APPLICATION FOR RECOGNITION OF A WATER SOURCE AS MINERAL WATER	1st May 2018
TO: ENVIRONMENTAL SERVICES COMMITTEE	
FOR DECISION	

Linkage to Council Strategy (2015-19)	
Strategic Theme	Protecting and Enhancing Our Environments and Assets
Outcome	To determine an application for recognition of a water source as natural mineral
Lead Officer	Food, Health & Safety and Consumer Protection Manager
Cost: (If applicable)	Not Applicable

Background

Natural mineral water may only be sold as such where a District Council grants recognition of the water source as natural mineral water in accordance with the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015.

In order to have water that is extracted from the ground recognised as natural mineral water for the purpose of Article 1 of Directive 2009/54 an application must be made in writing to the district council within whose district the water is extracted along with information specified within Part 1 Schedule 1 of the above mentioned Regulations.

An application for a borehole water source located at Coolkeeran Road, Armoy to be recognised as natural mineral water has been received from Anu Irish Mineral Water.

Due to the technical nature of the application and assessment required the services of White Young Green Environment and Planning (Northern Ireland Limited) consultants were availed of to assist with Council's determination. The costs involved in obtaining recognition of a natural mineral water are to be borne by the exploiter of the water so these consultancy costs are fully recoverable from the applicant.

The consultant's final report is attached as appendix 1 and reached the following conclusion:

Following a review of the additional documents and supporting information submitted by Anu it has been determined that sufficient information exists for the asset to be recognised as Natural Mineral Water. A review of the Northern Ireland Regulation (2015) requirements against the submitted information has highlighted that the minimum compliance criteria have been met. In some instances, additional information would be beneficial but should not in our opinion hinder the granting of mineral water status to this source. Laboratory analysis has successfully demonstrated acceptable water quality between October 2016 and October 2017

Recommendation

It is recommended that Council grants the water source located at Coolkeeran Road, Armoy, as outlined in the application from Anu Natural Mineral Water, recognition as natural mineral water in accordance with the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 and publish an announcement of the recognition, including the grounds on which it has been granted, in the Belfast Gazette.

Natural Mineral Water Status Review - Addendum

Review of additional information provided by Anu Irish Water

Causeway Coast and Glens Borough Council
16 April 2018
Prepared by WYG Environment and Planning (Northern Ireland Limited)

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Document control

Document:	Natural Mineral Water Status Review Addendum
Project:	ANU Application
Client:	Causeway Coast and Glens Borough Council
Job Number:	A106186
File Origin:	\\belfast02\data\Projects\A106\A106186\P-03 Execution\11 EP\01 Reports

Revision:	001	
Date:	05/04/2018	
Prepared by: Neil Dickson	Checked by: Conor Lydon	Approved by: Conor Lydon
Description of revision: Issued to Causeway Coast and Glens Borough Council for Comment		

Revision:	002	
Date:	16/04/2018	
Prepared by: Neil Dickson	Checked by: Conor Lydon	Approved by: Conor Lydon
Description of revision: Issued to Causeway Coast and Glens Borough Council		

Contents

1.0 Introduction

1.1 Instruction and Scope of Works

WYG Environmental and Planning (Northern Ireland) limited (WYG) were commissioned by Causeway Coast and Glens Borough Council (the 'Council') to complete a review of documents submitted by Anu Irish Water (Anu) who are applying for their borehole water source to be granted Natural Mineral Water Status. Following an initial review in January 2018, Anu have provided additional supporting information in March 2018. This addendum report provides commentary on the additional information and makes an application recommendation.

1.2 Available Documentation

The determination of Natural Mineral Water status is defined under the Statutory Rules of Northern Ireland 2015, No. 365: The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. The following provides a summary of the documents provided to the Council and WYG as part of the application and upon which we have based our review:

- Anu Irish Mineral Water application for Mineral Water Status, submitted to Moyle District Council, dated 4th May 2015;
- Anu Irish Mineral Water Abstraction Licence for Alcrossagh Boreholes, Coolkeeran Road, Armoy, Co. Antrim, dated 6th May 2015;
- Freedom of information request from Amber Holmes of Moyle District Council to Water Management Unit (WM) dated 23rd September 2015;
- Laboratory water quality results (post 2002) provided by NI Water dated 2nd October 2015;
- Biosearch Laboratory water quality results for samples collected on 11th May 2016, 18th May 2016, 25th May 2016, 1st June 2016, 8th June 2016, 15th June 2016, 22nd June 2016, 29th June 2016, 14th July 2016, 20th July 2016, 29th July 2016, 4th August 2016 10th August 2016, 17th August 2016, 24th August 2016, 31st August 2016, 7th September 2016, 14th September 2016, 21st September 2016, 28th September 2016, 5th October 2016, 12th October 2016, 19th October 2016, 26th October 2016, 2nd November 2016, 9th November 2016, 7th December 2016, 10th January 2017, 14th February 2017, 22nd March 2017, 25th

April 2017, 23rd May 2017, 20th June 2017, 24th July 2017, 12th September 2017, 27th September and 11th October 2017;

- NSF Assessment of a Source in Northern Ireland regarding Official Recognition as Natural Mineral Water dated 21st December 2016;
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379 dated July 2017;
- NSF Update of the Source Assessment Report of Anu Irish Water of 21. December 2016 dated 16th November 2017;
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379-1 dated February 2018 Unmarked;
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379-1 dated February 2018;
- Extended council submission full programme (11052016 to 11102017). Summary Excel spreadsheet displaying all laboratory accreditation, analysis methods and results from 11th may 2016 to 11th October 2017;
- High Level Anu Response to WYG and CC&GBC excel spreadsheet;
- Laboratory certifications for Bio Search (N.I.) Limited, ALS Environmental Limited, LGC Limited, Northumbrian Water Limited and Eurofins.

1.3 Report Scope

The information provided to WYG contains an assortment of documents put forward to the Council and WYG by the applicant, Anu Irish Water ('Anu') in support of their application to have a groundwater abstraction recognised as a mineral water source. The source, a borehole, formerly owned by Northern Ireland Water Board (NIWB) at their site on Coolkeeran Road, Armoy, Co. Antrim, Northern Ireland was reportedly decommissioned circa 2009 and purchased by Anu in 2013.

By definition, mineral water is *"water originating in an underground water table, deposit or aquifer, which emerges or is extracted from a source tapped at one or more natural or bore exits. It must come from an officially recognised spring, be microbiologically wholesome and have been protected from all risk of pollution"* [1]. The source in question is indeed originating from the underground water table and is extracted from a source tapped at a single bore exit.

[1] The natural mineral water, spring water and bottled drinking water (England) regulations 2007 (as amended)

As part of this commission the Council are seeking assistance with the determination of whether the water quality is microbiologically wholesome and protected from all risk of pollution. This is particularly relevant as there have been some water quality exceedances reported in the laboratory results accompanying the application.

As part of this review WYG have assessed the completeness of the application in the context of the Natural Mineral Water Regulations (2015)[2] requirements. This review aims to ascertain whether the criteria required to achieve mineral water status have been met. Each of the required criteria considered in detail herein, with consideration given to the information provided by the Applicant.

1.4 Non-Technical Summary

WYG were contacted by the Council and asked to review the information submitted by Anu and to assist the Council in their determination of recognition as natural mineral water. Upon completion of the initial review, Anu submitted additional supporting documentation which has informed this subsequent review (addendum). The application submission includes a hydrogeological assessment, which has been based on both current information and historical studies. Recent photographs are provided to demonstrate the condition of the headworks; however, the assessments still do not confirm the borehole depth or sub-surface integrity.

Recent pumping and sampling from the borehole provide an indication of its yield and quality however limited testing has been completed to demonstrate its potential impact on the wider catchment if pumping were to continue at the proposed constant rate. Anecdotal and limited observation data are used to supplement the conclusions behind the potential impact to the catchment. It is proposed that there is no hydraulic connection between surface water and groundwater sources.

A preliminary conceptual site model has been created by the applicant's advisors to demonstrate the expected stratigraphy and target aquifer. Laboratory results, with appropriate laboratory and analysis method accreditation, have been screened against Mineral Water standards and Drinking Water Inspectorate standards. No exceedances in water quality parameters have been exceeded within one year of sampling.

[2] The natural mineral water, spring water and bottled drinking water Regulations (Northern Ireland) 2015

2.0 Requirements for Natural Mineral Water Status

Schedule 1, Part 1 of 'The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015' specifies the requirements for a source of water to be recognised as natural mineral water. Schedule 1, Part 1 contains 4 paragraphs, each of which have specific sub-sections to be addressed. For the remainder of this report, the relevant paragraphs and sub-sections taken from the Regulations are detailed, followed by WYGs originally determined information gap and recommendation for additional works (January 2018). This section is followed by our updated comments and recommendations upon review of the additional information submitted by Anu.

2.1 Schedule 1, Part 1, Paragraph 1, Sub-section A

Schedule 1, Part 1, Paragraph 1, sub-section A requires a description of the particulars specified in Schedule 1, Part 3, Paragraph 1. The particulars of Paragraph 1, of Part 3 are discussed in section 2.1.1 to 2.1.3 below.

2.1.1 Geological and Hydrogeological Surveys

2.1.1.1 Site Location

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The exact site of the catchment with an indication of its altitude, on a map with a scale of not more than 1: 1,000.*

The following information has been provided by the applicant:

- Appendix D and E of Anu application for mineral water status (2015);
- Map to accompany water abstraction licence (2015);
- Sections 3.1, 4.1, 4.3, 4.4, 4.5.1 and 4.5.2 of MCL report (2018)[3];
- Site Location Map, Historical Maps and Aerial Photographs - Appendix 1, 5 and 6 of MCL report (2018);
- GSNI hydrogeological investigation report dated 1984 - Appendix 13 of MCL report (2018)[4].

[3] MCL Consulting, February 2018, Hydrogeological Assessment Report, Water Supply Borehole Armoy, Northern Ireland
[4] Geological Survey of Northern Ireland (1984) 'Hydrogeological Investigations of Sand and Gravel Aquifers in the Armoy Area'

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of a scaled map of 1:1,000 demonstrating the catchment altitude and borehole asset location and elevation, including topographical contours to indicate elevation of the site is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. It is also recommended that an accurate topographical survey of the borehole assets elevation be completed and a grid reference defined using an appropriate co-ordinate system."

Addendum Review Comments

As per MCL (2018), a site location map and aerial photograph are presented on Figures 1 and 2 respectively in addition to Appendix 1 where an additional aerial photograph, Figure 1 and Figure 1a (Zoomed) are provided. Figure 1 and Figure 1a are produced at a scale of 1:1,000 and 1:500 respectively. Contours indicating the altitude of the site and immediately surrounding area are also included within these Figures.

The provided Irish Grid reference of 307590 432580 is verified to be in the correct location, identifying the borehole asset.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Scaled Map of Site	
Regulation Compliant:	**Yes**

2.1.1.2 Geological Origin and Nature of Terrain

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require:

- *A detailed geological report on the origin and nature of the terrain.*

The following information has been provided by the applicant:

- Section 2.3 of Anu application for mineral water status (2015);
- Appendix D and E of Anu application for mineral water status (2015);
- Sections 3.1, 4.1, 4.2, 4.3, 4.4 and 4.5 of MCL report (2018);

- Production Borehole (No. 1) Geological and Construction Log - Appendix 3 of MCL report (2018);
- GSNI hydrogeological investigation report dated 1984 - Appendix 13 of MCL report (2018).

Addendum Review Comments

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Geological Background	
Regulation Compliant:	**Yes**

2.1.1.3 Hydrogeological Layer

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requires a description of:

- *The stratigraphy of the hydrogeological layer.*

The following information has been provided by the applicant:

- Section 2.3 of Anu application for mineral water status (2015);
- Sections 3.2.2, 4.1, 4.3, 4.4, 4.5, 5.1, 5.2 and 7 of MCL report (2018);
- GSNI hydrogeological investigation report dated 1984 - Appendix 7 of MCL report (2018).

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Stratigraphy of Hydrogeological Layer	
Regulation Compliant:	**Yes**

2.1.1.4 Description of the Catchment Operations

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require:

- *A description of the catchment operations.*

The following information has been provided by the applicant:

- Appendix D and E of Anu application for mineral water status (2015);
- Sections 4.5, 5.3, 5.4, 5.5.2, 5.5.3, 5.5.4 and 7.2 of MCL report (2018);
- Local Surface Water Bodies and Local Surface Water Drainage - Figures 11 and 12 of MCL report (2018);
- GSNI hydrogeological investigation report dated 1984 - Appendix 13 of MCL report (2018).

Information Gap Identified as Part of Original Review Response

"The description of the catchment operations should be based upon the hydrogeology and other information held or available (e.g. historical use of catchment area, likely presence of pollutants). No source risk assessment has been completed and therefore it is unclear whether the hydrogeological conditions are such that the source is likely to be free from microbiological and or chemical pollution."

Addendum Review Comments

The historical landuses throughout the catchment are discussed in Section 5.5 and Appendix 5. The integration of historical Ordnance Survey maps indicates that the land use surrounding the borehole asset have remained generally unchanged for the time period covered by the maps (1832-1973). The land is noted to have been undeveloped and there are no contaminating landuses within close proximity of the site, i.e. less than 500m. A quarry is noted to be located c. 600m southwest of the site in 1832 but is not annotated on any subsequent map exerts. Urbanisation is noted to the west of the site.

Furthermore, as per MCL (2018), Section 5.5.2, a simplified source risk assessment has been provided detailing potential sources of contamination within the vicinity of the borehole asset and its compound. No details of the sensitivity of a receptor, magnitude of the impact and subsequent impact significance assessment descriptor are provided, for either the current day conditions or those following mitigation. Of the 12No. sources of contamination identified to potentially exist at the asset, only 2No. are considered to be of significance. These include the existence of other boreholes located at the compound and the well-head itself. It is proposed that a clearer description of the level of risk to the borehole would be beneficial, i.e. if the source is of moderate or major concern. The proposed future mitigation measures are considered to be acceptable. It is noted that the majority of mitigation works are proposed to be removal of existing measures and upgrading the well-head. It is suggested that additional details regarding the 'up-grade of well-head and chamber' should be provided.

As per Table 6, wider catchment risk assessment, a descriptor of impact significance is provided with all 6No. sources and are deemed to be low risk to the source from the wider catchment.

It is detailed that the identified risks are not considered to be of significant risk to the water quality. Furthermore, risk to the water source (located within the deep confined aquifer) is considered low.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Catchment Operations	
Regulation Compliant:	**Yes**

2.1.1.5 Demarcation of Area

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The demarcation of the area or details of other measures protecting the spring against pollution.*

The following information has been provided by the applicant:

- Section 2.2 of Anu application for mineral water status (2015);
- Section 5.5 of MCL report (2018);
- WMU response to the council, dated (September 2015).

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of a hydrogeological risk assessment is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. No discussion regarding the source, pathway receptor linkage around the borehole has been provided and would be beneficial to demonstrate that all land uses have been considered."

Addendum Review Comments

As per MCL (2018), Section 5.5.2 (Table 4), a simplified source risk assessment has been provided detailing potential sources of contamination at the site compound. No details of the

sensitivity of a receptor, magnitude of the impact and subsequent impact significance assessment descriptor are provided, for either the current day conditions or those following mitigation.

Tables 5 and 6 of MCL (2018) provide a description of the Source – Pathway – Receptor linkage with regards to the local area and wider catchment. A summarisation of the level of risk is provided in Table 6 for the wider catchment but not for the local area as the proceeding text indicates all risks are low. The risk assessment at the local scale concludes that the identified risks are not considered to pose a significant risk to the source water quality; hence the risk to the water source (located within the deep confined aquifer) is considered low.

It is proposed that a clearer description of the level of risk to the borehole would be beneficial, i.e. if the source is of moderate or major concern. It is also suggested that additional details regarding the 'up-grade of well-head and chamber' should be provided.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Demarcation of the site	
Regulation Compliant:	**Yes**

2.1.2 Physical, Chemical and Physio-chemical Surveys

2.1.2.1 The rate of flow of the spring

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The rate of flow of the spring.*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Water abstraction licence (2015);
- Anu application for mineral water status (2015);
- MCL report (2018),

- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of an up to date pumping test data is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. This information is required to demonstrate that the aquifer yields and rate of flow proposed is sustainable and unlikely to impact on the catchment in which the borehole is installed or adjoining catchments from which the abstraction has the potential to influence. "

Addendum Review Comments

No details of recent pumping or resulting hydrogeological parameters, e.g. hydraulic conductivity, transmissivity are presented within any of the supporting documentation provided by the applicant. Alternatively, it has been deemed appropriate to consider the final flow rate to be used during the proposed operational phase of works.

As per section 5.7 of MCL (2018), the abstraction volume is proposed to not exceed 300m^3/d (c. 3.5l/s). For the purpose of sampling, c. 200m^3 was purged over a period of c. 3 hours. Based on anecdotal evidence that the former owner (NIWB) abstracted 1.5-2Ml/d (c. 130,000 – 170,000m^3/d) with no observable impact to nearby watercourses, thus confirming the historical hydrogeological test observations that the deep water source is not hydraulically connected to surface watercourses and subsequently will not have an impact on surface water availability. It is recommended that the applicant communicates with NIWB and NIEA AIL in anticipation of receiving historical information regarding historical impact to adjacent watercourses and to amend the licence volume.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Rate of Flow	
Regulation Compliant:	**Yes**

2.1.2.2 Temperature of the Water at Source and the Ambient Temperature

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The temperature of the water at source and the ambient temperature.*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Section 5.6 of MCL report (2018),
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of recorded temperatures of the water source and the corresponding ambient temperature are required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Consideration should be given to what duration or frequency of monitoring is sufficient to adequately characterise the source. "

Addendum Review Comments

Details of the abstracted groundwater temperature (˚C) is presented in Table 7 of MCL (2018), showing field recorded temperature at 10No. intervals over a period of 158 minutes. Personal communication with Anu on 5th April 2018 indicates that temperatures included within the submitted laboratory results are those relating to field based measurements. The corresponding ambient temperature has not been recorded; however, given the stability of reported results and low variance, it is considered that ambient temperature is not having a significant impact on water quality results.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Temperature at Source	
Regulation Compliant:	**Yes**

2.1.2.3 Relationship Between Terrain and Mineralogy

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The relationship between the nature of the terrain and the nature and type of minerals in the water;*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Section 5.6 of MCL report (2018);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"Water quality results have been provided but no attempt has been made to characterise the relationship between the nature of the terrain and the nature and type of minerals present in the water.

Details of the sampling techniques employed are required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Details regarding the well operation prior to testing, development process and sampling techniques would benefit the ambiguity noted within the report by NSF (2016) regarding the detection of several parameters. Furthermore, no screening of the laboratory results against relevant quality standards has not been completed, which restricts interpretation of the results."

Addendum Review Comments

As detailed in Section 5.6.3 of MCL (2018), groundwater chemical analysis for sources in specific bedrock areas are reported for expected bedrock present across Northern Ireland. A comparison of water chemistry signature values from samples taken from the source, samples taken from the adjacent surface water and those of regional bedrock (as determined from literature) are displayed in Table 9. The average values from the source, are relatively close to those expected from particular bedrock formations. A description of expected origins of the Calcium – Magnesium – Bicarbonate signature is provided and is consistent with average values displayed in Table 9. An attempt has been made to characterise the relationship between the nature of the terrain and the nature and type of minerals present in the water.

As the borehole is not currently in operation, it is considered that well operation prior to testing is non-functional. It has been detailed in Section 5. 7 of MCL (2018) that borehole development

was achieved through the purge of the borehole at rates of 10-11 l/s and 22 l/s over a period of c. 3 hours. Samples were collected from a designated source sample tap at the headworks. Samples collected from this sample location were used for the field readings.

Screening of the laboratory results against relevant quality standards (Mineral Water Standards and Drinking Water Inspectorate) have been completed and are provided in Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Relationship between terrain and minerals	
Regulation Compliant:	**Yes**

2.1.2.4 Dry Residues

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The dry residues at 180˚C and 260˚C.*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017),
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of a discussion regarding dry residue values is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Due to the analysis potentially being unaccredited and having taken place outside of its stability time, further justification or analysis is required to provide confidence that the reported results are valid and can be relied upon to classify the mineral water. "

Addendum Review Comments

It has been confirmed that accreditation is available for dry residues analysed at 180˚C but not at 260˚C; however, the method at which the 260˚C values are derived is the same as that completed for 180˚C but at a different temperature. Furthermore, analysis is completed by a subcontracted laboratory (ALS) and not by Biosearch Testing Laboratory.

Dry residues at 180˚C and 260˚C has been completed 16 times between March 2016 and October 2017, with 5No. (180˚C) and 4No. (260˚C) of these having been analysed outside of recommended stability times. Of the available dry residue results at 260˚C, they are deemed to be relatively consistent, with an average of 204mg/l, minimum of 166mg/l and maximum of 234mg/l. Of the available dry residue results at 180˚C, the reported values are considered to have a more significant variance, with an average of 206mg/l, minimum of 123mg/l and maximum of 317mg/l. These summary statistics have been generated when an outlier of 1010mg/l is not included. Despite the large variation between the maximum and minimum value, the reported values are low with regards to volume relative to mineralisation and are deemed relatively consistent. The application would benefit from a brief discussion regarding the reported values and their categorisation as low mineral content.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Dry Residues	
Regulation Compliant:	**Yes**

2.1.2.5 Electrical Conductivity

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The electrical conductivity or resistivity, with, the measurement temperature being specified.*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);

- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of field determined EC is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Additionally, it is recommended that a focussed discussion of the characteristics is provided for clarity of results."

Addendum Review Comments

Details of the abstracted groundwater Electrical Conductivity (mS/cm) is presented in Table 7 of MCL (2018), showing field recorded electrical conductivity at 10No. intervals over a period of 158 minutes. Furthermore, electrical conductivity has been analysed in laboratory conditions on 17No. occasions with values ranging between 302µS/cm and 328µS/cm. All results are below threshold values for Mineral Water Standards and Drinking Water Inspectorate Standards. The corresponding atmospheric pressure has not been recorded.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Electrical Conductivity	
Regulation Compliant:	**Yes**

2.1.2.6 Hydrogen Ion Concentration

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The Hydrogen ion concentration (pH);*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that no additional information is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. However, it is recommended that a focussed discussion of the characteristics is provided for clarity of results. Furthermore, due to the analysis occurring outside of stability times, it is recommended that additional samples are required to verify the results."

Addendum Review Comments

Details of the abstracted groundwater pH is presented in Table 7 of MCL (2018), showing field recorded pH at 10No. intervals over a period of 158 minutes. Furthermore, pH has been analysed in laboratory conditions on 17No. occasions with values ranging between 6.79 and 7.14. All results are between the threshold values for Mineral Water Standards and Drinking Water Inspectorate Standards. No discussion to provide clarity of the results is evident in any of the supporting documentation.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Hydrogen Ion Concentration	
Regulation Compliant:	**Yes**

2.1.2.7 Anions and Cations

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The anions and cations;*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of laboratory analysis of borate and confirmation on whether the results provided are accredited for all of the anions and cations required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. "

Addendum Review Comments

Review of the additional laboratory results received (from May 2016 to October 2017), Borate has been analysed in laboratory conditions on 17No. occasions with values ranging between 'Not Detected' and 0.1mg/l. All results are between the threshold values for Mineral Water Standards and Drinking Water Inspectorate Standards. Accreditation is available for all anion and cation analysis methods and the corresponding analysis laboratory. The hydrogeological report did not indicate the presence of additional anions and cations which would require analysis.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Anions and Cations	
Regulation Compliant:	**Yes**

2.1.2.8 Non-ionised Elements

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The non-ionised elements;*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of accredited results for free carbon dioxide and silica are required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. It is also recommended that a focussed discussion of the characteristics is provided for clarity of results. Should the applicant be able to provide the relevant accredited certificates compliance with the non-ionised elements will likely be met. "

Addendum Review Comments

Accreditation is available for all non-ionised elements analysis methods and the corresponding analysis laboratory. It is noted that the method for determining free carbon dioxide is not accredited as it is a calculation; however, the techniques used to determine the input parameters are accredited. The hydrogeological report did not indicate the presence of additional non-ionised elements which would require analysis.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Non-ionised Elements	
Regulation Compliant:	**Yes**

2.1.2.9 Trace Elements

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The trace elements.*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May to October 2017;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of laboratory analysis of the trace elements bromine (total) and iodine (total) and accredited results for cobalt, lithium, molybdenum and strontium are required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Additionally, it is recommended that a focussed discussion of the characteristics is provided for clarity of results. Should the applicant be able to provide the relevant accredited certificates and discussion of the results, compliance with the trace elements requirement will likely be met."

Addendum Review Comments

17No. analysis results for bromine (total) are available for samples taken between June 2016 and October 2017 with a minimum value of 33µg/l and a maximum value of 110µg/l reported. 4No. analysis results for iodine (total) are available for samples taken between June 2016 and October 2017 with a minimum value of 1.2µg/l and a maximum value of 3.39µg/l reported. Accreditation is available for cobalt, lithium, molybdenum and strontium analysis methods and the corresponding analysis laboratory.

The hydrogeological report did not indicate the presence of additional non-ionised elements which would require analysis.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Trace Elements	
Regulation Compliant:	**Yes**

2.1.2.10 Radio-actinological Properties

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The radio-actinological properties at source;*

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May 2016 to October 2017;

- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form a discussion regarding sampling and transport procedure is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015."

Addendum Review Comments

The radioactivity of the water (gross alpha and gross beta Bq/l or mBq/l) has been measured in laboratory conditions on 4No. occasions between May 2016 and October 2017. Gross alpha has not been detected during the sampling period. Gross beta has a reported maximum value of 0.062Bq/l which is lower than the mineral water standards maximum value (0.4Bq/l).

The sampling of the groundwater is reported to occur from a sample tap installed at the headworks of the borehole and is displayed at Appendix 2 of MCL (2018). The process of sampling is incorporated into the accreditation held by Biosearch laboratory. Sampling has been detailed to comprise retrieving the sample from a designated tap close to the headworks.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Radio-actinological properties	
Regulation Compliant:	**Yes**

2.1.3 Microbiological Analysis

Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 require a description of:

- *The absence of parasites and pathogenic micro-organisms;*
- *A quantitative determination of the indicators of faecal contamination, showing an absence of:*
    - Escherichia coli and other coliforms in 250 ml;
    - faecal streptococci in 250 ml;

    - sporulated sulphite-reducing anaerobes in 50 ml; and
    - Pseudomonas aeruginosa in 250 ml.
- *A determination of total viable colony count per millilitre of water:*
    - at 20-22°C in 72 hours on agar-agar or agar-gelatine mixture; and
    - at 37 °C in 24 hours on agar-agar.

The following information has been provided by the applicant:

- Water Quality Results from NIWB records issued October 2015;
- Biosearch laboratory results from May to November 2016;
- NSF International water quality assessment report (2016);
- NSF updated water quality assessment report (2017);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"Parasites and pathogenic organisms - Elevations in total colony count at 20˚C were detected with no reasoning for this elevation. Further details of the sampling procedure would be required to discuss these results.

Faecal contamination - No explicit description of the colony count with regards to faecal contamination, E-coli, faecal streptococci or pseudomonas aeruginosa are provided in any of the supporting reports.

Colony Count **-** *No discussion regarding revivable total colony count per millilitre of water has been provided. No further comment can be made at this stage.*

We consider that additional information in the form of a discussion regarding sampling procedure is required to satisfy Schedule 1, Part 3, Paragraph 1 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. "

Addendum Review Comments

Regarding parasites and pathogenic organisms, elevations in total colony count at 20˚C were detected in 29th July and 12th October 2016; however, no determination for the exceedances could be provided. Instead, it was speculated that growth due to sampling, transport or storage conditions was possible. Subsequent to these exceedances, an additional 15No. samples were collected between 19th October 2016 and 11th October 2017. Reported results indicate a range between 0 and 31cfu/ml, indicating there is a low degree of variation between samples across a period of one year (four seasons). As required under the Drinking Water Inspectorate (DWI) standards, TVC at 20˚C and 37˚C are to show no abnormal change

between results. The sampling completed here demonstrates no abnormal change for a period of one year, between October 2016 and October 2017.

Regarding faecal contamination, Escherichia coli (E.coli) and other coliforms in 250ml are reported to be not detected from a total of 38No. tests between May 2016 and October 2017. Faecal streptococci in 250ml are reported to be not detected from a total of 35No. tests between May 2016 and October 2017.

Sporulated sulphite-reducing anaerobes in 50ml are reported to be not detected from a total of 36No. of 37No. tests between May 2016 and October 2017. One detection was reported from samples obtained on 5th October 2016. Supporting documentation indicates the reason for this detection is a result of possible surface water influence; however, in low abundance. Alternatively, the result has been considered a false positive. Furthermore, the subsequent 16No. samples taken over the period of one year have no indicated the presence of sporulated sulphite-reducing anaerobes.

Additionally, pseudomonas aeruginosa in 250ml are reported to be not detected from a total of 37No. tests between May 2016 and October 2017. Holistically, limited discussion regarding faecal contamination are presented in the supporting documentation.

Regarding total viable colony count per millilitre of water, a determination of count at 20-22°C in 72 hours on agar-agar and 37°C in 72 hours on agar-agar is provided in the supporting documentation alongside a brief discussion by NSF.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Parasites and Pathogenic Micro-organisms	
Regulation Compliant:	**Yes**

Faecal Contamination	
Regulation Compliant:	**Yes**

Colony Count	
Regulation Compliant:	**Yes**

2.2 Schedule 1, Part 1, Paragraph 1, Sub-section B

Schedule 1, Part 1, Paragraph 1, sub-section B of 'The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015' requires details from the surveys and analysis are read alongside Paragraph 4 of part 3 (i.e. regulation Number 17).

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form a prototype label is required to satisfy Schedule 1, Part 1, Paragraph 1, sub-section B of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. However, as this element is dependent on the presentation of Natural Mineral Water status, assessing this criterion is too pre-emptive at present. It should be readdressed if the source is provided Natural Mineral Water status."

Addendum Review Comments

As Natural Mineral Water Status has not been granted at this time, assessing this criterion is too pre-emptive at present. It is proposed that this requisite is readdressed if the source is provided Natural Mineral Water Status.

Regulation Compliance

We consider that the information provided does not satisfy the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Bottle Labels	
Regulation Compliant:	**No**

2.3 Schedule 1, Part 1, Paragraph 1, Sub-section C

Schedule 1, Part 1, Paragraph 1, sub-section C of 'The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015' requires evidence that no substance listed in Part 1 of Schedule 5 is at a level which exceeds the maximum limit specified.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of laboratory results screening against substances listed in Part 1 of Schedule 5 is required to satisfy Schedule 1, Part 1, Paragraph 1 sub-section C of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Additionally, for parameters which have been analysed

by Biosearch but no concentration is provided in Part 1 of Schedule 5, results could be screened against other relevant standards, e.g. Drinking Water Standards."

Addendum Review Comments

Part 1 of Schedule 5 provides a list of constituents and corresponding maximum limits (mg/l) at which they can be found within natural mineral water. Each of the sampling results submitted as part of the application have been screened against these maximum limits. Additional screening against Drinking Water Inspectorate (DWI) standards has also been provided (where applicable). For the majority, analysed parameters have been reported below the maximum concentration limits for every relevant constituent. Total Viable Colony (TVC) count is noted to have 2No. occasions where concentrations are significantly higher than the typical range <40cfu/ml on 29th July 2016 and 12th October 2016. An additional 15No. samples collected between 19th October 2016 and 11th October 2017 reported results indicating there is a low degree of variation between samples and demonstrates no abnormal change for a period of one year.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Concentrations Exceedances	
Regulation Compliant:	**Yes**

2.4 Schedule 1, Part 1, Paragraph 2

Schedule 1, Part 1, Paragraph 2 of 'The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015' require the concentrations of anions, cations, non-ionised compounds and trace elements, specific in Schedule 1, Part 4, if the screened values determined in Schedule 1, Part 1, Paragraph 1, sub-section B are of concern.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form a discussion regarding non-ionised compounds is required to satisfy Schedule 1, Part 3, Paragraph 2 of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Furthermore, screening of laboratory results will determine if any elevated concentrations require acknowledgement."

Addendum Review Comments

Screening of laboratory results (as discussed in Section 2.1.2.8 and 2.3) has been completed and indicates that were relevant, the reported non-ionised compounds do not exceed the Mineral Water standards or the Drinking Water Inspectorate standards. The hydrogeological report did not highlight the presence of additional non-ionised elements which would require analysis.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Schedule 1, Part 1, Paragraph 2	
Regulation Compliant:	**Yes**

2.5 Schedule 1, Part 1, Paragraph 3

Schedule 1, Part 1, Paragraph 3 of 'The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015' require the council to recognise the water as natural mineral water if it is satisfied with Schedule 1, Part 1, Paragraph 3 sub-sections A and B; the particulars of which are discussed in section 2.5.1 and 2.5.2 below.

2.5.1 Directive 2009/54

Schedule 1, Part 1, Paragraph 3, sub-section A of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requires confirmation that the Council is satisfied that:

- *The water is natural mineral water which complies with Paragraph 3 of Section I of Annex I to Directive 2009/54*

The following information has been provided by the applicant:

- Anu Irish Mineral Water application for Mineral Water Status (2015);
- Anu Irish Mineral Water Abstraction Licence (2015);
- Freedom of information request to Water Management Unit (WMU) (2015);
- Laboratory water quality results (post 2002) provided by NI Water (2015);
- Biosearch Laboratory water quality results for samples collected May 2016 to October 2017;

- NSF Assessment of a Source in Northern Ireland regarding Official Recognition as Natural Mineral Water (2016);
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379 (2017);
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379 (2018);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of water analysis taken following various pumping rates is required to satisfy Schedule 1, Part 1, Paragraph 3, sub-section A of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Furthermore, it is reiterated that screening of laboratory results against the Natural Mineral Water standards is required."

Addendum Review Comments

As discussed in Section 2.3 above, screening of reported results against Mineral Water standards and Drinking Water Inspectorate standards has been completed. Within the hydrogeological report (MCL 2018), indications of the proposed final flow rate have been provided (300m^3/d). Purging of the borehole was completed by the applicant on 23rd January 2018 at rates up to 67% of the proposed final rate. Three water samples were taken during this time; two at a rate of 10-11l/s and one at a rate of 22l/s. Comparison of results indicates relative consistency in chemical concentrations of the 1.5-hour sampling period and against the reported 6-month average from 2016 (NSF 2016). Both the 6-month average discussed in NSF (2016) and the 3 samples taken on 23d January 2018 indicate the water to be calcium-magnesium-bicarbonate.

No discussion regarding natural fluctuations is explicitly detailed within the hydrogeological report (MCL 2018), however it has been theorised that the surface water and groundwater resources are not hydraulically connected, suggesting that the groundwater would not significantly impacted by seasonal variations.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Stable Water Quality	
Regulation Compliant:	**Yes**

2.5.2 Water Characteristics

Schedule 1, Part 1, Paragraph 3, sub-section B of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requires confirmation that the Council is satisfied that:

- *The characteristics of the water have been assessed in accordance with:*
  - *The points number 1 to 4 in paragraph 2(a) of Section I of Annex I to Directive 2009/54*
  - *The particulars and criteria listed in part 3 and*
  - *Recognised scientific methods*

The following information has been provided by the applicant:

- Anu Irish Mineral Water application for Mineral Water Status (2015);
- Anu Irish Mineral Water Abstraction Licence (2015);
- Freedom of information request to Water Management Unit (WMU) (2015);
- Laboratory water quality results (post 2002) provided by NI Water (2015);
- Biosearch Laboratory water quality results for samples collected May to November 2016;
- NSF Assessment of a Source in Northern Ireland regarding Official Recognition as Natural Mineral Water (2016);
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379 (2017);
- MCL Consulting Hydrogeological Assessment Report, Water Supply Borehole, Armoy, Northern Ireland, P1379 (2018);
- Extended Council Submission Full Programme (11052016 to 11102017) Excel Spreadsheet.

2.5.2.1 Annex I, Section I, Paragraph 2(a), Point 1 to 4

Information Gap Identified as Part of Original Review Response

"We consider that additional information is required to satisfy Schedule 1, Part 1, Paragraph 3, sub-section B of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Full details of recommended additional works are detailed in Section 2.1 above."

Addendum Review Comments

Points number 1 to 4 in Paragraph 2(a) of Section I of Annex I to Directive 2009/54 relate to the geological and hydrological background, physical, chemical and physico-chemical characteristics, microbiology and, if necessary, pharmacological, physiological and clinical

characteristics. An assessment of these conditions is detailed in Section 2.1 above. Holistically, all components are deemed to be regulation compliant.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Annex I, Section I, Paragraph 2(a)	
Regulation Compliant:	**Yes**

2.5.2.2 Particular and Criteria Listed in Schedule 1, Part 3

Information Gap Identified as Part of Original Review Response

"We consider that additional information is required to satisfy Schedule 1, Part 1, Paragraph 3, sub-section B of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015. Full details of recommended additional works are detailed in Section 2.1 above."

Addendum Review Comments

The particulars and criteria listed in Schedule 1, Part 3 refer to completed geological and hydrogeological surveys, physical, chemical and physico-chemical surveys, and microbiological analysis. An assessment of these conditions is detailed in Section 2.1 above. Holistically, all components are deemed to be regulation compliant.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Schedule 1, Part 3	
Regulation Compliant:	**Yes**

2.5.2.3 Recognised Scientific Methods

Information Gap Identified as Part of Original Review Response

"We consider that additional information in the form of a discussion regarding sampling procedures and laboratory analysis methods (including accreditations and stability) is required

to satisfy Schedule 1, Part 1, Paragraph 3, sub-section B of The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015."

Addendum Review Comments

Upon review of laboratory result reports, applicable accreditation name (UKAS / EU) has been provided for all scientific methods were available. Analysis without accreditation are Temperature, Dry Residues at 260°C, Carbonate, Hydrogen Carbonate, Free Carbon Dioxide and Salmonella. Of these six analyses, Carbonate, Hydrogen Carbonate and Free Carbon Dioxide are determined through a calculation of results derived through accredited analysis. Therefore, by proxy, these results are deemed appropriate and dependable. Dry residues at 260°C is analysed in the same manner as at 180°C. Temperature results are subsided with values taken within the field at the time of collection. Therefore, Salmonella is the only outstanding parameter which is not covered by accreditation. As this parameter does not have a Mineral Water standard of Drinking Water Inspectorate standard the lack of accreditation does not impact on the recognition of the source as mineral water status.

Accreditation certificates for each laboratory used as part of the analysis process and their respective techniques have been provided. As such, details of sample registration, quality control and the cleaning processes and deemed appropriate.

It is noted that throughout the sampling programme, some results are annotated to be sampled outside of recommended stability times and as such, the results may be compromised. It is recommended that where a parameter has been analysed outside of recommended stability times, the results should be analysed as a whole to ensure there is no significant variance across the sampling period.

Regulation Compliance

We consider that the information provided satisfies the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015 requirements.

Recognised Scientific Methods	
Regulation Compliant:	**Yes**

2.6 Schedule 1, Part 1, Paragraph 4

Schedule 1, Part 1, Paragraph 4 of 'The Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 2015' require the Council to publish an

announcement of Natural Mineral Water status and the grounds on which it has been granted, in the Belfast Gazette.

Addendum Review Comments

As Natural Mineral Water status has not been granted, this condition cannot be commented upon.

3.0 Conclusion

Following a review of the additional documents and supporting information submitted by Anu it has been determined that sufficient information exists for the asset to be recognised as Natural Mineral Water. A review of the Northern Ireland Regulation (2015) requirements against the submitted information has highlighted that the minimum compliance criteria have been met. In some instances, additional information would be beneficial but should not in our opinion hinder the granting of mineral water status to this source. Laboratory analysis has successfully demonstrated acceptable water quality between October 2016 and October 2017.

				WYG Comments
Schedule 1, Part 1, Paragraph 1, Sub-section A	Geological and hydrological surveys which include:	The exact site of the catchment with an indication of its altitude, on a map with a scale of not more than 1:10,000		A scaled map of 1:1,000 demonstrating the catchment altitude and borehole asset location and elevation, including topographical contours to indicate elevation of the site has been displayed adequately.
		A detailed geological report on the origin and nature of the terrain		It is recommended that more recent literature and online sources of information are used to adequately portray geological layers. Field notes relating to field slips would be beneficial.
		The stratigraphy of the hydrogeological layer		The stratigraphy of the hydrogeological layer has been detailed adequately.
		A description of the catchment operations		Figures displaying historical land use are displayed, a source-pathway-receptor discussion has been included for the local area and wider vicinity of the borehole in addition to consideration to on-site pollutant sources. Catchment operations and potential risks, including their impact have been considered.
		The demarcation of the area or details of other measures protecting the spring against pollution.		A hydrogeological risk assessment, detailing the source – pathway – receptor model has been presented for the local area and wider catchment. However, clearer descriptions of the level of risk to the borehole would be beneficial and further details regarding the proposed up-grade to the borehole and compound.
	Physical, chemical and physico-chemical surveys which must establish:	The rate of flow of the spring		A proposed final flow rate has been provided and considered to be significantly lower than historical pumping at which no surface water interaction effects were displayed. It is recommended that the applicant communicates with NIWB and NIEA AIL in anticipation of receiving historical information regarding historical impact to adjacent watercourses and to amend the licence volume.
		The temperature of the water at source and the ambient temperature		Field determined temperature has been provided. Field based values are incorporated into the summary report of parameter analysis. No record of ambient temperature has been provided.
		The relationship between the nature of the terrain and the nature and type of minerals in the water		Water quality results have been provided but no attempt has been made to characterise the relationship between the nature of the terrain and the nature and type of minerals present in the water. Details regarding the well operation prior to testing, development process and sampling techniques would benefit the ambiguity noted within the report by NSF (2016) regarding the detection of several parameters.
		The dry residues at 180°C and 260°C		Accreditation for analysis at 180°C has been provided. Analysis at 260°C Is not available but uses the same method as that for 180°C. A low variation is deemed to exist from the results provided. The application would benefit from a brief discussion regarding the low mineral content in the water.
		The electrical conductivity or resistivity, with, the measurement temperature being specified		Field determined Electrical Conductivity has been provided for one date (23rd January 2018). Laboratory based electrical conducitivity are available throughout the testing period.
		The hydrogen ion concentration (pH)		Sufficient laboratory analysis of pH has been completed. A discussion regarding the values would be beneficial for report clarity.
		The anions and cations		All appropriate laboratory analysis has been completed and is supported by analysis and laboratory accreditation.
		The non-ionised elements		All appropriate laboratory analysis has been completed and is supported by analysis and laboratory accreditation.
		The trace elements		All appropriate laboratory analysis has been completed and is supported by analysis and laboratory accreditation.
		The radio-actinological properties at source		All appropriate laboratory analysis has been completed and is supported by analysis and laboratory accreditation. Accreditation for sampling procedure and brief summary has been provided.
	A microbiological analysis at source	The absence of parasites and pathogenic micro-organisms		Testing completed over a 1 year period has been completed with no detections / no abnormal change to concentrations.
		Quantitative determination of the revivable colony count indicative of faecal contamination, demonstrating an absence of:	Escherichia coli and other coliforms in 250ml at 37°C and 44.5°C	
			Faecal streptococci in 250 ml	
			Sporulated sulphite-reducing anaerobes in 50ml	
			Pseudomonas aeruginosa in 250 ml	
		The revivable total colony count per ml of water:	At 20 to 22°C in 72 hours on agar-agar or an agar-gelatine mixture	
			At 37oC in 24 hours on agar-agar	

Schedule 1, Part 1, Paragraph 1 Sub-section B	The information obtained as a result of the surveys and analyses required under paragraphs 1 and 2, as read with paragraph 4 of Part 3 are established		A prototype label is required. However, as this element is dependent on the presentation of Natural Mineral Water status, assessing this criterion is too pre-emptive at present. It should be readdressed if the source is provided Natural Mineral Water status.
Schedule 1, Part 1, Paragraph 1, Sub-section C	Evidence to show that the water contains no substance listed in Part 1 of Schedule 5 at a level which exceeds the maximum limit specified in relation to that substance in that schedule		Laboratory results screening against substances listed in Part 1 of Schedule 5 identifies that all relevant parameters are reported below maximum limits.
Schedule 1, Part 1, Paragraph 2	Where information on the anions, cations, non-ionised compounds and trace elements is required to be given pursuant to paragraph 1(b), the concentration of each such anion, cation, non-ionised compound and trace element specified in the first column of the tables in Part 4 of this Schedule must be expressed.		Appropriate screening of laboratory results has been completed. The application would benefit from a discussion regarding non-ionised compounds results.
Schedule 1, Part 1, Paragraph 3, Sub-section A	The water is natural mineral water which complies with Paragraph 3 of Section I of Annex I to Directive 2009/54		All appropriate laboratory analysis has been completed and is supported by analysis and laboratory accreditation.
Schedule 1, Part 1, Paragraph 3, Sub-section B	The characteristics of the water have been assessed in accordance with:	The points number 1 to 4 in paragraph 2(a) of Section I of Annex I to Directive 2009/54	Full details of recommended additional works are detailed in comments relating to Schedule 1, Part 1, Paragraph 1.
		The particulars and criteria listed in part 3 and	Full details of recommended additional works are detailed in comments relating to Schedule 1, Part 1, Paragraph 1.
		Recognised scientific methods	Information on sampling procedure and laboratory analysis methods has been provided.
Schedule 1, Part 1, Paragraph 4	The district council must, on recognising a natural mineral water in accordance with paragraph 3, publish an announcement of such recognition and the grounds on which it has been granted in the Belfast Gazette		As Natural Mineral Water status has not been granted, this condition cannot be commented upon.

Satisfies Regulations
Satisfies Regulations but can be improved
Does not satisfy Regulations
Not appropriate at this time