

"ТЕЦ Марица изток 2" ЕАД  
с. Ковачево, обл. Ст. Загора  
Вх.№ 30048  
Получено на 05.09.2017г.



## Proposal

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| <b>To:</b> TPP Maritsa EAST 2 EAD,<br>Stara, Zagora DST,<br>6265, Kavachevo,<br>Bulgaria | <b>Date:</b> 4 <sup>th</sup> September 2017 |
|  | <b>Our ref:</b> 39969/AJC/K003AProcurement  |
|  | <b>Your ref:</b>                            |
|  | <b>Issued by:</b> David Tyrer               |
|  | <b>Approved by:</b> Adam Clegg              |

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### **Title: Market Consultation - Emissions Derogation Analysis**

Please find enclosed Amec Foster Wheeler Environment & Infrastructure UK Limited's ('Amec Foster Wheeler') market consultation note in relation to assessments foreseen under Article 15(4) of Directive 2010/75/EU (the Industrial Emissions Directive - or IED). This note assumes that four plants Counter Global Maritsa East 3, AES 3C Maritsa East 1, TPP Maritsa East 2 and BRIKEL Power stations each require a cost benefit analysis relating to SO<sub>2</sub>, NO<sub>x</sub> and Hg emissions.

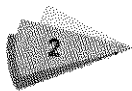
**This note is submitted as an indicative offer, for the purposes of a market consultation exercise. If required a full proposal will be submitted to TPP Maritsa East 2 EAD at a later date.**

#### 1.1 Context

Article 15(3) of IED states that Member States shall set emission limit values (ELVs) so that, under normal operating conditions, emissions do not exceed emission levels associated with the use of best available techniques (BAT) as set out in the BAT Conclusions (BATC) established within the relevant BAT Reference (BREF) document. Article 15(4) of IED describes the potential grounds for derogations from Article 15(3). It states that in specific circumstances the Member State competent authority may set less strict emission limit values:

- ▶ *'Such a derogation may only apply where an assessment shows that the achievement of the emission levels associated with BAT would lead to disproportionately higher costs when compared to the environmental benefits, due to:*
  - ▶ *The geographical location or local environmental conditions of the installation concerned; or*
  - ▶ *The technical characteristics of the installation concerned.'*

Any such derogation and, ultimately, the emission limit values (ELVs) set by the competent authority in permits must in any case *'ensure no significant pollution is caused and a high level of protection of the environment as a whole is achieved'*.



Therefore, any operator seeking to make a case under Article 15(4) to secure derogation from the BAT-AEL would need to undertake a cost-benefit analysis (CBA) study to understand the proportionality of the additional costs to further reduce SO<sub>2</sub>, NO<sub>x</sub> and Hg emissions from the power plants.

## 1.2 Objectives

The primary purpose of the study is to:

- Quantify the societal benefits gained from further abatement of SO<sub>2</sub>, NO<sub>x</sub> and Hg emissions;
- Present these benefits, together with a clear methodology indicating how these were derived, and the approach taken to monetisation of such benefits, where possible; and
- Compare the societal benefits to the financial costs of installing and operating further abatement over its expected operational lifetime. This will enable a comparison of the potential public benefits expected to be derived from its installation, compared to the costs of installation/operation and hence a discussion of 'disproportionality' in line with the wording in Article 15(4).

## 1.3 Scope

### *Type of assessment*

There are two primary methods available for quantifying the societal benefits associated with reductions in emissions to air. These methods are detailed below.

### *The 'damage cost' approach*

This approach makes use of damage costs, expressed as a monetary value for each tonne of emission avoided (i.e. €/tonne). It provides a relatively quick and simple initial appraisal of the societal benefits that may be gained from emission reductions. However, damage costs should only ever be viewed as an approximation of the potential benefits associated with air quality improvements.

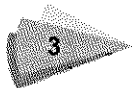
### *The impact-pathway approach*

Analysis more attuned to site specifics can be undertaken. Given that the '*geographical, location or local environmental conditions of the installation concerned*' is a central component of Article 15(4), impact-pathway analysis allows a more focussed assessment. The impact pathway approach adds additional stages to the analysis to improve the estimates:

- Firstly, by applying dispersion modelling to assess local concentrations and hence the actual, rather than assumed, population at risk;
- Secondly, by applying 'concentration response functions' to more accurately assess how these people may be affected by exposure; and
- Thirdly, by explicitly considering each type of potential damage relevant to SO<sub>2</sub>, for example human health, environmental and buildings damage.

### *Approach to be used*

An initial assessment will be undertaken using the damage cost approach (DCA) to estimate the potential societal benefits. This assessment may suggest clear disproportionality in the cost: benefit ratio. However, given the limitations inherent to any estimate using damage costs the potentially high profile nature of any derogation case made under Article 15(4) and the size of the investment that may ultimately depend on the Competent Authorities decision, Amec Foster Wheeler's recommendation would be to carry out an additional more detailed impact-pathway approach (IPA) study. This proposal includes a fee estimate for both pieces of work.



### *Pollutants and number of sites considered*

This proposal allows consideration of emissions of SO<sub>2</sub>, NO<sub>x</sub> and Hg from a total of four plants. We have assumed a damage costs approach will be required for SO<sub>2</sub>, NO<sub>x</sub> and Hg as well as an impact pathway approach for SO<sub>2</sub>, NO<sub>x</sub> and Hg. The proposal assumes all four plants proceed with the analysis; this results in savings for each plant because some tasks will only be required once and the cost can be split between the four plants. If the number of plants participating reduce, the price for each plant will increase. Should further pollutants or additional sites need to be added to the scope, additional costs would be incurred. If further assessment is required, the scope of work and the associated fee would be agreed in advance.

### *Scenarios considered*

Provision has been made for consideration of two specific scenarios at this stage, for each plant:

- ▶ The business as usual (BAU) scenario, representing emissions from the power plant and associated societal costs without further abatement; and
- ▶ The abatement scenario, representing the emissions and associated additional societal benefit for the preferred abatement option.

### *Cross media effects*

Other 'cross media' environmental factors should also be considered in assessment conducted under the context of Article 15(4), where these are relevant. Examples may include increased energy requirement and associated emissions of CO<sub>2</sub>, or additional discharges to water. At this present stage, there is insufficient information on the potential options being considered to further reduce SO<sub>2</sub>, NO<sub>x</sub> and Hg emissions to air. Valuation of cross media effects are, therefore, not included in the current scope.

### *Derivation of capital and operational expenditure*

Amec Foster Wheeler's understanding is that the client will provide CAPEX and OPEX estimates for the preferred abatement option. Derivation of these estimates by Amec Foster Wheeler is not included in the current scope. The details can be agreed in advance with the client and it would be useful for further information to be provided in any final report on precisely which elements have been included, excluded or cannot be estimated at the time of writing, for reasons of transparency.

## 2. Methodology

### 2.1 Inception Meeting

We propose a teleconference at the start of the project to introduce the project team and ensure we fully understand your requirements as well as the context to the site (including historical investment in emission abatement).

### 2.2 Task 1 – Establishment of emissions inventory

The first stage will be to establish the current annual quantity of SO<sub>2</sub>, NO<sub>x</sub> and Hg emissions from the plants to allow a baseline upon which the benefits from additional reductions in emissions can be established. Amec Foster Wheeler would derive the emissions inventory based on the latest environmental performance data provided by the client.

### 2.3 Task 2 – Stage I damage cost assessment

The first stage is to identify the mass of SO<sub>2</sub>, NO<sub>x</sub> and Hg under the BAU scenario and the abatement scenario emitted each year over the operational lifetime of the abatement equipment. An appropriate estimate on operational lifetime will be agreed with the client, and/or based on data in the public domain

(from the BREF, for example). Appropriate damage costs (€ per tonne emitted, per year)<sup>1</sup> will be applied to the mass of pollutants emitted under a baseline and emission abatement scenario, over the equipment lifetime. After adjustments are made<sup>2</sup>, net present value (NPV) will be calculated.

This will provide an overall value of the societal benefits of emission reduction at the site. This will then be compared with the net present value (NPV) of the costs of abatement, which will be calculated using the CAPEX and OPEX data provided by the client). The UK Government has published a user tool to help with this calculation, for example. We will either use this model or create our own, depending on the damage cost values and other parameters used<sup>3</sup>.

This analysis will form a short section of our final report, where the assumptions will be clearly set out.

## 2.4 Task 3 – Stage II impact pathway assessment

### Dispersion modelling of SO<sub>2</sub> and NO<sub>x</sub> emissions and population exposure analysis

The first stage of this analysis is to quantify the population weighted mean exposure to SO<sub>2</sub> and NO<sub>x</sub> (and NO<sub>2</sub>). In order to quantify the contribution of emissions from the site to overall ambient concentrations of these pollutants in the local area, dispersion modelling will be required.

Detailed dispersion modelling of the BAU scenario and abatement scenario will be used to identify changes in ambient annual mean ambient concentrations of these pollutants. Emissions from the power plants will be modelled over a 30km x 30km model domain with a 200m x 200m resolution; this being an appropriate distance whereby contributions from large emission sources start to become indistinguishable above background levels and the distance to which large emitters are generally considered as part of modelling studies. It is also considered appropriate given the number and distribution of potential receptors in the local area.

Amec Foster Wheeler uses several dispersion models which are widely applied and accepted across the EU (ADMS, AERMOD and CALPUFF, for example). As the model domain is limited to a 30km x 30km area, use of a short-range model such as ADMS and AERMOD would be acceptable.

ADMS would be our preferred model in this case due to the complex terrain to the south and east of the plant. However, if there was a desire for predictions to be made using AERMOD, we could consider this option without having an impact on scope or budget. Further detail of the technical rationale can be provided. Our initial review indicates there are no weather stations in the local area which could provide the full range of meteorological parameters and in the correct format to run the model. Therefore, we would propose to use 5 years of hourly sequential meteorological data from the Weather Research and Forecasting (WRF) global model, interpolated from the full 4km x 4km resolution dataset for the exact location of the plants.

Gridded results from the dispersion model outputs will be input to GIS software and combined with population count data at a 1km x 1km resolution obtained from the Republic of Bulgaria National Statistical Institute to derive the population weighted mean concentration (PWMC) of SO<sub>2</sub> and NO<sub>x</sub> where possible in the study area for the BAU scenario and the abatement scenario.

### Dispersion modelling of Hg emissions and population exposure analysis

The approach here is largely consistent with that described. However, in the case of Hg, given a significant proportion of human exposure arises from ingestion, in addition to inhalation, estimates of Hg deposition rates and subsequent ingestion from e.g. surface water contaminated with Hg, cattle grazing on land contaminated with Hg etc. will be required. Here, the risk assessment involves modelling the fate and

<sup>1</sup> Our understanding is that there are not "standard" Government recommended damage costs for Bulgaria. Therefore, we propose to use damage costs from reputable published sources that are appropriate at European level. These would include those from CAFÉ ([http://ec.europa.eu/environment/archives/cafefacilities/indicate\\_cof\\_externality.pdf](http://ec.europa.eu/environment/archives/cafefacilities/indicate_cof_externality.pdf)) for example. We will also consider using the standard damage costs for SO<sub>2</sub>, published by the UK government <https://www.gov.uk/guidance/air-quality-economic-analysis>.

<sup>2</sup> A discount rate will be applied, likely to be 4% in line with European Commission Impact Assessment guidance. We also add a "willingness to pay" uplift, as some of the valuation is based on willingness to pay data and the expectation is that this will rise in line with inflation. The standard assumption is 2% per year.

<sup>3</sup> See for example: <https://www.gov.uk/government/publications/industrial-emissions-directive-derogation-cost-benefit-analysis-tool>

transport of Hg beyond its dispersion in the air. Transport through mechanisms such as deposition, run-off and bioaccumulation are considered with an overall objective of predicting the impact of pollutants on people and the environment.

These estimates will be made using the IRAP-h software. IRAP-h is an advanced human health risk assessment program for conducting a comprehensive multi-pathway risk assessment based on the US EPA Human Health Risk Assessment Protocol (HHRAP).

#### Calculation of dose-response and impact in target receptors (health impact assessment)

The main objectives of this task are to:

- ▶ Review the latest literature on health impacts of SO<sub>2</sub> NO<sub>x</sub> and Hg as relevant; Identify appropriate concentration-response functions based on the health endpoints identified for use in health impact analysis; Identify the population at risk and their characteristics; calculate the health impacts based on concentration response function, population mean exposure and population numbers quantifying these were possible; and Provide a commentary on any characteristics of the population at risk that would make them more or less susceptible than the population as a whole. For example, the evidence suggests that socio-economic 'deprivation' influences susceptibility to health problems as well as influencing underlying health conditions.

The calculation of impact is a simple function of multiplication of the population-weighted increment in exposure to SO<sub>2</sub>, NO<sub>x</sub> and Hg where possible by the appropriate concentration-response function. Population characteristics that might increase susceptibility to air pollution include:

- ▶ Above average levels of deprivation; shorter life expectancy/ higher death rate; above average proportion of older adults or very young children; and poorer baseline health.

It is important that such factors are considered in the health impact assessment (HIA). To enable consideration of these factors, baseline health information and population characteristics for the study area will be obtained. One potential source of this information is the Republic of Bulgaria National Statistical Institute which contains information on population demographics, social inclusion and living conditions and mortality statistics. Additional web searches will be carried out during the study to identify further relevant statistics.

#### Valuation of human health and environmental benefits and presentation of costs

Using the technical analysis from the HIA the final stage is to provide a valuation of the health and other environmental benefits and consider these alongside the costs. The UK impact pathway guidance<sup>4</sup> categorises the impacts in four ways; the objective is to quantify all four where possible:

- ▶ Human Health: The HIA will identify specific health effects. These will be given a monetary value using published, reputable sources (such as IGCB recommended health values and/or CAFE values)<sup>5</sup>. This would be based on the results of the previous task; Productivity (detriment to human and natural capital). For example, effects here include direct effects on crop yields and materials damage (i.e. damage to buildings near the plant) from SO<sub>2</sub>. This is only harmful above certain concentrations - air dispersion modelling will be used to draw a conclusion as to the likelihood of damage. Changes in the effects of crop yields can be estimated with reference to the integrated cooperative programme on Vegetation and Mapping and Modelling. Yield changes can then be valued using international crop prices:
  - ▶ Ultimately any effect will depend on activity near the plant;
- ▶ Ecosystems (effects on the environment). This is a complex area where limited information exists and it is hard to attribute damage to any given site. We will research this with reference to the large body of literature, focussing on any effect on critical levels and critical loads, where

<sup>4</sup> <https://www.gov.uk/government/publications/air-quality-impact-pathway-guidance>

<sup>5</sup> Note these are different to the IGCB damage costs as they relate to specific health end points rather than general levels of damage per tonne of pollutant.

appropriate<sup>6</sup>. We will research nearby environmental designations; A final category – amenity - relates to conscious changes in peoples' satisfaction (this is not relevant in this case); and

- ▶ We will provide monetary valuation of all effects where it is possible to do so, clearly explaining the approach used, assumptions made and the key uncertainties.

Once we have valued the social benefits of abatement, as before we compare the net present value of the costs, with the net present value of the benefits. Finally, we will undertake a sensitivity analysis. This is a formal requirement where we test the effects of varying key input data; reflecting uncertainties in it. Results would be presented in a range.

## 2.5 Reporting

We will produce a single, consolidated report containing the outcome of all tasks, for each plant. We will provide a draft report for comment with the final report produced upon receipt of a single set of consolidated comments. Reports will be provided in electronic format detailing the methodology, results and any supporting calculations.

## 3. Data requirements

In order to complete the dispersion modelling study to support the assessment, the following data will be required for **both** the BAU and abatement scenario for each plant:

- ▶ Site plan; Stack height (m); Stack internal diameter (m); Discharge velocity or volumetric flow (m/s or m<sup>3</sup>/s); Discharge temperature (°C); SO<sub>2</sub>, NO<sub>x</sub> and Hg emission rate (g/s or tpa); Stack location (X/Y); and Dimensions of buildings (height, length and width) in the vicinity of the emission point.

To support the cost-benefit study, CAPEX and OPEX for the preferred abatement option would need to be provided by the client.

## 4. Programme

The CBA will be completed within three months of contract signature.

## 5. Commercial

**This note is submitted as an indicative offer, for the purposes of a market consultation exercise. If required a full proposal will be submitted to TPP Maritsa East 2 EAD separately.**

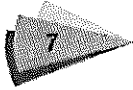
**The work as proposed is offered on a lump sum basis at £131,200.** This equates to £32,800 for each plant and would entail a damage costs approach for SO<sub>2</sub>, NO<sub>x</sub> and Hg and an impact pathway approach for SO<sub>2</sub>, NO<sub>x</sub> and Hg. A report would be developed for each plant.

The prices quoted are exclusive of VAT but inclusive of expenses (e.g. procurement of meteorological data). It has assumed that the four plants are in the same area and so the study team will be able to use the same population/background statistics and other research on the local environment.

The price estimate is based on the scope of work requested and assumes four installations will commission the work. This enables economies of scale as several tasks common to all four studies would only need to be undertaken once. We have divided the total cost for the base approach and for the optional approach by four, as the assumed price paid by each installation. If the number of installations proceeding with the work is less than four, or the scope of work otherwise changes, an amended price would need to be agreed.

The costs have been developed on the basis of our standard terms of business, attached in Appendix A, regulating the contract and include provision for an initial inception meeting and one further meeting to

<sup>6</sup> [http://www.epis.ac.uk/c\\_enview/was\\_act/enview/Cipadajawels.htm](http://www.epis.ac.uk/c_enview/was_act/enview/Cipadajawels.htm)



discuss the results of the assessment. We would use technology such as Lync/Skype for these type of meetings as a cost efficiency measure. Provision for meetings within Bulgaria has not been made at this stage.

We would propose to invoice 70% of the total cost upon submission of the draft report, with the remaining 30% invoiced upon acceptance of the final report.

Should there be a change in scope as the project progresses, we have provided a set of hourly rates below applicable for any additional work to be undertaken beyond the defined scope in Section 1.3 and Section 2. An estimate of the time required to complete any work out with the initial scope will be provided for agreement prior to beginning any additional work:

- ▶ Director/Technical Director = £125 p/h; Associate Director = £110 p/h; Principal Consultant = £85 p/h; Senior Consultant = £75 p/h; Consultant = £65 p/h; and Assistant Consultant = £50 p/h.

Further details of the team, our experience and quality assurance approaches can be provided in the full proposal.

Issued by

David Tyrer

Approved by

Adam Clegg

### Copyright and non-disclosure notice

The contents and layout of this proposal are subject to copyright owned by Amec Foster Wheeler (© Amec Foster Wheeler Environment & Infrastructure UK Limited 2015). This proposal may not be copied or used for any purpose other than for your own assessment of the proposal in connection with the project referred to and it may not be used to modify, improve or change your specification for the project, in either case without the prior written agreement of Amec Foster Wheeler.

All information contained in this proposal regarding the breakdown of our fees, our methodology and our staff is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of Amec Foster Wheeler. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this proposal by any means will, in any event, be subject to the Third Party Disclaimer set out below.

### Third party disclaimer

Any disclosure of this proposal to a third party is subject to this disclaimer. This proposal was prepared by Amec Foster Wheeler for use by our client named on the front of the proposal. It does not in any way constitute advice to any third party who is able to access it by any means. Amec Foster Wheeler excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this proposal. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

### Management systems

This document has been produced by Amec Foster Wheeler Environment & Infrastructure UK Limited in full compliance with the management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.



# Appendix A

## Terms of Business



## TERMS OF BUSINESS

### AMEC FOSTER WHEELER ENVIRONMENT & INFRASTRUCTURE UK LIMITED

The Company's pricing structure is based on the distribution of risk set out in these Terms. Any request to vary these Terms will only be considered as part of a discussion of any consequent changes in the balancing of risks to be accepted by the parties, and any price increase considered appropriate. In allowing the Company to begin the Work, the Client agrees to the application of these Terms to the exclusion of any other terms that may have been proposed by the Client. In particular, the Client acknowledges and agrees that its use of any purchase order to procure services is solely for administrative purposes and in no event shall the Company be bound to any terms and conditions on such order.

#### 1 DEFINITIONS

- 1.1 "Agreement" means the Company's written proposal together with these Terms;
- 1.2 "Company" means Amec Foster Wheeler Environment & Infrastructure UK Limited;
- 1.3 "Client" means the business entity to whom the proposal detailing the Work was submitted (unless otherwise agreed in writing by the Company);
- 1.4 "Report" means any findings, forecasts, statements of opinion, recommendations, technical notes or reports relating to or arising out of the Work;
- 1.5 "Price" means the fee rates, costs, expenses, lump sum price and any uplift or interest payable under these Terms;
- 1.6 "Work" means the services to be provided in accordance with the scope of work set out in the detailed written proposal submitted by the Company to the Client, as may be modified under clause 2.3, including any Report;
- 1.7 "Authorised Employee" means an employee of the Company holding the position of project director or project manager in relation to the Work, an employee holding the office of director or a legally appointed director of the Company.
- 1.8 Words in the singular include their equivalent in the plural.

#### 2 COMPANY'S DUTIES

- 2.1 The Company will carry out the Work for the Client with all the reasonable skill, care and diligence to be expected from a professional firm in the performance of similar services in the same circumstances, in accordance with relevant standards current at the time. No other warranty or representation, express or implied, is included or intended to apply to the Work and it shall not do so.
- 2.2 The Company will perform the Work generally in accordance with the written proposal, but reserves the right to vary the Work if it appears to the Company reasonably necessary to do so as a result of site conditions, new information, or of safety or environmental factors, on the basis that the Client agrees to bear the costs of additional work reasonably undertaken at the Company's standard rates or such rates as are otherwise agreed in writing.
- 2.3 On receipt of a notice from the Client of a proposed variation to the scope of the Work, the Company will notify the Client if there is an impact on the Price or timetable for the Work and will prepare and submit a proposal for the varied scope. The Company's standard rates shall apply to the varied Work or such rates as are otherwise agreed in writing.
- 2.4 The Company will take all reasonable precautions to avoid damage to the Client's property, including underground services and structures. The Company is not responsible for location or identification of underground services and structures and therefore shall not be liable for any damage to underground services and structures that are not called to the Company's attention or are not located as shown on any plans that are provided to the Company.

#### 3 CLIENT'S OBLIGATIONS

- 3.1 The Client acknowledges that in preparing the written proposal and in carrying out the Work, the Company has relied and continues to rely on the Client to make full disclosure of all known, assumed or suspected structures, tanks, utilities, pipelines, discharges, spillages, leachate and hazardous substances at, under or near the project site, together with all plans, surveys, reports, hydrographic data, previous geotechnical or environmental investigations and any other relevant data. The Client shall promptly provide the Company with any new relevant information that becomes available.
- 3.2 The Client will co-operate with the Company in all reasonable ways and will make freely available or place at the Company's disposal all facilities and personnel reasonably required by the Company to carry out the Work including (without limitation) access, permits, power etc.
- 3.3 If the Client suspects at any time that the Work is or may be defective in any way whatsoever, the Client shall immediately draw the same to the attention of the Company and allow the Company the opportunity to correct the same. The Client acknowledges that the Work will not necessarily reveal all adverse conditions that could be identified either through a different formulation of the Work or through more detailed work being carried out.

#### 4 CONFIDENTIALITY

- 4.1 Each party will treat any information of a confidential nature relating to the other party which it comes across as a result of this Agreement, and any information about the Work, as confidential. Any Report will be addressed and delivered to the Client only. The parties will keep confidential the Report and neither will make it available or disclose its substance or contents to any third party. Notwithstanding the foregoing, the Company reserves the right to use a description of the Work in its promotional literature.
- 4.2 This clause shall not prevent the publication or disclosure of any such information once it has come within the public domain through no fault of the party which would otherwise owe the duty of confidentiality, information that has been lawfully acquired on a non-confidential basis and information published or disclosed under a duty or obligation owed to or imposed by any court, regulatory or governmental authority or body.

#### 5 SAMPLES AND HAZARDOUS SUBSTANCES

- 5.1 The Client acknowledges and agrees that it retains all responsibility and liability associated with the environmental conditions at the Client's property. Any hazardous substance or waste (including samples and contaminated equipment) arising from the Work shall be held by the Company as agent for the Client, whose property such materials shall remain. The Company will make all reasonable efforts to assist the Client with the safe handling and disposal of such materials; however the Client will be responsible for this disposal and for all associated costs.
- 5.2 The Client acknowledges and assumes the risk that commonly used exploration, investigative or remedial methods involve an inherent risk of contamination of previously uncontaminated soils and waters, including the potential migration of contaminants present on or beneath the surface of the project site or in the vicinity, and that any seal may be imperfect despite all reasonable or usual precautions.

## **6 DOCUMENTS AND REPORTS**

- 6.1 All documents made available by the Client under these Terms shall remain the property of the Client and shall be returned to the Client after use or on completion of the Work. The Company shall have the right to retain a copy of any document for its files.
- 6.2 Reports will remain the property of the Company until the Price is paid in full. Reports shall be used only by the Client for the purpose set out in the Company's written proposal and shall not be relied on or used for any other purpose whatsoever, or by any other party.
- 6.3 Copyright in the Company's written proposal and in Reports and any intellectual property rights arising from the Work shall at all times belong to the Company, unless there is a specific written agreement otherwise, signed by an Authorised Employee.

## **7 THE PRICE**

- 7.1 Work will be carried out and charged on a time basis unless a fixed price or other basis is agreed in writing by an Authorised Employee. Any time charge contained or referred to in the Company's written proposal is for guidance only and relates to the fee rates and price schedule as at that date only. Invoices will be issued using the fee rates and price schedule in force at the time Work is carried out unless otherwise agreed in writing by an Authorised Employee. Any time charge or fixed price specified in the Company's written proposal will remain valid for a period of three months from the date of the proposal unless a different date is agreed in writing by an Authorised Employee.
- 7.2 Unless otherwise stated in the Company's written proposal, a ten percent charge may be made on all disbursements made by the Company associated with the Work in order to cover administrative costs. The disbursements include, but are not limited to: subcontractors, freight and packing charges, customs documentation, out-of-pocket expenses plus costs of travel, accommodation and meals away from the normal place of business of the Company's personnel incurred in carrying out the Work.
- 7.3 Where utilised, a charge will be made for the use of the Company's in-house computer services and specialist software in accordance with a schedule of charges in force at the time the Work is carried out, unless otherwise agreed in writing by an Authorised Employee. An amount equivalent to 2.5% of the price payable under clause 7.1 will be charged to cover the cost of communications and photocopying unless otherwise agreed in writing with the Client.

## **8 TERMS OF PAYMENT**

- 8.1 Invoices will be rendered monthly in arrears unless otherwise set out in the Company's written proposal and shall be paid (without deduction or set-off) by the Client within 28 days of the date of submission of the invoice by the Company. The Company reserves the right to charge interest and claim compensation in accordance with the Late Payment of Commercial Debts (Interest) Act 1998 on any sums remaining unpaid at the expiry of any such 28 days.
- 8.2 Where any expense to be reimbursed by the Client is paid by the Company in a currency other than sterling, it shall be reimbursed in sterling calculated at the official purchase rate of exchange prevailing at the date when the expense was incurred, together with any additional charge payable under clause 7.
- 8.3 The cost of services and expenses incurred will bear any applicable value added tax charge or its equivalent at the rate current at the date of invoice. Non-UK Clients shall remit all payments free of any taxes, levies, claims or duties arising outside the UK, and shall pay in full any such taxes, levies, claims or duties that may be due according to the laws of its country or state.

## **9 COMPANY PERSONNEL**

It is a condition of this Agreement that the Client will not approach or contact with the intention of employing or retaining any employee of the Company engaged on or connected with the Work. This restriction is to apply at all times during the Work and for a period of one year immediately following the completion of the Work. In the event the Client hires an employee of the Company in breach of this Condition the Client agrees to pay the Company an amount equal to the normal introduction fee of ten per cent (10%) of the relevant employee's first year's remuneration.

## **10 LIABILITY OF THE COMPANY**

- 10.1 Save for the obligations set out in these Terms, all other warranties, obligations and representations are hereby excluded to the fullest extent permitted by law, and all relations between the parties and all matters, issues or claims in relation to the Work shall be governed by these Terms to the exclusion of any other liability whatsoever or howsoever arising under the law of tort or its equivalent in any other country. Notwithstanding the foregoing, nothing in these Terms shall restrict the Company's liability for death or personal injury caused by the Company's negligence.
- 10.2 The Company's liability shall be limited to the extent of any damage, injury or loss that is directly attributable to the failure of the Company, its employees, its subcontractors, and/or agents to comply with the obligations on the part of the Company under the Agreement. The Company shall not be liable, whether in contract, tort and otherwise at law, irrespective of cause and notwithstanding the negligence or breach of duty (statutory or otherwise) of the Company, for (1) any indirect, special or consequential loss or damage or (2) loss of revenue (3) loss of profits (4) loss of business opportunity (5) loss of or damage to goodwill (6) loss of contracts (7) money payable to third parties on account of delay (8) loss of savings (whether anticipated or otherwise).
- 10.3 The Client acknowledges and accepts that the Price does not contain a premium sufficient to cover the Company's risk of unlimited liability in respect of the Work and that a limitation on the Company's liability is therefore reasonable, bearing in mind the relevant circumstances, including the cost and availability or otherwise of insurance cover. Without prejudice to the remainder of this clause, the Company shall be liable to the Client for such direct losses of the Client as are attributable directly to the Company's defective work, limited to an aggregate amount equivalent to five times the Price up to an absolute maximum of £1,000,000. The Company shall have no further liability to the Client, its employees or agents in connection with the Work.
- 10.4 The Client agrees not to pursue any claim or other issue against an individual employee of the Company who has been engaged in carrying out the Company's obligations under these Terms, whether such employee is named expressly or not. The Client acknowledges that such employees are entitled to enforce this provision of the agreement between the Company and the Client pursuant to the Contracts (Rights of Third Parties) Act 1999.
- 10.5 No claim shall be brought against the Company by the Client after a period of two years from completion of the Work other than in any case involving fraud or dishonesty on the part of the Company.

## **11 THIRD PARTIES**

The Client acknowledges and agrees that save as provided in clause 10.4 these Terms shall not confer on any third party a right to enforce any term of the Agreement. This provision confirms the intention of both parties for the purposes of Section 1(2) of the Contracts (Rights of Third Parties) Act 1999.

## **12 THIRD PARTY PRODUCTS**

Where the Company supplies or arranges the supply of products (including software) owned by a third party ("Third Party Products") the Client agrees to comply with any third party terms and conditions applicable to the Third Party Products and shall indemnify and hold the Company harmless against any liability that may result from a breach of such terms and conditions by the Client. Where the Client enters into a separate licence for Third Party Products, such licence shall not operate to increase the Company's liability in respect of the Work.

## **13 ASSIGNMENT AND DELEGATION**

13.1 Neither the rights nor obligations of the Client under these Terms may be assigned.

13.2 The Company may subcontract such services in connection with the Work as it reasonably decides.

## **14 FORCE MAJEURE**

14.1 If the Company is delayed in the Work by any act or default of the Client or any other party (including suspension of the Work pursuant to clause 15.2) or by any cause beyond the reasonable control of the Company, the period for completion of the Work shall be extended by a reasonable period, subject to clause 15.5, and the Company shall be paid for any additional reasonable costs incurred attributable to the delay.

14.2 Neither the Company nor the Client shall be liable for any failure to perform caused by circumstances or events beyond their reasonable control. Should such circumstances or events occur, it is agreed that both parties shall use all reasonable efforts to overcome difficulties arising and to resume as soon as reasonably possible the normal pursuit and schedule of the Work subject to clause 15.5.

## **15 TERMINATION OR SUSPENSION**

15.1 If the Client shall become bankrupt, go into liquidation (other than voluntary liquidation for the purposes of amalgamation or reorganisation only) have a receiver, administrative receiver or administrator appointed over any part of its business or assets, enter into a composition with its creditors or otherwise become in the reasonable opinion of the Company insolvent, the Company shall be entitled forthwith by notice to the Client to suspend the Work or terminate this Agreement with immediate effect.

15.2 If the Client fails to pay any sum due hereunder within 60 days of the date of submission of the Company's invoice, or the Company reasonably believes that the Client will be unable to pay the Company in accordance with these Terms, the Company may by notice to the Client suspend the Work and, at the same or a later time, terminate this Agreement with immediate effect.

15.3 Save in circumstances to which clause 14 applies, if either party (the "Defaulting Party") breaches a material term of this Agreement which remains unremedied for 30 days after service of written notice on it specifying such a breach, or if the breach is not capable of remedy or it appears that the Defaulting Party is in breach of a material provision of any statute, statutory instrument or common law, the other party may by notice in writing to the Defaulting Party suspend the Work and, at the same or a later time, terminate this Agreement with immediate effect.

15.4 The Client may terminate this Agreement on 7 days written notice to the Company, to expire no later than 7 days before the intended commencement date of the Work.

15.5 If circumstances or events as described in clause 14 prevent the proper performance of a party's obligations under this Agreement for more than 90 days, then either party may immediately terminate this Agreement by written notice to the other.

15.6 If the Client terminates this Agreement under clause 15.3 above the Client shall pay to the Company only such sums as are payable in respect of Work done and costs incurred during the period up to the date of termination.

15.7 If the Company terminates this Agreement under clauses 15.1, 15.2 or 15.3, the Client terminates this agreement under clause 15.4 or either party terminates this agreement under clause 15.5, the Client shall pay to the Company, in addition to the sums referred to in clause 15.6, such sums or costs as are reasonably expended or incurred by the Company in bringing the Work to an end in a prompt but orderly fashion and, where the Client terminates this Agreement under clause 15.4, a cancellation fee of 10 per cent of the Price, such sums in aggregate not to exceed the Price (where fixed).

15.8 If the Work is suspended under clauses 15.1, 15.2 or 15.3 or the circumstances referred to in clause 14.2 apply and the Company is required to perform any additional work or incur additional costs in connection with the suspension or resumption of the Work, the Client shall pay the Company in respect of the same within 28 days of the suspension or resumption.

15.9 Termination shall not affect or prejudice the accrued rights, claims or defences of either party.

## **16 STATUS OF THESE TERMS**

16.1 These Terms, together with, or as varied by, the Company's written proposal or the express written agreement referred to in clause 16.2, prevail over all other terms or representations and supersede all prior discussions, negotiations, arrangements, understandings or agreements between the parties (whether oral or otherwise), and shall constitute the entire agreement between the parties.

16.2 These Terms may be varied or excluded (in whole or in part) by the Company's written proposal or by subsequent express agreement in writing signed on behalf of the Company by an Authorised Employee, but not otherwise.

16.3 If any provision of these Terms is or becomes invalid, illegal or unenforceable in any respect, the remaining parts of these Terms shall remain in force.

16.4 The Agreement shall be governed by and construed in accordance with English law and each party agrees to submit to the exclusive jurisdiction of the English courts.

## **17 DISPUTES**

Any dispute arising under this Agreement shall be resolved by taking the following steps, where a successive step is taken if the issue is not resolved at the preceding step; by the technical and contractual personnel for each party performing this Agreement, by executive management of each party, by mediation or through the English court system.

## **18 NOTICES**

Any notice to be given by one party to the other shall be served by sending the same by post to the address for each party shown in the Company's written proposal or notified in writing as the address for service. A notice sent by post shall be deemed to have been served 4 days after posting (for sendings within the United Kingdom) or within 10 days for all other sendings.

## **19 PREVENTION OF BRIBERY AND CORRUPTION**

It is a condition of this Agreement that both parties comply, and have and maintain throughout the term of this Agreement policies and procedures that ensure their compliance, with all applicable laws, statutes, regulations and codes relating to anti-bribery and corruption including, but not limited to, the Bribery Act 2010 and any amendment thereto or re-enactment thereof.