

Cutting the Lake at Lady's Island



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Location

Lady's Island Lake (Grid Ref: T1007) is the large, coastal waterbody located on the South Wexford Coast 4km north-west of Carnsore Point, the extreme south-east corner of the island of Ireland¹ & ².



Location map: Screenshot from <https://maps.wexford.ie/imaps/>. OSi copyright Permit No 8947. © Ordnance Survey Ireland/Government of Ireland.

The lake is separated from the eastern Celtic Sea by a fringing shingle barrier composed mainly of sandy-gravel. That barrier is regularly breached mechanically to lower water level in the lake when the level rises to an unacceptable height. The breach in the barrier is known locally as 'The Cut' and the long-standing name used for the drainage activity is 'Cutting the Lake'. This leaflet answers some frequently asked questions about cutting the lake such as: Why is the lake cut? How is water level measured? What would happen if the lake wasn't cut? When did cutting start? What does 'Cutting the Lake' mean? Who are the stakeholders? How is the lake cut? Who manages the cutting? And, what is the current situation?

Why is the lake cut?

The lake is cut to lower an unacceptably high water level. In the past, the work was done by local landowners to relieve flooding of surrounding agricultural land. At present, breaching is carried out by the National Parks and Wildlife Service, in association with the Lady's Island Lake Drainage Committee, to free nesting habitat used by the terns that breed on two islands in the lake. Terns are small white seabirds with black caps. Two islands — Inish and Sgarbheen — in Lady's Island Lake support the largest mixed tern colony in Ireland. Careful management of these migratory seabirds has resulted in the population recovering from a crash during the early 1980s³ & ⁴. Lady's Island Lake now supports the largest mixed colony of terns in Ireland.



Terns at The Cut.

Water gets into Lady's Island Lake in the following six ways³.

1. **Precipitation.** Mainly rain and local shower activity; 30-year (1981-2010) annual mean = 905.5mm at the former Rosslare Harbour weather station (closed April 2008)⁵.
2. **Run-off.** The catchment has an area of 18.9km squared⁶. Surface run-off + channel drainage (12 feeder streams; most very small) + delayed runoff, e.g., groundwater.
3. **Spray.** Spray is airborne on prevailing south-westerly winds.
4. **Seepage.** Seepage of seawater landward through the barrier is significant when water level in the lake is low.
5. **Crestal overwash.** Significant after breaching when the breach plug is low and/or growing.
6. **Storm surge and storm swell penetration over the barrier.** On the night of 16-17 December 1989 a swell caused water level in the lake to rise by 0.5m even though the barrier had not been breached that year.

Water gets out of Lady's Island Lake in two ways³.

1. **Seepage.** Seaward seepage through the barrier (1.5km long x 200m wide) is significant at low tide when water level in the lake is high.
2. **Evapotranspiration.** Evaporation from the lake water surface area (approximately 400ha) is significant in summer. Transpiration is sweating by plants.

An analysis of budgetary inputs and losses over the 28-year period 1984-2012 showed that the mean annual water input raised water level in the lake by 1.69m (range 0.86-2.66m) while the corresponding figure for outputs was 0.38m (range 0.01-1.02m). In other words, over time, more water normally entered the lake than left it and that resulted in flooding.

How is water level measured?

Water level in Lady's Island Lake can be measured on either of two staff gauges erected near the

Community Centre in Lady's Island village. The gauges are calibrated at 0.02m (2cm) intervals and are levelled to Ordnance Datum Poolbeg (ODP). The calibration at the top of the gauges is 6.00m ODP. The level at the bottom of the gauge, that is the bed of the lake, is about 3.16m ODP. To convert from OD Poolbeg to OD Malin subtract 2.57⁷. Poolbeg is below Malin. Water level in the image is 4.32m ODP (= 1.73m ODM). The Office of Public Works (OPW) manages a data logger on the bed of the lagoon (Station No 13070) and every 15 minutes real-time water level values are uploaded from it to the OPW website at <https://waterlevel.ie/0000013070/0001/>.



Staff gauge

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SWC Promotions: promoting the natural heritage resource values of the South Wexford Coast.

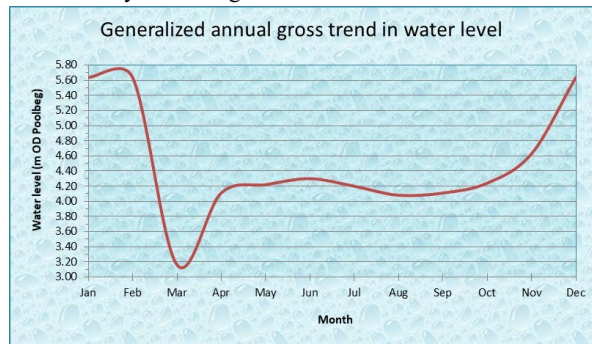


What would happen if the lake wasn't cut?

The generalized annual gross trend in water level at Lady's Island Lake is for water level to be high in winter. The highest water level recorded since September 1984 was 5.867m ODP on 29 January 2016^{OPW&8}.

The barrier is normally breached in early spring and the water level drops dramatically from its winter maximum to about 3.0m ODP, that is, slightly above mean sea level (2.59m ODP⁷). Seawater enters through the open breach on high tides and as the natural action of the sea plugs the breach the water level usually stabilises at around 4.0m ODP, slightly above mean high water of spring tides (MHWST = 3.69m ODP^{7 and 9}).

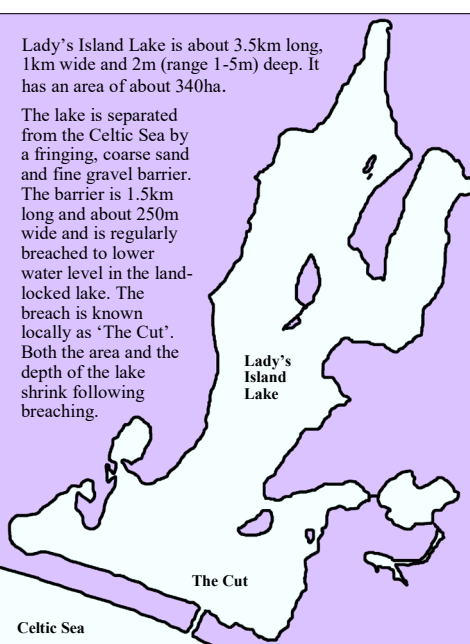
If the summer is wet, water level rises due to rainfall; if the summer is dry, water level falls due to evaporation. In the Lady's Island Lake area, October is normally the wettest month of the year⁵ so as winter sets in water level climbs steeply back to its seasonal peak to start the annual cycle over again.



If the barrier was never breached it is assumed that during a dry spell water level in the lake might, given time, stabilise at about 5.9m ODP by seepage through the gravel barrier.

In a wet time, with flash flooding, it is likely that water level would rise so rapidly that the water would overtop a low point on the fringing barrier eroded by an earlier tidal incursion and the lake would empty itself suddenly into the adjoining sea sweeping a portion of the barrier before it, resulting in the waterbody becoming tidal.

The combination of prevailing south-westerly, on-shore winds, coastal processes and the transgressive nature of the barrier would eventually seal the breach enclosing the lake once more.



When did cutting start?

The earliest known historical references to cutting the lake date from the seventeenth century. Sir William Petty's Down Survey map (1656-57) of the area appears to show that The Cut was well established in the 1650s¹⁰. The first known written descriptions of cutting the lake date from around the early 1680s^{11 & 12}.

What does 'Cutting the Lake' mean?

It is self-evident that it is not possible to cut a lake. One possible explanation for the widely used and long-established local expression 'cutting the lake' may be that it is a corruption of 'cutting the leat'¹³.

Landlord John Codd of Castletown House was a prominent late 17th century organiser of breaching the barrier^{10, 12 & 14}. His ancestors were from Devon and Cornwall in the south of England where the word 'leat' is used to mean an artificial aqueduct, a channel dug to carry water. As an educated man, Squire Codd would probably have pronounced the word 'leat' to rhyme with 'meet'. It is very likely that some of his workmen did not have the privilege of a formal education and were strongly

influenced by Yola, the local dialect that was spoken in the area "*amongst ye common people*"¹⁵. Yola preserved Middle English vowels so 'leat' would have been pronounced to rhyme with 'mate' rather than with 'meet'. Consequently, 'cutting the lake' may be a mispronunciation, corruption or reinterpretation of 'cutting the leat'?

Who are the stakeholders?

Lady's Island Lake is State foreshore and ownership is vested in the Minister for Housing, Local Government and Heritage. Both the lake shores and the fringing gravel barrier that separates the lake from the adjoining Celtic Sea have a number of owners. In no particular order, the main stakeholders with interests in cutting the lake are

- Local farmers, landowners and householders with property adjoining the lake and its catchment area.
- The Catholic Church and Our Lady's Island Pilgrimage Committee, organisers of the annual Marian pilgrimage around Lady's Island.
- Members of Our Lady's Island Game Protection Association (OLI GPA) who shoot wildfowl on the lake.
- Wexford County Council, the local authority.
- The Environmental Protection Agency (EPA), that monitors water quality in the lake, its feeder streams and the adjoining nearshore marine waters.
- The National Parks and Wildlife Service (NPWS), an executive agency of the Department of Housing, Local Government and Heritage and is the statutory body responsible for nature



conservation and natural heritage in Ireland.

- The European Commission (EC) as administrator of the Natura 2000 network.
- Various other interested parties.

How is the lake cut?

The lake is normally cut in springtime, usually during late March or early April. The breach is opened by a contractor using a track excavator. Repeated breaching of the barrier over many years has resulted in the formation, via erosion by the running water, of an exit channel on the floor of the lake. For a cut to be successful, the axis of the breach has to be aligned with that existing exit channel. The excavator aligns his machine on a line of sight joining the western tip of Codd's Inish with the steeple of the church in the village and drives across the barrier so that the machine tracks mark the axis of the leat, breach or cut.



Starting work at dawn, the operator of the track excavator digs a deep trench across the barrier leaving a plug at the lake side. Gravel is piled on the eastern side of the breach. When the trench is complete the plug at the lake side is removed. Lake water pours into the trench and runs seaward. The excavator operator clears any blockages and the water runs smoothly like a river before nightfall.



Ideally, the pent-up waters are released on a falling neap tide with a northerly wind. The head of water in the lake drives the outpouring water through the breach causing water level to fall steadily. Often, a 'burst' occurs. The barrier is said to burst when the velocity of the

outpouring water reaches the threshold required to lift the underlying coarse sand and fine gravel and carry it in suspension.

Erosion increases suddenly during a burst causing very rapid widening and deepening of the breach. If and when the barrier bursts depends on a combination of factors including the head of water in the lake, the amount, if any, of winding of the breach, grain size on the barrier, the tidal cycle and the weather. The average drop in water level when the lake is cut is about 1.25m which is roughly equivalent to five million metres cubed, five billion litres or five million tonnes of water.

The open breach tides for a few days, rarely for weeks, very exceptionally for months, before the natural action of the sea plugs it. The breach plug gets overwashed by high tides but as the plug grows in height overwashing normally diminishes and may cease altogether. While each overwashing event adds additional layers or veneers of gravel to the breach plug causing it to grow, the barrier seldom recovers its former height leaving the lake vulnerable to penetration by seawater during winter storm surge events.

Who manages the cutting?

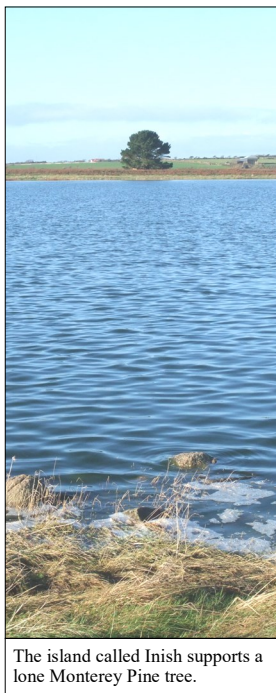
The barrier at Lady's Island Lake has been breached since at least the mid-17th century¹¹. Originally breaching was organised by local landowners and happened every 7-8 years; later every 3-4 years. Wexford County Council (WCC) took control of breaching in 1954 and, under its flood relief functions, continued to cut the lake on a more or less annual basis until 1988.

In 1986 the lake and the islands that terns nest on (Inish and Sgarbheen) were classified Special Protection Area (SPA) No IE0004009. In 1988 the National Parks and Wildlife Service (NPWS) felt that breaching the barrier was not compatible with the SPA designation and asked WCC to cease the practice. WCC complied and the barrier was not breached in 1989.

Fearing flooding as water level rose in 1990, local interests

organised a cut. In an attempt to regularise matters, WCC and NPWS held a meeting of all interested parties on 24 July 1990 and a committee, the Lady's Island Lake Drainage Committee (LILDC), was elected to formally manage the cutting of the lake³. The LILDC is constituted as a sub-committee of the Wexford District Committee of WCC. The County Council provides a Chair, Secretary and secretarial services;

otherwise, participation on the LILDC is entirely voluntary. The cost of breaching the barrier is borne by the NPWS as part of that service's management of the tern colonies.



The island called Inish supports a lone Monterey Pine tree.

What is the current situation?

In 1990, the Office of Public Works (OPW) investigated possible long-term engineering solutions to managing water levels in the lake. OPW engineers ruled out any engineering works

on the barrier due to the unstable nature of the gravel substrate³. The OPW favoured pumping excess water to Carne. However, that option was not pursued due to the costs involved. The fall-back position was to continue cutting the lake but to cut more regularly.

On 13 March 1997, public notice was given that it was proposed to designate the lake, barrier and adjoining areas a candidate Special Area of Conservation. The proposed designation to protect the lagoon and barrier conflicted with the traditional breaching of the barrier and drainage of the lake. In 1998 consulting engineers were commissioned by the OPW and NPWS to make recommendations. The consultants favoured a pipeline under the barrier and advised what while works on the gravel barrier would be difficult they would not be impossible⁶. A similar option was proposed for Tacumshin Lake. Works at Tacumshin Lake went ahead first but the outcome there was deemed "an ecological disaster" in that the drainage works significantly reduced the area of the priority habitat. The NPWS had no desire to repeat such an undesirable outcome at Lady's Island Lake so the pipeline option was not pursued.

Further studies were commissioned by the NPWS. In the spring of 2002 contour and hydrological surveys of the lake bed, lake shore and adjoining lands were carried out. In the period 2002-2004 land-based and dive surveys of the lake's vegetation and rare plants were carried out.

In 2007 the assessment of the ecological status of the lake rated the status of the waterbody "Unfavourable-BAD". The report stated: "large areas of aquatic macrophytes have disappeared, together presumably with the fauna associated with them". The main issues were "Periodic mass mortalities associated with tidal exchange following breaching of the barrier" and "repeated algal blooms and fish kills" due to pollution issues on-going since the 1980s¹⁶.

In 2009 the NPWS commissioned an ecological assessment of breaching the barrier. The consultants' report recommended that breaching should cease. It went on to advise that a management plan for the lake was "urgently needed", that an engineering solution to managing water levels was also needed as a matter of urgency, and that the water quality issues needed to be tackled¹⁷.

In 2010 the overall environment quality status of Lady's Island Lake was again rated 'Bad' due to elevated nutrients, elevated Biological Oxygen Demand (BOD), high chlorophyll concentration and poor phyto-benthos composition¹⁸. Also in 2010, the 1997 SPA designation was amended¹⁹.

In 2012 the OPW and NPWS commissioned an update of the 1998 consulting engineers' report⁶. The 2012 update repeated that the



High water level in winter.

pipeline proposed in 1998 remained the preferred option²⁰. The NPWS commissioned an ecological assessment of that option. The assessment concluded "it is not possible to assess if this [option] would maintain the favourable conservation status of the Annex I habitat" and advised that alternative solutions be investigated²¹.

On 20 October 2016, the first meeting was held of a Design Committee tasked with finding the preferred water level and median target values for salinity in the lagoon and a structure to achieve these values.

The Design Committee members completed their work, a 219-page Natura Impact Statement was prepared, and on 26 June 2020 Wexford County Council applied to An Bord Pleanála for planning permission to advance the proposed engineering works (case reference number PL26.307432).

The permission sought was granted on 3 September 2021 subject to six conditions²².

Three documents were posted on the Board's website: a 69-page Inspector's Report, a seven-page Board Order and a six-page Board Direction²².

In summary, the six conditions were: (1) the works to be completed in accordance with the plans

submitted, (2) compliance with the mitigation measures proposed, (3) production of a Construction Environmental Management Plan (CEMP), (4) employment of a Project Ecologist by the local authority, (5) definition of the duties and responsibilities of key personnel on site, and (6) cleaning and washing of all machinery before delivery to the site²².

To complete the permits required, Wexford County Council applied on 29 October 2021 to the Minister for Housing, Local Government and Heritage for consent to lay two drainage pipelines on State foreshore (File Ref: FS007038)²³. On 4 January 2022, the Department of Housing, Local Government and Heritage gave public notice of the application received and made the application form and supporting materials available online²³.

On 9 February 2022, public notice of the application was given and submissions,



OPW recorder

comments and objections were invited before 10 March 2022.

While the application for foreshore consent is being processed, cutting the lake continues and funding to advance the engineering option is being secured.

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Nature conservation

The lake and adjoining coast are designated protected areas for their natural heritage resource values.

*"Lady's Island Lake is by far the largest and best example of a sedimentary lagoon in the country and one of the best in Europe. It is in a relatively natural condition, despite regular breaching of the barrier separating it from the sea."*²⁴

Lagoons are priority habitat types annexed for special protection measures in the EU Habitats Directive²⁵. A description of the protected area at Lady's Island Lake is available online²⁶.

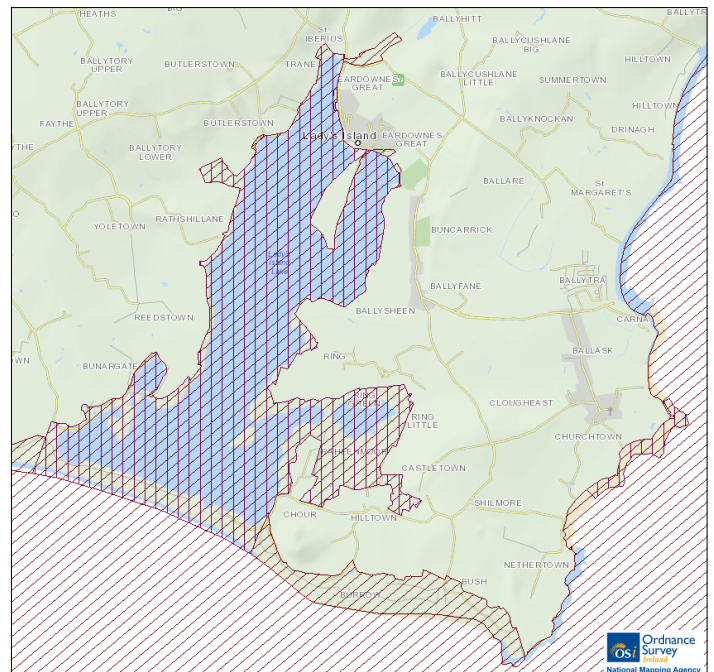


Protected sites

Lady's Island Lake is subject to the following two designations

- Lady's Island Lake **Special Area of Conservation (SAC)**, Site Code IE0000704 (upward diagonal red lines),
- Lady's Island Lake **Special Protection Area (SPA)**, Site Code IE0004009 (vertical red lines).

These sites are part of the European Union's **Natura 2000** network.



Protected areas. The figure above shows Lady's Island Lake SAC and Lady's Island Lake SPA, together with parts of Carnsore Point SAC to the south and east and Tacumshin Lake SAC to the west. (Source: National Parks and Wildlife Service at <https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba>. Ordnance Survey Ireland Permit No 8947. © Ordnance Survey Ireland/Government of Ireland.

Follow the Country Code

Visitors to Lady's Island Lake are very welcome and can help conserve the biodiversity of the area by following the Country Code.

- Leave the area as you found it. Do nothing to destroy the wonderful amenity you have come to enjoy. Kill nothing but time; take nothing but photographs and memories.
- Please take your rubbish home with you. Leave nothing but footprints.

The protected wildlife areas are managed by the National Parks and Wildlife Service (NPWS). If you see any threats to wildlife report your concerns to Tony Murray, the local NPWS Conservation Ranger, email Tony.Murray@npws.gov.ie, telephone 01 539 3212.