of more focussed BMS audits/ reviews are likely to identify more opportunities to reduce consumption, costs, and emissions.	Consumption, cost, and emissions reduction.	Recently completed works to upgrade BMS controls for zoning of NRD. Work now required at Ards Blair Mayne, Bangor Sportsplex Comber LC and Town Hall. Additional works to be aligned with 10-Year programme for M&E infrastructure renewal Explore the development of a framework to deliver improvements in BMS operational efficiency
Boiler temperature settings	**Short term** Director of Environment	Complete exercises at each of the following locations to optimise the temperature settings on the heating to maximise the efficiency of the condensing boilers: ○ Comber Leisure Centre ○ Queen's Leisure Complex ○ Donaghadee Community Centre	An ideal design temperature for a condensing boiler commercial heating system would be 65°C supply, 45°C return. The lower return temperature means it can operate in part-condensing mode all year round. Although this is the most efficient setting other factors need to be considered. Such factors include: ○ how well the building is insulated, ○ the pipe runs throughout the building/ building size; and	Reduced consumption, costs, and emissions	Ongoing Propose aligning this initiative with scheduled major building insulation works to maximise operational efficiency

		○ Kilcooley Community Centre ○ Waste Transfer Station, Baloo Drive ○ Ards Blair Mayne (pool water and pool hall temperatures)	○ potential for legionella risk. To complement this action, it is therefore vital that building insulation is also upgraded to prevent heat loss and support the lowering of temperature set points on boilers. It is recommended that set points are gradually lowered e.g. by 1°C each time, with periods of monitoring between each lowering until the set points gets to an optimum point in terms of lower temperature set point and building comfort.		
Solar Reflective/ Control film on Windows	**Short term** Director of Environment	Install Solar Reflective/ Control film on Windows on the Church Street building.	The identified buildings were very warm during the audit visits, with staff members mentioning the overheating and comfort issues. Additional portable air conditioning had been introduced to try to address the issue (with the associated energy consumption implications). The application of solar film to the windows in those areas experiencing overheating will reduce solar gain and will also retain heat, thereby improving both comfort levels and efficiency.	Electricity consumption, costs, and emissions reduction. Film is a widely used solution which can result in up to 1/3 savings on associated cooling requirements/ costs for those spaces which are subject to excessive solar gain. It also has comfort benefits for space users.	New UPVC double glazing is scheduled for installation at this location in Q2 2025/26 (summer), aimed at reducing solar gain and enhancing natural ventilation to support passive cooling. Good practice guidance will be issued to staff to promote effective use of office space for cooling. The need for this initiative will be reviewed following implementation of the above.
Pipework insulation	**Short term** Director of Environment	Complete insulation of pipework at the following locations:	Insulating pipework will reduce heat loss, thereby improving the efficiency of the heating systems	Electricity consumption, costs, and emissions reduction.	Quotes received but deemed no feasible as installation costs far outweighed the

		○ City Hall, the Castle (significant lengths requiring insulation) ○ Ballygowan Village Hall ○ Marquis Hall, Bangor ○ Ards Blair Mayne (fit jackets to sand filters)		Generally, maximum savings of 10-20% can be realised. This however depends on the length of uninsulated pipe run, pipe/ valve size etc.	energy savings its would bring. Possibly look at again in the future if surplus budget available. Insulation was completed at City Hall Bangor previously. Opportunities for improvement will be highlighted during the statutory building surveys. To be aligned with 10-Year programme for M&E infrastructure renewal
Solar PV	**Short term** Director of Environment	Consider the installation of Solar PV at the following locations: ○ Ards Blair Mayne Leisure Centre (add to existing system and check that existing system is operational) ○ Bangor Sportsplex (add to existing system and check that existing system is operational) ○ Queen's Leisure Complex ○ Donaghadee Community Centre ○ Hamilton Road Community Hub	Engage a specialist installer or independent solar consultant to design/ specify systems for each building which optimises the amount of generated renewable electricity used on site, thereby minimising grid electricity use and avoidance of associated carbon emissions. Designs/ specifications should be developed using half hourly consumption/ load data. There is likely to be potential to install additional PV systems at sites with such systems already installed. Consideration should also be given to the 'future proofing' of any installations i.e. to	Increased use of renewable electricity, resulting in reduced grid dependency, cost reduction and carbon emissions reduction	Indicative costs and initial design received for Ards Blair Mayne. Proposal to progress to detailed design for 2025/26. 100kWp installation at North Road Depot in 2025/26. Pre-construction information to be prepared and issued for other selected sites to progress to detailed design for

		○ Manor Court Community Centre ○ Queen's Hall ○ Recycling Centre, Bangor ○ Skipperstone Community Centre ○ Glen Community Centre ○ Portavogie Community Centre ○ Green Road Community Centre ○ Alderman Green Community Centre ○ Kircubbin Community Centre ○ North Road Works Depot ○ Kilcooley Community Centre ○ Whitechurch Cemetery ○ 2 Church Street ○ Clandeboye Cemetery ○ Conlig Community Centre	facilitate the introduction of battery storage systems once the technology is more commercially available.		the 2025/26 business year PV install completed at Walled Gardens Depot in Bangor for cross border grant scheme PV installed at North Road Depot portacabins.
Northern Community Leisure Trust (Serco) Operated Facilities	**Medium term** Director of Environment	Completion of energy assessments for each building/ facility	The completion of the assessments will ensure opportunities to optimise consumption are identified an Due to the nature of the facilities multiple leisure sites and pavilions), these are high consuming buildings and as such have the potential for good energy reduction opportunities to be identified. Efforts should focus on BMS settings and controls on key plant such as AHUs, pumps etc. and the potential to upgrade existing inefficient fittings e.g. lighting as well as	Identification of reduction and other opportunities prior to facility handover and assessment of priority to rectify in terms of energy cost, consumption, and emissions reduction.	Explore the development of a framework to deliver improvements in BMS operational efficiency Engage a specialist external provider to conduct building performance assessments

			introduce/ increase the use of low/ zero carbon technologies such as solar PV.		
Boiler replacement	**Medium term** Director of Environment	Upgrade the following, less efficient heating boilers to improve the efficient use of energy: ○ Comber Adult Learning Centre ○ Green Road Community Centre ○ Groomsport Boathouse ○ Kircubbin Community Centre ○ Manor Court ○ Portavogie Community Centre ○ Queen's Hall ○ Skipperstone Community Centre ○ North Road Depot ○ Ards Blair Mayne (replace existing hot water boilers with plater heat exchangers)	Upgrading to a more efficient heating boiler should result on average 5-10% energy efficiency improvement benefits and subsequent reduction in consumption, costs, and emissions. These upgrades should be prioritised based on consumption and building use/ occupancy levels at each location. Upgrades should be completed after consideration has been given to the fuel switching action point in locations using kerosene.	Consumption, cost, and emissions reduction.	Boilers to be replaced at end of life aligned with 10-Year programme for M&E infrastructure renewal Works completed at Bangor Sportsplex
Low carbon fuel replacement	**Medium term** Director of Environment	Complete a feasibility review to assess potential to migrate to lower carbon fuels at the following locations: ○ Bangor Sportsplex ○ Kircubbin Community Centre ○ Portavogie Community Centre ○ Queen's Hall	The highlighted location using Kerosene as a heating fuel, which is a high carbon fuel when compared to others currently available. Lower carbon options include: ○ Natural Gas- limitations on availability may restrict this option. ○ Propane- this could be utilized where natural gas is not available.	Reduced carbon emissions Currently, LPG costs are comparable with natural gas and kerosene costs. The benefit would be on lowering carbon emissions.	Review will start upon completion of the installation of above boilers. Possible heat pump project at Kircubbin/Portavogie CC due to current UF heating. Feasibility

		○ Skipperstone Community Centre	○ BioLPG- a lower carbon alternative to 'virgin' propane, though it is a higher cost fuel. ○ Electric- electrification of heating in buildings could be considered, particularly along with the installation of solar PV. This action focuses on carbon reduction. Cost savings may be realized but its focus is more on reducing the Council's carbon emissions.	BioLPG costs are approximately 15-20% higher than standard LPG. Carbon emissions associated with standard LPG are approximately 40% less carbon intensive than kerosene. BioLPG is effectively zero carbon rated.	Study to be carried out by APS To be aligned with 10-Year programme for M&E infrastructure renewal To be be aligned Solar PV installation programme to allow electrical consumption to be offset by solar generation.
Lighting upgrades to LED equivalents	**Medium term** Director of Environment	Complete lighting upgrades to LED equivalents (and install PIR/ daylight controls) in the following buildings: ○ Baloo Waste Transfer Station (T5 fittings in the main waste 'shed') ○ Bangor Sportsplex (internal lighting T8 & pitches to LED) ○ Glen Community Centre (T8 fittings) ○ Kilcooley Community Centre (install PIRs to existing LED) ○ Kircubbin Community Centre (T8) ○ Church Street Office ○ Comber Adult Learning Centre	Upgrading to LED lighting as well as introducing automated PIR and/ or daylight sensors will reduce electricity consumption, costs, and emissions. LED fittings also reduce 'whole life' maintenance costs due primarily to their longer life spans.	Electricity consumption, costs, and emissions reduction Typical savings of 30% can be realised through the installation of PIR controls and LED lighting when compared with older fittings.	Lighting controls added to dome area and internally within Ards Blair Mayne to control lights via daylight levels primarily and PIR sensing as secondary control. Detailed design completed at North Road Depot to allow costs to be understood for replacement of remaining fluorescent lights with lighting controls. Currently working through zone by zone to replace light

		○ Conlig Community Centre ○ Alderman George Green Community Centre (PIR) ○ Redburn Community Centre ○ Tower House (PIR) ○ Portavogie Community Centre (PIR) ○ Queen's Hall (PIR) ○ Queen's Leisure Complex (PIR) ○ Manor Court (T5 fittings to be replaced with LED) ○ City Hall, The Castle (existing fittings to be replaced with LED and controls) ○ Ards Blair Mayne (microcell and PIR sensors fitted and time control added) ○ North Road Depot (fit LED lighting to all other areas that currently do not have LED) ○ Aurora (LED replacements of fluorescent and microcell/PIR controls)			fittings and controls at Aurora Leisure Centre, and is ongoing. Opportunities for improvement will be highlighted during the statutory building surveys.
Electric Storage Heaters	**Medium term** Director of Environment	Complete upgrades to more efficient alternatives to existing, aged storage heater units in the following locations:	Move to more efficient storage heaters will reduce consumption.	Electricity consumption, costs, and emissions reduction	Opportunities for improvement will be highlighted during the statutory building surveys.

		○ Ards Arts Centre (partial replacement) ○ North Down Museum ○ Portaferry Market House			To be aligned with 10-Year programme for M&E infrastructure renewal
Glazing upgrades	**Medium term** Director of Environment	Complete glazing upgrades to the following buildings. Install secondary glazing in the following listed buildings: ○ Town Hall, the Castle ○ North Down Museum ○ Portaferry Market House (1st Floor) ○ Tower House	Upgrading glazing at the identified locations will reduce heat loss from the buildings, thereby improving energy efficiency.	Electricity consumption, costs, and emissions reduction. Glazing upgrades from single pane reduces heat loss from the respective areas being upgraded. Up to 15% savings on heating costs in those areas can be realised.	Works to install secondary glazed windows at Church Street offices to commence 2025/26

ITEM 11

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	22 May 2025
File Reference	92009
Legislation	Dogs NI Order 1983 Dogs (Amendment) Act (Northern Ireland) 2011 Clean Neighbourhoods and Environment Act (Northern Ireland) 2011 Litter (NI) Order 1994 Waste and Contaminated Land (NI) Order 1997
Section 75 Compliant	Yes ☐ No ☐ Other ☐ If other, please add comment below:
Subject	NET Activity Report (Q4 - 1 January 2025 to 31 March 2025)
Attachments	Appendix 1 - Number of Service Requests by Type Appendix 2 - Results of Court Proceedings Appendix 3 - List of Fixed Penalties issued by Type and Location Appendix 4 - List of Dog Attack Service Requests Appendix 5 - High Profile Patrols

Not Applicable

Introduction
The information provided in this report covers, unless otherwise stated, the period 1 January to 31 March 2025. The aim of the report is to provide members with details of some of the key activities of the Team, the range of services it provides along with details of level of performance.

Applications to the Neighbourhood Environment Team

Dog Licences - The Dogs (NI) Order 1983
It should be noted that these figures include block licences where one licence can be issued for multiple dogs in specific circumstances.

	Period of Report Jan – Mar 2025	Same 3 months Jan – Mar 2024	Comparison
Dog licences issued during the three months	**4798**	4825	↓

Concessionary licences remain at 83% of dog licences issued over the period. This includes the categories of neutering (£5) / over 65 (Free – 1st dog) / over 65 subsequent dog (£5) and income related benefits (£5). Standard dog licence £12.50 and block licence £32. The application fees are set by statute.

DOG CONTROL – Dog Licences	**2025**	**2024**
Full Cost	**793**	890
Reduced - Neutered	**2449**	2449
Reduced - Benefits	**500**	483
Free – Over 65	**915**	877
Reduced – Over 65 Subsequent Dogs	**117**	112
Block Licence	**11**	14
Exemption (XL Bully - £12.50)	**13**	0
TOTAL	**4798**	4825

Investigations
The Neighbourhood Environment Team responds to a range of service requests. In terms of time spent, some types of service requests will be completed immediately whilst others require a longer-term strategy to find a resolution. The breakdown within the categories for the types of service requests received have been detailed in Appendix 1.

SERVICE REQUESTS			
	Period of Report Jan – Mar 2025	Same 3 months Jan – Mar 2024	**Comparison**
DOG CONTROL	**238**	371	↓
ENVIRONMENTAL CONTROL	**447**	441	↑

Not Applicable

Fixed Penalty Notices
The Neighbourhood Environment Team issued 64 Fixed Penalty Notices for various environmental offences in the Borough.

FIXED PENALTY NOTICES			
	Period of Report Jan - Mar 2025	Same 3 months Jan – Mar 2024	**Comparison**
DOG CONTROL	**39**	71	↓
ENVIRONMENTAL CONTROL	**25**	36	↓

Prosecutions
Breakdown of cases being prosecuted through the Court.

PROSECUTIONS			
	Period of Report Jan – Mar 2025	Same 3 months Jan – Mar 2024	**Comparison**
DOG CONTROL	**10**	2	↑
ENVIRONMENTAL CONTROL	**6**	3	↑

Educational Programme
Project E.L.L.A. (Environment, Learning, Lifestyle, Action) is designed to improve and protect our local environment by way of education and community engagement. This in turn will help tackle many of the issues facing us today both locally and globally.

During the first quarter of 2025 the following activities were delivered:

1. Plastic Oceans – this presentation and hands on activity explores the importance of our oceans to the planet's health and the threats posed by plastic pollution and littering.

   - Ballyholme Primary School – 3 x Primary 5 classes (90 pupils approx.)
   - Elim Church (Ards) Explorers
   - Bloomfield Primary School – 2 x Primary 5 classes (60 pupils approx.)
   - STRIDES (a group for young adults with learning issues)

2. Atlantic Salmon Conservation Project – this initiative sees a fish egg hatchery set up in the classroom and the pupils record the changes as the eggs hatch into small fry. This allows the pupils to understand the importance of lifecycles and why conservation of this threatened and important native species.
   An informative introductory talk was given to each group and at the end of the project the small fry were taken back to the River Bush Salmon Research Station where they will eventually be released back into the wild. A video of this return was made so that the groups could follow the young salmon on this part of their journey.

Not Applicable

- Bloomfield Primary School – 2 x Primary 5 classes (60 pupils approx.)
- Donaghadee Primary School – 2 x Primary 4 classes (60 pupils approx.)
- STRIDES group (a group for young adults with learning issues)

3. Rock Pooling and Beach Clean – this activity which allows pupils to collect and identify the vast array of marine mini-beasts that we have on our shores as well as beach litter pick was organised and delivered to the STRIDES group at a location in Donaghadee.

RECOMMENDATION

It is recommended that the Council notes the report.

Not Applicable

APPENDIX 1 – JANUARY TO MARCH 2025

SERVICE REQUESTS			
	Period of Report Jan – Mar 2025	**Same 3 months Jan – Mar 2024**	**Comparison**
DOG CONTROL	**238**	371	↓
ENVIRONMENTAL CONTROL	**447**	441	↑

DOG CONTROL – Service Requests	**2025**	**2024**
Dog Attack on Other Domestic Animal	**16**	18
Dog Attack on Person	**8**	13
Dog Attack on Livestock	**0**	1
Barking	**34**	34
Breeding Establishments	**1**	2
Collection/Stray	**26**	33
Control Conditions Issued	**9**	7
Dangerous Breed	**21**	1
Dogs Education / Awareness / Events	**0**	2
Dogs Off Lead	**35**	11
Expired Dog Licence Calls*	**55**	216
Greyhound Control	**0**	0
Inadequate Dog Control	**10**	8
Straying	**20**	18
Welfare Initial Response	**3**	7
TOTAL	**238**	371

*These calls are carried out to cleanse the database as and when required.

ENVIRONMENTAL CONTROL – Service Requests	**2025**	**2024**
Abandoned Shopping Trolleys	**1**	0
Abandoned Vehicles	**88**	56
Bye-Laws	**0**	0
Dog Fouling	**158**	162
Enviro Education / Awareness / Events	**0**	1
Fly-Posting	**1**	1
Fly-Tipping	**149**	154
Graffiti	**18**	18
Littering	**31**	48
Littering Detection (Under 18 yr olds)	**1**	1
Motorhomes	**0**	0
Nuisance Parking	**0**	0
Repairing Vehicles on a Road	**0**	0
Shellfish Gathering	**0**	0
Vehicles Exposed For Sale on a Road	**0**	0
TOTAL	**447**	441

Not Applicable

Further to Members' request to receive a more detailed analysis of trends in relation to fly-tipping, officers have assessed the number of separate incidents reported. The figures in the table below reflect these statistics, which differ from the number of fly-tipping complaints/service requests given in the previous table, as some separate incidents will have been reported more than once.

Separate Fly-Tipping Incidents Recorded by Month for the Past 4 years.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2021	37	58	51	55	39	53	27	38	31	33	30	28
2022	38	37	41	50	19	31	36	42	36	22	27	23
2023	53	47	40	21	32	34	36	40	56	47	21	28
2024	36	34	15	31	42	32	32	32	36	64	28	28
2025	39	46	55									

Fixed Penalty Notices

FIXED PENALTY NOTICES			
	Period of Report Jan – Mar 2025	Same 3 months Jan – Mar 2024	**Comparison**
DOG CONTROL	**39**	71	↓
ENVIRONMENTAL CONTROL	**25**	36	↓

	2025 Jan - Mar			**2024 Jan - Mar**		
DOG CONTROL	**Jan**	**Feb**	**Mar**	**Jan**	**Feb**	**Mar**
No Dog Licence	**2**	**0**	**6**	15	30	9
Straying	**2**	**1**	**2**	8	6	3
Breach of Conditions	**0**	**0**	**0**	0	0	0
Control of Greyhounds	**0**	**0**	**0**	0	0	0
Dog Off Lead	**11**	**6**	**9**	0	0	0
TOTAL	**15**	**7**	**17**	23	36	12
ENVIRONMENTAL CONTROL	**2025 Jan - Mar**			**2024 Jan - Mar**		
Litter	**8**	**4**	**3**	7	14	10
Fly-Tipping	**1**	**1**	**0**	1	0	0
Fouling	**1**	**5**	**2**	0	4	0
TOTAL	**10**	**10**	**5**	8	18	10

Not Applicable

APPENDIX 2

The following convictions were secured at Newtownards Magistrate's Court between 1st January and 31st March 2025.

In accordance with the instructions of the Resident Magistrate, Council's solicitor will notify defendants upon first appearance in court in response to a summons, that they may seek to have the matter withdrawn upon payment of legal costs and any fixed penalty notice previously offered. The cases are then adjourned to permit a further opportunity for payment. This has resulted in a number of cases being settled on the day of court upon payment of all costs and fines.

PROSECUTIONS			
	Period of Report Jan – Mar 2025	Same 3 months Jan – Mar 2024	**Comparison**
DOG CONTROL	**10**	2	↑
ENVIRONMENTAL CONTROL	**6**	3	↑

Reference	Date of Offence	Offence	Fine	Legal Costs	Service Fee	Offenders Levy	Total	Comments	Gross Cost to Council Exc. VAT	Net Cost To Council
Court Date 17th January 2025										
2024/339033	12/06/2024	Failure to Complete & Return Article 20	£50	£186	£0	£15	£251		£173	Nil
2024/337418	30/05/2024	Attack on Animal & Person	Absolute Discharge	£235	£0	£0	£235	Compensation paid by 18/07/2025	£252.50	£17.50
2024/333785	29/04/2024	Litter	Settled & Withdrawn	Settled & Withdrawn	Settled & Withdrawn	Settled & Withdrawn	Settled & Withdrawn		£178	£178
2024/334670	10/05/2024	Straying & No Licence	£200	£186	£0	£15	£401	Pay by 28/02/2025	£193.50	£7.50
Court Date 21st February 2025										
2024/327610	12/03/2024	Litter	£100	£150	£31	£15	£296	Pay by 13/06/2025	£181	Nil
2024/348444	22/08/2024	Litter	£75	£150	£28	£0	£253		£178	Nil
2024/339172	01/07/2024	No Licence	£75	£150	£28	£15	£268		£187	£9.00
2024/316543	04/01/2024	No Licence	£100	£150	£46	£15	£311	Pay by 08/08/2025	£196	Nil
2024/326934	05/03/2024	Litter	Conditional Discharge - 2 years	£450	£27	£0	£477	Pay by 21/08/2025	£477	Nil
2024/317728	11/01/2024	No Licence	£100	£150	£46	£15	£311		£196	Nil
2024/351102	18/09/2024	No Licence	£75	£150	£24	£15	£264		£174	Nil
2024/319600	29/02/2024	No Licence	Withdrawn	Withdrawn	Withdawn	Withdrawn	Withdrawn	Moved to England	£98	£98
2024/346350	06/08/2024	Straying	Conditional Discharge - 2 years	£150	£28	£0	£178		£178	Nil

Not Applicable

Court Date 21st March 2025

2024/328465	27/03/2024	No Licence	£10	£197	£0	£15	£222	Pay by 19/09/2025	£173	£24 +
2024/331617	15/04/2024	Fly-Tipping	Conditional Discharge - 2 years	£398	£0	£0	£398	Pay by 19/09/2025	£491.53	£93.53
2024/353596	08/10/2024	Straying	£10	£174	£0	£15	£199	Pay by 11/07/2025	£174	Nil

*It should be noted Court will often limit the level of legal costs awarded against a defendant and this award may not be repaid to Council for several years (recent monetary receipts from cases 6 years ago). The award will normally be less than the actual cost to Council.

OFFICERS PATROLS

High profile patrols were suspended for the first quarter due to staffing resources and the staff resource requirement for implementation of new Dangerous Dogs legislation.

Not Applicable

APPENDIX 3

OFFENCE	AREA	TOWN
Dog Off Lead	Bangor Seafront Promenade	Bangor
No Licence	Ashbury Avenue	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Fly-Tipping	Primrose Street	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Fouling	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Ward Park	Bangor
No Licence	Cleland Park North	Bangor
No Licence	Cleland Park North	Bangor
No Licence	Cleland Park North	Bangor
Straying	Briarwood Drive/Perry Road	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Fouling	Ward Park	Bangor
Fouling	Banks Lane Beach	Bangor
Litter	Sainsburys Car Park	Bangor
Dog Off Lead	Ward Park	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Dog Off Lead	Bangor Seafront Promenade	Bangor
Litter	Bloomfield Shopping Centre	Bangor
Straying	Ballygowan Road	Comber
Straying	Stonebridge Green	Conlig
Litter	Commons Car Park	Donaghadee
Litter	Warren Road	Donaghadee
Straying	Ace Vets	Donaghadee

Not Applicable

OFFENCE	AREA	TOWN
No Licence	Beechfield Drive	Donaghadee
No Licence	Millisle Road	Donaghadee
No Licence	Millisle Road	Donaghadee
Fouling	Groomsport Seafront Path	Groomsport
Litter	Kinnegar Avenue	Holywood
Fouling	Hillview Place	Holywood
Litter	A2 Belfast Road	Holywood
Litter	Ballywalter Road Car Park	Millisle
No Licence	Jubilee Vets	Newtownards
Straying	Jubilee Vets	Newtownards
Fly-Tipping	Kiltonga Hall	Newtownards
Litter	IMC Movieland	Newtownards
Litter	New Road	Newtownards
Litter	Castlebawn Car Pk	Newtownards
Litter	Castlebawn Car Park	Newtownards
Litter	Ards Shopping Centre	Newtownards
Fouling	Zion Place	Newtownards
Litter	Ards Shopping Centre	Newtownards
Litter	Castlebawn Shopping centre	Newtownards
Fouling	Fairfield Place	Newtownards
Litter	Ards Shopping centre	Newtownards
Fouling	Kiltonga Nature Reserve	Newtownards

Not Applicable

APPENDIX 4

OFFENCE	AREA	TOWN
Attack on Person	Briarwood Nook	Ballywalter
Attack On Person	Seacliff Road	Bangor
Attack On Person	Bloomfield Avenue	Bangor
Attack On Other Domestic Animal	Beechfield Crescent	Bangor
Attack On Other Domestic Animal	Pickie Park	Bangor
Attack On Other Domestic Animal	Valentine Playing Fields	Bangor
Attack on Person & Domestic Animal	Perry Road	Bangor
Attack on Person	Carnalea	Bangor
Attack On Other Domestic Animal	Lynn Hall Park	Bangor
Attack on Person	Crescent Grove	Comber
Attack On Other Domestic Animal	Meadow behind Dunsy Way	Comber
Attack On Other Domestic Animal	Beechfield Drive	Donaghadee
Attack On Other Domestic Animal	Donaghadee Road	Groomsport
Attack On Other Domestic Animal	Coastal Path	Helens Bay
Attack On Other Domestic Animal	Helen's Bay Beach	Helen's Bay
Attack On Other Domestic Animal	Station Road	Holywood
Attack On Other Domestic Animal	Scrabo Road	Newtownards
Attack on Person & Domestic Animal	Old Forge Drive	Newtownards
Attack On Other Domestic Animal	Ilex Avenue	Newtownards
Attack On Other Domestic Animal	Old Forge Avenue	Newtownards
Attack on Person	Windsor Avenue	Newtownards

APPENDIX 5

High Profile Patrols January to March 2025

Due to staffing resources and implementation of new legislation under The Dangerous Dogs (Compensation and Exemption Schemes) Order (Northern Ireland) 2024 took precedence. High profile patrols were suspended for the first quarter – January to March 2025.

ITEM 12

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	29 May 2025
File Reference	90303
Legislation	
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Response from Minister for Infrastructure regarding Off Street Parking Order
Attachments	Appendix 1 - Letter from Minister for Infrastructure

The Council wrote to the Minister for Infrastructure regarding the delay in revoking the Off-Street Parking Order 2000, as this is preventing the Council from creating our own Order.

The Minister's response is attached at Appendix 1.

RECOMMENDATION

It is recommended that Council notes the response.

Department for Infrastructur
An Roinn Bonneagair
Depairtment fur Infrastructure
www.infrastructure-ni.gov.uk

From the office of the Minister for Infrastructure
LIZ KIMMINS MLA

Susie McCullough
Chief Executive
Ards and North Down Borough Council
City Hall
The Castle
Bangor
BT20 4BT

Private Office, 3rd Floor,
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Telephone: (028) 9054 0540
Email: Private.office@infrastructure-ni.gov.uk

Your reference: XXXX
Our reference: COR-310-2025
02 May 2025

Susie, a chara,

OFF-STREET PARKING ORDER 2000

Thank you for your letter of 14 April 2025, in which you suggest that the Department gives appropriate notice to all Councils that it intends to repeal the provisions of the existing Off-Street Parking Order 2000 ("the 2000 Order") with effect from a specified date, or alternatively considers proceeding with an amendment of the 2000 Order, to remove references to former DfI off street car parks located in the Ards and North Down Borough.

As you have acknowledged, it is the Department's intention to bring forward legislation using powers in the Local Government Act 2014 ("the 2014 Act"). The use of those powers, however, is subject to the draft affirmative resolution procedure meaning that the legislation must be laid before the Assembly in draft and subsequently approved by a resolution of the Assembly. As such, my Department cannot proceed and make the necessary legislation independently of that procedure.

Furthermore, the Department's proposed legislation would solely disapply the provisions of the 2000 Order for councils, as my Department needs to retain the 2000 Order to administer the governance arrangements for its own park and ride/park and share sites.

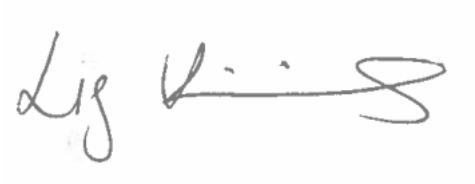
Regrettably, I am advised that some councils are unable to provide confirmation of when they will have their administrative orders in place. This is key to ensuring continuity of governance arrangements for each council once the 2000 Order ceases to apply to all council off-street car parks.

Indeed, it is likely a key consideration of the Assembly when determining whether to approve the legislation by resolution would be those councils without replacement governance arrangements in place, who would be at risk of financial loss as parking charges could no longer be applied or enforced. To be effective, the legislative solution must be practical and workable.

Turning to your suggestion that the Department proceed with an amendment to the 2000 Order and remove references to former DfI off-street car parks located in the Ards and North Down Borough, I should advise that as those car parks are now in council ownership, the Department is unable to amend any aspect of the 2000 Order (apart from in respect of its own park and ride/park and share sites). It is therefore for this reason that my Department must make subordinate legislation under the relevant powers of the 2014 Act, and subject to the draft affirmative resolution procedure.

I can assure you my officials are keen to progress the legislation as quickly as practicable and I have requested that they once again write to councils to ascertain the current state of play. Following the outcome of this exercise, officials will consider any actions required to expedite this process.

Is mise le meas,



LIZ KIMMINS MLA
Minister for Infrastructure

ITEM 13

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	29 May 2025
File Reference	90101
Legislation	Licensing of Pavement Cafés Act (Northern Ireland) 2014
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Evaluation of the Impact of the Licensing of Pavement Cafés Act (Northern Ireland) 2014
Attachments	Appendix 1 - An Evaluation of the Impact of the Licensing of Pavement Cafés Act (Northern Ireland) 2014

The Department for Communities has published a report on the findings of an Evaluation of the Impact of the Licensing of Pavement Cafés Act (Northern Ireland) 2014, which it carried out in 2023.

A copy of the report is attached at Appendix 1.

As can be seen in the report, in Ards and North Down Borough, we have the highest number of Pavement Cafés behind Belfast and well above average across the 11 Council areas.

As part of the ongoing engagement and support for businesses, Licensing Officers recently surveyed the Pavement Cafés operating in the Borough and continue to liaise with business owners to ensure compliance. During 25/26, it is intended that

Not Applicable

stakeholder engagement sessions will take place to offer further support to those wishing to operate a Pavement Café.

RECOMMENDATION

It is recommended that the Council notes this report and the attached appendix.

An Evaluation of the Impact of the Licensing of Pavement Cafés Act (Northern Ireland) 2014

Contents:

1. Introduction

Background: The Licensing of Pavement Cafés Act (NI) 2014

1.1 The Department for Communities ('the Department') is responsible for the policy and legislation regulating pavement cafés in Northern Ireland which were previously unregulated. The Licensing of Pavement Cafés Act (Northern Ireland) 2014 ('the Act') places a statutory responsibility on councils to establish a scheme for the licensing of pavement cafés. The Act allows for flexibility in how each council administers the scheme, such as setting fees. The policy aim of the scheme is to facilitate the controlled expansion of suitable premises such as cafés, restaurants and pubs in support of the creation of a vibrant daytime and evening economy and for the general well-being of communities.

1.2 A pavement café licence authorises a person who carries on a business involving the supply of food or drink to place furniture on a public area for use by customers. Those who wish to obtain a licence must, under the Act, apply to their local council and submit a plan of the proposed pavement café area. Furniture is required to be temporary in nature and must be capable of being removed within 20 minutes.

1.3 The objective of licensing is to balance the need for robust regulation with the necessary flexibility to respond to local circumstances. Licensing is also designed to ensure that the needs of pedestrians and other street users are not detrimentally affected whilst offering significant commercial opportunities for local businesses.

1.4 Overview of the Act:

- Sections 1 and 2 set out the general requirement to obtain a pavement café licence.
- Sections 3 to 12 set out the application procedures for the grant, renewal, and variation of a licence.
- Section 13 sets out the procedure when there are multiple licence holders and there is a change of a business partner.
- Sections 14 to 19 deal with revocation, suspension and compulsory variation of a licence.
- Section 20 makes provision for certain matters to be recorded in a register under liquor licensing law.
- Section 21 specifies the circumstances in which appeals can be made against a decision of a district council.
- Sections 22 to 24 give district councils' powers of entry, removal etc. for the purpose of enforcing the provisions of the Act.
- Supplementary matters are set out in Sections 25 to 32.
- The Schedule contains amendments to other legislation as a consequence of the introduction of the Act.

Previous Evaluation

1.5 The Act and the associated regulations came into operation on 1 October 2016. In October 2017, after the Act had been in operation for one year, the Department carried out an evaluation exercise regarding the implementation of the legislation by district councils.

1.6 Some key findings from this evaluation were:

- At the time the evaluation was completed only two district councils, Ards and North Down, and Mid and East Antrim had introduced licensing schemes.

- All 11 district councils had finalised fee structures, with some councils deciding not to charge fees. This approach was to be reviewed in the future.

- The nine district councils who had not introduced licensing schemes were seeking to address disability access, planning and operational issues.

- A key factor in councils not implementing the scheme was that they were awaiting the Department for Infrastructure's (DfI) revised, amended and finalised technical guidance on the *Highway Considerations of Pavement Cafés Licences*. The amended DfI guidance was intended to assist district councils in assessing pavement café licence applications.

2. This Evaluation: Purpose, Objectives and Approach

Evaluation: Purpose and Objectives

2.1 The purpose of this evaluation is to assess the extent to which the original policy intent has been achieved, namely the controlled expansion of suitable premises such as cafés, restaurants, and pubs in support of the creation of a vibrant daytime and evening economy and for the general well-being of communities.

2.2 Specific objectives for this evaluation are to:

- assess policy achievements along with any shortcomings, weaknesses or areas for improvement informed by statistical data to help draw comparisons pre and post implementation of the Act;
- examine stakeholder awareness and local council implementation of the Act six years post introduction;
- examine the impact of the Covid-19 pandemic on the pavement cafés licensing process, including number of licences, application process for licences, fees, enforcement and the positive or negative impacts on the sector and daytime and evening economy; and
- gather and examine recommendations and lessons learned that will facilitate and inform future policies/strategies.

Evaluation: Approach

2.3 In August 2023, the Department in conjunction with statisticians from DfC's Analytics Division (AD) issued a series of bespoke questionnaires to inform an evaluation of the Act. The questionnaires were aimed at a focused audience of the 11 local councils, representatives of the food and drink/hospitality sector and Invest NI. Recipients were given 12 weeks to respond between 1 August 2023 and 20 October 2023. The questionnaires addressed the following subject areas:

- Awareness of the Act and guidance materials
- Applications
- 28-day notice
- Fees
- Flexibility of the Act
- Community well-being
- Enforcement
- Covid

2.4 Some statistical analysis was undertaken by AD based on the responses to the questionnaires. All 11 councils responded to the bespoke council questionnaire. However, of the seven food and drink hospitality and business representative bodies who were invited to respond, only the Federation of Small Businesses provided a response. Invest NI provided a nil response to its bespoke questionnaire.

2.5 In addition to analysing responses to questionnaires, the Department met separately with identified key statutory stakeholders, namely: Tourism NI; Department for Infrastructure (DfI) (which has responsibility for road safety); and the Police Service of Northern Ireland (PSNI). Individual discussions with these stakeholders also focused on the above subjects as they affected each of their respective areas of responsibility.

2.6 Furthermore, at the suggestion of the PSNI, DfC officials undertook site visits to three separate council areas along with licensing representatives from relevant local councils. (see para 3.41 below).

2.7 The emerging findings are set out below.

3. Emerging Findings

Awareness and Guidance

3.1 There is good awareness of the scheme amongst regulatory stakeholders, PSNI, councils and the small business sector in general. PSNI are consulted as part of any pavement café application for premises with a liquor licence.

3.2 All 11 councils had produced guidance materials in relation to pavement café licensing for their area and all councils had made guidance materials available online at the council's website. 10 had produced written guidance, with two offering advice sessions. Other methods included writing to businesses, visiting relevant premises, and responding to direct requests for information.

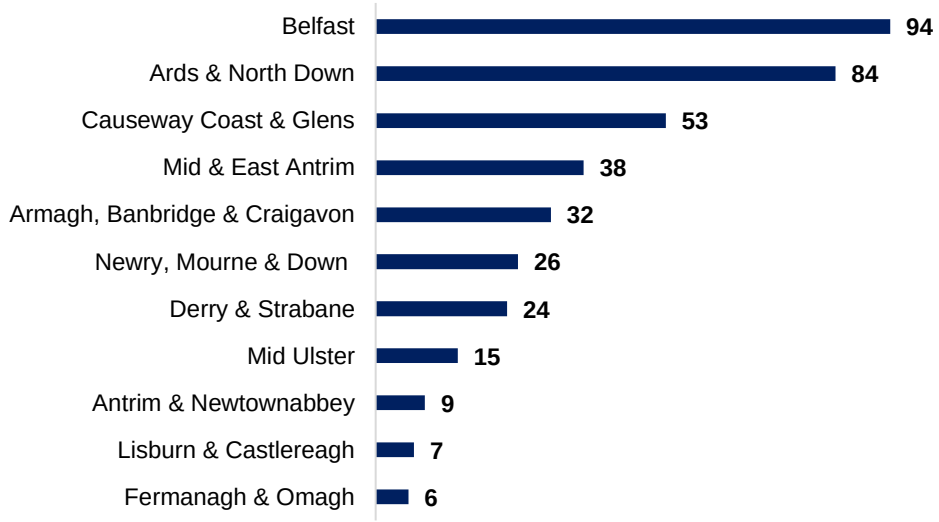
3.3 10 of the 11 councils had carried out promotion of pavement café licensing law to make stakeholders, retailers or the general public aware of the implications of the legislation. Other methods to promote the Act included sending emails, advisory visits, the provision of promotional materials, press releases, and targeted letters. The one council that had not produced promotional materials stated that promotion only took place through the council website with no direct contact with businesses.

3.4 The Federation of Small Businesses stated that the approach taken by councils during the Covid-19 pandemic (see paras 3.32 - 3.40 below) proved effective in increasing awareness of licences amongst its members. The statutory bodies responsible for tourism and business (i.e. Tourism NI and Invest NI) appeared to have limited awareness of the scheme. Tourism NI advised it would welcome wider engagement and buy in.

Applications

3.5 Since the introduction of the Act and up to October 2023, a total of 388 applications for a pavement café licence had been received across the 11 councils. The number of applications per council ranged from six in Fermanagh & Omagh Borough Council to 94 in Belfast City Council, with an average number of applications per council of 35. Figure 1 below shows the breakdown of the applications received per council as of October 2023.

Figure 1: Applications received per council up to October 2023



3.6 Under the Act, councils can refuse an application on the following grounds: that the area where the applicant wishes to place temporary furniture is unsuitable for that purpose; that placing furniture here would likely result in undue interference to persons or vehicles in the vicinity; that the applicant made a statement which they knew to be false in relation to the application; or the applicant had at any time been granted a licence which had been or could have been revoked.

3.7 Only four councils said they had refused an application for a pavement café licence with a total of 30 applications refused. Available information showed four were refused, under section 4(2) of the Act, as the location proposed

was deemed unsuitable and three were refused as they were considered likely to cause undue interference or inconvenience to other public area users. No appeals were received against the refusal of a licence. Table 1 below shows the councils that refused an application and the number of refusals as of October 2023.

Table 1: Number of pavement café applications refused per council as per October 2023.

Council	No. of applications
Ards & North Down	4
Causeway Coast & Glens	11
Derry & Strabane	13
Mid Ulster	2
TOTAL	**30**

3.8 PSNI is consulted as part of any pavement café application for premises with a liquor licence. PSNI stated that it found the number of applications to have increased dramatically during Covid. The Federation of Small Businesses called for the publication of data relating to the number of successful and unsuccessful applications.

3.9 DfI must be consulted under the Act as part of any pavement café application. In order to assess the eligibility of an application DfI has adopted Belfast City Council technical guidance and feel this works well in lieu of any DfI guidelines.

3.10 Whilst Tourism NI has no statutory role in the licensing process, it indicated that it would always welcome a consistent approach to applications across councils.

28 Day Notice

3.11 Applicants are required under the Act to fix a public notice to the premises on the day the application is made to the council. The notice must be positioned so as to be visible to the public for 28 days. Interested parties can make representations to the council, such as an objection in respect of an application within this period.

3.12 All eleven councils confirmed that their guidance advised applicants of the requirement to make notices of application visible to the public. Ten of the eleven councils made applications available to be viewed by the public for the full period, allowing for representations. The information was made available via the council website, inviting interested parties to make representations to the council. Councils also reported they carried out spot checks to ensure that notices are displayed on the premises. To comply with the requirements set out in the Act, the one council that did not make applications available for viewing by the public confirmed that in future it intended to publish any applications on its website.

Fees

3.13 The Act makes provision for councils to charge fees for the grant, renewal or variation of a licence. Councils are free to set their own fees independently of one another in relation to the licensing process.

3.14 Of the eleven councils, seven reported that prior to the Covid-19 pandemic their council charged a fee for a pavement café licence, details of which are outlined in Table 2 below. The councils that charged fees stated that, prior to the Covid-19 pandemic, they publicised the fees associated with a pavement café licence. These were available via the council website (six councils), within guidance documents (five councils), and newspaper/local or national media (two councils). Other methods included email and in-person visits by council officers.

3.15 As of October 2023, the fee structure was found to vary from council to council. The variance in fees associated with granting a new licence range between £225 to £480. Similarly, renewal fees, annual fees and frequency vary from £55 to £360 with licences being valid for 1, 3 or 5 years. Fees for applying for variations on a licence range from £85 to £300.

3.16 PSNI discussed the merits of imposing a higher fee on premises serving alcohol due to increased risk associated with premises serving alcohol in a public space.

3.17 DfI expressed an eagerness to see a more permanent, post-Covid licensing scheme introduced and implemented. (see Covid 19 paras 3.32 – 3.40 below)

Table 2: Fees applied per council as per October 2023

Council	Details of fees applied
Ards & North Down	£225 grant of licence (£147 admin fee plus £78 refundable if refused) £150 renewal of licence years £85 variation of licence
Armagh, Banbridge & Craigavon	£284 grant of licence £182 renewal of licence (every 3 years) £147 variation of licence
Belfast	£225 grant of licence £55 annual licence fee (no annual licence fee in first year) £112.50 variation / renewal of licence (every 5 years)
Causeway Coast & Glens	£375 grant of licence £285 renewal (every 3 years)
Derry & Strabane	£460 grant of licence (3-year licence), revised to £255 from 1 April 2023 £300 renewal (3-year licence), revised to £210 from 1 April 2023 £300 variation of licence, revised to £150 from 1 April 2023
Lisburn & Castlereagh	£480 grant of licence (3-year licence) £360 renewal of licence (5-year licence)
Newry, Mourne & Down	£375 for 3-year licence £300 for renewal licence

Flexibility of the Act

3.18 The licensing scheme is intended to provide sufficient flexibility to allow each district council to design an appropriate licensing scheme for its area. It also ensures there is adequate scope for councils to amend their respective licensing processes (fees etc) without the need for any new legislation.

3.19 Councils were therefore asked as part of the evaluation if this flexibility and scope had worked well for them, with nine saying that it had and two saying that they did not know.

3.20 Councils also outlined what they felt were the main benefits of flexibility, which included: helping to meet covid requirements (six councils); adopting a more proportionate approach (three councils); helping businesses with costs (two councils); and meeting local need (two councils).

3.21 PSNI believed that, during Covid, the flexibility of the scheme facilitated businesses moving out onto the street which was helpful in ensuring that business stayed open.

3.22 Tourism NI felt that during Covid the pavement café guidance was applied quite liberally which helped drive innovation in terms of price point, quality and the variety of food options for tourists. Such developments would, in Tourism NI's view, tend to have a positive impact on attracting visitors from the Republic of Ireland in particular.

Community and Economic Wellbeing

3.23 One of the objectives of this evaluation was to assess the impact of the licensing scheme on community well-being, which was another important policy aim of the Act. Councils were asked to provide their views as to the extent to which the licensing scheme:

- supports efforts to improve the economic outlook in their council area

- helps enhance the appeal of towns and villages within the council area to visitors and tourists
- enables towns and villages within their areas to become more vibrant
- gives those within the community a chance to voice their opinion on how licensing decisions might affect them
- may be having a negative impact on local communities.

3.24 All 11 councils considered that the licensing scheme was having a positive impact on efforts to improve the economic outlook in their area. Seven councils believed that the scheme has helped their towns and villages to become more vibrant and four made comments on the positive impact of having a "café culture". There was a unanimous positive view amongst Councils on how having pavement cafés open and operating has helped to enhance the appeal of towns and villages within the council area to visitors and tourists.

3.25 Tourism NI also provided a range of comments that support pavement cafés having a positive impact on community well-being, albeit caveated that pavement cafés are not the sole cause of this. All 11 councils agreed that the Act gives those within the community a chance to voice their opinion on how licensing decisions might affect them. However, on the negative side, one council stated that the display of a small public notice of an application for a licence may not serve to attract the attention of many passers-by. Two councils made comment as to nuisance noise arising from some pavement cafés, and one of anti-social behaviour.

Enforcement

3.26 Enforcement of the Act is the principal responsibility of the councils. Councils were asked if, since 1 October 2016, they have had to deal with any enforcement issues with regards to the Act. Five councils reported they had, and six said they had not. Three councils reported having to remove unlicensed furniture from a public space and four reported other compliance issues when completing an on-

site check. No councils had to revoke any pavement café licences since 1 October 2016.

3.27 Both DfI Roads and the PSNI expressed a number of concerns in relation to enforcement. PSNI advised that it was aware of at least 45 unlicensed pavement cafés operating in Belfast as of December 2023, and that some pavement cafés in the city continue to trade after the required 11pm cut off period.

3.28 Both PSNI and DfI Roads have stated that some pavement cafés have been expanding beyond their public area boundaries causing accessibility issues for pedestrians (including those with disabilities) and emergency vehicles.

3.29 PSNI suggested that a more joined up approach to enforcement is required. If councils and PSNI were to carry out inspections together it would, it believed, send a strong message and lead to increased compliance.

Covid-19

3.30 During the Covid-19 pandemic, the then Minister for Communities urged all councils to make more use of the pavement café licensing scheme, which had not been fully implemented at the time, to support towns and city centres in their recovery. In response, seven of the 11 councils opted to introduce a temporary process for pavement café licences, with no associated fee, having charged a fee prior to the Covid-19 pandemic. Councils were asked if they had noticed an increase in applications for pavement café licences as a result of the pandemic. Nine reported there had been, with two saying there had been no noticeable change.

3.31 Councils were asked if they felt the Act had helped them support businesses in the hospitality industry throughout the Covid-19 pandemic. 10 of the 11 councils felt that the Act had helped, with all 10 agreeing that the flexible approach to licensing had made this easier. One council did not know if the Act had helped and felt that the flexible approach made no difference.

3.32 Councils were asked what the benefits were, if any, of adopting a flexible approach throughout the Covid-19 pandemic. All councils provided comments, with 10 saying that the approach helped them to support businesses in general.

3.33 Councils were asked what the negatives were, if any, of adopting a flexible approach throughout the Covid-19 pandemic. Three said there were none, and one said the question did not apply to them. Points raised by the other seven councils highlighted issues in relation to a lack of consistency across council areas and a lack of guidance from DfI Roads.

3.34 Councils were asked about the easing of restrictions on indoor services during and in the aftermath of the Covid pandemic in bars, restaurants etc and its impact on the number of licence applications. Five had seen no change, three had seen an increase and three reported a decrease.

3.35 In terms of the number of renewals for pavement café licences since the easing of restrictions, 10 councils reported that there had been no change and one had seen a downturn in renewals.

3.36 PSNI stated that applications increased dramatically during Covid and acknowledged that the Act helped ensure that business stayed open during Covid.

3.37 Tourism NI stated that Covid brought on an accelerated change towards a more vibrant “street and brunch culture” and also helped stimulate innovation in relation to price point, diversity in street foods, casual markets and drove quality up. The Federation of Small Businesses suggested that the Department consider whether the temporary pavement café licensing scheme(s) initiated during Covid have actually helped to better achieve the original aim of the Act, and therefore whether such temporary adjustments should or could form the basis of a new permanent approach.

Site Visits

3.38 In the course of this evaluation the Department accepted an invitation from the PSNI to join them in visiting three separate council areas with a view to ascertaining the practical issues PSNI is encountering with pavement cafés. Between December 2023 and May 2024 visits were undertaken in the Belfast City, Derry and Strabane, and Causeway Coast and Glens Council areas.

3.39 For each visit the Department was accompanied by representatives from PSNI and relevant council licensing officers.

3.40 There was evidence of vibrant pavement café activity, but also evidence that a number of operators were operating outside the requirements outlined in legislation i.e. had set down permanent/near-permanent structures on public areas or positioned their cafés at very narrow points that did not take account of the needs of other public area users.

3.41 PSNI, councils and DfI Roads were unanimous in their opinion that those acting outside the law had largely taken advantage of the 'light touch' licensing approach adopted during, and in the immediate wake of, the Covid pandemic.

3.42 DfI, PSNI and councils were in general agreement as to the need to ensure greater clarity as to what the law permits, and that expansion of pavement cafés is properly controlled in the wider public interest. It was clear that all the relevant statutory bodies were committed to working more closely on enforcement.

3.43 It was also evident from the site visits that councils generally are beginning to take a more proactive approach to enforcement, including carrying out visits and writing out to businesses who have not yet applied for a pavement café licence before taking further enforcement action, taking them to court and issuing fines. At least one council has adopted a 'two metre rule' as an acceptable minimum pavement width to allow pedestrians and other pavement users free passage when pavement cafés are operating.

4. Conclusions

4.1 There is substantial evidence that the pavement café licensing scheme has achieved the policy aim of expansion of suitable premises such as cafés, restaurants, and pubs in support of the creation of a vibrant daytime and evening economy and for the general well-being of communities.

4.2 The Covid pandemic impacted the pavement café licensing process significantly. The flexibility of the scheme enabled councils to react to an ever-changing situation quickly, and support businesses through a difficult period.

4.3 Although not solely responsible, the original decision to make statutory provision for pavement cafés also appears to have facilitated some business growth during Covid.

4.4 The licensing scheme has played a positive role in promoting a growing "café" and "food and brunch" culture in NI that is, in turn, seen by many stakeholders as adding much needed vibrancy and appeal to outdoor spaces and commercial areas. This appears to be assisting in underpinning economic growth and general improvements in community well-being.

4.5 There is significant awareness of the Act amongst councils, local small businesses, DfI Roads and PSNI but a lower level of awareness amongst other statutory stakeholders (Tourism NI and Invest NI). Closer engagement by and with these bodies is needed to maximise the benefits of the scheme.

4.6 There is evidence of some negative impacts (mostly around nuisance noise and anti-social behaviour). There is also evidence that a small number of businesses have been abusing the temporary licensing process operated by councils during the Covid pandemic. This appears, in part, to be a consequence of the fact that, at the time the evaluation was initiated, there was no permanent licensing scheme in place across the councils.

4.7 There is an urgent need for a more permanent licensing scheme to be introduced by councils and fully enforced to allow pavement café expansion to be appropriately controlled in line with the original intention of the Act, in the interests of fairness, to drive up standards and ensure the needs of pedestrians and other street users are not detrimentally affected. **

4.8 There has been a particular issue around technical guidance from DfI in relation to what is deemed acceptable pavement width to be maintained for other users while operating a pavement café and how this could potentially have implications for free movement and access to public areas. Councils have been defacto following guidance produced by Belfast City Council in lieu of guidance from DfI. The impact of both above appear to be detrimentally impacting community's ability to maximise potential benefits presented by the scheme.

4.9 It is not clear that councils, DfI and PSNI work concurrently on issues of enforcement. This seems in part due to a lack of technical guidance in the past and a permanent licensing scheme only recently having been introduced.

4.10 Given the flexibility the scheme allows, there is potential for inconsistency in approach to implementation and enforcement in different council areas. This could in the long term be seen by the public to impact on the overall fairness of the scheme.

4.11 The Department notes that councils are following through on their increasingly proactive approach to enforcement, carrying out regular inspections and challenging businesses that are unlicensed or otherwise in breach of licensing conditions, ensuring removal of furniture when appropriate and necessary and issuing fines if required.

4.12 In light of the conclusions the Department believes that the Licensing of Pavement Cafés Act (Northern Ireland) 2014 remains fit for purpose and recommends that it be retained in its present form.

** It should be noted that during the evaluation being completed, following a consultation administered by Belfast City Council, a permanent licensing scheme has been introduced across all council areas. The introduction of the scheme has seen more stringent enforcement of the Act across council areas with 9 of the 11 councils introducing a licensing fee.

ANNEX

Annex: Updated Position as of January 2025 on Fees Applied by Councils for Pavement Café Licences.

Council	Details of fees applied
Ards & North Down	£240 grant of licence (£157 admin fee plus £83 refundable if refused) (3-year licence) £160 renewal of licence years (£110 non-refundable plus £50) (3-year licence) £91 variation of licence
Armagh, Banbridge & Craigavon	£219 grant of licence (3-year licence) £115/£38.30 renewal of licence (3-year licence/1 year licence) £115 variation of licence
Belfast	£225 grant of licence (5-year licence) £55 annual licence fee (years two to five of the five-year licence period) £112.50 variation / renewal of licence
Causeway Coast & Glens	£375 grant of licence (3-year licence) £285 renewal (3-year licence) No charge for variation of a licence
Derry & Strabane	£255 grant of licence (3-year licence) £210 renewal (3-year licence) £150 variation of licence
Fermanagh and Omagh	£375 grant of licence (3-year licence) £280 for annual renewal
Lisburn & Castlereagh	£480 grant of licence (3-year licence)

	£360 renewal of licence (5-year licence)
Newry, Mourne & Down	£400 for (3-year licence) £300 for renewal or variation licence

ITEM 14

Ards and North Down Borough Council

Report Classification	Unclassified
Exemption Reason	Not Applicable
Council/Committee	Environment Committee
Date of Meeting	11 June 2025
Responsible Director	Director of Environment
Responsible Head of Service	Interim Head of Regulatory Services
Date of Report	30 May 2025
File Reference	92000 / NOM 653
Legislation	The Dangerous Dogs (Compensation and Exemption Schemes) Order (NI) 2024
Section 75 Compliant	Yes ☒ No ☐ Other ☐ If other, please add comment below:
Subject	Response to Notice of Motion - Letter from DAERA Minister on XL Bully Dogs
Attachments	Appendix 1 - Letter from DAERA Minister

Response letter received from DAERA Minister following letter sent by Council as requested in Notice of Motion 653 on XL Bully Dogs.

RECOMMENDATION

It is recommended that the Council notes response.

From the Office of the Minister of Agriculture, Environment and Rural Affairs

Department of Agriculture, Environment and Rural Affairs
An Roinn Talmhaíochta, Comhshaoil agus Gnóthaí Tuaithe
Depairtment o' Fairmin, Environment an' Kintra Matthers
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Our Ref: COR-0277-2025
Date: 29 April 2025

Dear Susie

THE DANGEROUS DOGS (DESIGNATED TYPES) ORDER (NORTHERN IRELAND) 2024

Thank-you for your letter, of 14 April 2025, in relation the motion on The Dangerous Dogs (Designated Types) Order (Northern Ireland) 2024 that was discussed at the meeting of Ards and North Down Borough council in January 2025. You have highlighted that the Council opposes the restriction on the rehoming of restricted types of dog and XL Bully's, in particular. Consequently, the Council has asked me to consider amending the current legislation to allow the rehoming of these restricted types.

I wish to reiterate the reasons for my taking the decision to introduce this legislation. While I acknowledge that all dogs can be dangerous, the reality remains that if a large and powerful dog, such as an XL Bully, becomes aggressive, the consequences of an attack by this type of dog are much more likely to be serious and, in the worst cases, fatal. In response to this, the Department for Environment, Food and Rural Affairs introduced restrictions on the breed for England, and Wales. These restrictions were the replicated by the Scottish Government.

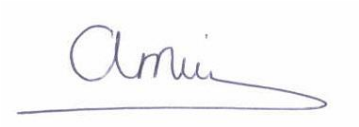
Following the decisions by those jurisdictions to introduce restrictions on XL Bully's, it was clear, from the figures that were supplied by the 11 councils across Northern Ireland, that the population of XL Bully type dogs was increasing rapidly. Consequently, I considered it necessary to make legislation here to mitigate the serious public safety risk and reduce the potential for a significant increase in the number of unwanted dogs coming to Northern Ireland from rest of the UK, with unknown backgrounds and ownership histories. I wish to reassure you that when I made this decision, I balanced

public protection and interests of dog owners, making a decision which I felt was proportionate and based on the best possible evidence.

I do appreciate the concerns that have been raised around rehoming. However, prohibiting the transfer of ownership is a key component to reducing the risk of an attack. The legal requirement for a restricted dog type to remain with its owner, as provided for by way of the Exemption Certificate, ensures that councils have knowledge of the location of these dogs and can hold owners accountable should any conditions of their exemption be breached.

I trust this reply is helpful.

Yours sincerely



ANDREW MUIR MLA
Minister of Agriculture, Environment and Rural Affairs