Greater Dublin Drainage

Alternative Sites Assessment and Route Selection Report (Phase 4):
Final Preferred Site and Routes

Appendix 9

Traffic & Access Assessment

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Traffic and Access

9.1 Introduction

On completion of the ASA Phase 2 process, as reported in the *Alternative Sites Assessment and Route Selection Report (Phase 2): Emerging Preferred Sites and Routes; May 2012,* three preferred site options emerged to be taken forward for further consideration under Phase 3 and Phase 4 of the ASA process.

This report considers the relative merits of the three emerging preferred site options and in particular the parcels of land in which the proposed Regional WwTP would be located in terms of the ability to achieve suitable vehicular access. In comparing the potential sites, the requirements for a new access onto the public road network, the construction of a new access road leading to the WwTP and the suitability of the public road network to cater for traffic associated with the WwTP are taken into consideration.

The orbital sewer and outfall pipeline corridors associated with the proposed Regional WwTP also have relative merits in terms of traffic impact and this is also considered in this report. The choice of location for the marine outfall does not have any traffic implications and so this is not discussed.

9.2 Methodology

9.2.1 Desktop Study

In preparing this report, the following documents have been referred to:

- Fingal County Development Plan 2011 - 2017
- NRA Traffic and Transport Assessment Guidelines September 2007
- NRA DMRB
- NRA Policy Statement on Development Management and Access to National Roads

The main type of data used to carry out this desktop study has been mapping and aerial photography which has been sourced from the OSi. Other data sources included road accident data which was obtained from Fingal County Council and online mapping services such as Google maps.

During phase 2 of the assessment and using the available data, an access to the public road network was chosen for each of the nine land parcels taking into account the suitability of roads surrounding the parcel. When choosing the location of each access the physical characteristics of the receiving road such as carriageway width, horizontal and vertical alignment and visibility were considered along with the frequency of road accidents on the road network in the area. From the access point an access route to the land parcel was then generated while attempting to minimise the impact on the

surrounding landscape. Similar criteria were then used to compare the sites. Detail of this comparison is provided in section 9.3.

Traffic generation has not been fully considered at this stage as the volumes of traffic that the construction and operation stages of the GDD project will generate will not differ between sites. This will be dealt with in greater detail during the EIS phase of the project.

For the orbital sewers and outfall pipeline corridors, traffic generation during construction is a factor, however this can be dealt with rather broadly as, effectively, the longer the pipeline corridor, the greater the volume of construction traffic that will be generated. The only other factor concerning the pipeline corridors from a roads or traffic point of view is the number and type of road crossings, as temporary traffic management measures or road closures may be required at these locations.

9.2.2 Site Visits

A site visit was carried out to each of the three preferred site locations in order to assess the location of proposed accesses identified within the desktop study. The primary reason for the site visits was to confirm that the mapping and other data used in the desktop study accurately reflected the situation on the ground.

9.3 Existing Environment

The preferred sites for the proposed Regional WwTP are all located in North County Dublin, where the major route serving the area is the N1/M1 Dublin to Belfast National Primary Road, which, is a high quality motorway standard road. The remainder of the road network consists of regional roads and local roads which supplement the regional roads.

The three preferred sites are located in rural to semi-rural locations and in these locations the quality of the road network varies considerably. In most cases a speed limit of 80km/h applies to the roads in these areas. Generally the regional roads are of higher quality compared to the local roads, with carriageway widths approximately 6m or greater. The alignment and pavement conditions of regional roads are also generally of better quality than the local roads, however, these also suffer from sharp bends, poor visibility and signs of pavement wear in specific locations. Where possible site accesses have been located on regional roads.

Annsbrook

The Annsbrook site is within lands bounded by the R129 to the south and local roads to the north, east and west. As such the access has been located on the R129 and is shown on Drawing Nr 13A, included in Appendix 13 of the main ASA Phase 4 Report. The R129 is a single carriageway road linking the R122 to the R132 via Ballyboughal. It has a carriageway width of approximately 6m, no hard shoulders, verges or

footpaths. The road pavement shows signs of wear to the west of the proposed entrance, and localised repairs are apparent at the entrance location.

The proposed entrance is located within an 80km/hr speed zone and as such, a 160m visibility splay is required from a 3m setback. Visibility at the entrance is restricted by the existing hedgerows, ditch and boundary treatments to both sides, however the required visibility could be achieved by setting back vegetation and by lowering the existing mound, replacing it with a verge. Due to the proximity of a stream to the road's edge, a safety barrier may be required to accommodate this verge.

The R129 has a straight horizontal alignment at the location where the entrance is proposed, however there are several sharp bends along the R129, which restrict forward visibility in places. The closest of these to the proposed entrance are approximately 250m from the entrance in both directions.

The accident history in the vicinity of the site has been reviewed and indicates that there have been a small number of accidents on the R129 in recent years. One accident recorded as minor occurred in 2006 approximately 50m to the west of the proposed entrance. To the east, 2 minor accidents were recorded at the junction between the R129 and the R132 also in 2006.

Access into the WwTP site would be provided by an access road approximately 1.3km long. The carriageway width would be 4m with passing bays provided at regular intervals to provide passing opportunities for vehicles travelling in opposing directions. This access road will cross a stream at the entrance which would require either a bridge crossing or large culvert and crosses a field drain further along the access which would have to be culverted. These structures would be constructed in accordance with Section 50 of the Arterial Drainage Act.

Due to the location of the main circulation routes in relation to the site and the condition of roads to the west of the site, traffic generated by the proposed WwTP will be routed east, turning left out of the proposed entrance. Similarly, incoming WwTP traffic will be directed to approach from the east.

With regard to WwTP operations staff traffic, Fingal County Council aim to promote sustainable transport through the implementation of the National Transport Authority's (NTAs) smarter travel policy and have included the following policy statement within the County Development Plan:

'Promote and facilitate movement within, and to, the County of Fingal, by integrating land use with a high quality, sustainable transport system that prioritises public transport, cycling and walking. In facilitating such movement, the natural and cultural heritage of the County must be protected.'

Due to its semi rural location, alternate modes of travel to and from the WwTP by operations staff would not be feasible and it is likely that operations staff would travel to and from the WwTP by private car.

Clonshagh

The Clonshagh site is situated near the N32 and the Clonshaugh Road, the former being to the south and the latter to the west. The N32 was a National Primary Route but has recently been re-designated as Regional Road R139. The R139 is a single carriageway with 2 lanes in both directions and carries a significant volume of traffic.

Access to the site is proposed from the Clonshaugh Road and is shown on Drawing Nr 13B, included in Appendix 13 of the main ASA Phase 4 Report. The Clonshaugh Road has a carriageway width of approximately 6m, has no hard shoulders and generally no verges or footpaths. The proposed entrance is located at the location of an existing field access. Visibility at this location is limited to approximately 25m to the right and 30m to the left from a setback of 3m. The speed limit of this road is 60km/hr resulting in a desired visibility of 120m from a setback of 3m. This visibility splay could be achieved, by setting back of boundaries and verge widening as well as some service diversions.

Forward visibility along the Clonshaugh Road is restricted by the presence of sharp bends in the road approximately 375m to the north. The accident data for this road indicates infrequent accidents, with one minor accident recorded in 2005 located slightly south of the proposed entrance.

Access into the WwTP site would be provided by an access road approximately 320m long. The carriageway width would be 4m with passing bays provided at regular intervals to provide passing opportunities for vehicles travelling in opposing directions.

Due to the location of the main circulation routes in relation to the site and the poor forward visibility along the Clonshaugh Road immediately north of the site, traffic generated by the proposed WwTP will be routed south, turning left out of the proposed entrance. Similarly, incoming WwTP traffic will be directed to approach from the south, turning right into the facility.

With regard to staff traffic, Fingal County Council aim to promote sustainable transport through the implementation of the NTAs smarter travel policy and due to its location on the fringe of Dublin City and in close proximity to Swords, it is possible that staff could access the WwTP by public transport or by walking or cycling.

An alternative access to the site from the R139 (formerly the N32) is also under consideration. The realignment of the Malahide Road is a stated objective of the Fingal County Development Plan, 2011 – 2017. As such the Malahide Road Realignment Scheme is currently under consideration by Fingal County Council. The alignment of one road forming part of this proposed road scheme passes south of and immediately adjacent to the site, while another road links to the R139. Future access to the site could be gained via the roads included in this scheme should it progress to full construction. Access to the WwTP site could be provided from the R139 by constructing the link road from the R139 as part of the proposed GDD scheme.

Should this link road be constructed as an access to the WwTP only, it would be appropriate that the junction with the R139 be constructed with a left-in, left-out arrangement. However, should the road be used as part of the overall Malahide Road Realignment Scheme this junction would operate more efficiently as a signalised junction.

There have been several accidents along the R139 including one serious accident in 2002. Two minor accidents, both of which were recorded in 2002, occurred close to the proposed junction with the R139.

The road from the R139 would be approximately 600m in length and would have a carriageway width of approximately 10.5m, 1.5m hard strips and a 2m verge. This access road would cross the Mayne River and would require the construction of a bridge or culvert. This structure would be constructed in accordance with Section 50 of the Arterial Drainage Act.

The potential accesses to the Clonshagh site are shown on Drawing Nr 13B, included in Appendix 13 of the main ASA Phase 4 Report.

Newtowncorduff

The Newtowncorduff site is bordered to the west by the M1 Motorway, which is not suitable for access. The nearest roads with potential for an access are the R132 to the east of the site and a local road to the north. The local road is of lower standard than the R132 and not suitable for an access therefore it is proposed to provide an access onto the R132. The proposed access location is shown on Drawing Nr 13C, included in Appendix 13 of the main ASA Phase 4 Report. The R132 was formerly part of the N1/M1 National Route linking Dublin to Belfast and is a well maintained single carriageway road. The section between Blake's Cross and the Five Roads where the proposed access has been located has a running carriageway of approximately 7m in width and 2.5m hard shoulders.

The R132 has a straight horizontal alignment at the location where the entrance is proposed and the proposed entrance is located within an 80km/hr speed zone. In such a speed zone, a visibility splay of 160m from a 3m setback is required. The required 160m visibility splay can be achieved to both the left and right by trimming the hedgerows.

Forward visibility along the R132 is restricted in places, most notably due to the presence of tight bends approximately 280m south of the proposed entrance and a crest in the hill to the approximately 370m to the north.

A review of the accident history along this road revealed that there have been several accidents along this section of the R132 with 1 recorded serious accident in 2006 and a cluster of 3 minor accidents recorded, 2 of which occurred in 2002 and 1 in 2008.

Access into the facility would be provided by an access road approximately 630m long. The carriageway width would be 4m with passing bays provided at regular intervals to provide passing opportunities for vehicles travelling in opposing directions. This access road will cross a stream approximately 100m from the entrance which would require a bridge or culvert to be constructed. This structure would be constructed in accordance with Section 50 of the Arterial Drainage Act.

Due to location of the proposed WwTP site, traffic generated by the proposed WwTP would most likely turn right out of the development and travel south, however it is not considered necessary to restrict traffic movements when entering or exiting the proposed WwTP site.

With regard to WwTP operations staff traffic, Fingal County Council aim to promote sustainable transport through the implementation of the NTAs smarter travel policy, however due to the sites semi rural location, alternate modes of travel to and from the WwTP by operations staff would not be feasible and it is likely that operations staff would travel to and from the WwTP by private car.

Summary

In summary, access to the Annsbrook site is provided from the R129. Minor works will be required at the proposed access to achieve the required visibility. An access road of 1.3km in length with two minor watercourse crossings will be required. Traffic to and from the WwTP will be restricted to accessing from the east.

Access to the Clonshagh site is provided from the Clonshaugh (local) Road. Works including some service diversions will be necessary in order to achieve the required visibility. An access road of 320m in length will be required. Traffic to and from the WwTP will be restricted to accessing from the south. Staff traffic will be able to use sustainable transport options to access the WwTP. Should it be deemed appropriate, alternative access could be provided to the Clonshagh site from the R139. In this instance an access road of 600m in length with one significant watercourse crossing will be required. It will be appropriate to implement a left-in, left-out arrangement at the access.

Access to the Newtowncorduff site is provided from the R132. Minimal landscape improvements will be required to achieve the required visibility. An access road of 630m with one minor watercourse crossing would be required.

While it is possible to provide a safe access to each of the proposed WwTP sites, the better access arrangement is achieved from the R132 to the Newtowncorduff site due to the high forward visibility along this route, lack of works required to achieve visibility at the access point and lack of restrictions on appraoch routes. This is due to the width of the R132 and its straight horizontal and vertical alignment adjacent to the proposed entrance.

9.4 Predicted Impacts

9.4.1 Construction Phase

WwTP Sites

Due to the rural or semi rural nature of the potential sites, the principal form of transport that will be used in the construction of the proposed facility will be by road. The construction of the WwTP will generate a temporary but sizeable increase in traffic. Although there will be some variance resulting from differing quantities of excavations etc. the volumes of movements generated by each site will be of a similar order. As detailed designs of the WwTP have not been carried out at this stage, it is not possible to produce an estimate of the volumes of traffic that the construction stage will generate and this will be carried out during the EIS phase. As there are similar volumes of traffic being generated at each site however, for the purposes of selecting a site, this has not been considered as a differentiating issue.

The traffic generated by a site can be categorised into two types, operations staff traffic and construction traffic. Operations staff traffic will generally be light vehicles such as cars or vans and will be generated over more condensed time periods which may coincide with existing peak traffic flows on the road network. The impact of staff traffic will therefore be primarily related to potential increases in congestion. No traffic surveys have been carried out to-date so this cannot be numerically quantified, at this stage, but the sites located closer to built up areas or accessed by roads used by large volumes of commuters would be those most impacted upon.

Construction traffic will typically be made up of heavy vehicles transporting materials to and from site. These vehicles would be making journeys throughout the site operating hours and as a result would be unlikely to have a significant impact on congestion. The impacts associated with the increase in heavy vehicles operating on the road network, are; a greater potential for accidents associated with slow moving vehicles and the greater wear on road pavements leading to potential defects.

Other traffic related impacts during the construction phase of the facility are the construction of the entrance and any associated works such as localised road widening or service diversions. It is likely these elements would require temporary traffic management perhaps resulting in temporary lane or road closures. Temporary closures would result in reduced capacity of the road, exacerbating any existing congestion issues. As such, the sites with accesses located on less trafficked roads would be preferable from a traffic and access view point.

Pipe Routes

Due to the long, linear nature of pipe routes, they are generally constructed in sections. This will result in localised impacts on the road network which will move when one section is complete and another commences. The impacts that are associated with the

construction of the pipe is the increased vehicular traffic consisting of both construction traffic and site staff vehicles. Traffic management measures may be required at site entrances and road crossings reducing road capacity i.e. temporary road/lane closures.

As the pipe construction will take place in different sections, the only criteria that could be used to separate the different options is the length of pipe, the number of road crossings and the nature of the road crossings (i.e. how trafficked these routes are).

The only major route specific impact would be the crossing of the M1 Motorway which only applies to certain pipe route sections. Despite this, regardless of route sections used, one crossing of the M1 will be required to outfall into Irish Sea. The use of tunnelling techniques would be required to achieve the crossing of the M1.

9.4.2 Operational Phase

WwTP Sites

The bulk of the traffic generated by the proposed WwTP will occur during the construction phase with operational phase traffic being limited to staff accessing the WwTP and vehicles transporting sludges from outlying small scale treatment plants and septic tanks and bi-products of the waste treatment process for disposal off site. The volume of HGV traffic generated during the operational phase is estimated at 14 vehicles per day in year 2040, which is considered to be negligible in terms of existing traffic flows on the surrounding road network.

Pipe Routes

There will be no requirement for regular operational traffic along the pipe route during the operational phase. Any traffic will be related to maintenance and will be small in volume and infrequent.

9.5 Mitigation Measures

9.5.1 Construction Phase

Recommended construction phase mitigation measures are as follows:

- Development and implementation of a construction traffic management plan outlining haul routes using the most suitable roads for vehicles arriving at and departing site.
- Photographic survey of haul roads prior to commencement of construction.
- Continuous monitoring of haul roads throughout the construction phase.
- Wheel wash facilities at all site entrances.

- Appropriate warning signage along haul routes alerting traffic to slow moving vehicles.
- Designing of any temporary accesses to NRA DMRB standard ensuring adequate visibility and sufficient turning radii and tapers to allow vehicles turn into and out of the WwTP site without crossing the centre of the public road
- Consider constructing the entrance to the Waste Water Treatment Plant prior to commencement of the main works.
- Ensure sufficient space for parking of site staff and HGV within construction sites.
- All temporary traffic management should be designed in accordance with the current version of Chapter 8 of the Traffic Signs Manual.

9.5.2 Operational Phase

Recommended operational phase mitigation measures are as follows:

- Construction of entrance to NRA DMRB standard ensuring adequate visibility and sufficient turning radii and tapers to allow vehicles turn into and out of the facility without crossing the centre of the public road
- Ensuring sufficient parking for vehicles within the site.
- Ensuring sufficient space for HGV's to park within the entrance prior to opening security gates.
- Provision of signage warning of the presence of slow moving vehicles on the approaches to the facility entrance.
- Development and implementation of a transportation plan outlining haul routes using the most suitable roads for vehicles arriving at and departing site.