



Hydro-G

WW Discharge Assessment Report

An Bord Pleanála

Appeal 301714-18

Appeal to Reviewed Discharge Licence

Bracetown, Clonee, Co. Meath.

Appellant: AXIAL PROPERTIES LIMITED.

Planning Authority: MEATH COUNTY COUNCIL

Local Government (Water Pollution) Acts 1977 & 1990

Consultant Pamela Bartley

January 2019



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Report Title: An Bord Pleanála Appeal 301714-18. Discharge Licence Reviewed.
Treated Wastewater Effluent to Waters. Bracetown, Clonnee, Co. Meath.

Date: 17/1/19

Pamela Bartley

Prepared by: _____

Dr. Pamela Bartley B.Eng, M.SC., Ph.D.

NOTES:

This report is for the use solely of the party to whom it is addressed and no responsibility is accepted to any third party.

TABLE OF CONTENTS

Executive Summary	iv
1. Introduction	1
2. Characteristics of the Area & of Relevance to the Site	3
2.1. Ecological Characteristics	4
2.2. Characteristics of the Water Environment	6
3. Discharge Licence & Appeal Details	9
3.1. Discharge Licence Issued	9
3.2. Appellant's Presentation of Grounds for Appeal	10
3.3. Objections to the Application for Discharge Licence.....	10
3.4. Observers to the Appeal	10
4. Site Visit, Catchment Assessment & Data Employed	11
5. Assessment	12
5.1. Surface Water Regulations (2009) Assessment	13
5.2. Fish Life Evaluation.....	16
5.3. Appropriate Assessment	16
6. Consideration of Appellant's Points	19
7. Discussion	20
8. Overall Conclusions	21
9. Recommendation	22
10. Schedule -	22
11. Decision of Inspector	23
12. REFERENCES & Bibliography	24
Appendix A Site Photographs	Error! Bookmark not defined.
Appendix B Data Employed & Site Information	Error! Bookmark not defined.

Executive Summary

- Axial Properties Limited, Bracetown Business Park, Clonee, Co. Meath is the appellant in this case. The appellant holds a discharge licence for the discharge of treated wastewater to waters (Reference No. WP92/3). That licence was issued in 1992.
- Notice for intention to review this licence was issued by Meath County Council (MCC) on the 11th March 2009. That review was initiated by the enactment of the Surface Water Regulations (SI 272 of 2009) and the requirements enacted into Irish Law regarding the duty of each Local Authority to review each discharge licence in order to ensure compliance with the Environmental Quality Objectives of that enacted legislation. In the time period 2009 to 2018 Meath County Council and Axial Properties Limited engaged in collaborative consultation including site visits, requests for and receipt of information.
- Meath County Council issued a revised Discharge Licence in April 2018 (27/4/18) in Environment Order 5390/2018. The Reference in the Register for Meath County Council is 18/01. The licence was issued to Axial Properties Ltd., Bracetown Business Park, Clonee, Co. Meath. The discharge licence permitted a volume of 15m³/d and ELVs for a variety of parameters. Axial Properties Ltd. lodged an appeal to ABP, appealing two Conditions of the revised discharge licence (Ref 18/01). The appellant's reasons for the appeal are that the licensed volume is insufficient and that the proposed Emission Limit Values are too stringent. An Bord Pleanála's file reference is Appeal 301714-18. Meath County Council made a submission to the appeal. The appellant responded to the Board, on the 9th August 2018, to an Article 19 letter. Hydro-G has considered all details and both the detail and considerations are presented and addressed in this report.
- The discharge licence in this case is associated with the discharge of treated wastewater, that has a domestic characteristic, from a Business Park of commercial offices and a large area in the back half of the site for dry warehousing (articulated lorry conveyance for storage and delivery). The M3 motorway is in proximity to the site and the stream which receives the treated wastewater's point of discharge. Treated wastewater from the site is conveyed by closed pipe under the motorway and discharges in an open drainage channel to the west of the M3. That open drainage channel is 300m long, approximately. The licence considers that the treated wastewater is discharged to waters of the River Tolka. The River Tolka flows into Dublin Bay and that is a Special Protection Area (South Dublin Bay and River Tolka Estuary SPA Site Code 004024). The River Tolka joins that SPA at a distance of 20km, approximately, from the site of the discharge. There are no designated sites within 20km of the discharge. It is considered that Meath County Council has complied with the requirements of Articles 27 (2) and 42 (1), (2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011). Evidence on file demonstrates that Meath County Council considered the Site and the proximity of Designated Sites. I deem that they correctly concluded that due to the considerable distance of the discharge from the Dublin Bay and Tolka River SPA, and the compatibility of the ELVs with environmental objectives much further upstream, there is no likelihood of significant effects on the conservation interests of the SPA. I have had regard for Meath County Council's screening and I have completed a screening on behalf of the Board. Based on the Conservation Objectives for the Site (NPWS, 2011), the application of the Source>Pathway>Target Risk Assessment Framework, the connectivity between the proposed point of discharge and the South Dublin Bay and River Tolka Estuary SPA (Site

Code 004024) my assimilation capacity simulations suggest a water quality response that infers that likely significant effects CAN be reasonably ruled out on the basis of objective scientific information. I conclude that on the basis of the information provided the Board can be satisfied that the proposed development individually, or in combination with other plans or projects is **not** likely to have a significant effect on the South Dublin Bay and River Tolka Estuary SPA (Site Code 004024) in view of the site's Conservation Objectives.

➤ On the basis of my calculations, the Conditions under appeal are indeed conservatively stringent and the MRP-P ELV in licence 18/01 is neither practical nor achievable in my experience. MCC request that the licensee achieve a Total P concentration of 0.16 mg/l TP. The average concentration in the wastewater is >7 mg/l TP. Meath County Council have applied a diligent assessment and competent evaluation. However, the Conditions are very conservative. The actual requirements of the Surface Water Regulations and the regulated Environmental Quality Objectives (EQSs) can still be met with less stringent Emission Limit Values (ELVs) in the Discharge Licence Conditions. On the basis of my calculations, restricting the % 'Headroom' allocation to <25% for both the ammonia and ortho-P parameters places an impractical treatment burden on the package WWTP and the required ferric dosing system that would be required. The 'Headroom' concept is not a statutory requirement. The 'Headroom' concept is one that was written into the Local Authority Services National Training Group (LASNTG) guidance document. I deem that the downstream environment is mostly serviced by national infrastructure foul drainage. Dublin city is also downstream. With respect to nutrient concentration in the discharge from this site, there is room in the system to allocate more of the River Tolka's 'Headroom' to the discharge of treated wastewater from Bracetown Business Park. The Environmental Quality Objectives of the EC Environmental Objectives (Surface Waters) Regulations, 2009 (SI No 272 of 2009) can still be adhered to for slightly revised Conditions in the Licence on the basis that Meath County Council's adopted allocation of headroom in the river is increased. That would permit slightly less stringent Emission Limit Values. While the existing Status of the River Tolka is Poor. This is not going to be improved or deteriorated by the discharge of a relatively small volume of treated wastewater from the Bracetown Business Park. Far greater works are required in the wider catchment, which contains numerous roads and a motorway, all of which discharge sediment laden stormwater runoff to this river system. The Status reports for the Tolka River cite that 'Nutrient Conditions' are 'Pass'. Therefore, it is not treated wastewater effluent that causes the problem resulting in assigning Poor Status to this waterbody. It is the sediment issues causing poor ecology in the river. Sediments and urbanisation require control. This is not a problem caused by Bracetown Business Park. The site's results for Suspended Solids content in their treated wastewater are so low (<2mg/l SS) that they are below the Limit of Detection of the accredited laboratory analyser.

➤ It is considered that the case presented by the appellant is valid and I recommend that the Board accepts the said appeal for reasons set out in the schedule.

➤ The site could still meet the requirements of the Surface Water Regulation EQSs and be licensed to discharge treated wastewater to the River Tolka for a daily discharge volume of 30m³/d and ELVs as follows: 1 mg/l Total Phosphorus as P; 0.75 mg/l MRP-P; 5 mg/l BOD₅; 50 mg/l COD; 20 mg/l Suspended Solids; 6 – 9 pH units; 0.4 mg/l Ammonium as N; 40 mg/l Nitrates as N; 10 mg/l Oils, Fats & Grease.

1. Introduction

Axial Properties Limited, Bracetown Business Park, Clonee, Co. Meath is the appellant in this case. The appellant holds a discharge licence for the discharge of treated wastewater to waters (Reference No. WP92/3). That licence was issued in 1992.

Notice for intention to review this licence was issued by Meath County Council on the 11th March 2009. That review was initiated by the coming into Regulation of the Surface Water Regulations (SI 272 of 2009) and the requirements enacted into Irish Law regarding the duty of each Local Authority to review each discharge licence in order to ensure compliance with the Environmental Quality Objectives of that enacted legislation. In the time period 2009 to 2018 Meath County Council engaged in consultation with, site visits, requests and receipt of information from, Axial Properties Limited.

Meath County Council issued a revised Discharge Licence in April 2018 (27/4/18) in Environment Order 5390/2018. The Ref in Register for Meath County Council is 18/01. The licence was issued to Axial Properties Ltd., Bracetown Business Park, Clonee, Co. Meath.

Axial Properties Ltd. lodged an appeal to ABP, appealing two Conditions of the revised discharge licence (Ref 18/01). The appellant's reasons for the appeal are that the licensed volume is insufficient and that the proposed Emission Limit Values are too stringent. An Bord Pleanála's file reference is Appeal 301714-18.

The discharge licence in this case is associated with the discharge of treated wastewater, that has a domestic characteristic, from a Business Park of commercial offices and a large area in the back half of the site for dry warehousing (articulated lorry conveyance for storage and delivery). The licence considers that the treated wastewater is discharged to waters of the River Tolka. The River Tolka flows to and into Dublin Bay and that is a Special Protection Area (South Dublin Bay and River Tolka Estuary SPA Site Code 004024). The River Tolka joins that SPA at a distance of 20km, approximately, from the site of the discharge. There are no designated sites within proximity of the discharge. The M3 motorway is in proximity of the site and the discharge. Treated wastewater from the site is conveyed by closed pipe under the motorway and discharges in an open drainage channel to the west of the M3. That drainage channel is 300m long, approximately. Figure 1 presents the appeal site location and proximity to the nearest downstream, hydraulically connected, designated site (South Dublin Bay and River Tolka Estuary SPA Site Code 004024). The River Tolka joins that SPA at a distance of 20km, approximately, from the site of the discharge. There are no linked designated sites within 20km of the discharge. While there is the Rye Water Valley/Carton SAC (Site Code: 001398) at <10km to the south west, this site is not hydraulically connected to the proposed discharge. Appeal case details are presented in summary format in Table 1.

Table 1 Summary of Appeal Case Details

Licence Holder	Axial Properties Limited																								
Appellant	Axial Properties Limited																								
An Bord Pleanála Reference	301714-18																								
Appeal Date	21 st May 2018																								
Development	Discharge of treated effluent (wastewater, domestic characteristic) from a Business Park on the immediate outskirts of Clonee, Co. Meath.																								
Location	Bracetown, Clonee, Co. Meath National Grid Reference 702541, 743336 OS Discovery Series Map No.50, Scale: 1:50,000																								
Discharge Information	<p>Existing wastewater treatment plant that discharges treated wastewater by pipe to a conveyance channel that runs alongside a maintenance access route of the M3 motorway. This conveyance channel is removed vertically and horizontally from the M3. It is at a much lower elevation to the M3 and is in a natural wetland type setting. The discharge is then conveyed to the River Tolka. The average discharge quality has been measured as follows:</p> <table border="1"> <thead> <tr> <th>AVERAGE</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td><2</td> <td>BOD</td> <td>mg/l</td> </tr> <tr> <td>29</td> <td>COD</td> <td>mg/l</td> </tr> <tr> <td>6</td> <td>SS</td> <td>mg/l</td> </tr> <tr> <td>7.40</td> <td>pH</td> <td>pH units</td> </tr> <tr> <td>0.13</td> <td>NH4-N</td> <td>mg/l</td> </tr> <tr> <td>7.64</td> <td>Total P</td> <td>mg/l</td> </tr> <tr> <td>49.01</td> <td>TON-N</td> <td>mg/l</td> </tr> </tbody> </table>	AVERAGE			<2	BOD	mg/l	29	COD	mg/l	6	SS	mg/l	7.40	pH	pH units	0.13	NH4-N	mg/l	7.64	Total P	mg/l	49.01	TON-N	mg/l
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7.40	pH	pH units																							
0.13	NH4-N	mg/l																							
7.64	Total P	mg/l																							
49.01	TON-N	mg/l																							
Licence Information	Meath County Council. Original Discharge Licence Reference No. WP92/3. Revised Discharge Licence reference is 18/01. Meath County Council initiated the Licence Review in 2009 on the basis of enactment of the Surface Water Regulations. Reviewed Licence issued in 2018. The revised discharge licence issued permits 15m ³ /d and very strict ELV for phosphorus.																								
Notes regarding Information Presented in Case File	<p>River is classed as 'Poor Status'. However, it is ecological system that is Poor. Nutrient and Fish status of the river is 'Pass' (https://gis.epa.ie/EPAMaps/). It is most likely the road and sediment that causes the Poor Status. 15m³/d of treated wastewater is not the problem here.</p> <p>Meath County Council applied correct and robust appraisal method for the assimilative capacity simulations. However, a very conservative 'headroom' allocation was applied. In addition, an incorrect 95%tile flow value was used. This is not the fault of MCC – it seems to be a legacy error from the original licence consideration in 1992.</p> <p>Independent assimilation capacity simulations suggest that this discharge could be licensed for slightly more volume and less stringent ELVs and still meet the requirements of the Environmental Quality Objectives of the Surface Water Regulations (2009).</p>																								

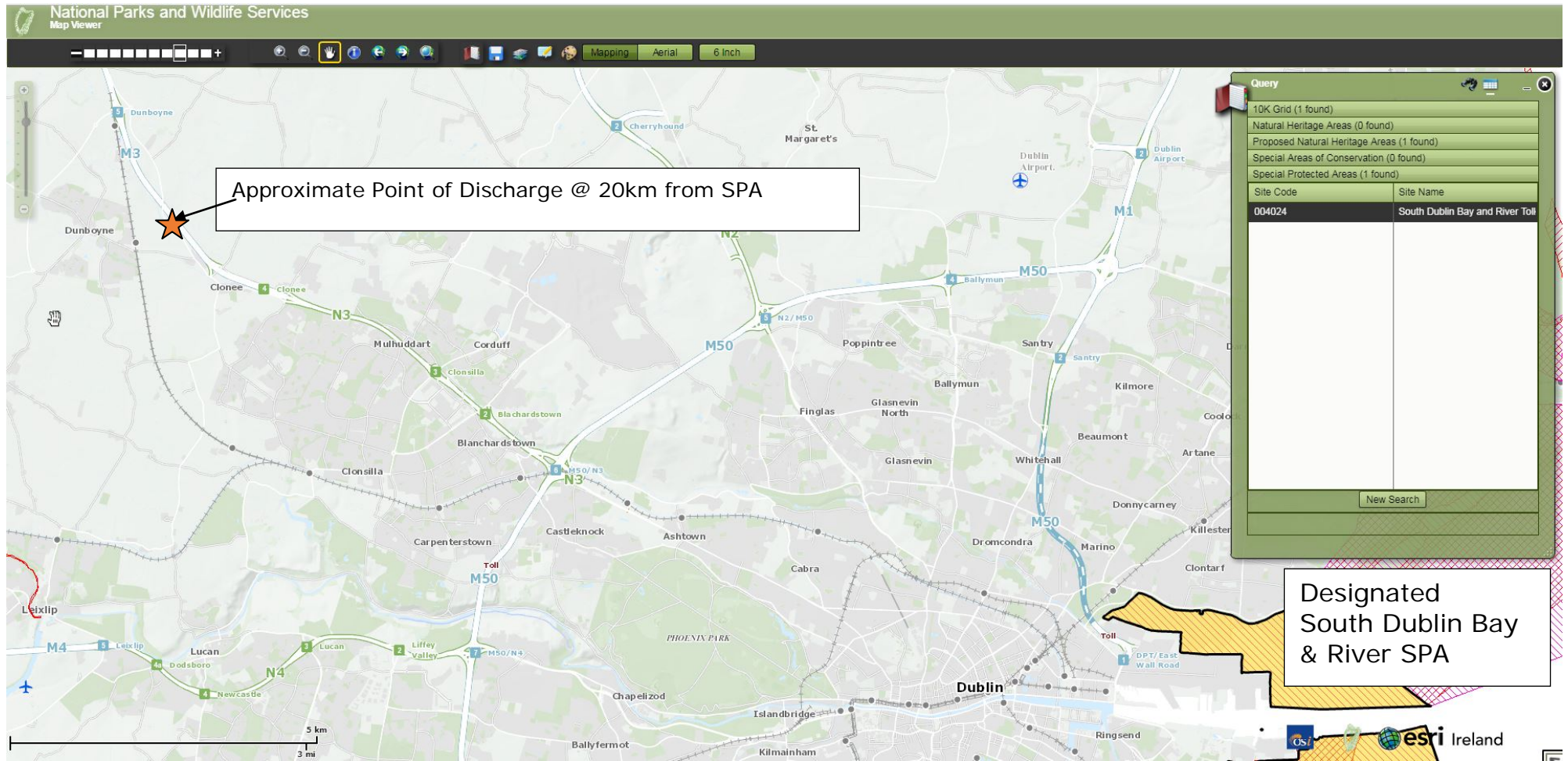


Figure 1 Site Location ★ and closest linked designated site.

2. Characteristics of the Area & of Relevance to the Site

This discharge is created by a Business Park that is part of the 'South Meath Economic Corridor'. The Bracetown Business Park is located immediately adjacent to the M3; 13km west of Dublin City and 16km west of Dublin Airport. The site has road frontage directly on to the local road R147, which was the N3, and there is direct access to the M3 interchange. One would imagine that Meath County Council & Irish Water would be able to service the site with provision of a wastewater mains but it seems that there has been a protracted engagement between Meath County Council, in the first instance, and latterly Irish Water and the required 'service level agreement' has not borne any successes to date (refer to the 2 page list of correspondences and meeting on this issue in Appendix 9 of the Appellants response 9th August 2018). The South East Meath Chamber of Commerce (2017) cites that the "Bracetown Business Park has over 400 people employed by over 30 businesses located within the Business Park and currently has a number of Own Door Office or Serviced Office Suites available." Therefore, let us assume that 500 people is the current maximum occupancy of the site. However, there are recent grants of planning permission for additional office space at Bracetown Business Park RA/170586.

The site's discharge is to a surface water in proximity to the M3. It does not pose a health hazard to humans in the area because the natural wetland type surface water channel to which the wastewater is discharged to is removed vertically and horizontally from the M3. It is at a much lower elevation to the M3 and is in a natural wetland type setting. The discharge is then conveyed to the River Tolka. I deem the natural wetland setting surface water that receives the treated wastewater is an important component of the treatment system and it is an important component of how the assessment of the proposal is considered. Wetlands are considered a wastewater treatment system in themselves: 'Integrated Constructed Wetlands' are well described by the Department of the Environment, Heritage & Local Government (DoEHLG, 2010) and wetlands have been constructed in the Tolka Valley with the specific purpose of contamination treatment (Collins & McEntee, 2009).

The EPA's 'Licensing and Permitting' search engine reveals no other local discharges of relevance to this assessment. With respect to Bracetown a Clonee, the EPA notes that there is indeed a large discharging of Total Phosphorus, from Keepak in Clonee but that discharge is to local authority sewer¹.

The discharge from the Bracetown Business Park has a history going back to 1989 (ABP case file folder, Appendix A, original License associated information). In summary, Table 2 presents information for the WWTP from the original application at the site (data 1991 – 1992).

¹ <http://www.epa.ie/pubs/advice/aerprtr/prtr/TOP%20Emitters%20to%20wastewater%202007-2012.pdf>

Table 2 Information for the WWTP

PE Existing WWTP	400	PE Population Equivalent cited in original documents
Hydraulic Capability of Existing WWTP (m³/d)	72	based on the fact that the 400PE was referenced in 1992 documentation and so 180L/p/d design figure back then
Appendix 3 (1992) submission	18	m ³ /d is cited as the Treatment capacity
Treatment Plant Information (1992)	80m ³ aeration tank, 13.5m ³ settlement tank, 100m ² Puraflo WWTP (Filtration Area) = 2400 gallons /d (Hydro-G calculates = 10.7m ³ /d)	
Original Licence (MCC Ref 92/3)	Licensed 11 m ³ /d and ELVs of 10 mg/l BOD, 15 mg/l SS & 6.5 to 9.5 pH.	

There does not seem to be any further information in the Case File regarding upgrades in capacity of the WWTP, Other than the information presented by Emmett Conboy (MCC's executive chemist, Environmental Section) in his 17 page report, dated 13/10/17, to David Keyes (MCC's Senior Executive Engineer, Environmental Section). Page 10 of the report suggests that EPA (1999) would assign 30 l/d/p. In that case, 500 people (total, future) would generate 15 m³/d. This appears to have been the figure agreed on site during MCCs site and area visit in 26/7/16.

Emmett Conboy (MCC's executive chemist, Environmental Section) presents much relevant detail of the WWTP and the discharge location and ecological considerations in his 13/10/17 report to David Keyes (MCC's Senior Executive Engineer, Environmental Section).

2.1. Ecological Characteristics

2.1.1. General Ecological

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network. European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites. A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The treated wastewater is discharged to waters that form the River Tolka. The River Tolka flows to and into Dublin Bay and that is a Special Protection Area (South Dublin Bay and River Tolka Estuary SPA Site Code 004024). The River Tolka joins that SPA at a distance of 20km, approximately, from the site of the discharge. There are no designated sites within proximity of the discharge. Figure 1 presented the appeal site location and proximity to the nearest downstream, hydraulically connected, designated site (South Dublin Bay and River Tolka Estuary SPA Site Code 004024), which is 20km distance, approximately. While there is the

Rye Water Valley/Carlton SAC (Site Code: 001398) at <10km to the south west, the Site Synopsis for this site lists designation for the habitats and species [7220] Petrifying Springs* [1014], Narrow-mouthed Whorl Snail (*Vertigo angustior*) and [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*). I conclude that those springs and snails in the Rye Water Valley/Carlton SAC could not be affected by a relatively small magnitude discharge of treated water at a site that is under review here from the Bracetown Business Park.

The South Dublin Bay and River Tolka Estuary SPA Site Code 004024 has its own Statutory Instrument: European Communities (Conservation Of Wild Birds (South Dublin Bay And River Tolka Estuary Special Protection Area 004024)) Regulations 2010 [S.I. No. 212 Of 2010]. The Special Conservation Interests are a range of birds, which are listed in S.I. No. 212 of 2010, and wetland habitats that support them. The area protected is presented in Figure 2.

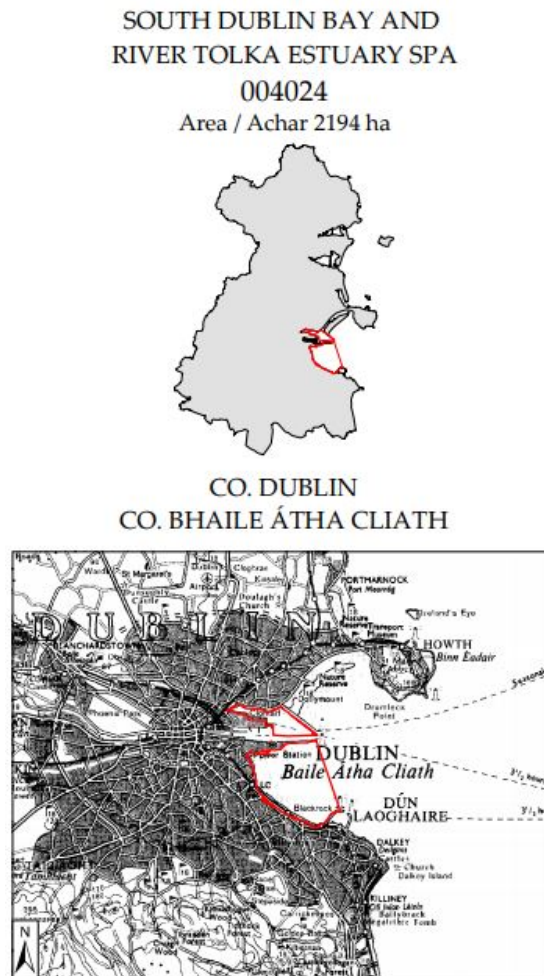


Figure 2 SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPA 004024 area and geographical context.

The North Bull Island SPA (004006) is farther NE of the South Dublin Bay and River Tolka estuary SPA 004024 area. I am considering that the River Tolka discharges to South Dublin Bay and not to the North Bull Island SPA. My assessment for the Bay covers impact assessment for the island by virtue of the fact that the Bay is the primary receptor: if the discharge isn't going to affect the Bay, it will not affect the island.

2.2. Characteristics of the Water Environment

2.2.1. Designations on the River Tolka

The River Tolka is not listed as a Salmonid River in S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations, 1988. Similarly, the River Tolka does not have any nutrient sensitive designations or any noteworthy characteristics requiring special consideration according to the EPA Envision database (<https://gis.epa.ie/EPAMaps/>). However, MCC report (Conboy, 2017) that Inland Fisheries Ireland advise that R.Tolka is an important salmonid system supporting resident brown trout and a migratory sea trout population. Hydro-G notes Inland Fisheries characterisation of the River Tolka as continuing to support important fish life throughout the almost 30 years of wastewater discharge from Bracetown Business Park.

2.2.2. 'Status' of the Receiving Water Environment

The surface water (river) system in the vicinity of the site is the 'Waterbody Tolka (E_EA_09_1541)' (www.wfdireland.ie; watermaps) was assigned '**Moderate Status**' classification (www.wfdireland.ie; watermaps, Date Reported to Europe: July 2010). The 'Objective' for this waterbody is to '**Restore by 2021**'. However, the Water Framework Directive Mapping and reporting in www.wfdireland.ie's 'watermaps' has been superseded by the EPA's updated Envision Mapping (<https://gis.epa.ie/EPAMaps/>) and this national database now maps the site as '**Poor**' Status (Name TOLKA_020, European Code IE_EA_09T010600, Status Poor, Period for WFD Status SW 2010-2015). However, it is for ecological (sediment issues) that the river system is assigned Poor Status. All other assessment criteria for the River Tolka are reported as Pass: such as pH, nutrient, fish life and oxygenation criteria (<https://gis.epa.ie/EPAMaps/>). I propose that it is for these criteria that are relevant to the discharge evaluation under consideration and there is room in the system for nutrients but not sediments (suspended solids). The 'one out, all out' principle is counterproductive for rational evaluation of discrete types of discharges into a river system. DoEHLG (2010) states as follows:

"WFD Ecological Status

Surface water monitoring includes ecological and chemical parameters. For ecological status, quality elements, representing plants, insects and fish, along with supporting water quality, hydrology and morphological conditions are sampled and analysed in rivers and lakes to allow waterbodies to be classified into one of five classes of ecological status; high, good, moderate, poor and bad. New standards were set in the Surface Waters Environmental Quality Objectives Regulations (SI 272 of 2009). A range of elements are measured in each water body, and a classification is produced based on a 'one out, all out' principle. This uses the poorest individual element result to set the overall classification. Once the status of monitored waterbodies is determined all waterbody types (e.g. river or lake) in the River Basin District (RBD) are clustered according to typology (physical characteristics) and risk assessment (from Article 5 characterisation). This provides a type and pressure profile of waterbodies which allows status to be extrapolated from monitored (donor) waterbodies to unmonitored (recipient) waterbodies."

The Tolka estuary (approximately 19km downstream) is classed as '**Moderate**' Status (<https://gis.epa.ie/EPAMaps/>).

In 2018 the Basin Management Plan for Ireland 2018-2021 was launched and it sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027. The Plan provides a national framework for improving the quality of waters. This is a 2nd cycle plan and for the 2nd Cycle, the Eastern, South Eastern, South Western, Western and Shannon River Basin Districts are now merged to form one national River Basin District: the Plan is very political speak and talk focussed about future aims and economy rather than science. It refers to programmes that are getting under way such as catchments.ie. The document itself makes no specific reference to the River Tolka, Dublin Bay or other points of note of relevance to this assessment: The Upper Tolka is listed in a Table in an Appendix for an area for action but nowhere in the Appendices on Wastewater Treatment Plant upgrades is anything listed for Meath that would suggest servicing the area around Bracetown Business Park.

2.2.3. Hydrochemical Data for River Upstream

For the purposes of assigning background concentrations in the receiving waterbody, MCC adopted adjusted background concentrations for BOD, MRP and NH4 because the River Tolka already exceeds the EQS's for those parameters in the Surface Water Regulations (2009). This is permitted and outlined in the LASNTG (2011) Guidance. That Guidance suggests that a mid-point value between the High & Good Status EQS's should be adopted as the adjusted background concentration where data is sparse. MCC report monitoring results for Q values only in the monitoring record for the River Tolka. Therefore, assuming sparse concentration data is reasonable. The detail of MCC's approach is provided in pages 12 & 13 of Conboy (2017). Water Quality adopted is presented in the assimilation capacity Tables of Appendix D.

2.2.4. Hydrometric Data for the Receiving Water

In MCC's assimilation capacity simulations, the 95%tile flow for Stn. No. 09003, Tolka at Clonee was taken to be 0.004m³/s = 345.6m³/d (MCC cite the figure as originating from the EPA and there is a correspondence dating back to 1989 in the case file history). MCC correctly apportioned 70% of Stn no. 09003's catchment area as appropriate to the catchment upgradient of the Bracetown Business Park. MCC, therefore, adopts a value of 238m³/d, which is equivalent to 0.003 m³/s as the flow in the receiving water.

However, when the EPA HydroTOOL function is applied to Stn. No. 09003, Tolka at Clonee, the 95%tile value returned is 0.024m³/s, rather than 0.004m³/s. The appropriate 95%tile flow value for the point of discharge of treated wastewater from Bracetown Business Park is therefore 70% of 0.024m³/s = 0.017 m³/s. The significance of this is that there is possibly six times more flow in the river, under 95%tile flow conditions, than conceptualised in MCC's calculations for the ELVs.

EPA HydroNET, which is the most up to date hydrometric service from the EPA, does not list stn 09003 in their database. The only station the EPA lists for flow on the River Tolka is at Botanic Gardens (Stn no. 09037) and that station is reported to have a catchment area of

137.8 km² with an associated Estimated 95%tile Flow of 0.317 m³/s, which suggests **0.0023 m³/s per km²**. That value compares more favorably to the 0.024 m³/s 95%tile flow value for Stn 09003. The upstream catchment area for stn 09003 is 63.8 km². Therefore, adopting 0.026 m³/s as 95%tile flow for 63.8km² suggests **0.0004 m³/s per km² rather than 6*10⁻⁶ m³/s per km²** if MCC's 0.004m³/s as 95%tile flow value were adopted.

The OPW does not list flow data for the River Tolka in proximity to Clonee and the historic 'Register of hydrometric stations in Ireland' cites that the station ceased to record in 1991. The HydroTOOL model output document is presented in Appendix B. I provide further rationale for my adoption of the HydroTOOL 95%tile flow value in Section 4: Site Visit.

3. Discharge Licence & Appeal Details

3.1. Discharge Licence Issued

Meath County Council's reference for this discharge licence is 18/01. Meath County Council issued this Discharge Licence, in April 2018, as a new Licence under the 'Review' criteria of the Surface Water Regulations (2009). Axial Properties Limited, Bracetown Business Park, Clonee, Co. Meath already held a discharge licence for the discharge of treated wastewater to waters from this same site to the same waters (Reference No. WP92/3). That licence was issued in 1992.

Notice for intention to review this licence was issued by Meath County Council on the 11th March 2009. In the time period 2009 to 2018 Meath County Council and Axial Properties Limited engaged in collaborative consultation including site visits, requests for and receipt of information. Meath County Council issued a revised Discharge Licence in April 2018 (27/4/18) in Environment Order 5390/2018. The 2018 discharge licence permitted a volume of 15m³/d and ELVs for a variety of parameters, as presented in Table 3.

Table 3 Discharge Licence 18/01 Emission Limit Values as issued by Meath County Council

Parameter	units	Maximum Limit Value
Volume	m ³ /d	15
BOD ₅	mg/l	3
COD	mg/l	50
Suspended Solids	mg/l	20
pH	pH units	6 - 9
Ammonium as N	mg/l	0.2
Nitrates as N	mg/l	40
Total Phosphorus as P	mg/l	0.16
Oils, Fats & Greases	mg/l	10

Meath County Council's Executive Chemist, Emmet Conboy, assessed the discharge, information for the catchment and information supplied by the site and reported his recommendations. Meath County Council (Emmet Conboy) did email the appellant on the 22nd July 2016 and in that email he did present the initial findings of his assessment that suggested very low ELVs for Total P and Ammonium-N. He recommended that liaison with the WWTP supplier was warranted in order to get an indication as to whether the existing WWTP can meet requirements or require upgrades. His final report was submitted to Meath County Council's Senior Executive Engineer, Mr. David Keyes, on the 13/10/17. Meath County Council applied the correct assimilation capacity simulation methodology but the assimilation capacity simulations contain a very low 95thtile flow estimation (refer to Section 2.4) and a conservative 'Headroom' allocation. MCC adopts a position, as is presented by LASNTG (2011), that no more than 25% of the 'headroom' in a river should be assigned to each discharge. While this is a commendable objective, the 'Headroom' concept is not a statutory requirement. The Headroom concept is one that was written into the Guidance document for Local Authorities and the guidance does say that a different judgment call can be applied in cases.

3.2. Appellant's Presentation of Grounds for Appeal

Axial Properties Ltd. lodged an appeal to ABP, appealing two Conditions of the revised discharge licence (Ref 18/01). The appellant's reasons for the appeal are that the licensed volume is insufficient and that the proposed Emission Limit Values are too stringent. An Bord Pleanála's file reference is Appeal 301714-18.

Meath County Council made a submission to the appeal. On the 8/6/2018 a comprehensive response was submitted sent by Meath County Council's Executive Chemist, Emmet Conboy, to Meath County Council's Senior Executive Engineer, Mr. David Keyes. The particulars and reasons for the assessment were presented therein. This document was then sent to the Board. The case and conclusions presented by MCC are based on the fact that that the ELVs were determined in accordance with the Guidance outlined in LASNTG guidance document "Guidance, Procedures and Training on the Licensing of Discharges to Surface Waters and to Sewer for Local Authorities", Water Services Training Group. LASNTG, 2011).

The appellant responded, on the 9th August 2018, to the Board's Article 19 letter. In the August 2018 response to the Board, the Appellant presents nine Appendices of information supporting the appeal, including, as follows:

1. Historic loading information;
2. Evidence of increased business activity;
3. Metered daily flow volume record;
4. Effluent systems detail sheet;
5. Irish Water Services Bill = 3,145m³ over 222 days = ~14m³/d. BUT the appellant requests additional consideration that there is additional waters taken by Bracetown Business Park's WWTP from The Hub Logistics Park, adjacent;
6. Details of recent granted Permissions for the Site (Planning Refs RA/150972 & RA/170586);
7. Assimilation Capacity Simulations conducted for the appellant by consulting engineers working on their behalf: the appellant suggests that these calculations show that more lenient ELVs can be applied;
8. Evidence of only one occasion, since 1992, in which the site failed to comply with the licence ELVs. On that occasion, maintenance to the WWTP was responsible;
9. Evidence of 15 years of attempts to secure mains wastewater connection for the site.

3.3. Objections to the Application for Discharge Licence

There are no objections on file.

3.4. Observers to the Appeal

There are no observers to the application or appeal. While the appellant produced an extensive detail of communications with Irish Water & Meath County Council regarding Bracetown

Business Park's requests for connections to mains sewerage provisions, there is no record on the file for Irish Water's observation to the review or the Licence issued.

4. Site Visit, Catchment Assessment & Data Employed

On the 15/8/18, I visited the area and viewed all upgradient and downgradient elements of the river system. I observed flow and physiochemical characteristics at the point of discharge and I completed a visual assessment of the point of confluence with the River Tolka. During a visual assessment of the wider geographical area and catchment, I noted general catchment characteristics and pressures. I noted flow characteristics, vegetation growth and colour in the rivers and streams at various points. I noted conditions in the River Tolka and the wetland area that receives the discharge. On the same day I visited, unannounced and unaccompanied, the corner of the business park that accommodates the wastewater treatment plant. My site observations were that the wastewater treatment plant was excellently maintained. There was no odour at the WWTP. Security was excellent – the WWTP compound was gated and locked. I was able to see enough from outside the locked gates. Photographs are presented in Appendix A.

Data that I have employed in my assessment are discussed in Section 2.2.3, for hydrochemistry, and in Section 2.2.4 for flow. Data for flow and catchment characteristics are tabulated in Appendix B.

- With respect to the flow in the receiving water, the EPA surface water flow tool HydroTOOL and my catchment delineations suggest higher flow in the river than the figure adopted by Meath County Council. HydroTOOL suggests 0.026m³/s for 95%tile at Hydrometric Stn 09003, whereas MCC adopted 0.004m³/s. As previously stated, I am adopting the EPA HydroTOOL model's information, supported by my own catchment data because I believe it to be a truer representation of the hydraulics of the system. I visited the site during the official 'Drought' period of the summer of 2018. Indeed, I had spent the preceding weeks monitoring flow in rivers all over Ireland, as part of an Irish Water emergency flow measurement team. I was familiar with low flow hydrometrics and immersed in comparing visual flow characteristics with values obtained by British Standard Velocity Area measurement methods, which I was conducting on behalf of Irish Water. The flow that I observed in the River Tolka downstream of the discharge from Bracetown Business Park in August 2018 was, officially, because of the national drought status, less than 95%tile and the flow I observed was much more in line with the HydroTOOL value for 95%tile than the MCC value used in their assimilation capacity simulations. I provide the HydroTOOL model output for the site in Appendix B.

- The data I have employed for hydrochemical characteristics (quality) of the receiving water and of the treated wastewater are those as supplied by MCC/EPA in the case file.

5. Assessment

This section presents my evaluation of the potential effect of the discharge in the context of regulatory obligations. Overall, assessment of this discharge consent requires consideration as to whether the discharge itself is feasible in the context of the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009).

In addition, my assessment requires consideration as to whether the proposed discharge complies with the requirements of the Habitats Directive (92/43/EEC) and the Irish enactment of this Directive, namely the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011). The requirements under Article 6(3) of the Habitats Directive in respect of Screening (Stage 1) and Appropriate Assessment (Stage 2) require a number of conclusions/determinations/decisions to be made by the Inspector and ultimately the Board.

Of note is that following on from a review of other Section 4 discharges in the area (<https://gis.epa.ie/EPAMaps/>) and my catchment inspection/assessment on the ground, I determine that there is no need to do additional assimilation capacity simulations for consideration of '**In Combination**' because there is only one other licensed discharge that is documented to occur in the relevant catchment and that discharge license / business is not operational anymore. The details are LA Reference No 05/05, Licence Holder Name: Gardenworks, Plantagen, Piercetown, Dunboyne, Co. Meath. That site is 2km to the north-northwest. Both the appellant and this one and only other Section 4 discharge licensed site are shown in Figure 4, Appendix C.

Section 5 is structured as follows:

- Section 5.1 presents an evaluation of compliance with the requirements of the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) by assimilation capacity simulations as suggested in the LANSTG (2011) guidance document. The effect of the discharge is simulated in terms of the assimilation capacity of the receiving water and compare simulation outputs to the requirements of the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009). I have conducted simulations for a range of scenarios, as detailed in Section 5.1.
- Section 5.2 discusses the simulation results in the context of the potential effect of the discharge on fish life.
- Section 5.3 discusses the case in the context of requirements of Article 42 of Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) requirements for a screening for Appropriate Assessment.

5.1. Surface Water Regulations (2009) Assessment

The requirements of the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) are considered. I have adopted the formula and simulation methodologies suggested by DoEHLG (2011) in the Guidance for Assessing Discharges. Full assimilation capacity simulation outputs are presented in Appendix D. I have simulated three scenarios, as follows;

1. Appendix D1 presents the simulation for the **Local Authority's Proposed Discharge Licence Conditions issued in licence number 18/01**: The flow characteristic of the EPA's HydroTOOL model for the River Tolka in the vicinity of the discharge and MCC's issued Discharge Licence 18/01 ELVs for the treated wastewater characteristic as the input parameters, i.e. 15m³/d discharge volume and the ELVs as were presented in Table 3;
2. Appendix D2 presents the simulation outputs for the **Appellant's requested Conditions in their response to the Article 19 letter Simulation**: The flow characteristic of the EPA's HydroTOOL model for the River Tolka in the vicinity of the discharge and the appellant requested ELVs for the treated wastewater characteristic as the input parameters, i.e. 50m³/d discharge volume and the ELVs as were presented in Table 3, except for ortho-P – which the appellant requested to be 0.3mg/l MRP-P;
3. Appendix D3 presents the simulation outputs for **Hydro-G's Scenario Testing Simulation**: The flow characteristic of the EPA's HydroTOOL model for the River Tolka in the vicinity of the discharge and the ELVs for the treated wastewater characteristic that are REALISTIC and achievable. The rationale for conducting this 'Testing Simulation' is that the 0.16 Total P ELV of the discharge licence issued in the MCC licence ref. 18/01 is not at all practical or achievable, in my experience. The amount of ferric iron that would have to be used on a daily basis to ATTEMPT to get Total Phosphorus down to <1 mg/l TP creates an environmental and economic burden that should not be considered. An enormous amount of ferric iron powder would have to be purchased. An enormous amount of ferric iron sludge would be created as a by-product. The traffic burden, the haulage costs and the landfill pressure is something we should aim to avoid. In addition, it is my working experience that a concentration of 0.16 mg/l Total P is **NOT ACHIEVABLE** and therefore setting an ELV that low creates an administration burden on the local authority that should also be avoided;

With respect to assimilation capacity simulation outputs, my summarised evaluations are as follows:

- EVALUATION OF proposed MCC's ELVs and 15m³/d discharge volume (Appendix D1) = All parameters compliant with Surface Water Regulation SI 272 of 2009's 95%tile condition EQS for Ortho-P, BOD and Ammonia-N & Compliant with the Salmonid Regulations requirement with respect to pH and Suspended Solids. There is no increase in many parameters and for any parameter in which there is a simulated increase, it is insignificant;
- EVALUATION OF Appellant requested 50m³/d and 0.3 mg/l MRP-P (Appendix D2) = All parameters compliant with Surface Water Regulation SI 272 of 2009's 95%tile condition EQS for Ortho-P, BOD and Ammonia-N & Compliant with the Salmonid Regulations requirement wrt to pH and Suspended Solids. There is no increase in many parameters and for any parameter in which there is a simulated increase, it is insignificant in the scale of the acceptable maximum for that parameter;
- EVALUATION OF A PRACTICABLE AND WORKABLE discharge volume and ELVs that do not create an unnecessary financial, environmental and administration burden (Appendix D3) = All parameters compliant with Surface Water Regulation SI 272 of 2009's 95%tile condition EQS for Ortho-P, BOD and Ammonia-N & Compliant with the Salmonid Regulations requirement wrt to pH and Suspended Solids. Simulation results suggest that a license volume of 30m³/d is permissible for ELV's as presented in Table 4, as follows:

Table 4 POSSIBLE Discharge Licence Emission Limit Values for Bracetown Business Park

Parameter	units	Maximum Limit Value
Volume	m ³ /d	30
BOD ₅	mg/l	5
COD	mg/l	50
Suspended Solids	mg/l	20
pH	pH units	6 - 9
Ammonium as N	mg/l	0.4
Nitrates as N	mg/l	40
Total Phosphorus as P	mg/l	1
MRP-P	mg/l	0.75
Oils, Fats & Greases	mg/l	10

Therefore, the receiving waters' response to the proposed discharge from the site is acceptable, for all three discharge scenarios tested. The hydrochemical response for ammonia-N, ortho-P or BOD under 95%tile river flow river conditions meets the requirements of the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009). Why then did MCC aim to restrict the discharge volume to 15m³/d when I have simulated that both the appellants requested 50m³/d and my selected preference for 30m³/d are viable and maintain compliance with the Environmental Quality Standards of the Surface Water Regulations? There are two reasons, MCC adopted an overly conservative flow volume for the receiving water and MCC aspire to apply the LASNTG (2011) guidance

document's recommendation that no site should be allocated all of the 'headroom' available in a river. That 'headroom' concept is not written into the Surface Water Regulations (2009). While it the 'restrict headroom allocation to 25% for each site' is a commendable recommendation, so too is the same recommendation in that same LASNTG (2011) guidance which allows for mixing zone exceedances. The LASNTG (2011) also references Guidance that permits exceedances in a 'mixing zone' (reference CIRCABC, 2010). That 'mixing zone/exceedance' evaluation has been used in other cases, for example, The Alexandra Basin, Dublin Port, assessment presented by RPS to the EPA (2016), in which the following detail is important:

"Guidance published by the Local Authority Services National Training Group (LASNTG, 2011) on the licensing of discharges to surface waters, groundwater and sewer for Local Authorities states that a licensing authority may seek to have a mixing zone modelled in order to simulate the physical mixing process between an effluent discharge and ambient water and therefore delineate an area within which the EQS may be exceeded. However based on the Common Implementation Strategy (CIS) Technical Background Document on identification of mixing zones (CIRCABC, 2010) it is not always necessary to carry out mixing zone modelling.

The purpose of this technical document is to assist in:

- Establishing whether the delineation of a mixing zone is required using a tier approach;*
- Where it has been determined that a mixing zone is required the size and acceptability of the zone is determined using a tier approach.*

The first tier in the guidance is Tier 0 which provides a check to establish if the effluent is liable to contain a contaminant of potential concern. If the concentration of the contaminant in the effluent is above the EQS value for that contaminant then there will be a zone of EQS exceedance in the vicinity of the point of discharge and in such cases a tier 1 assessment is required under the guidance. All discharges where no contaminant of concern is present above the EQS are deselected at this stage, because this discharge will not lead to an exceedance of the EQS in the water body."

Hydro-G suggests that simulation outputs present no EQS exceedance for any ELV parameters of the Surface Water Regulations (2009), as presented in Table 4. Yes, there is a >25% allocation of Headroom for the 30m³/d simulated discharge volume but only in the Phosphorus ELV @ associated 1 mg/l TP, 0.75 mg/l MRP-P ELV. But, as I have stated previously, the discharge is to a wetland area and wetlands are recommended by the DoEHLG (2010) as valuable components for wastewater polishing and have been showcased by Dublin City Council for a particular application parkland's water remediation project in the Tolka Valley (Collins & McEntee, 2009). Therefore, the wetland will remove more nitrogen and phosphorus from the discharged water. Another mitigating factor to discount the non-regulated headroom concept in this case, is that there is a 20km river length and associated large area catchment downstream of the discharge and most of that catchment is serviced by national wastewater infrastructure (refer to Figures, Appendix C, showing Ringsend WW Agglomeration @ 2.65 km from the site).

Hydro-G also makes reference to the fact that, yes, assimilation capacity simulations for the appellant requested ELV of 50m³/d and 0.3 mg/l MRP-P suggest that the river can accept this. However, Hydro-G notes that despite MCC requesting that the appellant provide evidence that this treatment is achievable, no evidence exists on file. Hydro-G does not believe that 0.3 mg/l MRP-P is achievable realistically. The ferric dosing burden is too onerous from many perspectives.

5.2. Fish Life Evaluation

Assimilation capacity simulation of resultant ammonia concentrations suggest that resultant ammonium concentrations are acceptable for all three scenarios simulated:

1. MCC's 15m³/d License 18/01 & ELVs issued (Table 3);
2. Appellant's requested 50m³/d and requested lenience in MRP-P ELV of 0.3 mg/l;
3. Hydro-G test simulations with EPVs (Table 4).

Ammonium is a relevant parameter because:

- Of its indirect toxicity, hence possibly affecting aquatic organisms, including fish;
- Being a nitrogen compound, possibly adding as a nutrient to risks of eutrophication. While orthophosphate is typically the limiting nutrient in the eutrophication equation, nitrogen is also a nutrient of some importance.

Simulated resultant concentrations for Ammonium-N suggest compliance with the mandatory concentrations of the Fish Life Directive (2006) for salmonid and cyprinid waters. Similarly, the simulated resultant concentrations for BOD, Suspended Solids and pH comply with the requirements of the Fish Life Directive (2006) for salmonid and cyprinid waters.

While the River Tolka is not designated as a Salmonid River in the 1988 Regulations, there is a note on file from the fisheries board that it is an important fisheries river. Mass balance simulation calculations suggest that the discharge will not cause any increase in suspended solids concentration in the receiving waters. Assimilation capacity simulations suggest that the discharge is feasible and complies with the hydrochemical standards set out in the Salmonid Regulations 1988.

5.3. Appropriate Assessment

Article 42 of Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) requires that a screening for Appropriate Assessment... "shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the European site, if that plan or project, individually or in

combination with other plans or projects is likely to have a significant effect on the European site" BEFORE consent is given and that a public authority may direct the applicant to furnish additional information necessary for the purposes of the Regulation.

In the requirements of Article 42 (2) of the European Communities (Birds And Natural Habitats) Regulations (2011) Meath County Council carried out a type of Screening for Appropriate Assessment for the proposed discharge (Conboy, 2107) in that the Designated site was described and assessed within the overall general environmental assessment report on the site. Meath County Council concluded that "there is no likelihood of significant effects on the conservation interests of the SPA from the discharge". They make that conclusion based on the fact that the ELVs of the revised discharge licence should allow the upstream watercourse to meet the environmental objectives and nutrient EQS's at the discharge location. I have had regard for Meath County Council's screening and I have completed a screening on behalf of the Board.

I present my Appropriate Assessment, conducted on behalf of the Board, as follows:

1. Adopting the **Source > Pathway > Receptor** Risk Assessment Methodology:

- a. **Source** = Discharge of treated wastewater arising from an existing business park discharging wastewater for almost 30 years. The hydraulic loading presents a median value of $20\text{m}^3/\text{d}$ but the data has ranged from $1\text{m}^3/\text{d}$ to $89\text{m}^3/\text{d}$, approximately. However, extreme values in the record can be related to high rainfall events or gaps in the record associated with weekends and bank holidays. MCC suggested that $15\text{m}^3/\text{d}$ be permitted in the discharge licence ref. no. 18/01, which was issued under the review process that the enactment of the Surface Water Regulations (2009) initiated. The appellant requested a daily volume of $50\text{m}^3/\text{d}$ in order to ensure the site's ability to comply with the licence conditions and accommodate future planning permissions that are already granted. Refer to Table 3 and Table 4 for possible ELVs describing the discharge characteristic. None of the ELVs in either Table 3 or Table 4 cause exceedance in any EQS parameter of the Surface Water Regulations.

- b. **Pathway** = The proposed discharge is to River Tolka. The River Tolka flows through north Dublin and into Dublin Bay: that is a Special Protection Area (South Dublin Bay and River Tolka Estuary SPA Site Code 004024). The River Tolka joins that SPA at a distance of 20km, approximately, from the site of the discharge. There are no designated sites within 20km of the discharge. The site location relative to the SPA was presented in Figure 1. The River Tolka is classified as having Poor Status under Water Framework Directive Classification. Flow and hydrochemical characteristics of the pathway were presented in Section 2 and Appendix B. The M3 motorway is in proximity and the River Tolka receives runoff from this road (refer to site photographs, Appendix A). Consideration of the River Tolka as THE pathway and its Water Framework

Directive assigned 'Poor Status' requires more specific consideration of the detail of the individual elements of Status, as is discussed in Section 2.2.2.; it is for ecological (sediment issues) that the river system is assigned Poor Status. All other assessment criteria for the River Tolka are reported as Pass: such as pH, nutrient, fish life and oxygenation criteria (<https://gis.epa.ie/EPAMaps/>). I propose that it is for these criteria that are relevant to the discharge evaluation under consideration and there is room in the system for nutrients but not sediments (suspended solids). I also frame consideration of the pathway in the context that the discharge of treated effluent from this site has been ongoing for almost 30 years and the average Total P concentration has been 7.26mg/l and values for Total P have exceeded 9mg/l on occasion. There is currently no ferric dosing system at the site. Nevertheless, the EPA mapping system (<https://gis.epa.ie/EPAMaps/>) reports for the 2012 -2015 monitoring period that the river 'passes' for the nutrient, oxygenation, pH and fish life criteria.

- c. **Target** = South Dublin Bay and River Tolka Estuary SPA Site Code 004024: having its own Regulation: EUROPEAN COMMUNITIES (CONSERVATION OF WILD BIRDS (SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPECIAL PROTECTION AREA 004024)) REGULATIONS 2010. I have considered the Special Conservation Interests range of birds, which are listed in S.I. No. 212 of 2010, and wetland habitats that support them.

It is considered that Meath County Council has complied with the requirements of Articles 27 (2) and 42 (1), (2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011). Evidence on file demonstrates that Meath County Council considered the Site and the proximity of Designated Sites. I deem that they correctly concluded that due to the considerable distance of the discharge from the Dublin Bay and Tolka River SPA, and the compatibility of the ELVs with environmental objectives much further upstream, there is no likelihood of significant effects on the conservation interests of the SPA. I have had regard for Meath County Council's screening and I have completed a screening on behalf of the Board. Based on the Conservation Objectives for the Site (NPWS, 2011), the application of the Source>Pathway>Target Risk Assessment Framework, the connectivity between the proposed point of discharge and the South Dublin Bay and River Tolka Estuary SPA (Site Code 004024) my assimilation capacity simulations suggest a water quality response that infers that likely significant effects CAN be reasonably ruled out on the basis of objective scientific information. I conclude that on the basis of the information provided the Board can be satisfied that the proposed development individually, or in combination with other plans or projects is not likely to have a significant effect on the South Dublin Bay and River Tolka Estuary SPA (Site Code 004024) in view of the site's Conservation Objectives.

The overall succinct conclusion is that the proposed discharge at Bracetown Business Park does not have the potential to impact SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPA or any other site, such as North Bull Island SPA or any other European site.

6. Consideration of Appellant's Points

Axial Properties Ltd. lodged an appeal to ABP, appealing two Conditions of the revised discharge licence (Ref 18/01). The appellant's reasons for the appeal are that the licensed volume is insufficient and that the proposed Emission Limit Values are too stringent. An Bord Pleanála's file reference is Appeal 301714-18.

The appellant responded to the Board, on the 9th August 2018, to an Article 19 letter. In the August 2018 response to the Board, the Appellant presented 9 Appendices of information supporting the appeal, as were listed in Section 3.2. Hydro-G's consideration of each of those 9 Appendices is provided as follows:

1. Appendix 1: Historic document (year of 2009) presented by their consulting engineers to document hydraulic loading assimilation capacity simulations. Hydro-G assesses that it is valid information;
2. Appendix 2: Evidence of increased business activity, supplied by their auditors. Hydro-G notes and has considered this information in the 'Test Scenarios' detailed in Appendix D.3;
3. Appendix 3: Metered daily flow volume record February to July 2018. Hydro-G notes the general trends associated with weekends and also notes the extreme values are related to stormwater ingress at times of noted high rainfall;
4. Appendix 4: Effluent systems detail sheet 2015 to 2016. Hydro-G notes the general trends associated with weekends and also notes the extreme values are related to multiple days added together or stormwater ingress at times of noted high rainfall;
5. Appendix 5: Irish Water Services Bill = 3,145m³ over 222 days = averages 14m³/d. Hydro-G notes that the appellant requests additional consideration that there is additional waters taken by Bracetown Business Park's WWTP from The Hub Logistics Park, adjacent. Hydro-G considers this in simulations presented in Appendix D3. However, Hydro-G is also aware that the ELV for MRP-P shall dictate how high the permitted daily discharge volume can be. Hydro-G notes that <1 mg/l Total P is impracticable, and MRP-P is usually 75% of TP;
6. Appendix 6: Details of recent granted Permissions for the Site (Planning Refs RA/150972 & RA/170586). Hydro-G has considered the detail of these grants of permission. The increase in development granted totals new warehousing for the articulated lorries, the demolition of an existing one storey office block and conversion to a three-story unit. No increase in car parking is proposed. The simulations presented in Appendix D3 should account for the relatively small increase in office accommodation;
7. Appendix 7: Assimilation Capacity Simulations conducted for the appellant by consulting engineers working on their behalf: the appellant suggests that these calculations show that more lenient ELVs can be applied. Hydro-G considered these and yes, the receiving water can indeed assimilate the appellant's requested 50m³/d and 0.3 mg/l

MRP-P. Hydro-G demonstrates the compliance in Appendix D2. However, Hydro-G asserts that the ferric dosing load would be too high and it is Hydro-G's working experience that 0.5 mg/l Total P is not achievable, on an ongoing basis, in practice. Often, licence holders tire of the high cost of ferric iron and the maintenance/constant replacement of the pumps involved in heavy usage in the dosing systems. Ferric dosing systems are not economical and for effective use a flow proportional dosing system is required;

8. Appendix 8: Evidence of only one occasion, since 1992, in which the site failed to comply with the licence ELVs. On that occasion, maintenance to the WWTP was responsible. Hydro-G notes this and observations during site visit in August 2018 supports that the plant is well maintained and operated diligently;
9. Appendix 9: Evidence of 15 years of attempts to secure mains wastewater connection for the site. Hydro-G ponders why there was no Irish Water observation on the file and is the lack of connection to mains sewerage because the site does not want to enter into a service level agreement with Irish Water?

I suggest that it is very important for the Board to note that the ELVs proposed by MCC in the 18/01 licence issued, requires a treated effluent that should achieve a 0.2 mg/l ammonia and 0.16 mg/l Total-P standard. This is EXTREMELY ONEROUS for a WWTP – perhaps too onerous. I adopted these design effluent characteristics in my simulations even though my professional experience leads me to recommend to the Board that they are not achievable on a permanent ongoing basis. Neither are they in line with sustainable development principles. The amount of ferric iron required to obtain a 0.16mg/l TP places a transport and financial burden on the licensee holder, an administration burden on MCC and an environmental burden on the planet's resources that is not warranted.

7. Discussion

The case and conclusions presented by MCC is that the ELVs were determined in accordance with the Guidance outlined in LASNTG guidance document "Guidance, Procedures and Training on the Licensing of Discharges to Surface Waters and to Sewer for Local Authorities". Water Services Training Group (LASNTG, 2011).

On the basis of my calculations, the Conditions under appeal are conservatively stringent. Meath County Council have applied a diligent assessment and competent evaluation. However, the Conditions issued are conservative. First of all, the 95%tile flow volume adopted for the receiving water was too low – I suspect that this was an error that crept in from the original information on file for the early 1990's determination. Secondly, on the basis of my calculations, restricting the % Headroom allocation to <25% for the ortho-P parameter places an impractical treatment burden on the package WWTP and the required ferric dosing system that would be required. The 'Headroom' concept is not a statutory requirement. The 'Headroom' concept is one that was written into the LASNTG (2011) Guidance document for

Local Authorities. I deem that the downstream environment is mostly serviced by national infrastructure foul drainage. At a mere 2.65 km stream length downstream of the discharge, the Ringsend WW Agglomeration comes into effect (Figures, Appendix C). Dublin city is also downstream. With respect to nutrient concentration in the discharge from this site, there is room in the system to allocate more of the River Tolka's 'Headroom' to the discharge of treated wastewater from Bracetown Business Park. The Environmental Quality Objectives of the EC Environmental Objectives (Surface Waters) Regulations, 2009 (SI No 272 of 2009) can still be adhered to for slightly revised Conditions in the Licence on the basis that Meath County Council's adopted allocation of headroom in the river is increased. That would permit slightly less stringent Emission Limit Values. While the existing Status of the River Tolka is Poor. This is not going to be improved or deteriorated by the discharge of a relatively small volume of treated wastewater from the Bracetown Business Park. Far greater works are required in the wider catchment, which contains numerous roads and a motorway, all of which discharge sediment laden stormwater runoff to this river system. The Status reports for the Tolka River cite that nutrient, pH, Fish Life and Oxygenation Conditions, are 'Pass'. Therefore, it is not treated wastewater effluent that causes the problem resulting in assigning Poor Status to this waterbody. It is the sediment issues causing poor ecology in the river. Sediments and urbanisation require control. This is not a problem caused by Bracetown Business Park. The site's results for Suspended Solids are so low (<2mg/l SS) that they are below the Limit of Detection of the accredited laboratory analyser. The site has been discharging for almost 30 years and that wastewater has not been treated for enhanced phosphorus reduction: still the river 'passes' for nutrient, pH, Fish Life and Oxygenation Conditions <https://gis.epa.ie/EPAMaps/>.

Assimilation capacity simulations suggest that the discharge volume can be increased to 30m³/d and still the river will conform to the Good Status EQS characteristics of the Surface Water Regulations, when we adopt an adjusted background concentration – as is the norm in this simulation scenario. Assimilation capacity simulations suggest that the ELVs of Table 4 are acceptable.

8. Overall Conclusions

I have independently assessed and simulated the River Tolka's response to assimilating the proposed discharge and assess as follows:

- Surface Water Regulation (2009) compliant for ortho-P;
- Surface Water Regulation (2009) compliant for BOD;
- Surface Water Regulation (2009) compliant for Ammonia-N.

Overall, the discharge is acceptable for the receiving water environment. I make this assessment in the context of the requirements of the European Communities Environmental Objectives (Surface Water Regulations) Regulations, 2009 (S.I. No. 272 of 2009), the requirements of the European Communities (Quality of Salmonid Waters) Regulations, 1988

(S.I. 293/1988), the requirements of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) and the requirements of the European Communities (Conservation Of Wild Birds (South Dublin Bay And River Tolka Estuary Special Protection Area 004024)) Regulations 2010 [S.I. No. 212 Of 2010]. With respect to the requirements of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011), information on file demonstrates that Meath County Council completed a screening for Appropriate Assessment and concluded that there is no likelihood of significant effects on the conservation interests of the SPA. I have had regard for Meath County Council's screening and I have completed a screening on behalf of the Board and conclude that likely significant effects CAN be reasonably ruled out on the basis of objective scientific information. I conclude that on the basis of the information provided the Board can be satisfied that the proposed development individually, or in combination with other plans or projects is **not** likely to have a significant effect on the South Dublin Bay and River Tolka Estuary SPA (Site Code 004024) or any other European Sites.

9. Recommendation

It is considered that the case presented by the appellant is valid and I recommend that the Board accepts the said appeal for reasons set out in the schedule.

Further, it is considered that Meath County Council has complied with the requirements of Articles 27 (2) and 42 (1), (2) the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) in that they conducted a Stage 1 Appropriate Assessment Screening, albeit that they did not specifically report on that AA Screening in an independent document in their assessment but rather they included it in their overall environmental assessment report.

10. Schedule

Having regard to the following:

- Simulations for the receiving waters, which have been independently conducted as part of my assessment; and
- The fact that the ultimate point of receipt of the proposed discharge is the SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPECIAL PROTECTION AREA 004024.

It is considered that the proposed discharge can comply with the requirements of the European Communities Environmental Objectives (Surface Water Regulations) Regulations, 2009 (S.I. No. 272 of 2009), the requirements of the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. 293/1988), the requirements of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) and the requirements of

the European Communities (Conservation Of Wild Birds (South Dublin Bay And River Tolka Estuary Special Protection Area 004024)) Regulations 2010 [S.I. No. 212 Of 2010].

Based on the information provided with the application and appeal the Board can be satisfied that the proposed development individually, or in combination with other plans or projects, is not likely to have a significant effect on the River Tolka or SOUTH DUBLIN BAY AND RIVER TOLKA ESTUARY SPECIAL PROTECTION AREA 004024 or any other European Site. It is considered that Meath County Council has complied with the requirements of Articles 27 (2) and 42 (1), (2) the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011).

11. Decision of Inspector

In exercise of the powers conferred on it by Section 8 of the Local Government (Water Pollution) Act 1977, as substituted by section 6 of the Local Government Act (Water Pollution) (Amendment) Act, 1990, this inspector recommends to An Bord Pleanála to accept the said appeal for reasons set out in the schedule. I recommend to An Bord Pleanála that a revised discharge licence is issued to the site.

As presented earlier in this report, assimilation capacity simulations, that tested an EVALUATION OF A PRACTICABLE AND WORKABLE discharge volume and ELVs that do not create an unnecessary financial, environmental and administration burden, suggest that a license volume of 30m³/d is permissible for ELV's as presented in Table 4, as follows:

Table 4 POSSIBLE Discharge Licence Emission Limit Values for Bracetown Business Park

Parameter	units	Maximum Limit Value
Volume	m ³ /d	30
BOD ₅	mg/l	5
COD	mg/l	50
Suspended Solids	mg/l	20
pH	pH units	6 - 9
Ammonium as N	mg/l	0.4
Nitrates as N	mg/l	40
Total Phosphorus as P	mg/l	1
MRP-P	mg/l	0.75
Oils, Fats & Greases	mg/l	10

Pamela Bartley

Signed: _____

Date: ____17th January 2019 _

Dr. Pamela Bartley BEng, MSc, PhD

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