

Attachment 7.3 - Calculations Required for Carbon Reporting through APMS

Item	Description	User Input	Contract Control and Management Functionality Calculation Required	Contract Control and Management Functionality Calculation Output
Principal Distance (PD)	The distance, in kilometres, to the Site from the primary material source e.g. quarry supplier, as identified in the relevant maintenance Scheme detail (MSD) data sheet.	At Scheme Closure Date, record the principal distance (in km) in the appropriate field.	PD = user entered value	n/a
Mass Conversion Factor (MCF)	Factor provided by the Director to convert APMS Schedule of Rates and Prices Item quantity unit (eg. m ² , m, m ³ , litres, etc.) to a mass, in tonnes, for carbon emission calculations. This will be derived for a range of items where published carbon factors are available, and will be updated periodically in line with updates to published figures.	None. APMS will apply the MCF to each Schedule of Rates and Prices Item recorded under the Scheme.	Schedule of Rate item (unit) * quantity * MCF	Item tonnage T1, T2, T3, etc.
Emissions Factor (EF) rate	Each Schedule of Rates and Prices material item type with an available published embodied carbon factor will be assigned an EF, provided by the Director. This will be multiplied by the item tonnage to provide an embodied carbon value for each item recorded under the Scheme.	None. Following application of the MCF, APMS will apply the EF to each Schedule of Rates and Prices Item tonnage.	Item tonnage T1, T2, T3, etc. * EF for each item	Item embodied carbon tonnage C1, C2, C3, etc. (Measured in tCO ₂ e)
Total Embodied Carbon in materials	APMS will calculate the total embodied carbon across all materials, with published EF, recorded under the Scheme.	None. APMS will sum the item embodied carbon values.	Sum of item embodied carbon tonnages C1 + C2 + C3, etc.	Total embodied carbon in Scheme materials C(SUM) (Measured in tCO ₂ e)

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Material Tonnes	<p>To calculate transportation emissions, APMS requires a total material tonnage for each Scheme.</p> <p>This will be calculated by multiplying each relevant Schedule of Rates and Prices Item by the MCF for each item, and then summing the total mass across all items within the Scheme.</p>	<p>None.</p> <p>APMS will sum the total mass across all items recorded under the Scheme.</p>	<p>Sum of item tonnages</p> <p>$T1 + T2 + T3$</p>	<p>Total material tonnage</p> <p>$T(\text{SUM})$</p>
Tonne-Kilometres	<p>To calculate transportation emissions, APMS needs to multiply the total material tonnage by the principal distance</p>	<p>PD in kilometres at Scheme closure only.</p>	<p>$T(\text{SUM}) * PD$</p>	<p>Total tonne-kilometres</p> <p>t-km</p>
Fuel Carbon Factor (FCF)	<p>To calculate transportation emissions, APMS needs a carbon emissions factor for fuel consumption per tonne-kilometre.</p> <p>This factor will be supplied by Transport Scotland and will be based on published Defra figures for a 17 tonne rigid heavy goods vehicle.</p>	<p>None.</p> <p>APMS will apply the FCF to calculate transportation emissions.</p>	<p>FCF = figure provided by Transport Scotland and applied across all Schemes</p>	<p>n/a</p>
Transport Carbon Emissions (TrC)	<p>To calculate transportation emissions, APMS needs to multiply the FCF by the total number of tonne-kilometres.</p>	<p>None.</p> <p>APMS will multiply the tonne-kilometres by the FCF.</p>	<p>t-km * FCF</p>	<p>Total transport carbon emissions</p> <p>TrC</p> <p>(measured in tCO₂e)</p>
Total scheme carbon (SC)	<p>To calculate the total carbon associated with a Scheme, APMS needs to add the total embodied carbon in materials to the total transportation carbon emissions.</p>	<p>None.</p> <p>APMS will add C(SUM) to TrC for each Scheme.</p>	<p>$C(\text{SUM}) + \text{TrC}$</p>	<p>Total Scheme carbon</p> <p>SC</p> <p>(Measured in tCO₂e)</p>