

Galway City Council

Comhairle Cathrach na Gaillimhe



GALWAY MAIN DRAINAGE

Stage 3

Mutton Island Wastewater Treatment Plant Upgrade

**Environmental Impact Statement
Non-Technical Summary**

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Sub Consultants:

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Non-Technical Summary

Introduction

Galway City Council is proposing to modify the Mutton Island Wastewater Treatment Plant (WWTP) so that it can treat greater volumes of raw sewage, but without extending the plant beyond its current boundary.

An Environmental Impact Assessment (EIA) has been undertaken to identify, describe and evaluate the environmental effects of this proposed upgrade in treatment capacity to the WWTP which is located approximately 900m offshore of the South Park/Salthill area of Galway City, on the western portion of Mutton Island.

An Environmental Impact Statement (EIS), presenting the findings of the EIA, has been prepared for submission to An Board Pleanála for their consideration as part of the planning process.

This document is the Non-Technical Summary of the EIS.

Need for the Development

Galway City is the third largest city in the Republic of Ireland and has sustained strong economic and population growth over recent years. This rapid growth has required sustainable solutions to various issues including that of wastewater (sewage) treatment and disposal. The provision of a modern treatment facility, located on Mutton Island, in the latter half of 2003 meant that it was possible to close various outfall pipes that had been discharging untreated sewage into Galway Bay.

This original WWTP was supported by an EIS which certifies the WWTP for a population equivalent¹ (p.e.) of 91,600 persons.

The rapid growth of the city means that Mutton Island WWTP is now nearing its design capacity, and with growth projected to continue there is a requirement to increase treatment capacity to cater for both residential and industrial expansion within the area. It is possible to meet this requirement in the short term by upgrading the capacity of the Mutton Island WWTP. This is because there is spare capacity in some of the existing units which, combined with certain modifications to the plant, will enable the plant's capacity to be increased in a short time frame and, moreover, without requiring any additional land to be used

We have determined from process modelling that the reconfigured and upgraded Mutton Island WWTP will be capable of treating a peak loading of 170,000 p.e. and we

¹ For a conceptual design, WWTPs are designed to treat a particular population equivalent (p.e.). Population equivalent is a term used as a measure of the water pollution load, and is an accepted measurement of the residential, commercial and industrial loading to a WWTP.

have assessed the impacts from such a loading in preparing the EIS. However, we have recommended that this be interpreted as permitting a planned load averaging 145,000 p.e., with the remainder being treated as an allowance for summer peaking, and as an operational reserve for maintenance and other purposes at the Plant. The EIA can therefore be considered to assess a worst case situation.

Galway Main Drainage - Strategic Overview

It is estimated, based on projected rates of population, commercial and industrial growth, that the upgraded capacity of Mutton Island could again be exceeded at the end of the decade. Within the limits of uncertainty in planning, particularly related to industrial development, this will require a new WWTP to be constructed and commissioned to handle the load surplus to the upgraded Mutton Island WWTP's capacity.

Such a new WWTP will, in due course, have to pass through the EIA process on its own merits, but the final site selection for that WWTP has yet to be determined. The new facility will be located in the Galway County Council administrative area on the eastern side of Galway City and this Galway East WWTP will discharge its treated effluent offshore to Galway Bay. Any cumulative effects of the two WWTP discharges will be fully assessed and presented as part of the EIA for the proposed new Galway East discharge.

The Existing WWTP and the Proposed Development

The WWTP occupies most of the western part of Mutton Island and is connected to the mainland by a causeway. Within the causeway lies a main sewer, which delivers raw sewage to the WWTP for treatment. The treated effluent is discharged into the sea approximately 400m to the south of the island via an outfall pipe equipped with diffusers. (Diffusers increase the rate at which the treated effluent is diluted). There is a second, smaller, outfall pipe to the west of Mutton Island which discharges effluent (after screening) under storm conditions, thus preventing the WWTP from becoming overloaded.

The upgraded plant will be contained entirely within the existing WWTP site, which is surrounded by a protective wave wall and rock armouring, and it will not require any work to the causeway, mains sewer or outfalls.

A large proportion of the WWTP is already occupied by treatment tanks, so there is limited room for additional tanks. However, in order to minimise visual effects and construction disturbance, the aim is to avoid further development outside the existing WWTP site boundary and to minimise any increase in the overall height of the plant structures. Thus, the design philosophy for the increase in capacity is to maximise the effectiveness of the existing process units and minimise the requirement for new structures.

The options for achieving capacity upgrade are therefore limited to using the existing process tanks in a different configuration either/or with a different treatment process that enables the treatment of a greater volume of wastewater. It is proposed that the

WWTP is operated as a conventional, non-nitrifying activated sludge plant because in this mode the capacity of the aeration process units are increased.

The increased volumes of wastewater treated at the plant will generate additional sewage sludge (the solids left over from the treatment process) for processing and ultimate disposal. Two future options for the treatment and disposal of sludge are considered appropriate for consideration:

Option A: Modifications to the sludge treatment process carried out at the WWTP including separation of primary and secondary sludges such that only secondary sludges are digested. Furthermore, an additional centrifuge (used for thickening sludge) will be installed to enable the WWTP to cope with the extra volume of raw sewage. This thickened sludge would then be taken off site for further treatment.

Option B: Installation of a sludge dryer at the plant which will convert the liquid sludge to a dried sludge. This option will require modifications to some of the buildings and tanks currently used for sludge treatment plus the installation of additional equipment outside the existing buildings and the installation of ducts and pipework between the various units, some of which will be overground. The detail of the equipment to be installed will depend on the specific manufacturer of the plant and cannot be determined until the appointed contractors present their detailed proposals.

At this stage, therefore, it is not yet certain which option will be taken forward. Consequently, each of the environmental topic assessments presented in this EIS considers the worst case option.

As part of these proposals public access to the causeway linking Mutton Island to the mainland will be increased so that access will be possible along the majority of the length of the causeway.

Construction

It is likely that the contract will be let as a Public Private Partnership (PPP) arrangement and it is envisaged that construction will take approximately 12 months and that it will start in 2007, subject to approvals.

Construction activities will normally be restricted to 07.00 - 19.00 hours on weekdays and 07.00 - 13.00 on Saturday mornings. Working outside of these hours will not be permitted without prior permission from Galway City Council.

All construction will be confined within the WWTP site and no construction compound or temporary works will be allowed at South Park. The contractor will be required to plan the delivery and removal of equipment and material from the site on this basis.

This decision has been made in order to reduce the disturbance from the construction works on local residents and people using the area for recreational purposes. It will be a requirement of the Contract for the contractor to conform to this decision.

Construction access to the WWTP was assessed during the construction of the existing WWTP, and subsequent consultation with local residents led to agreed routes and

signage locations for construction traffic. It is anticipated that this previous agreement will be adhered to for this phase of development, subject to agreement between Galway City Council and An Garda Síochána along with further consultation with local residents. Further measures to reduce effects from construction traffic, such as the timing of deliveries to avoid the start and end of the school day, will be included in a Traffic Management Plan that the Contractor will be obliged to comply with.

Due to the nature of the work envisaged, there will be very little surplus soil/spoil (or other wastes) generated as part of the proposed construction, but any that is generated will be disposed of to a suitable licensed facility.

Consideration of Alternatives

As the Mutton Island WWTP is already operational and as the modification can be accommodated within the boundary of the existing site, no alternative sites have been considered. This approach is a minimum disturbance option which results in a greater contribution to sustainable development than would provision of an alternative site.

Preliminary investigations have identified several possible design options for the upgrade, with the work to be procured under a Public Private Partnership (PPP) where the bidders will submit their tenders for individual designs for the Design Build and Operate (DBO) contract. The final site design and processes to be used will ultimately be determined in accordance with the requirements of the contract documents. Design envelopes set out in the EIS clearly define the range of impacts, effluents and emissions that will be permitted, and each submitted proposal will be robustly examined to ensure strict adherence with these envelopes. No transgressions from these envelopes will be permitted in the finally accepted proposal and no treatment process will be acceptable to Galway City Council that is not based on proven technology. Additionally, any requirements from An Bord Pleanála identified in their approval for the upgrade will be passed on to the contractor for implementation.

This approach should allow a range of potential solutions to come forward, thus maximising opportunity for use of the best available technology whilst protecting the environment via the use of strict criteria.

Scoping and Consultation

To assist Galway City Council in reaching an opinion, and to facilitate broader consultation with bodies that may be unfamiliar with the proposals, a Scoping Report (a report outlining the proposed development and seeking feedback on the range of potential environmental effects requiring investigation) was produced and issued to key consultee organisations, including the local residents association. The responses from each of these assisted in determining the final scope (range of issues examined) of the assessment.

Following the scoping process and the evolution in scheme design, it was determined that there was no potential for significant effects to occur in relation to cultural heritage, traffic and soil/ground contamination, and hence that no detailed assessment of these

aspects was required. However, mitigation in relation to traffic identified later in the EIA process has been incorporated in response to concerns from local residents.

A public consultation event was held on Thursday 19th January 2006 in the Galway Bay Hotel, Salthill, from 2pm to 8pm with the event publicised in the local papers and a local radio station.

The event was attended by 20 members of the general public. Written comments were sought during this event and have been taken into account in finalising the EIS. The main comments regarding the upgrade proposals related to minimising odours and to the protection of the South Park area from construction activity disturbance, both of which have been considered within the EIS and mitigated against.

Odour

An odour control unit is already operational at the plant, and either it or an alternative upgraded unit supplied by the successful tenderer will be used for the modified WWTP. We have established the change in odour due to the capacity upgrade and the provision of a new sludge dryer (this option is considered to be worst case) via the use of an odour model. The results of this modelling show that there would be a very slight increase in the overall odour footprint of the plant but as a result of the use of an appropriate odour control unit, the odour received at Grattan Road would still be about ten times lower than the adopted nuisance criterion. Thus the impact of odours will not be significant and there are unlikely to be complaints about the odour emission from the plant.

Dust and Air Quality

Due to the very limited amount of earthworks likely to be needed for the upgrade, the presence of the site boundary wall and the distance offshore of the treatment plant, very little dust will reach the mainland.

A suite of new EU Directives setting out the approach to the monitoring, assessment and management of air quality has been adopted in recent years. The objectives of the new Directives include avoiding, preventing and reducing the impact of harmful air emissions on human health and the environment. Any new sewage sludge dryer located within the site will be required to operate within statutory limits.

Air quality modelling has been undertaken for the operational stage of the upgrade, including emissions from the proposed on-site sludge dryer. The results of the modelling show that levels of the relevant parameters at Grattan Road will be approximately ten times less than the required National Air Quality Standards for these gases. No significant effects from emissions are therefore predicted.

Noise and Vibration

Residents of Grattan Road have complained of a low frequency hum and a spot survey has confirmed the presence of a low frequency tone. However, an analysis of noise sources at Mutton Island does not indicate a corresponding clear tone from any of the equipment on the island.

During the modification of the WWTP there may be periods when construction activities result in elevated noise levels, but such occasions are likely to be infrequent and short-lived.

Construction noise effects would be reduced through restriction of working hours, and it should be noted that all construction activities will be contained within the existing WWTP which is surrounded by a high protective, concrete wall. This will reduce the effect from construction noise on the mainland where predicted construction noise levels are well below accepted criteria for daytime construction noise levels (70 dB(A)), and are below the daytime and night time baseline noise levels recorded at Grattan Road (the closest residential area).

The existing background noise levels for Grattan Road have been used to define the acceptable level of noise that the upgraded WWTP should be designed to avoid exceeding. Mitigation will be incorporated in the design including, if required, complete enclosure of noise-generating equipment to meet the noise criterion.

It is unlikely that there will be any significant vibration effects associated with either the modification or operation of the modified plant. The nearest sensitive receptor is over 900m from the WWTP and is therefore highly unlikely to be affected by any vibration effects.

Socio-Economics

Due to the small scale of the envisaged work, the construction phase will not have any significant effects on the local economy.

The on-going population growth in Galway is driven, at least in part, by expansion of employment and business. An upgrade of the WWTP will allow for this growth, with attendant economic benefits ensuing for the City, County and the wider region.

Without this wastewater treatment provision, development will be constrained and the local and regional economy will not be able to develop as is envisaged in a number of national, regional and local planning documents.

The economy of the area is closely linked to the quality of water within the bay (e.g. aquaculture and tourism). The results of the water quality and marine ecology assessments indicate that there will be no significant adverse effects, and therefore it is considered that no significant, adverse effect on water based economic activities will occur.

Thus the development will have highly significant beneficial effects on the socio-economic well being of the area, contributing to sustainable growth of the city and wider region.

Landscape and Visual Effects

The character of Mutton Island is that of a small island with the treatment plant occupying the majority of the land area above high tide level. The lighthouse and cottage, once the focus of the island, now share the scene with the WWTP although the

distinctive white lighthouse with its red railings is still the tallest structure on the island and therefore draws the eye. In the wider context the character of the area is coastal, with the expanse of Galway Bay stretching towards the Burren to the south in Co. Clare.

Galway City Council has undertaken to ensure that the sludge treatment facility will be the only new structure allowed to be taller than the highest existing structure on the site to minimise the visual impact of the upgrade. If possible, the new sludge treatment facility will be constructed with part of it below ground level to reduce potential impacts on views and the landscape. The external protruding part of the sludge dryer shall be a maximum of 4m wide and shall not extend any higher than 2m above the existing treatment works structures.

Views from the coastline of Galway Bay in the vicinity of the city towards Mutton Island will change little, due to the incorporation of the upgrade works within the existing site, with only the potential for the sludge dryer to be seen above the existing wall. The proposed sludge dryer facility would be located within the existing site boundary using material and an architectural style that will reflect that of the existing treatment plant. This, in combination with Mutton Island's distance off-shore (almost 1 km from the closest visible points on the mainland), would greatly reduce its potential visual intrusiveness. Overall, the effect of the operational site on the landscape and seascape of Galway Bay will be negligible, localised and insignificant.

Water Quality

A range of site practices will be established and implemented during the modification works to reduce the potential for pollutants to enter Galway Bay to the lowest practicable level. These will include the isolation of any drains near construction work areas to ensure that any contaminated run-off is contained and removed for appropriate treatment.

The WWTP will have to treat an increasing wastewater loading as the local population increases. Irrespective of the volume of wastewater being treated, the final treated effluent will have to meet effluent discharge standards (as laid out by the EU and incorporated into national legislation) prior to being discharged to Galway Bay.

Within Galway Bay there are several bathing beaches (including Salthill, Silver Strand, Grattan and Ballyloughane) and shellfish/aquaculture production areas. Water quality modelling has been undertaken to assess compliance with microbiological standards in these areas under a variety of tidal and wind conditions under realistic worst case discharge conditions. The modelling shows that no designated beach will fail the rigorous Blue Flag standard for faecal coliforms (a sewage indicator bacteria) due to the influence of the Mutton Island discharge. It is also predicted that areas of shellfish/aquaculture production will not be affected by the increased discharge to any noticeable degree.

Modelling of potential effects from increased organic loading and ammonia show that no significant effects should occur.

Marine Ecology

The protective measures applied during the construction stage to protect water quality within Galway Bay will have attendant benefits for the local marine ecology.

Mutton Island is located within the Galway Bay Complex candidate Special Area of Conservation (cSAC). This is a European conservation designation and highlights the importance of Galway Bay for a number of habitats including rocky reefs and mudflats/sandflats. The bay supports an important common seal colony, migratory fish and important bird colonies (see below).

Surveys have been undertaken to find out if there are any plants and animals which could be affected by the increased discharge from the WWTP. It should be noted that parts of the bay will be improving in quality as much of the crude sewage that formerly entered the bay via a number of discharge pipes is now being treated (since late 2003) by the Mutton Island WWTP.

None of the species or habitats recorded during the sub-tidal survey are of specific nature conservation importance or interest, with the exception of maerl (calcified red seaweed) which was identified in the vicinity of the Tawin Shoals approximately 1.5km south of Mutton Island. However, at this distance the extent of treated effluent dilution and dispersion is such that no effects on the maerl are predicted.

Given the secondary treatment quality standards required by law, it is considered unlikely that the proposed increase in volume of treated effluent discharge will have a significant effect on the marine ecology of the area including seals, dolphins, porpoises and all important sub-tidal and inter-tidal communities.

It is considered that aquaculture interests will not be adversely affected because the nearest, off Rinville Point and Ardfry Point, where mussels and oysters are grown respectively, are some 4 km distant.

Birds

Mutton Island WWTP is located within an important area for bird populations (parts of the bay being designated as a Special Protection Area (SPA) by the European Union and also as a ‘Ramsar’ site, international designations intended to protect birds and wetlands respectively).

Mutton Island and the surrounding area support large numbers of birds, especially during the winter period. The results of the surveys carried out during construction of the causeway and the WWTP suggest that the construction activities did not disturb the majority of birds present.

The main effect of the plant modification works on the birds feeding, roosting or breeding on Mutton Island is likely to be disturbance due to increased levels of activity and noise. This disturbance will be temporary and will affect no more than one breeding and/or one winter season. It is unlikely to be significant as the modification

works are on a much smaller scale than the original WWTP construction and will only involve activity within the existing WWTP site.

Construction workers will be restricted to the WWTP and its access route with access to the wider island prohibited.

Increasing the treatment capacity of the Mutton Island WWTP will not lead to any significantly greater level of operational activity, and hence disturbance, than is currently the case and no significant effects on bird populations are likely to occur.

The increased treated discharge has been shown not to adversely affect the marine ecology of the area and therefore it is considered that the effects on bird food resources will be negligible and probably undetectable.

Conclusion

There is a clear need to upgrade the treatment capacity for wastewater in Galway City and the surrounding area to cater for the current and predicted growth in domestic population, and in the commercial and industrial sectors. An additional WWTP will be required in the near future, east of Galway City in the Galway County Area, and this will be subject to statutory assessment at a later date. Galway City Council has identified that modifications to the Mutton Island WWTP to increase the sewage treatment capacity will provide a solution in the short term, and that it will be possible to do this without extending the plant beyond its current boundary.

It is predicted that with the mitigation measures proposed in the EIS in place, there will be no significant adverse effects arising from the modification works or the operation of the upgraded WWTP. The project will be implemented under a Public Private Partnership (PPP), where the bidders will submit their tenders for designing, building and operating the proposed upgrade. Any treatment process offered by the selected Contractor will be considered appropriate provided that it is based on proven technology and that any adverse impacts it has are of lesser significance than those outlined in the EIS.

Submissions

Written submissions and observations in relation to the implications of the proposed development for proper planning and sustainable development in the area and the likely effects on the environment of the proposed development, if carried out, may be made to An Bord Pleanála, 64 Marlborough Street, Dublin 1, up to close of business on Thursday 20th April.