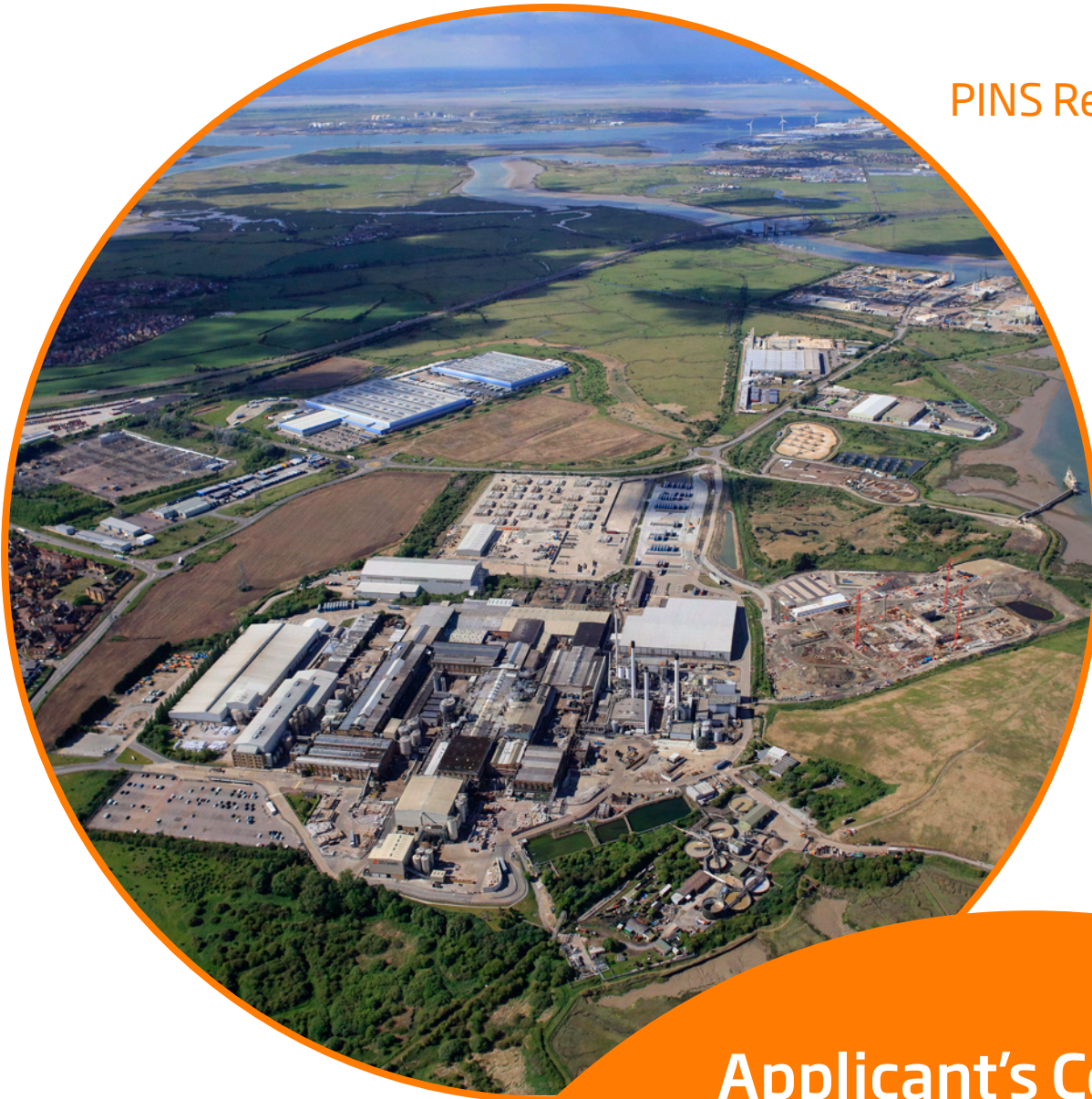




The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

PINS Ref: EN010090



Applicant's Comments on the Relevant Representations

Document 8.2

Author: DHA Planning



July 2018 - Deadline 1 Version

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Appendix A – Noise Survey at the DS Smith Paper Mill at Kemsley – Ref: INR/2818C-A

1 Introduction

1.1 Overview

- 1.1.1 This document has been prepared on behalf of DS Smith Paper Ltd (DS Smith) in respect of its application for a Development Consent Order (DCO) for a gas fired Combined Heat and Power Plant at the Kemsley Paper Mill in Sittingbourne, Kent. The Application was accepted for examination by the Planning Inspectorate on behalf of Secretary of State for Business, Energy and Industrial Strategy on 26 April 2018 and given the application reference EN010090.
- 1.1.2 The application was submitted to the Inspectorate on the 6th April 2018 and was accepted by the Planning Inspectorate on the 26th April 2018. A deadline of 8th June 2018 was set for the submission of Relevant Representations from Interested Parties.
- 1.1.3 Eight relevant representations were received by that deadline. This document provides the applicant's response to those Relevant Representations. It should be read in conjunction with the other documents submitted by the applicant at Deadline 1 of the Examination Timetable, particularly any Statements of Common Ground (SoCG's) which have been submitted. Reference is therefore made to those documents where relevant and an updated version of the Application Guide (AS-001- Document 1.2) lists the documents submitted by the Applicant for Deadline 1.

1.2 The Application Site

- 1.2.1 The Site lies in the south east corner of the existing Kemsley Paper Mill approximately 600m west of the Swale Estuary and north of Milton Creek in the Borough of Swale, Kent. The entire Site is within the security fence for the Paper Mill. The main part of the Site is roughly triangular in shape and consists almost entirely of existing concrete hardstanding. The Site lies within the wider Paper Mill industrial complex which comprises a number of existing large industrial buildings, flue emission stacks, concrete hardstanding and other associated development.
- 1.2.2 The nearest statutory designation with regard to ecological interest is the Swale Special Protection Area and Site of Special Scientific Interest which lies approximately 280m east of the Site at its closest point. The Site is also less than 200m from the Milton Creek Local Wildlife Site.

1.3 The Proposed Development

- 1.3.1 DS Smith is seeking permission to decommission the existing gas-fired CHP Plant (K1) and build a new gas-fired CHP plant (K4) with a nominal power output of 68-73 Megawatts to be operated by DS Smith and/or other companies to supply steam and power to their existing Kemsley Paper Mill, with excess electricity being exported to the grid.
- 1.3.2 The Proposed Development will comprise a combined cycle plant fuelled by a gas turbine of 52-57 MW nominal power output, waste heat recovery boilers providing 105 MWth steam and steam turbine technology of around 16 MW nominal power output.

- 1.3.3 The proposed K4 plant would replace the existing K1 CHP generating station at the paper mill which is nearing the end of its operational life. The decommissioning of the K1 CHP plant comprises works to make K1 inoperable but no physical demolition of the existing K1 structure is proposed as part of this DCO.

2 Applicant's Responses to Relevant Representations

- 2.1.1 The following Table provides the reference number for each relevant representation received, identifies the party or organisation who have made the relevant representation, provides the representation itself and then the applicant's response to that representation.

Ref No	Consultee	Relevant Representation	Applicant's Comment
1	Mr Michael Vick	<p>I've no real objection to the replacement of an existing facility but in regards to mill noise exceeding the site boundary I have concerns that this will lead to an increase []</p> <p>Please find details of the numerous breach of the Environmental Agency licence granted to D S Smith concerning noise exceeding the site boundary. These are:</p> <ul style="list-style-type: none"> 1st January 2016 noise reported to EA reference at 0550 18th January 2016 noise reported to mill 17th March 2016 noise nuisance for previous 7 days 5th May 2016 noise nuisance from 0530 6th May 2016 reported to EA reference 1432622 at 0930 8th May 2016 reported to EA reference 1433275 at 1815 19th July 2016 reported to EA reference 1453906 on this occasion I actually heard the noise start 15th August 2016 reported to EA reference 1462005 at 0730 7th October 2016 reported to EA reference 1476969 noise continuous from 2nd October 23rd October 2016 reported to EA reference 1480113 at 0535 23rd November 2016 reported to EA reference 1486693 at 0820 4th December 2016 reported to EA reference 4 1488877 at 0850 31st January 2017 email sent to [] at mill concerning noise copied to [] at EA 23rd March 2017 email sent to [] at mill concerning noise copied to [] at EA 23rd September 2017 first intrusive noise since 26th May 25th September 2017 email sent to [] at mill concerning noise copied to [] at EA <p>Not reported noise nuisance as below EA level 4 nuisance: 10th March 2016, 19th March 2016, 9th - 12th March 2017, 26th March 2017, 9th - 11th May 2017, 6th January 2018, 14th January 2018 18th - 20th April 2018</p> <p>The above list is only when I have contacted Environment Agency or the mill and when the noise had been going on for some time. [] at the Environment Agency does have the diary I kept of noise nuisance., this includes all noise nuisance from mill, reported or not. I only normally contact the EA or the mill when the noise level exceeded the EA level 4 nuisance and has been lasting for some time. If I was to report every instance of noise nuisance from the mill I would do little else.</p>	<p>The Applicant notes that Mr Vick does not have any objections to the replacement of the existing CHP plant, which is the purpose of the DCO application.</p> <p>In addressing the noise concerns, Chapter 7 of Environmental Statement concludes that noise associated with the construction of K4 would not result in any significant effects on the nearby residential area. Chapter 7 also concludes that the operational noise levels of K4 would not result in any significant adverse impacts, particularly given the installation of a dump condenser which will reduce the need to use the emergency release valve.</p> <p>DS Smith has been working with the site pollution inspector in relation to the past complaints referred to in the Relevant Representation; each complaint has been investigated to try to identify a cause and whilst those complaints are not considered to be directly relevant to the current proposal, they are addressed here for completeness. A number of noise surveys have been undertaken since 2012 by an independent noise consultant and have concentrated on identifying noisy equipment. The noisiest equipment onsite has been abated and silencers installed, which is reflected in the reduction in the number of instances noted by Mr Vick recently. The most recent noise survey identified that during certain climatic conditions a temperature inversion occurs and normal noise is carried to Mr Vicks property. That latest noise report is attached to this document in Appendix A for reference.</p>

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		<p>So far this year the noise has been less intrusive although still audible on many occasions but not at level 4 or higher and has mainly been intermittent.</p> <p>The Mill and the Environment Agency have placed a monitoring station in my front garden and the noise from the mill was picked up.</p> <p>The mill also sent out numerous documents showing what is now the Kemsley Generating Station never mentions it is in fact that but purely a facility for the mill. This was submitted to KCC under proposal SW/10/444.</p> <p>As I said in my submission, I have no real objection to the mill replacing existing plant but given their appalling record of EA licence [].</p>	
2 - Ashford Borough Council			
		<p>Ashford Borough Council is raising no objection to the proposals</p>	<p>The Applicant welcomes the representation made by Ashford Borough Council and that they have no objection to the proposed development. Accordingly no response is necessary.</p>
3 - Swale Borough Council			
		<p>Swale Borough Council has no significant objections to the scheme. The proposed development is substantively similar to that for which the Council raised no objection to (in response to a consultation on a County application) in 2010 under ref. SW/10/0444, save for the increased power output.</p> <p>Under that consultation the Council considered representations from statutory and local consultees, and ultimately raised no objection subject to a number of conditions aimed at minimising environmental impacts:</p> <p>(1) The imposition of the conditions required by Natural England, RSPB, and the Environment Agency.</p>	<p>The applicant notes that the Swale Borough Council Relevant Representation is in response to a different DCO. The applicant notes further correspondence from Swale Borough Council dated 11th July 2018 in which this error has been identified and which notes that Swale Borough Council has no objections or significant concerns.</p> <p>The Applicant and Swale Borough Council have agreed a Statement of Common Ground which will be submitted at</p>

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		<p>(2) The Borough Council being fully consulted for its views on landscape and planting materials; and materials to be used in construction to be required by planning condition</p> <p>(3) A condition requiring a full investigation of whether the use/reuse of the existing rail infrastructure can be used to transport construction and fuel source material prior to the commencement of the development, and to include an investigation of the potential for deliveries by ship to Ridham Dock.</p> <p>(4) A condition requiring details of the fuel source and travel distances must first be submitted to and approved in writing, or that a s.106 Agreement is secured to ensure it is locally sourced.</p> <p>(5) A condition or legal agreement that a plan is submitted showing how the developer will ensure that construction and operation jobs and training is secured from the local area wherever possible.</p> <p>(6) A condition be imposed requiring an investigation of a district heating system for excess thermal heat to supply new residential development in the Sittingbourne area.</p> <p>(7) Conditions with respect to construction hours, fuel delivery hours, and piling control.</p> <p>The Council's representations will therefore put forward the case that it does not have any significant objections to the current proposal, but that consideration should be given to securing the items set out by the above conditions.</p>	<p>Deadline 1 on the 31st July 2018 and which will confirm the agreed position of the Borough Council and the applicant on relevant matters.</p>
<p>4 - Environment Agency</p>			
		<p><i>The Role of the Environment Agency</i></p> <p>The Environment Agency has a responsibility for protecting and improving the environment, as well as contributing to sustainable development. We have three main roles as an environmental regulator, environmental operator and an environmental advisor.</p> <p>One of our specific functions is as a Flood Risk Management Authority. We have a general supervisory duty relating to specific flood risk management matters in respect of flood risk arising from Main Rivers or the sea.</p> <p><i>Outstanding information and issues of concern:</i></p> <p>Our relevant representation outlines where further work, clarification or mitigation is required to ensure that the proposal has no detrimental impact on the environment. Our comments -in relation to Water Framework Directive assessment and eels and elver - raise concerns which we believe need to be addressed prior to a development consent order being granted.</p>	<p>The applicant notes the comments from the Environment Agency and will respond to any written representation as required by Deadline 2 on the 21st August.</p> <p>The applicant has agreed a Statement of Common Ground with the Environment Agency, which has been submitted for Deadline 1 and which addresses all the specific elements of the Environment Agency's Relevant Representation.</p>

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		<p>Relevant Representations on behalf of the Environment Agency:</p> <p>Environmental Statement: <i>Chapter 9, Water Environment</i></p> <p>There is no evidence of a Water Framework Directive (WFD) Assessment having been carried out, despite the intention to discharge cooling water into the Swale transitional WFD water body.</p> <p>We are concerned by the statement pertaining to the monitoring conditions placed on the permit stating "No limits are defined for; Flow (m3), pH, Mercury (kgs) or Cadmium (kgs)". The WFD sets strict chemical limits (as Environmental Quality Standards:EQS's) for many chemicals, including mercury and cadmium. If mercury or cadmium are in the effluent then their concentration need to be determined when that discharge reaches WFD waters.</p> <p>Any discharges to WFD water bodies should be assessed in relation to their potential for impacts on the compliance of those receiving WFD water bodies (and any adjoined water bodies).</p> <p>Whilst we appreciate that Environmental Statements have their own relative scales for magnitude and severity of potential impacts, these are subjective and cannot be considered a substitute for a WFD Assessment, where the question is necessarily a detailed one; primarily will the activities being licensed/permitted cause a failure of any of the multiple EQS concentration limits laid down in the WFD and its daughter directives, or prevent the waterbody from meeting its WFD objectives as laid down in the River Basin Management Plan. Specific consideration of the concentrations of all discharged chemicals on the WFD & EQSD lists are required before it might be concluded whether or not they meet water quality criteria for WFD.</p> <p>We suggest the applicant visits the government website where guidance on conducting a WFD assessment is provided: https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters</p> <p>Any elements of the application which require a marine licence should be WFD assessed, and the discharge permits intended to be (re-)used should be WFD compliant.</p>	<p>A Water Framework Directive Assessment has now been carried out and forms part of the Deadline 1 submission, as an Appendix to the SoCG with the EA. The EA agree that the assessment demonstrates the proposed development will not affect the River Swale's compliance with the requirements of the Water Framework Directive.</p>

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		<p><i>Chapter 10, Ecology</i> There remains concern that the effect of the temperature of the discharges from the works will adversely affect the water temperature of the Swale. This will be looked at in more detail as part of the Permit Variation for the site, however it should be noted that in Section 10.4.14 on Protected species, the authors have only relied on records of protected species. Many of the ditches in the area contain Eel, <i>Anguilla anguilla</i>. This should be addressed particularly in the context of the temperature of discharges, above, and light scatter from the development, which might not reach the designated sites but could affect the marshes near the proposal site.</p>	<p>The SoCG deals with this point, as does the comments made below in respect of draft Requirement 9 (External Lighting).</p>
		<p><i>Appendix 9.1, Flood Risk Assessment</i> The developed area of the site is located within flood zone 1 and therefore at low risk of flooding. The proposed development buildings are set above the predicted flood levels for the area. The proposed construction site access is within the 200 year flood outline when accounting for climate change to 2115. This is considered to be low risk, and we therefore have no concerns with this.</p>	<p>Noted</p>
		<p><i>Draft Development Consent Order, Schedule 2 – Requirements</i> <i>9 External lighting</i> This requirement specifies that “no part of the authorised development may be commenced until a scheme for the management and mitigation of artificial light emissions during the construction, operation and decommissioning of the authorised development has been submitted to and approved by the relevant planning authority”. When the planning authority assesses the lighting scheme, they should also consider the impact of lighting on eels and elvers that might be in the ditch network near to the development site. As stated above eels and elvers have not currently been considered in the Environmental Statement which focuses on light impacts on birds that are only reported to be found at a distance from the site.</p>	<p>It is intended that the next dDCO, submitted at Deadline 3, will include a reworded Requirement 9 which makes specific reference to eels and elver.</p>
		<p><i>Section 12 Contaminated land and groundwater</i> We are satisfied that this requirement addresses those matters of interest to us.</p>	<p>Noted</p>

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<p>The site has been reasonably well characterised by desk study information and referenced previous investigations on the wider site complex. As the environmental permit will require a suitable site condition report and baseline reporting is already being gathered we would not anticipate any significant effects from ground contamination that cannot be addressed by good practice outlined in the CEMP and using standard construction controls.</p>					
<p>5 - Network Rail</p>					
<table border="0" style="width: 100%;"> <tr> <td style="width: 65%; vertical-align: top;"> <p>I refer to your letter dated 26th of April 2018 in respect of to the Application by DS Smith Plc to apply for Development Consent for Kemsley paper Mill.</p> <p>Network Rail is a statutory undertaker responsible for maintaining and operating the railway infrastructure and associated estate. It owns, operates, maintains and develops the main rail network.</p> <p>Network Rail aims to protect and enhance the railway infrastructure therefore any proposed development which is in close proximity to the railway line or could potentially affect Network Rail's specific land interests, will need to be carefully considered.</p> <p>Network Rail has been reviewing the information to date and at this stage it is not sufficiently detailed to fully assess potential impacts of the scheme on the railway and further information will be required to properly respond on the likely impacts of the proposed scheme.</p> <p>Network Rail will be seeking protection from the exercise of compulsory purchase powers over operational land either for permanent or temporary purposes. In addition, Network Rail will wish to agree protection for the railway during the course of the construction works and otherwise to protect our undertaking and land interests. Network Rail reserve the right to produce additional and further grounds of concern when further details of the application and its effect on Network Rail's land are available. In addition, any rights for power or other lines under, over or alongside the railway line will require appropriate asset protection measures deemed necessary by Network Rail to protect the operational railway and stations.</p> </td> <td style="width: 35%; vertical-align: top;"> <p>The applicant is in continued discussion with Network Rail with regards to their Relevant Representation. The Applicant is unaware of any Network Rail assets which could be affected by this development and is of the view that it would not be necessary on that basis to include protective provisions within the DCO.</p> <p>The applicant notes that a requirement for a SoCG with Network Rail was not included within the Rule 8 letter (24th July 2018). On that basis, and on the basis of the lack of any identified interactions between the proposed development and Network Rail assets, it is not intended that a SoCG will be progressed at this stage.</p> </td> </tr> </table>				<p>I refer to your letter dated 26th of April 2018 in respect of to the Application by DS Smith Plc to apply for Development Consent for Kemsley paper Mill.</p> <p>Network Rail is a statutory undertaker responsible for maintaining and operating the railway infrastructure and associated estate. It owns, operates, maintains and develops the main rail network.</p> <p>Network Rail aims to protect and enhance the railway infrastructure therefore any proposed development which is in close proximity to the railway line or could potentially affect Network Rail's specific land interests, will need to be carefully considered.</p> <p>Network Rail has been reviewing the information to date and at this stage it is not sufficiently detailed to fully assess potential impacts of the scheme on the railway and further information will be required to properly respond on the likely impacts of the proposed scheme.</p> <p>Network Rail will be seeking protection from the exercise of compulsory purchase powers over operational land either for permanent or temporary purposes. In addition, Network Rail will wish to agree protection for the railway during the course of the construction works and otherwise to protect our undertaking and land interests. Network Rail reserve the right to produce additional and further grounds of concern when further details of the application and its effect on Network Rail's land are available. In addition, any rights for power or other lines under, over or alongside the railway line will require appropriate asset protection measures deemed necessary by Network Rail to protect the operational railway and stations.</p>	<p>The applicant is in continued discussion with Network Rail with regards to their Relevant Representation. The Applicant is unaware of any Network Rail assets which could be affected by this development and is of the view that it would not be necessary on that basis to include protective provisions within the DCO.</p> <p>The applicant notes that a requirement for a SoCG with Network Rail was not included within the Rule 8 letter (24th July 2018). On that basis, and on the basis of the lack of any identified interactions between the proposed development and Network Rail assets, it is not intended that a SoCG will be progressed at this stage.</p>
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			<p>We have standard protective provisions which will need to be included in the DCO as a minimum therefore contact should be made to Emma Colquhoun, email: Emma.Colquhoun@networkrail.co.uk to obtain a copy of the relevant wording, in addition, other agreements will need to be entered into with Network Rail.</p> <p>A number of legal and commercial agreements will need to be entered into, for example, [asset protection agreements, asset protections agreements, method statements, connection agreements, property agreements and all other relevant legal and commercial agreements].</p> <p>This list is not exhaustive and will need to be reviewed once more details of the scheme are discussed between the parties. Consideration should be given to ensure that the construction and subsequent maintenance can be carried out without adversely affecting the safety of, or encroaching upon Network Rail's adjacent land. In addition security of the railway boundary will require to be maintained at all times.</p> <p>In any event you must contact Network Rail's Asset Protection Engineers as soon as possible in relation to this scheme on the following e-mail address AssetProtectionkent@networkrail.co.uk.</p> <p>DS Smith Plc should submit for NR acceptance design and construction methodology for any structural works which could impact on the railway infrastructure.</p> <p>Network Rail is prepared to discuss the inclusion of Network Rail land or rights over land subject to there being no impact on the operational railway, all regulatory and other required consents being in place and appropriate commercial and other terms having been agreed between the parties and approved by Network Rail's board.</p> <p>Network Rail also reserves the right to make additional comments once we have evaluated the proposals in more detail.</p> <p>Summary NR would be grateful if the comments and points detailed within this consultation response are considered</p>

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		by DS Smith Plc. NR would welcome further discussion and negotiation with the DS Smith Plc in relation to the proposed development.	
6 - Kent County Council			
		<p>Following the Planning Inspectorate's acceptance (26 April 2018) of the application for a Development Consent Order (DCO) for Kemsley Paper Mill (K4) CHP Plant, Kent County Council (KCC) requests to be registered as an Interested Party at the Examination.</p> <p>This letter provides a summary of the main aspects of the proposal that KCC agrees and/or disagrees, together with an appropriate explanation, in accordance with the Planning Inspectorate Advice Note 8.3. In summary, an outline of the principal submissions that KCC intends to make in relation to the application will concern:</p> <ul style="list-style-type: none"> - Highways and Transportation – as the Local Highway Authority for Kent; - Minerals and Waste – as the Minerals and Waste Planning Authority for Kent; - Sustainable Urban Drainage (SuDS) – as the Lead Local Flood Authority for Kent; -Heritage; and -Biodiversity. <p>Highways and Transportation</p> <p><i>Baseline Conditions</i></p> <p>Following KCC's previous consultation response (provided on 2 March 2018) under Section 42 of the Planning Act 2008 (amended), additional junction assessments are now included within the Transport Assessment (TA), covering a wider area of the highway network. KCC considers that the extent of the study area is now appropriate. It is noted that the additional survey work was undertaken within a traffic neutral month, as per the initial surveys, so the collection of data that has been presented is agreed.</p> <p><i>Development Proposal</i></p> <p>Given the minimal staffing and maintenance requirements during the operational phase of the development and during its lifetime, it is agreed that the Transport Statement is only required to assess the impacts from the construction phase, which is anticipated to extend for a period of twenty months, with a programmed</p>	<p>The applicant notes the comments from the Kent County Council and will respond to any written representations at the appropriate point during the examination process.</p> <p>The applicant is in continuing discussions with Kent County Council regarding a Statement of Common Ground. A draft version of the SoCG has been supplied to the ExA at Deadline 1 to demonstrate the progress being made, with a signed version to follow by Deadline 2 which will address all the specific elements of the Kent County Council's Relevant Representation.</p>
			Noted
			Noted

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		<p>completion in 2020. The principle of HGV traffic being directed to use the Northern (Barge Way) for construction access and staff via Ridham Avenue is agreed.</p> <p>The final TA will however be required to demonstrate a justification for the predicted number of HGV movements. It will also need to provide a clear indication as to the length of time that the peak number of staff would be expected to be on site. In addition, the number of remaining staff expected for the construction period should be made clear, in order for the true impacts and parking needs to be assessed.</p>	<p>This element of the RR is being discussed with KCC and will be confirmed within the SoCG.</p>
		<p><i>Future Year Traffic Flows</i></p> <p>It is agreed that 2019 is the appropriate future year for the assessment, taking into account the anticipated construction programme that expects to generate a peak traffic impact at the start of the build, during the groundworks and foundation works stage.</p>	<p>Noted</p>
		<p>The committed sites used in the assessment are agreed. KCC concurs that the residential sites in Iwade that it had previously suggested may need to be included are unlikely to have been built out and occupied to any noticeable degree by 2019, given that no planning applications have yet been submitted for those developments.</p>	<p>Noted</p>
		<p><i>Trip Generation</i></p> <p>On the basis that the assessment assumes workers will arrive between 06:00 and 07:00, and leave between 19:00 and 20:00 on a weekday, it is agreed that the associated traffic movements will occur outside of the identified highway network peaks of 08:00 to 09:00 and 17:00 to 18:00. However, it is noted in Section 1.6 of the Outline Construction Environmental Management Plan that the working hours are still be finalised. This will need to be confirmed and controlled by the Construction Traffic Management Plan and separate Travel Plan.</p>	<p>It is envisaged that through the SoCG amendments will be proposed to Requirement 7 (CEMP) to require approval by the relevant planning authority in consultation with KCC as the highways authority. Requirement 8 (CTMP) will then be amended to require the provision of a Travel Plan.</p>
		<p>KCC does not have any objection to the principle of up to 40 HGV deliveries per day at the peak of activity during the construction phase, or the suggested maximum of eight HGV movements in peak hour.</p>	<p>Noted</p>
		<p><i>Construction Management Plan (CMP)</i></p> <p>It is noted that a full CMP is to be agreed with KCC prior to commencement. The details proposed in paragraph 4.8.2 of the Outline Construction Environmental Management Plan are largely agreed. However, there still</p>	<p>It is envisaged that through the SoCG it will be agreed that the provision of a Travel Plan through Requirement 8 will provide an appropriate control to avoid peak traffic times.</p>

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		<p>does not appear to be to be any reference to control measures, to ensure the arrivals and departures of construction staff are outside of the identified highway network peak traffic times, as assessed.</p>	
		<p>Minerals and Waste As the Minerals and Waste Planning Authority, KCC is responsible for ensuring that mineral resources are not needlessly sterilised by other forms of development. This will ensure that a steady and adequate supply of minerals is maintained into the future to facilitate sustainable development.</p> <p>This safeguarding approach is supported in the National Planning Policy Framework (NPPF) and in the adopted Kent Minerals and Waste Local Plan 2013-30 (KMWLP). The NPPF requires that development proposals should not be permitted within mineral safeguarding areas where they might constrain potential future use of the economic mineral resource. As such, the policies within the KMWLP aim to prevent the sterilisation of Kent's potentially economic mineral assets. The proposed new gas fired power station is to be sited on an already developed hard standing area and will therefore have no impact on potential economic mineral assets.</p> <p>In addition, KCC is keen to ensure waste capacity is not compromised by new developments. Due to the proposed new gas fired power station not having an adverse effect on existing waste management capacities at Kemsley Paper Mill or potential economic mineral assets, KCC is of the view that the proposed development has no minerals or waste policy implications.</p>	<p>Noted</p>
		<p>SuDS The DCO provides control on discharge to watercourses, which have a responsible party e.g. adopting authority as stated in paragraph 9 (3) (pg5) of the DCO: (3) The undertaker must not discharge any water into any watercourse, public sewer or drain except with the consent of the person to whom it belongs; and such consent may be given subject to such terms and conditions as that person may reasonably impose, but must not be unreasonably withheld.</p> <p>KCC notes that the Lower Medway Internal Drainage Board (IDB) covers some of the area of the Kemsley K4 CHP Plant. Although it is unlikely to be a major issue, there is a possibility that discharge could occur to ordinary watercourses that are outside the IDB area and would fall within the consenting responsibilities of KCC. The wording within paragraph 9 (3) (pg5) of the DCO therefore does not cover all watercourse</p>	<p>This point is addressed within ISH1:28 in the Schedule in Appendix 1; revised wording is proposed to be included within the DCO by the applicant which performs the same role.</p>

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		<p>responsibilities or situations and does not include a situation where there is no ownership but a consenting responsibility.</p> <p>KCC would recommend revised wording, which captures consenting such as “with the consent of the person to whom it belongs or the consent of the authority which has consenting authority”.</p> <p>Heritage KCC has had the opportunity to review, in particular, Chapter 12 of the Environmental Statement covering ‘Archaeology and Cultural Heritage’ and Appendix 12.1, which is the supporting Desk Based Heritage Assessment.</p> <p>As previously advised, Historic England and Swale Borough Council’s Conservation Officer will lead on considering the effects of the scheme on designated heritage assets. KCC has seen a copy of previous advice from Historic England to DHA Planning dated 7th February 2018 and agrees with its position that there is no physical impact upon designated heritage assets and that visual impacts on the setting of Scheduled Monuments would be negligible, given the massing of the present Kemsley Mill complex. KCC notes that Historic England had some concerns about the assessment of the effects of noise, lighting and traffic on the Castle Rough moated site and whilst KCC notes that these issues are mentioned in paragraphs 12.6.11 to 12.6.13, KCC will defer to Historic England to advise whether it is now satisfied with the assessment and the negligible scale of impact described.</p> <p>KCC is satisfied that the Environmental Statement adequately sets out the archaeological background of the area and recognises the high potential of this area of Kemsley, particularly for remains of prehistoric to medieval date. KCC agrees that given the previous use of the site, there is likely to have been an impact on the archaeology. The submission makes a case for there being low potential for archaeology on the site and that adequate mitigation can be secured through a requirement for a programme of archaeological works following determination of the application. Whilst there remains potential for important archaeology, KCC agrees that this can be addressed through such a requirement. Mitigation of the potential archaeological impacts of the scheme should therefore include a requirement that seeks further assessment of the impacts of the scheme on buried archaeology. This should be done initially through a review of any forthcoming geotechnical data from the site, followed by an informed and targeted program of evaluation through trial trenching and possibly bore hole survey. Should potential archaeological impacts be subsequently confirmed as a result of the evaluation, then provision should be made for further investigation and reporting.</p>	<p>Heritage matters continue to be discussed by the Applicant and KCC; the position on this matter will be agreed through the SoCG.</p>

Ref No	Consultee	Relevant Representation	Applicant's Comment
		<p>Biodiversity</p> <p>The proposed development site is hard standing and therefore KCC accepts that there was no requirement for detailed surveys to be carried out within the footprint of the proposed development site.</p> <p>However, the site is within 500m of the Swale SPA, SSSI and Ramsar site, so there is a need to consider if the operational and construction phases of the proposed development will have an impact on these designated sites. A detailed Habitats Regulation Assessment has been carried out as part of this application and assessed that the proposed development is unlikely to have a significant effect on the designated sites.</p> <p>The report has made a number of recommendations that will need to be implemented as part of the construction/operational phase of the development to ensure that the development will not result in a likely significant effect on the designated sites. If the determining authority is satisfied that the conclusions of the submitted report and that the measures are appropriate, they will need to be implemented during construction/operational phase of the development.</p> <p>KCC looks forward to working with the applicant and the Planning Inspectorate as the project progresses through the DCO process and would welcome the opportunity to comment on matters of detail throughout the Examination.</p>	<p>This is noted; it is envisaged that the SoCG will reflect the fact that Requirements 7 (CEMP), 8 (CTMP), 9 (External Lighting) and 12 (Contaminated Land and Groundwater) will ensure that the identified recommendations will be implemented during the construction/operational phase of the development.</p>
		<p>7 - Natural England</p> <p>Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.</p> <p>Relevant Representation Summary of Natural England's advice. In relation to identified nature conservation issues there is no fundamental reason of principle why the project should not be permitted, however, further information or analysis is needed on several issues to establish that the proposal will not have adverse effects on nearby designated sites:</p>	<p>The applicant notes the comments from the Natural England and will respond to any written representations at the appropriate point during the examination process.</p> <p>The applicant is in continuing discussions with Natural England regarding a Statement of Common Ground, a final version of which will be submitted for Deadline 2 and will address all the specific elements of the Natural England's Relevant Representation.</p>

Ref No	Consultee	Relevant Representation	Applicant's Comment
		<p>- Noise disturbance – further information is needed on the bird use of Milton Creek and mitigation measures to reduce impacts;</p> <p>- Air quality – the assessment needs to include the habitats for which the relevant Ramsar sites are designated;</p> <p>- Water quality – an MCZ assessment should be carried out of potential impacts of the discharge to the Swale Estuary MCZ.</p> <p>Furthermore, the 'No Significant Effects HRA report' should be revisited in the light of the recent ruling from the Court of Justice of the European Union (the CJEU) on the interpretation of the Habitats Directive in the case of People Over Wind and Sweetman vs Coillte Teoranta (ref: C 323/17).</p> <p>1.1. Natural England's advice in these relevant representations is based on information submitted by DS Smith Paper Ltd in support of its application for a Development Consent Order ('DCO') in relation to the proposed Kemsley Mill (K4) Combined Heat and Power (CHP) plant ('the project').</p> <p>1.2. Natural England has been working closely with consultants for DS Smith Paper Ltd to provide advice and guidance on potential impacts of the project and necessary mitigation measures. However, it has not been possible to resolve all issues ahead of submission of the project. Nevertheless, we remain committed to working with the project team to progress outstanding issues over the period of the Examination, and will set this out in our statement of common ground.</p> <p>1.3. These relevant representations contain a summary of what Natural England considers the main nature conservation issues [PINS NSIP Advice Note 11 Annex C sets out Natural England's role in infrastructure planning. https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/10/PINS-Advice-Note-11_AnnexC_20150928.pdf] to be in relation to the DCO application, and indicate the principal submissions that it wishes to make at this point. Natural England will develop these points further as appropriate during the examination process. We may have further or additional points to make, particularly if further information about the project becomes available. This is not an exhaustive representation on all matters related to biodiversity, and any matters upon which we have not commented should not be taken to mean that there are no other impacts, rather that these are not the focus for our engagement. Other parties may wish to make comments on these points.</p> <p>1.4. Natural England's advice is that in relation to identified nature conservation issues within its remit there</p>	<p>Noted and addressed individually with reference to NE's full comments on these issues.</p> <p>Noted</p> <p>Noted</p> <p>Noted</p>

Ref No	Consultee	Relevant Representation	Applicant's Comment
		<p>is no fundamental reason of principle why the project should not be permitted but that the applicant has provided insufficient evidence to establish that the proposal will not have adverse effects on nearby designated sites. The further information required is set out in section 2 below.</p> <p>Main issues raised by this application The designated sites relevant to this application are:</p> <ul style="list-style-type: none"> • The Swale Special Protection Area (SPA), Wetland of International Importance under the Ramsar Convention (Ramsar site) and Site of Special Scientific Interest (SSSI) • The Swale Estuary Marine Conservation Zone (MCZ) • Medway Estuary and Marshes SPA, Ramsar site and SSSI • Thames Estuary and Marshes SPA and Ramsar site • South Thames Estuary and Marshes SSSI; • Queendown Warren Special Area of Conservation (SAC) and SSSI <p>Given the presence of internationally designated nature conservation sites, competent authorities undertaking Habitats Regulations Assessments (HRAs) should be aware of a recent ruling made by the Court of Justice of the European Union (the CJEU) on the interpretation of the Habitats Directive in the case of People Over Wind and Sweetman vs Coillte Teoranta (ref: C 323/17). The case relates to the treatment of mitigation measures at the screening stage of a HRA when deciding whether an appropriate assessment of a plan/project is required. The Court's Ruling goes against established practice in the UK that mitigation measures can, to a certain degree, be taken into account at the screening stage.</p> <p>2.3. As a result, Natural England advises that any "embedded" mitigation relating to protected sites under the Habitat Regulations 2017 Regulation 63 (1) should no longer be considered at the screening stage, but taken forward and considered at the appropriate assessment stage to inform a decision as whether no adverse effect on site integrity can be ascertained.</p> <p>2.4. Appendix 10.2 of the Environmental Statement provides a report to inform an HRA of the proposal, and screens all potential impacts out at the likely significant effect stage. The conclusion of no likely significant effect on European sites is based on there either being no pathway for impact, or because mitigation measures are included in the proposal. Natural England has discussed the implications of the recent CJEU ruling with consultants for the applicant. It has been agreed that Appendix 10.2 will be redrafted so that issues requiring mitigation will not be screened out at the 'likely significant effect' stage, but information presented</p>	<p>Noted</p> <p>Noted; a revised HRA was submitted as part of the response to the S51 Advice issued by the Inspector which takes the amended approach required following the 'People over Wind' case. Following further discussions with NE that will then be replaced by a further version of the HRA report which will be submitted alongside the SoCG with Natural England at Deadline 2 and which will include additional information regarding noise impacts on birds using the SPA.</p>

Ref No	Consultee	Relevant Representation	Applicant's Comment
		<p>to enable an appropriate assessment to be completed. Natural England's views on the issues and potential mitigation measures are set out below.</p> <p>2.5. The main issues raised by this application are potential noise and visual disturbance; air quality impacts; changes to water quality and water resources impacts on the nature conservation receptors noted above in paragraph 2.1. Taking each of these in turn:</p> <p>2.6. Noise disturbance – The birds for which The Swale SPA, Ramsar and SSSI are designated are susceptible to disturbance from noise, which may impact their energy budgets by causing them to cease feeding, or fly away from the source of disturbance. Loud, intermittent noise, for example produced by percussive piling, is particularly disturbing to birds. Natural England noted, in our Section 42 response, that noise levels below 55dB are unlikely to result in disturbance to coastal bird species. However, it is not possible to set a noise threshold above which disturbance is likely to be significant. This is because reactions of birds are species and site specific, and will depend on many factors, including the level of background noise.</p> <p>2.7. Therefore, the noise contour maps in Chapter 7 of the Environmental Statement (ES) and in Appendix 10.2 are helpful in setting out the areas of adjacent habitat subject to noise above 55dB. Figures 7.4 and 7.5 show that during normal operation, predicted noise levels within The Swale SPA, Ramsar and SSSI are not likely to exceed 50dB LAeq. Noise levels are higher when the steam release valves operate. However, Chapter 7 states that this will only occur in an emergency, and due to the fitting of a dump condenser that is not fitted to the existing K1 plant, this will occur less frequently than currently (less than 4 times a year). Therefore, Natural England's view is that noise impacts during operation will not be significant and will not require mitigation.</p> <p>2.8. Figure 10.5 models noise during construction, and shows that peak noise levels within The Swale SPA, Ramsar and SSSI will reach 65-75 dB LAmx. Appendix 10.2 states that this covers an area of around 20ha, which supports SPA/Ramsar species, including dunlin and grey plover. But concludes that the small proportion of the SPA affected and the short temporal nature of the piling works mean that potential for disturbance is limited.</p> <p>2.9. Natural England requests that further information is provided on the bird use of the mouth of Milton Creek, affected by higher noise levels during piling operations. Parts of the SPA/Ramsar may be disproportionately important, for example if they support a high tide roost, or if they provide a sheltered area</p>	<p>This point is addressed in the comment above in relation to the amended HRA report to be submitted at Deadline 2 and will be discussed further within the SoCG to be agreed between the applicant and Natural England.</p>

Ref No	Consultee	Relevant Representation	Applicant's Comment
		<p>during extreme weather. Therefore, further information is needed on the numbers of birds using the area affected and what ecological functions are being provided by the habitat affected, before a conclusion over the impact of construction disturbance can be made. Natural England also recommends that avoidance measures are considered in terms of timing the piling works outside the core wintering period of November to February inclusive. Clearly, this would avoid impacts and avoid further discussion over whether impacts are significant or not.</p>	
		<p>2.10. Marsh harrier breed in the reedbeds adjacent to the access road. The reedbeds are not designated, but the marsh harriers are part of The Swale SPA breeding bird assemblage. Therefore, the reedbeds can be considered functionally linked land, by providing supporting habitat to SPA species. However, Natural England agrees with the conclusion of Appendix 10.2, that marsh harriers are unlikely to be significantly affected by noise (or visual) disturbance during construction or operation.</p>	
		<p>2.11. Visual disturbance – due to the distance to The Swale SPA/Ramsar site, and screening by other buildings, Natural England agrees with the conclusion in Appendix 10.2 that there will be no likely significant effect to coastal waterbirds from visual disturbance. As noted in paragraph 2.10 of this letter, marsh harriers breed in reedbeds adjacent to the access road. This road is already used by construction traffic, so the marsh harriers will have become habituated to the use of the road by vehicles.</p>	Noted
		<p>2.12. Lighting – given the distance to the Swale SPA/Ramsar site, the other development in the area, and the use of best available technology to avoid light spill, Natural England agrees that lighting is unlikely to lead to adverse effects on the designated sites.</p>	Noted
		<p>2.13. Air quality impacts – Appendix 5.4 sets out an ‘Air Quality Assessment of Ecological Impacts’ and concludes no significant impacts based on the process contribution (PC) from the proposal being below the critical load for all sites, apart from the NOx PC for The Swale SPA. In this case the PEC is only 47% of the critical level, and is, therefore, screened out as insignificant. However, whilst tables C2 and C3 in Appendix 5.4 consider the birds for which the SPAs are designated, they do not consider the habitat types for which the Ramsar sites are designated, which may have lower critical levels or loads than the bird species. Therefore, Natural England recommends updating the tables in Appendix 5.4 to include the supporting habitats of the relevant SPAs and Ramsar sites. Furthermore, it is not clear how the calculations to arrive at the PC have been carried out. Therefore, Natural England recommends further information is provided on the calculations of PC and PEC, in order to provide clarity over the calculations that have been carried out.</p>	This issue will be addressed in the amended HRA to be submitted for Deadline 2 and will be discussed within the SoCG which will be agreed with Natural England by that same deadline.

Ref No	Consultee	Relevant Representation	Applicant's Comment
		<p>2.14. During construction, air quality impacts could potentially arise from HGV movements and from dust. Natural England agrees that emissions from vehicles can be screened out as the number of HGV movements per day will not exceed 100, which is the threshold set for significant change. It is also agreed that, provided best construction practice measures are followed, adverse effects from dust can be avoided.</p>	
		<p>2.15. Water quality impacts – there is a risk of pollution to surface water during construction. However, Natural England agrees that standard pollution prevention measures, as part of the Construction Environment Management Plan, and set out in Table 9.14 in the ES, are sufficient to reduce the risk to The Swale SPA/Ramsar site.</p>	<p>Noted</p>
		<p>2.16. We note that during operation, process water will be discharged to the Swale and will continue to comply with the existing Environmental Permit. However, it is not clear whether this permit was issued before or after The Swale Estuary MCZ was designated. Therefore, Natural England recommends that an MCZ assessment of the discharge is carried out, in accordance with the Marine and Coastal Access Act 2009.</p>	<p>A Water Framework Directive assessment has been carried out and forms part of the SoCG between the applicant and the Environment Agency. That WFD Assessment will be discussed within the SoCG to be agreed between the applicant and Natural England.</p>
		<p>2.17. Water resources – As no changes to the surface water drainage scheme for the site are proposed, Natural England agrees that there is not likely to be a significant effect from surface water flows.</p>	
<p>8 - Public Health England</p>			
		<p>Thank you for your consultation regarding the above development. Public Health England (PHE) welcomes the opportunity to comment on your proposals at this stage of the project and can confirm that:</p> <p>We have no additional comments to make at this stage and can confirm that we have chosen NOT to register an interest with the Planning Inspectorate on this occasion.</p>	<p>The Applicant welcomes the representation made by Public Health England and that they have no objection to the proposed development. Accordingly, no response is necessary.</p>

Appendix A

Noise Survey at the DS Smith Paper Mill at Kemsley –

Ref: INR/2818C-A

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Reference: INR/2818C-A.

Date: May/2017.

Report.

Subject: Noise Survey at the DS Smith Paper Mill at Kemsley.

Noise survey of the Paper Mill, relating to complaints about noise from the Mill affecting a resident in Kemsley.

Client: DS Smith Paper Ltd.

**Prepared by: Richard Redwood C.Eng. MSc. MIOA.
Acoustic Consultant.
Industrial Noise Reduction Ltd.**

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Report reference: INR/RR/2818C-A.

Client: DS Smith Paper.

Subject: Noise levels at Kemsley Mill.

Date: May/2017.

1.0 Introduction and Summary.

This report describes a noise survey of the DS Smith Kemsley Paper Mill, carried out on the 1st and 2nd/May/2017. This survey forms a 'follow up' to the one described in our report reference INR/2812, carried out on the 11th/January/2017. Two very similar surveys were carried out in March/2012 and November/2015. For the sake of clarity, the surveys are referred to in this report as 'Survey 1' (2012), 'Survey 2' (2015) and 'Survey 3' (January/2017) and 'Survey 4' (May/2017).

The purpose for the 'follow up' was to address two matters outstanding from Survey 3:

All four surveys have been carried out in response to complaints from a resident who lives in Eleanor Drive, about 1300 metres to the West of the Mill. I visited Eleanor Drive several times in the first three surveys, and was never able to hear or measure Mill noise there. To explain the continuing complaints, it has been necessary to hypothesise that Mill noise is audible when certain weather conditions, giving unusually good propagation of sound to the West, occur. The relevant conditions are a very gentle breeze from the East and a 'temperature inversion', where air near the ground is colder than in a layer above. In the present survey, I visited Eleanor Drive four times, and heard noise from the Mill, clearly, on the first of these (only). As far as I can tell (I have no way of measuring an inversion), the weather fitted the conditions mentioned above. I have reviewed the weather data for the times of my other visits: none of them have Easterly breezes. I think this comes as close to a proof of the hypothesis as we are likely to achieve.

In Survey 3, I took readings around two new plant items in the Mill: these are the Runtech vacuum blowers, and they have replaced two Nash and two Sulzer machines. I understood that there was additional lagging work to be done at these machines, which would have reduced the noise levels around them, but it turns out that the extent of this was much less than I had assumed, and there has not been much change, in the event. Though these machines are very noisy, I don't believe they are significant in contributing to the levels of Mill related noise in Eleanor Drive, because they are extremely well shielded by the RCF building. It would be possible to reduce the sound levels in the area around them by improving the house that contains them and lagging some ducts, if desired (but, to repeat, it is not relevant at Eleanor Drive).

1.0 Introduction and Summary (continued).

In this, and previous, surveys, noise from road traffic has always been audible in Eleanor Drive, and was clearly coming from two main roads nearby: the B2005 and the A249 dual carriageway. The level of this has varied widely: for obvious reasons it is generally lower at the end of the evening than in the day, and some days are noisier than others. If we take the L90 value (near the minimum) for the traffic background, the readings from all the surveys range from 38dBA to 47dBA in the daytime and from 31dBA to 42dBA at around 11-00pm. Leq (average) levels are typically about 4dBA higher than L90.

In the surveys in 'normal' weather, I have not been able to hear Mill noise, as has been said. I estimate that the level of it is typically a little lower than 30dBA: hence it is masked by traffic noise. On the evening when I heard it, which I take as having 'abnormal' weather, I took a number of readings on the green in front of 13 Eleanor Drive between 10-20pm and 00-20am, and the range of these was 41dBA to 45dBA (measured as Leq). It may be seen that this falls at the upper end of the range of background sound levels.

When the above levels are rated using the method of BS4142:2014, the conclusion is that there is no adverse impact in 'normal' weather, but a significant adverse impact in the 'abnormal' condition. The current version of BS4142 advises strongly that the rating calculation should not be taken at face value: the context of the complaint must also be considered. In this case, I suggest the following contextual factors are relevant.

It is not possible to predict how often the 'abnormal' condition will occur, but it is clearly not very common. I have visited the site ten times, and only heard Mill noise once, and I believe the 'noise event' that I observed lasted no more than three or four hours.

The levels observed for Mill related noise in the 'abnormal' condition lie within the range for traffic noise, which is present every day and often lasts well into the evening.

However, if the 'abnormal' noise occurs at night, it is likely to be higher in level than the background at that time.

When an 'abnormal' noise occurs, it must affect quite a wide area in Kemsley, but there is only one complainant, as far as I am aware.

On balance, I suggest that the level of nuisance from Mill noise in Eleanor Drive cannot be said to be zero, but might reasonably be considered to be low.

On the evening when I could hear Mill noise, I was able to identify a tone in it, and subsequently to find the source, in the Mill. This was the exhaust duct from the Nash vacuum pumps for PM3 and PM4, which comes through the roof of a building attached to the main PM3/4 building. The tone is at a very low frequency, about 70Hz. It would be possible to fit a silencer in the duct that would eliminate the tone: it would need to be quite large, to achieve good attenuation at such a low frequency. I have not attempted to design it at this stage, but suggest a 'budget guesstimate' of £20,000 for the cost of it. The effect of the silencer will be to eliminate the tone in the 'abnormal' sound in Eleanor Drive: it will not reduce the overall dBA sound level very much, since the 'general noise' of the Mill was also audible. I was not able to pinpoint any other source that would, if silenced on its own, make a significant difference at Eleanor Drive.

2.0 Noise survey.

2.1 Site description.

Kemsley Paper Mill is a very large and long-established mill. It is located in a largely green-field area in Kemsley Marshes. To the West and South of the Mill there is a large development of modern houses in Kemsley: the nearest houses are about 400m from the main Mill buildings. The location of the Mill and its relationship to the housing are shown in Figures 1 and 2. Figure 2 includes a cross sectional view through the housing and the Mill: an enlarged section through the mill is shown in Figure 3.

The Mill uses waste paper as the raw material for making new (brown) paper, which is used to make corrugated cardboard for boxes (elsewhere). On the Mill site, there are substantial yards for storage and handling of waste paper, pulp-making plants, three paper mills, large warehouses and a steam and electricity generating plant. (The last of these is operated by Eon on behalf of DS Smith and is referred to as CHP).

The three paper mills on the site are numbered PM3, 4 and 6. PM 3 and PM4 are located in a large building near the middle of the site and PM6 is in a similar building which lies to the West of PM3/4. The noise levels inside the mill buildings are high, but the sound is generally well contained by the buildings: most of the noise that is apparent outside the buildings comes from exhaust ducts of various kinds on the roofs equipment such as fans and pumps located outside. A great deal of the obviously noisy equipment is located on the roofs of the mills, so the noise survey paid particular attention to these areas.

Three surveys have been carried out at the Mill in the past, as has been mentioned. Some changes in machinery and operating conditions were noticed in the most recent ones (Surveys 3 and 4), as follows.

Nash vacuum pumps of PM3 and PM4. These machines are located in a building beside the main PM3/4 building: the exhausts from them are joined together and exit through the roof as a single duct. The noise from this duct was very obvious in this survey, on the roofs nearby, with a very strong tone at about 70Hz, which makes it easy to identify at some distance. By a strange chance, it appears that these pumps were not running when I was near their exhaust at any of the previous surveys. I am quite surprised at this, but have checked all the results, and it appears it must be so.

Runtech Vacuum Blowers at PM6. These new machines were new in Survey 3: they are located in a new building outside PM6. I now understand there are two more inside the main PM6 building. They replace four previous machines, two Sulzer blowers and two Nash vacuum pumps. A small amount of lagging has been applied to some of the ducting associated with them since Survey 3, but not enough to make any difference to the noise levels in the area.

PM6 Roof. The central part of the roof of the PM6 building, which is semi-transparent, was being renewed at the time of Surveys 3 and 4. The work had progressed considerably between the two surveys, but in both there was an area which was actually open, with a working platform inside. It did not seem that a great deal of noise was escaping from this hole, however.

2.1 Site description (continued).

PM3/4 Roof. There was a significant area of the main roof of this building that I could not access, because it was considered unsafe and was awaiting repair. Six extractor fans on this roof that were missing in Survey 3 had been renewed at Survey 4. Away from these areas, however, the general sound pattern did not seem to have changed much (except that the Nash pumps were now audible).

Machine conditions affecting the CHP. In Surveys 1 and 2, there were some stoppages of paper machines, which led to steam venting from safety valves in the CHP and areas of high noise levels around the vents. I understood that all three paper machines were running normally in Survey 3, and there was no abnormal venting in the CHP. (I have to assume that the machines stopped from time to time, since the Nash pumps were not making noise when I was near them). In Survey 4, I did not take any readings in the CHP, but was not aware of venting and assume it was operating normally.

Nearest houses. The main area of housing lies to the West of the Mill, and the nearest houses are in Recreation Way. Some of these houses have a view of the Mill, over an embankment. However, there is no line of sight to any of the important noise sources, because the sight-lines are broken by intervening buildings (For example, the noise sources on PM6 building are hidden by the RCF buildings). The distance from the main Mill buildings to the nearest house is about 400m. My understanding is that there have not been any complaints about noise from the mill, from residents in Recreation Way.

Complainant in Eleanor Drive. There is a history of complaints from a resident in Eleanor Drive, which lies further to the West, at a distance of about 1300m from PM6. The complainant lives at 13 Eleanor Drive. The house is located at the top end of Eleanor Drive, beside an open green space, and faces East (towards the Mill).

2.2 Survey method.

Noise readings were taken with a Rion Real Time 1/3 Octave Integrating Sound Analyser (meter), type NA-27, which was checked before and after the survey using a Rion calibrator type NC-74. Both are 'Type 1 / Class 1' (precision) instruments. The meter was hand-held for the survey and a windshield was used throughout. The same meter was used for all three surveys. It is calibrated annually in our in-house facility, most recently in December/2016.

The Rion meter is able to take several measurements at once, and to store the results. At each measuring point, readings of Leq, L90, L50 and L10, expressed as dBA, dBC and one-third octave bands, were stored. In most cases, a 'spot' reading lasting about 15 seconds was taken. At positions where the sound level was varying, the time for each reading was longer. In the car park the duration was generally one minute and a 'pause' was taken if there was a noisy vehicle movement nearby. For the readings near the houses, the duration was five minutes.

This survey (Survey 4) in the Paper Mill was carried out on Tuesday the 2nd/May/2017. The first set of readings were taken on the roofs of PM6, then PM3/4, followed by the Mill roadways and finally in the car park. The CHP plant was not visited in this survey. The first reading was taken at 9-40am and the last at 6-05pm. As far as possible, the readings were repeats of those taken in Surveys 1, 2 and 3.

2.2 Survey method (continued).

In addition to the survey of the Mill, readings were taken in Kemsley, in Recreation Way and Eleanor Drive, at around 11-00pm on Monday the 1st/May and at about 8-40am, 6-30pm and 10-30pm on Tuesday. Again, these were repeats of readings taken in the previous Surveys. The weather was calm and mild on both days: weather related effects on the readings are discussed in some detail in the following sections.

3.0 Results and discussion.

3.1 Sound levels in the Mill.

The noise readings taken in the Mill are summarised in our drawing INR/2818C1, which is attached to this report. At each point, two numbers are given, XX/YY: these are the dBA/dBC sound levels expressed as Leq. In some cases the L90 value is also given. The site is so large that it is difficult to interpret these results, so in Figures 4 and 5 I have drawn contours of sound level dBA. I drew these contours by hand, by fitting them as best possible between the sound level readings. I should say that there is some degree of artistic licence in them, but they do show up the areas where the sound levels are highest. These Figures are directly comparable with those from the previous surveys, and it may be seen that the general picture has not changed a great deal. There is only one area of difference between the contours for Survey 3 and Survey 4: this is the inclusion of the noisy area around the exhaust of the Nash Pumps of PM3/4, which was not seen in the previous surveys. Even though this exhaust is a powerful noise source, the contour plot has not altered a great deal. This reflects the fact that there are many noise sources, and adding one more makes only a small difference, overall. The noise from these pumps is quite unusual in having a very pronounced, low frequency, tone in it: most of the other sources on site have rather nondescript spectra. As evidence of this, Figure 8 shows third octave spectra from readings taken near to some of the most prominent sources.

3.2 Sound levels in the community.

The sound levels measured in the community are summarised in Figure 2, for all four surveys, and third octave readings from them are shown in Figure 9. Two positions were visited in all the surveys: Eleanor Drive, where the complainant lives, and Recreation Way, which is much closer to the Mill. The position in Recreation Way was chosen because, in my first visit to Eleanor Drive I could not hear the Mill at all, so I looked for a position where I could hear it, and see it. My intention in this was to collect data that would help in calculating the sound levels from the Mill in Eleanor Drive, since I could not hear or measure it there.

At the measuring position in Recreation Way, sounds from the Mill and from road traffic were audible in all surveys. The main source for road traffic noise was Swale Way, which lies between the measuring position and the Mill: this seemed to be a busy road, with a good deal of HGV traffic. The road is on an embankment at this point, and there is an acoustic barrier fence beside it, which shields the houses from road traffic noise and Mill noise to some extent. Both were audible in all the visits, nonetheless. The traffic, and its noise, decreased as the evenings progressed, as is normal. Over the four surveys, values for L90 at this location have varied between 39dBA in Survey 2 at near 11-00pm on a very quiet night, to 49dBA in Survey 4 at 6-20pm (when there was much more traffic). The corresponding Leq values were 44dBA and 51dBA.

In Eleanor Drive, the sound levels observed across the four surveys range from 31dBA to 47dBA, measured as L90 ('near minimum') and from 35 to 50dBA as Leq ('average'). At most of my visits, my perception was that the sound I could hear came almost entirely from traffic on nearby main roads, and that I could not hear any sound from the Mill. However, I did hear it clearly in one visit of Survey 4, on the 1st/May/2017, at around midnight. The sound levels at this time were 38-42dBA, L90 and 39-45dBA, Leq (I took several readings). It may be seen that these levels fall within the range from other visits, when Mill noise was inaudible. This rather unusual phenomenon is discussed in more detail in the section 5, below.

4.0 Sound power levels.

In the reports for previous surveys, I listed estimates for the sound power levels (SWL's) for some sources or groups of sources. The list below is updated from Survey 3, rearranged in order of loudness, and has the PM3/4 vacuum pumps added. I would repeat my earlier comments: I would not claim very great accuracy for my estimates, but I feel they are useful in giving an approximate ranking of the most prominent sources. I offer some comments as follows.

- The list applies to sound levels outside buildings, only. There are many other sources inside, but they are not relevant in this survey.
- The new Runtech machines have the highest sound power level of all, measured as dBA. The fact that dBA and dBC are equal indicates a sound that has most of its energy in the higher frequency bands: this makes it very unusual. The machines are located near ground level, by the roadway between two tall buildings. Both these factors will reduce its importance as a source at any distance.
- The PM3/4 Nash pumps exhaust has the highest dBC sound power level, and the greatest difference dBC minus dBA. This indicates a strong tone at a low frequency: 70 Hz in this case. The exhaust is located on a high roof. Both features make it more likely that this sound may be audible at some distance.
- Most of the other sounds have values for dBC minus dBA of about 7dB. This often indicates a sound with a fairly featureless, broadband, spectrum, which makes it difficult to identify individual sources at any distance.

SWL of PM6 Runtech pipe work :	119dBA/119dBC
SWL of PM6 new Runtech blower, from building:	114dBA/114dBC
SWL of Belbond fan 2A/2B exhaust:	113dBA/119dBC
SWL of PM3/4 Hood exhausts (total):	112dBA/119dBC
SWL of PM6 Hood exhausts (total):	112dBA/117dBC
SWL of PM3/4 Nash vacuum pumps:	111dBA/133dBC
SWL of PM6 extractor fans on wall (total):	109dBA/116dBC
SWL of Belbond fan 1A exhaust:	109dBA/116dBC
SWL of E-Line silo pumps (total):	109dBA/112dBC
SWL of two exhausts on PM4:	106dBA/112dBC
SWL of open roof shutters on PM3/4:	105dBA/109dBC
Group of five fans on PM3 roof :	104dBA/109dBC
SWL of PM6 plastic-glazed area of roof:	103dBA/113dBC
SWL of PM6 external chiller:	102dBA/112dBC
SWL of PM3/4 plastic-glazed area of roof:	100dBA/110dBC
SWL of PM6 Nash pumps and exhaust:	99dBA/109dBC
SWL of PM4 extractor fans on top roof:	98dBA/106dBC
SWL of PM6 dormer roof louvres:	96dBA/104dBC
SWL of CHP Plant normal operation:	100dBA/106dBC
 SWL total of all:	 123dBA/134dBC

5.0 Sound levels in Eleanor Drive - analysis.

I have carried out sound surveys at Kemsley Mill on four occasions, in 2012, 2015, January/2017 and May/2017, as has been mentioned. All of them have been motivated, to some extent at least, by the wish to respond to complaints about noise from the Mill from a resident, who lives at 13 Eleanor Drive, located about 1300 metres to the West of it. It has always been rather difficult to evaluate these complaints, because I have not been able to hear any sound that I could identify as coming from the Mill, in Eleanor Drive. In the present survey (Survey 4) I visited Eleanor Drive four times. I could hear the Mill clearly in one of the visits, but not in the other three. I offer my analysis of the situation, as follows.

5.1 Summary of the sound levels observed in Eleanor Drive.

I have set out a summary of the results from all the surveys in tabular form, below. All the readings were taken over periods of five minutes, and the sound levels reported represent 'average' (Leq) and 'near minimum' (L90) levels at the time. Weather details for Surveys 3 and 4 are from my observations at the site: the older ones are taken from a website called weatherunderground.com.

Eleanor Drive: Sound levels in daytime: Mill not audible.

Date	Time	Leq, dBA/dBC	L90, dBA/dBC	Temp	WSpeed	Direct
06/03/2012	17-57	50/59	38/53	6	2	S
11/01/2017	19-39	43/55	41/54	7	5	W
02/05/2017	08-56	46/57	44/53	11	0	NW
02/05/2017	18-34	50/57	47/54	13	5	N
Mean		47/57	43/54	(Deg C)	(m/sec)	

Eleanor Drive: Sound levels, late evening and 'normal' weather: Mill not audible.

Date	Time	Leq, dBA/dBC	L90, dBA/dBC	Temp	WSpeed	Direct
06/03/2012	22-53	44/56	39/50	-	-	-
02/11/2015	23-09	35/54	31/49	9	4	SE
10/01/2017	23-00	40/52	37/49	7	4	SW
02/05/2017	22-40	45/57	42/54	10	7	N
Mean		41/55	37/51			

Eleanor Drive: Sound levels, late evening and 'abnormal' weather: Mill clearly audible.

Date	Time	Leq, dBA/dBC	L90, dBA/dBC	Temp	WSpeed	Direct
01/05/2017	22-21	43/56	39/51	9	0	E
01/05/2017	23-08	45/61	42/59	9	0	E
02/05/2017	00-12	41/59	38/55	9	0	E
02/05/2017	00-19	42/54	39/53	9	0	E
Mean		43/58	40/55			

5.1 Summary of the sound levels observed in Eleanor Drive (continued).

When rating sound levels from industrial activities affecting residences, it is normal to use the L90 (near minimum) level to represent the background noise level in the area. In this case, on the days when I could not hear the Mill, the daytime L90's range from 38dBA to 47dBA and those at the end of the evening from 31dBA to 42dBA. My observations have always been that the background sound in the area comes from road traffic. There are two main roads nearby: the B2005, Grovehurst Road, is about 200 metres to the East and the A249 dual carriageway about 600 metres to the West, and I have been able to hear traffic noise from both directions in the various surveys. The lowest background level observed was on the 2nd/November/2015: on this occasion I noted that there was very little traffic, at the end of a day when there had been widespread fog. When averaged over the four surveys, the background levels (L90) were 43dBA in the daytime and 37dBA at the end of the evening.

In comparison, the mean sound level on the evening when I could hear the Mill was 40dBA (L90) and 43dBA (Leq). On this occasion, it was clear to me that the sound was coming mainly from the Mill, with little contribution from traffic (indicating a lower than average level for traffic noise). As far as I can tell, the weather conditions appeared ideal for 'abnormal' sound transmission towards Eleanor Drive (see below). It was very still, with the faintest hint of a breeze coming from the East (but not strong enough to give a reading on my anemometer). The day had been warm, but with one or two very light showers: perhaps this would cool the ground enough to provoke the temperature inversion(?).

There is no way of telling whether this example represents the 'worst case' of abnormal sound transmission, but the impression of the Mill noise being the dominant source was very striking at the time. However, I believe the 'acoustic event' did not last long, probably only two or three hours at around midnight: certainly it had gone the following morning. I think it is quite likely that nobody noticed it, except me.

5.2 What does the Mill 'sound like'?

The sound of the Mill has a 'broadband' nature: there is generally no significant tonality observable at in it, at any distance from the Mill. My perception of it was that it 'sounded much the same' at the edge of the car park and in Recreation Way: these positions are about 250m and 400m from the PM6 building, respectively. When I visited Eleanor Drive in the evening of the 1st/May, I found that I could hear the Mill, and my first impression was that it sounded much the same here, too. After a little while, however, I noticed a difference: a low frequency tone, not very strong, at about 70Hz, which shows up in the third octave spectrum as a small peak at the 63Hz and 80Hz bands. I was not convinced at first that it came from the Mill: I revisited Recreation Way and could not hear or find it there. On returning to Eleanor Drive the tone was clearly present, however, and, on investigating further, I found that there was a spatial variation in the level of it: by moving the meter around I could pick a high spot or a low one, for the reading in the 63Hz band. My experience is that this is a common feature where low frequency tonal sounds meet reflecting surfaces such as house facades: it is a result of interference between incoming and reflected sound waves. I took readings at a number of positions on the green in Eleanor Drive, and found this pattern of highs and lows was quite consistent, and widespread. All the readings, except for the first one at 10-21pm (essentially at a randomly chosen position), were taken at 'high spots' in this tonal pattern.

5.2 What does the Mill 'sound like'? (continued)

In the survey in the Mill, the following day, I was able to identify this tone as being associated with the exhaust from the Nash pumps of PM3/4.

5.3 Mechanism for abnormal transmission of sound to Eleanor Drive.

The resident complains that the Mill is much louder at some times than others, but these times do not appear to correlate with any unusual activities in the Mill. It has been suggested in previous reports that the explanation for this may be that high noise levels occur when a rather unusual weather condition called 'temperature inversion' occurs. I believe that the sounds that I have heard do tie in with this theory, and my explanation of it is as follows.

Eleanor Drive lies to the West of the Mill, about 1300m from PM6. The intervening terrain is largely flat, and many of the sound sources in the Mill are 15 metres or so above ground level. The important acoustic aspects of this location are illustrated in Figure 6. It may be seen that there is no direct line of sight to any of the noise sources because other buildings in the Mill form barriers: the RCF building is particularly important in this respect. In Figure 6, the sight line from a 'typical' source in PM6 is shown: the effective height of the barrier formed by the RCF building is about 7.5 metres. A barrier of this size gives a very significant shielding effect: I have set out the equation for sound level below, so that the various elements are shown as clearly as possible.

$$\begin{array}{r} \text{SWL} \quad \text{Dist} \quad \text{DI} \quad \text{Atmos} \quad \text{Shielding} \\ \text{SPL at Eleanor Drive} = 123\text{dBA}/134\text{dBC} - 62 + 3 - 11 - 3\text{dBA}/0\text{dBC} - 18\text{dBA}/11\text{dBC} \\ \text{(For all of Mill)} \quad \quad \quad = 32\text{dBA}/53\text{dBC} \end{array}$$

The blue lines in Figure 6 can be viewed as sound 'rays' from source to receiver. These 'rays' are straight for small distances, but can be caused to curve over longer distances by weather conditions. If the rays are curved downwards, it is possible for the sound level at the receiving point to be higher than one would normally expect (and vice versa). The most favourable set of conditions for this to happen is when a gentle breeze from East to West is coupled with a 'temperature inversion', where the air at ground level is colder than a layer at a higher level. Both conditions can cause downwards curving. The two do not necessarily occur together, but if they do, the curving effect is additive.

$$\begin{array}{r} \text{SWL} \quad \text{Dist} \quad \text{DI} \quad \text{Atmos} \quad \text{Shielding} \\ \text{SPL at Eleanor Drive} = 123\text{dBA}/134\text{dBC} - 62 + 3 - 11 - 3\text{dBA}/0\text{dBC} - 8\text{dBA}/5\text{dBC} \\ \text{(For all of Mill)} \quad \quad \quad = 42\text{dBA}/59\text{dBC} \end{array}$$

In Figure 7, the sight line from the exhaust chimney of the Nash Blowers in PM3/4 is shown: the effective height of the barrier formed by the RCF building in this case is about 4.5 metres. The sound from the exhaust has a very powerful tone at about 70Hz, and a low frequency tone is less well shielded by a barrier (a 'softer' shadow is thrown). The calculation in this case becomes:

$$\begin{array}{r} \text{SWL} \quad \text{Dist} \quad \text{DI} \quad \text{Atmos} \quad \text{Shielding} \\ \text{SPL at Eleanor Drive} = 111\text{dBA}/133\text{dBC} - 63 + 3 - 11 - 3\text{dBA}/0\text{dBC} - 9\text{dBA}/9\text{dBC} \\ \text{(For PM3/4 Exhaust)} \quad \quad \quad = 28\text{dBA}/53\text{dBC} \end{array}$$

5.3 Mechanism for abnormal transmission of sound to Eleanor Drive (continued).

If the shielding effect of the RCF building is lost, in the case of a temperature inversion, the calculation becomes as follows. If we compare Figures 6 and 7, it is also clear that noise from the exhaust of PM3/4 requires less steepness of curving of the sound ray than many other important sound sources in the Mill, so is likely to be one of the first to become audible in Eleanor Drive when an inversion condition occurs.

	SWL	Dist	DI	Atmos	Shielding
SPL at Eleanor Drive =	111dBA/133dBC	- 63	+ 3	- 11	- 3dBA/0dBC - 0dBA/0dBC
(For PM3/4 Exhaust) =	40dBA/62dBC				

All the above calculations must be viewed as approximations, but the results fit fairly well with the sound levels actually measured in Eleanor Drive. I would draw some conclusions from them as follows.

- The Mill is inaudible in Eleanor Drive for much of the time.
- However, this location is quite sensitive to the effect of temperature inversion, since it can cause a large part of the shielding effects normally present to be lost.
- The geometry, and the nature of the noise, mean that the exhaust of the Nash machines of PM3/4, is particularly likely to be heard.
- However, if it was silenced completely, the reduction in sound level, measured as dBA, is likely to be quite small, because the 'overall' sound from the rest of the Mill is significant, too.

Finally, a calculation for the sound level due to the new Runtech machines, in normal weather, is as follows. Considering the result from this, I believe it is highly unlikely that these machines can be heard in Eleanor Drive at any time.

	SWL	Dist	DI	Atmos	Shielding
SPL at Eleanor Drive =	120dBA/120dBC	- 62	+ 3	- 11	- 13dBA/9dBC - 28dBA/26dBC
(For Runtech m/cs) =	9dBA/15dBC				

6.0 Assessment of the sound levels in Eleanor Drive.

British Standard BS4142:2014 ‘Methods for rating industrial and commercial sounds’ is the most widely used method for rating sounds affecting residences. A brief summary of it is given in an appendix herewith. The essence of the rating method is to compare the 'specific noise level' outside the residential facade, which is the sound level that is due to the Paper Mill in this case, with the background sound level that would exist in its absence. Rating calculations for Eleanor Drive are as follows: they are based on the levels tabulated in section 5.1 above.

For 'normal' weather conditions.		
Paper Mill specific sound level:	Daytime	Midnight
Correction for tonal or other content:	<30dBA	<30dBA
Rating level:	+0dBA	+0dBA
Background level:	30dBA	30dBA
Rating over background:	38-47dBA	31-42dBA
Conclusion:	-8 to -17dBA	-1 to -12dBA
	No adverse impact	

6.0 Assessment of the sound levels in Eleanor Drive (continued).

For temperature inversion conditions.	Daytime	Midnight
Paper Mill specific sound level:	41-45dBA	41-45dBA
Correction for perceptible tonal content:	+4dBA	+4dBA
Rating level:	45-49dBA	45-49dBA
Background level:	38-47dBA	31-42dBA
Rating over background:	-2 to +11dBA	+3 to +18dBA
Conclusion:	Significant adverse impact, especially at night	

The current version of BS4142 suggests strongly that the context of a noise situation should be considered, rather than merely relying on the numerical result from the rating calculation. It seems to me that this suggestion is particularly relevant in a case, such as this, where the complaint situation only occurs from time to time. I suggest the following factors may be considered relevant.

- The sound of the Mill was very obvious on the evening when I heard it, but the sound levels were not particularly high.
- The background noise level in the area, due to traffic, is often as high, or higher, than the observed level of noise from the Mill. It should be said, however, that the traffic noise level is also very variable. If a 'Mill noise event' occurs at night, the traffic noise level is likely to be lower than Mill noise.
- It is not possible to say how often Mill noise events will occur. However, I have only heard it in one visit out of ten. On reviewing the weather history data for that night on weatherunderground.com, I find that the wind turned round, and that the wind direction was only Easterly for a short period at around midnight. On this basis, it seems likely that the 'abnormal noise' situation only lasted for three or four hours, at most.
- When a Mill noise event occurs, it must affect quite a wide area in Kemsley. On the night I heard it, I walked around in the green in Eleanor Drive, and it was audible everywhere there. Nonetheless, there is only one complainant, as far as I am aware.
- Taking all these factors into account, I suggest it is reasonable to conclude that the impact of Mill noise in Eleanor Drive is quite small, overall.

6.0 Possible noise control measure.

The sound from PM3/4 Nash pumps exhaust has been noted above, and it could be eliminated by fitting a silencer at some point in the ducting. I have not attempted to specify the silencer at this stage: it would need to be quite large to be effective at the very low frequency of the tone in the noise, so questions of how to support it, and where to position it, will arise. I suspect the exhaust airflow must contain a significant amount of water, which may mean the silencer will need to be made from stainless steel. I suggest a 'budget guesstimate' for the cost to supply and install such a silencer of £20,000.

I would repeat: I would expect the effect of fitting this silencer to be to eliminate the tone at Eleanor Drive, as audible in abnormal weather conditions, but not to reduce the overall level of Mill noise (dBA) by very much.

Appendix.

BS4142:2014 'Methods for rating and assessing industrial and commercial sounds'

Industrial noise affecting housing is covered by the Environmental Protection Act 1990, which is administered by the Local Authority. There is a British Standard that the Authority may use to assess any given case: this is BS 4142:2014 'Methods for rating and assessing industrial and commercial sounds'. This Standard has recently replaced its predecessor, dated 1997. In essence the method consists of comparing the 'industrial' noise level measured outside the houses with the background level which would exist in the absence of the industrial noise. The greater the difference between the two, the greater the 'adverse impact' of the noise is judged to be.

In the context of the Standard, the 'noise level at the houses' is the **specific noise level** that is attributable to the industrial operation in question. If this noise has an irritating feature such as tonality or repeated impulses, a number of penalties, ranging from 3dBA upwards, may be added to the specific level before making the comparison: this adjusted level is called the **rated noise level**. The **background noise level** is always lower at night than by day, so if the noise continues through the night the Standard automatically sets a stricter criterion than applies if it does not.

BS4142 uses two ways of representing noise levels, L90 and Leq, as follows.

L90 is the level which is exceeded for 90% of the time and thus represents more or less the lowest level one is likely to measure, given that the actual level varies all the time. In the standard, L90 is used to define the background noise level, the view being that this measure will eliminate events such as occasional passing traffic, so that a 'true' figure for background level will be recorded.

Leq is a kind of average of the actual varying levels, and in BS4142 it is used as the measure of the specific noise level. Because of the way the average is taken, the Leq figure is in fact weighted somewhat towards the higher end of the range of actual levels. It is intended that the Leq should be a measure of how annoying or disturbing the noise is.

At the end of the calculations, the method produces a number referred to as **rating over background**, being the difference between the rated noise level and the background noise level. The greater the difference, the greater the **adverse impact** of the noise is judged to be. A difference +10dBA is described as a **likely to be an indication of a significant adverse impact**. +5dBA and +0dBA are described as having an **adverse impact** or **little impact**, depending on context. The Standard emphasises the importance of context, when considering the result from this numerical procedure.

It is, perhaps, worth pointing out that if the noise level is constant, as is normally the case for Kemsley Mill, then L90 and Leq are equal. Industrial noises from major machinery generally have much of their acoustic energy at low frequencies, and this is not always well represented in a dBA reading, since the A weighting emphasises contributions at higher frequencies. For this reason, I generally record dBC, which represents the low frequency element of the sound, as well as dBA. Be aware, however, that the method of BS4142 is based on dBA values (only).



Figure 1. Satellite Map.

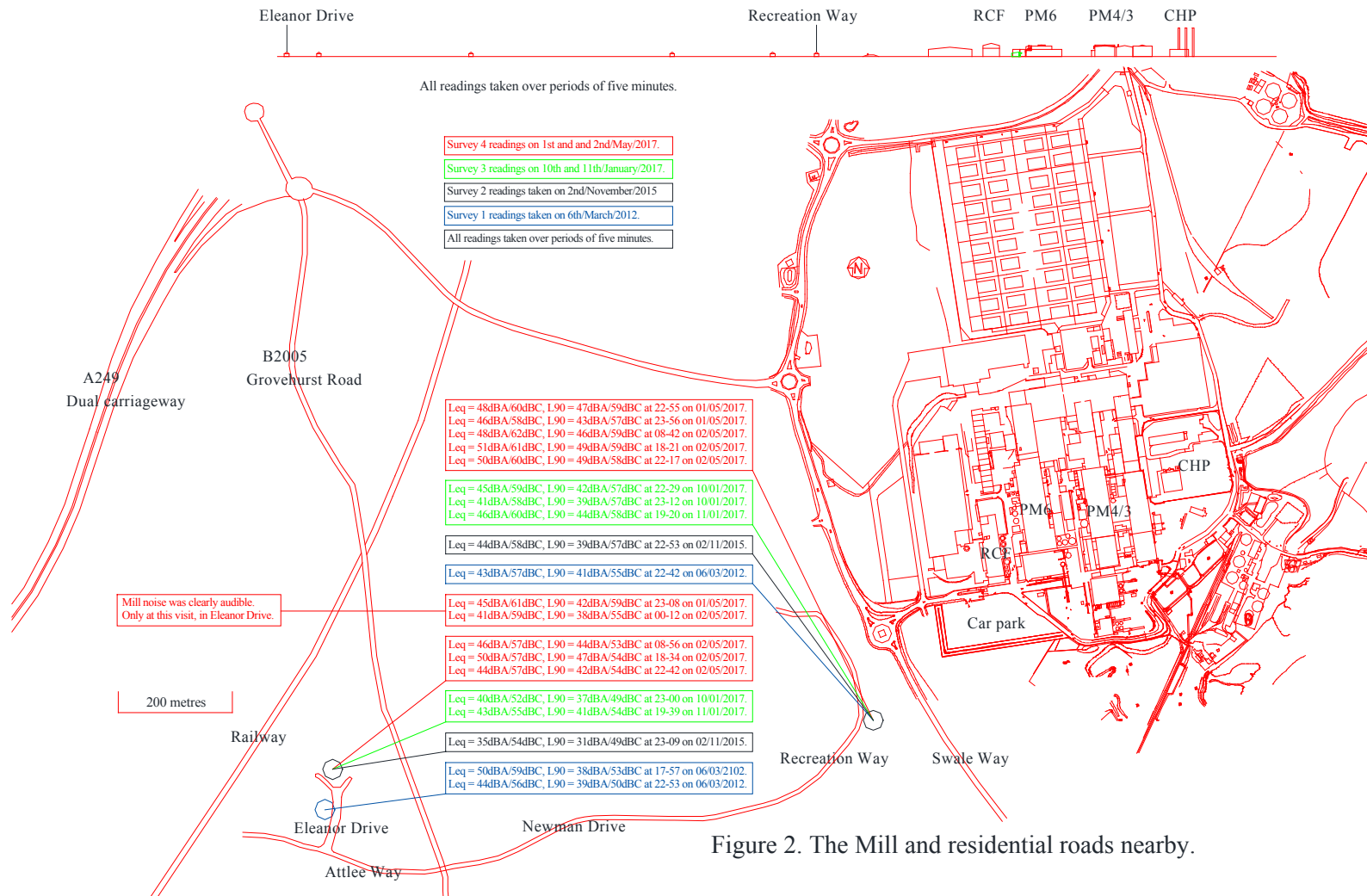
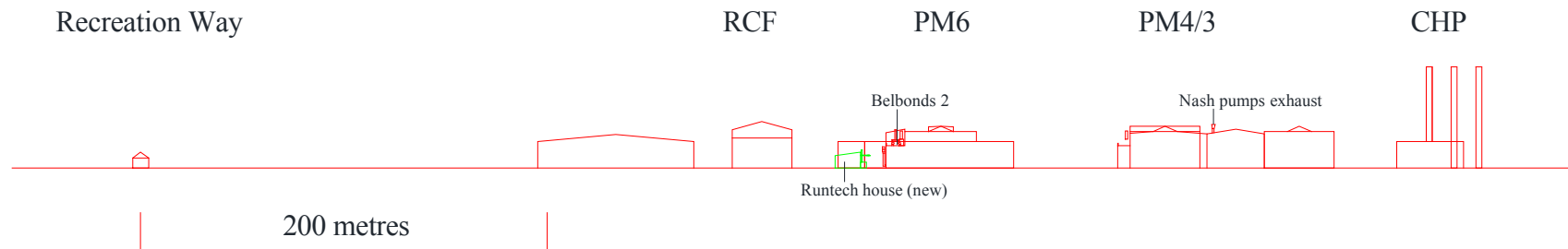


Figure 2. The Mill and residential roads nearby.



Cross section is taken through Eleanor Drive (about 800m off to left) and the main mill buildings. Note how the PM buildings are shielded by the RCF buildings: this reduces noise levels to the West of the Mill (in normal atmospheric conditions).

Figure 3. Cross sectional view.

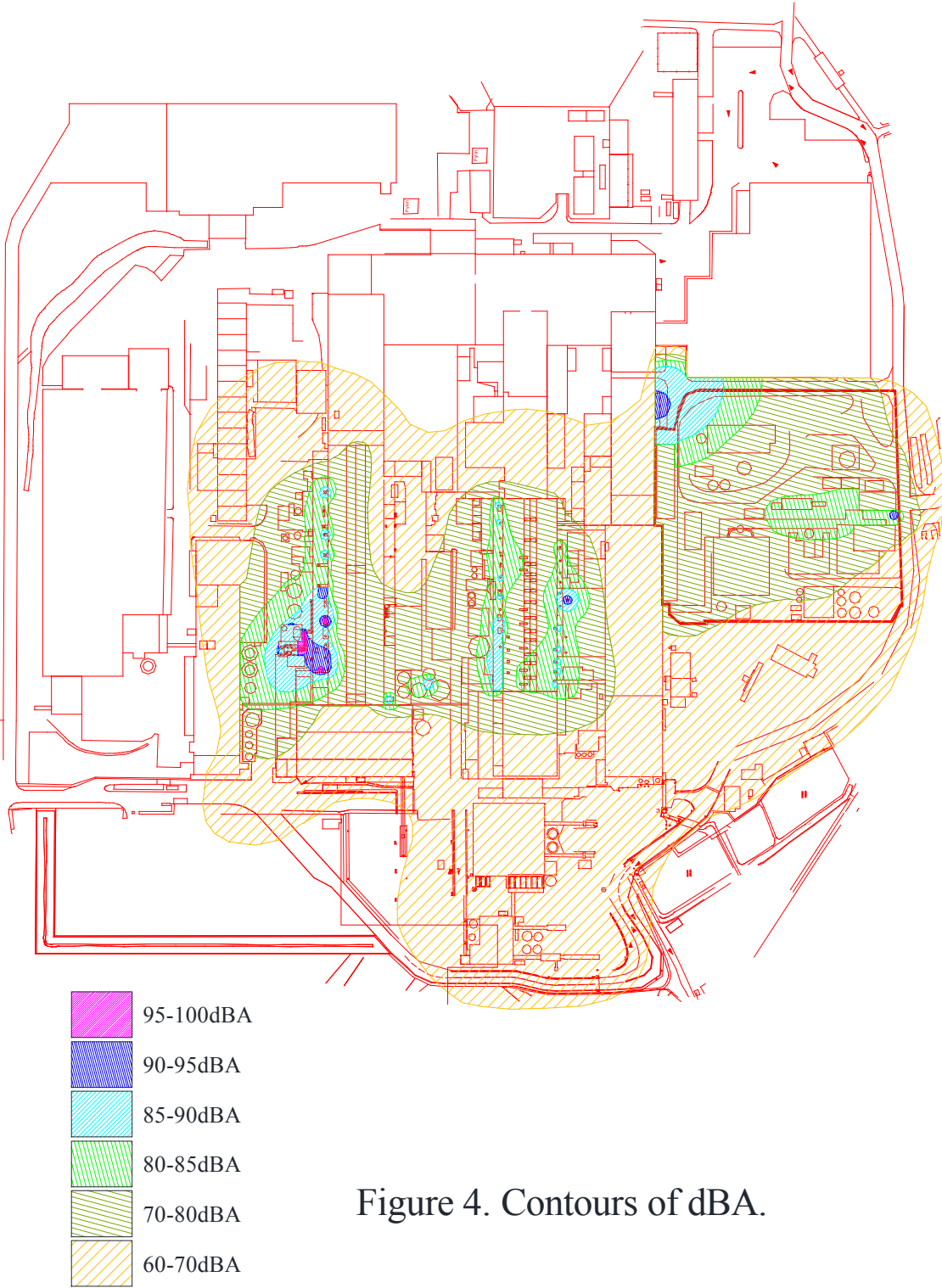
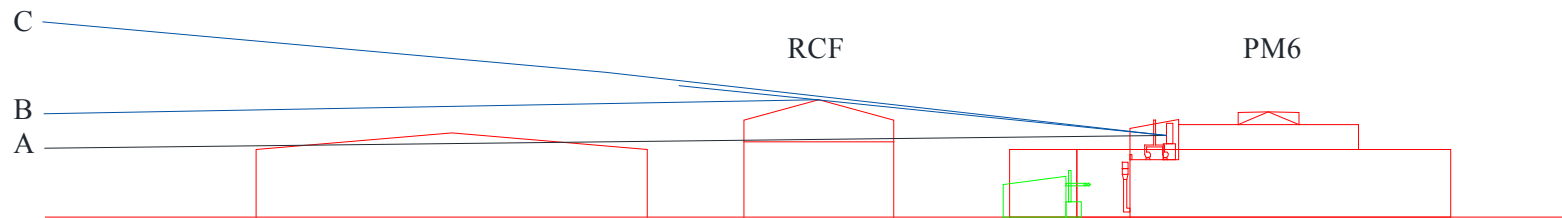
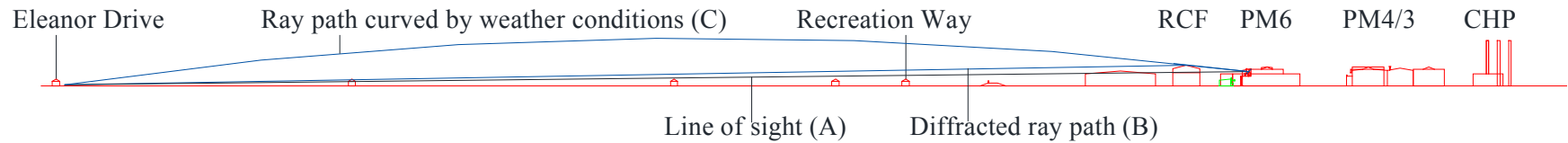


Figure 4. Contours of dBA.

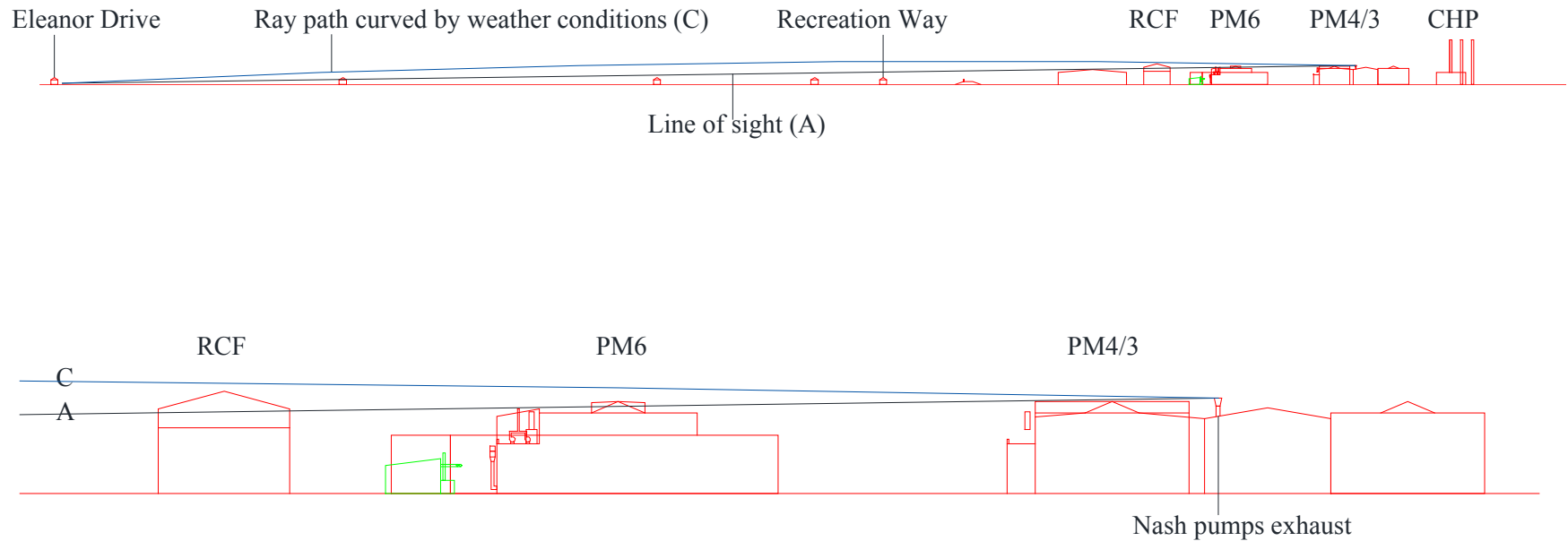


Figure 5. Contours of dBA.



- C = Sound ray curved downwards in 'abnormal' weather conditions.
 - B = Sound ray diffracted over top of RCF building in 'normal' weather conditions.
 - A = Line of sight from a typical sound source to Eleanor Drive.
- 'Abnormal' weather in this context has a gentle breeze from the East, a temperature inversion, or both.

Figure 6. Possible weather influence on sound levels in Eleanor Drive.



C = Sound ray curved downwards in 'abnormal' weather conditions.
 A = Line of sight from exhaust duct to Eleanor Drive (broken by PM6 and RCF).
 Note that curvature of ray C, to pass over RCF, is much less than for most sources on PM6.
 'Abnormal' weather in this context has a gentle breeze from the East, a temperature inversion, or both.

Figure 7. Sound 'ray' paths from PM3/4 Nash exhaust to Eleanor Drive.

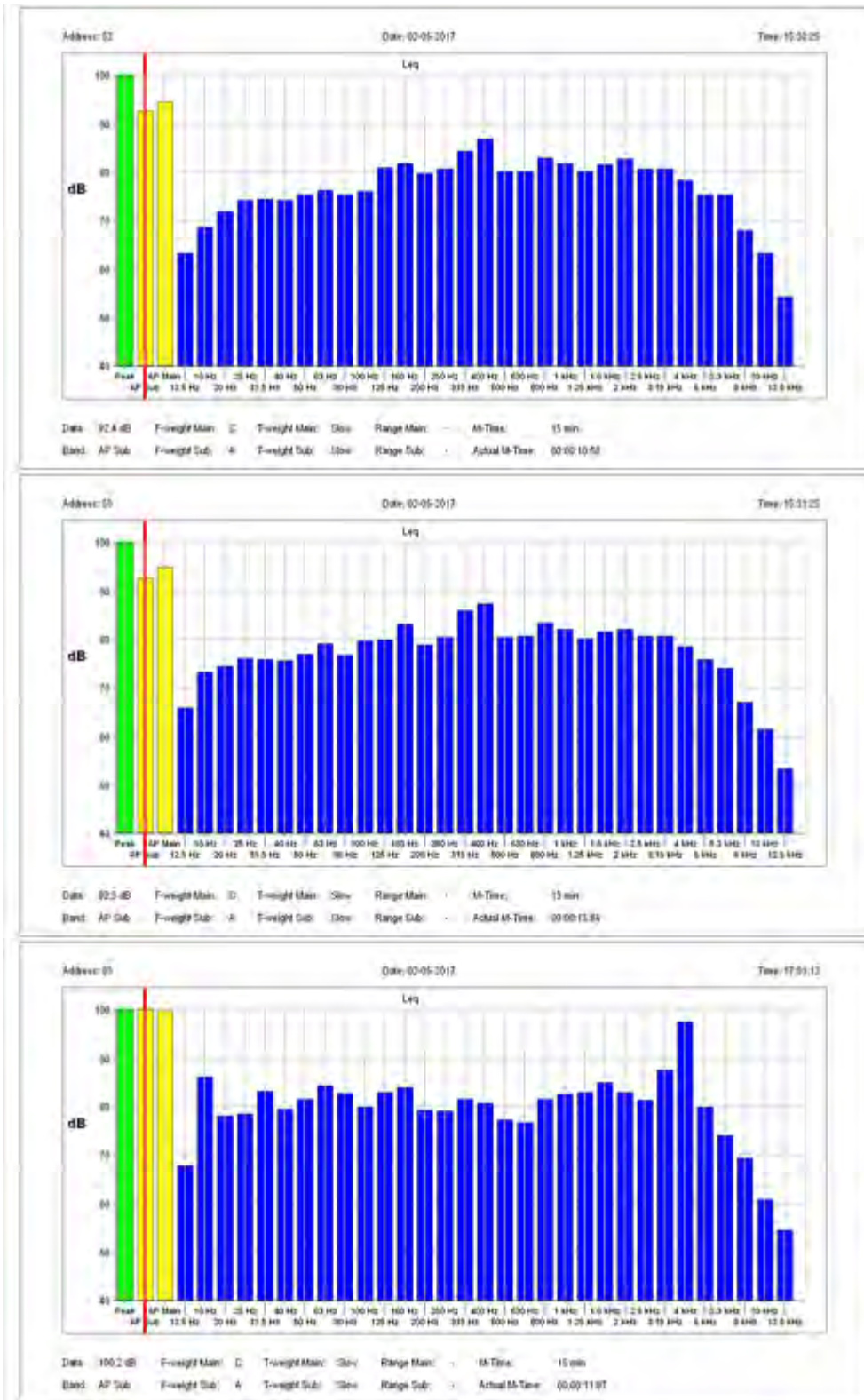


Figure 8A. Readings near prominent sources. The red marker is dBA.

Runtech blowers. Top: Outside the sliding doors. Middle: Outside disc filter building, at opening in wall. Bottom: Close to the ducts at the back of the building.

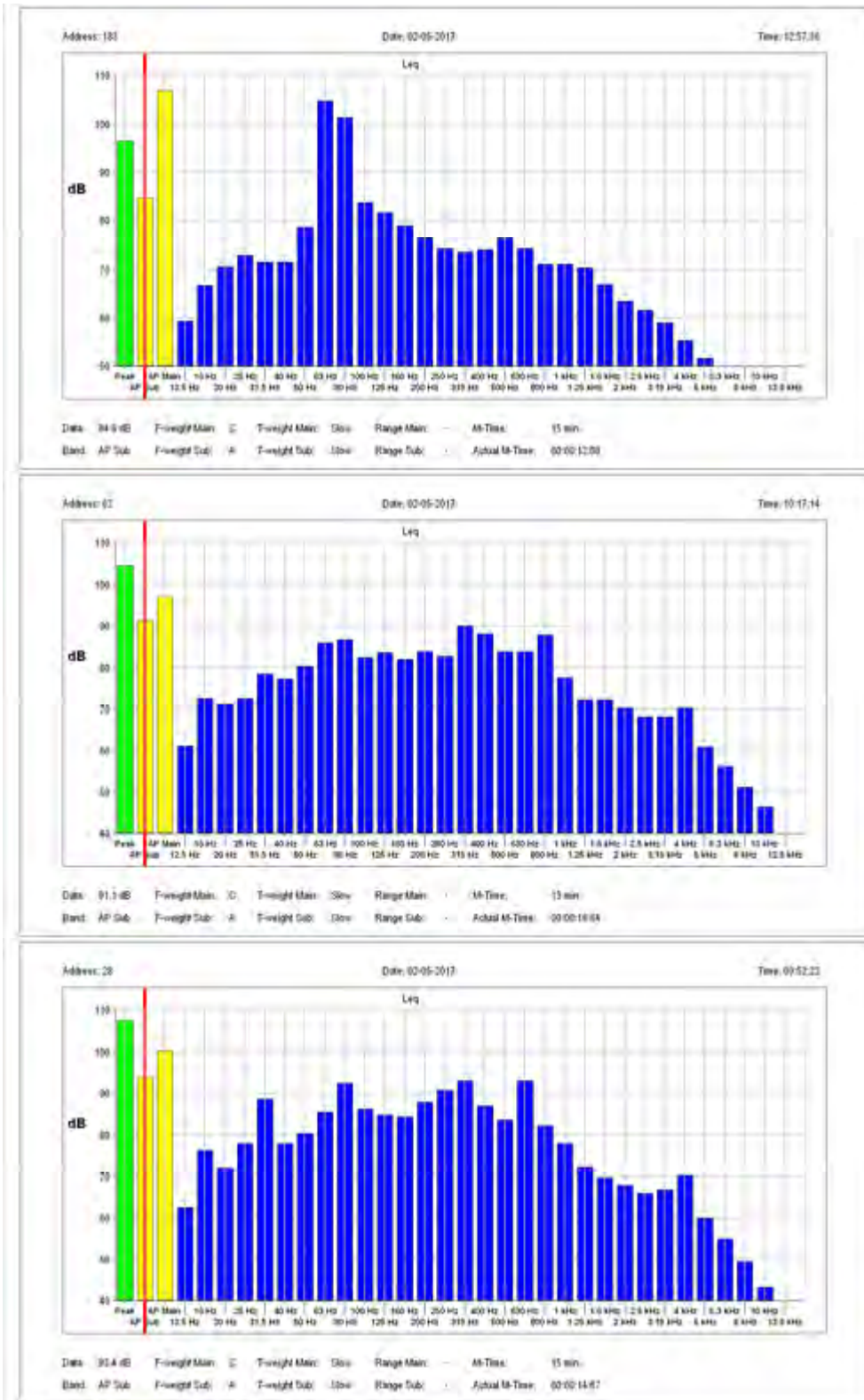


Figure 8B. Readings near prominent noise sources. The red marker is dBA.

Top: About 7m from PM3/4 Nash pumps exhaust. Middle: About 5m from Belbond 2A/2B exhaust. Bottom: About 2.5m from Belbond 1A exhaust.

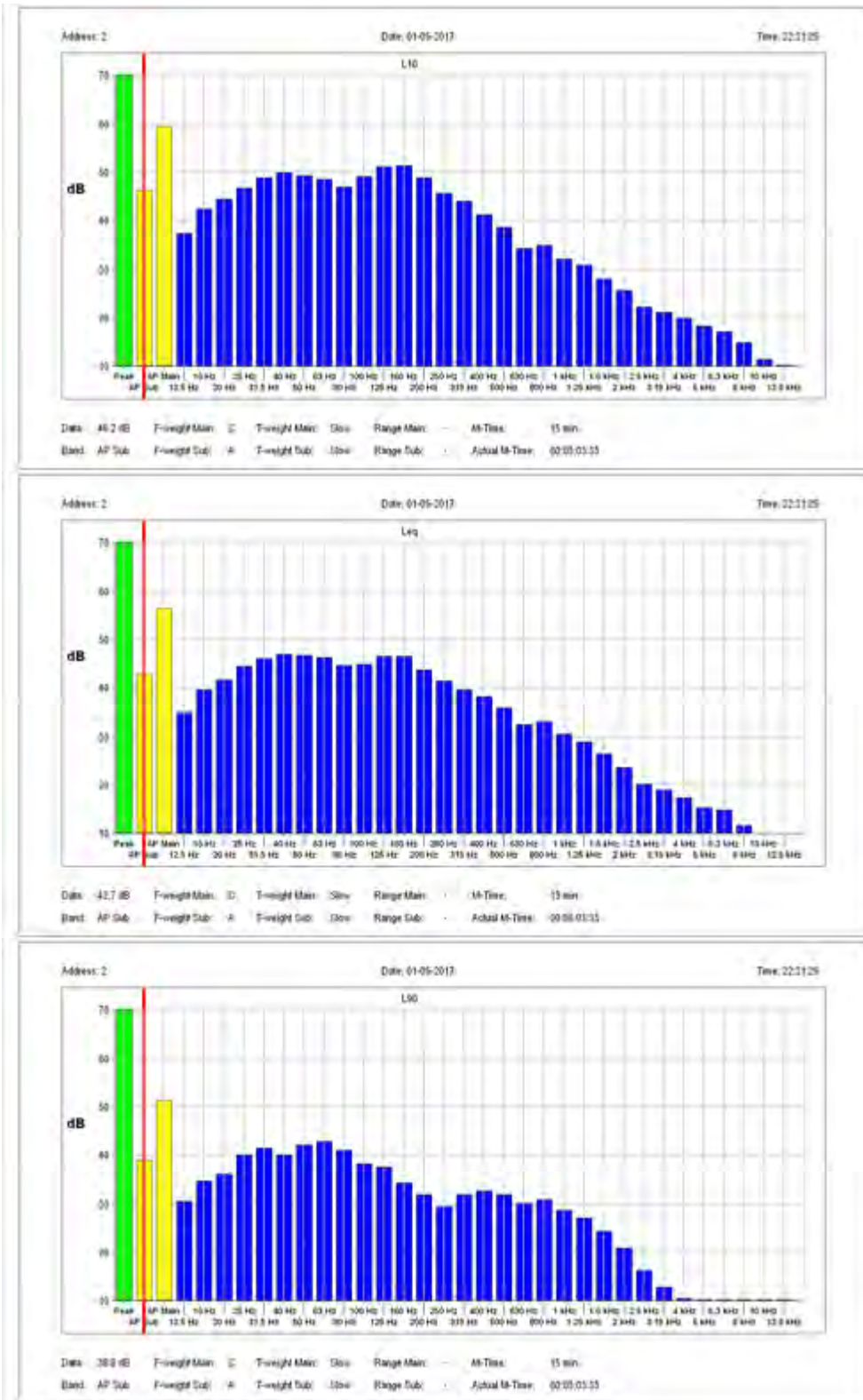


Figure 9A. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum).
 Reading at 10-22pm, when a 'high spot' for 63Hz band was not sought.

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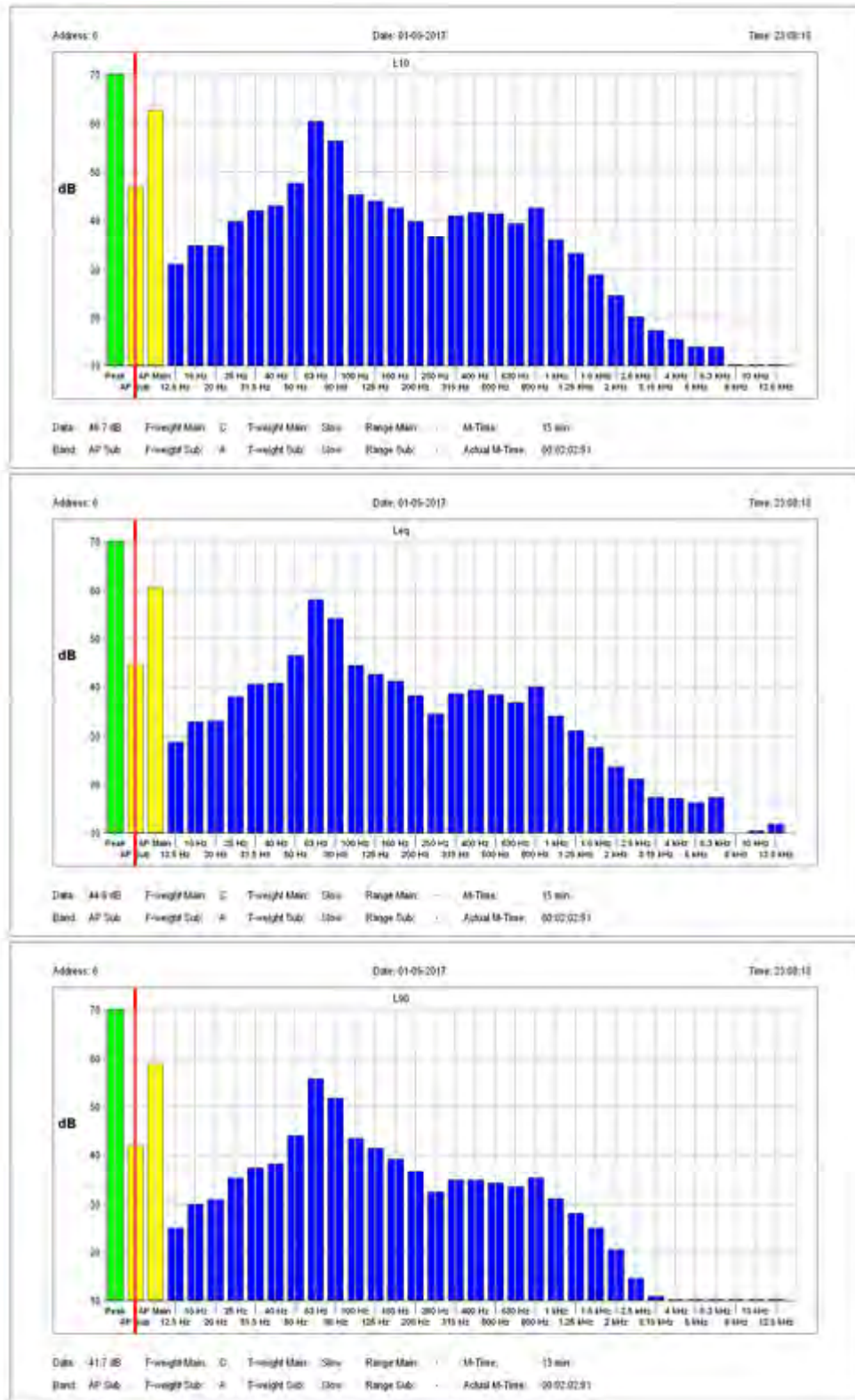


Figure 9B. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum).
 Reading at 11-08pm, taken at a 'high spot' for the 63Hz band reading.

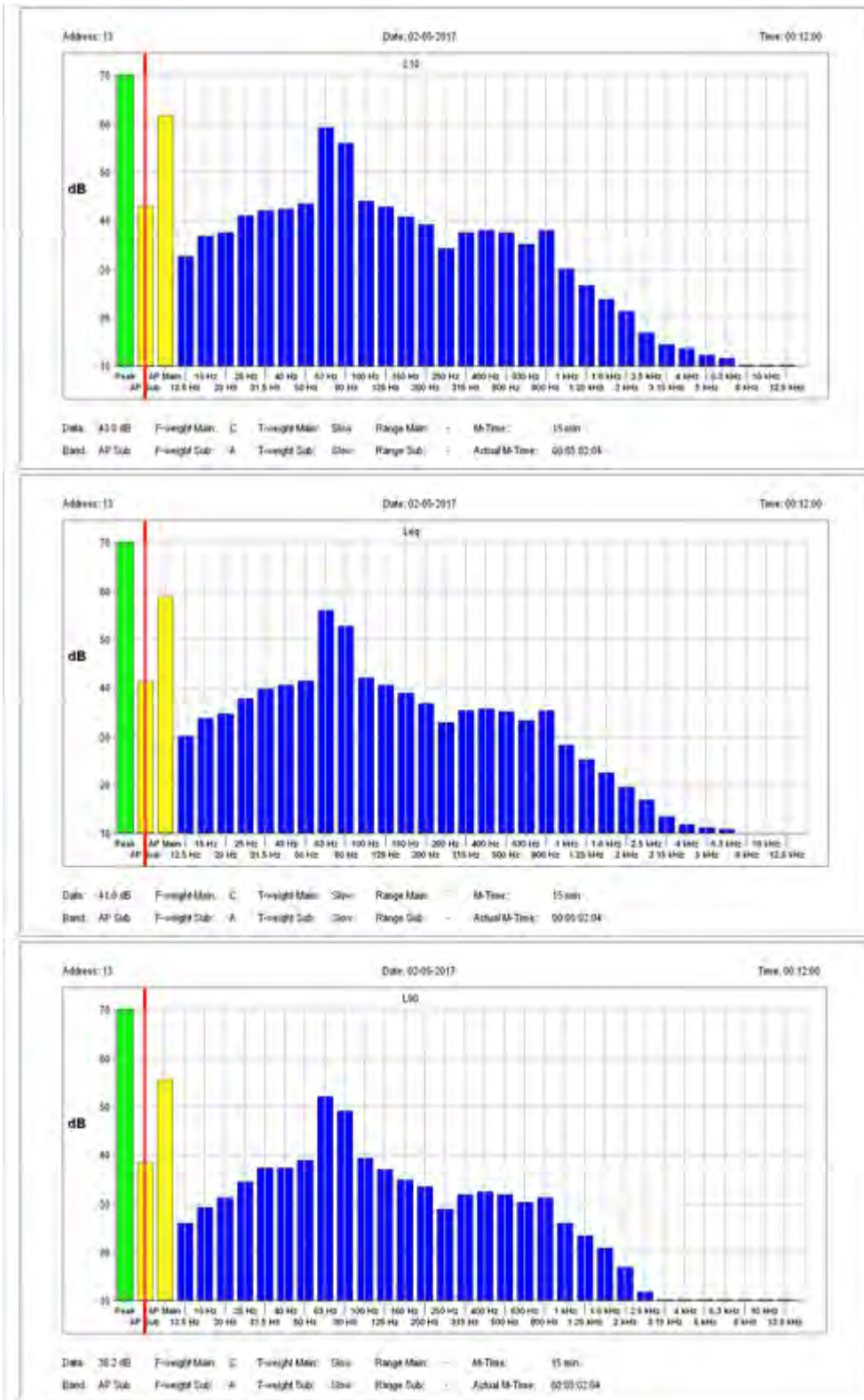


Figure 9C. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum).
Reading at 00-12am, taken at a 'high spot' for the 63Hz band reading.

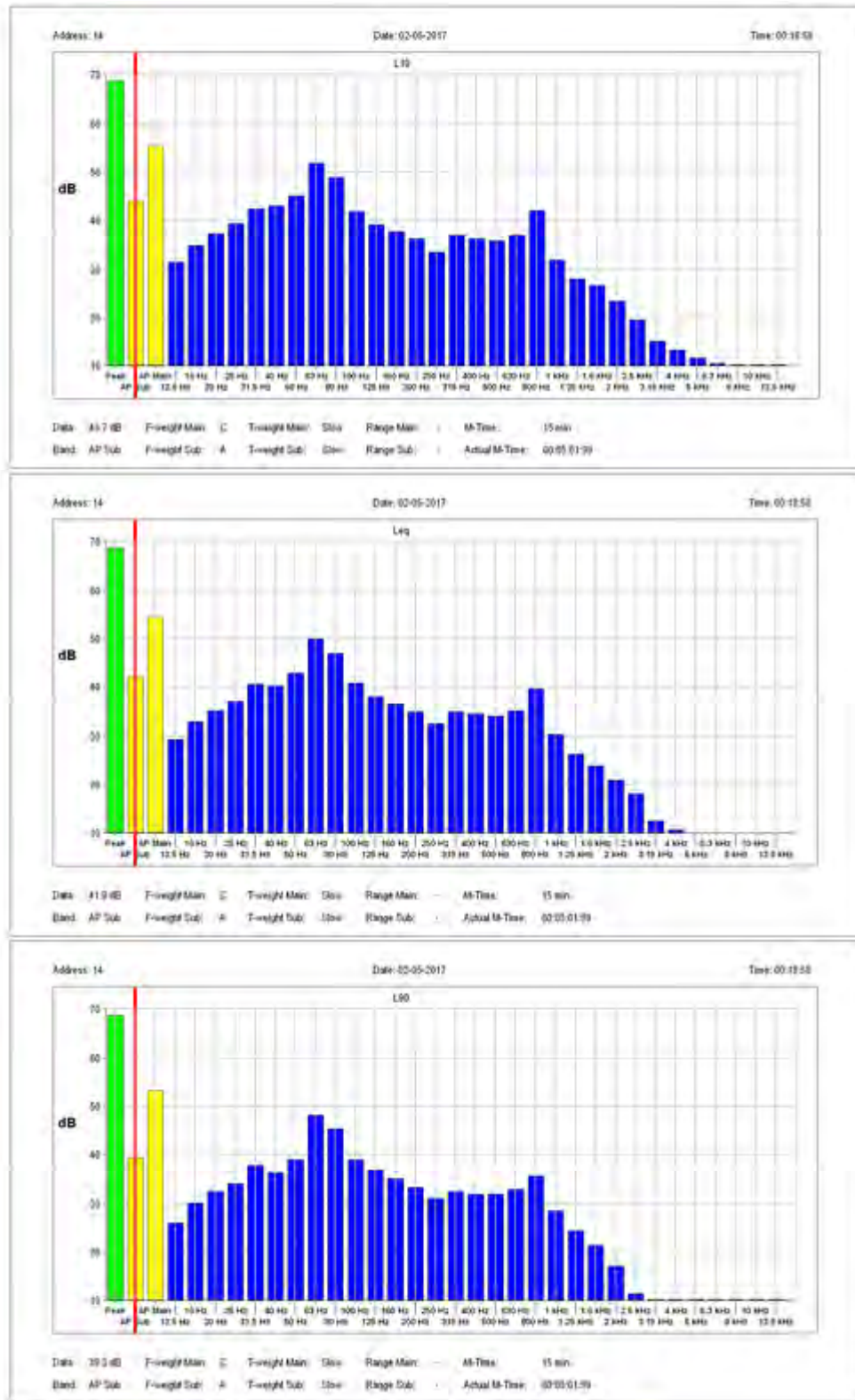


Figure 9D. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum).
 Reading at 00-19am, taken at a 'high spot' for the 63Hz band reading.



Figure 9E. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill not audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum). Reading at 08-42am. This was traffic noise. Hump at 4kHz was birdsong.



Figure 9F. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill not audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum). Reading at 6-34pm. This was traffic noise. Hump at 4kHz was birdsong.

INDUSTRIAL NOISE REDUCTION LTD

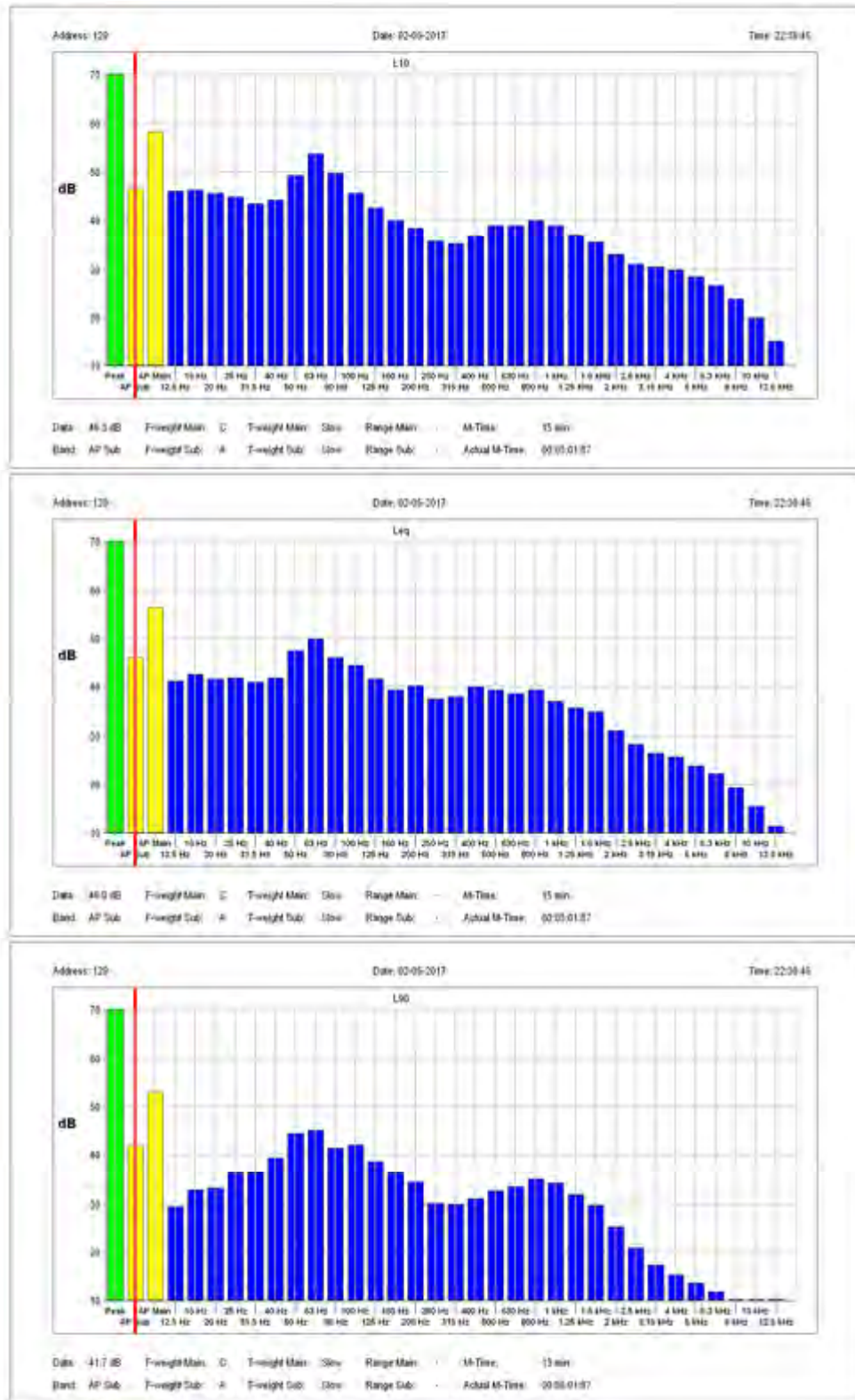


Figure 9G. Survey 4: 2nd/May/2017, outside 13 Eleanor Drive. Mill not audible.

Top: L10 (near maximum). Middle: Leq (average). Bottom: L90 (near minimum). Reading at 10-37pm. This was traffic noise.