**European Commission Ref. 070201/2014/693666/FRA/ENV.C.3 Service Agreement 7:
Continued improvements of inventory methodologies**

**Task 2.1: PM (Condensable vs Filterable) Emission Factors**

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**Consultation paper for discussion**

1. **Context**

Ricardo-AEA Ltd, Aether Ltd and AMEC have been commissioned to investigate and propose improvements to inventory methodologies in a number of key areas identified by the Task Force on Emission Inventories and Projections (TFEIP) and other bodies. The European Commission, as part of a collaborative initiative, has provided funding for this project, which is expected to be the focus of discussion at the TFEIP meeting and workshops in May 2015.

Task 2.1 of this project is entitled “PM (Condensable vs Filterable) Emission Factors”. This paper sets out our initial views on the delivery of this task, and is intended to form the basis of discussions with TFEIP Expert Panel Leaders, TFEIP members, and other stakeholders.

1. **The issue(s) to be addressed**

**Scope:** The objective for this task is to improve the quality of inventory PM estimates. It is recognised that the emission factors used for very similar processes in different countries (for example residential solid fuel combustion) can differ significantly.

**Issue :** In the GB, condensable particulate emissions appear to be included in some default particulate emission factor estimates but in other instances only the filterable component is considered. The GB does not distinguish between particulate emission factors derived using different sampling methods. This study will review the PM emission factors presented in the GB and identify, where possible, the method of sampling used in the derivation of the emission factors to establish whether emission factors represent filterable and/or condensable PM.

1. **Proposed approach**

**Measurement Standards** - Our first task will be to provide a summary of the techniques used for sampling from industrial stacks, residential heating, engine exhausts and other significant sources of particulate emissions. This will include consideration of national (e.g. Germany, Norway and USA) and international (e.g. CEN, ISO) standards.

**GB PM Emission Factors and references -** We will review the emission factors for TSP, PM10 and PM2.5 for each emission source type provided in the 2013 GB. The list will include details of the source documents for the emission factors quoted in the 2013 GB. This will provide the TFEIP members with the basis for discussion of the priorities and scope of the project.

**Screening assessment of priority activities –** following initial review with the TFEIP expert panel leaders (and wider circulation to the TFEIP members as appropriate) we will develop a priority list of GB activities to review in detail. The priority list of activities will be developed based on TFEIP documents and feedback on condensable/filterable PM. The aim is to focus resources on those emission factors which have the greatest potential for reducing inventory uncertainty for these pollutants.

**Literature review –** Following identification of the priority activities, the GB source documents and literature will be reviewed. We will develop a template to collate and present the results of our review.

The focus on the details of the sampling methods will allow us to establish whether the measurements are of filterable PM or total PM and whether condensable PM emissions were characterised. In addition, the review of the test protocol and activity details will indicate whether the tests represent a characterisation of the activity or, more typically, the operation of a particular device or plant under one or more operating conditions. This is particularly relevant for solid fuel roomheaters and engines where national or regional test protocols will vary and may not be representative of use of the device or the activity.

**Clarification of emission factors -** We will update the list of emission factors for each priority activity emission source type to provide labels to indicate whether each emission factor relates to filterable or total particulate matter (or condensable material). We will include further data where the source documents have provided separate emission factors for filterable, condensable and total particulate matter (for example USEPA AP-42). The report will highlight suggested changes to emission factors for consideration by TFEIP members. In the absence of information allowing labelling of the emission factors, it may be appropriate to assign total/filterable/condensable based on other data for the activity (or comparable activities) where the emission have been fully characterised. In the event that the emission factor cannot be characterised then it may be appropriate to propose removal of the factor or propose to extend the uncertainty range of the emission factor.

**Update of GB chapters –** Following consultation with the TFEIP, we will then update relevant chapters of the GB taking account of the new information obtained from the review and feedback in comments from the TFEIP members.

1. **Key sources of data**
* TFEIP workshop and summary papers on PM
* EN, ISO and national emission Standards
* EN, ISO and national product/equipment Standards
* Documents with internet links provided in the 2013 GB
* Documents that can be downloaded from host organization websites (e.g. US EPA)
* Papers in peer-reviewed academic journals
* Relevant member state inventories
* Published reports retrievable via ISBN
* Other grey literature reports, to be obtained from the responsible organization
* Earlier versions of the GB (e.g. 2006 GB): we will obtain reference documents identified in the earlier GB where possible
1. **Your views**

Your views are sought on the following key issues:

1. Whether the list of data sources is missing any relevant sources of information.
2. Which countries hold details of PM assumptions used in emissions inventories. Are there relevant national studies which can provide information?
3. Which countries might be able to provide data that supports the generation of condensable PM EFs?
4. **Consultation programme**

An introductory discussion has been held with the TFEIP management group at their meeting on 11 February 2015. Consultation with TFEIP members is planned to take place during the TFEIP meeting and workshop in May 2015. Following this, the project team will develop draft methodologies and Guidebook text. This will be circulated for consultation in late 2015, working with the TFEIP Expert Panel co-chairs.

Thank you for your co-operation with this process.

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