The Challenge

Development of a carbon baseline during the planning and design phase of infrastructure delivery can yield important insights with regards where to focus reduction efforts. Baselines also have an important role to play during the construction phase of project delivery.

It is important to monitor progress against the baseline during delivery so that any deviations can be understood and mitigated. The process should ensure that the asset owner/manager receives regular progress updates on carbon performance of the construction phase of a project whilst allowing contractors to set KPIs against owners of specific work packages.

From a practical perspective there are a number of key challenges to be overcome in order that progress against a baseline can be monitored and reported periodically to asset owner/managers. The chief challenge relates to the non-temporal nature of a baseline. A baseline tends to provide an overall static picture of the emissions profile of an infrastructure project and is therefore may not suitable for simply breaking down into discreet time periods for contractors to report against as they complete elements of work.

The purpose of this note is to summarise a possible solution which allows asset owner/managers to set meaningful KPIs against delivery teams in order to ensure that the carbon profile of the delivered asset or programme of work is in line with the expectations set by the initial baseline.

The Solution

Bill of quantity data normally provides enough detail to be able to associate line items of activities into carbon emission factors and so construct a robust baseline. By constructing the baseline using bill of quantity data, the practitioner can get a detailed insight into the overall emission profile of their project. This technique also allows for materials, plant and labour to be grouped into higher level activities (eg, the materials and effort that go in to installing a culvert).

Once the bill of quantities has been used to produce estimates of carbon emissions, a list of key activities within the project can be developed against which carbon figures can be placed. Material, labour and plant items can be rolled up into each of the predefined key activities. This will then give an expected carbon figure for each activity, providing contractors with insight into the emission profile of each activity they will undertake, which will allow for identification and development of opportunities for interventions to be made.

As the construction phase progresses contractors can compare actual performance against projected performance and report into asset owners as each activity completes. This allows
asset owners to monitor expected performance, and to establish progress towards their total. Equally, it can also be used to report on any efficiencies that have been introduced during the construction phase itself.

There are a range of solutions available to practitioners, from stand-alone systems through to integration of a bespoke library of emission factors with estimating software. Carbon quantification during the estimating phase of project development allows for carbon and cost to be analysed together and for robust business cases to be constructed for emission reduction interventions. Furthermore, project footprints and associated savings can be easily articulated in terms of carbon and cost.