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3rd November 2016 **Our Ref:** 20586/cor/jo031116

Wicklow County Council
Planning and Development,
County Buildings,
Wicklow

Attention: Administrative Officer

RE: PLANNING REFERENCE 16 363

Permission for water treatment plant including a water treatment building (gross area of approximately 4670 sqm) a low lift pumping station, sludge treatment facilities including a sludge dewatering building, sludge balancing tank, thickening tanks, sludge holding tank and sludge storage tank and sludge storage facility, washwater recovery and settlement tanks and an electrical distribution building to replace the existing water treatment scheme, alteration to the existing reservoir offtake tower, addition and alteration to pipework and structures within the existing reservoir dam, construction of a piped siphon over the existing reservoir dam, demolition of disused public toilet, regarding ot the existing overflow spillway and associated landscaping and site development works at Vartry Water treatment Site Vartry Roundwood

Dear Sirs,

We refer to your further information request dated 12th October 2016 and respond as follows:

Introduction
The planning application relates to the replacement and upgrade of plant and equipment that are no longer fit for purpose and are no longer capable of providing a safe and secure supply of drinking water. The works include the provision of a new water treatment plant which will

- meet current legal drinking water standards and
- maintain supplies during algal blooms on Vartry Reservoir

The existing plant is not capable of satisfying these key water supply requirements.

Water abstractions will remain at the levels established over the previous 150 years of service, since the impounding reservoir was originally constructed in the 1860's.

Public Importance

The Vartry Water Supply Scheme serves over 200,000 people in the Wicklow and South Dublin Areas with drinking water. The proposed works are essential if these supplies are to be maintained. This was illustrated by a failure of the plant in April 2014 as a result of the seasonal impact of Algal Blooms, as reported in the Wicklow Voice below:

> [Extract from Wicklow Voice, April 28 2014]
> *UPDATE ON WATER ISSUES IN NORTH WICKLOW*
> *The water supply was been disrupted in various areas across the county. According to Wicklow County Council this is due to seasonal impacts of algae in the source water. The algae occur naturally in clean fresh waters and though it does not pose a health risk, it slows the treatment processes at the production plant.*
>
> *Irish Water and Wicklow County Council are working together to restore supply.*
>
> *As a result, the water supplies to northeast Co. Wicklow are badly affected including the reservoir serving Enniskerry. As a result, the following areas in the Enniskerry area are without water: – Kilmolin, Kilgarron, Parknasilogue, Eagle Valley, Enniskerry Village, Knocksink, Ballyman Road, Monastery Area, Eagle Valley, R117 Road, and Millfield. Tankers will be in place at The Bog Meadow in Enniskerry village and Kilgarron housing estate, Enniskerry.*
>
> *In order to conserve water in the Greystones area, the supplies from the Drummin, Delgany reservoir will be shut off each night from 8 pm to 6:30 am.*
>
> *The areas affected are – Greystones, Windgates, Delgany and Killincarrig.*
>
> *Tankers are also in place at the following areas:*
> - *Wingfield Farm, Glencormack, on road no. L1019 (Glencormack to Tinnahinch road)*
> - *Bellevue Hill / Kindlestown Rise, Delgany*
> - *Tinnapark, Kilpedder – will be in place later on Monday 28th*
> - *Timmore Lane (south of Newtown) – will be in place later on Monday 28th*

The Vartry supply is the only source of water supply for many communities in North Wicklow and South Dublin. Should these works not proceed the likelihood of ongoing disruptions will increase and will occur on a more regular basis. Provision will be required for the following emergency measures:

- *Tankering water as a result of significant areas with reduced or intermittent supply;*
- *Temporary (above ground) connections to boost supplies;*
- *Modifications to plant in pumped areas to sustain supplies;*
- *Valve operations to redirect water, maximise customer supply zones and reduce the need for tankering.*

The Vartry Water Supply Scheme is on the EPA's Remedial Action list due to the risk of THM formation and cryptosporidium breakthough. According to the most recent EPA Report on drinking water *"Drinking Water Report for Public Water Supplies 2015"*, EPA, Oct 2016: (p18)

> *"Of the 75 supplies where Irish Water have indicated a completion date of 2017 or later,...9 supplies in Co. Wicklow are linked to the upgrade of the Vartry water treatment plant.."*

Irish Water have assured the EPA that the improvement works will be progressed urgently to address these concerns. Should these works not proceed there will be;

1. continued disruption to supply and
2. the risk of the entire scheme being issued with a boil water notice will increase and
3. the risk of the water supply not meeting the statutory quality standards will increase.

It is therefore a matter of overriding public importance that these works proceed as soon as possible.

Demand Projections
The regional water supply demand projections for the Greater Dublin Region, which includes large areas of Co. Wicklow, are summarised in Table 1 below (*Source: Irish Water*).

		2011	2016	2021	2026	2031	2041	2046	2050
Regional Water Requirement	*MLD*	*649.4*	*673.6*	*711.7*	*755.5*	*798.5*	*853.6*	*878.8*	*893.4*

Table 1 – Demand Projection for the Greater Dublin Region (Source: Irish Water)

In order to satisfy demand, all existing treatment plants must be capable of consistently operating at their optimum capacity. Therefore, it is essential that the proposed works are undertaken so that the reliable production capacity at Vartry can revert to 75MLD by 2021.

Reliable Yield
The reliable yield[1] of the reservoir is estimated at 79MLD as summarised in Table 2 below:

Yield	Probability of Failure	Years of failure, Ranked										
72												
73	0.8%	1893										
74	0.8%	1893										
75	0.8%	1893										
76	0.8%	1893										
77	1.6%	1893	1976									
78	1.6%	1893	1976									
79	**3.3%**	**1893**	**1976**	**1945**	**1944**							
80	3.3%	1976	1893	1945	1944							
81	3.3%	1945	1976	1893	1944							
82	4.1%	1945	1976	1893	1944	1990						
83	4.9%	1945	1976	1944	1893	1990	1954					
84	6.6%	1945	1976	1944	1893	1954	1946	1990	1953			
85	7.4%	1945	1976	1944	1893	1946	1954	1990	1953	1884		
86	9.0%	1945	1976	1944	1946	1893	1954	1953	1990	1989	1884	1971

Table 2 – Reliable Yield from Vartry Reservoir
Source: "Yield from Vartry Reservoirs", McCarthy Hyder, 12th February 2003

200,000 people are dependent on the Vartry Scheme for a reliable and secure source of water. Any increase in compensation flow for downstream users reduces Irish Water's ability to meet that need.

Each megalitre[2] per day reduction in water supply will either increase the frequency of disruption to supply or reduce the numbers supplied from Vartry by between 3,000 to 5,500 people[3]. If water supply from Vartry is reduced it impacts on public health and on the social and economic development of the region.

While Irish Water has plans to develop a major new source through the East and Midlands Region Water Supply Project, this will not be available until 2025 at the earliest and all projections in relation to the region assume that Vartry will be providing 75 MLD.

In summary, the storage available at Vartry has a limit and if additional water is provided

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[1] *Reliable yield is defined as the yield that would fail statistically once every 50years*
[2] *Megalitre – One million litres per day*
[3] *Per capita Consumption = 145litres/head/day plus a reducing allowance for unaccounted for water to 20%*

in compensation flows, it will have an impact on Irish Water's ability to provide a sustainable drinking water supply for the region.

Objectives in relation to downstream flows
The Vartry River immediately downstream of the plant has previously run dry when back pumping occurred. Under the terms of this Planning Application, Irish Water are now committing to maintain a set minimum flow in the river immediately downstream of the plant. This will be of major benefit to the river and downstream users.

The objective is to return the river to its 'normal' flow i.e. as it was from 1865 to when the plant started to fail in 2008, but to provide the added benefit now of ensuring a minimum flow is always available.

As a result of leaking plant and equipment, Irish Water is aware that the release to the river has increased to an average 10.5 MLD in recent years. Irish Water has reviewed the submissions raised and acknowledges their concerns in relation to the anticipated changes in levels of river flow. Irish Water is seeking to manage flows into the river, cognisant of the planned works, while also fulfilling its statutory duty to supply a secure and reliable source of drinking water to 200,000 people in Wicklow and Dublin.

Clarification in relation to 1(i) to 1(iii) - Discharge Quality
Irish Water note the clarifications raised by Wicklow County Council in relation to the quality of the proposed discharge. While it is the preference of Irish Water to discharge treated process water, Irish Water wish to address any concerns relating to the quality of water discharged from the plant. For this reason, Irish Water clarify that all treated process water will be returned to the head of the works. There will therefore be no discharge to the River Vartry from the new water treatment plant and the existing discharge from the slow sand washings will cease.

Irish Water will ensure there is a continuous flow of reservoir water downstream of the plant by diverting water abstracted from Vartry Reservoir through site pipework into the existing spillway channel.

The above clarification will ensure there is no risk to water quality during the operation of the proposed development and addresses Items 1 (i), (ii) and (iii) of the clarification request. An updated Appropriate Assessment Screening is attached to take account of this clarification.

Any additional works, required to ensure that there will be no discharge of treated water to the River Varty by means of returning all treated process water to the head of the works, shall be contained within the application site and will be of a scale consistent with the proposal. In the event of a grant of permission Irish Water shall submit compliance drawings showing the final layout of the development.

Clarification in relation to 1 (iv) – *"With regards to the flow data submitted, the applicant shall clarify the estimated volume of water historically and currently leaking from the overflow weir from the reservoir (during times of no overflow) to the Slipway and clarify if this was included in the flow data already submitted. This is to clarify what flow will be lost when the proposed overflow weir is upgraded."*

Any seepage through the existing weir is considered insignificant and no allowance for such seepage was included in flow data already submitted. There are no proposals to upgrade the existing weir. Therefore, there will be no change in flows (i.e. no flows will be lost) when the works are complete.

Clarification in relation to 1 (v) – *"The flow graph provided indicates that the flow regime has been very variable historically with periods of no flow due to 'pumping back' and periods with higher flow (15Ml/day) due to leakage. The current proposal, with leaks fixed, may result in protracted periods when a steady 5ML/day is discharged to the Vartry River due to no overflow from the reservoir during dryer months. Accordingly you may wish to comment as to the effect the change in flow regime with specific regard to the varied flow rates as opposed to relatively consistent flow rates will have on the downstream receiving environment with particular regard to meeting the objectives of the Water Framework Directive in responding to this item."*

The flow downstream of the plant is made up of:

- Flow from the plant
- Contributions from the catchment

The only flows that Irish Water can control are those released through the plant. All other flows are outside the control of Irish Water and will remain the same after the proposed works.

Consistent discharge rates were normal operating practice at the plant prior to 2008 as illustrated in Figure 1 below:

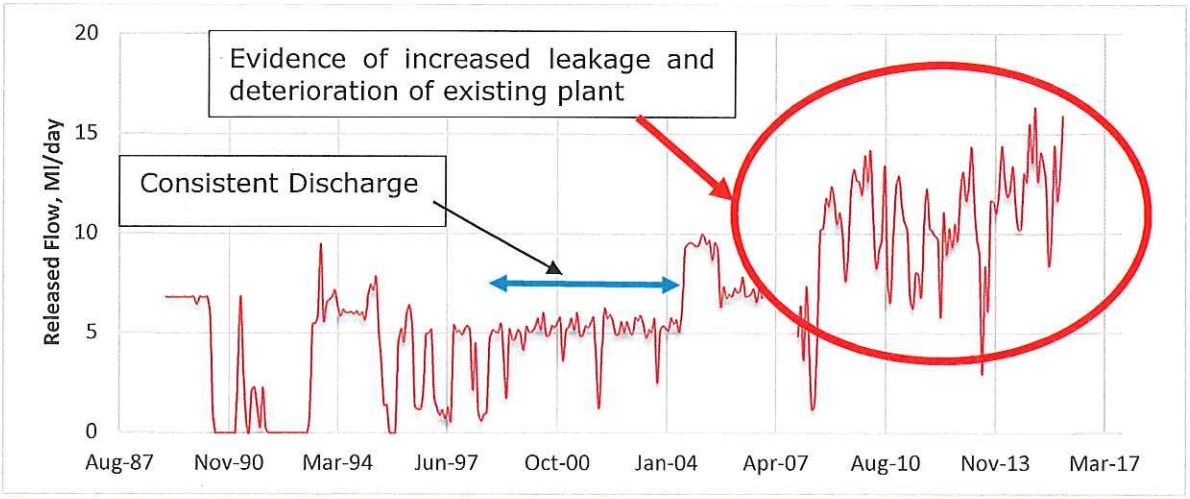

Figure 1 Measured Monthly Average Flows from the WTP to the Vartry River from 1988[4] to 2016

Variability in downstream flows occurred during spill events and from run-off from the downstream catchment both of which will not change as a result of this development.

Because there is an established practice of consistent discharge rates and because variability in flow has been provided by spill events and the downstream catchment, both of which will not be impacted by this development, there will not be a significant effect by returning the river to its 'normal' flow i.e. as it was from 1865 to when the plant started to fail in 2008, with the added benefit now of ensuring a minimum flow is always available.

Irish Water also clarify that the existing abstraction at Annagolan Bridge will cease once the proposed development at Vartry is complete. This will add a further 1.2MLD to downstream flows.

The Q rating of the river at Annagolan Bridge (downstream of the water Treatment Plant but upstream of Devils Glen and Ashford) has been at Q4, Q4-5 or Q5 since monitoring began in the 1970's and when the 'normal' flow would have been approximately 5MLD.

[4] *No records from 1868 to 1988*

The River Vartry downstream of the plant achieved 'Good' Status under the Water Framework Directive during the monitoring period 2007-2009. This rating was established prior to the current average leakage rates of 10.5MLD.

Updated Appropriate Assessment (AA) Screening Report

With regards to the updated AA Screening Report, there is no risk of any significant impact on the Murrough Wetlands SAC/SPA or any other Natura 2000 site or their qualifying interests arising from a 5MLD base flow. The freshwater dependant habitats within the Murrough SAC would not be adversely affected by the proposed maintenance of 5MLD flow rates during low flow periods. These habitats have always experienced large seasonal fluctuations in water levels and can tolerate them during spilling conditions. Moreover, they were established when the 'normal' baseflow from the Vartry site was 5MLD, Consequently, there can be no significant effect on the integrity of these habitats by returning the water supply to what it was when they were classified.

Summary

The provision of a new water treatment plant at Vartry is an urgently required development and one of overriding public importance. As outlined, water abstractions will remain at the levels as established over the previous 150 years of service, since the impounding reservoir was originally constructed in the 1860s.

Irish Water confirm they will maintain a minimum discharge of 5MLD of reservoir water downstream of the plant. This is in addition to other flows from the surrounding catchment which will not be affected by the proposed development and will provide flow variability in the downstream catchment.

If the planning authority is minded to increase the compensation flow immediately downstream of the works to address concerns that:

1. the daily *average* flow during non-spill events is 10.5MLD (or 9.3 MLD when the Annagolan Bridge Abstraction ceases)
2. variable flow rates within the above flow constraints are permitted subject to a minimum compensation flow of 5MLD

then such a decision will have implications and constraints for the water supplied to communities across Wicklow and South Dublin as previously outlined.

Irish Water also clarify there will now be no discharge from the treatment plant as all treated process water will be pumped back to the head of the works.

Yours faithfully,

Jim Oliver
Director
for NICHOLAS O'DWYER LTD