

PE (Population Equivalent) and Drumbeg WwTw Capacity

Comments below are based on information from NI Water and the Departmental Solicitor's Office.

1. SOURCE - NI WATER

The **2021 Drumbeg WwTw Review** stated:

"NI Water has developed an Asset Standard that defines the procedure for determining flow, population equivalent (PE) and loadings for both wastewater treatment facilities and networks. The current Asset Standard is *Wastewater Flow & Population Determination v1.6* Issued January 2019. This Asset Standard formed the basis of the Drumbeg WwTW PE 2021 review. The results of PE updates are fed into the Headroom Register, which holds information on PEs / Capacity for all WwTws."

A summary of the Drumbeg WwTw Review is provided at Annex A of the 2021 Review Report. "From Annex A the population served by Drumbeg WwTw in 2021 was 1833.1 (Residential and Non-Residential)" "NI Water subsequently confirmed that the design PE (population equivalent) of Drumbeg WwTW was 1919, the actual PE was 1833 which gave a theoretical headroom available of 86PE. There was also a pending planning application for 17 detached dwellings at land on Quarterlands Road, which will add a further loading of 35PE."

"Although the PE figures would indicate remaining headroom, based on the corresponding flow figure, the 17 dwellings will use up the remaining **Hydraulic** capacity stated in the Water Order Consent flow parameter issued by the Environmental Regulator, the Northern Ireland Environment Agency (NIEA). Consequently, the planning approval of the 17 dwellings will result in Drumbeg WwTW being closed to future development"

2. SOURCE - DEPARTMENTAL SOLICITOR'S OFFICE (DSO)

From DSO correspondence dated 20 May 2024 figures are available for 2024 in respect of Planning Application LA05/2022/0033/f.

"Drumbeg WWTW currently serves a population equivalent (PE) of 1877 (based on 2024 data). The WWTW has a design PE of 1919. The PE of 1877 does not include the 17 houses approved for connection as part of the planning application. This WWTW is now deemed to be at capacity."

COMMENT ON PE IN RESPECT OF THE PROPOSED DEVELOPMENT

However, if it is accepted that for a standard 3 bedroom house (affordable housing) proposed onsite the PE would equate to 2.4 per household, that is 7.2PE for this planning application. For 5 bedroomed houses the PE would be to 4. A total of 56 PE. The total PE for the 17 proposed houses using these figures would be 63.2, some 81% higher than the 35PEs estimated by NI Water. With the addition of the 17 Houses proposed, Drumbeg WwTw will be seriously **Over Capacity**. These calculations do not include the Hydraulic capacity as assessed in the 2021 Drumbeg WwTw Review.

Appendix 1 sets out a Table constructed to inform the design of sewage plants. This model attributes 5PE per house. Using that calculation the proposed 17 dwellings would account for 85PEs nearly two and a half times the PEs calculated by NI Water. The basis for NI Water determining 35 PEs for the proposed 17 houses was not explained in Annex A.

CONCLUSION BASED ON INFORMATION FROM NI WATER & DSO

From the above calculations, Drumbeg WwTw which is 'now at capacity' (DSO letter of 20 May 2024, Para 16), would become seriously **Over-Capacity** with the addition of the proposed 17 dwellings, even in the absence of consideration of the additional Hydraulic Capacity.

The figures provided by NI Water in its 2021 Review do not take account of more people working from home due to both covid and post-covid working from home arrangements. With fewer commuters and more people working from home it is probably that some foul sewage may have migrated back to people's home from their workplaces.

The disconnect between information provided by NI Water and that from the DSO confirms our concern that Drumbeg WwTw is now at capacity without the connection of the 17 proposed dwellings in planning application LA05/2022/0033/F.

Quarterlands Group

SEWAGE TREATMENT PLANT DESIGN CALCULATIONS

(<https://www.slideshare.net/slideshow/sewage-treatment-plant-design-calculation/22086431>)

1.0 Sewage treatment plant

1.1 Design calculation.

i. Population equivalent (PE)

For this proposal, 40 unit of residential house and 18 unit of commercial building are consider for the development. From this table of type of establishment and the PE consist of:

Type of establishment	Population equivalent
Residential	5 per house
Commercial	3 per 100m ² area
Educational Institutions	
- Day Schools	0.2 per student
- Residential Schools	1 per student (residential)
Hospitals	4 per bed Hotels 4 per room
Factories	0.3 per employee
Market (Wet Type)	3 per stall
Market (Dry Type)	1 per stall
Petrol Stations	18 per service bay
Bus Terminal	4 per bus bay
Taxi Terminal	4 per taxi bay
Mosque	0.5 per person
Church or Temple	0.2 per person
Stadium	0.2 per person
Swimming Pool or Sports Complex	0.5 per person
Public Toilet	16 per WC (water closet)
Airport	0.2 per passenger/day
Airport	0.3 per employee
Laundry	10 per machine
Prison	1 per person
Golf Course	20 per hole