National Swimming Pool Planning Model

Region: Carlow County

1. Overview

The National Swimming Pool Planning Model (NSPM) has been developed by Swim Ireland in conjunction with FMG Consulting Ltd as a tool for assessing the provision of available **public** swimming facilities in an area relative to the population size and to identify strategic gaps. It has been made possible by Dormant Accounts Innovation Funding provided through Sport Ireland. Additionally, a Swimming Facilities Gap Analysis Report has been published by and is available from Swim Ireland. This Gap Analysis assesses facility provision on a national and regional basis, including factors such as disability access, waiting lists for lessons etc.

As part of the project Swim Ireland and FMG have produced a base report for each local authority area. This report for Carlow County Local Authority gives a high-level overview of an initial supply and demand assessment of swimming pool provision based on a comparison of the publicly available pool water with a population's demand in each area and within a reasonable travel distance to neighboring counties. For the purposes of this report publicly available pool water is defined as any facility that is open to the public on a pay as you go basis.

In the analysis, pools offering negligible public access to water are fully discounted. This includes facilities which offer neither pay-as-you-go or membership such as hotels that are only open for guest use or corporate facilities for employee use only.

Facilities offering membership only options are also discounted, however, it is acknowledged that these facilities play an important role in soaking up some of the demand amongst segments of the population that can afford membership. It is also acknowledged that some membership options may offer better value than higher end pay as you go options.

The table in section 3 lists all facilities which are counted for the purpose of this facility planning model analysis. A more detailed report assessing the impact of facilities offering membership, cost factors and other variables, such as demographics, waiting lists for lessons etc. can be produced by FMG Ltd. for a modest fee upon application to Swim Ireland.

Quick View

There are a total of 3 pools, 2 of which are associated with a hotel.

In considering the 2 facilities which offer pay-as-you-go access, the facilities of Carlow County provide an **effective supply of 573 m^2** of pool space.

This supply can be compared with the allocated demand: **464 m^2**. This demand comes from Carlow County residents and interaction with nearby counties.

The Detail

This assessment found that:

- Facilities within Carlow County provide an effective supply (see infobox) of **573 m^2**.
- The residents of Carlow County alone (i.e., excluding the residents of nearby counties) generate a gross demand of **662 m^2** for pool water based on national participation rates and the age / sex profile of the population.
- This demand is allocated (based on travel time, facility capacity, and facility condition) as follows:
  - **344 m^2** is allocated to facilities within Carlow County.
  - A futher **269 m^2** is allocated to facilities in other nearby counties.
  - The remaining **49 m^2** of demand is unmet, and comes from people who are too far away from their nearest pool.
- Residents of nearby counties apply a demand of **120 m^2** to facilities in Carlow County, meaning that - when combined with the **344 m^2** of demand generated by residents of Carlow County - facilities in Carlow County are allocated a total demand of **464 m^2**.
- As the demand on facilities in Carlow County from residents of nearby regions is lesser than the demand from Carlow County, nearby counties' facilities are alleviating more pressure from Carlow County than their residents are putting on the facilities of Carlow County. This could be due to a facility very close to the border of Carlow County, or a very attractive (i.e., brand new) facility in a different county.

Information: Effective supply of a facility or region, S_e, is given by

$$S_e = S_a * f_{\text{open}}$$

and is equivalent to its total pool area S_{a} multiplied by f_{open}: the percentage of the peak hours during which the facility is open. One should assume that all supply figures in this document, unless otherwise stated, refer to effective supply.

Conclusion: the facilities of Carlow County provide an effective supply of 573 m^2, and are allocated a demand of 464 m^2 by the model.

Of the 662 m^2 of demand, 344 m^2 (or 52%) is met by facilities within Carlow County. The following is a list of the equivalent demand met by facilities in other nearby counties (only counties which meet >1% of demand are listed):

County	Carlow County demand allocated to county [m^2]	Percentage of Carlow County demand soaked
Carlow County	344	51.93%
Laois County	171	25.88%
Wexford County	51	7.68%
Kilkenny County	35	5.31%
Kildare County	12	1.81%

A further 49 m^2 of demand from Carlow County (7.39%) is unmet because some residents live too far from their nearest facility.

2. Pool supply

There are a total of 3 pools in the region of interest. Of these:

- 1 offer membership and pay-as-you-go: 280 m²
- 1 offer only pay-as-you-go: 293 m²
- 1 offer only membership: 100 m²
- 0 offer neither membership or pay-as-you-go: 0 m²

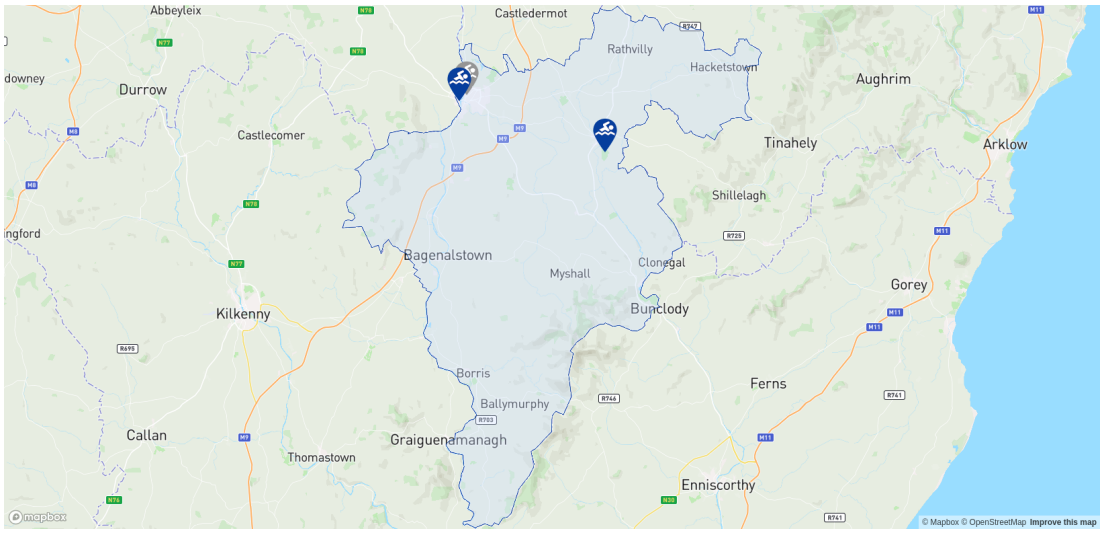
- 2 are associated with a hotel: 380 m²
- 1 are not associated with a hotel: 293 m²

Facilities which offer neither membership nor pay-as-you-go include hotels which restrict pool usage to its guests, or corporate facilities which restrict pool usage to its employees.

Note that in this analysis, pools who do not offer pay as you go have been discounted. A more detailed bespoke analysis report could include facilities offering membership to the general public as such facilities play an important role in catering for demand amongst segments of the population that can afford membership fees.

The table in section 3 lists all facilities which are counted for the purpose of this facility planning model analysis.

Details of the total pool supply can be found in Appendix 2.



Map showing the spread of facilities throughout the area of interest. Dark blue markers represent facilities that offer pay-as-you-go.

3. Demand for Pool Water

3.1. Attractiveness of the Facilities

In determining demand for pool water, the model makes three assumptions:

1. a person will prefer to use their nearest facility,
2. a person will prefer to use a quieter facility,
3. a person will not travel to a facility when that person is not within that facility's catchment (a facility's catchment is the region reachable within forty minutes of travel).

The table below provides details of the pool water demanded by individuals within a catchment, using only populations within the borough boundary and those where the catchment includes adjacent boroughs. For each facility, this table provides the forecasted demand of pool water from the population within that facility's catchment.

Name	Effective supply [m^2]	Allocated demand (from within region) [m^2]	Allocated demand (from outside region) [m^2]	Usage
Graiguecullen Swimming Pool	293	187	51	81%
Mount Wolseley Hotel	280	157	69	81%

4. Accessibility

Pool water accessibility is calculated at a 1 km² level. The model calculates the accessibility of each km² from the aggregate value of the pool supply and that demanded which determines the usage percentage of the facility, and the attractiveness of the facility from the perspective of the km². From an individual perspective, the score attributable to each km² refers to how accessible is the pool water to the individual. For example, the higher the user percentage the greater accessibility to pool water from that location.

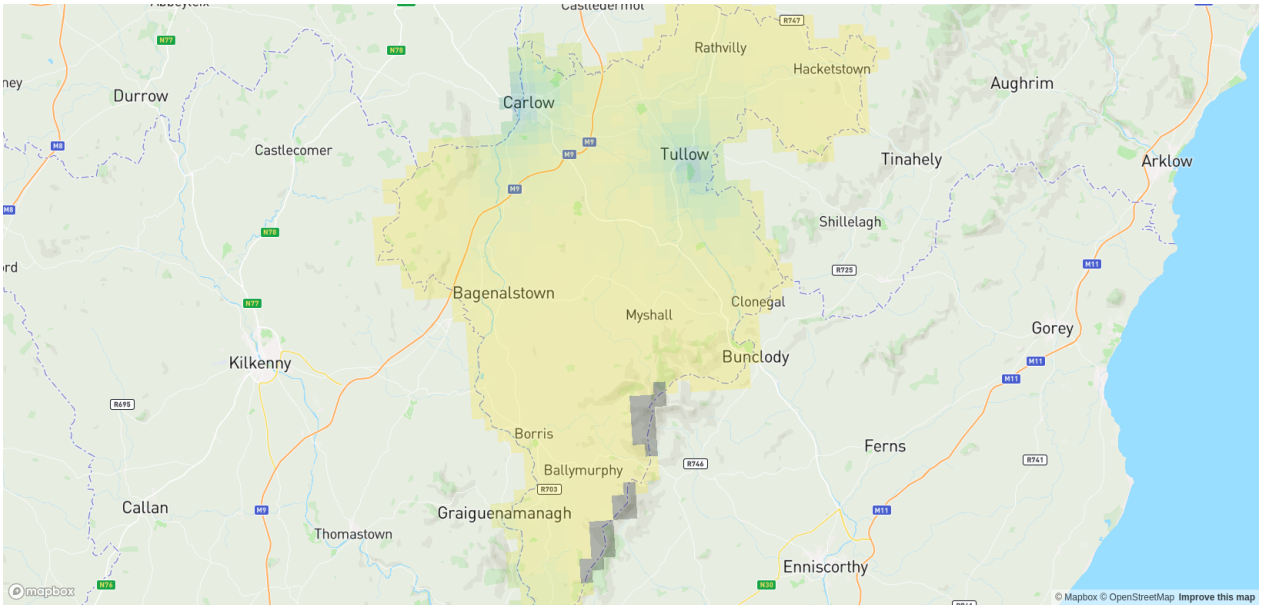
The people within each square kilometre have a relationship with each nearby facility. One aspect of this relationship is simple distance, another is attractiveness (which relies on facility age and distance), another is probability of interaction (which relies also on other nearby facilities).

To attempt to summarise all aspects of the relationship between the population of a square kilometre and nearby facilities, an accessibility index is introduced. This index is an abstract representation of the ability of the population to access pool water.

This index is rising with

- a higher number of supply locations, with greater capacity,
- a lower demand,
- and a decreasing distance between square kilometre and supply location.

In the map below, darker blues represent greater accessibility; grey-black regions are too far from their nearest pool, and are therefore considered to have no access to pool water.



5. Next steps

This report provides a high level spatial assessment of the existing supply and demand for swimming in the area. When considering the findings of this report, you may also wish to consider the following:

- Are facilities which offer pay-as-you-go doing so at a price that is accessible to the public?
- The impact on supply of facilities which only offer membership.
- The location and scale of any proposed housing developments in the study area as these are likely to include changes in the overall size and age profile of the population which may impact the overall level of demand for swimming.
- The age and condition of the existing stock of facilities and whether these are likely to provide the same level of attractiveness for the population in future years.
- Likely changes to the number and condition of swimming pools in neighbouring areas.

Whilst the standard model provides an initial assessment of supply and demand for swimming pool provision, for an additional fee, Swim Ireland and FMG Consulting Ltd are able to undertake more detailed analysis using bespoke modelling for different scenarios. Should you feel that this would be useful, please contact us for a more in depth discussion of your requirements.

Appendix 1. Accreditations and Disclaimer

The output presented in this report has been provided by Swim Ireland and FMG Consulting Ltd; extracts or indeed the full report can be reproduced provided that suitable acknowledgement is made.

Disclaimer

The information is presented in good faith using the data available to Swim Ireland and FMG Consulting Ltd at the time of preparation. it is provided on the basis that neither Swim Ireland or FMG as a company will not be held liable to any party for any direct or indirect losses, financial or otherwise, associated with any contents of this report, or in relation to taking, or not taking, action in respect of any information or advice contained within the report.

Other than data provided by Swim Ireland, this report also contains data from the following sources:

- Swim Participation data courtesy of Sport Ireland and the Irish Sports Monitor.

Population data

- Central Statistics Office, EIRE - Population data as provided as of 2022 and associated shapefiles, as well as Regional Population Projections (2017 - 2037) as licensed under Creative Commons Attribution 4.0 CC-BY in line with Open Data best practice.
- Northern Ireland Statistical and Research Authority - Population data and associated shapefiles based on 2021 Mid-Year Estimates for 11 Local Government Districts and 3,780 Data Zones. Additionally, 2018 - 2043 population projections for the 11 Local Government Districts. "Source: NISRA : Website: www.nisra.gov.uk" Crown copyright and licensed under the Open Government Licence v.3.0.

Indices of deprivation

- Republic of Ireland - freely available statistical data. Trinity National Deprivation Index 2016. Source: Teljeur C, Darker C, Barry J, O’Dowd T. The Trinity National Deprivation Index for Health and Health Services Research 2016. Trinity College Dublin 2019.
- Northern Ireland – Northern Ireland Multiple Deprivation Measure 2017 (NIMD2017) data contains public sector information. Source: www.nisra.gov.uk. Crown copyright and licensed under the Open Government Licence v.3.0.

Mapping

- OpenStreet Map - "© OpenStreetMap contributors". The data is available under the Open Database Licence. Licence terms are available at www.openstreetmap.org/copyright or www.opendatacommons.org/licenses/odbl.
- MapBox - @ Mapbox. Is a proprietary and non-free license. Licensed under Mapbox GL JS v2.

Appendix 2. Pool Supply Tables

Both PAYG and Membership

PAYG Only

Membership Only

Neither PAYG nor Membership

Name	Address	Pools	Hours open during peak	Most recently refurb. / built
Graiguecullen Swimming Pool	Graiguecullen Swimming Pool, The Numbers, Graiguecullen, Carlow, Carlow, Leinster, Republic of Ireland, R93N5Y0	10m x 25m 10m x 5m	43	1993
Mount Wolseley Hotel	Mount Wolseley Hotel, Tullow, Co. Carlow, Carlow, Leinster, Republic of Ireland, R93 C9H0	14m x 20m	44	2024
Seven Oaks Hotel and Leisure	Seven Oaks Hotel and Leisure, Athy Road, Carlow., Carlow, Leinster, Republic of Ireland, R93V4K5	10m x 20m	22	2022

The "Hours open during peak" column counts the number of peak hours during which a pool is open throughout a week. This number is used to modify the total pool area in order to acquire the effective supply; the lower this number, the lower the supply this facility is able to provide. The peak hours are defined as follows:

- Monday: 08:00 - 09:00, 17:00 - 22:00
- Tuesday: 08:00 - 09:00, 17:00 - 22:00
- Wednesday: 08:00 - 09:00, 17:00 - 22:00
- Thursday: 08:00 - 09:00, 17:00 - 22:00
- Friday: 08:00 - 09:00, 17:00 - 22:00
- Saturday: 09:00 - 16:00
- Sunday: 09:00 - 16:00

Appendix 3. About the model

The National Swimming Pool Planning Model (NSPM) has been developed to support the roll-out of Ireland's National Swimming Strategy. The model has been made possible by funding provided by Sport Ireland and the Dormant Accounts Fund. The model has been developed by Swim Ireland in conjunction with FMG Consulting Ltd and a small project team consisting of selected local authority representatives and key stakeholders. It is designed to be a tool for helping to assess the strategic provision of available public swimming facilities in an area.

The NSPM has been developed to:

- Help local authorities determine an adequate level of swimming pool provision to meet their existing and future needs.
- Help identify strategic gaps in provision.
- Provide bespoke functionality, that enables interested local authorities to model different scenarios based on changes in supply and patters of demand.

Swim Ireland are keen to deploy the model in local authority settings to enable them to make more informed decisions about future investment in swimming pool provision across the island of Ireland.

A3.1. How it works

The model compares the available supply of swimming pool water with a populations demand for swimming in a given area.

The model uses a set of parameters to define where facilities are located, how they are used and by whom. It draws on data collected from a National Audit of Swimming Facilities conducted in 2022-23 and participation data collected by Sport Ireland in their annual Irish Sports Monitor surveys as well as national census data from the relevant national statistics agencies. These surveys provide core information on the age profile of users, and their gender, and on the facilities themselves, their age, availability, their hours of use and general size.

The base data in the model will be regularly updated in time with the latest available information available from these sources.

A3.1.1. Understanding supply

Each facility's capacity varies depending on its size and how many hours it is available for use by the public.

The NSPM calculates capacity by taking the available supply and converting that into a capacity factor based on availability at peak times. Each facility is then given a rating of how many visits it can accommodate.

The model deploys a floating catchment area analysis to allocate demand to supply.

1. The model uses travelling times and different modes of travel to calculate estimated travelling distance from a particular locality.
2. The model assumes that the appeal of each facility will be different and it weights the data on the age of the facility to determine an attractiveness factor.
3. The model allocates population demand to facilities based on the findings of Step 1 and Step 2.

The Capacity of a facility is calculated by using a one-time measure based on 1 user per 6 m^2 to provide a maximum available capacity (MAC). When considering available capacity, one must bear in mind that a 100%-utilised facility will not be pleasant for swimmers, as it is full-to-bursting; it is recommended that facilities remain below 70% utilisation.

A3.1.2. Travel times

The model uses the MapBox proprietary service to determine 24 areas-of-service around each facility: eight for each travel mode of driving, cycling, and walking. Each of the eight represent the region reachable within a certain time (5, 10, 15, 20, 25, 30, 35, 40 minutes). The smaller the time distance of the innermost service area which a cell intersects, the more attractive that facility is to the residents of that cell.