

Email to : Sally Pike
A1 Wokingham

Email address : Sally@a1groupuk.com

From : Russell Tipping

Date : 17 August 2020

Subject : Best Practicable Means (BPM) Audit : Baler

Report No : R9620 Rev1

1.0 Scope and objective

The Industrial Noise and Vibration Centre (INVC) was requested by Sally Pike of A1 Group to perform a Best Practicable Means audit and investigate the noise generated by the Lefort baler.

The objective of the audit is to identify the components of the unit that contribute to the measured noise level and to present the best practicable means of minimising noise generated by the unit.

A requirement of A1's environmental permit is to periodically update and implement a noise management plan to ensure noise radiated off-site is minimised to as low as reasonably practicable. This report is intended to help determine what actions may be necessary, specifically for the Lefort Amazone 1000TS.

Noise measurements were performed in Foxhill woods and in the gardens of properties on Limmerhill Road and Tiffany Close. Detailed noise and vibration measurements were then performed close to the baler to help match the frequency signatures of the different equipment components. Calibrated digital recordings were also made to allow post-processing and frequency analysis of all measurements.

Noise measurements were made using calibrated instrumentation to the Type 1 specification of BS 60651 : 1994 and BS EN 60804 : 1994. The meter was calibrated before and after each set of measurements.

The site was visited on 11 March 2020. All measurements were performed between 10:00 and 14:00 hours.

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2.0 Results and discussion

Figure 1 shows the location of the baler and the off-site measurement locations. These have been labelled as follows:

1. Foxhill woods
2. Tiffany Close
3. Limmerhill Way
- A. Location of the baler



Figure 1 *Measurement locations*

Figure 2 shows a comparison of the measured frequency spectra at the three off-site locations when the Lefort baler was operating.

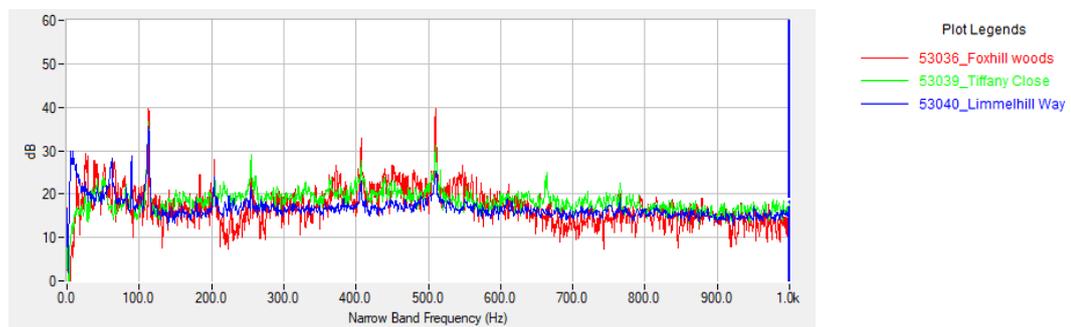


Figure 2 *Measured frequency spectra at Locations 1 to 3*

Analysis of the spectra above shows distinct tones at the following frequencies:

- 14 Hz (+ harmonics)
- 113 Hz
- 203 Hz (+ harmonics)
- 255 Hz (+ harmonics)

Figure 3 shows a comparison of the measured frequency spectra in Foxhill woods, in the site car park and close to the unit. Comparison of the measured spectra indicates that the tones identified are generated by the Lefort baler.

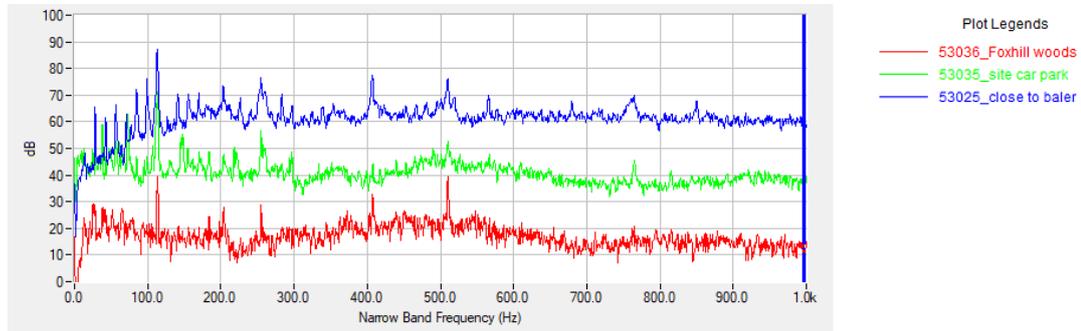


Figure 3 Comparison of measured spectra in Foxhill woods, close to reception and close to baler

The hydraulic power pack of the baler is powered by two V8 4-stroke diesel engines. Each engine drives 2 high speed axial piston pumps which compress the hydraulic fluid.

The engines have been designed to have an operating speed of ~1700 rpm. This corresponds to a rotational frequency of 28 Hz (1700 rpm/60) and an engine firing frequency (FF) of ~113 Hz. The 113 Hz tone measured on and off-site can be attributed to the engine firing frequency.

The low frequency tones measured at 14 Hz and harmonics are likely to be multiples of the camshaft rotation, ie half the engine rotational frequency.

Figure 4 below shows a comparison of the noise level when the engines are idling and when they are under load. From this it can be seen that both the 203 Hz and the 255 Hz tones (+ harmonics) appear when the unit goes under load. The higher frequency tones measured at 255 Hz + harmonics can be related to, and are multiples of, the 28 Hz rotational frequency of the engine/pumps.

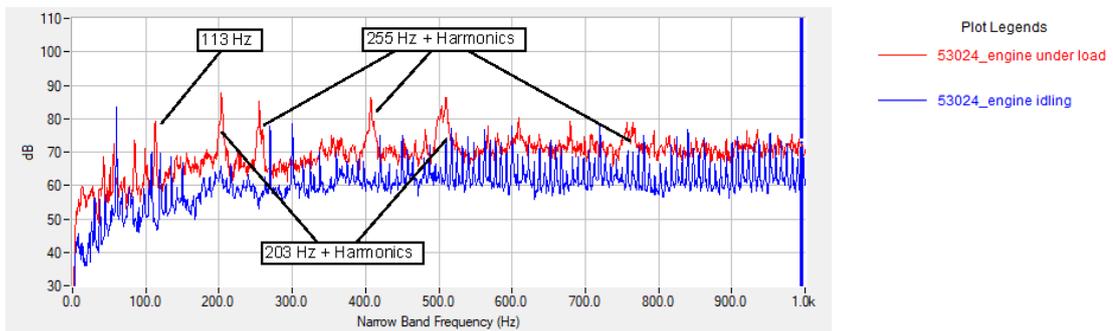


Figure 4 Comparison of the measured frequency spectra for under load and idling

The 203 Hz tone + harmonics also appear when the power pack engages, however, these do not appear to be multiples of the measured 28 Hz rotational frequency. During the baler operation cycle the engine speed fluctuates, this variation is thought to be the root cause of the 203 Hz tone.

The sets of tones are generated and radiated by both the engine and pumps. In addition, vibrational energy generated by the engine/pumps is transmitted to the subframe and hydraulic tank and subsequently re-radiated as noise.

The precise noise source features that are the causes of the complaints can be ranked in order of subjective effect as follows:-

1. engine firing frequency + harmonics
2. hydraulic pump frequency + harmonics

These noise features must be mitigated in rank order of the subjective effect at the complainants to ensure maximum benefit at minimum cost. The noise control ranking is as follows:-

1. improved engine exhaust silencing
2. design vibration damping, control (possible silencers) and acoustic close shields to reduce hydraulic tonal content
3. additional secondary hydraulic noise control measures (based on the results of 2)
4. add tuned acoustic absorbent to a limited area of the existing barrier

It will be necessary to implement items 1 and 2. As noise nuisance is subjective, it may or may not be necessary to implement items 3 and 4 to ensure that there are no further complaints.

This process and the ranked mitigation measures constitute Best Practicable Means in noise management from this source.

3.0 Noise control technology

Best Practice engineering source control techniques are recommended wherever practical. Whilst some of these modifications require specialist materials and fabrication techniques, with good organisation they can often be introduced as an extension to a maintenance schedule.

Where source control is not practical, more conventional options such as screens, enclosures and silencers may be recommended. Note that these measures are "additive" ie some screening can be retro-fitted after source modification if an additional noise reduction is required.

In each case, estimates of both the noise reduction that is likely to be practical and the costs are provided. Note that whilst these are estimates based on extensive and practical past experience, the final noise reduction that is achieved will sometimes depend on the preferred trade-off between various choices (e.g. between access or and the ultimate noise control performance).

4.0 Noise control options

4.1 Exhaust silencing

Current noise level in Foxhill woods	:	~39 dB at engine FF
Target noise level	:	5 to 10 dB reduction at engine FF



Figure 5 *Current silencer design*

Comment and diagnosis

Analysis has shown that the ~113 Hz tone can be attributed to the engine firing frequency. As the engine ramps up and down the tone varies in magnitude and frequency. The highest break-out noise of the 113 Hz tone was measured at the silencer outlet.

Noise control recommendations

Noise levels can be minimised by improving the silencer design. **INVC** will review the design of the current silencer and provide design details for upgraded silencers.

4.2 Hydraulic power pack modifications

Current noise level in Foxhill woods	:	28 to 33 dB at tones of interest
Target noise level	:	5 to 10 dB reduction of tones

Comment and diagnosis

Analysis has shown that higher frequency harmonics of the engine and pumps' running speed can be detected at the Foxhill measurement location. Although the source of the noise is the engine/pumps, the problem is created by vibrational energy transmitted to the subframe and the hydraulic tank and re-radiated as noise.

Noise control recommendations

4.2.1 *Vibration isolation*



Figure 6 *Current piping and mounting*

To minimise the level of vibrational energy transmitted from the engine/pumps and re-radiated as noise from the power pack, it will be necessary to review the pipe geometries and introduce high efficiency damping and vibration isolation at specific points. Appendix A provides an outline of some of the required measures.

4.2.2 *Power pack modifications*

Noise levels generated by the engine/pumps within the power pack can further be reduced by:

- addition of close-fitting acoustic screens
- addition of high performance damping in key areas
- addition of acoustic absorptive material to unit

None of the proposed noise control modifications will have any effect on system performance or engine cooling.

INVC will provide design details and material specifications for the above modifications.

4.3 Potential modifications to existing barrier (if required)

Figures 7 and 8 show the location and construction of the existing barrier. The barrier is constructed from a combination of corrugated steel and wood. If it should prove necessary, the attenuation from the barrier could be improved by fitting a limited area of tuned acoustic absorbent at key locations.



Figure 7 Location of existing barrier



Figure 8 Construction of existing barrier

5.0 Noise control recommendations

Once the preferred options and scope of the noise control programme have been decided, the next step would be to implement the following. This programme is designed to ensure that the noise control measures can be implemented quickly, conveniently and cost effectively.

- (i) Carry out additional measurements (as required), testing mock-ups where possible and discussing the options and operational constraints in detail with company engineers and, where appropriate, with an engineer from the selected fabrication and installation contractor.
- (ii) Develop detailed noise control recommendations for the selected options (including outline drawings and materials specifications) in conjunction with the contractor implementing the recommendations.

Note Sufficient information is provided (outline drawings, material specifications and potential suppliers) so that the noise control recommendations can be implemented (often as an extension to normal maintenance), either in-house or by local contractors.

- (iii) Liaise with company engineers (and / or the contractor) during implementation to ensure optimum performance of the modifications.

6.0 Cost and benefits

Benefits

This Best Practicable Means noise control audit provides definitive evidence of the precise causes of the noise complaints and what constitutes best practice to reduce noise levels sufficiently to eliminate future complaints.

Costs

The following table shows a summary of the costs associated with the noise reductions shown above. These are broken down into the following elements:-

- **INVC** development cost
Our consultancy costs associated with developing the design and liaising during implementation. The costs are provided both for considering each option as an individual project and for running all the projects in parallel.
- Development manufacture/install cost
These are the estimated costs for the process of the manufacture and installation of the modifications for the first of each type using an external contractor.

Note: whilst the **INVC** development costs are fixed, the other costs are estimates based on past experience and would be subject to confirmation by the contractor.

Cost Summary

Control option	Current level dB	Predicted level dB	INVC cost	Implementation cost
4.1 Silencer modification	39 dB @ FF	5 to 10 dB drop @ FF	£2450	<£2k
4.2 Vibration isolation and power pack modifications	28 to 33 dB at tones of interest	5 to 10 dB drop in tones	£6900	£4k - £8k
4.3 Barrier modifications	If required	If required	£590	~ £5k
Total INVC			£9350	
If projects run in parallel, total INVC cost			£7480	

All figures are exclusive of VAT and expenses at cost which will be charged in addition. Mileage is currently charged at 62p per mile. A copy of our terms of business is appended. Note that the full cost of the project will be invoiced with the noise control recommendations report unless alternative arrangements are made.

Let me know if you need any additional information at this stage or if you would like to discuss any of the above in more detail.

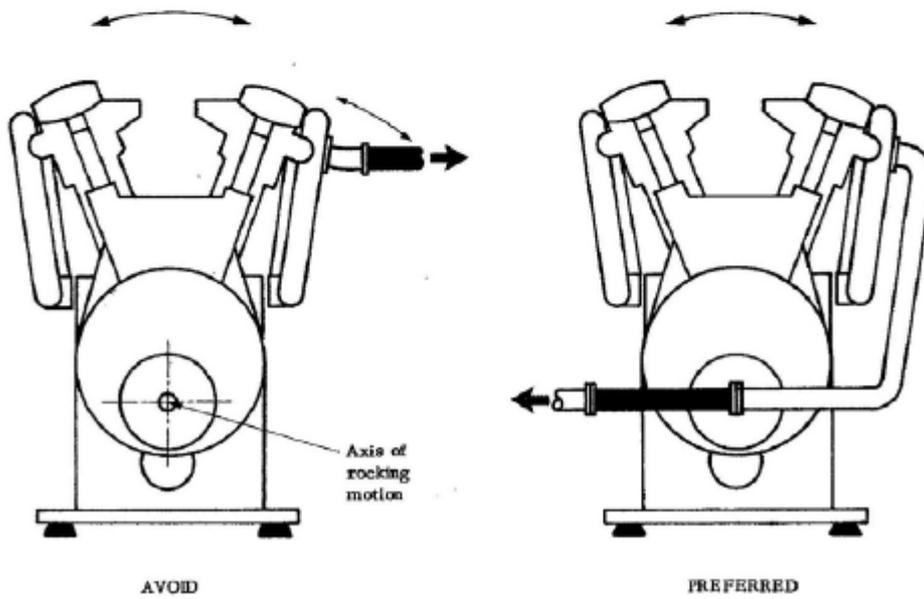
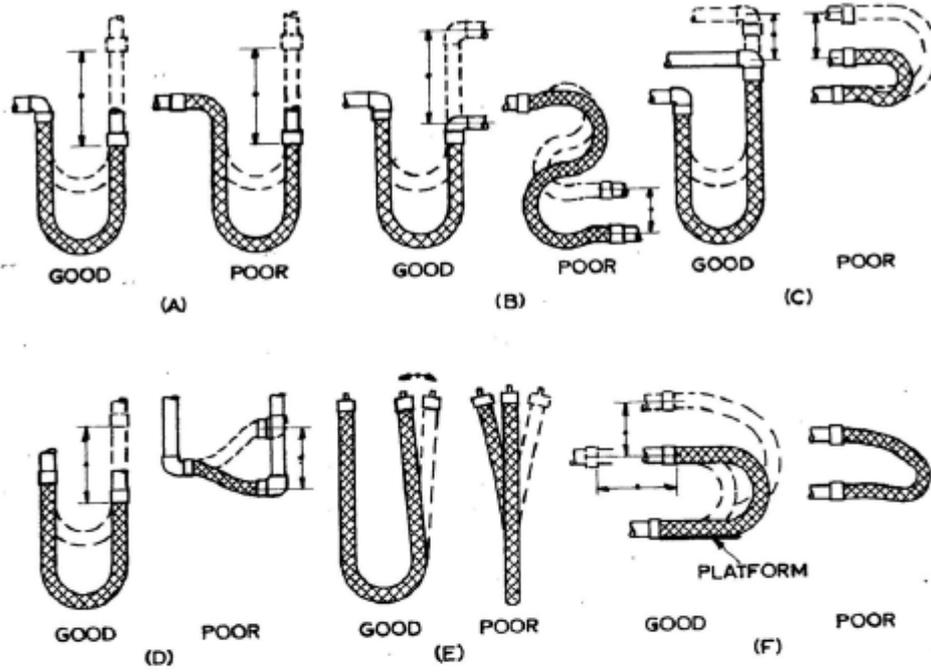
Author: _____



Russell Tipping

attach Terms of business

Appendix A – Flexible coupling examples





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Tel : 01753 698800 Email : consult@invc.co.uk web : www.invc.co.uk Fax : 01753 567988

TERMS OF BUSINESS

1.0 TERMS AND CONDITIONS

- (a) "Appointment" means the appointment of the Company by the Customer pursuant to the Proposal.
- (b) "Charges" means the charges set forth in the Proposal.
- (c) "Company" means Industrial Noise and Vibration Centre Limited.
- (d) "Company Equipment" means any equipment, plant, machinery, or any other material of any description used by the Company to perform the Services.
- (e) "Customer" means the party named as the Customer in the Proposal.
- (f) "Equipment" means any equipment, plant, machinery, or any other material of any description in relation to which the Company shall perform the Services.
- (g) "Intellectual Property Rights" means any design rights, utility models, patents, inventions, logos, business names, trademarks, domain names, copyright, moral rights, rights in databases, source codes, reports, drawings, specifications, know how, trade secrets, rights in software, rights in the nature of unfair competition and the right to sue for passing off and any other equivalent or similar rights to any of the foregoing in any jurisdiction, whether registered or unregistered.
- (h) "Location" means the place or places where the Services are to be performed as stated in the Proposal.
- (i) "Proposal" means a specification of works, describing the services to be provided by the Company to the Customer.
- (j) "Report" means any advisory document produced by the Company pursuant to the Proposal, which may recommend methods to reduce noise and vibration and may also recommend any equipment and components required therefor.
- (k) "Services" means those consultancy services referenced in the Proposal.
- (l) "Specified Purpose" means the purpose set out in the Proposal.
- (m) "Terms and Conditions" means these terms and conditions.
- (n) "Term" means the time period referred to in the Proposal.

2.0 PROPOSAL

The Proposal shall remain valid for a period of 30 days from the date issued. The Customer shall be deemed to have accepted the Proposal (a) by signing the Proposal and returning the Proposal to the Company within 30 days from the date issued; or (b) by issuing a purchase order which refers to the Proposal within 30 days from the date upon which the Proposal was issued. The Proposal shall be deemed to be accepted subject to these Terms and Conditions.

3.0 APPLICATION OF TERMS

- 3.1 The Customer accepts these Terms and Conditions to the exclusion of any terms or conditions stipulated, incorporated, or referred to by the Customer. Each party warrants to the other that it has not relied upon any representations not recorded herein. No amendment of the Terms and Conditions will be valid unless subsequently confirmed in writing by both parties by the signatures of an authorised representative of each party.
- 3.2 A reference to a particular law is a reference to it as it is in force for the time being taking account of any amendment, extension, application or re-enactment and includes any subordinate legislation for the time being in force made under it.
- 3.3 Words in the singular include the plural and in the plural include the singular.
- 3.4 Condition headings do not affect the interpretation of these Terms and Conditions.

4.0 TERM

- 4.1 Subject to Clause 12, the Appointment shall continue until the last day of the Term stated in the Proposal, or such other time as may be determined by mutual written agreement or until the Company shall have fulfilled its obligations by completing the Services, unless the Appointment is earlier terminated by one of the parties giving to the other 30 days written notice of termination. If the Appointment is terminated, the Charges shall be paid on a pro rata basis based on works completed.
- 4.2 Upon termination of the Appointment for whatever reason, the Customer shall deliver to the Company all materials and other property of or relating to the Company (including any Company Equipment) which may then be in the possession or under the control of the Customer.

5.0 THE SERVICES

- 5.1 The Company warrants that the Services will be performed with reasonable skill and care. All other warranties, conditions and terms implied by statute or common law (save for the conditions implied by section 2 of the Supply of Goods and Services Act 1982) are, to the fullest extent permitted by law, hereby excluded. Without limiting the generality of the foregoing, the Company expressly disclaims any warranty or guarantee that the Company's obligations to the Customer include any obligation to ensure that the Customer achieves any specific result or objective.
- 5.3 Subject to the other provisions of these Terms and Conditions, the Company shall not be liable for any direct, indirect or consequential loss (all three of which terms include, without limitation, pure economic loss, loss of profits, loss of business, depletion of goodwill and similar loss), costs, damages, charges or expenses caused directly or indirectly by any delay in the performance of the Services (even if caused by the Company's negligence), nor shall any delay entitle the Customer to terminate the Appointment unless such delay exceeds 180 days.
- 5.4 The Company makes no warranty regarding any oral representation made by the Company or any description, illustration or specification contained in any catalogues and publicity material produced by the Company, which are only intended to convey a general idea of the Services. Subject to any other exclusion or limitation of the Company's liability in these Terms and Conditions, the Company will only be liable for recommendations, representations, descriptions, illustrations or specifications made by it and contained or referred to in the Report.
- 5.5 The Services shall be provided only in relation to and shall be used by the Customer only for, the Specified Purpose.
- 5.6 Testing of Equipment will normally be carried out in accordance with the standards for the time being laid down by the British Standards Institution or other recognised authority. In the event of such standards not being applicable, testing will be carried out according to a specification to be agreed before the commencement of the testing.
- 5.7 By arrangement, tests may be witnessed by the Customer or its representative, but the Company shall be entitled to charge the Customer for any additional costs thereby incurred.

6.0 UNDERTAKINGS OF THE CUSTOMER

- 6.1 The Customer undertakes:
- a. To provide the Company with all information, co-operation and support that may be required to enable the Company to carry out its obligations to the Customer (including but not limited to providing the Company with details related to the Location, the Equipment, the Customer's practices and procedures and HSE matters);
- b. For the purpose of co-ordination, to designate one individual as shall be notified in writing to the Company who shall be responsible for controlling, in consultation with the Company, all aspects of the Company's responsibilities to the Customer;
- c. To provide or procure adequate facilities to enable the Company to perform the Services at the Location and further to provide the Company with adequate free working space and other such facilities, including running or stopping Equipment for such periods of time as may be necessary (without any liability of the Company to the Customer for any stoppage period) to ensure the full and proper performance of the Company's obligations;

- d. To allow full and complete access to the Location;
- e. To take all steps to ensure the health and safety of the personnel of the Company whilst they are in attendance at the Location in connection with the performance of the Services;
- f. To pay for the Services as provided in Clauses 8 and 9 hereunder;
- g. During the Term and for one year thereafter, not to solicit or hire either directly or through any associated company, firm or person any personnel of the Company engaged in the performance of the Services, except with the prior written consent of the Company;
- h. Unless the Company agrees in writing in advance to assume responsibility for the following matters, to:
- (i) Effect and maintain appropriate insurance in an adequate amount with respect to all possible risks which may arise in connection with the deployment of any person engaged by the Company to perform the Services at the Location and shall, at the Company's request, provide such evidence of such insurance as the Company may reasonably require; and
- (ii) Effect and maintain appropriate licences and consents in relation to anything which may be required for the provision of the Services at the Location.

6.2 Where the carrying out of tests or any modification to any Equipment is considered necessary, reasonable time and assistance will be provided by the Customer for this purpose, without any liability of the Company to the Customer for any Equipment stoppage period.

6.3 The Company will be entitled to freely photograph the Location and if required the photographs will be taken on a Polaroid camera, numbered and returned with the Report to the Customer.

7.0 INDEPENDENT CONTRACTOR

It is understood that in the Company's performance of the Services, the Company is acting as an independent contractor and in an advisory capacity and not in any way as an agent or representative of the Customer. The full responsibility for any use made by the Customer of the Services shall rest exclusively with the Customer, whether or not such use is in accordance with the Specified Purpose.

8.0 CHARGES

- 8.1 Any quotation given by the Company is an invitation to treat only and no quotation shall be binding until the Customer has accepted the Proposal in accordance with Clause 2.
- 8.2 The Customer shall pay the Charges to the Company.
- 8.3 The Customer shall additionally reimburse the Company for the amount of all travelling (including rail travel or air travel), accommodation, subsistence, stationery, telephone, fax and postage charges, photocopying and other expenses incurred by the Company in the course of providing the Services, including but not limited to, miscellaneous expenses and the cost of sundry items.
- 8.4 The Customer shall pay to the Company any additional costs, charges and/or expenses which (a) result from any work which falls outside the scope of the Proposal, or (b) are required as a result of the Customer's inaccurate, incomplete or delayed instructions, or for any other cause attributable to the Customer directly or indirectly.
- 8.5 All Company Equipment shall remain the sole and exclusive property of the Company (unless stated otherwise) and any Company Equipment that is lost or damaged at the Location when not in the Company's possession during the Term shall be charged to the Customer at its full replacement value.
- 8.6 Any delays occurring during the performance of the Services at the Location which are beyond the control of the Company shall be charged to the Customer at the Company's then-prevailing rates.
- 8.7 Any additional visits to the Location by the Company to investigate matters which fall outside the scope of the Proposal shall be charged to the Customer at the Company's then-prevailing rates.
- 8.8 The Company shall give the Customer a minimum of 14 days notice of any variation to the Charges, where such variation is occasioned other than by any act or omission of the Customer under this Clause 8.
- 8.9 All payments due to the Company shall be exclusive of Value Added Tax or like charges unless expressly agreed otherwise with the Company in advance.

9.0 PAYMENT

- 9.1 The Customer shall pay the Charges to the Company together with any additional sum due to the Company within 14 days of the date of the Company's invoice. Time for payment shall be of the essence.
- 9.2 The Customer shall make all payments due to the Company in full without any deduction whether by way of set-off, counterclaim, discount, abatement or otherwise unless the Customer has a valid court order requiring an amount equal to such deduction to be paid by the Company to the Customer.
- 9.3 If the Customer fails to pay any sum due to the Company, the Customer shall be liable to pay interest to the Company on such sum from the due date for payment at the annual rate of 5 % above National Westminster Bank's base lending rate from time to time, accruing on a daily basis until payment is made, whether before or after any judgment. The Company reserves the right to claim interest under the Late Payment of Commercial Debts (Interest) Act 1998. The Customer shall reimburse the Company for any and all costs incurred by the Company in recovering payment pursuant to this Clause 9.3.
- 9.4 Any failure by the Customer to pay the Company any sum by the due date for payment and/or the occurrence of any one or more of the events set forth in Clause 12.1 shall entitle the Company, at any time and without notice to the Customer and without limitation to any other remedy available to the Company under these Terms and Conditions, or otherwise:
- a. To suspend or cancel the performance of any Services; and
- b. To treat the Appointment as having been terminated by the Customer.

10.0 CONFIDENTIAL INFORMATION AND INTELLECTUAL PROPERTY RIGHTS

- 10.1 All information of whatsoever kind or nature expressed to be confidential (or which could reasonably be supposed to be confidential) and furnished or made available to the Customer or its personnel by, through or on behalf of the Company shall be treated as confidential by the Customer and the Customer shall ensure that such confidential information is not copied or disclosed to any third party in any manner whatsoever, either in whole or in part except upon the prior written authority of the Company, PROVIDED ALWAYS that such confidential information shall not already be in, nor subsequently enter (other than at the instance of the Customer acting in an unauthorised manner) the public domain.
- 10.2 Without limiting the generality of Clause 10.1, the Customer may only disclose confidential information:
- a. To its employees, officers, representatives, advisers and agents who need to know such information for the purposes of carrying out the Customer's obligations to the Company;
- b. As may be required by law, court order or any governmental or regulatory authority.
- 10.3 The Customer shall not use any confidential information for any purpose other than to carry out the Customer's obligations to the Company in accordance with the Specified Purpose.
- 10.4 No Report or abridgement or abstract of any Report shall be used in any Customer prospectus, advertisement or other publication, or reproduced on any Equipment or on the packaging thereof, without the prior written consent of the Company.

/continued

- 10.5 Without the prior written consent of the Company, no indication shall be given in any advertisement or by markings on any Equipment or the packaging thereof, or by any other means, that the Equipment has been subjected to inspection or testing by the Company.
- 10.6 The Company shall have the right to mention the Customer's name as a client and to describe the work done on the Customer's behalf for publicity purposes.
- 10.7 Any and all Intellectual Property Rights (howsoever arising), in relation to the Services and any related documents and other materials shall at all times vest in and belong solely to the Company. The Company grants the Customer a non-exclusive, non-transferable licence to use such Intellectual Property Rights in order to enable the Customer to carry out the Customer's obligations to the Company in accordance with the Specified Purpose.
- 10.8 Any equipment or components furnished by the Company pursuant to any recommendation in any Report shall, once installed, be the property of the Customer until their removal for purposes other than maintenance, upon which ownership shall revert to the Company. Nothing in this Clause 10.8 shall affect the Company's sole and exclusive ownership of the Intellectual Property Rights in said equipment or components.
- 10.9 If the Customer wishes to change or alter the design or any dimension or technical specification contained in or referred to in any Report, the Customer shall first deliver to the Company full details of the proposed changes or alterations, which if given orally shall be confirmed in writing as soon as is practicable. The Customer shall not make any change or alteration of the above nature without the consent of the Company, who shall bear no responsibility in respect of loss or damage or injury for any unauthorised changes or alterations of the type mentioned herein.
- 10.10 The Customer shall hold the Company harmless and shall fully indemnify the Company against any and all loss, damage, costs and expenses awarded against or incurred by the Company in connection with, or paid or agreed to be paid by, the Company, in settlement of any claim for infringement of any Intellectual Property Right of any other person resulting from the Company's use of any specification, design or material submitted by the Customer.
- 11.0 LIABILITY AND INDEMNITY**
- 11.1 Nothing in these Terms and Conditions shall exclude or limit the liability of the Company:
- For death or personal injury caused by the Company's negligence; or
 - Under section 2(3), Consumer Protection Act 1987 or section 2 of the Supply of Goods and Services Act 1982; or
 - For any matter which it would be illegal for the Company to exclude or attempt to exclude its liability; or
 - For fraud or fraudulent misrepresentation.
- 11.2 Subject to clause 11.1, in no event shall the Company be liable to the Customer for any increased costs or expenses; for any loss of profits, business, contracts, revenues or anticipated savings; or for any special, indirect or consequential damages, in each case howsoever arising.
- 11.3 Subject to Clauses 11.1 and 11.2, the Company's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the performance or contemplated performance of the Company's obligations hereunder shall be limited to the Charges paid for the Services.
- 11.4 The Company shall not be liable to the Customer if for any reason the Company shall have failed to provide the Services in full, provided that the Company shall have used its reasonable endeavours to rectify any such failure.
- 11.5 The Company shall not bear any liability for any loss or damage to any Equipment directly or indirectly arising from or attributable to the Services.
- 11.6 The Company shall not be liable for any errors or losses which result from the failure of the Customer to clearly identify any Equipment submitted to the Company.
- 11.7 The Company shall not accept any responsibility for any intermittent or permanent electrical interference at the Location affecting any measurements, although all normal precautions will be taken to eliminate such problems.
- 11.8 The Customer shall promptly and fully indemnify the Company against:
- any claim, loss, damage or expense suffered by the Company or its employees or property as a result of a defect or dangerous or potentially dangerous feature of the Equipment which has not been disclosed in writing to the Company prior to commencement of performance of the Services;
 - any liability of the Company to any person for loss or damage, whether direct or indirect, resulting from or attributable to the condition of the Equipment following the performance of the Services; and
 - any claim for loss, damage or injury suffered by any representative of the Company whilst at the Location, insofar as any such loss, damage or injury was not caused by the Company's negligence.
- 11.9 The Customer shall hold the Company harmless and keep the Company indemnified in full against all direct, indirect or consequential liabilities (all three of which terms include, without limitation, loss of profit, loss of business, depletion of goodwill and like loss), loss, damages, injury, costs and expenses (including legal and other professional fees and expenses) awarded against or incurred or paid by the Company as a result of or in connection with any claim made against the Company in respect of any liability, loss, damage, injury, cost or expense sustained by any third party to the extent that such liability, loss, damage, injury, cost or expense arises directly or indirectly from the Customer's instructions to the Company, or from the Customer's fraud, negligence, failure to perform or delay in the performance of any of its obligations hereunder, subject to the Company confirming such costs, charges and losses to the Customer in writing.
- 12.0 BREACH**
- 12.1 Either party may terminate this Appointment at any time by notice in writing to the other party such notice to take effect forthwith:-
- if the other party is in breach of these Terms and Conditions and, in the case of a breach capable of remedy, the breach is not remedied within 14 days of the other party receiving notice specifying the breach and requiring it to be remedied; or
 - if the other party becomes insolvent or if an order is made or a resolution is passed for the winding up of the other party (other than voluntarily for the purpose of solvent amalgamation or reconstruction) or if an administrator, administrative receiver or receiver is appointed in respect of the whole or any part of the other party's assets or business, or if the other party makes any composition with its creditors or takes or suffers any similar or analogous action in consequence of debt.
- 13.0 GENERAL**
- 13.1 No failure, delay, relaxation or indulgence on the part of either party in exercising any power or right conferred upon such party shall operate as a waiver of such power or right nor shall any single or partial exercise of any such power or right preclude any other or further exercise thereof or the exercise of any other power or right.
- 13.2 The Company, but not the Customer, may assign its rights under the Appointment.
- 13.3 The Services will be undertaken by the Company's employees, independent contractors and consultants. The Company, but not the Customer, shall be free to sub-contract or delegate to any third party any or all of its obligations without seeking the prior consent of the other party.
- 13.4 The parties shall not be liable for any failure of performance or any delay in performing any of their obligations (other than for non-payment or late payment of the Charges) by reason of Act of God, war, civil disorder, labour dispute, Governmental action, fire, flood or drought.
- 13.5 If any provision of these Terms and Conditions is found by any court, tribunal or administrative body of competent jurisdiction to be wholly or partly illegal, invalid, void, voidable, unenforceable or unreasonable it shall to the extent of such illegality, invalidity, voidness, voidability, unenforceability or unreasonableness be deemed severable and the remaining provisions of these Terms and Conditions and the remainder of such provision shall continue in full force and effect.
- 13.6 The parties do not intend that any provision of these Terms shall be enforceable by virtue of the Contracts (Rights of Third Parties) Act 1999 by any third party.
- 13.7 Any notice given by either party to the other must be in writing and may be effected by personal delivery or by prepaid registered postage. A notice delivered personally is deemed to be served upon delivery and in the case of postage within forty-eight (48) hours after the date of posting. Notices sent by post shall be sent to the addresses of the parties set out herein or to any other address notified in writing by one party to the other for the purpose of receiving notices.
- 13.8 These Terms and Conditions shall be interpreted in accordance with English law and the parties submit to the non-exclusive jurisdiction of the English Courts, except that in cases involving issues other than uncontested sums owing, the parties agree to submit any dispute or difference between them arising out of or relating to the performance of the Services to arbitration by a single arbitrator in accordance with and subject to the provisions of the Arbitration Act 1996 or any statutory modification or re-enactment thereof.