

A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 9

9.130 Clarification on Scheme Construction and the UK
Government's Carbon Budgets

Planning Act 2008

The Infrastructure Planning (Examination Procedure)
Rules 2010

July 2022

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Examination Procedure) Rules 2010**

A428 Black Cat to Caxton Gibbet improvements

Development Consent Order 202[]

**9.130 Clarification on Scheme Construction and the UK Government's
Carbon Budgets**

Planning Inspectorate Scheme Reference	TR010044
Document Reference	TR010044/EXAM/9.130
Author	A428 Black Cat to Caxton Gibbet improvements Project Team, National Highways

Version	Date	Status of Version
1	28 July 2022	Final

Table of Contents

Chapter

1	Introduction	1
2	Clarification on Scheme Construction and the UK Government's Carbon Budgets	2
3	Conclusion	7

1 Introduction

- 1.1.1 This document has been prepared by the Applicant to provide further clarification on the A428 Black Cat to Caxton Gibbet Scheme (the Scheme) construction and the Government's carbon budgets. The Applicant has provided an update to Table 1 'Change in CO₂e Emissions (With Scheme Scenario – Without Scheme Scenario)' set out within the 'Applicant's Responses to the Secretary of State's Consultation Letter dated 13 July 2022' to:
- a. Show all construction works (main and enabling/advanced) taking place from 2023-2026 and therefore falling within the fourth carbon budget (2023 to 2027); and
 - b. Reflect the revised approach to calculating carbon sequestration set out in Table 2 'Summary of the construction phase carbon footprint' and Table 3 'Construction and operation emissions in comparison to national'
- 1.1.2 In relation to (a) above, enabling/advanced works for the scheme commenced in 2022 and only the main construction works are scheduled to commence in 2023. The Applicant has therefore also provided a second version of Table 1 updated only in respect of (b) above.
- 1.1.3 As per the request for clarification of the scheme construction in relation to the Government's carbon budget, the Applicant has presented the information within this document. The Applicant has specifically taken into consideration the impact of a revised methodology to calculate carbon sequestration as well as an assumption that construction will not commence until 2023. This updated assessment, undertaken in accordance with Paragraph 5.17 of the National Networks National Policy Statement concludes that the Scheme will not have a material impact on the UK Government meeting its carbon budgets. This conclusion aligns with the outcome set out in Chapter 14 Climate [APP-083] of the Environmental Statement.

2 Clarification on Scheme Construction and the UK Government's Carbon Budgets

- 2.1.1 As explained in Table 2-3 in Chapter 2 'The Scheme' [APP-071], of the Environmental Statement, the reasonable worst case construction programme presents construction activities taking place between March 2022 and March 2026, with the Scheme opening in May 2026. This programme allowed for advance works and enabling works to be undertaken between March 2022 and March 2023, so that the main construction works could commence in March 2023. As set out in the Applicant's response to the Secretary of State's letter dated 31 May 2022, the Applicant is still working to this programme. The Applicant has sought separate planning permissions which enabled the programme of advance works to commence in March 2022 and these works will continue until September 2022. Enabling works are then programmed to take place from September 2022 to March 2023, with main construction works due to commence in March 2023 and to complete in March 2026. This programme is still considered to be the viable programme for the Scheme.
- 2.1.2 Given that the advance works and some of the enabling works are being conducted in 2022, the Applicant previously presented construction GHG emissions in Table 1-1 'Cumulative effects of Greenhouse Gas emissions from the Proposed Development' [AS-022] as split across the third and fourth carbon budgets. Due to the granularity of data available to undertake the Greenhouse Gas (GHG) assessment it has not been possible to breakdown GHG emissions into the different phases of construction i.e., advanced, enabling and main works. This approach is considered proportionate and reasonable for a GHG assessment and is consistent with that taken on similar highways schemes. Total construction GHG emissions were therefore calculated and divided equally over the years construction would take place, starting with the advance works in March 2022 and ending with the completion of the main construction works in 2026. As a result, one year of construction was assumed to take place during the third carbon budget period, while three years of construction were assumed to take place during the fourth carbon budget period. As advance works have already begun and enabling works are due to commence in September 2022, this approach is considered to present a realistic breakdown of GHG emissions across the carbon budget periods.
- 2.1.3 However, in view of the Secretary of State's request at (a) above and given the 'main' construction works would not commence until March 2023, the Applicant has updated Table 1 to apply GHG emissions to the fourth carbon budget period only (2023-2027). This is shown in Table 1 below. As previously stated above it is not possible to accurately report construction GHG emissions split between enabling, advanced and main works therefore GHG emissions reported in Table 1 include total construction emissions for all three phases. For comparison, Table 2 below presents the same total quantity of construction GHG emissions but in this scenario they are split between the third and fourth carbon budget periods. This second scenario (Table 2) is considered to better align with the construction programme. As the fourth carbon budget allows for less emissions to be emitted across the UK than the third carbon budget, and therefore the contribution of the Scheme as a proportion of the fourth carbon budget would be greater, this is considered a worst-case scenario.

- 2.1.4 Table 1 has also been updated to incorporate and take into account the approach to sequestration presented in the Applicant's response to the Secretary of State's letter dated 13 July 2022, as referred to by the Secretary of State at paragraph (b) above.
- 2.1.5 The emissions scenarios presented in both Table 1 and Table 2, when considering construction and operational GHG emissions combined in each scenario, does not change the conclusion presented in the Environmental Statement, at Chapter 14 Climate [APP-083], that the greenhouse gases from the scheme will not have a material impact on the UK Government meeting its carbon budgets.
- 2.1.6 **Note: For clarity Tables 1 and 2 below present both GHG emissions as originally presented in the Environmental Statement (see points a and b) and then following an update to the assessment (points c and d) to include the use of a revised sequestration methodology, the use of the latest version National Highways Carbon Tool (v2.4), and the use of the most recent version of the Emissions Factor Toolkit (EFT v11.)**

Table 1: Change in CO₂e emissions between the Environmental Statement and the updated assessment (with Scheme Scenario - Without Scheme Scenario)

	CO ₂ e (Millions of tonnes)			
Carbon Budget Period	3 (2018-2022) (e)	4 (2023-2027)	5 (2028-2032)	6 (2033-2037)
Carbon Budget	2,544Mt	1,950 Mt	1,725 Mt	965 Mt
Previously Reported in the Environmental Statement				
Construction (a)	0.0521	0.1563	0	0
Operation (b)	0	0.0736(f)	0.2015	-(g)
Total	0.0521	0.2299	0.2015	-
Updated Government Guidance Since the Publication of the Environmental Statement				
Construction (c)	0	0.2233		
Operation (d)	0	0.0699	0.1719	0.1670
Total	0	0.2932	0.1719	0.1670
Sensitivity Test for Operational Emissions				
TDP (upper bound)		0.099	0.136	0.090
TDP (lower bound)		0.073	0.079	0.040
Notes:				
Mt – Millions of Tonnes				
a) National Highways Carbon Emissions Calculation Tool v.2.2 (2020)				
b) Road user emissions (DMRB v7 based on EFT v.9)				

- c) National Highways Carbon Emissions Calculation Tool v2.4 (2021)
- d) Road user emissions (DMRB v9 based on EFT v11)
- e) The assessment undertaken for the Environmental Statement assumed a start of construction works date in 2022, resulting in one year of a 4 year construction period falling within the 3rd carbon budget period. The updated GHG assessment presented in this table (c) assumes construction will commence in 2023.
- f) The first year of operation will be 2026.
- g) The 6th Carbon Budget was not published at the time the ES was produced therefore emissions were not presented against the 6th carbon budget.

2.1.7 As explained above, given that all advance works and some enabling works for the scheme either have been, or would be, undertaken in 2022, for completeness, the Applicant has also produced a separate version of Table 1 which retains the split for construction across the third and fourth carbon budgets, as originally presented, but which has also been updated to incorporate the revised approach to sequestration (as referred to by the Secretary of State at paragraph (b) above). This can be seen in Table 2 below.

Table 2: Change in CO₂e Emissions between the Environmental Statement and the updated assessment (With Scheme Scenario - Without Scheme Scenario)

	CO ₂ e (Millions of tonnes)			
Carbon Budget Period	3 (2018-2022) (e)	4 (2023-2027)	5 (2028-2032)	6 (2033-2037)
Carbon Budget	2,544Mt	1,950 Mt	1,725 Mt	965 Mt
Previously Reported in the Environmental Statement				
Construction (a)	0.0521	0.1563	0	0
Operation (b)	0	0.0736(f)	0.2015	-(g)
Total	0.0521	0.2299	0.2015	-
Updated Government Guidance Since the Publication of the Environmental Statement				
Construction (c)	0.0558	0.1675		
Operation (d)	0	0.0699	0.1719	0.1670
Total	0.0558	0.2374	0.1719	0.1670
Sensitivity Test for Operational Emissions				
TDP (upper bound)		0.099	0.136	0.090
TDP (lower bound)		0.073	0.079	0.040
Notes:				
Mt – Millions of Tonnes				
a) National Highways Carbon Emissions Calculation Tool v.2.2 (2020)				
b) Road user emissions (DMRB v7 based on EFT v.9)				
c) National Highways Carbon Emissions Calculation Tool v2.4 (2021)				

- d) Road user emissions (DMRB v9 based on EFT v11)
- e) The assessment undertaken for the Environmental Statement assumed a start of construction works date in 2022, resulting in one year of a 4 year construction period falling within the 3rd carbon budget period. For the purpose of this assessment the same construction period has been used as in the Environmental Statement i.e. March 2022 to March 2026
- f) The first year of operation will be 2026.
- g) The 6th Carbon Budget was not published at the time the ES was produced therefore emissions were not presented against the 6th carbon budget.

2.1.8 As explained above, both Table 1 and Table 2 in this response have been updated to account for the revised approach for calculating sequestered GHG emissions. In summary, the impact of the revised approach has resulted in a small increase in GHG emissions during construction as land and vegetation is cleared, while there has been a small decrease in GHG emissions during operation as new planting matures resulting in carbon being sequestered.

2.1.9 When producing the updated Table 1 and Table 2 above, the Applicant noticed an inconsistency between this data and that contained in the Applicant's response to the Secretary of State's letter dated 13 July 2022. The inconsistency is due to a number of changes to the GHG calculations that have been undertaken since publication of Chapter 14 Climate [APP-083] of the Environmental Statement, which included updating the GHG calculations using the most recent version of the National Highways Carbon Tool (v2.4) and applying EFT v11. These updated numbers have been used to produce Table 1 and Table 2 above. The Applicant's response provided to Question 2 of the Secretary of State's letter dated 13 July 2022 used the GHG emissions reported in Chapter 14 Climate [APP-083] of the Environmental Statement. Therefore, for clarity and consistency, the Applicant has also produced a revision of Table 3-2 presented in 'Construction Phase Greenhouse Gas Emissions' [REP9-017] below using the latest GHG data. This can be seen at Table 3 below.

2.1.10 The waste category presented in Table 3 below differs from Table 1 in Question 2 of the Applicant's Response to the Secretary of State's letter dated 13 July 2022. This is as a result of the revised waste calculation methodology used in the latest version of the National Highways Tool (v2.4)

Table 3: Summary of the construction phase carbon footprint – Revision of Table 3-2, presented in 'Construction Phase Greenhouse Gas Emissions' [AS-022]

Reporting Category	Emissions (tCO ₂ e)	% Contribution
Land clearance	11,412	5.1%
Embodied carbon in materials	145,845	65.3%
Transportation of materials	17,748	7.9%
Fuel use (plant/equipment)	42,815	19.2%
Worker travel	4,287	1.9 %
Waste	1,216	0.5%
Total	223,323	100%

- 2.1.11 In the original version of Table 3-2 (as presented in 'Construction Phase Greenhouse Gas Emissions' **[AS-022]**), land clearance emissions were reported as -13,037 tCO₂e. This represented the net whole-life carbon sequestration benefit modelled and resulted in Scheme construction emissions being reported as 201,194 tCO₂e. In this instance the balance between carbon sequestration loss as a result of land clearance and carbon sequestration gain as a result of new planting had been accounted for in the construction phase of the Scheme. The revised methodology has split out carbon sequestration so that sequestration losses due to land clearance are reported under construction, while carbon sequestration gains are reported during operation, better reflecting when these losses and gains occur. Following the amendments to the calculation methodology, a carbon emissions impact of 11,412 tCO₂e due to lost sequestration as a result of land clearance has been included in the construction phase to give a new construction emissions total of 223,323 tCO₂e.
- 2.1.12 While this update increases the GHG emissions reported during the construction period, over the lifetime of the Scheme the overall net carbon benefit as a result of carbon sequestration has increased from 13,037 tCO₂e to 21,778 tCO₂e (New planting will result in an increase in sequestered carbon of 33,189 tCO₂e, less the impact of sequestration lost during construction of 11,412 tCO₂e.)
- 2.1.13 The impact of this amended carbon modelling approach to the comparison of Scheme GHG emissions with the UK Government's third, fourth and fifth carbon budgets (as presented in Chapter 14 Climate **[APP-083]** of the Environmental Statement) is presented in Tables 1 and 2 above.

3 Conclusion

- 3.1.1 In accordance with Paragraph 5.17 of the National Networks National Policy Statement, the Applicant has provided evidence of the carbon impact of the Scheme and an assessment against the Government's carbon budget. This demonstrates that as per the conclusion in the Chapter 14 Climate **[APP-083]** of the Environmental Statement the Scheme will not have a material impact on the UK government meeting its carbon budgets.