

Applicant; [REDACTED]; 3rd; 29<sup>th</sup> January 2019

**IN THE HIGH COURT OF JUSTICE IN NORTHERN IRELAND**

**QUEEN'S BENCH DIVISION (JUDICIAL REVIEW)**

**IN THE MATTER** of an application by [REDACTED] for Judicial Review

**AND IN THE MATTER** of a decision of the Department for Agriculture, Environment and Rural Affairs dated 29<sup>th</sup> September 2017

**AFFIDAVIT**

I, [REDACTED], Omagh, County Tyrone, aged 18 years and upwards, make oath and say as follows:

1. I am the Applicant in the above entitled proceedings. I am making this affidavit in support of my application for judicial review. This is my third affidavit in these proceedings. I am making this affidavit in response to the affidavits of [REDACTED] [REDACTED] and in light of the further information and documentation that has been provided by the Respondent and in light of the report of Dr Emerman following receipt of that information.

**OWENKILLEW SUB-BASIN MANAGEMENT STRATEGY AND SUSPENDED SOLIDS**

2. On 28 September 2018, my solicitors received a copy of a document they had requested from the Respondents, entitled "Practical Implementation of Freshwater Pearl Mussel Measures, Proposals for Owenkillew Sub-Basin Management Strategy, Final Draft (July 2014)." This document sets out that the following

should be observed in waters hosting freshwater pearl mussels: [MB1, pages 44-293]

- a. the annual mean of suspended solids should be less than 10mg/l [internal page 2-18];
- b. that suspended solids should be rare rather than chronic and should be attributable to natural conditions. [internal page 2-24]
- c. that it is important to understand the causes of elevated suspended solids where they are unnatural in order to rectify problems and to be aware that no level of exceedance beyond the natural is acceptable. [internal page 2-30]

3. The same document sets out that freshwater pearl mussels are likely to be extinct in the Owenkillew River (and also in the Owenreagh River) by 2080. I refer to the relevant part of the July 2014 document. [MB1, page 179]

4. I therefore believe that it is particularly important that the amount of suspended solids in the Owenkillew River be strictly monitored and not be allowed to exceed the safe levels set out in the Sub-Basin Management Strategy.

5. As far as I can see from the affidavit and exhibit of ████████, it does not appear that any measurement was ever made of the amount of suspended solids in the Curraghinalt Burn upstream of the discharge or in the Owenkillew River upstream of its confluence with the Curraghinalt Burn. I say this because:

- a. In the HRA dated 26 September 2014, it is recorded under "Discussion" that "Compliance with the discharge consent issued by WMU ... will ensure that the maximum suspended solids target of 10mg/l for the Owenkillew SAC ... will be met, subject to the upstream concentration of suspended solids not already exceeding this level." (Underlining added.) [Exhibits, ████████, 305]

- b. Mr Coey avers that when Dalradian raised concerns about inconsistencies about the limits for discharge solids within the planning permission and the Discharge Consent, NIEA WMU carried out an analysis which concluded that a concentration of 50mg/l suspended solids in the discharge effluent was consistent with and would not, on its own, give rise to an exceedence of a concentration of 10mg/l in the Owenkillev. The other calculations have not been qualified by the use of the phrase "on its own". When this is considered along with the paragraph above, I believe that the concentration of suspended solids already within the waterway before the effluent was discharged has not been measured or taken into account when calculating the total amount of suspended solids in the waterway.
6. I believe that in making its decision, the Respondent should have measured the amount of suspended solids in the Curraghinalt Burn and in the Owenkillev River. This would have been necessary to consider whether the amount of suspended solids in the SAC was in compliance with the requirements in the Sub-basin Management Strategy and in the River Basin Management Plan. If the Respondent had not actually measured the amount of suspended solids in the Curraghinalt Burn upstream of the discharge point and / or in the Owenkillev River upstream of the confluence with Curraghinalt Burn, then the Respondent could not know the concentration of suspended solids in the Owenkillev River and therefore could not consider whether same was in compliance with the amounts in the Sub-basin Management Strategy. The Respondent could not therefore take into account the requirements of the Sub-basin Management Strategy. I believe that the Respondent did not adequately protect the SAC ("Special Area of Conservation) or take into account or give adequate weight to the environmental protections relating to it and / or to the Sub-basin Management Strategy.
7. It is particularly important that the value for suspended solids is not assumed to be a certain value or to be within the limits required by the Owenkillev Sub Basin

Management Strategy in circumstances where the Respondent was aware that in some cases the levels for the parameters set within the strategy were already being exceeded in the Owenkillew SAC. [Exhibits, A291]

### HABITATS REGULATIONS ASSESSMENTS

8. Mr ██████ avers that in making the decision re the impugned consent, the Respondent carried out a review and reconsideration of the appropriate assessment which had previously been carried out in 2014. He describes the steps in this review and reconsideration as follows:
  - a. The Respondent consulted with NIEA NED on 11 May 2017;
  - b. On 17 August 2017, NIEA WMU carried out a screening exercise which concluded that the previous appropriate assessment carried out in 2014 should be reviewed;
  - c. On 22 August 2017, NIEA WMU undertook a review of the appropriate assessment which had previously been undertaken in 2014 in light of the revised modelling and updated EQSs, and the result was that the discharge would not give rise to any adverse effect upon the Owenkillew;
9. It appears from the affidavit of Mr ██████ that the above constitutes the entirety of the steps carried out by the Respondent for the review and reconsideration. Unless the Respondent avers to the contrary, I ask the Court to make the assumption that this is the case.
10. I believe that this approach by the Respondent is flawed in several respects.
11. The screening exercise referred to is simply a form confirming whether the discharge is within an SAC and so requires a HRA. The conclusion was that a HRA was required.

Review of the appropriate assessment that had been carried out in 2014

12. Mr [REDACTED] avers that on 22 August 2017, NIEA WMU undertook a review of the appropriate assessment which had previously been undertaken in 2014. In fact, whilst a Habitats Regulations Assessment was carried out in 2014 dated 26 September 2014, and whilst the cover sheet on this HRA recorded that an Appropriate Assessment had been carried out, the stage 1 assessment concluded that the proposal was not likely to have a significant effect on an N2K site and therefore an Appropriate Assessment was not in fact carried out. There is no appropriate assessment within the HRA dated 26 September 2014.
13. In any event, the flaws in the HRA dated 26 September 2014 are such that it could not be relied upon by the Respondent.
14. I do not understand why the HRA dated 26 September 2014 concluded that the proposal was not likely to have a significant effect on a N2K site. The conclusion of the stage 1 test in both of the draft HRAs [REDACTED], Tabs 22 & 23] was that the proposal was likely to have a significant effect on the Owenkillew River, particularly in respect of fresh water pearl mussel; water courses; salmon; bog woodland and otters. There is no justifiable reason why this would change for the HRA dated 26 September 2014.
15. Furthermore, in the HRA dated 26 September 2014, the column recording why it was considered that the effect was not significant refers to the following:
  - a. The water management and treatment system to be utilised by Dalradian.
  - b. Dalradian's Surface Water Management Plan (February 2013).
  - c. Dalradian's Environmental Monitoring Plan (February 2013).
  - d. Dalradian's Construction Environmental Management Plan.
  - e. Dalradian's Pollution Prevention Management Plan (2014).

- f. Measures specified by Dalradian to be implemented to deal with silt / suspended solids mitigation; refuelling of equipment; staff training and site inductions, drainage control and dust management.
- g. Ongoing environmental baseline monitoring to be carried out by Dalradian.
- h. The discharge consent issued by NIEA WMU for the proposal in February 2014, which places strict conditions on “the parameters outlined in Section 5.5”.
- i. The Respondent will undertake regular monitoring of both the discharge and receiving waters to assess compliance against the conditions of the consent.
- j. The consent places strict self monitoring requirements on Dalradian, which will be audited by the Respondent.
- k. The discharge consent will ensure that the maximum suspended solids target of 10mg/l will be met, subject to the upstream concentration of suspended solids not already exceeding this level.

16. This very strongly suggests that these matters were taken into account by the Respondent when deciding that the proposal was not likely to have a significant effect on the Owenkillev SAC. Unless the Respondent avers otherwise, I ask that the Court make this assumption. I am told by my legal representatives and verily believe that the Respondent was not entitled to take the above matters into account at stage 1 of the HRA, whether they are within the application or imposed by the Respondent, as they constitute measures intended to avoid or reduce the harmful effects of the proposed project on the Owenkillev SAC.

### Other concerns re HRA

17. I have already raised an issue with regard to the date the HRA updated on 26 September 2014 was signed. Mr ██████ avers that this HRA contains a typing error, namely that whilst the date beside his name on internal page 2 of the report reads “16/04/13”, it was approved by him at the same time as officials from NIEA NED and ought to read “16/09/14.” This does not explain why the report was updated on 26 September 2014, after it was approved and signed by all of the relevant officials on 16 September 2014. This is particularly important in circumstances where there are very significant differences between the draft reports and the final report, most notably with regard to the conclusions of the stage I test.

18. I am also concerned by the fact that it appears from the HRAs that the reports are often simply cut and pasted from a report relating to another site, for example on several occasions the HRAs relating to the Owenkillew SAC refer to the Roe and its tributaries.

### ISSUES RELATING TO DOCTOER ██████'S REPORT

#### Failures to comply with the requirements of the Water Framework Directive (Classification, Priority Substances and Shellfish Waters) Regulations (NI) 2015

19. There are different Environmental Quality Standards (“EQSs”) for certain substances which are set out in Table 47 of the Water Framework Directive (Classification, Priority Substances and Shellfish Waters) Regulations (NI) 2015. The first is an “AA-EQS”, which refers to an annual average of the substance in the water. The second is a “MAC-EQS”, which refers to the maximum allowable concentration. The third is the “Biota EQS.” The AA-EQS is to be used for the purposes of the amount of discharge that can be contained in a discharge effluent that is being discharged on a continuous basis. The MAC-EQS is to be used

where there is an incident of acute toxicity. The Biota-EQS is a measurement of the maximum amount of a substance that can be found in a type of animal or plant life in the area, usually fish.

#### Cadmium

20. The impugned discharge consent is a continuous discharge and so the AA-EQS should have been applied. The AA-EQS for cadmium is 0.08 µg/L. The Respondent has been erroneously considering that the appropriate EQS is the MAC-EQS which is 0.45 µg/L.

#### Mercury

21. There is a mass balance calculation of the amount of mercury in the Curraghinalt Burn dated 29 August 2018. This predicts that the 90<sup>th</sup> percentile of mercury in the Curraghinalt Burn on that date was 0.14 µg/L. This is in excess of the Maximum Allowable Concentration allowed in any waterway under the 2015 Regulations. My solicitors wrote to the Respondent about this issue by way of a letter dated 26 September 2018 and the Respondent replied by letter dated 19 October 2018. The Respondent indicated in its letter (at paragraph 4 thereof) that EQS for mercury is set as a “Maximum Allowable Concentration” (“MAC-EQS”) at 0.07 µg/L.
22. The purpose of the MAC-EQS is to make sure that the amount of mercury in the waterway does not ever exceed the MAC-EQS. It provides for acute instances of toxicity. With regard to mercury, the Respondent also has to apply the Biota-EQS set out in Table 47 of the 2015 Regulations, which is 20 µg/kg. The Respondent has failed to do this and has failed to take the biota into account. This is particularly important in circumstances where the NIEA River Basin Management Plan Cycle 1 Biota Monitoring Survey 2014 shows that the biota samples for mercury in the Owenkillew River were 20.6 µg/kg for wet weight and 28 µg/kg



for dry weight, both of which are in excess of the limit of 20. (Affidavit of [REDACTED], Exhibit [REDACTED] 1)

23. The Respondent does not appear to have calculated the amounts of any of the substances set out in Table 47 of the 2015 Regulations in the Curraghinalt Burn. It therefore has not made sure that the water therein complies with the 2015 Regulations. Given the very low flow in the Curraghinalt Burn (particularly this past summer) I believe that the concentrations of the substances listed in Table 47 in the Curraghinalt Burn are often likely to exceed the amounts set out in Table 47. The Respondent does not seem to have taken this into account at all and / or given it any or adequate weight in making the impugned decision.

Failure to keep proper records

24. I believe that the Respondent is required to keep registers setting out the river flow data that it has used in its calculations. The Respondent has failed to do this as it has not provided the data of the effluent flow rates for the Owenkillew River stating that it no longer has the actual streamflow data for the Curraghinalt Burn and Owenkillew River. (This is indicated in its letter of 19 October 2018).

Save as otherwise appears, I depose to the foregoing of my own knowledge information and belief.

[REDACTED]

\_\_\_\_\_

SWORN at Omagh, in the County of Tyrone this 29th day of January, 2019 by the said Fidelma O'Kane before me, a solicitor empowered to Administer Oaths in the High Court of Judicature in Northern Ireland.

[REDACTED]

This affidavit is filed on behalf of the Applicant by [REDACTED], Brolly Jameson, Solicitors, 14 Old Market Place, Omagh, County Tyrone BT78 1BT



Applicant; Dr [REDACTED]; 1st; 29<sup>th</sup> January 2019

**IN THE HIGH COURT OF JUSTICE IN NORTHERN IRELAND**

**QUEEN'S BENCH DIVISION (JUDICIAL REVIEW)**

**IN THE MATTER** of an application by [REDACTED] for Judicial Review

**AND IN THE MATTER** of a decision of the Department for Agriculture, Environment and Rural Affairs dated 29<sup>th</sup> September 2017

**AFFIDAVIT**

I, [REDACTED], of Malach Consulting, [REDACTED], Utah 84660, USA, aged 18 years and upwards, make oath and say as follows:

1. I am the owner of Malach Consulting, which specialises in assessing the environmental impacts of mining for mining companies, government agencies and non-governmental organisations. This is my first affidavit in these proceedings. I am making it as the Applicant has asked me to consider the decision of the Department for Agriculture, Environment and Rural Affairs (Northern Ireland Environment Agency) ("the Respondent"), dated 29 September 2017, to grant a Discharge Consent to Dalradian Gold. I refer to a booklet of exhibits which has been prepared for the purpose of this affidavit, which I have marked "SE1" at the time of swearing hereof.
2. I refer to my curriculum vitae. [SE1, pages 1-2]

### ERRORS IN FIRST REPORT

3. I prepared my first report, dated 9 August 2018, and this has already been provided to the Court and to the other parties. [SE1, pages 3-15] Since the provision of that report, I have had sight of further correspondence and documents that have been received from the Respondent. Once I had considered those further documents, it became clear that my first report was subject to errors due to assumptions on my part.
4. The original version of my report involved three mistakes. The first mistake was that I thought that the data in Tabs 13 and 16 referred to the Owenkillew River upstream of the confluence with Curraghinalt Burn. I now understand that the data in Tabs 13 and 16 refer to the effluent. I am grateful to Kevin Brown for clarifying this in his email of 19 October. The mistake was based upon my reading of Paragraph 53 of Mr Coey's affidavit along with the heading in Tabs 13 and 16. At paragraph 53, Mr Coey indicated that the Departmental monitoring was in the Owenkillew River. At Tabs 13 and 16, the handwritten heading was "Department compliance monitoring data." I therefore assumed that these data referred to the Owenkillew River as it had been recorded by the Department.
5. The second mistake was that, based upon the use of the terms "mean" and "standard deviation," I assumed that the Monte Carlo software required the use of input data that were normally distributed. (Data that are normally distributed will form the shape of a bell on a graph that has the data values along the horizontal axis and the frequency of occurrence along the vertical axis.) This would be correct, except that the terms "mean" and "standard deviation" could also refer to data that were normally distributed after suitable transformation of the values. For example, data that were normally distributed only after taking the logarithms of the values would be said to be lognormally distributed. In fact, the software manual, subsequently provided by Dr Neil Murdoch, shows

that there are several options within the Monte Carlo software that can be used. It is clear from the screenshots that have now been provided by the Respondent that the option used by the Respondent required the input data to be lognormally distributed.

6. The third mistake was a continuation of the second mistake. I calculated the correct value of the discharge consent limit for suspended solids (32 mg/L) under the assumption that Richard Coey was assuming that the flow rates for the effluent were normally distributed. If the flow rates are assumed to be lognormally distributed, then the discharge consent limit for suspended solids should be lower (31 mg/L).

## **SECOND REPORT**

7. In light of the further documentation received, I prepared a further report. There were several versions of this report. I refer to the final version dated 9<sup>th</sup> December 2018, revision submitted dated 17<sup>th</sup> December 2018, and provided to Brolly Jameson Solicitors on 17<sup>th</sup> December 2018. [SE1, pages 16-59] I am now providing an affidavit in the hope that I can set out more simply in layman's terms some of the matters in my report. I confirm that the entire contents of my report are accurate and the inclusion of a matter in this affidavit does not mean that it is any different from matters in my report that have not been explained in this affidavit.

### **Raw data are not lognormally distributed**

8. When using the Monte Carlo software, certain input has to be entered into the software. There is a version of the software that would require the Respondent to enter all of the actual values of the parameters that had been obtained through monitoring in the Curraghinalt Burn, the Owenkillew River and the discharge effluent. However, it is clear from the screenshots provided that the

Respondent did not use this version of the software (which in my view would have been more appropriate) but instead used the version that required that the raw data be lognormally distributed. This meant that the Respondent did not have to enter all of the actual values for the raw data but instead had to enter only two values into the software – for example the mean and the standard deviation of the raw data; or the mean and the number that is exceeded by 95% of the raw data. The software then uses these two values to calculate the “population of values” to be used in the software calculations.

9. This would have been appropriate if the raw data were lognormally distributed. However, if the raw data were not lognormally distributed, then the “population of values” would not have been appropriate. In such a situation, the values that were entered into the software would not be appropriate. Therefore, the results calculated by the software would be meaningless.
  
10. I have considered the raw data for all of the parameters that were used in the software calculation and have concluded as follows:
  - a. The streamflow in the Curraghinalt Burn is not lognormally distributed.
  - b. The streamflow in the Owenkillev River at Crosh is not lognormally distributed (therefore, it is likely that the streamflow in the Owenkillev River upstream of the confluence with the Curraghinalt Burn is not lognormally distributed).
  - c. Cadmium and mercury are not lognormally distributed at any location where raw data have been measured (either in the discharge effluent, the Curraghinalt Burn upstream of the confluence with the discharge effluent, or in the Owenkillev River upstream of the confluence with the Curraghinalt Burn).
  - d. Copper is not lognormally distributed in either the discharge effluent or in Curraghinalt Burn.

- e. Zinc is not lognormally distributed in either the effluent or the Owenkillew River.
  - f. Iron is not lognormally distributed in the discharge effluent.
11. In fact, the only sets of figures in respect of which the assumption of lognormal distribution could not be rejected with 95% confidence were in respect of iron in Curraghinalt Burn, zinc in Curraghinalt Burn, copper in the Owenkillew River, and iron in the Owenkillew River.
12. If the raw data are not lognormally distributed, then the values entered into the Monte Carlo software are not appropriate and the results calculated by the software are meaningless. My conclusion is that the Respondent was not using the Monte Carlo software correctly, and therefore the results cannot be relied upon.

#### Data and calculation errors

13. Mr █████ refers to certain values that were calculated by the software based on the raw data provided. I have reviewed these calculations (based on the same data as Mr █████ used) and found several errors, for example:
- a. Mr █████ avers that the 90<sup>th</sup> percentile for zinc in the Owenkillew River upstream of the confluence with the Curraghinalt Burn was 9.13 µg/L. It should be 9.35 µg/L.
  - b. Mr █████ avers that the 90<sup>th</sup> percentile for cadmium in the Owenkillew River upstream of the confluence with the Curraghinalt Burn was 0.04 µg/L. It should be 0.05 µg/L.
  - c. Mr █████ avers that the 90<sup>th</sup> percentile for copper in the Curraghinalt Burn was 2.72 µg/L. It should be 2.23 µg/L.
  - d. Mr █████ avers that the 90<sup>th</sup> percentile for iron in the Curraghinalt Burn was 4.47 µg/L. It should be 5.742 µg/L.

- e. Mr [REDACTED] has entered the same values repeatedly in error when running the software as evident from Figures 5d and 5e of my report. [SE1 pages 56-57]
14. The 90<sup>th</sup> percentiles calculated by Mr [REDACTED] and by me appear to be based on the same sets of raw data (Tabs 15, 17 and 18 and the attachments provided by Kevin Brown). It is therefore unclear whether Mr [REDACTED] carried out the calculations wrongly or whether, in fact, different raw data were used in the calculations.
15. The same argument would apply to the calculations for the streamflow of Curraghinalt Burn.
16. There are also a large number of inconsistencies in the raw data sets themselves. These are numerous and cause me to have no confidence whatsoever in the accuracy of the raw data sets themselves.
17. I have also considered the screenshots of the software, which show the values input by the Respondent and the results calculated by the software. There are numerous incorrect input entries in these screen shots. I have set these out in my report under the heading "Correct Use of Input Data in Monte Carlo Software" and in Figures 5a-5e, which list the errors under each screenshot. By way of an example, in Figure 5d, with regard to the upstream river data (in the rectangle on the left):
- a. The mean flow is 1355. It should be 5125.
  - b. The 95% exceedance flow is 432. It should be 259.
  - c. The mean quality is 4.55. It should be 4.18.
  - d. The standard deviation of quality is 4.18. It should be 2.52.



18. The errors are compounded by the fact that the Monte Carlo software is used twice (firstly, re the mixing of the effluent with Curraghinalt Burn and then re the mixing of Curraghinalt Burn with the Owenkillew River). If the initial results from the first mixing calculations are wrong, since these are used in the second mixing calculation, then the results of the second mixing calculation must also be wrong.
19. Again, there is no way of knowing whether the above discrepancies were a result of data entry errors or whether the data used were data that have not been provided.

#### Inadequate monitoring equipment

20. Mr █████ has averred that:
  - a. The NIEA laboratory analytical methods, as with all analytical methods, are only accurate down to a certain concentration, below which the method cannot produce an accurate result.
  - b. Below this figure, the laboratory will report the result as a “less than” concentration (using the symbol “<”).
  - c. In the case of copper, the consent limit is 16.2 µg/L, however the laboratory can only analyse down to a concentration of 20 µg/L.
  - d. The results for copper are therefore reported by the laboratory as <20 µg/L, but since the database is unable to display the “<” qualifier the result appears to be 20 µg/L, which constitutes an “apparent failure,” rather than a “real failure.”
  - e. Similarly, the consent limit for cadmium is 0.7 µg/L, however the laboratory can only analyse down to a concentration of 10 µg/L.
  - f. The results for cadmium are therefore reported by the laboratory as <10 µg/L. Again, because the database is unable to display the “<” qualifier,

the result appears to be 10 µg/L, which is an “apparent failure,” rather than a “real failure.”

21. Based on the above, the Respondent cannot in fact know whether the failures are real or apparent. If the actual amount of copper in the discharge effluent is greater than 16.2 µg/L, but less than 20 µg/L, then the Respondent would not know whether the failure was a real failure or an apparent failure.
22. The same difficulty arises with respect to cadmium. Again, the Department cannot know whether there is a real or an apparent failure for readings greater than 0.7 µg/L, but less than 10 µg/L, and so the decision of the Respondent suffers from the same flaws as set out above with regard to copper.
23. In my view, it must be obvious that an analytical instrument with a detection limit of 20 µg/L is inappropriate for determining whether a consent limit of 16.2 µg/L has been met. Even more so, an analytical instrument with a detection limit of 10 µg/L is inappropriate for determining whether a consent limit of 0.7 µg/L has been met.

#### Amount of discharge effluent

24. In its calculations, the software has taken into account the history of the water quality in the discharge effluent. In other words, it has considered that the amount of discharge effluent discharged each day is variable and the concentration of each substance in that discharge effluent is variable. In circumstances where Dalradian Gold are permitted to discharge a maximum amount of effluent per day and where the concentrations of each substance within that effluent are set, it is not appropriate to assume a past variability for the amount of the discharge or the concentration of each substance within it. (That method is of course appropriate for natural streams where the amounts

and concentrations vary naturally.) Instead, constant figures should be used for the amount of effluent per day and the concentration of each substance within that effluent. This is because Dalradian Gold will be able to discharge that amount of effluent with those limits of concentration per day.

### Suspended Solids

25. The Respondent has calculated the consent limit for suspended solids inappropriately. I have set out the detailed reasons for this at pages 10, 11 and 12 of my report. The consent limit for suspended solids should be 31 or 32  $\mu\text{g/L}$ . The consent limit should be 31  $\mu\text{g/L}$  if it is assumed that the effluent flow rates were lognormally distributed, and the consent limit should be 32  $\mu\text{g/L}$  if it is assumed that the effluent flow rates were normally distributed. Furthermore, the Respondent did not take account of the fact that there was likely to be either a loss or gain of suspended solids during the mixing process. Therefore, any equivalence between consent limits in the effluent discharge and the Owenkillew River must be tested in the field and should not be assumed to be correct on the basis of a mixing calculation. Further the Respondent has assumed that the amount of suspended solids in the water upstream of the discharge of the effluent is 10 mg/L. This should be measured, rather than assumed, and since suspended solid concentrations are highly variable, a very large number of measurements ought to be made.

### CONCLUSION

26. In conclusion:

- a. There are so many contradictions and unanswered questions regarding the input data that I have no confidence in either the data or any consent limits that were determined using those data.
- b. The Respondent used a version of the Monte Carlo software that required that the input data were lognormally distributed. The majority of the input data were not lognormally distributed, therefore the results generated by

the Monte Carlo software and any consent limits determined using those results, cannot be relied upon.

- c. The statistical summaries are also contradictory.
- d. The Respondent's laboratory does not appear to have appropriate detection limits and the discussion and use of detection limits is filled with inconsistencies.
- e. The consent limit for suspended solids (50 mg/L) was calculated wrongly (using the same number for the mean and the maximum effluent discharge) and should have been 31 mg/L.

27. Finally, there are so many inconsistencies and errors in the raw data, in the summaries of data, in the choice of the software options, and in the calculations that it is my view that the consent limits contained in the impugned discharge consent cannot be accurate and should not be relied upon.

Save as otherwise appears, I depose to the foregoing of my own knowledge information and belief.

Executed at

this 29<sup>th</sup> day of January, 2019

by the said Doctor [REDACTED] before

of

a Notary Public.

This affidavit is filed on behalf of the Applicant by [REDACTED], Brolly Jameson, Solicitors, 14 Old Market Place, Omagh, County Tyrone BT78 1BT