

C2434 – Nutrient Neutrality Assessment

121 Heol Cae Gurwen, Gwaun-Cae-Gurwen

Introduction

CB3 Consult has been appointed by NMJ Property Developments Ltd to assess the potential impact of the proposed redevelopment of the former R.A.O.B Club into a commercial development with associated car parking spaces on the Special Area of Conservation (SAC). This assessment is required in light of the guidance issued by Natural Resources Wales (NRW) on 25 July, which confirmed the need to consider potential nutrient impacts arising from new developments. This Nutrient Assessment should be read in conjunction with the Drainage Strategy Report prepared for the scheme.

Gwaun-Cae-Gurwen is located on the boundary of the freshwater catchment discharging into the River Loughor via Garnswllt Wastewater Treatment Works (WwTW), as such a nutrient neutrality assessment is required.

The application site is classified brownfield, currently a R.A.O.B Club. It is understood that the club employed 4 staff members and on average 30 number of customers, with an assumption that 50% of the staff and customers reside from outside of the freshwater catchment. The existing site is served by a positive drainage connection discharging into the public sewer.

The redevelopment proposal is a commercial unit which we understood employs up to 5 staff members. The onsite facilities will be accessible to staff only. Similar to the existing calculations, an assumption that 50% of the staff reside from outside of the freshwater catchment.

Foul Flow Analysis

The document 'Flows and Loads - 4' published by British Water will be used to assess the average daily foul flow generated by the existing and post development unit. Based on the existing and proposed usage, the following flows are appropriate for this analysis:

- Existing Staff (4 hr shift) = 45 litres/person/day
- Existing Customers (function room) = 15 litres/person/day
- Proposed Staff (full time) = 90 litres/person/day

A calculation sheet of the existing scenario is included in Appendix A and proposed scenario in Appendix B based on the figured discussed above. The Total Nitrates generated by the existing club is 3.11 kg TN/year and the Total Nitrates generated by the proposed development is 2.22 kg TN/year.

Based on this analysis it is evident that the proposed redevelopment will provide betterment in terms of Total Nitrates, achieving a betterment factor of 1.40 and achieves nutrient neutrality.

Appendix A
Existing Foul Flow Calculation

Wastewater load input data	
Description of required information	Data entry column - user inputs required
Special Area of Conservation (SAC):	Bae ac Aberoedd Caerfyrddin/ Carmarthen Bay and Estuaries
Postcode:	SA18 1PD
Local Planning Authority (LPA):	Neath Port Talbot County Borough Council
Rainfall:	1691
Project type:	Leisure
Development proposal (number of additional units):	1
Not applicable	Not applicable
Not applicable	Not applicable
Not applicable	Not applicable
Number of customers / users per unit:	30
Water usage per customer / user (litres/person/day):	15
Percentage of customers / users from outside catchment:	50
Number of employees (per unit):	4
Water usage per employee (litres/person/day):	45
Percentage of employees from outside catchment:	50
Wastewater treatment works:	Garnswllt STW
Not applicable	
Not applicable	
Phosphorus permitted limit (mg TP/l):	2.00
Nitrogen permitted limit (mg TN/l):	27.00
Final calculation of nutrient load from wastewater	
Description of values generated	Values generated
Additional population:	17.00
Annual wastewater production (litres):	115053.75
Annual phosphorus load (kg TP/year):	0.23
Annual nitrogen load (kg TN/year):	3.11

Appendix B
Proposed Foul Flow Calculation

Wastewater load input data	
Description of required information	Data entry column - user inputs required
Special Area of Conservation (SAC):	Bae ac Aberoedd Caerfyrddin/ Carmarthen Bay and Estuaries
Postcode:	SA18 1PD
Local Planning Authority (LPA):	Neath Port Talbot County Borough Council
Rainfall:	1691
Project type:	Commercial
Development proposal (number of additional units):	1
Not applicable	Not applicable
Not applicable	Not applicable
Not applicable	Not applicable
Number of customers / users per unit:	
Water usage per customer / user (litres/person/day):	
Percentage of customers / users from outside catchment:	
Number of employees (per unit):	5
Water usage per employee (litres/person/day):	90
Percentage of employees from outside catchment:	50
Wastewater treatment works:	Garnswllt STW
Not applicable	
Not applicable	
Phosphorus permitted limit (mg TP/l):	2.00
Nitrogen permitted limit (mg TN/l):	27.00
Final calculation of nutrient load from wastewater	
Description of values generated	Values generated
Additional population:	2.50
Annual wastewater production (litres):	82181.25
Annual phosphorus load (kg TP/year):	0.16
Annual nitrogen load (kg TN/year):	2.22