FICHTNER
Consulting Engineers Limited

Powerfuel Portland Ltd

Portland ERF

Clarifications in Response to AQC Review dated 22 February 2022

1 Background

Air Quality Consultants Ltd (AQC) has been commissioned by the Stop Portland Waste Incinerator (SPWI) group to carry out a review of the submissions made by Powerfuel Portland Limited to the Environment Agency (EA) and Dorset Council in relation to air quality. This has included a review of the following documents:

- The Schedule 5 response to the EA dated 03 December 2021; and
- The Regulation 25 response to further information to Dorset Council dated 26 January 2022.

AQC has previously reviewed all other relevant submissions to both the EA and Dorset Council.

It should be noted that AQC is not providing an independent review of this information; AQC was commissioned by the Stop Portland Waste Incinerator group to review and comment on the submissions made to the EA and Dorset Council in relation to air quality. We note that the EA's technical team will independently review all submissions as part of their determination of the environmental permit application and understand that Dorset Council has engaged TetraTech (an experienced technical advisor) to complete an independent review of all submissions on its behalf as part of their determination of the planning application.

The review of the most recent documents is set out in the AQC document reference: J10-12797B-10/2/F3 (referred to within this note as the "AQC Feb 2022 Review"). This has followed the same approach as previous reviews, where issues have been identified and categorised according to the following criteria (directly quoted from Section 1.4 of the AQC Feb 2022 Review):

- *"Major issue – in the opinion of the reviewer, any one individual failing would be highly likely to invalidate the reported conclusions, or if clear instruction from decisionmakers have not been acted on.*
- *Moderate issue – weaknesses have been identified which, individually, may or not affect the conclusions; or*
- *Minor issue – weaknesses have been identified but the professional experience of the reviewers suggests that each one, in isolation, would be unlikely to affect the conclusions of the assessment. There remains, however, the potential for multiple minor issues to combine to invalidate the reported conclusions. Minor issues have also been identified where the material presented is misleading or otherwise inappropriate to inform consultation."*

Fichtner provides the following comments and clarifications on the AQC Feb 2022 Review to ensure that readers of the technical information on air quality are not given a misleading impression on important information. For the avoidance of doubt, no new information is being provided and there are no changes to the conclusions of any of the submissions made by Powerfuel Portland Ltd.

2 Response to points raised on Schedule 5 response

The following section addresses each point set out in the AQC response relating to the Schedule 5 response.

Information is provided in a piecemeal manner - para 2.2

The documents produced are technical in nature and were developed to answer specific questions raised by the EA through the determination process. These are designed to be reviewed by an experienced individual at the Environment Agency who asked the specific questions, and the manner of the presentation is quite standard in that context. We note that the EA has raised no issue with this approach.

We note that this has not been categorised as an issue by AQC and does not affect any of the conclusions of the works submitted to the EA.

Stack height - para 2.3

The response to the EA confirmed that there was a typographical error relating to the stack height in the original Non-Technical Summary and Supporting Information documentation. This was corrected as part of the response to the EA, confirming the stack height at 80 m.

AQC is aware that a detailed stack height assessment was included within air quality submissions relating to both the planning and permit applications, using an 80 m height.

AQC is also aware that should a different stack height be proposed this would need to be agreed with both the EA and Dorset Council. Given the nature of the proposal this would be supported by updated dispersion modelling.

It should be clear to AQC that the stack height is 80 m, as stated in the air quality assessment and the stack height assessment, so it is not clear what point AQC is raising, save that there was a typographical error in other documents in the original submission which has since been corrected.

Uncertainty - paras 2.4 to 2.7

The results are presented for the maximum impact for each model run. Results are also presented as a series of plot files. The results are presented in a clear and concise manner. The EA has been supplied with the model input and output files so that all results can be verified by the regulator. The EA has raised no issue on this.

AQC notes in para 2.7 that:

"On balance, the uncertainty in modelled concentrations in relation to topography and meteorology is probably offset by the conservative assumptions applied to the emissions".

Fichtner considers that this means that AQC agrees with the model validation exercise that has been submitted to the EA, and the conclusions set out in the response, which were supported by CERC, namely that:

- the ADMS model is appropriate for modelling impacts from the proposed ERF in Portland; and
- the specific location conditions at Portland are well within the modelling capabilities.

However, AQC considers that:

"the lack of confidence in the results and presentation of a comprehensive set of results for human health and ecological receptors, which takes into account the combined influence of emissions from

traffic, the main stack and the emergency diesel generator, make it very difficult to determine the expected impact at specific locations"

Fichtner does not agree with AQC's view for the following reasons:

1. The permitting process purely deals with emissions from the installation – i.e. the process emissions – and so the cumulative impact of traffic and process emissions is never included in a permit application.
2. The assessment has considered the maximum impact of emissions at any location and the maximum across both the identified ecological sites. In addition, contour plot files have been provided to graphically display the effects.
3. A discussion relating to the combined impact of the operation of the Emergency Diesel Generator (EDG) and ERF was set out in section 7 of the Annex B of the Schedule 5 response. AQC has clearly reviewed this document but failed to acknowledge that this has been considered in the submission.

AQC categorises this as a major issue but the points raised do not meet AQC's own criterion for this conclusion. Specifically, the findings raised by AQC do not "*invalidate the reported conclusions*" and it is incorrect to assert that "*instructions from the decisionmakers have not been acted upon*" as each question raised has been answered.

The points raised do not even satisfy the criterion for a minor issue as the information presented to the EA to support the determination of the EP is not inappropriate to inform their consultation.

EDGs - paras 2.8 to 2.9

AQC considers that the assessment of the air quality impact of the EDG is inadequate and categorised this as a major issue. To support this, AQC listed a series of points.

Fichtner does not agree with AQC's statement, or any of the points to support it, and we have responded to each point in turn as follows:

1. *The EDG emission location is not identified.*

   This is incorrect. Table 1 clearly states all the source information for the EDG including the location and height of the stack.

2. *It does not consider the influence of the total emissions from the site (i.e. in combination with EfW stack, traffic and shipping). In particular the combined influence of emissions from the EfW stack and generator are not presented, as required by the schedule 5 notice.*

   This is incorrect. Within section 7 of the technical report on the EDGs contained within Annex B of the Schedule 5 response there is a discussion relating to the potential for in-combination impacts with the ERF. No mention of either traffic or shipping emissions has been included as this is outside of the scope of the installation, and not relevant for the EA's consideration of the EP application.

3. *It does not consider the impact of ammonia, sulphur dioxide and PM emissions from the EDG;*

   Section 4 of the technical report on the EDGs contained within Annex B of the Schedule 5 response provides a justification for the assessment levels chosen.

   AQC as a technical reviewer and the EA are aware that no secondary abatement of NOx on the EDGs is proposed. Therefore, there would be no reason for any emissions of ammonia from the EDG and for this reason impacts of ammonia were not considered in the analysis.

   In terms of particulate matter, there is a daily mean AQAL for PM_{10} which is set at 50 µg/m^3 not to be exceeded more than 35 times per year, which applies where members of the public have regular access.

   The Schedule 5 response explains that the EDG would operate for "*testing purposes every 2 weeks for less than 30 minutes*" and "*impacts are restricted to close to the facility*". Therefore,

it is considered highly unlikely that emissions during 30 minutes for a 24-hour period would cause an exceedance of the daily mean AQAL, especially given the distance to areas of relevant exposure and the number of exceedances allowable.

The Schedule 5 response explains that the EDG would be needed to "safely shut down the ERF in the event of an emergency shutdown and when there is a loss of grid connection". It is further explained that "*the shut-down would take no more than 4 hours*" and that "*the port has confirmed that there have been 3 grid outages in the last 6 years"*. Therefore, it is considered even if the grid outages coincide with an event where the ERF would need to be shut down, there is limited risk of the AQAL being exceeded at areas of relevant exposure and even if this was it would not be exceeded more than 35 times per year.

In terms of sulphur dioxide, we note that there are short term AQALs, and the fuel would include small amounts of sulphur which would result in emissions of sulphur dioxide. However, there is very little risk of the AQALs being exceeded. As set out in relation to PM above, the EDGs would need to operate under the worst-case conditions for dispersion and people be present close to the Facility for each of these occurrences. This is highly unlikely. The impact of sulphur dioxide emissions was not considered in the Schedule 5 response as this focussed on the emissions limits for oxides of nitrogen as set in the TA-Luft 2g standard which the EA referenced in the Schedule 5 request.

4. *It does not consider the impact on annual mean concentrations, whilst the EDG will only be operated for short periods it will have an influence on annual concentrations;*

Section 4 of the technical report on the EDGs contained within Annex B of the Schedule 5 response provides a justification for the assessment levels chosen and why annual mean impacts were screened out from the detailed analysis.

To clarify and to make this clear, we set out below the total NOx emissions from the EDG if it operates 26 times a year for 30 minutes (including 10 minutes of warm-up) and if there is a single 4 hour emergency (with the loading as described in section 3.2 of the technical report on the EDGs). All of the information in the calculation is taken from the technical report.

- Testing: (4.415 g/s x 600 s + 0.938 g/s x 1200s) x 26 = 98.1 kg
- Emergency: – 4.415 g/s x 600s + 0.938 g/s x 3000s + 0.938 g/s x 3600s x 70% + 0.938 g/s x 7200s x 50% = 11.2 kg
- Total emissions from EDG = 98.1 kg + 11.2 kg = 109.3 kg

This can be compared with the emissions from the ERF plant, if it is assumed to operate at the emissions limit for 8760 hours.

- 4.689 g/s x 3600 s/hr x 8760 hr = 147,872 kg

Hence, the emissions from the EDG would be 0.07% of the emissions from the ERF and we are confident that the influence of these emissions on annual concentrations will be insignificant. Fichtner considers that AQC could have checked this point using the information in the technical report and, indeed, that it should be obvious that the impact of the EDG, operating at a lower emission rate for around 17 hours in the year, will be insignificant over an entire year.

In addition, we note that in paragraph 3.7 of the AQC Feb 2022 review relating to the roads emissions modelling AQC state that:

"…although it excludes the influence of generator emissions. In relation to the impacts on annual mean nitrogen dioxide and PM_{10} concentrations this is unlikely to alter the conclusions of the ES".

In this paragraph AQC is confirming that in respect of the generator (EDG) the impacts are unlikely to impact the conclusions of the ES. As such it is not clear why AQC raise this as a concern in this section given they confirmed the limited impact of the EDGs in paragraph 3.7.

5. It does not consider the impact of emissions on nitrogen and acid deposition fluxes; and

   Section 4 of the technical report on the EDGs contained within Annex B of the Schedule 5 response provides a justification for the assessment levels chosen and why annual mean impacts were screened out from the detailed analysis. This is also relevant to nitrogen and acid deposition impacts as these are only considered on an annual basis.

6. No receptor results or contour are presented, so it is not possible to determine the spatial extent of any impacts.

   The technical report considers the point of maximum impact and the maximum impact across the grid points within the ecological sites for each year of meteorological data. Contours were not provided. Providing contour plots would be misleading as the EDGs would only operate for a few hours each year. The modelling has been carried out for the entire year in order to identify the maximum impact under the worst case weather conditions, so a contour plot of short term impacts would show the spatial extent if the EDGs operate for the whole year.

   Therefore, this does not undermine the assessment carried out or affect the conclusions of the assessment.

AQC again chooses to categorise this as a major issue but, again, the points raised do not meet AQC's own criterion for this conclusion. We note that none of the points raised show that the "*material presented is misleading or otherwise inappropriate to inform consultation"* and therefore, these do not even satisfy the criterion specified by AQC for a minor issue.

Repetition / Information not relevant - para 2.10

ALC states "*Information supplied is a repetition of information submitted with the Regulation 25 response. It does not appear to identify which information is of specific relevance to the permit application and therefore does not fulfil the explicit request of the Schedule 5 notice".*

Point 4 of the Schedule 5 response requested that:

> *"You must ensure that your response clearly indicates the information which you consider relevant for the permit application, thereby distinguishing if from information submitted to the LPA which is outside of the Environment Agency's environmental permitting remit. The Environment Agency is aware that information that would be relevant to the environmental permit application has been submitted by the Applicant in the aforementioned response to the LPA. This information should also be submitted to the Agency for consideration during our determination of the permit application"*

This criticism is misconceived. Fichtner only provided the EA with a subset of the information which was of specific relevance to the EP application process, as explained in the Schedule 5 response. The entire suite of Regulation 25 documentation submitted to Dorset Council was not provided to the EA; only information which was relevant. This should have been apparent to AQC. Therefore, Fichtner considers that the correct level of information was provided as requested. The EA has not raised any concern with this approach.

3 Response to points raised on Regulation 25 response

The following section addresses each point set out in the AQC response relating to the Regulation 25 response.

ES Addendum Appendix 3.1 Diesel Generator and 3.2 Modelling Uncertainty - para 3.2

AQC has stated that the discussion is the same as that in relation to the Schedule 5 response and make no further comments.

ES Addendum Appendix 3.3 $PM_{2.5}$ - para 3.3

AQC agrees with the conclusions and that these do not alter the conclusions of the ES.

ES Addendum Appendix 3.4 Additional Dispersion Modelling – paras 3.4 to 3.6

AQC states that Tables 4 to 6 do not include the contribution from the stack emissions. This is not correct.

The data presented in Table 6 is correct. All columns can be cross referenced and calculated through. However, it is acknowledged that there is an error in Table 4 and 5, albeit not the error that AQC has identified. A review of the spreadsheet has shown that the column labelled "do-minimum" was incorrectly referencing the "do-something" column in the results spreadsheet, and so the figures presented in the "do minimum" column in the tables are too high as they include the contribution from development traffic and therefore overestimate the impact. However, the calculation of the cumulative concentration correctly uses the "do minimum" concentration, which means that the cumulative concentration presented in the tables, and used for the analysis, is correct as are all the figures and graphs.

AQC states that the numbers presented appear to have omitted the stack process contribution and have classified this as a major issue. If this was the case we would agree, but it is not. The cumulative concentrations are correct and the typographical error in Table 4 and 5 has no impact and does not invalidate the conclusions of the assessment.

An erratum version of Appendix 3.4 has been prepared and will be submitted with this clarification.

AQC has stated that none of the tables include the generator model results and therefore do not present the full impact of emissions and have classified this as a major issue.

A justification for not considering the effect of the short term and emergency operation of the EDG on annual impacts was included in the technical report on the EDGs which was included as Appendix 3.1 of the Regulation 25 response. AQC has clearly reviewed this document but failed to acknowledge this analysis. As noted above, it is clear that the effect of the EDGs on annual average concentrations will be insignificant and AQC appear to accept this in their response in para 3.7 so it is unclear why they are raising this point here.

ES Addendum Appendix 3.5 Roads Modelling – para 3.7

AQC acknowledges that the contribution of the diesel generator emissions to long term impacts would not alter the conclusions of the ES (para 3.7).

Short term impacts of EDG – para 3.8

AQC states that:

> *"short term concentrations will be subject to the most model uncertainty in relation to local terrain and meteorology. Although the probably of the generator running during meteorological conditions likely to cause the highest concentrations is low, this is a cause for concern because insufficient information has been provided about the points of maximum impact in the Diesel Generator Assessment. This is a moderate issue."*

The assessment of the impact of the EDG considered the point of maximum impact and the maximum impact across the grid points within the ecological sites for each year of meteorological data. Contours were not provided. Providing contour plots would be misleading as the EDGs would only operate for a few hours each year. The modelling has been carried out for the entire year in order to identify the maximum impact under the worst case weather conditions, so a contour plot of short term impacts would show the spatial extent if the EDGs operate for the whole year.

Therefore, this does not undermine the assessment carried out or affect the conclusions of the assessment.

4 Response to points raised on other documentation

In addition to the detailed review set out in sections 2 and 3, AQC has provided commentary on inconsistencies which have been identified when cross-referencing and evaluating the specific air quality documents. These are:

1. Model results at discrete receptor locations, which formed appendix 3.3 to the August 2021 ES addendum
2. Data used in the shadow appropriate assessment

4.1 Model results at discrete receptor locations

AQC has correctly identified an error in Table 6 of the Modelling Results at Discrete Receptor Locations dated 07 May 2021 submitted with the EP application. We clarify the correct position below and have also provided an erratum version of the document with this clarification.

In reviewing the tables we identified that the values shown for the PC at the BAT-AEL with the IED ratio applied were incorrect, as they were based on a value for the BAT-AEL of 100 mg/Nm^3 rather than the correct level of 120 mg/Nm^3. This issue was also present in Tables 7 and 8 and therefore, these have been corrected.

However, this does not change the conclusions of the assessment, because the correct values were actually used when describing the impact. The relevant paragraph from the original document is as follows:

"The half-hourly ELV in the IED is 2 times the daily ELV for oxides of nitrogen and 4 times the daily ELV for sulphur dioxide. If the same ratio were to be applied to the emissions from the Facility, the maximum process contribution from the Facility would be less than 10% of the AQAL for 1-hour nitrogen dioxide and sulphur dioxide. However, the maximum impact of 15-minute sulphur dioxide from the Facility would slightly exceed 10% of the AQAL."

The following tables show the corrected results, with the original values struck through and the revised values underlined in red. It can be seen that the values in the table are consistent with the conclusion, with the maximum PC being less than 10% of the AQAL for 1-hour nitrogen dioxide and sulphur dioxide and slightly more than 10% for 15-minute sulphur dioxide for one year of weather data. The original values were lower, meaning that the maximum PC for 15 minute sulphur dioxide was presented as being lower than 10% of the AQAL.

Therefore, the conclusions remain the same in that the impact can be screened out as insignificant at each of the receptor locations.

Corrected Table 6: 99.79%ile 1-hour Nitrogen Dioxide Impact at Identified Sensitive Receptors

Receptor	PC – IED half-hourly ELV			PC – BAT AEL with IED ratio applied		
	µg/m³	as % of AQAL	as % of headroom	µg/m³	as % of AQAL	as % of headroom
R1	11.69	5.84%	7.49%	7.01~~5.84~~	3.51~~2.92~~%	4.50~~3.75~~%
R2	9.87	4.93%	6.33%	5.92~~4.93~~	2.96~~2.47~~%	3.80~~3.16~~%
R3	12.79	6.39%	8.20%	7.67~~6.39~~	3.84~~3.20~~%	4.92~~4.10~~%
R4	26.73	**13.37%**	17.14%	16.04~~13.37~~	8.02~~6.68~~%	10.28~~8.57~~%
R5	9.17	4.59%	5.88%	5.50~~4.59~~	2.75~~2.29~~%	3.53~~2.94~~%

Corrected Table 7: 99.73%ile 1-hour Sulphur Dioxide Impact at Identified Sensitive Receptors

Receptor	PC – IED half-hourly ELV			PC – BAT AEL with IED ratio applied		
	µg/m³	as % of AQAL	as % of headroom	µg/m³	as % of AQAL	as % of headroom
R1	16.52	4.72%	4.81%	9.91~~4.13~~	2.83~~1.18~~%	2.58~~1.20~~%
R2	13.99	4.00%	4.07%	8.39~~3.50~~	2.40~~1.00~~%	2.44~~1.02~~%
R3	18.02	5.15%	5.25%	10.81~~4.51~~	3.09~~1.29~~%	3.15~~1.31~~%
R4	38.05	**10.87%**	11.08%	22.83~~9.51~~	6.52~~2.72~~%	6.65~~2.77~~%
R5	12.87	3.68%	3.75%	7.72~~3.22~~	2.21~~0.92~~%	2.25~~0.94~~%

Corrected Table 8: 99.9%ile 15-minute Sulphur Dioxide Impact at Identified Sensitive Receptors

Receptor	PC – IED half-hourly ELV			PC – BAT AEL with IED ratio applied		
	µg/m³	as % of AQAL	as % of headroom	µg/m³	as % of AQAL	as % of headroom
R1	18.76	7.05%	7.23%	11.26~~4.69~~	4.23~~1.76~~%	4.34~~1.81~~%
R2	16.47	6.19%	6.35%	9.88~~4.12~~	3.72~~1.55~~%	3.81~~1.59~~%
R3	20.92	7.86%	8.07%	12.55~~5.23~~	4.72~~1.97~~%	4.84~~2.02~~%
R4	45.86	**17.24%**	17.68%	27.52~~11.47~~	10.35~~4.31~~%	10.61~~4.42~~%
R5	16.37	6.15%	6.31%	9.82~~4.09~~	3.69~~1.54~~%	3.79~~1.58~~%

4.2 Data used in the shadow appropriate assessment

AQC has correctly identified a typographical error in paragraph 6.12 of the shadow appropriate assessment. However, the error does not affect the assessment.

Paragraph 6.12 includes two statements

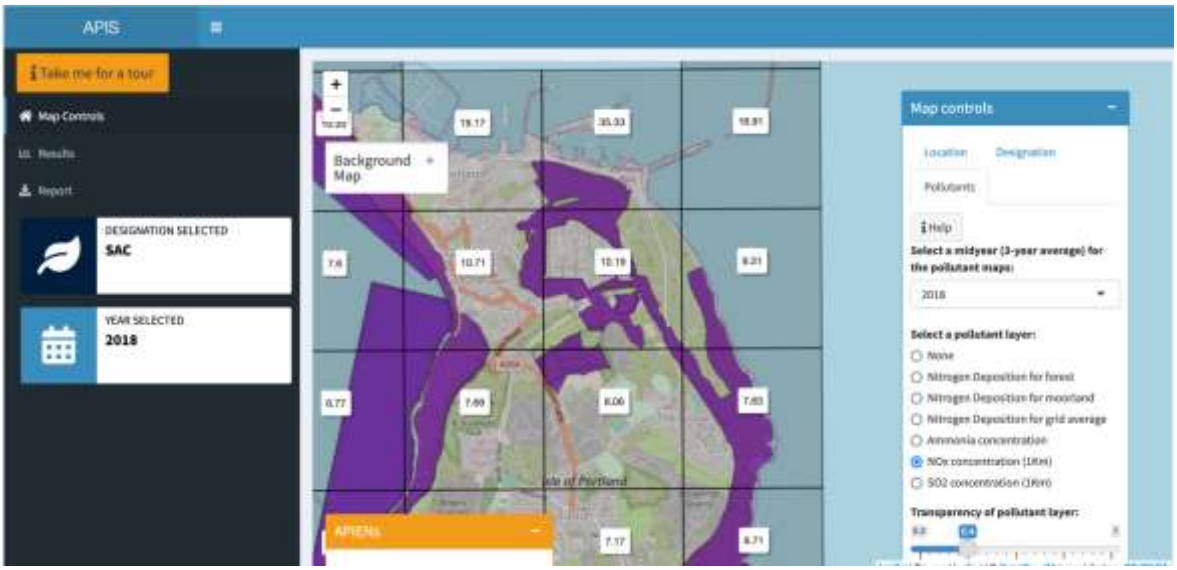
- "the baseline concentration of NOx for the Isle of Portland to Studland Cliffs SAC taken from the APIS website is between 17.6 and 7.5 µg/m^3."
- "with the background NOx concentration being 10.19 µg/m^3 where the process contribution from the ERF is greater than 1% of the critical level."

As AQC notes, the first statement is incorrect as the figures quoted are the nitrogen deposition rates. However, this statement merely provides information on the range of baseline concentrations in the wider Portland area and is not utilised in any part of the analysis. The fact that the correct range is 5.9 to 35.3 µg/m^3 does not change anything.

The second statement is correct. The assessment was based on the background concentration within the grid square where the process contribution could not be screened out as insignificant, the second statement is the important one.

AQC has included an extract from the APIS website that they use to imply that the NOx contribution could exceed the critical level of 30 µg/m^3 on the basis that there is a point in the wider Portland area that has a level higher than this. However, AQC, as an experienced technical consultant, will be aware that the website also includes a map function that allows the user to identify the background concentrations within each localised square area. We have shown this below and it clearly confirms that the background NOx concentration in the square where the project is located is 10.19 µg/m^3, materially below the critical level of 30 µg/m^3.

AQC has categorised this as a major issue. Whilst we acknowledge there is a typographical error in the description of the range of background levels for the wider Portland area (which are not used in any way in the analysis) the remaining points made by AQC are incorrect and therefore there is no issue to consider.



5 Conclusions

AQC has identified some issues and has stated that they have categorised these according to the criterion set out in the note.

A step forward is that AQC now appears to agree that the ADMS model used is fit for purpose in that they state that: "*On balance, the uncertainty in modelled concentrations in relation to topography and meteorology is probably offset by the conservative assumptions applied to the emissions".*

Fichtner has reviewed the report and disagrees with all of AQC's other conclusions. In summary:

1. None of the information presented is misleading. The errors identified are merely errors in the presentation of information.
2. None of these clarifications do or could change the conclusions of the assessment, and are not directly relevant to reaching a reasoned conclusion on the likely significant effects of the development and AQC had sufficient information to confirm this. ,
3. AQC has failed to acknowledge where explanations have been provided.
4. All instructions from the decisionmakers have been acted upon.
5. Even where we agree that AQC has identified an issue, none of the issues raised should have been classified as major, or even minor.

We are aware that other parties commenting on the Schedule 5 and Regulation 25 responses have referred to apparent issues raised in the AQC Feb 2022 Review as they go on to make other points. We trust that SPWI / AQC will bring the substance of this Response to the attention of those other parties and invite them to update their contributions accordingly.