Dunkellin River and Aggard Stream Flood Relief Scheme

Response to Bord Iascaigh Mhara

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INTRODUCTION

RPS was commissioned by Galway County Council in 2011 to prepare an Environmental Impact Statement (EIS) for the Dunkellin River and Aggard Stream Flood Relief Scheme, hereafter called the "scheme", in south County Galway. The Dunkellin River and the Aggard Stream form part of the Dunkellin Drainage District which was constructed in or around 1857 and Galway County Council has a statutory maintenance responsibility for these works.

The scheme was submitted to An Bord Pleanála (ABP) in October 2014 for planning approval in line with Section 175 of the Planning and Development Act 2000, as amended. In February 2015, the Board, in accordance with Section 175(5)(a) of the Planning and Development Act, 2000, as amended, requested further information in relation to the proposed development.

Item 7 of the Board's letter stated that, "*The applicant is invited to respond in detail to the written submissions made by parties including local residents, prescribed bodies and others.*"

The purpose of this document is to provide a response to the issues raised by Bord Iascaigh Mhara in their submission.

1 ITEM 1 - SILTATION

1.1 Despite efforts to prevent the movement of silt downstream from several previous drainage works in the area, serious siltation of oyster beds has occurred, leading to loss of shellfish stock and a financial loss to oyster growers in the area. There is real fear that this might occur again if these drainage works are allowed to proceed, with further loss to shellfish stocks.

Table 9.2 (pp.99-103) of the NIS Section 9 Mitigation Measures shows extensive mitigation measures with respect to waterborne pollutants (including sediment/silt) for each flood alleviation area. Furthermore, as outlined in Section 9.2.2 (p.92) of the NIS, "*A detailed design and method statement should be drawn up by the contractor indicating what standard measures will be taken to avoid (i) sediment or soil loss and (ii) cement and hydrocarbon release, associated with all aspects of the construction phase*."

As stated in Section 10.5 (Conclusions), p.113, of the NIS: "*The timing and sequencing of upstream flood relief scheme measures, coupled with mitigation applied with respect to each measure, will reduce the potential for silt generation at source and stem the potential for losses*."

Furthermore, it was concluded in Section 8.2.2.4 of the NIS that the scheme model:

> "*… predicts that the proposed scheme will increase the peak discharge rate into Galway Bay by 1% and the time to peak flow (Tp) was also estimated to be reduced from 95 hours to 93 hours. The proposed scheme conveys the freshwater discharge slightly more quickly but the total discharge is not increased over the course of the event.*
>
> *Any slight increase in peak discharge by 1% and reduction in time to peak flow is not likely to cause the transport of significant additional quantities of suspended sediment and nutrients to the Dunkellin Estuary. Table 8.5 outlines that this increase in peak discharge is extremely unlikely to result in significant changes to the 'Intertidal sandy mud community complex community' and 'Intertidal sand community complex' which are the habitats most likely to influence the distribution of waterbirds at the site."*

It should be noted that a detailed construction management plan addressing details of construction methods and all recommendations for mitigation presented in the EIS and the NIS will be presented to statutory bodes for consideration prior to commencement of works.

2 ITEM 2 – FRESH WATER INPUT

2.1 The second concern regards the additional volume and speed of fresh water entering the bay as a result of the proposed drainage works. Extra fresh water inputs are likely to reduce the salinity in significant areas the inner bay, especially those closest to the outflow from the Dunkellin. This is likely to have an effect on native and Pacific oyster population, which are sensitive to decreases in salinity. The presence of Bonamia ostrea in the native oyster population of inner Galway Bay renders them more susceptible to environmental stresses than populations which the parasite is not present.

As stated in Section 4.5.1, p.28, (Hydraulic Impact of the Scheme) of the NIS: *Examination of the channel velocities in the mathematical model (HEC-RAS) for the existing channel and Preferred Scheme scenario shows that expected changes in flow velocities is minimal".*

Furthermore, it states at Section 4.5.2, p.28, that: "The time to peak (Tp) is estimated to be reduced from 95 hours to 93 hours. It is expected that implementation of the Preferred Scheme will result in a marginal increase (less than 1%) in the rate at which water is discharged to Galway Bay during a similar November 2009 flood event and on balance the volume of flood water passing Killeely Beg Bridge will not change significantly." In other words, the scheme conveys the freshwater discharge slightly more quickly but the total discharge is not increased over the course of the event. The potential impact on flow volumes is discussed in full in the NIS, Appendix A, Section 4.4.

As stated in Section 4.3.3, p.24, (Salinity Modelling) of the NIS:

> "*A comparative study was carried out to examine the impact if any of the scheme on shellfish in the receiving marine waters. The objective of completing this modelling was to conclude if the scheme could cause decreases in salinity in the receiving shellfish waters that would prove detrimental to the shellfish population in times of flood such as the 2009 event.*
>
> *The modelling demonstrated that, for the 2009 event, the salinity levels at the shellfish beds would experience minimal effects due to the scheme."*

Section 16.7, p.317, of the EIS (Conclusion on impacts on Human Beings & Material Assets) states: "*The mitigation put in place for the shellfish industry will minimise any possible impacts during construction. Under normal operating conditions there will be no discernible changes. In extreme flood events (such as the 2009 flood), the increased flow from the Dunkellin River as a result of the works would have a minor effect on salinity in the receiving waters, this effect has been modelled and would result in a change of less than 1 PSU. As the water quality of the flood water is likely to be improved as a result of the works* (due to reduced interaction with diffuse sources of contamination)*, this minor change in itself is highly unlikely to cause any impact."*

In practice, during the most critical phase of the modelled event (i.e. when the salinity is the lowest) the proposed scheme was shown to result in short-term changes in salinity of less than 0.5PSU. Given the magnitude of potential change even during extreme flood events (such as 2009) it is highly unlikely that these short lived changes would significantly impact upon the sensitivity of the receptor.

The hydraulic modelling demonstrated that even during times of extreme flood (e.g. the 2009 flood event) water would be effectively restricted to the main river channel. This in effect would reduce the risk of contamination of waters by land based diffuse sources of pollution including septic tanks. Reducing interaction of waters with diffuse contamination sources has the potential to decrease E. coli levels in the receiving waters of Galway Bay and thereby improve water quality.

2.2 The extra speed of influent fresh water will also facilitate the carrying of extra suspended solids that will settle out once the speed of fresh water drops upon entering the bay. This will lead to extra siltation in the inner bay and is likely to further impair viability of native and pacific oyster beds.

As stated in Section 10.5 (Conclusions), p.113, of the NIS, the scheme model:

> *"… predicts that there will be an increase in the peak discharge rate into Galway Bay by 1% and the time to peak flow (Tp) was also estimated to be reduced from 95 hours to 93 hours. The scheme conveys the freshwater discharge slightly more quickly but the total discharge is not increased over the course of the event.*
>
> *Any slight increase in peak discharge by 1% and reduction in time to peak flow is not likely to cause the transport of significant additional quantities of suspended sediment and nutrients to the Dunkellin Estuary*."

Furthermore, as outlined in Section 9.2.2 (Mitigation Measures for the control of Waterborne Pollutants during Construction Activities), p.92, of the NIS, **"***A detailed design and method statement should be drawn up by the contractor indicating what standard measures will be taken to avoid (i) sediment or soil loss and (ii) cement and hydrocarbon release, associated with all aspects of the construction phase."*

It should be noted a detailed construction management plan (CMP) addressing details of construction methods and all recommendations for mitigation presented in the EIS and the NIS will be presented to statutory bodes for consideration prior to commencement of works

Table 9.2, pp.99-103, in Section 9 (Mitigation Measures) of the NIS shows extensive Mitigation Measures for each Flood Alleviation Area.

Section 10.5 (Conclusions), p.113, of the NIS indicates that: "*The timing and sequencing of upstream flood relief scheme measures coupled with mitigation applied with respect to each measure will reduce the potential for silt generation at source and stem the potential for losses."*

2.3 The added speed of that which fresh water reaches the shellfish area may also have the effect of carrying additional E. coli, leading to a further worsening of the bay's classification under the shellfish hygiene legislation, or of norovirus, which would cripple the shellfish industry in the bay.

As stated in Section 4.5.1 (Impact on Flow Velocities), p.28, of the NIS: "*Examination of the channel velocities in the mathematical model (HEC-RAS) for the existing channel and Preferred Scheme scenario shows that expected changes in flow velocities is minima."*

The hydraulic modelling demonstrated that even during times of extreme flood (e.g. the 2009 flood event) water would be effectively restricted to the main river channel. This in effect would reduce the risk of contamination of waters by land based diffuse sources of pollution including septic tanks. Reducing interaction of waters with diffuse contamination sources has the potential to decrease E. coli levels in the receiving waters of Galway Bay and thereby improve water quality

3 ITEM 3 – ADDITIONAL MEASURES

3.1 ***We would propose additional measures be taken to ensure that no extra pressures are put on this environmentally sensitive area. These might include the construction of holding ponds to divert fresh water away from direct entry into the bay at periods of high rainfall, with the additional benefit of allowing settlement of suspended solids from the water. These diverted waters could then be released in a controlled way at periods when freshwater inputs were lower.***

The recommendations are not deemed necessary because there is prediction of little change to the flow velocities and volume of suspended solids as a result of the scheme (please refer to Section 4.5 (Hydraulic Impact of the Scheme), pp.27-28, of the NIS).