

Shropshire Council
NORTH WEST RELIEF ROAD (NWRR)
Carbon Management Report

A Peer Review Undertaken by Dr Dexter Hunt on behalf of the WSP

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General comments:

- This report has been appropriately put together with specific reference to a number of key relevant standards. Relevant supporting documents (additional to standards) are referenced throughout;
- Carbon reporting by its very nature is very broad, hence it is good to see that the scope of the work (with appropriately set boundaries) has been clearly defined according to PAS 2080 – this is stated clearly from the outset of the report (Section 1). Moreover the report clearly states those aspects which are scoped into and out. Clear scoping justifications are provided (see comment 9);
- The methodological approach (Section 2) is clearly outlined and appropriately followed (see comment 5);
- The results (Section 3) are clearly stated (see comment 12);
- Conclusions and recommendations are coherent and helpful.

Specific comments:

1. One needs to be careful when stipulating that *'methane is around 34 times more effective at warming the atmosphere than CO₂'*, not least because the value is very much influenced by the time horizon considered (i.e. 20, 100 or 500 years), 100 typically being used for reporting purposes. The value also very much depends on the year when it was reported - so including the reference source (with date) is important here. For example in the IPCC 5th report <https://www.ipcc.ch/assessment-report/ar5/> Methane is stated as being 28 times more polluting than Carbon Dioxide at 100 years;
2. Would be worth stating that Nitrous Oxide (N₂O) is around 265 times more polluting than CO₂ Please see source table below, for example: https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf
3. Whilst CO₂e is a widely used and understood term the 2 should technically be subscript – I don't imagine it would be a problem if this remains as is;
4. It would be wise to use tCO₂e throughout ...in places kgCO₂e is used (e.g. Section 1.2 on Page 0);

5. The Low Carbon Engagement aspects appear to be less-well considered in the report, excepting a list of recommendations at the end and table provided in Appendix B ...it would have been useful to know what actual savings could be made through some of the proposed alternative materials suggested. For example, how much carbon could be saved from using (a) Plastic pipes rather than concrete and (b) Reduced concrete kerbing?
6. In Section 2.2, it would be worth referring to these additional references:
 - EN 15804:2012: + A1: 2013 Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products
 - ISO 21930: 2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
 - ISO 14040: 2006 Environmental management – Lifecycle assessment – Principles and framework
 - ISO 14044: 2006 Environmental management – Lifecycle assessment – Requirements and guidelines
7. Reference 2 (p2): As there are many references with ISO (2006) ...it would be better to use the actual standard number. Please note also that this version has in fact been withdrawn and replaced with ISO 14064-1:2018 ...best also to include the full reference as below:
 - Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals <https://www.iso.org/standard/66453.html>
8. Reference 4 (p2): I suggest referring to the actual standard BS EN 15978:2011 – also please note that BS1 is not correctly referenced ... the '1' should have been an 'I';
9. In Table 2-1 (scoping justification):
 - 4 and 5 (A5) ...It seemed unusual that transport of waste (B4) was scoped in and yet disposal of waste (B5) was scoped out – surely if materials are processed and re-used on site (there is mention of site won materials in the recommendations) the need to transport waste (offsite) is minimised?;
 - 11 (B-8) Whilst I appreciate that *'The Project is not expected to add or remove any large carbon sinks and therefore land use change emissions are not expected to be a source of large magnitude of emissions'*, it would be worth

noting that a potential reader might ask where is the evidence for making this assumption? - is it based on experience, from previous projects, for example? without quantification being made this statement could be criticised;

- 14 (B9/D) whilst I appreciate that end user emissions are scoped out it might be worth mentioning that a relief road, by its very nature, helps relieve traffic and hence emissions (not least carbon) on already very busy main roads;

10. Reference 5 (p5): Please note that there is a version 3 available from Hammond and Jones. This is important as the focus of the update / change was to better include reference for key infrastructure construction materials (i.e. Concrete (and constituents, Steel and Asphalt and bitumen).

Version released in 2019 can be found here: <https://circularecology.com/embodied-carbon-footprint-database.html>

11. Web link addresses seemed only to be included for some of the references ...it would be worth having them for all references to facilitate ease of access for the reader ...and to show consistency throughout the document;
12. Table 3-1 ...please note that the heading needs to be placed and spaced appropriately ...not a continuation of the previous text as currently displayed.

Therein the data is highly appropriate, however there is no way for a reader to sense check / validate the values given due to the fact Quantities of materials and emissions factors (specified in Source 1) are not shown here.

Moreover, were the calculations done in some kind of spreadsheet set up by those working on this document or was a piece of software used to undertake this – for example Gabi / Simapro etc. The reader should be told this as it forms an underlying part of the methodological process employed;

13. Recommendations (4.3, p 11) '*recommendations to procure concrete with a high percentage of cement replacement (for example Ground-Granulated Blast-Furnace Slag (GGBS))*'. It is worth noting that there are other cement alternatives such as PFA - Pulverised Fuel Ash.

Additionally it is also worth stating that these alternatives would impact upon the rate of curing (e.g. reduced strength at 7 days) and ultimate strength achieved (an increase at 56 days) all of which is dependent on % added. Recognition of the additional strength gains achievable at 56 days ...over and above the 28 day strength (currently used in design) could be an important feature to highlight.

However, one would also need to consider the changes this would bring in terms of the fresh concrete properties (i.e. slump / flow test).

14. In line with comment 13 you may also wish to refer to EN 16757: 2017 Sustainability of construction works. Environmental product declarations. Product Category Rules for concrete and concrete elements.