

Gate three query process

Strategic solution(s)	SESRO
Query number	SER020
Date sent to company	09/10/2025
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Query

This query relates to the Carbon Report A2.

In Figure 7, we have identified that the capital carbon for 'Embankment Works' has decreased substantially since gate two.

We note in Section 2.3.13 that the shape and embankment heights at gate three remain consistent with those of gate two. However, the overall material usage has been reduced by nearly half between the two gates. We also note in Section 2.3.31, some differences can be explained by the categorisation of emissions between the ACWG classifications and the comparison of carbon hotspots.

It is unclear why capital carbon for Embankment Works has decreased between gates two and three. It is also not clear how / whether this relates to the change in the quantity of materials needed or changes to categorisation, and how the materials needed for the embankment can reduce while maintaining the previously proposed embankment height and shape.

Please clarify:

- What has driven the decrease in capital carbon for embankment works since gate two and how this relates to the proposed changes to the quantity of embankment materials and any changes to categorisation of emissions
- How the materials required can reduce while maintaining the proposed shape and height of the embankments

Solution owner response

[response completed by solution owner]

- What has driven the decrease in capital carbon for embankment works since gate two and how this relates to the proposed changes to the quantity of embankment materials and any changes to categorisation of emissions

In Gate 3, the capital carbon emissions attributed to embankment works were calculated at 168,000 tCO₂e. This compares to 249,000 tCO₂e of capital carbon for the embankment works modelled in Gate 2.

This 81,000 tCO₂e difference is primarily due to a different classification approach in the capital carbon numbers (using the ACWG categories) between Gate 2 and Gate 3 to reflect more accurate modelling granularity.

In Gate 2, the construction activities relevant to site clearance, service diversions, and temporary roads were classified under the ‘Embankment Works’ ACWG category, whereas in Gate 3 they were re-assigned to the “Other non-depreciating assets” category (see extract below from the Gate 3 carbon assessment).

This change in the classification approach does not reflect an actual reduction in emissions. The total capital carbon emissions for the project have increased from 400,100 tCO₂e in Gate 2 to 495,700 tCO₂e in Gate 3. However, due to the reclassification in ACWG categories, the emissions attributed to embankment works have changed from 250,000 tCO₂e in Gate 2 to 168,000 tCO₂e in Gate 3.

Below is an extract of the capital carbon (tCO₂e) estimates in the two relevant ACWG categories and how these were presented during Gate 2 and Gate 3.

ACWG Category	Gate 2	Gate 3	Difference (tCO ₂ e)
Other Non-Depreciating Assets (Non depreciating)	39,597	122,152	82,554

Embankment Works (250)	248,676	167,914	-80,763
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- How the materials required can reduce while maintaining the proposed shape and height of the embankments

We understand that RAPID have queried the statement in the Gate 3 carbon report below:

“The shape and embankment heights at gate three remain consistent with those of gate two. **However, the overall material usage has been reduced by nearly half between the two gates.** Further design updates and more detailed specifications have enabled the selection of more suitable carbon models.”

The “overall material usage” statement needs clarification, and it relates only to the **quantity of imported materials**. Outlined below are further details on the material quantities. The shape and height of the embankment remained the same between Gate 2 and Gate 3.

The volume of **imported** natural material associated with the embankment earthworks has reduced from 808,000 m³ in Gate 2 to 438,000 m³ in Gate 3. As a result, the associated capital carbon of imported material has decreased from 9,900 tCO₂e in Gate 2 to 5,100 tCO₂e in Gate 3. However, the total material used for the embankment remains the same during Gate 2 and Gate 3.

The reduction in **imported** natural material requirements is largely due to design improvements relevant to optimising cut and fill balance. These enable more efficient repurposing and reuse of excavated material on site. The capital carbon reductions associated with this design intervention are estimated to be approximately 4,800 tCO₂e.

Date of response to RAPID	13/09/2025
Strategic solution contact / responsible person	