

APPENDIX 1 - BTNO Project Resource Profile and Closely Associated Indirect (CAI) costs

1. Introduction and summary of response

This appendix is in support of National Grid Electricity Transmission's (NGET) response to question 2 of the consultation on the Project Assessment relating to Bramford to Twinstead (BTNO). It focuses on the personnel costs of £13.1m¹ that Ofgem is minded to disallow, based on justification in paragraphs 3.17 and 3.18 in the Minded to-Decision document where Ofgem makes two observations:

- a) **The Project Management (PM) costs** – Ofgem acknowledges the increased PM costs associated with Option C contracts relative to Option A, but notes that BTNO employs both Option A and Option C contracts, and in Ofgem's view 'PM costs appear high compared to other NGET ASTI Projects'.
- b) **Personnel Costs** – In addition, Ofgem assessed the wider personnel costs against '*other recent and comparable ASTI Projects*²' and determined that '*Personnel costs as a proportion of total project value also reveals BTNO as the most expensive*²'.

It is important that like-for-like data points are used when benchmarking costs. We recognise that Ofgem has drawn on the independent report undertaken by Mott MacDonald and IET, alongside evidence from other ASTI projects (EGL1, EGL2, Yorkshire Green, TKRE), however, in some cases the data points used do not appear to be directly comparable to BTNO.

We believe that BTNO benchmarks strongly once like-for-like comparisons are applied, with cost lines aligned, definitions of CAI used consistently, and pre-construction and non-CAI items removed. BTNO's CAI position of 10.33% sits below the updated Gardiner & Theobald (G+T) power-project benchmark range and under the sector mean, demonstrating efficiency rather than excess. The project's mixed Option A/Option C contracting strategy does not reduce its management burden, in fact, managing both contract forms in parallel increases commercial complexity, meaning BTNO's resourcing needs are entirely consistent with other major ASTI schemes.

Comparisons with other ASTI projects, including OPN2, show it is equally efficient in relation to personnel costs. While Ofgem's initial assessment contrasted BTNO's total personnel costs with only OPN2's internal resource spend, a like-for-like comparison shows near-identical totals (10.33% vs 10.31%). Differences in internal/external mix simply reflect the organisational capability shift between Jan 2024 and today, not inefficiency: BTNO draws on a much more mature and experienced in-house NGET resource pool, whereas OPN2 relied heavily on external specialists due to its timing. BTNO also carries greater interface and delivery complexity, longer overhead line (OHL) length, more underground cable through sensitive areas, and broader ASTI-portfolio integration requirements, all of which legitimately increase coordination demands.

Overall, the evidence shows that BTNO's CAI profile is suitable for the project's scale and complexity and is efficient compared to industry standards and other ASTI projects, especially OPN2, as the closest comparison. TKRE is mainly a tunnelling project so uses a different resourcing model and EGL1, EGL2 and Sea Link are offshore schemes. HWUP is the only other ASTI project with a submitted PA with a CAI of 9.2% which compares well (given the OHL works at HWUP is predominantly reconductoring and not new build), and we note that no concerns were raised about HWUP's personnel costs in its Minded-To decision.

Metric	BTNO	OPN2
Direct EPC		
Total Construction CAI		
Total CAI / Direct EPC	10.33%	10.31%
CAI NGET only (construction)		
CAI NGET only / Direct EPC	9.92%	7.03%
External Specialist / Direct EPC	0.41%	3.27%

Table 1 - BTNO vs OPN2 direct comparisons

Section 2 provides more detailed explanations of where differences between Ofgem and NGET's view have arisen and explain why BTNO's personnel costs are appropriate for delivering the project safely and to the accelerated timelines.

¹ Para 3.19 from Ofgem's Minded to decision on BTNO Project Assessment

² Para 3.18 from Ofgem's Minded to decision on BTNO Project Assessment

2. Detailed assessment of Ofgem's consultation position on benchmarking data

A consistent definition and application of CAI costs is essential to ensure like-for-like benchmarking. CAI covers the project-wide personnel and support functions needed to deliver a project, even though they are not attributable to a single construction activity or asset. In practice, CAI typically includes:

- Project and Construction Management
- Engineering Management and Design
- Environmental and Consents
- Commercial and Contract Management
- Testing, Commissioning and Asset Integration
- Health, Safety and Quality Assurance
- Project Controls (planning, cost, risk, change)

These roles may be delivered by the NGET project team, organisational support functions, or specialist external resources, depending on project needs.

For BTNO, all internal and external personnel contributing to these functions have been captured as "Project Management – Personnel Costs" in the Cost Model. They have not been split into "Project Management" and "Business Support" categories, as shown in the G&T Report, which supported our PA submission. We will aim to make this clearer in future PA submissions.

Because each ASTI project uses a different mix of project-team roles, support-function inputs and specialist resources, benchmarking must compare total CAI costs, not just the Project Management subset. Based on the above definition we have identified some areas that require clarification through this consultation process and we welcome further engagement with Ofgem.

1. Blend of Option A and Option C on BTNO

Ofgem's consultation position – Ofgem has stated that BTNO employs both Option A and Option C contracts, implying that two contract types would result in lower, as opposed to higher PM costs when compared to other NGET ASTI Projects.

NGET clarification and conclusion – BTNO's use of a mix of NEC4 Option A and Option C contracts does not reduce the internal resource needed to manage the programme. Although three of the six EPC packages are Option A, these represent only around 10% of the total contract value. The vast majority of delivery—90%—sits under Option C and therefore requires active commercial management, cost control, forecasting and change handling.

In practice, running both Option A and Option C contracts together increases rather than reduces complexity. Each contract type requires a different commercial approach, and different levels of intervention from the project team. Coordinating these in parallel places a consistent demand on internal resources.

For these reasons, the mix of contract options does not create a materially lower management burden. The level of oversight, commercial governance and programme coordination required is comparable to other ASTI projects, and therefore does not justify a reduced project resourcing level.

2. Comparison to industry benchmarking – G&T Report:

Ofgem's consultation position- Ofgem's comparison uses the G&T Benchmarking Report submitted with EGL1 to cite PM-only benchmark - 7.3% of EPC value (range 5.2%–9.5%) -to assess BTNO's 10.33%. This is not a like-for-like comparison. The 7.3% figure excludes other CAI functions set out above (e.g., project controls, engineering management, commercial, HSEQ, testing and commissioning). The appropriate comparator is PM + other CAI combined:

- Original G&T combined PM + CAI benchmark: mean 10.4%, range 7.8%–13.1%.
- Updated G&T power-project dataset: PM + Business Support (i.e. full CAI) range 10.6%–15.5%, mean 11.8%—directly relevant to BTNO's scope and sector.

NGET clarification and conclusion – To ensure like-for-like benchmarking, Ofgem should use the updated G&T power-project CAI benchmark^{3,4}. On that basis, BTNO's total CAI of 10.33% is below the bottom of the updated range (10.6%–15.5%) and under the sector mean (11.8%). This evidences that BTNO's CAI is efficient and competitively positioned against comparable power projects.



3. Inflated CAI costs due to inclusion of pre-construction funding

Ofgem's consultation position – The reported 10.9% CAI for BTNO is not comparable to construction-phase benchmarks because it includes pre-construction funding (PCF). PCF is ordinarily excluded from Project Assessment reporting and is outside the scope of G&T benchmarks, which focus on construction activity only.

NGET clarification and conclusion – Referring to Table 2 BTNO CAI Costs below

- Ofgem proposes to provide NGET with a total Direct EPC cost of [REDACTED] and total CIA costs of [REDACTED] (18/19 prices). Using these figures, Ofgem calculated BTNO CAIs of 10.96% (rounded to 10.9% in communications) and noted that these figures did not benchmark well.
- However, the calculation includes NGET's pre-construction CIA costs (pre con/ Development Consent Order (DCO) submission CAI costs), which should be excluded from the BTNO CAI costs for a PA. Excluding pre-construction costs, BTNO's construction-only CAI is 10.33%.
- This 10.33% is the correct figure for benchmarking against G&T's construction-phase CAI ranges as per point 2 above and as outlined in the BTNO PA. Therefore, this value of 10.33% should be used for assessing BTNO's efficiency, not 10.96% (CAI including PCF).

Cost Category	Cost (18/19 Prices)
Direct EPC Costs	[REDACTED]
NGET Personnel Costs (incl. Pre-Con/DCO)	[REDACTED]
External Specialist Support	[REDACTED]
Total CAI Costs	[REDACTED]
NGET Pre Con / DCO Submission Cost	[REDACTED]
Specialist Support - Pre Con/DCO Submission Costs	[REDACTED]
Total Pre Con CAI Costs	[REDACTED]
NGET Personnel Costs - Construction	[REDACTED]
Specialist Support + External Relations Costs	[REDACTED]
Total Construction CAI Costs	[REDACTED]
Total CAI Costs for BTNO	11.56%
Total NGET CAI Cost	10.96%
NGET Construction CIA Costs	10.33%
Internal NGET Only Personnel Construction Costs	9.92%

Table 2 – BTNO CAI Costs

4. Direct comparison OPN2 and BTNO must consider the blend of internal staff and external specialist costs.

Ofgem's consultation position – Ofgem has compared BTNO to OPN2 and viewed BTNO as having higher Personnel costs at 10.33% of EPC contract value compared to OPN2 at 7.03%.

NGET clarification and conclusion – Taking this approach is incorrect as Ofgem has only looked at NGET internal resources on OPN2 and compared it to internal and external resources combined on BTNO. If both internal and external resource costs on both projects are compared, then the construction personnel costs for BTNO are 10.33% vs OPN2 10.31% (difference 0.02%).

- Internal NGET Only Personnel costs:
 - BTNO 9.92%
 - OPN2 7.03%.
- External specialists spend:
 - OPN2 3.27%
 - BTNO 0.41%.

BTNO and OPN2 are almost identical when including internal and external resources, and the main differences are driven by internal vs external resourcing mix. OPN2 are relying on 32% of their personnel costs to be supplemented by external support, whereas BTNO only has 4% from external support.

At the time the OPN2 Project Assessment was submitted in January 2024, the National Grid Strategic Infrastructure (SI) business unit had only recently been formed to lead the delivery of Major Transmission Infrastructure projects and therefore had not yet fully developed its in-house capability for several key roles.

As a result, OPN2 relied far more heavily on externally sourced specialists, and this was reflected in its CAI profile.

Since then, SI has undergone significant organisational growth, from around 200 FTE in 2024 to approximately 1,000 FTE today, building internal capability across project management, engineering, commercial, controls and other core functions. BTNO therefore draws predominantly on internal NGET resources, whereas OPN2 necessarily relied on external non-direct labour due to the capability gap at the time. Due to this structural shift in organisational capability, OPN2 would naturally show a higher proportion of external, non-direct CAI and BTNO will show a higher proportion of internal, direct CAI because those skills now exist in-house.

Given the scale of organisational growth and the shift from externally procured capability to in-house delivery, OPN2 is not an appropriate benchmark for BTNO when comparing CAI composition. The correct basis for comparison is the total CAI cost for each project, adjusted for project scope, complexity and duration; not the internal/external split, which reflects organisational maturity at the time rather than efficiency.

BTNO is also a more complex project for NGET to manage, compared to OPN2. More underground cabling capability will be required due to the sections going through Areas of Outstanding Natural Beauty on BTNO, compared to OPN2. There is also over 50% greater length of new OHL in BTNO compared to OPN2, so we would anticipate resources being required for a longer period of time to manage those sections of the project.

The ASTI portfolio consists of projects with complex characteristics, including multiple work sites, DCO complexities, environmental and stakeholder constraints, staged energisation, and greater compliance and system integration requirements. These all contribute to requiring increased resources when compared to our traditional projects, which are largely repeatable projects and require less resources.

Even when making comparisons between other ASTI projects, care needs to be taken to ensure appropriate data is used. For example, TKRE, a complex tunnelling project, will have a high demand for specialist resources. Given the frequency of tunnelling projects of this nature, NGET would not seek to employ these specialists directly, rather obtain this resource externally. This will result in a different balance of personnel costs when compared to BTNO or OPN2.

5. Ofgem has indicated that BTNO's EPC contracts include a high proportion of Project Management costs

Ofgem's consultation position – Ofgem has stated that within the EPC contracts, project management costs are higher when compared to industry standards. Ofgem states that “[BTNO's] OHL 26% and UGC 16% [Project Management costs] of total EPC costs are significantly higher than industry benchmarks of 12.80% and 12.30% respectively reported by Mott MacDonald and IET⁵. Overall combined PM costs for the project become additionally concerning when combined with NGET's personnel cost of 10.96%.”

NGET clarification and conclusion: We would appreciate further clarity and engagement as it is not clear precisely what is being included in any comparison. Specifically:

- A.** We believe Ofgem has not considered BTNO project specifics in arriving at its comparable industry benchmarks.
 - For OHL the 12.80% quoted above relates to projects of 75km in length however, BTNO is 18km. Therefore, it is more appropriate to use the 15km example in the IET report, which states project management costs of 16.7%
 - For underground cables (UGC), the 12.30% appears to relate to buried UGC of 75km at a medium rating. BTNO is ~11km UGC and high rating indicating a lower figure of 8.3% should be the comparator used.
- B.** We believe Ofgem has included activities relating to Site Accommodation and Site Logistics in arriving at the BTNO figures for Project Management at 26% (OHL) and 16% (UGC). After removing these non-CAI costs, the adjusted EPC contractor for OHL is 16.1% and for UGC is 13.3%. This means that if you compare against the IET report for a 15km OHL project the OHL is below the acceptable benchmark and UGC is slightly above benchmark within the report. For UGC we believe this is appropriate given the complexity of the Horizontal Directional Drilling approach we are adopting on the project and is offset by a lower benchmark on the OHL.

⁵ [100110238_001-rev-j-electricity-transmission-costs-and-characteristics_final-full.pdf](#)

3. Conclusion:

BTNO benchmarks favourably once like-for-like comparisons are applied, with its construction-phase CAI of 10.33% sitting below updated industry ranges, and its combined EPC OHL and UGC PM costs also falling beneath accepted benchmarks. When compared on a like for like basis with OPN2, total personnel costs are essentially identical, with differences driven only by the timing of organisational capability growth, rather than inefficiency. Taken together, the evidence shows that BTNO's CAI profile is not only appropriate for its scale and complexity, but also efficient relative to industry standards and its ASTI peers.