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MALONE O'REGAN ENVIRONMENTAL

2nd June 2022

Environmental Licencing Programme,
Office of Environmental Sustainability,
Johnstown Castle Estate,
Co. Wexford,
Y35 W821

By EDEN

***Re: Response to Further Notice under the EPA (Industrial Emissions) (Licensing) Regulations 2013, in respect of a licence application from William Connolly & Sons Unlimited Company for an installation located at William Connolly & Sons Unlimited Company, Grange Lower, Goresbridge, Kilkenny, R95 EKH4, dated 19th May 2022 -* IE Licence Reg No. P1069-01**

Dear Sir/Madam,

Please find attached Connolly's Red Mills response to the requested items as per the EPA's notice dated 19th May 2022, in respect of a licence application Reg No. P1069-01 from William Connolly & Sons Unlimited Company (hereafter referred to as Red Mills), in accordance with the EPA (Industrial Emissions) (Licensing) Regulations 2013.

Response to Item 1

The Agency's letter dated 19th May 2022 requested the following information:

> *'1. Provide details of the annual consumption of LPG and diesel (for refuelling) on-site and the annual electricity usage on-site (Regulation 9(2)(f).'*

The annual consumption of LPG, diesel, and annual usage of electricity for 2021 were as follows:

1. LPG consumption was 1,160,000 Litres
2. Diesel for refuelling was 1,003,742 Litres
3. Annual electricity usage was 11,802,359 kWh

Response to Item 2

The Agency's letter dated 19th May 2022 requested the following information:

> *'2. Confirm if the water abstraction well in northwest corner of the site is registered under European Union (Water Policy) (Abstractions Registration) Regulation 2018 (S.I. No. 261 of 2018) (Regulation 9(2)(f).'*

The well has been registered via Eden on 31st May 2022, please see details below:

- Registration Number: R02540-01
- Registering Organisation: William Connolly & Sons Unlimited Company
- Registered by: Eugene Brennan
- Submission Date: 31/05/2022 09:52
- Abstraction Name: Connolly's RED MILLS

- Number of Abstraction Points Registered: 1
- Cumulative Maximum Daily Volume Registered: 200.00m3

Response to Item 3

The Agency's letter dated 19th May 2022 requested the following information:

> *'3. Confirm the total area within the installation boundary (hectare or acres or m2).'*

The total Site area within the installation boundary is 18.02ha.

Response to Item 4

The Agency's letter dated 19th May 2022 requested the following information:

> *'4. Provide the grant of planning permission reference number for the new storage sheds to be built to the north of the installation (Regulation 9(2)(e).'*

The planning permission reference number is 21-573 in relation to the two new storage sheds to be built to the north of the facility.

Response to Item 5

The Agency's letter dated 19th May 2022 requested the following information:

> *'5. Provide confirmation from the relevant planning authority that the amended stack heights requested for inclusion in the licence, as detailed in 'Attachment 7.4.1 – Emissions to Atmosphere – Main' and as modelled in Scenario 3.2 of the Air Dispersion Model dated March 2022, are planning exempt (Regulation 9(2)(e).'*

Red Mills will submit Section 5 Planning Exemption Notification to Kilkenny County Council within next 7 working days. Declaration by Kilkenny County Council will be issued within 4 weeks. At that point, Red Mills will submit this to the EPA via Eden.

Response to Item 6

The Agency's letter dated 19th May 2022 requested the following information:

> *'6. Provide further details on the justification for decibel level reductions for static infrastructure on-site included in Table 4.1 of the Noise Impact Assessment dated March 2022 (Regulation 9(2)(i).'*

Please refer to Appendix A accompanying this submission in response to Item 6.

Response to Item 7

The Agency's letter dated 19th May 2022 requested the following information:

> *'7. Provide an updated Air Dispersion Model for emissions of dust to air from the installation based on existing operations on-site, demonstrating compliance with relevant air quality standard (Regulation 9(2)(k).'*

Please refer to Appendix B accompanying this submission in response to Item 7.

Response to Item 8

The Agency's letter dated 19th May 2022 requested the following information:

> *'8. Provide confirmation that capacity of the Integrated Constructed Wetland shall be able to incorporate the surface water from the new the grain storage shed area if not already included in initial calculations as part of the ICW report dated 17th November 2021. (Regulation 9(2)(i).'*

As stated in the report completed by IE Consulting regarding the integrated constructed wetlands system onsite and submitted to the EPA on the 30th of November 2021:

> *'With respect to future development proposals at this facility site (proposed grain stores, grain dryers, marshalling yard and associated site works – Kilkenny County Council Planning Ref:P.21/573), storm water runoff generated from this future development proposal shall be managed at source via a combination of storm water infiltration systems and limited to existing pre-development greenfield runoff rates via storm water attenuation. Storm water runoff from this future development proposal shall therefore not impact the hydrological, hydraulic or storm water management capacity or regime of the ICW system.'*

Direct Drying

Red Mills would also like to confirm that combustion gases from burners within all grain and seed dryers onsite (Dryers 2, 4A, 4B, 5 and 6) are utilised for direct drying. Direct drying of grains and feedingstuffs is regulated by EU (Directive 2002/32/EC) and National Undesirable Substances (SI 432) Legislation. The direct drying of grain has been risk assessed in our HACCP Plan and we carry out routine dioxin analysis to confirm that direct dying has no impact on the quality of the grain and feedingstuffs. In addition, the Department of Agriculture take routine samples at our facility each year and analyse them in accordance with their own feed monitoring plan.

The additional information provided in this letter does not impinge on the Non-Technical Summary or Natura Impact Statement submitted to the Agency on 31st March 2022, and therefore an alteration to either of these documents is not required.

We trust this submission will again demonstrate to the Agency that Red Mills remain fully committed to addressing all of the Agency's requirements to allow for a proposed licence determination to be issued on Reg No. P1069-01.

Yours sincerely,

for Malone O'Regan

Klara Kovacic
Associate Director

Appendix A: Technical Note – Acoustics – RFI Item 6

Appendix B: Technical Note – Air Emissions – RFI Item 7

Appendices

Appendix A

TECHNICAL NOTE

MALONE O'REGAN ENVIRONMENTAL

E1835, Acoustics - Response to Request for Further Information dated 19th May 2022 (RFI Item 6)

Malone O'Regan Background

The Request for Further Information (RFI) from the Agency, dated the 19th May 2022 with regards to acoustics states:

> *'6. Provide further details on the justification for decibel level reductions for static infrastructure on-site included in Table 4.1 of the Noise Impact Assessment dated March 2022 (Regulation 9(2)(i)'*

Malone O'Regan Environmental Services (MOR) have two inhouse qualified Institute of Acoustics (IOA) acousticians who are members of the Association of Acoustic Consultants of Ireland (AACI). They have a combined experience of over 20 years in industrial and environmental acoustics.

Within the previous five years, MOR have successfully engaged with the Environmental Protection Agency (the Agency) regarding the reduction of acoustic emissions at Industrial Emissions (IE) licenced sites similar to Red Mills. These complex acoustic settings, typically adjacent to major roads and/or motorways or located within industrial estates in proximity to sensitive receptors where noise complaints and breaches of the typical IE Licence limits regarding noise had occurred.

MOR in tandem with our clients were successful in achieving noise compliance with the IEL licence limits at these sites through a combination of noise modelling and noise reduction plans, which incorporated capital expenditure and operational noise management measures. A similar programme has been presented for the Red Mills project.

Example Site 1

A licenced Site situated in an industrial estate beside a busy road network. A source assessment and noise model identified significant noise sources. Targeted noise level reductions of 3dB to 17dB at source were identified within a Noise Management Plan to enable compliance at IE licenced noise monitoring locations (NMLs). This reduction at NMLs was achieved through a combination of the following:

- General Noise Management;
  - Items turned off when not in use;
  - Timers to ensure operations within desired time periods;
  - Decommissioning of items not required (such as extraction fans);
  - Roller doors and other doors kept closed;
- Fitting of silencers on dryers and extract stacks (refer to Plate 1);
- Relocating / increasing height of emissions points;
- Installation of acoustic louvres; and
- Installation of absorptive barriers.

A comparison of compliance monitoring pre and post works illustrated the acoustic improvements made at the Site. At receptor locations where Site specific emissions were dominant, improvements of over 4dB were recorded. The Site is now compliant with its licenced limits following the reductions of between 3dB to 17dB at identified sources.

Plate 1: Example Site 1 – Silencers on Extract Stacks

Example Site 2

A licenced Site situated in a rural area similar to the Red Mills Site. A source assessment and noise model identified significant noise sources. Noise level reductions at source were identified and implemented. This reduction at NSRs was achieved through a combination of the following:

- General Noise Management;
  - Items turned off when not in use;
  - Timers to ensure operations within desired time periods;
  - Decommissioning of items not required (extraction fans);
  - Roller doors, doors kept closed;
- Fitting of silencers to dryer (refer to Plate 2) and vacuum system; and
- Relocating / increasing height of emissions points;

Plate 2: Example Site 2 - Silencers Example

A comparison of compliance monitoring pre and post works illustrated that acoustic improvements were made at the Site to achieve compliance with the limits. The Site is now compliant with its licenced limits.

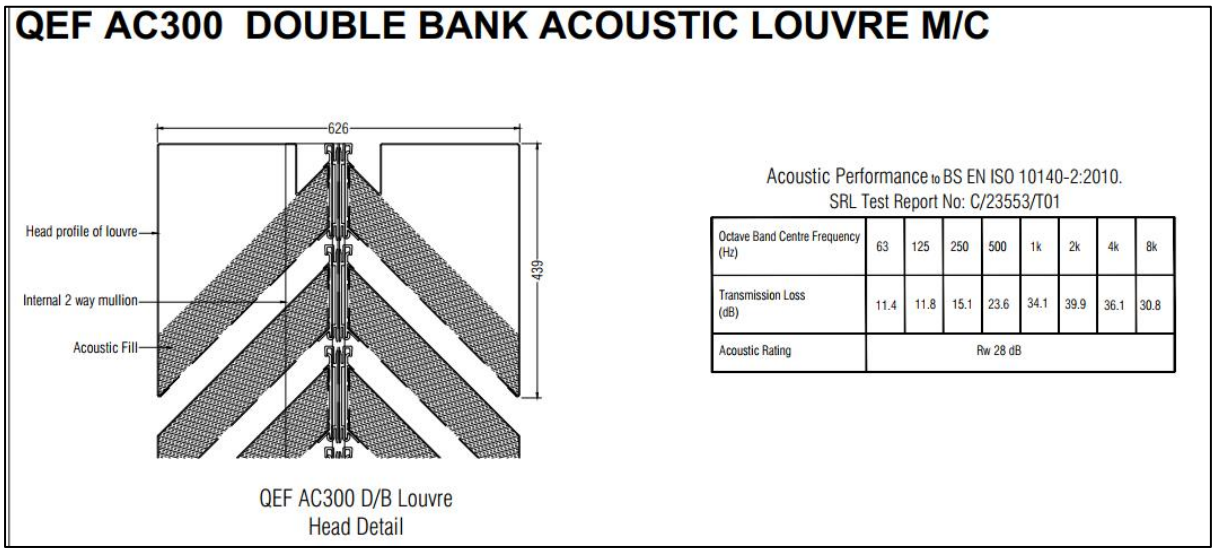
Example Site 3

A proposed development was modelled utilising technical specification data of each noise emission within an industrial estate located in proximity to a motorway. Acoustic design and reduction were paramount in this project. The acoustic design included the following:

- General Noise Management;
    - Items turned off when not in use;
    - Timers to ensure operations within desired time periods;
    - Roller doors, doors kept closed;
- Fitting of enclosures (cooler towers); and
- Relocating / increasing height of emissions points;
- Building layout to reduce HGV noise;
- Acoustic louvres for Boiler/CHP rooms; and
- Reorientation of noise emissions away from receptors.

An example of the acoustic louvres utilised in the project are shown in Plate 3 below. These double bank acoustic louvres have an acoustic sound level reduction (Rw) of up to 28dB.

Plate 3: Example Site 3 - Acoustic Louvre Example



This proposed development is now licenced by the Agency. The first annual acoustic compliance survey was undertaken last year at receptors and indicated compliance with its licenced limits.

Proposed Noise Mitigation / Reduction Measures at the Red Mills Site

General noise management onsite such as closing doors can reduce dB values by 6dB to 8dB. The reorientation of noise emissions away from receptors can reduce dB values by 1dB to 4dB. These actions utilise attenuation (closed doors) and directionality to reduce noise emissions and are both effective methods of mitigating minor to moderate noise levels in relevant situations.

Acoustic silencers and attenuators are used in industrial processes to reduce noise transmitted via ducted or piped systems, and to achieve the desired noise level within industrial premises or at a receptor. Most suppliers now offer acoustic packages which can be added to the plant to reduce its overall sound emission, measured in dB.

Noise Modelling

Modelling of noise presents an EPA approved methodology for the assessment of predicted noise at all sensitive receptors to a proposed development. In the model, trucks and machinery to be used during the operational phase are considered.

This noise model included the entire facility including grain stores and associated plant and vehicle movements (grain deliveries, onsite JCB) during the Harvest Season (peak noise emissions), i.e. worst-case scenario. For much of the year the facility does not operate the grain dryers onsite (non-harvest season), during these months noise emissions from the facility will be significantly lower.

General plant emissions were modelled as working 24 hours a day, at duty capacity and at the same time, however this is not typical even during the Harvest Season. The vehicle movements utilised in this model were based on 2021 movements and are expected to be reduced when the Grain Stores are operational.

Weather conditions were modelled to present the spread of the noise emissions in all directions equally, which again is a worst-case scenario and is not realistic, as typically conditions will favour one orientation over another based on local weather conditions.

Receptor positions were external to the receptor building and at the closest point of the property to the source, therefore not representative of the likely receptor when internal to the building or taking account of façade's where no windows or vents may be present.

Furthermore, local obstructions, including receptor boundary walls and hedging at the receptor positions have not been modelled.

All of the above factors result in very conservative approach to noise emissions modelling.

Noise Reduction / Mitigation Measures

Current noise model for Red Mills details noise reduction decibel (dB) target values which MOR. Red Mills and subcontractors are actively working on enabling Red Mills achieve compliance with the typical IE Licence limits at offsite Noise Sensitive Receptors (NSRs).

The noise model (Model 1 – Harvest Season) mitigation / dB reductions are detailed in Table 4-1 of the submitted Noise Impact Assessment and repeated below. An additional column has been added in table below to describe how the mitigation measure will be achieved. The final reduction / mitigation dB values are based on achieving compliance with the typical IE Licence limits at offsite Noise Sensitive Receptors (NSRs).

Mitigation measures also include stack heights and stack location changes as per Scenario 3.2 in Air Dispersion Modelling Report dated 31st March 2022.

Table 4-1(a): Noise Emission Sources Mitigated dB Values

Noise Model ID / Item	Location / Description	Mitigation dB	Proposed Mitigation Method and/or Commentary
A2-37	Dryer 5	8	A typical silencer will achieve this reduction.
A2-36	Dryer 5	8	A typical silencer will achieve this reduction.
A2-34	Dryer 5	8	A typical silencer will achieve this reduction.
A2-33	Dryer 5	8	A typical silencer will achieve this reduction.
A2-35	Dryer 5	8	A typical silencer will achieve this reduction.
A2-38	Dryer 4a&b	18	Bespoke manufacturing required utilising more acoustically absorbent materials and baffling
A2-39	Dryer 4a&b	18	Bespoke manufacturing required utilising more acoustically absorbent materials and baffling
A2-49	Seed Plant	10	A typical silencer will achieve this reduction.
A2-41	Dryer4a&b	18	Bespoke manufacturing required utilising more acoustically absorbent materials and baffling.
A2-42	Dryer4a&b	18	Bespoke manufacturing required utilising more acoustically absorbent materials and baffling.
A2-30A/B Dryer 2 exhaust vents	Dryer 2	20	Bespoke manufacturing required utilising more acoustically absorbent materials and baffling. Increased stack height also aids in this reduction.
A2-21 Main Grain Intake 4	Mill	3	A typical silencer will achieve this reduction.
A2-42 Precleaner	Dryer 5	10	A typical silencer will achieve this reduction.
A2-40 Precleaner	Dryer 4a&b	5	A typical silencer will achieve this reduction.
A2-22 Soya Extruder	Soya Extruder	3	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
A2-3 Cuber 3 Exhaust	Cuber 3	5	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
A2-2 Cuber 2 Exhaust	Cuber 2	5	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
A2- 1 Cuber 1 Exhaust	Cuber	5	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
Combined Flaker A2_6,7	Flaker	3	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
A2-4 Cuber 4	Cuber 2	5	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
A2-17	Soya	5	A typical silencer will achieve this reduction. Increased stack height also aids in this reduction.
Door Dryer 4 Closed/sealed	Dryer 4	10	Roller door closed, door frame and any gaps sealed, a 10dB reduction should be achievable.

Conveyor Noise

Conveyors transport dried grain from existing dryers to the grain stores. The main noise associated with conveyor systems are the associated motors and belts. The enclosed conveyor system is currently being upgraded as part of ongoing maintenance works. The new conveyor system will be upgraded where relevant by a specialist supplier, utilising the latest technology which will include, polyethylene plastic belt and/or Teflon coating as appropriate, which are non-slip and wear-resistant, and will improve the transportation of grain. This design will also ensure low noise operation. Conveyor systems are typically far below the major noise emission sources onsite and therefore do not typically dominate the acoustic environment at receptors. Therefore, these low noise items were discounted from the noise model and during the source assessment.

Noise Compliance

The noise model utilising standard mitigation measures for the majority of noise emission points has predicted that the Site will comply with typical EPA limits at receptors of:

- Daytime (07:00 to 19:00) - 55dB $L_{Ar,T}$;
- Evening time (19:00 to 23:00) - 50dB $L_{Ar,T}$;
- Night-time (23:00 to 07:00) - 45dB $L_{Aeq,T}$.

Appendix B

TECHNICAL NOTE

MALONE O'REGAN ENVIRONMENTAL

E1835, Air Emissions - Response to Request for Further Information dated 19th May 2022 (RFI Item 7)

Request For Information Item 7

The Request for Further Information (RFI) from the Agency, dated the 19th May 2022 with regards to air emissions states:

> *'7. Provide an updated Air Dispersion Model for emissions of dust to air from the installation based on existing operations on-site, demonstrating compliance with relevant air quality standard (Regulation 9(2)(k)).'*

An additional emissions to air scenario was modelled to demonstrate compliance in terms of PM_{10} emissions at the Site (Connolly's Red Mills) according to the relevant Air Quality Standards (Clean Air for Europe (CAFE) Directive (2008/50/EC) which was transposed into Irish law as S.I. 180 of 2011). AERMOD View software was used for this study. Specific details regarding all inputs and the set up the model can be found in the Emissions to Air Assessment submitted to the EPA on the 31st of March 2022 [1].

Total Particulate Matter (TPM) vs. PM_{10}

In all previous air dispersion modelled scenarios for IEL Application P1069-01, as detailed in two separate Emissions to Air Assessment reports submitted to the EPA on 30th November 2021 [2] & 31st March 2022 [1] respectively, dust emissions at the Site were modelled as TPM, i.e. it was very conservatively assumed that ratio of TPM to PM_{10} is 1. This assumption was made as no information on this ratio could be identified.

However, in agreement with the EPA, information on TPM to PM_{10} ratio detailed in the EPA addendum report carried out for IEL Application P1048-01 [3] and the accompanying Inspector's Report [4] can be applied for the Red Mills site. These reports state:

> *'PM10 levels were assumed to be 30% of total dust emissions (TPM) in line with UK Trade Association Research completed.'*

A similar approach has been adopted for this remodelling scenario, albeit more conservative than the 'worst case' stated above. For the Red Mills study PM_{10} emissions were assumed to be 50% of TPM emissions from the stacks (1:2 ratio PM_{10}:TPM).

Model Input Scenario 2.2

As stated in the Emissions to Air Report submitted on the 31st of March 2022 [1] Scenario 2.2 presented the configuration of emission points that will be in place for Harvest season 2022 with the following operating regime:

Feed Mill:

- 1st October to 30th April inclusive, Feed Mill operating 5 days a week, 16 hours a day, when there is a higher demand for manufactured animal feed;
- 1st May to 30th September inclusive, Feed Mill operating 5 days a week, 12 hours a day, as feed demand is lower in the summer months when animals are mostly outdoors and grass-fed;

Dryers:

- operating in two 8-week harvest periods.

Seed Plant:

- same operating regime as Dryers.

This is based on Site SCADA output for the previous 5 years, with the Feed Mill operating on average 35% of hours in a year (24 hours x 365 days). Due to the way the variable emissions file is set up in AERMOD, the modelled number of hours works out as 39% of hours in a year.

The results from this air dispersion modelled scenario included one exceedance of the AQS for the worst meteorological year 2019 combined with the 8-week September ending harvest season (103% AQS 24hr mean including background). A detailed account of the results and the model inputs for each emission point are available in the Emissions to Air Report submitted on the 31st of March 2022 [1], Section 8.2 of the main report for results and Appendix A for model inputs.

Model Input Remodelling Scenario 2.2

For this scenario, the above Site operating regime and stack configuration was modelled in terms of input for each emission point for only the worst met year, 2019, and the September ending harvest season (8 weeks). The model inputs are available in Appendix A which accompanies this technical note. The aforementioned PM_{10} :TPM conservative ratio of 1:2 was applied, resulting in the emission rate (g/s) input for each stack being reduced by 50%. Volumetric flow, exit velocity or any other parameter were not changed compared to the original scenario.

Results PM_{10} Model

Predicted Environmental Concentrations – Annual Mean PM_{10}

Table 1-1 details the results of the air dispersion modelling for PM_{10} annual mean, showing maximum process contribution at ground level (emissions to air from the stacks) and maximum predicted environmental concentration (process contribution plus background contribution) outside the Site boundary at ground level. These concentrations represent the worst-case scenario - maximum concentrations near the Site boundary, that only occur under specific weather conditions. These represent predicted maximum concentrations that occur at a limited area near the site boundary and fall rapidly with distance to the Site boundary.

Table 1-1: Maximum Predicted Environmental Concentration of Pollutants - Annual Mean PM_{10} in µg/Nm^3 Scenario 2.2 September ending Harvest

PM_{10} (µg/Nm^3)	**Annual Mean PM_{10} (µg/Nm^3)**
Maximum Process Contribution	5.53
Background Concentration	11.80
Predicted Environmental Concentration (PEC)	17.33
Air Quality Standards (AQS)	40
PEC as a percentage of AQS	43.3%

Table 1-2 provides the PM_{10} (Annual Mean) Maximum Process Contribution (PC) and the Predicted Environmental Concentrations (PEC) at sensitive receptors.

Table 1-2: Maximum Predicted Environmental Concentration of Pollutants at Sensitive Receptors- Annual Mean PM10 in µg/Nm3 Scenario 2.2 September ending Harvest

Year	Receptor	Result (PC)	Unit	AQS	Result + Background (PEC)	%AQS (PEC)
2019	SR1	0.92	ug/m3	40	12.72	31.81%
	SR2	0.61	ug/m3	40	12.41	31.03%
	SR3	0.58	ug/m3	40	12.38	30.94%
	SR4	1.13	ug/m3	40	12.93	32.34%
	SR5	0.90	ug/m3	40	12.70	31.75%
	SR6	0.90	ug/m3	40	12.70	31.75%
	SR7	0.62	ug/m3	40	12.42	31.05%
	SR8	0.65	ug/m3	40	12.45	31.14%
	SR9	0.22	ug/m3	40	12.02	30.04%

Predicted Environmental Concentrations – Short-term 24-hour PM_{10}

Table 1-3 details the results of the air dispersion modelling for the short-term 24-hour PM_{10} concentration, showing maximum process contribution at ground level (emissions to air from the stacks) and maximum predicted environmental concentration (process contribution plus background contribution) outside the Site boundary at ground level. These concentrations represent the worst-case scenario - maximum concentrations near the Site boundary, that only occur under specific weather conditions.

Table 1-3: Maximum Predicted Environmental Concentration of Pollutants – 24hr Mean PM_{10} in µg/Nm^3 Scenario 2.2 September ending Harvest

PM_{10} (µg/Nm^3)	24hr Mean PM_{10} (µg/Nm^3)
Maximum Process Contribution	20.29
Background Concentration	11.80
Predicted Environmental Concentration (PEC)	32.09
Air Quality Standards (AQS)	50
PEC as a percentage of AQS	64%

Table 1-4 provides the PM_{10} (24-hr 90.4%ile) Maximum Process Contribution (PC) and the Predicted Environmental Concentrations (PEC) at sensitive receptors.

Table 1-4: Maximum Predicted Environmental Concentration of Pollutants at Sensitive Receptors– 24hr Mean PM_{10} in µg/Nm^3 Scenario 2.2 September ending Harvest

Year	Receptor	Result (PC)	Unit	AQS	Result + Background (PEC)	%AQS (PEC)
2019	SR1	2.59	ug/m3	50	14.39	28.79%
	SR2	1.87	ug/m3	50	13.67	27.33%
	SR3	2.14	ug/m3	50	13.94	27.89%
	SR4	3.87	ug/m3	50	15.67	31.34%
	SR5	3.73	ug/m3	50	15.53	31.07%
	SR6	3.59	ug/m3	50	15.39	30.79%
	SR7	2.18	ug/m3	50	13.98	27.96%
	SR8	1.87	ug/m3	50	13.67	27.34%
	SR9	0.46	ug/m3	50	12.26	24.53%

Contour Plots

Figure 1-1 and Figure 1-2 show the contour plots for the air dispersion of all major emission points at the Red Mills facility (excluding Boilers). Background concentrations are not shown in contour plots. As per AG4 guidance and in response to RFI Item 7, the year and harvest which contributed the highest PC for both short-term (24hr, 90.4thpercentile) and long-term (annual), are shown.

Figure 1-1: Results Scenario 2.2 Remodelled 2019 September Ending Harvest Season –Process Contribution Annual Mean (no background) PM_{10}

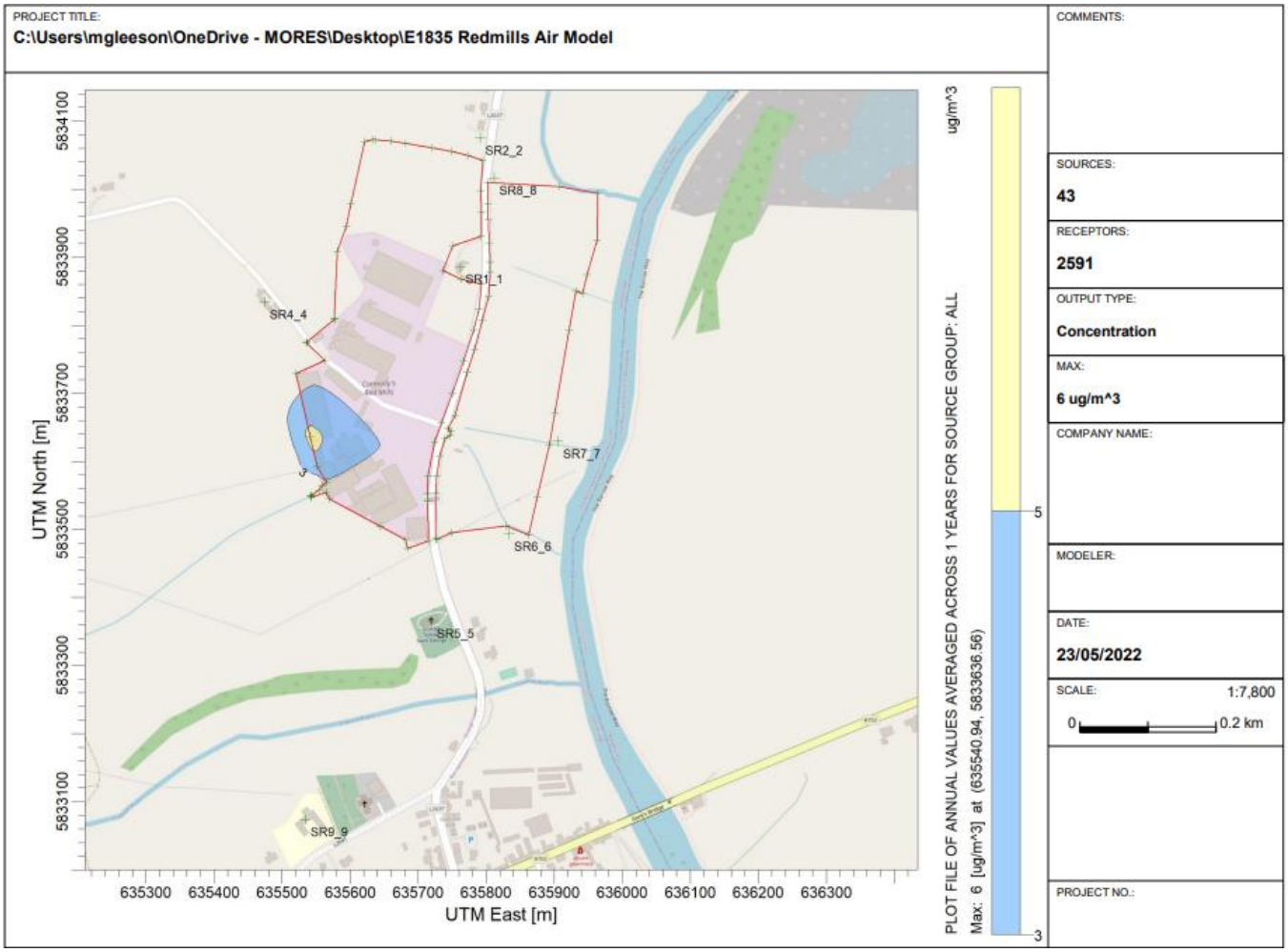
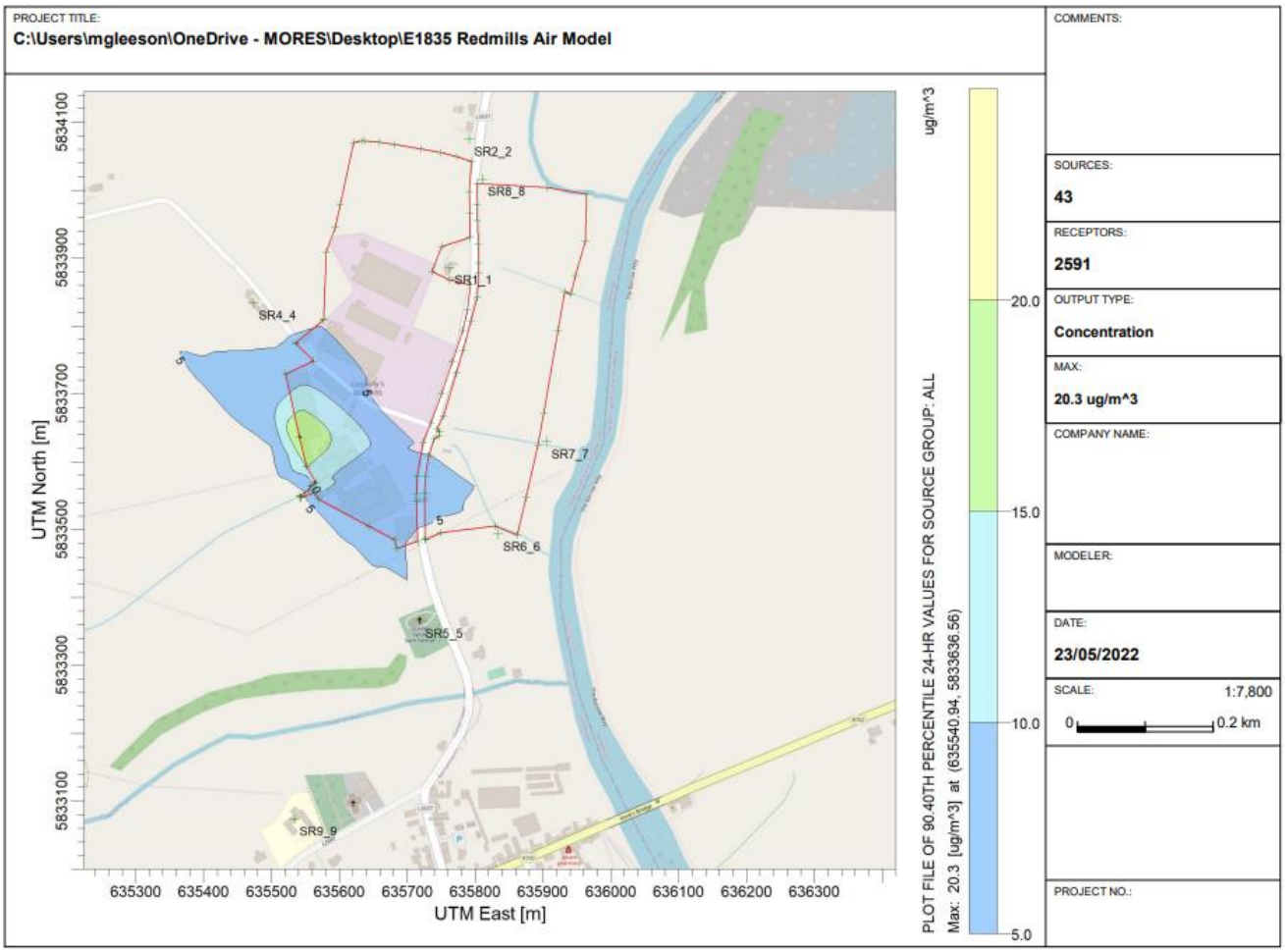


Figure 1-2: Results Scenario 2.2 Remodelled 2019 September Ending Harvest Season –Process Contribution 24hr Mean (no background) PM_{10}



*Note: a zoomed version of figure 1.2 has been attached in Appendix B of the technical note

Conclusion

Based on the above air dispersion modelled scenario both the annual and 24hr mean Predicted Environmental Concentrations (PEC) of PM_{10}, at the Site boundary and at sensitive receptors, are below the AG4 threshold of 75% of AQS. Therefore, the Site is not breaching the air quality standards and is demonstrating compliance with national and European air quality standards in terms of PM_{10} emissions.

Further, as ground level concentrations are proportional to the emission rate in g/s where no other parameters change, as would is the case here, dramatic reduction in ground level concentrations would occur, if all other scenarios would be remodelled with PM_{10} : TPM = 1:2

References

[1] Malone O'Regan Environmental, “Air Dispersion Modelling Report: Additional and Refined Scenarios - William Connolly & Sons Unlimted Company, Grange Lower, Goresbridge, Co. Kilkenny,” Dublin, 2022.

[2] Malone O'Regan Environmental, “Air Dispersion Modelling Report - William Connolly & Sons Unlimted Company, Grange Lower, Goresbridge, Co. Kilkenny,” Dublin, 2021.

[3] Niamh Connolly Office of Environmental Sustainability, “Application for IE licence for J.H. Roche and Sons Limited, Dock Road, Limerick, Licence Register P1048-01,” EPA, Wexford, 2018.

[4] Niamh Connolly Office of Environmental Sustainability, “Inspector's Report IE licence application from J.H. Roche and Sons Limited (Licence Reg. P1048-01),” EPA, Wexford, 2017.

Appendices

Appendix A

Scenario 2.2 (Harvest 2022) - TPM & PM10				Stack Parameters				Flow Parameters and Emissions					
Emission Point Ref	Emission Point Name	Abatement	Building Height (m)	Minimum Discharge Height (m) - above ground	Stack Orientation	Stack Inside Diameter (m)	Flue Gas Exit Temp (K)	TPM Concentration (mg/Nm3)	Volumetric Flow (Nm3/hr)	Model Input - Gas Exit Flow Rate (m3/s)	Model Input - Mass emission rate (g/s)	Model Input - Mass emission rate PM10/TPM 1:2 ratio (g/s)	Mass Emission Rate (kg/hr)
Feed Mill													
A2-1	Cuber 1	Cyclone	24	21	Horizontal	0.71	324.55	10	26,000	7.222	0.072	0.036	0.260
A2-2	Cuber 2	Cyclone	24	21	Horizontal	1.13	329.05	10	24,000	6.667	0.067	0.033	0.240
A2-3	Cuber 3	Cyclone	24	21	Horizontal	0.80	313.65	10	28,000	7.778	0.078	0.039	0.280
A2-4	Cuber 4	Cyclone	27	19	Horizontal	0.50	329.05	10	28,000	7.778	0.078	0.039	0.280
A2-6	Flaker 1	Cyclone and Sock filter	31	29	Horizontal	0.91	300.50	10	8,000	2.222	0.022	0.011	0.080
A2-7	Flaker 1	Cyclone and Sock filter	31	29	Horizontal	0.62	298.25	10	10,000	2.778	0.028	0.014	0.100
A2-8	Flaker 2	Cyclone and Sock filter	22.5	23.5	Vertical	0.78	297.95	5	12,000	3.333	0.017	0.008	0.060
A2-9	Flaker 2	Cyclone and Sock filter	31	30	Horizontal	0.27	299.55	10	3,000	0.833	0.008	0.004	0.030
A2-10	Flaker Cyclone	Cyclone	22.5	20	Vertical	1.69	298.25	5	30,000	8.333	0.042	0.021	0.150
A2-11	Flaker Cyclone	Cyclone	31	32	Vertical	0.41	333.25	5	10,000	2.778	0.014	0.007	0.050
A2-12	Cyclone GVRSA and GVRSB	Cyclone	24	25	Vertical	0.50	333.25	10	26,000	7.222	0.072	0.036	0.260
A2-13	Fines	None	24	23	Horizontal	0.50	298.25	10	11,000	3.056	0.031	0.015	0.110
A2-15	Soya Grinder	Cyclone	24	3	Horizontal	0.23	300.15	10	5,000	1.389	0.014	0.007	0.050
A2-16	Soya Extruder	Cyclone	24	24	Horizontal	0.65	304.25	5	8,000	2.222	0.011	0.006	0.040
A2-17	Soya Cyclone - Bin Filling	Cyclone	31	30.5	Horizontal	0.50	289.15	10	3,000	0.833	0.008	0.004	0.030
A2-18	Grinder 1	Sock Filter	22.5	3	Horizontal	0.85	301.15	5	7,000	1.944	0.010	0.005	0.035
A2-19	Grinder 3	Sock Filter	22.5	3	Horizontal	0.50	306.15	5	6,500	1.806	0.009	0.005	0.033
A2-20	Grinder 4 - Dust Extraction	Sock Filter	22.5	3	Horizontal	0.34	306.15	5	8,000	2.222	0.011	0.006	0.040
A2-21	Main Intake Grain	Sock Filter	11	15.9	Vertical	0.50	301.15	5	6,500	1.806	0.009	0.005	0.033
A2-22	Extruder Vent	Cyclone	12	13.5	Vertical	0.40	295.65	5	14,000	3.889	0.019	0.010	0.070
A2-23	Extruder Dryer/ Cooler Vent	None	24	23	Horizontal	0.65	316.25	5	28,000	7.778	0.039	0.019	0.140
A2-26	Flaker Clean 1	Cyclone	22.5	23	Horizontal	0.50	289.15	5	6,000	1.667	0.008	0.004	0.030
Dryers													
A2-30A	Dryer 2	None	11	8	Horizontal	1.65	299.15	5	59,000	16.389	0.082	0.041	0.295
A2-30B	Dryer 2	None	11	8	Horizontal	1.65	299.15	5	59,000	16.389	0.082	0.041	0.295
A2-31	Dryer 2	None	11	9	Horizontal	0.23	291.45	10	2,000	0.556	0.006	0.003	0.020
A2-32	Dryer 5	Cyclofan	11	13	Vertical	0.50	289.15	10	10,000	2.778	0.028	0.014	0.100
A2-33	Dryer 5	Cyclofan	20	21.5	Vertical	1.13	293.55	5	42,000	11.667	0.058	0.029	0.210
A2-34	Dryer 5	Cyclofan	20	21.5	Vertical	1.13	293.75	5	39,000	10.833	0.054	0.027	0.195
A2-35	Dryer 5	Cyclofan	20	21.5	Vertical	1.00	300.15	5	32,000	8.889	0.044	0.022	0.160
A2-36	Dryer 5	Cyclofan	20	21.5	Vertical	1.13	299.85	5	39,000	10.833	0.054	0.027	0.195
A2-37	Dryer 5	Cyclofan	20	21.5	Vertical	1.13	303.55	5	39,000	10.833	0.054	0.027	0.195
A2-38	Dryer 4A2	Cyclofan	10	11	Vertical	0.95	311.45	5	53,000	14.722	0.074	0.037	0.265
A2-39	Dryer 4A1	Cyclofan	10	11	Vertical	0.97	310.25	5	83,000	23.056	0.115	0.058	0.415
A2-40	Dryer 4	Cyclone	8.5	10.5	Vertical	0.50	289.15	10	10,000	2.778	0.028	0.014	0.100
A2-41	Dryer 4B	Cyclofan	18	19.5	Vertical	1.35	307.85	5	59,000	16.389	0.082	0.041	0.295
A2-42	Dryer 4B	Cyclofan	18	19.5	Vertical	1.35	306.85	5	78,000	21.667	0.108	0.054	0.390
A2-45A	Replacement Dryer 6	none	22	24.5	Vertical	1.86	299.85	10	136,000	37.778	0.378	0.189	1.360
A2-45B	Replacement Dryer 6	none	22	24.5	Vertical	1.86	299.85	10	136,000	37.778	0.378	0.189	1.360
A2-46A	Replacement Dryer 6	none	22	24.5	Vertical	1.86	299.85	10	136,000	37.778	0.378	0.189	1.360
A2-46B	Replacement Dryer 6	none	22	24.5	Vertical	1.86	299.85	10	136,000	37.778	0.378	0.189	1.360
A2-46C	Replacement Dryer 6	Fabric Filter	10	20	Vertical	0.50	289.15	10	20,000	5.556	0.056	0.028	0.200
Seed Plant													
A2-48	Seed Plant	Screening and Dressing Seeds	11	12	Vertical	0.50	289.15	10	20,000	5.556	0.056	0.028	0.200
A2-49	Seed Plant	Cyclone	11	12	Vertical	0.50	289.15	10	10,000	2.778	0.028	0.014	0.100

*Note: Red indicates PM10 :TPM 1:2 Ratio. Mass emission rate reduced to 50% of original modelled scenarios.

Appendix B

Figure 1-1: Results Scenario 2.2 Remodelled 2019September Ending Harvest Season–Process Contribution Annual Mean (no background)PM10

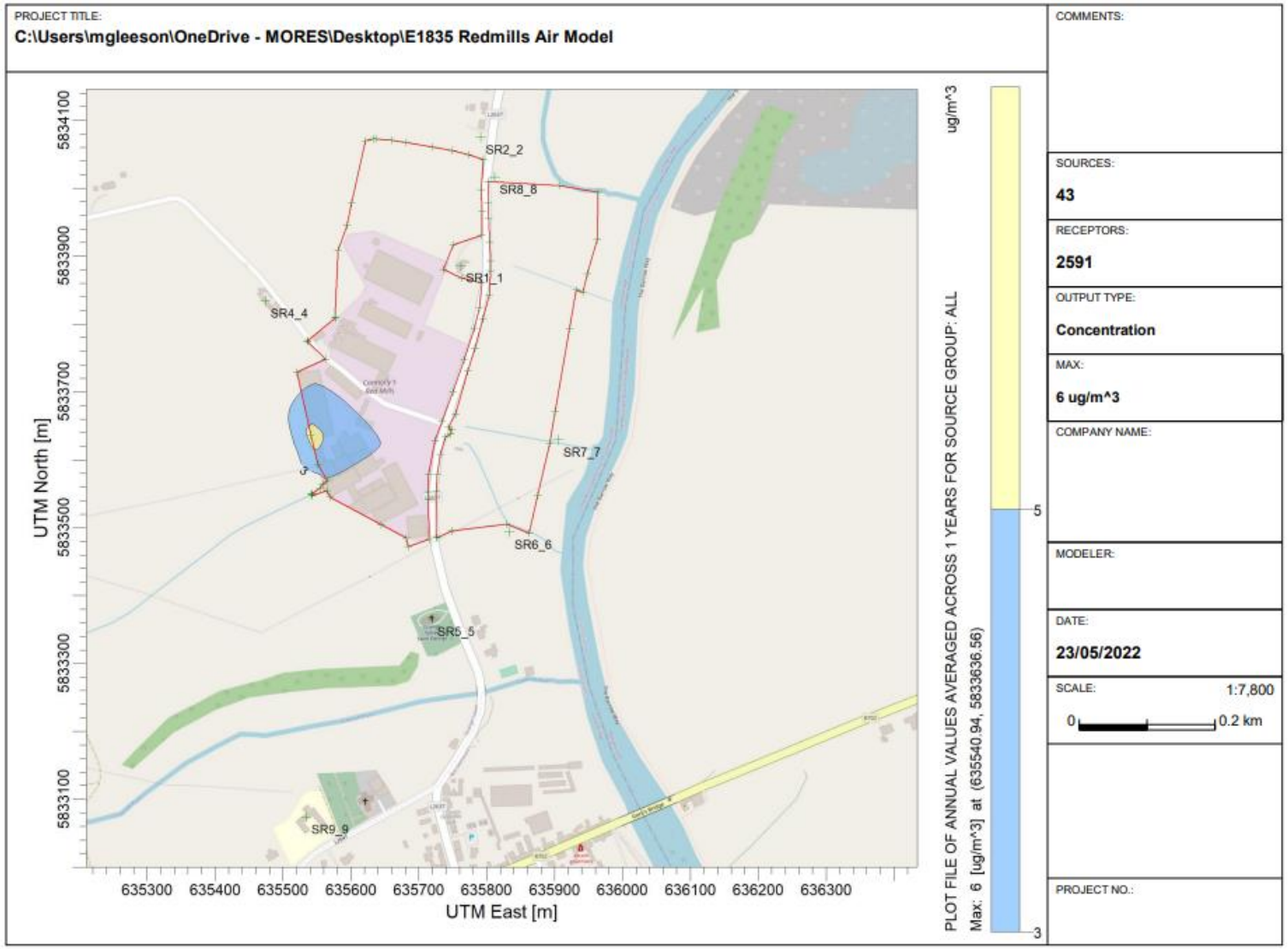


Figure 1-2:Results Scenario 2.2 Remodelled 2019 September Ending Harvest Season –Process Contribution 24hrMean (no background)PM10

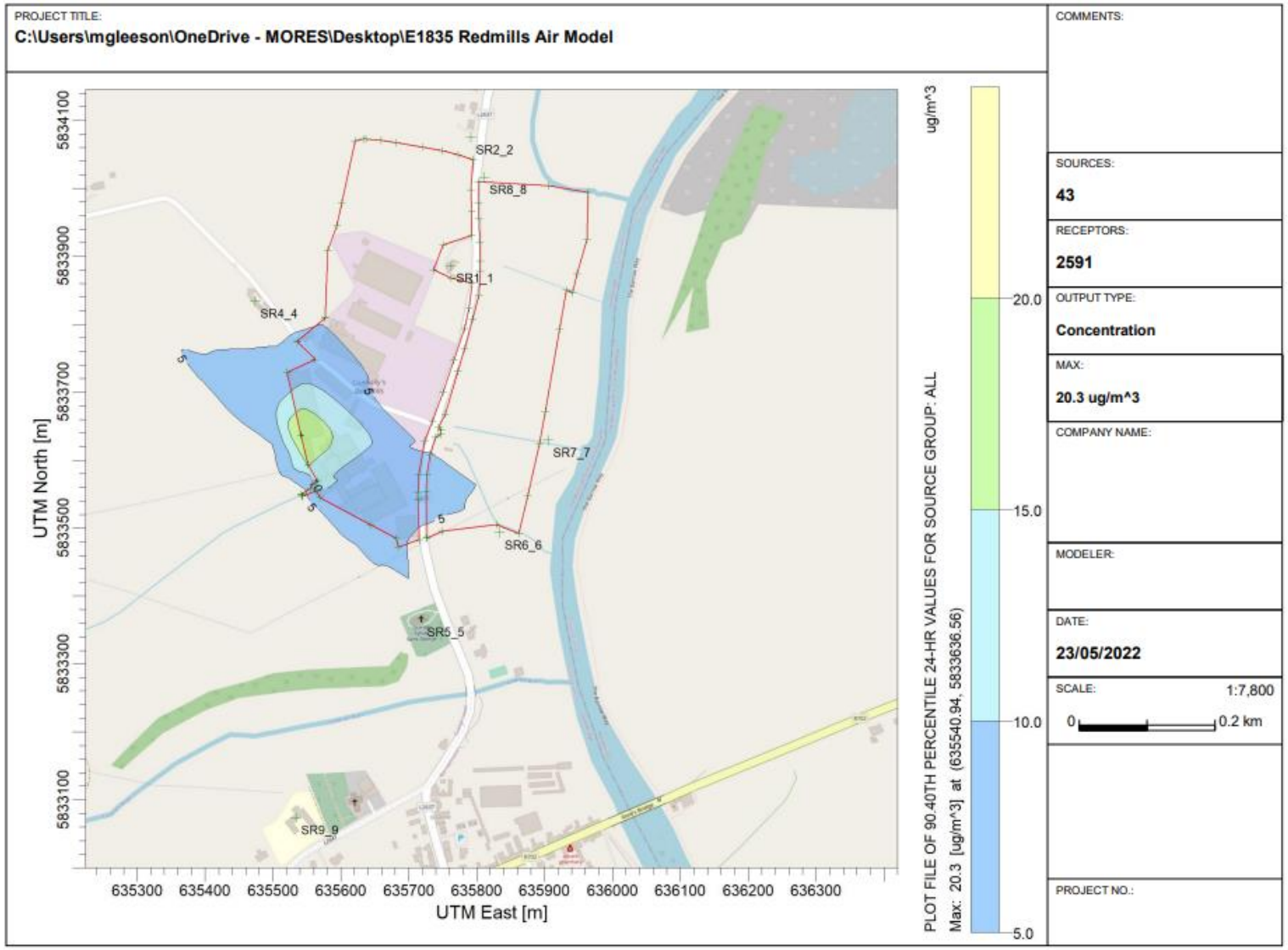


Figure 1-3:Results Scenario 2.2 Remodelled 2019 September Ending Harvest Season –Process Contribution 24hrMean (no background)PM10 Close Up