Responses to questions regarding asPECT version 1

1. **Upon plant selection only batch & continuous are shown. To me this would refer to either traditional batch heaters or indeed drum mix plants. Most plants are classified as semi-continuous with the use of hot storage.**

This terminology refers to the drying technology: "continuous dryer" or "batch heater". In this case the "continuous" option should be used. The most important thing is to ensure is that all of the plant energy consumption is picked up and is distributed proportionally across the different asphalt products produced. Make use of special processes and notional rates (Protocol Section 2.6.3), if necessary.

2. **When selecting fuels, while I realise that you use the strict Defra definitions, this provides no ability to differentiate between different blends of fuel oils i.e. Class E - LFO, Class F - MFO. While I accept that the CO_2e factor remains the same but the CV changes across the breadth of fuels.**

3. **If indeed you are utilising biofuels that indeed do not come under the bio-diesel classifications where can you enter these specific fuels and the amount of renewable content?**

Since the aim of the protocol is to create a level platform for comparing asphalt products and applications, it is not ideal to depart from the range of fuels and emissions factors that Defra provides data for. However, we are considering developing a facility in the Autumn 2010 release of the calculator which will accept CO_2e data on novel fuels and blends which have been analysed in accordance with Appendix B.

4. **While I appreciate that you have to use a range of fuels. I would suggest that petrol is removed from the list as no combustion process within Industry would utilise this fuel due to reasons of both cost and safety.**

We have now removed petrol from the list in the Summer 2010 version of the calculator.

5. **Coal has been entered as a fuel and whilst not commonly used within the UK, I can see merit. In the same way this has been entered & also wood pellet, what about the use of bio-char?**

The use of bio-char and its environmental credentials is very topical and investigations into its use are ongoing. When reliable emissions factors for the use of bio-char become available it will be added to the list of fuels.

6. **What arrangements are in place to keep this tool up to date? Who will ensure that correct versions are in use? To me a more sensible way would to have a web based tool that is policed/updated and managed by the partner organisations.**

Future arrangements for hosting by client organisations are currently under consideration for later versions of the calculator. It will be up to the user to ensure that they are using the latest version available.

7. **Pre-combustion factors are categorised for a range of fuels. Under the guidance notes for both refuse derived fuels (RDF) and novel fuels you are allowed to use an estimate. This does seem amiss.**

Suitable pre-combustion factors for RDF had not been determined at the time of publication. We will continue to search for suitable factors to use for RDF fuels with a view to including them in future versions of asPECT. Should the user wish to utilise novel fuels, it will still be up to them to make an assessment of pre-combustion emissions, alongside the direct emissions, and to include this in the evidence which supports the declaration of the fuel.

8. **With the classification of RDF you are only allowing for the carbon content of the fuel portion derived from crude oil. With RDF or more commonly referred to as "Clean Fuel Oil" (CFO), this is indeed waste oil that is all derived from mineral oils. As such the complete 100% volume is crude oil based product and should reflect this. The wording is misleading & makes the assumption as the oil is derived from waste you can claim some renewable benefit. In the true sense, the oil can only be classed as renewable when it is reconstituted back to its original use offsetting the depletion of fossil fuel. As most CFO base oils are waste lubricants the only way to claim this would be if they were re-processed back into lubricants and not combusted.**

Agreed. The wording will be modified in future asPECT documentation to reflect that RDFs commonly used within the industry are mineral oil based and the emissions factor which is determined for use should reflect this.

9. **Page 3; paragraph 2; "maintaining a road structure", what is the exact definition of a structure here? Is the drainage included? Is asPECT a project focused tool or does it hinge on the asset?**

asPECT is a product focussed tool; concerning asphalt and its life cycle as a product. More accurate wording here would have perhaps been "maintaining bituminous bound road courses", until further components of the road structure are included when the PECT framework is extended.

10. **Section 2.4.1.5; RAP – The impact of RAP at the first point of disposal is considered to be zero, process energy is accounted for; if mineral depletion is not considered to be a factor there may arise instances where using RAP would increase the CO_2, how can this be addressed?**

Options for reflecting the recyclability of RAP are currently being considered as part of Step 10 and will be included in the final version of asPECT.

11. **Section 2.6; Heating and Drying – What are the rules for grouping particular mixes together, e.g. could all 6 mm surface source materials be considered to have the same fuel consumption per litre or is the limiting factor pigments or fibres?**

The key factor in terms of grouping mixtures together are heating and drying characteristics: reflected in the production rate (continuous plants) or heating time (batch heaters). No further guidelines are provided beyond this since it is realised that a number of factors are influential including mix composition, moisture content and fines content. It is therefore up to the plant/production manager to take a retrospective look at the past year's mixtures and group them according to the range of production/heating rates which have been used.

12. **Section 2.7; Transport – I use this as an example. If vehicle utilisation can be specified what measures are in place to provide verification of claims? How can some subjective claims be more transparent? Will asPECT require evidence? If transport factors are very inconsistent it could adversely affect the CO_2e per tonne of material for a particular project.**

Evidence will be required to support utilisation claims. Options are being explored on how to flag up where non-standard data has been used in an assessment made by asPECT and the associated requirement to provide supporting evidence. Inclusions to this effect will be made in the final version of asPECT.

13. **Appendix D – What assurances are there that the various data sources for default kgCO_2e are consistent with the methodology of PAS 2050 or the ISO standards?**

Given the timescale in which PAS 2050 has been available to use for making assessments, it is unlikely that much of the default data available in Appendix D will conform exactly to its requirements. A data quality assessment has been made in Appendix F to fully describe the sources used. First and foremost, in order to calculate the most representative CO_2e figures, asphalt manufacturers are encouraged to obtain primary data for the components they use from the supply chain (which ideally will have been compiled in accordance with PAS 2050). The data in Appendix D should only be used as a last resort.

14. **The bitumen CO_2e was generated in 1999, are there any plans to update this figure?**

Yes. A project led by a EuroBitume task group is underway to update the straight-run bitumen figure and to also calculate a figure for polymer-modified bitumen. The figures will be peer reviewed by independent consultants and included in asPECT in due course.

15. **Does this approach not lead industry to a point where asphalt plants will only be competitive within a certain radius? (I accept this is true to a physical extent as we stand). How does the HA intend to use such CO_2e in making decisions about awarding projects? What role will it have in procurement?**

The view from the Highways Agency (and ADEPT) is that CO_2e will be included in value/asset management processes in the future to sit alongside cost assessments.

16. **I would recommend that the TRL conduct a trial project with a fictitious plant/site that a number of manufacturers could then apply their own data to; this would give the TRL valuable insight into the sensitivities of the assumptions at this cradle to lay stage. This would also give further credibility to the tool and give manufacturers and contractors an idea of the likely tolerances. For example, if a number of parameters in the fictitious project were fixed the TRL could see the impacts of the material manufactured in relation to the constant variables.**

TRL has conducted one-off product assessments using asPECT and is therefore aware of the most significant factors in the life cycle. It is for this reason a standard figure was established for the relatively insignificant installation step (Step 7) and that the process for attributing heating and drying energies (Step 5) is relatively complex.

17.You appear to have missed planing/milling from the list. This is an integral part of works to the majority of existing surfaces.

Milling/planing will be included in the final version of asPECT, within Step 9 (maintenance). Only Steps 1-7 (raw material acquisition to installation) were considered for the 2009 release.

18.The first and most troublesome problem is that it won't allow me to print it to PDF. Before I select print there are the tables in the background. Selecting print it brings up an error saying that Excel 2003 doesn't support printing to PDF. Selecting cancel takes you back to where you were and selecting OK it just freezes. A way around this problem would be fantastic. I have checked that I can print an ordinary document to PDF fine.

The print to PDF has been problematic on some versions of MS Word and versions of office. A new print option has been devised for the latest version.

19."Run-time error '438': Object doesn't support this property or method" incompatible with Excel 2000 / related problems with versions of Excel pre-2003

The calculator was coded in Excel 2007 but in the backwards compatible format for 97-03 versions of Excel. During testing, the calculator was tested in Excel 2003 to ensure compatibility. We therefore recommend that the calculator is only used on 2003 and later versions of Excel. Compatibility problems may be encountered with pre-2003 versions.