Connections Reform

Final Recommendations Report

December 2023

ESO

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Chapter 1: Context and Overview

1.1 Connections Reform Phase 1 and Phase 2 Overview

In December 2022, we published our Case for Change, to conclude Phase 1, in respect of longer-term reform of the connections process i.e. the process by which projects apply to connect to or use the electricity transmission system in Great Britain. We subsequently worked with stakeholders during early 2023 to develop and explore options in relation to a longer-term reformed process for connections and we set out our initial recommendations for reform in a consultation in June 2023.

Figure 1 below provides an overview of the ESO connections reform programme.

We have continued to engage and develop our thinking based on the ~80 responses to our consultation, and we set out our final recommendations for longer-term connections reform within this publication. Chapter 2 and Chapter 3 set out some of this stakeholder feedback in the context of our final recommendations. A detailed summary of stakeholder feedback can be found within Annex 1.

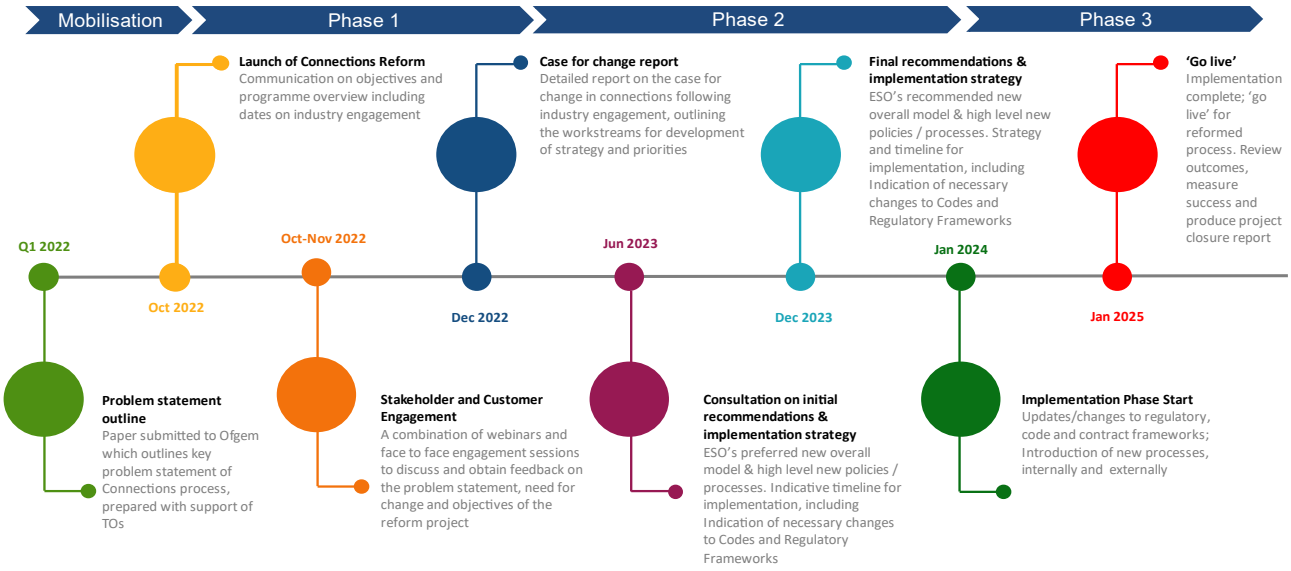

Figure 1: Overview of ESO connections reform programme

Prior to setting out our final recommendations, and in order to place them into a wider context, we provide an update on shorter-term initiatives (our 5-Point Plan and the Energy Networks Association (ENA) 3-Point Plan). These are delivering tactical improvements to the connections process (both transmission and distribution) within the context of the current regulatory and industry frameworks. We also provide an overview of key relevant broader developments in the electricity sector.

1.2 The 5-Point Plan and 3-Point Plan

In February 2023, we launched our 5-Point Plan with the aim of improving, in the shorter term, the time it takes to connect to or use the electricity transmission system, ahead of the planned longer-term changes that would be driven by our connections reform programme.

The following section provides an update on these initiatives:

1.2.1 Transmission Entry Capacity (TEC) Amnesty

We launched the TEC Amnesty in September 2022 in partnership with the Transmission Owners (TOs). We invited all parties with agreements listed on the TEC Register to confirm whether they would be willing to terminate their connection agreement at minimal or no cost, or reduce their TEC.

Following the close of the Expression of Interest (EOI) window in April 2023, we received a total of 8.1GW in applications. On 15 August 2023, Ofgem published a public letter of support, noting the steps they will take to facilitate the processing of the TEC Amnesty for these projects.

In particular, the letter noted the methodology for the costs incurred and how this would be recovered via Transmission Network Use of System charges.

As part of the final steps for this process, we reached out to all customers who had applied for TEC Amnesty, to confirm whether they wish to accept the TEC Amnesty, and are in the process of termination for those projects accordingly.

Some of the applications have withdrawn from the TEC Amnesty in recent weeks and as a result we are currently processing 4.1GW of applications that had accepted termination or reduction as part of the TEC Amnesty. We anticipate concluding that process by September 2024 - this is the length of time that it can take to finalise the Final Sums process that is associated with a Termination.

1.2.2 Construction Planning Assumptions (CPAs) Review

The CPAs include the baseline assumptions we and TOs make around volume and attrition for different technologies which will be connecting to the transmission system. These assumptions are important as they inform how we design the network and transmission reinforcements that are necessary in order to connect projects, and that ultimately drive the dates and costs of connections.

Working with the TOs we undertook a review of projects seeking connections over previous years in order to review the CPAs in line with current connection rates. Previously, offers were made based on the assumption that the majority of projects would successfully connect to the system. However, following the review, we identified that only 30-40% of projects may connect. These insights were used to update our CPAs going forward and are being used as part of the Transmission Reinforcement Works review. This review aims to identify whether fewer transmission reinforcement works are required on the network to accelerate the connection dates of some customers.

To support this review, we launched an EOI in April 2023 to establish whether some projects would be interested in accepting an earlier connection date. The customers who responded to this EOI are the focus of this initiative going forward.

In the meantime, we have continued to progress the CPA methodology and network studies based on the new CPAs with the TOs. We expect that the completion of the review will provide a view of the spare capacity available, which can be allocated to eligible projects that responded positively to the EOI. The review is progressing across Great Britain, and we are currently finalising the methodology by which connection dates for certain projects can be accelerated across transmission and distribution-connected projects. This will ensure that we make the most of the capacity that is being created by this process. Once this has been finalised, we can then move to allocating the capacity and updating customers' contracts where applicable. We aim to complete this exercise in the near future and issue updated contracts to relevant projects by Summer 2024.

1.2.3 Treatment of Storage

We have also been reviewing the way storage connections are modelled given that the previous process took a conservative view of what the assumed behaviours of storage could be. Following engagement with developers and our better understanding of the range of potential behaviours, our modelling of storage projects has improved, and should be more reflective of their actual market behaviour. These changes will allow storage to connect quicker (see 'non-firm offer development' below) and further support our ability to unlock more capacity for other projects to connect earlier.

1.2.4 Queue Management

There was previously a limited mechanism in the Connection and Use of System Code (CUSC) which enabled us to terminate projects which are not progressing. Working with industry, we proposed to update the CUSC via CUSC Modification Proposal 376 which would allow us to actively manage the queue of projects. This would mean that we would be able to terminate projects which are not progressing in line with contractual milestones, thereby freeing up capacity for other projects that can progress. On 13 November 2023 Ofgem approved 'WACM7', which captures relevant new and existing connections. The implementation date for this change was 27 November 2023. Further information from the ESO, including guidance on the implementation of this change, can be found here.

1.2.5 Non-firm Offer Development

Our 'Accelerating Energy Storage Connections Policy Update' launched in June 2023, aims to accelerate the connection of energy storge projects by removing the need for non-critical enabling works to be complete before they connect under an interim non-firm connection. This is because our analysis shows that storage projects can be beneficial for the system and support the operability needs of the system during times of stress. By connecting on an interim non-firm basis, the ESO would still be able to restrict storage projects' output under specific network conditions in order to manage the network, and these restrictions will be uncompensated. Once all enabling works are completed, these projects would connect on a firm basis and non-firm restrictions would be removed.

We have recently launched this development with an initial tranche of energy storage customers before we intend to deploy the approach to further tranches of energy storage customers. Tranche 1 is for ~20 customers (~10GW) of transmission connected battery energy storage in England and Wales. These customers will be connecting on an interim non-firm basis an average of 4 years ahead of their firm connection date.

Facilitating connection of distribution network connected storage is being progressed through the ENA's Strategic Connections Group (SCG). The ENA has their own 3-Point Plan that accelerates customer connections (further information can be found below). Point 2 of their plan is improving the coordination of the transmission and distribution interface on connections. We are working closely with the SCG to implement 'technical limits' for each Grid Supply Point. This accelerates embedded (i.e. distribution-connected) customers, connects them non-firm on a temporary basis, and (ahead of the required transmission reinforcements) manages the operational impact e.g. through an Active Network Management scheme. Once all relevant transmission reinforcements are complete, the connection becomes firm and 'non-firm' restrictions are removed. The work is technology agnostic.

However, our EOI[1] shows that there is overlap between the sites identified for Phase 1 acceleration under 'technical limits' and those embedded storage projects that opted for an accelerated non-firm connection within the EOI.

Circa 450 of distributed generation connected sites in England and Wales expressed an interest in an accelerated non-firm connection in our EOI. Circa 300 of those sites are covered by the technical limits in Phases 1 and 2. Subsequent sites are expected to be included in these arrangements as the technical limits work is deployed more widely.

1.2.6 ENAs 3-Point Plan

As referred to above, the ENA has published a 3-Point Plan to speed up connections to the distribution system and work is being progressed through the SCG. These are tactical changes that complement the work we are doing at the transmission level, through our 5-Point Plan and our ongoing work on Connections Reform.

The ENA has set out three immediate priority areas to support customers connecting to the distribution network as follows:

- Reforming the distribution network connections queue, promoting mature projects that are closer to delivery above those that may be 'blocking' the queue.
- Changing how transmission and distribution networks coordinate connections, improving their interactivity.
- Greater flexibility for storage customers through new contractual options.

We are part of the ENA and SCG and are supporting the development of the 3-Point Plan. We will continue to collaborate to develop whole system solutions as these initiatives facilitate timely project connection. This ensures consistency / alignment of initiatives across Transmission and Distribution.

1.3 Broader Developments

Since we published and consulted upon our initial recommendations there have been a number of notable developments that are relevant to our final recommendations. These include developments relating specifically to connections and wider developments relating to the design and delivery of networks more broadly.

1.3.1 Connections Action Plan (CAP)

The Department for Energy Security and Net Zero and Ofgem recently jointly published their CAP. The CAP sets out a vision for connections timescales, which includes an ambition for transmission connection dates offered to be on average no more than 6 months beyond the date requested by the customer, for viable, net zero aligned projects. The CAP sets out a variety of actions (for various parties across industry, including the ESO) to achieve that vision across various timescales, including in relation to the longer-term reformed connections process. We cover those actions within these final recommendations.

[1] As part of our 5-Point Plan, we launched an EOI to better understand customers in two areas, with this being the second of those areas.

Based on statements within the CAP, we believe our final recommendations set out within this document will be generally acceptable to (and supported by) Government and Ofgem (and the newly formed Connections Delivery Board), so long as we can adequately address some of the concerns raised about specific aspects of the reformed connections process. We will continue to work with our delivery partners in detailed process design and implementation to explore those specific aspects.

However, the Department for Energy Security and Net Zero and Ofgem set out in the CAP, delivering the improvements needed for connection times relies on a combination of factors. These include strategic investment bringing forward the network capacity needed in a timely manner; efficient and flexible management of network capacity; and an efficient connections process. Our final recommendations focus mainly on the latter two areas, but there also need to be improvements in the way networks are designed and delivered. We set out notable developments in this area below.

1.3.2 Transmission Acceleration Action Plan (TAAP)

In August 2023 the Electricity Networks Commissioner published his recommendations[2] for improvements to the way electricity transmission networks are planned and built. In late November 2023, the Department for Energy Security and Net Zero published its response to this, in the form of the TAAP[3].

The TAAP includes various measures to accelerate the delivery of transmission network, including a plan to halve the timeline for building new transmission network infrastructure from 14 to 7 years. It also set out the intention to support a holistic approach, looking at every part of the design and delivery of transmission infrastructure, seeking to reduce timelines to a minimum, while engaging communities effectively and mitigating impact on the environment.

As such, the TAAP confirmed that Government will commission the ESO in early 2024 to work with government to develop a Strategic Spatial Energy Plan (SSEP) in line with the Electricity Network Commissioner's recommendations. According to the TAAP:

"*The SSEP is intended to bridge the gap between government policy and infrastructure development plans. It will ultimately cover the whole energy system, land and sea, across Great Britain and will support the government in tandem with energy markets to determine the optimal location of energy infrastructure needed to transition to a greater supply of homegrown energy. It will set the foundation for holistic, cost-effective network planning; facilitate early engagement with the supply chain; and give more certainty to the planning and consenting process*."

As set out later in this document, we believe our final recommendations for reform are future proof for the likely development and use of the SSEP, most specifically with regards the use of application windows and the introduction of strategic coordinated network designs for connections.

1.3.3 Other developments in relation to strategic network planning

Ofgem has further consulted on centralised strategic network planning which we have responded to. We believe our final recommendations for connections reform are materially aligned with the plans for centralised strategic network planning and as such will deliver increased benefits for customers and consumers.

[2] Accelerating electricity transmission network deployment: Electricity Networks Commissioner's recommendations - GOV.UK (www.gov.uk)
[3] Electricity networks: transmission acceleration action plan - GOV.UK (www.gov.uk)

However, as can be seen from our response to Ofgem's consultation, we need to be mindful of ensuring continued alignment between the development of these two programmes prior to their implementation.

The Department for Energy Security and Net Zero has published their Offshore Transmission Network Review Future Framework. We believe our final recommendations for connections reform are materially aligned with the recommendations within the Future Framework i.e. a greater alignment between the connections process and the seabed leasing process, noting future interactions with centralised strategic network planning.

Ofgem carried out a review on the governance and institutional arrangements at a sub-national level in April 2022. The review focused on the delivery of three key energy system functions critical to how distribution systems operate and ultimately transform: energy system planning, market facilitation of flexible resources and real time operations. One of the key components of Ofgem's November 2023 decision is to introduce Regional Energy Strategic Planners (RESPs) to ensure there is appropriate accountability and effective coordination for strategic planning at a sub-national level. As a result, RESPs will be responsible for the development of strategic energy plans at the regional level, providing critical planning assumptions to inform system and network needs. The Future System Operator will be the delivery body for this role. At this stage, we believe our reform proposals are future proof to enable future alignment with RESP developments in future, but we will continue to monitor and manage interactions as thinking on RESPs evolves.

Chapter 2: Key Final Recommendations

This chapter provides an overview of our key initial recommendations in June 2023, the stakeholder feedback on those initial recommendations and our key final recommendations for the reformed connections process. Our key final recommendations focus on the overall recommended Target Model Option (TMO)[4] and the associated core components of that TMO. The next chapter focuses on further final recommendations on other aspects of that TMO.

2.1 Foundational Design Options (FDOs) and Key Variations (KVs)

Our initial recommendations in relation to FDOs and KVs were as per Table 1 as follows.

Table 1: FDOs, KVs and our initial recommendations

FDO / KV	Our Initial Recommendation
FDO 1 - Status Quo type process	Include within TMOs.
FDO 2 - Gated process	Include within TMOs.
FDO 3 - Central Planning	The reformed connections process should facilitate and enable efficient connection under either a market-based (locational signals) or centralised deployment approach, but not mandate which approach to follow. The TMOs allow for more central planning in relation to specific technology types e.g. offshore wind.
KV 1 - Application to the TO rather than the ESO	This is not an area of focus for the TMOs as it was felt that the issues with the current process were not necessarily due to which entity a developer applies to but due to broader challenges present in the process.
KV 2 - ESO responsibility for Connections Design	This is not an area of focus for the TMOs as it was felt that the issues with the current process were not necessarily due to which entity undertakes connections design but due to broader challenges present in the process.
KV 3 - Scope of Customer Delivered Works	This is not an immediate area of focus for the TMOs as, so long as the reformed connections process is future proof in relation to allowing contestability to occur efficiently, the presence or absence of additional contestability should not materially affect the design of the reformed connections process.
KV 4 - Application Windows	This is thought to be a beneficial variation to consider in the TMOs as there are natural synergies with FDO 2 and FDO 3. Therefore, application windows are included in some of the TMOs, but this is not considered as a standalone option.

[4] i.e. the overall high-level end to end design of the reformed connections process.

KV 5 - Separation of Connection and Capacity	This is not an area of focus for the TMOs given potential challenges of implementation and given that current issues with the connections process could be addressed through other, less radical, and lower risk means. There is the possibility this area could still be subject to future consideration through other reform programmes.

As detailed within Annex 1, a majority of stakeholders agreed (albeit sometimes with caveats) with our initial recommendations on the FDOs and KVs.

It is noteworthy that there was considerable feedback on FDO 3, and some stakeholders felt that we should take a position on the question of mandating a market-based (i.e. locational signals) or 'centralised' deployment approach for generation and large demand projects (or an approach somewhere between the two) as part of a reformed connections process. However, there were then a variety of different views on this i.e. what those stakeholders felt the position should be, with several concerns being raised in relation to the future potential introduction of Locational Marginal Pricing, but with no clear majority preference.

In addition, as set out earlier, there have been further developments in this area since the publication of our initial recommendations, with Government publishing the Transmission Acceleration Action Plan (TAAP), the intention to create a Strategic Spatial Energy Plan (SSEP), and Government setting out its views on a Future Framework for the planning and delivery of transmission infrastructure related to offshore projects. As set out earlier, our final recommendations align with the Department for Energy Security and Net Zero's Future Framework for offshore projects and are future-proofed to be adapted to any future SSEP.

It is also noteworthy that a notable minority of stakeholders (who provided a view) did not support our position on KV 4 and fundamentally disagreed with the principle of application windows, and they suggested that options with that design aspect should not be considered for further development. Stakeholder concerns with application windows included a slowing down of the connections process and the introduction of bottlenecks, as well as implementation complexity and timescales, and the potential for unintended consequences. We consider this further within "Frequency and/or duration of application windows in TMO4" later on in this document, but at a high level, we consider that the benefits of an application window significantly exceed the risks, which can be mitigated.

As a result, our views on all of the FDOs and KVs remain unchanged, and our final recommendations are consistent with our initial recommendations (as per Table 1 above).

2.2 High level choice of TMO

Within the consultation we presented four TMOs based on gates and application windows[5], aligned with our views on the FDOs and KVs. Stakeholders generally agreed that these were a reasonable range of options, although in some cases proposed variations or additions, which we explore further in this sub-section.

[5] TMO1 did not have an application window.

2.2.1 Stakeholder Feedback on our overall TMO Initial Recommendation

From the four TMOs presented within the consultation, our initial recommendation was for TMO4 to be the primary reformed connections process i.e. the process for new connection applications and for any significant Modification Applications. We also noted that there would be a need for secondary processes as per Target Model Add-on (TMA) O i.e. for other types of contractual change, such as the novation of existing connection contracts, etc.

TMO4 is comprised of an early application window (with an indicative frequency and duration of 12 months) and two formal gates. Gate 1 would provide connection offers towards the end of that 12-month period based on a 'co-ordinated network design connection date'[6]. This is the confirmed connection date for a project, unless that connection date is accelerated at Gate 2.

Gate 2 (initially recommended to occur when consents have been submitted by the project developer) would be used to determine queue position for projects within the application window and to potentially accelerate projects that seek advancement of their connection date.

Further information on TMO4 can be found in our initial recommendations consultation and is also provided within the next section on "Specific feedback on core aspects of TMO4". We also set out a high-level overview of TMO4 in Annex 2.

As can be seen within Annex 1, particularly in response to Question 15, there was a notable level of outright support for TMO4 in consultation responses and there was also some conditional/cautious support for TMO4.

Combining outright support and conditional/cautious support results in majority support from stakeholders for TMO4. However, some of this support is conditional on some of the changes to TMO4 proposed by stakeholders being adequately addressed as part of detailed process design.

We set out our views on the stakeholder proposed changes later on in this section, when we consider specific responses on TMO4. In that section we also set out our views on other core components of TMO4.

Stakeholder views on TMO1, TMO2 and TMO3

There was minority support from consultation respondents for the other three shortlisted TMOs. There were also suggestions for variations to those TMOs. Further information on this feedback can be found in Annex 1. The particular aspects which we felt noteworthy (based on the text taken from Question 18 in Annex 1), and our views in this are as follows.

[6] In our initial recommendations we referred to this as a 'backstop date'. However, to avoid potential confusion with an existing contracted term within the connection contracts and to more accurately describe the concept we now refer to the 'co-ordinated network design connection date' rather than to the 'backstop date'.

1. Some stakeholders suggested that TMO2, potentially with a fuller/firmer offer at Gate 1, would be preferable to TMO4. There was also a suggestion that TMO2 could be further improved with a live network model being available to inform connection applications and network design activities.

2. Some stakeholders suggested that TMO3, potentially with a fuller/firmer offer at Gate 1, would be preferable to TMO4. Reasons included that it would be more balanced between developers (who can continue to apply on an ad-hoc basis as they can do under the current arrangements) and network companies who can undertake co-ordinated design activities at Gate 2.

3. Some stakeholders also suggested Reserved Developer Capacity (RDC) could be applied to TMO2 and TMO3, if each RDC request were treated akin to an application on a first come, first served basis.

We agree that the first of the above suggestions is worth noting as a potential TMO variation (or standalone TMO). The reason being that in TMO2 there is the potential to offer a full offer (similar to today) at Gate 1, with Gate 2 effectively only being for potential connection date advancement as a result of Reactive Queue Management + (RQM+[7]) and/or via earlier interim non-firm access[8].

However, if this same alternative approach were taken for TMO3 in the second of the above suggestions the co-ordinated network design activities would be limited to anticipatory investment and potentially 'wider enabling works' (depending on TMA E, as per Section 3.2). As such it would not be possible to provide a fuller, firmer offer at Gate 1 without materially undermining the potential of the application window within TMO3. In any case, while fuller and firmer offers in these instances would effectively provide more certainty to developers at an earlier stage, they would continue to do so on a first come, first served basis (with application interactivity) and in a way which results in incremental and ad-hoc network design activities.

In respect of the third of the above suggestions, we agree there could potentially be some RDC related benefits for relevant projects within TMO2 and TMO3. However, the concept of RDC would need to be adapted within these TMOs. Due to the incremental and ad-hoc approach to RDC in these TMOs, with first come, first served capacity allocation in place, this adapted approach is likely to be sub-optimal to the proposed approach within TMO4.

In summary, we think that there is the potential for a TMO2 variation to be considered where Gate 1 provides a fully firm offer and Gate 2 provides an advancement opportunity, but only via RQM+ and/or earlier non-firm access. Within this TMO2 variation there could also be an adapted version of the concept of RDC. We also think that there is the potential for a TMO3 variation that could include an adapted version of the concept of RDC. It is not possible however to make the fuller/firmer offer at Gate 1 change for TMO3 without fundamentally undermining the underlying reason for TMO3.

As such, we have reflected these two potential TMO variations in the updated design criteria scoring in Annex 3. Whilst the potential for an adapted RDC approach improves the score in both variations, there are bi-directional changes to the score as a result of a fuller/firmer offer at Gate 1 in the TMO2 variation. The overall result is that both variations are slightly better overall than the original proposals for TMO2 and TMO3, but do not provide as much benefit as TMO4.

[7] The RQM+ concept within our initial recommendations allows 'capacity gaps' created through the termination of contracted projects to be held for allocation to priority projects, including projects which have met the Gate 2 milestone, as considered within TMA F in Section 3.3. Further information can be found within Section 3.4.

[8] In future there could be the potential to further explore the creation of a 'live network model' but this is not something which we are proposing to progress at this stage.

Stakeholder views on other TMOs

There were also suggestions from some stakeholders for other TMOs, beyond the four TMOs we included. The key suggestions (based on the text taken from Question 13 in Annex 1), and our views on them, are as follows.

'An 'Amended Key Variation 5' whereby non-firm connection offers are provided to all projects, project progress is monitored, network reinforcements are planned on a probabilistic risk-based approach, resulting constraint costs are socialised and network reinforcements are then undertaken to minimise constraint costs based on the projects actually in construction. This would result in open access to the system without a queue and a form of auctions would be utilised in relation to capacity allocation.'

This alternative proposal is similar to an extreme form of Connect and Manage but with changes to access rights and is effectively a hybrid of some of the more extreme variations considered in TMA E (as per Section 3.2). However, it goes beyond the scope of this programme (as for example it relates closely to the Review of Electricity Market Arrangements), and we also have concerns about the potential access rights and constraint costs impacts of such an approach. We have therefore not further developed this alternative suggestion as an option.

'A process where projects are allocated into multiple tracks based on an assessment of application merits at Gate 1 against fixed criteria to provide the ability to accelerate strategically important projects ahead of a less strategically important projects within a second track that follows a First Come, First Served approach.'

This alternative proposal has similar aspects to the dual track process we consider in TMA P (as per Section 3.18), but it also includes novel aspects.

We feel that assessing project merits to allocate them to a separate track would be complex and subjective and for the reasons set out in relation to TMA P, we have concerns more generally with a dual track approach for applications. We have therefore not further developed this alternative suggestion as an option.

'A process where projects continue to apply as and when they wish but they become associated with a set of planned anticipatory reinforcements and once the unlocked capacity from those reinforcements is reached applications are then closed for a region until those reinforcements are complete and a new set of anticipatory reinforcements are planned for the region.'

This alternative proposal would start to introduce material elements of centralised planning of deployment of generation and demand, which we consider would be a matter for Government and Ofgem to consider in the context of the SSEP. We have therefore not further developed this alternative suggestion as an option. However, it is worth noting that TMO4 (and potentially TMO3 to a limited extent) could in future be further adapted to reflect the approach proposed above, if such an approach were to be determined in future.

'A 'Matrix of Benefits' approach to project prioritisation with those projects that score most highly being those which are prioritised e.g. those projects best providing a decarbonised, stable and operable system.'

This alternative proposal has similarities to those we consider in TMA F (as per Section 3.3), but it would apply to the initial process of queue position and capacity allocations i.e. all projects would need to be allocated a relative priority based on the matrix of benefits at Gate 1 and this would then allocate a relative queue position. We feel that this has potential for significant complexity and challenge, which may significantly delay the issuing of connections offers at Gate 1 and potentially lead to significant legal challenge. It would also not help prioritise projects that are progressing compared to projects that are not progressing, unless combined with additional Gate 2 criteria. We have therefore not further developed this alternative suggestion as an option.

2.2.2 Specific feedback on core aspects of TMO4

Where conditional or cautious support was provided for TMO4, some stakeholders proposed changes to TMO4. The main examples of these stakeholder proposed changes are:

- Some stakeholders suggested that our initial recommendations for the milestone for Gate 2 were not appropriate and suggested either earlier (and/or less onerous) or later (and/or more onerous) milestones/requirements for the Gate 2 milestone.
- Some stakeholders suggested changes to the frequency and/or duration of application windows in TMO4; the most common suggestion being a bi-annual application window.
- Some stakeholders suggested that capacity and queue position allocation in respect of Gate 1 and Gate 2 (especially in relation to the appropriate Gate 2 milestone) needed further clarification and consideration.
- Some stakeholders suggested that more work is required on the detail of how the concept of RDC would work within TMO4 to ensure that it is applied effectively.

We consider below each of these key stakeholder proposed changes to TMO4.

Capacity and queue position allocation in respect of Gate 1 and Gate 2

A particularly noteworthy stakeholder suggestion was an alternative approach to Gate 1 and Gate 2 in TMO4, where the queue would be formed at Gate 1.

In our initial recommendations we set out that queue would be formed at Gate 2. In order to move away from the current first come first served approach (where connection application submission 'clock start' sets queue position), the stakeholder suggested that queue position and connection date should instead be allocated at Gate 1 on the basis of the connection date requested by the developer and the connection date offered to each developer as a result of the co-ordinated network design.

This approach would remove the concept of a 'co-ordinated network design connection date' that we proposed in our initial recommendations, as the connection date provided at Gate 1 would remain the connection date, unless advanced via RQM+ (or an earlier interim non-firm connection) at Gate 2.

In this alternative approach, developers might however be incentivised to request earlier connection dates at Gate 1, even where those dates are not deliverable, in order to secure a more favourable queue position. Therefore, something would need to be in place to provide a strong incentive to developers to request realistically achievable connection dates.

Our assumption is that this incentive would need to be provided by the contract milestones associated with introduction of Code Modification Proposal (CMP) 376 i.e. the code modification adding in contract milestones.

In other words, while there would be an incentive to request an earlier connection date at Gate 1, this incentive would be offset by the risk to project developers of having their contract terminated due to not meeting unrealistic early contractual milestones.

We think there is merit to further considering this alternative proposal for capacity and queue position allocation within TMO4[9]. As such we have highlighted (within Table 2) some initial benefits and drawbacks of this approach relative to the 'co-ordinated network design connection date' and queue only formed at Gate 2 approach proposed within our initial recommendations.

Table 2: Alternative Approach to capacity and queue position allocation within TMO4 – relative benefits and drawbacks

Relative Benefits	Relative Drawbacks
Gate 1 connection date would be earlier for projects that can deliver more quickly. No need for there to be a 'co-ordinated network design connection date' provided at Gate 1 – it also negates stakeholder feedback on there potentially being a need for a 'best case date' at Gate 1.	Relies on CMP376 (becoming RQM+) to work well in practice and i) incentivise developers to request realistically deliverable connection dates in their connection application, and ii) result in termination of those projects that do not do so, where not covered by an exemption.
Timing / positioning of Gate 2 becomes less important as it would now be used only for RQM+ advancement opportunities, and/or for earlier non-firm access opportunities.	Potentially makes RDC more complex, as may need to be broken into tranches to ensure that the RDC has an associated realistic connection date requested each tranche of capacity.
May be advantageous from a project developer perspective to be able to submit planning consent application with more certainty on connection date (and this could consequentially be of benefit to the Transmission Owners (TOs))	Potentially makes offshore capacity reservation more complex, as may need to be broken into tranches and make assumptions on behalf of developers e.g. if The Crown Estate and Crown Estate Scotland were to reserve capacity in anticipation of leasing rounds.
Removes requirement to amend methodology on User Commitment in respect of Gate 1.	Less chance of advancement at Gate 2 i.e. requires RQM+ to create capacity gaps.

We have included this alternative approach as a TMO4 variation in Annex 3.

It is worth noting that in the event that we decide to retain the originally proposed co-ordinated network design connection date approach at Gate 1, we will work with the TOs to consider what information could be provided to developers prior to Gate 1 in respect of the potential for an advanced connection date at Gate 2. This could partially address some of the stakeholder feedback about the benefits of a 'best case date' or 'best view' also being provided at Gate 1. Although we note that it is highly unlikely such a concept could be fully relied upon due to it being dependent upon the progress of third parties. However, it might be possible to provide some information in such circumstances e.g. to indicate to larger projects if it is unlikely based on available spare capacity that they will be able to advance when they reach Gate 2.

[9] However, due to tight timescales for Phase 3, the scope of this review/choice must be kept narrow and a decision should ideally be taken on which approach should be progressed within TMO4 prior to code changes being raised in April 2024.

Frequency and/or duration of application windows in TMO4

Due to stakeholder feedback, we have started to further explore with the TOs the frequency and duration options for the application window under TMO4. At this stage we think that material reduction to the application window duration (i.e. below 12 months) in the short-term will be a challenge. It will also likely be challenging to increase the frequency of windows below 12 months. However, both matters are subject to detailed process design and implementation activities in Phase 3[10]. We will therefore continue to explore whether any improvements to duration and/or frequency are possible, without material detriment to the overall aims of the reformed connections process. It is worth noting that a stakeholder suggested that more frequent windows could possibly help with process duration, as there will likely be fewer projects to design for within each window. We will further explore this point in Phase 3.

To further consider stakeholder feedback in respect of the annual application window cycle, we have started to consider potential application window frequencies of 9-months or 6-months, compared to a frequency of 12-months. As stated above, these options will be further explored in Phase 3, but for transparency we set them out in a little more detail below in Figure 3 to Figure 5 inclusive. Table 3 then summarises the associated process timescales of those three options. However, we first set out a more detailed overview of what we initially imagine occurring month-to-month within a 12-month process duration in Figure 2.

[10] Phase 3 is our detailed process design and implementation phase, commencing January 2024 and concluding when the reformed connections process goes live. This final recommendation report is being published as part of Phase 2, which concludes December 2023.

Figure 2: 12-Month Duration i.e. what happens in the 12-month period within an application window

	Application Window Process (12 Months)											
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Add. Pre-App Time	Pre-App and Application			CPAs and Design Time and Recommendations						Contracts		*Add. Contract Time*
Potential Additional Time Prior to Application Window to update Pre-Application Data and Information, and Self-Serve Tools, and CPA Methodology, and Network Design Methodology, etc.	Launch Event and Pre-Application Stage commences with access to data and information, self-serve tools, pre-application meetings, checklist completion, etc.	Pre-Application Stage continues but M2 is the (only) month in which connection (and significant modification) applications can be submitted to the ESO (now requiring LoA and standard contract term acceptance). This includes RDC requests and offshore wind capacity reservation.	Based on submitted applications, application fee invoices are raised and paid, technical competence is checked and resolved, where required, applications are checked for competence and resolved e.g. LOAs, any Gate 2 declarations; fast-track disputes process may be triggered for projects which are not clock started at this	Based on validated connection (and significant modification) applications from M2 and M3 creation and agreement of the CPAs (in line with the agreed CPA methodology) for use in the application window network design exercise. Data published on those in and rejected from the process.	Network Design Exercise commences and concludes - network design methodology to include approach to CSNP links, AI, developer engagement, network design criteria (e.g. economic, environmental, etc), enabling and wider works boundary clarification, treatment of bays, governance process, roles and responsibilities, approach to derogations in design, approach to firm and non-firm (Design Variations and Interim Non-Firm) in design, approach to contestability, approach to network competition, approach to modelling, etc.				Based upon the outcome of the network design exercise, recommendations and governance in relation to the connection of each project within the network design exercise and their associated Enabling Works and Connection Date, etc. Design and connection dates offered published.	Based on design recommendations TOs provide non-standard and project specific TOCOs to the ESO	Final TOCOs provided and the ESO creates and provides non-standard and project specific contract terms (Mid M11) for developers to start to review. All contracts to be offered on the same date.	Developers continue to review and accept contracts (and place securities) or allow to lapse or refer to Ofgem. Full and final outcomes to be published.	*Potential Additional Time Post Application Window to Conclude Contracting Process (if required).*

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Figure 3: 12-Month Duration and 12-Month Frequency

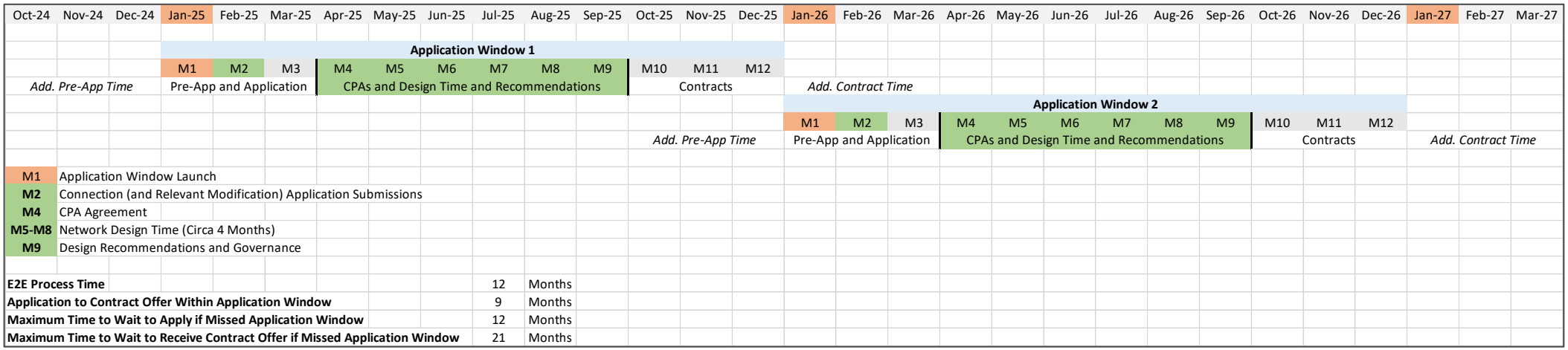


Figure 4: 12-Month Duration and 9-Month Frequency

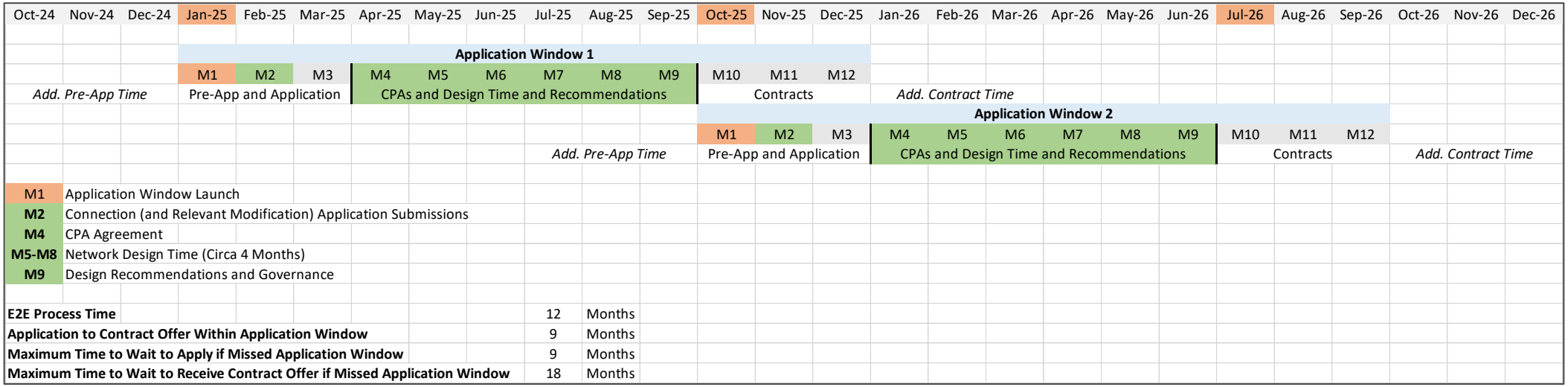


Figure 5: 12-Month Duration and 6-Month Frequency

Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26
			Application Window 1																				
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12									
Add. Pre-App Time			Pre-App and Application			CPAs and Design Time and Recommendations						Contracts			*Add. Contract Time*								
									Application Window 2														
									M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12			
						Add. Pre-App Time			Pre-App and Application			CPAs and Design Time and Recommendations						Contracts			*Add. Contract Time*		

M1	Application Window Launch
M2	Connection (and Relevant Modification) Application Submissions
M4	CPA Agreement
M5-M8	Network Design Time (Circa 4 Months)
M9	Design Recommendations and Governance

E2E Process Time	12	Months
Application to Contract Offer Within Application Window	9	Months
Maximum Time to Wait to Apply if Missed Application Window	6	Months
Maximum Time to Wait to Receive Contract Offer if Missed Application Window	15	Months

Table 3: Process Time (Three Options)

Process and Time (in Months)	12M Process / 12M Frequency	12M Process / 9M Frequency	12M Process / 6M Frequency
E2E Process Time	12	12	12
Application to Contract Offer Within Application Window	9	9	9
Max Time to Wait to Apply if Missed Application Window	12	9	6
Max Time to Wait to Receive Contract Offer if Missed Application Window	21	18	15

As a final point we ordinarily consider 'six months' to be the end-to-end process time under the status quo (i.e. pre-reform) connections process arrangements. However, it is worth noting that the status quo process can take materially longer than 6 months in some instances i.e. through Confirmation of Project Progression for relevant embedded generation and/or through the interactivity process where conditional offers have been made to developers and an unconditional offer is accepted, triggering a need to recommence the connections process for those projects.

Furthermore, if we proceeded with TMO1, TMO2 or TMO3, the end-to-end process time under each of these TMOs may actually need to be longer than 6 months. Given the significant increases in connection application volumes, the size of the connections queue, and the level of interactivity between connection applications, the current licenced and codified timescales would likely be insufficient to deliver efficient or meaningful outcomes. As such the current three-month clock start to offer period would likely no longer be sustainable in future. In our view the baseline timescale for application submission to contract offer in TMO1 to TMO3 may therefore need to extend to in the region a minimum of 6 months, with an end-to-end process of no less than a minimum of 9 months.

Gate 2 Milestone(s)

As set out earlier, our initial recommendation was that there should be a Gate 2 under TMO4 to determine queue position for projects within the application window and to potentially accelerate projects that seek advancement of their connection date. We initially recommended that this Gate 2 milestone should be when developers "Submit Consent" (i.e. "submission of the application for planning consents").

In the responses to our consultation there was at a high-level:

- Stakeholder support for gates as a concept to allow projects to advance their connection date; and
- Mixed stakeholder views, split into three relatively even camps, on the appropriate project milestone for Gate 2. These three relatively even camps were:
  - Those who felt Gate 2 needed to be at an earlier stage than "submission of the application for planning consents" e.g. successful pre-application consultation;
  - Those who thought that "submission of the application for planning consents" for Gate 2 provided an appropriate balance between project viability and risk/expenditure; and
  - Those who felt Gate 2 needed to be at a later stage than "submission of the application for planning consents" e.g. "submission of the application for planning consents plus validation with the planning authority and/or a financial health check, or even "obtaining planning consent".

Further commentary on the stakeholder feedback can be found in Annex 1.

The purpose of Gate 2 is to allocate earlier connection dates to projects that are progressing and that have flexibility in their delivery programme to take advantage of that earlier date. We note from the stakeholder feedback we received as part of our consultation that these two factors are somewhat in opposition i.e. to be more confident that projects will eventually connect, then Gate 2 would need to be as late as possible. However, in order for projects to be able to take advantage of any earlier date, that date has to be given to them early enough for them to be able to accelerate their delivery schedule, whilst complying with the conditions of their planning consent. We also note that the pre-application requirements differ based on planning type e.g. in England and Wales, there are mandatory process steps that a Nationally Significant Infrastructure Project needs to go through before they can submit an application for planning consent. These steps do not apply for smaller projects that follow a Town and Country Planning process.

Therefore, noting the conflicting factors and pre-application requirement differences described above, we are seeking to find a solution that identifies the most appropriate project milestone for Gate 2. We consider that the Gate 2 requirement needs to be clear and objectively verifiable to provide clarity and confidence for industry regarding any decision as to whether or not Gate 2 has been met. We have already developed a number of further options (as set out in Annex 4) for what Gate 2 could be and we plan to seek further stakeholder feedback on the viability of these options during Phase 3.

We also note that the alternative proposal for a Gate 2 in TMO4 (as described earlier in this section), where the queue would be formed at Gate 1. If this alternative proposal was taken forward, Gate 2 may become less important, as Gate 2 would now be used only for advancement opportunities where capacity gaps are created (and potentially for earlier interim non-firm access opportunities). If this alternative proposal is progressed it may impact views on the most appropriate Milestone for Gate 2. We will therefore take this into consideration in our future decision on project milestone for Gate 2.

We also note that there are occasions where sites do not need planning consent e.g. as they have permitted development rights, and we need to confirm whether their Gate 2 requirement would simply be submission of evidence that they have permitted development rights, etc.

Transmission and Distribution (T/D) Interface

Our initial recommendation was to introduce a concept whereby the Distribution Network Operators (DNOs) would apply for RDC on behalf of small and medium embedded generators (EG) within each application window. This would allow DNOs to reserve ‘firm’ capacity for small and medium embedded projects within each application window, with that reserved capacity incorporated into the network modelling assumptions and methodology used to create the coordinated network design. This would ensure that queue/capacity allocation was aligned with both transmission connected and large EG, whilst small and medium EG did not need to wait for an application window.

We recognised that there was still a requirement to work through a number of considerations to determine whether our proposal for RDC within an application window could work in relation to TMO4. These considerations were:

- Whether the different approach for small and medium EG compared to transmission connected generators and large EG is justified.
- Whether a financial and/or regulatory mechanism (e.g. User Commitment) is needed to incentivise accurate forecasting of requirements by DNOs and to avoid more RDC than is necessary being requested, at the risk of inefficient network reinforcement;
- Whether RDC should be made available on a rolling use-it-or-lose it basis i.e. if RDC was unused from the prior window at the start of the relevant subsequent window it would be returned for use within that subsequent window; and

- How RDC is fairly allocated once it is made available e.g. to avoid a situation where small and medium EG applies for additional capacity (and unnecessarily uses up all the RDC) out of concern that RDC will not be available later in the inter-window period.

Overall, where a view was provided by stakeholders in response to our consultation, the responses were generally supportive of an RDC approach (although there were also some concerns), with the recognition that the current processes for managing connections across the T/D Interface are not fit for purpose. However, it was highlighted by some stakeholders that the high-level RDC process we outlined in our initial recommendations would need to be developed further to determine the benefits and ensure that this would support small and medium EG, whilst ensuring that there would be no material issues for transmission projects and large EG (or material issues for small and medium EG).

This feedback highlighted the main themes which needed to be addressed for RDC and that we therefore considered in conjunction with the DNOs through the T/D Interface Sub-Group[11]:

- Ensuring that there is sufficient RDC allocation in each application window so small and medium EG does not face delays in having to wait for the next application window.
- Exploring the approach to RDC forecasting and incentives that could be applied, including financial and commercial obligations, as well as the extent to which these should be applied (noting the potential for unintended consequences).
- The level of specificity required for RDC forecasting and allocation, as within our consultation we proposed that RDC forecasts would be both Grid Supply Point (GSP) and technology specific.
- Ensuring that there is not a detrimental effect on smaller EG should larger EG apply and utilise all the RDC available, and what the appropriate threshold is for projects which can utilise RDC and projects which need to await an application window.

The sub-group commenced RDC discussions in September 2023 to discuss the themes raised in more detail with a view to considering further possible solutions which could facilitate the concept of RDC. A summary of the discussions and proposed solutions are detailed below.

RDC forecasting – A number of discussions focussed on the importance and accuracy of RDC forecast requests with DNO's highlighting that the submission of RDC in advance of known applications makes it complex to provide an accurate forecast, given the uncertain external factors such as policy changes, attrition and planning permission timescales. Furthermore, it has been highlighted that there would need to be a degree of acceptable variance applied to ensure that there is the right balance between having sufficient RDC available to meet small and medium EG applications in each inter-window period and ensuring that DNO's are not penalised where RDC has not been fully allocated which may focus perceptions that DNO's are over forecasting. Some alternate proposed solutions have considered a rolling approach to RDC requests or multi-year requests which would allow the DNO's to have a greater RDC allocation. A further augmentation proposed by one of the sub-group members considers an approach where RDC is allocated to small and medium EG based on energisation dates in line with the study date parameters. This could remove some of the forecasting uncertainties. With this proposal the current processes for forecasting (such as Week 24) would continue to provide the ESO with a longer-term view of potential applications.

RDC applicability – The sub-group considered RDC thresholds and investigated whether using Type A, B, C or D Power Generating Modules would be a more appropriate approach to thresholds. This was discounted as this approach is by generating unit and not by site.

[11] To consider stakeholder feedback further and start to try to address some of the points raised, we have worked with the ENA and DNOs to set up a Sub-Group within the SCG to explore the T/D Interface, including the concept of RDC.

Level of specificity – The sub-group highlighted that RDC forecasting would be more onerous, and complex, should the approach proposed within the consultation be progressed in relation to level of detail required for the forecasts be implemented. The sub-group felt that specifying a forecast by technology type could have a detrimental effect on small and medium EG as there could be scenarios where there is not sufficient RDC available for a particular technology type leading to delays in the DNO's ability to respond to EG applications. Furthermore, the sub-group suggested that the initiatives in this area that are being developed more broadly under the umbrella of the Energy Network Association Strategic Connections Group (SCG) should set the foundations for the approach i.e. that the impact on boundary flows of a given technology can be calculated as equivalents to other types of technology.

Live code modifications – It was noted that the impacts of other relevant code modifications needs to be carefully considered to avoid creating additional complexities and unintended consequences and therefore the sub-group has proposed to dissociate the proposed RDC thresholds from the current code modifications in development e.g. GC0117 and GC0139[12].

Queue management and capacity re-allocation – The sub-group discussed how forecasted capacity could be fairly re-distributed in the event that some projects could progress faster than others and/or if there are changes to the contracted pipelines. Reference was made to the work undertaken by the SCG on capacity reallocation and it was proposed that this methodology would be considered as part of the RDC proposal. Queue management will need to be administered by the incumbent network/system operator but effective coordination of queues needs to be whole system considering both distribution and transmission elements.

Existing processes – The group discussed the timing of the proposed annual window and the effects that this may have to existing processes such as Week 24 process. The group highlighted that to ensure forecasts contain the latest winter peak demand data, the application windows should ideally accommodate the current Week 24 timings, or alternatively we should align both the application windows and Week 24 process to ensure the forecasts submitted to the ESO reflect the latest position.

RDC Definition – The sub-group discussed whether RDC is the best description of the proposed concept and discussed alternatives which were felt to potentially be a more accurate description.

As a result of the consultation feedback and the ongoing sub-group discussions, it was agreed that we should introduce the concept of RDC for DNOs, acknowledging that there is further development required for attrition as part of detailed design. This will require that DNOs forecast future RDC requirements and apply for RDC (for projects between certain MW thresholds) within application windows. This will allow DNOs to offer and allocate Developer Capacity (DC) to EG applicants in the inter-window period in line with the following high-level arrangements.

- The threshold range for EG which can utilise RDC (rather than awaiting an application window) will be set at[13]:

    - Scottish Hydro Electric Power Distribution 1MW - <10MW
    - Scottish Power Distribution 1MW - <30MW
    - England and Wales 1MW - <100MW

[12] Grid Code proposal GC0117 is a live code modification which is considering amending (amongst other things) what MW is considered to be a large power station. GC0139 is reviewing the scope and detail of data exchanged between DNOs and ESO for system planning.

[13] Note that in some scenarios, projects below 1MW may need to have RDC depending on the impact on the transmission system. The nominal lower threshold is currently under review via the SCG action plan.

- DNOs will manage the offering/allocation of firm capacity to EG projects within the above threshold range via RDC. It is worth noting that work is also planned more broadly within the SCG to further consider the lower end of these threshold range.
- We will continue to explore whether the above Scottish limits could and should be increased (to no more than 100MW) within Phase 3.
- EG above these upper threshold limits would be subject to the application window process i.e. they would need to apply directly to the ESO (as well as the relevant DNO) and they cannot utilise RDC[14].
- These proposed thresholds should help alleviate concerns that the RDC allocation could be fully utilised by larger EG to the detriment of smaller and medium sized EG.
- We expect that DNOs would submit RDC forecast requirements for up to ten years. This ensures that there will be sufficient future capacity available to allocate to EG projects within the above threshold range in the inter-window period as and when they apply to the DNO for a connection. This mitigates the risk raised by some stakeholders that DNOs will not have sufficient RDC available to allocate to such EG developers.
- The RDC forecast submissions to the ESO from DNOs in the application window will be by GSP, year and technology type. This level of detail is required to ensure that the RDC impact is accurately modelled within the co-ordinated network design process.
- Further detail about the RDC forecast submissions and how they will be formed is needed (e.g. whether to include attrition rate) and this will be developed in Phase 3.
- The ESO will review the RDC forecast submissions, assess the impact on the transmission system, identify any transmission reinforcements required and specify the corresponding RDC capacity to be provided to the DNO on a yearly basis by technology and GSP. This RDC capacity will be provided based on the 'co-ordinated network design connection date' or alternative stakeholder proposed approach, as further considered elsewhere in Section 2.2.2.
- To address the concerns that forecasts at a technology specific level of detail would add complexity to the use of RDC, the technology swapping methodology currently being employed through technical limits could potentially be used with RDC. However, further work is needed in Phase 3 to understand whether this is possible as the technical analysis underpinning the two initiatives is different.
- Once a DNO connection offer has been accepted by the EG, the offered RDC becomes DC and it will remain contracted on that basis with the DNO. Therefore, this will reduce the available RDC for the remainder of the inter-window period.
- Any RDC which has not been offered/allocated at the end of each inter-window period will (as part of a subsequent application window and its RDC forecast/request) be restudied/refreshed (if still being forecasted/requested). This is to ensure that alignment remains between the allocation of firm connection dates (and capacity) to projects which cannot utilise RDC and to those can utilise RDC (and so avoid the need to await the application window outcome to be provided with a firm connection date from a transmission perspective).
- RDC can only be offered by the DNO to EG within the above threshold range in the period for which it has been made available for use i.e. within the relevant inter-window period(s), and in line with RDC allocation provided to the DNO for those time periods.

[14] In the event that GC0017 results in a requirement for EG projects below these thresholds to hold an agreement with the ESO (or where projects below these thresholds choose to hold an agreement with the ESO) we will need to consider this as part of TMA O (Secondary Processes) to ensure that those projects are able to get the agreement they require from the ESO without having to await an application window (and through use of the RDC process).

- Where such EG then meets the Gate 2 milestone there is potential for an accelerated firm connection date. This ensures that transmission and distribution projects are treated on an equitable basis for access to earlier connection dates where firm capacity is or becomes available i.e. in accordance with our broader TMO4 proposals.
- After further consideration, we are no longer recommending that an earlier non-firm connection can only be requested by EG (within the above threshold ranges) once it has met the Gate 2 milestone. We are now recommending that DNOs can offer earlier non-firm connections (where such arrangements are in place e.g. via technical limits) to such EG projects in line with those arrangements, even where Gate 2 has not been met. In addition, we are also considering the possibility of allowing DC allocated through this process, which has been terminated (for whatever reason) to be reallocated by the DNO to a comparable EG project. This is aligned with ongoing developments within the SCG.
- Appropriate licence conditions/obligations for DNOs are likely to be a sufficient incentive to ensure that a suitable level of RDC (including in for anticipatory investment) is forecast by DNOs and requested within application windows. The Connections Action Plan states that Ofgem plans to review connections incentives and obligations for Q2 2024. It may be prudent for existing/planned DNO/Distribution System Operator licence conditions/obligations to be considered in the context of RDC in this review. For the avoidance of doubt, we are therefore not proposing any liability or security requirement (or charge) in relation to requesting or holding RDC. However, there will continue to be liability and security requirements for DC (as is currently the case) under the prevailing arrangements.

We are confident that once the above approach is fully developed in Phase 3 it will benefit EG within the above threshold range by allowing DNOs to (in most circumstances) provide a firm Transmission connection date at the same time that they provide a Distribution connection date, This avoids the need to have a second step Statement of Works and Confirmation of Project Progression process which results in a delay to the full connection picture being provided to EG projects at the same time. It also allows DNOs to continue to offer an earlier non-firm connection where such arrangements are in place. In addition, it allows stronger strategic network planning between the DNOs, TOs and ESO by allowing future capacity forecasts (of up to ten years) to be included in the co-ordinated network design process, allowing anticipatory investment related to EG projects to be identified within TMO4.

Whilst this document continues to refer to RDC throughout for consistency, it is proposed that we now use Distribution Forecasted Transmission Capacity (DFTC) to refer to this concept in Phase 3. The sub-group felt that DFTC is a more accurate description of the concept which is to be developed within Phase 3.

The T/D Interface Subgroup will continue to develop the DFTC process and methodology in further detail against these high-level principles in Phase 3 to allow go-live on the planned date. This will include engagement with the Connections Process Advisory Group and Connections Delivery Board (as described in Chapter 4) at the appropriate time, prior to any necessary code modifications being raised by April 2024 (as per our code change strategy detailed within Chapter 4). This will also need to include further consideration on how the first RDC allocation will be provided for use whilst the first application window process is undertaken in 2025.

Directly Connected Demand

Our initial recommendation was that directly connected (i.e. transmission-connected) demand would go through the same connections process (i.e. TMO4) as directly connected generation.

We also stated that the benefits and challenges of including directly connected demand projects within the reformed connections process on the same (or a similar) basis to generation would be broadly the same as for generation.

Of those who provided a view, a significant majority agreed with the initial recommendation. The most common reason stated in support was that this provides network design synergies in respect of both generation and demand applications. However, some of these stakeholders also stated that while directly connected generation and directly connected demand should go through the same process, that process should be something other than TMO4. Separate to the consultation responses, we also heard concerns that awaiting an application window under TMO4 could have drawbacks for strategically important directly connected demand projects.

Considering all of the above, we agree that directly connected demand being included in the same process as directly connected generation will result in network design synergies. We disagree that TMO4 has greater drawbacks for directly connected demand compared to directly connected generation, as both project types require comparable connection date location and date certainty as soon as reasonably practicable to de-risk project development. However, for future strategically important demand projects, we consider that it would be worth exploring whether there is a case for capacity being reserved by a central body (with the identity of such central body to be confirmed), akin to the approach to RDC (as above) or for offshore projects (as per Section 3.5.1).

2.3 TMO Final Recommendations

2.3.1 High level design of the reformed connections process

Based on stakeholder feedback and further analysis we recommend that:

- **TMO4 should be used as the basis for the reformed connections process;**
- **TMO4 should apply to all new generation, interconnection and demand connection applications (or significant Modification Applications) received after the 'go live' date; and**
- **Before 'go live' of the reformed connections, where capacity is freed up (as a result of termination of existing connections contracts e.g. via CMP376) we intend to allocate that capacity to either 'priority projects' (as defined within TMA F in Section 3.3) or projects identified via an Expression of Interest (EOI) process) - the EOI process would apply until such time as Gate 2 arrangements are in place.**

For the avoidance of doubt, as a small number of stakeholders queried this in response to our consultation, we want to clarify that we also expect TMO4 to be the connection process for interconnectors and (in future) offshore hybrid assets.

We recommend that the high-level design of the reformed connections process under TMO4 should be based on:

- **an early application window;**
- **a series of network modelling assumptions and an associated network design methodology to create a coordinated network design as an output of each application window. This would be used as the basis for issuing connections contracts at Gate 1 (and Gate 2);**
- **two formal stage gates (Gate 1 and Gate 2) for issuing and managing connections contracts, including queue position and capacity allocation; and**
- **introduction of RDC to allow DNOs to reserve 'firm' capacity for certain embedded projects (i.e. projects connected to the distribution network) within each application window. That reserved capacity would be incorporated into the network modelling assumptions and methodology used to create the coordinated network design.**

We continue to consider that TMO4 best meets our design criteria and remains the most beneficial model for customers and consumers, as it:

- will provide the greatest opportunity for earlier connection dates for generation and demand projects across Great Britain, on a first ready first connected basis;
- will lead to more efficient and coordinated future planning of the network (i.e. onshore, offshore, including interconnectors and offshore hybrid assets, and across transmission / distribution), thereby delivering savings to project developers and consumers;
- supports more efficient delivery of network infrastructure, by building out the network more efficiently in anticipation of need;
- better facilitates competition, innovation and the introduction of non-build solutions; and
- is most future-proofed and aligned to facilitate the introduction of a SSEP, and best aligns to (and allows synergies with) Centralised Strategic Network Planning and strategic planning of offshore networks.

We note in this context the current ongoing challenges caused by operating different processes for different projects (e.g. between onshore and offshore projects, or between Transmission and Distribution) where there are considerable alignment challenges and complexities.

This has strengthened our view of the need for a common connections process for all relevant projects, even if within that common process there are relatively minor specific tailored process deviations for certain types of projects (e.g. offshore and embedded).

We have further refined our ESO qualitative design criteria assessment within Annex 3, which continues to show that TMO4 (or the TMO4 variation) is the highest scoring of the TMOs.

For the reasons set out earlier and in our initial recommendations, we do not believe that any other TMOs better meet our design criteria (this includes any stakeholder proposed variations or alternative TMOs).

2.3.2 Detailed process design

We recommend that the detailed process design of TMO4 is developed and finalised during Phase 3 in alignment with the above high-level design. As part of detailed design in Phase 3 we propose to work with industry and other key stakeholders to consider and decide on the following key detailed design aspects of the reformed connections process:

- timing of capacity and queue position allocation i.e. whether to allocate queue position at Gate 1 (as per the variant described above) or retain the initial recommendation for the 'co-ordinated network design connection date' approach that allocates queue position at Gate 2;
- the frequency and/or duration of application windows, both for the first window following 'go live' and for future windows once the reformed process is more established;
- timing and project milestone(s) for Gate 2, noting the interaction with the preferred approach to capacity and queue position allocation, as above;
- appropriate interactions with other key processes, such as the Capacity Market regime and our Network Services Procurement (Pathfinders)[15], as holding a connections agreement can be important in respect of both of these processes;
- detailed design of RDC, so that RDC is forecast robustly and efficiently and that sufficient RDC is available so 'relevant' embedded generation will only need to await an application window in exceptional circumstances, as set out in Section 2.2.2; and
- to give further consideration to whether, for future strategically important demand projects, there should be a case for capacity being reserved by a central body (with the identity of such central body to be confirmed). This could be akin to the approach to RDC or for offshore projects (as further described in Section 3.5).

Overall, we think that the above key aspects are resolvable matters of detail that can be addressed within detailed process design in Phase 3. We consider that any agreed variations in the above bulleted areas from the initial recommendations for TMO4 would not detract materially from the overall cost benefit case for TMO4 compared to other potential reformed connections process models.

We recommend that the key aspects of TMO4 referred to in the above bullet points are developed on an expedited basis during Phase 3 as part of the Minimum Viable Product (MVP) for the reformed connections process. There are also some additional aspects of TMO4 that we think should be included in the MVP – these are highlighted in Chapter 4.

Further information on the MVP and the aspects of our final recommendations which we consider to be fixed, and those we consider to be semi-flexible (or fully flexible) can be found within Section 4.5.

[15] Network Services Procurement (Pathfinders) are projects that look for innovative solutions to operate the electricity system of today and tomorrow and keep costs down for consumers: https://www.nationalgrideso.com/industry-information/balancing-services/pathfinders

Chapter 3: Further High-Level Final Recommendations

This chapter provides an overview of our remaining initial recommendations, stakeholder feedback and our associated final recommendations.

3.1 Target Model Add-on (TMA) D – Requirements to apply

Our initial recommendations were:

- The introduction of a requirement for a Letter of Authority (LoA) to enter into the connections process (TMA D1);
- The introduction of a duplication check against that LoA and other aspects of the application (TMA D4);
- The standardisation and simplification of the terms and conditions within the connection offer (TMA D5); and
- The introduction of a requirement to accept a standard form contract as part of the connection application process (TMA D6).

In our consultation, we argued that, coupled with changes to the Pre-Application Stage, these changes would improve the quality of applications and reduce speculative applications.

In the responses to our consultation there was at a high-level:

TMA D1 and TMA D4

- Majority support for introducing the LoA, although stakeholders noted:
  - a need to clarify the process for and timing of the duplication check proposed under TMA D4; and
  - Recognition that some technologies will have different forms of LoA.

As a result of the above feedback, we continue to consider that the introduction of the requirement for a LoA to enter into the connections process (TMA D1) would be beneficial. We note that the Connection Actions Plan (CAP) was also supportive of the requirement for a LoA. We agree that there is a need to clarify the process for and timing of the duplication check proposed under TMA D4. We also agree that the overall approach to LoA needs to flexible to recognise that some technologies will have different forms of LoA.

TMA D5 and TMA D6

- Limited specific response, but there was tacit support to pursue further, with one stakeholder noting the need to bring these up to date with the technologies that are currently connecting to the system; and
- The main comments from those that provided a view were related to a need to work through the detail and see where standardisation can be achieved across the network companies. There was an acceptance that there is no one size fits all approach and that there will be geographical and technology variations and that Transmission Owners (TOs) should retain the right to apply non-standard clauses where necessary.

To facilitate TMA D6 we feel it is beneficial to also implement TMA D5 as this would minimise inefficiencies in the contract offer process (as the contract offers would be focused only on project specifics). We have further explored the potential challenges that the standardisation and simplification of terms and conditions in the connection offer (TMA D5) across all TOs will present. We have also considered the relative priority of this change compared to the other changes we propose to make, particularly where we need TOs resource and engagement e.g. development of the Target Model Option (TMO) 4 process.

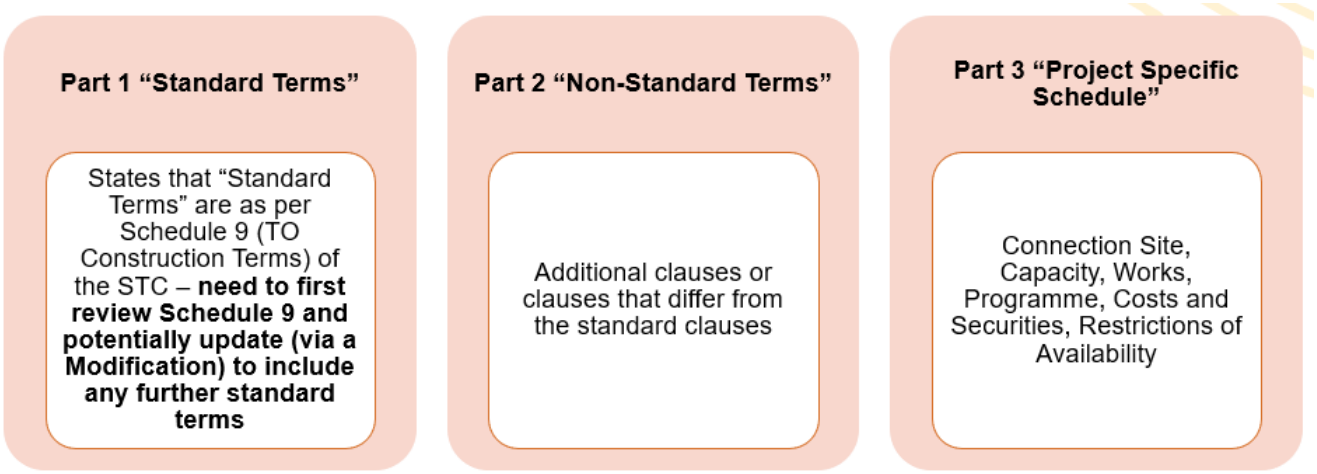
We have concluded that standardisation and simplification of terms and conditions in the connection offer across all TOs would be difficult to achieve (and has been difficult to achieve previously as TOs have their own "standard" clauses) and geographical variations (e.g. transmission voltages differ geographically) would need to be taken into account, so a one size fits all contract appears unrealistic in the short-term, as well as being resource intensive.

Therefore, noting the above resource and geographical challenges, we believe TMA D5 should be limited to agreeing a standard structure of the TO Construction Offer (TOCO) between the TO and the ESO, which can then assist the ESO with creating the standard form contract between ESO and customers. This will allow the implementation of the requirement to accept a standard form contract as part of the connection application process (TMA D6).

We consider that the standard structure of the TOCO should make clear: i) which clauses are standard (by reference to the TO Construction Terms set out in Schedule 9 of the System Operator Transmission Owner Code (STC)); ii) which clauses are non-standard; and iii) include a schedule of project specific details.

A proposed structure is included in Figure 6 for reference below:

Figure 6: Proposed standardised TOCO structure



This structure will enable the ESO to produce connection contracts for customers that clearly identify both the standard and non-standard clauses.

In summary, our final recommendations for TMA D are:

- **To introduce a requirement for a LoA to enter into the connections process, in order to reduce speculative applications (TMA D1 and D4).**
- **To align with the CAP recommendations related to introducing an LoA, where we are:**
  - **now encouraging customers to provide a LoA on a voluntary basis;**
  - **in the process of raising an urgent code modification to introduce a LoA requirement at application stage as soon as possible; and**
  - **considering further measures to support the LoA process, which will be developed as part of the code modifications related to the reformed connections process.**
- **To standardise and simplify the terms and conditions in the connection offer (TMA D5) limited to agreeing a common structure rather than agreeing a standard agreement across all TOs.**
- **To introduce a requirement to accept a standard form contract as part of the connection application process (TMA D6), with non-standard terms offered to developers leading up to Gate 1.**

Although desirable, the improvements to TMA D5 and D6 are not essential. We therefore do not propose that the improvements to TMA D5 and D6 should form part of our Minimum Viable Product (MVP) for the reformed connections process.

3.2 TMA E – Determination of enabling works

In our initial recommendations we noted that at present the connection date offered as part of a connection contract is generally the product of three factors:

- The Construction Planning Assumptions (TMA E1);
- The Connect and Manage regime (TMA E2); and
- Compliance with the Security and Quality of Supply Standards (TMA E3).

We also noted that it is sometimes possible for developers to seek a non-compliant connection, which is often called a design variation or a 'non-firm' connection. Our consultation noted that the above factors can be thought of as levers, which when pulled in isolation or combination, will to a greater or lesser extent impact upon the extent of enabling works, connection dates and connection access. For each lever, the consultation then went on to suggest a number of potential improvement possibilities.

A fourth area was considered i.e. Anticipatory Investment (TMA E4), in respect of the ability to include network design and associated investment in relation to connections where it goes beyond the needs of the immediate network required to connect each project i.e. by anticipating future network needs.

For our initial recommendations, due to the interacting and compounding effect of pulling the TMA E1 to TMA E3 levers, and associated impact on the balance of risk between developers and consumers, we recommended not making any further changes until the impact of the 5-Point Plan is known. We also initially recommended that before deciding whether further action is required with regards to TMA E4, it would be beneficial to develop robust criteria and processes for determining anticipatory investment under TMA E4 once final recommendations have been made on the preferred TMO.

The majority of stakeholders who commented on this aspect agreed with the initial recommendation that it is right to wait until the impact of the 5-Point Plan is known before forming a view on whether further changes are required to TMA E1 to TMA E3.

Some thought that more should be done now in respect of leveraging the options available to endeavour to further advance connection dates. Some others felt we should be doing more now and working up options (or a 'Plan B') for what else we might do in future once the outcome of the 5-Point Plan is known. Some stakeholders called for TMA E4 and anticipatory investment to be more immediately implemented.

With regards to TMA E1 to E3, we agree that more should be done now in respect of investigating the impact of leveraging the options available to further advance connection dates.

With regards to TMA E4, we continue to think that a robust methodology is required in relation to how anticipatory investment is considered within the connections process. This will need to consider how we ensure that the presence of anticipatory investment in a co-ordinated network design does not adversely impact the connection dates for projects which have applied to connect within a window.

In light of the above, our final recommendations for TMA E are:

- **To make a recommendation to the Connections Delivery Board (CDB) (as detailed within Chapter 4) in Q1 2024 on whether to make further changes to TMA E1 to TMA E3, in line with the recommendation in the CAP. In order to do this we will further explore the cost benefit case of further changes to TMA E1 to TMA E3. We have integrated this into our thinking on "Additional actions we could take ahead of 'go live' of the reformed connections process", as set out further in Chapter 5.**
- **To incorporate our thinking on anticipatory investment (TMA E4) into the development of the MVP connections network design methodology to be used within the co-ordinated network design process for connections in future.**

3.3 TMA F – Criteria for accelerating 'priority' projects

Our initial recommendations were:

- Projects that have official designation by Government (TMA F1) or demonstrate significant additional consumer, net zero and/or wider economic and societal benefits (TMA F2) should be capable of being accelerated under the reformed connections process, due to the significant associated benefits that could be provided.
- A reformed connections process should be able to accelerate projects that are ready(ier) to connect (TMA F3) as it helps allocate capacity to those projects that are most ready to use it.
- A price-based mechanism (TMA F4) for accelerating projects should not be progressed at this time due to its potential to favour larger or more established developers and/or certain types of technologies as accelerated connection dates would be determined based on an ability to pay.

In the response to our consultation, at a high-level there was:

- Majority support for our initial recommendation to proceed with TMA F1, TMA F2 and TMA F3. However, support was caveated on the basis of criteria for identifying priority projects needing to be clearly defined, consistent and transparent, including clarifying the relative priority order between projects in TMA F1 and TMA F2 and TMA F3 categories. Additionally, stakeholders generally felt that any acceleration of projects should not detrimentally impact those projects in the queue that are sufficiently progressing towards their connection date.

- On TMA F1, there were a minority of stakeholder views expressing that Government should not be determining the projects to be progressed and that centralised intervention may undermine investor confidence. There were also concerns over the potential for excessive lobbying from industry.
- The majority of stakeholders also agreed with the initial recommendation not to proceed with TMA F4, as acceleration criteria solely based on a project's ability to pay would favour larger portfolio developers or more commercially competitive technologies and could inadvertently rebalance the technology mix.

Further commentary on the stakeholder feedback can be found in Annex 1.

We agree with the comments on the need for clearly defined and transparent criteria for what constitutes a priority project under each of TMA F1, TMA F2 and TMA F3. We agree that acceleration of priority projects should not disadvantage other projects that are progressing. We also agree that we should clarify the relative priority order between projects in TMA F1 and TMA F2 and TMA F3.

We also note the majority support for our initial recommendation not to proceed with TMA F4.

Therefore, our final recommendations for TMA F are:

- **That 'priority' projects in categories TMA F1, TMA F2 and TMA F3 should be capable of being accelerated under the reformed connections process.**
- **That Government should define transparent criteria for what constitutes a priority project under TMA F1.**
- **That we will provide further clarity on the criteria for TMA F2 (having worked with Government) and TMA F3.**
- **That we will provide further clarity on the rules for relative priority between TMA F1, TMA F2 and TMA F3.**
- **That a price-based mechanism (TMA F4) should not be progressed at this time.**

We consider these final recommendations to be part of the MVP in respect of TMO4.

3.4 TMA G – Queue Management

As part of our consultation, we presented three Queue Management approaches as follows:

- **Reactive Queue Management (RQM)** – where a 'capacity gap' is theoretically filled by the next project in the queue on a first come first served basis.
- **RQM+** - where a 'capacity gap' is allocated to a 'priority project' (as per TMA F) rather than on a first come, first served basis.
- **Proactive Queue Management (PQM)** – where a project can be accelerated without capacity first being released by another project. Under this approach there is no 'capacity gap' so the risk of this acceleration sits either with consumers (in terms of additional constraint costs or reduced system operability) and/or other developers (in terms of potentially pushing back their connection date as a result of an accelerated project taking their place in the queue).

Our initial recommendation was for RQM+, as this provides greater potential for project advancement than RQM, without the risk of detriment to other projects or consumers associated with PQM.

In the responses to our consultation, at a high-level there was:

- Majority support for a form of RQM (as opposed to PQM), with the majority of these stakeholders then supporting the initial recommendation of RQM+, as this would provide greater utilisation of the network and also allow projects to progress without detriment to others. Stakeholders generally felt PQM would result in detriment to others, as the risk of acceleration would sit either with consumers and/or existing contracted schemes that are progressing (albeit more slowly than any accelerated projects) towards their milestones;
- Minority support for PQM on its own as it allows projects to advance more efficiently and in a timelier way even where no capacity gap exists, and this could have a greater impact than either of the RQM options;
- Minority support for RQM+ as an interim measure until PQM is introduced; and
- A suggestion from one stakeholder for a variation of RQM where available capacity is offered to all in a connection queue and interested parties would submit updated timelines and project plans which are then assessed by ESO to determine the most appropriate project to accelerate.

Some stakeholders asked for further details and some of these suggested applying real-life scenarios to each of these options, which would help some stakeholders decide which option they favour. One stakeholder suggested that benefits for the transmission/distribution system and for consumer costs should also be considered when determining the order of project queues. Further commentary on the stakeholder feedback can be found in Annex 1.

We note the majority support for our initial recommendation of RQM+. We agree that PQM could provide further potential for project advancement than RQM+, but the benefit may be outweighed by the detrimental impacts this could have on the other projects and consumers. We also note that PQM adds complexity in terms of establishing the rules for advancement and postponement of others (e.g. how to determine the new queue position and bay allocation of a project pushed back via PQM).

In our view the variation of RQM where available capacity is offered to all in a connection queue and interested parties would submit updated timelines and project plans, introduces additional processes and associated delays to determining which projects to accelerate. Additionally, it introduces subjectivity as it may be difficult to develop objective criteria that the ESO could use to determine the most appropriate project to accelerate.

We acknowledge that we need to address how projects from different windows interact with each other where RQM+ is used in TMO4 i.e. in what circumstance (if any) could a project from a later window connect prior to a project from a previous window. Our current thinking is that the only circumstance where a project in a later window could move ahead of a project from an earlier window is if there is a capacity gap created and no project in the earlier window is able to use this capacity. The reason we have proposed this is that if you allow customers to jump their connection date forward past projects from earlier application windows, if they meet milestones quicker than projects in earlier windows, that effectively becomes akin to PQM. This would raise the same concerns we have more generally with PQM, which is that it may represent a significant challenge for investors if there were no certainty on their connection date and that it may favour certain technologies that are able to progress more quickly than others to Gate 2.

Therefore, our final recommendations for TMA G are:

- **That RQM+ is utilised following 'go live' of the reformed connections process so that 'capacity gaps' are allocated to 'priority projects' (as defined within TMA F).**
- **Before 'go live' of the reformed connections process, where capacity is freed up (as a result of termination of existing connections contracts e.g. via Code Modification Proposal (CMP) 376), that we apply RQM+ to allocate that capacity to either 'priority projects' (as defined within TMA F) or projects identified via an Expression of Interest (EOI) process) - the EOI process would apply until such time as Gate 2 arrangements are in place.**

We consider RQM+ to be part of the MVP in respect of TMO4.

In support of these recommendations, we will develop examples/scenarios of how RQM+ will be applied in practice, including considering how projects from different windows interact with each other.

3.5 Offshore

In our initial recommendations we noted that TMO4 was the model most aligned to offshore connections and the one which would require the least adjusting between offshore and other technology types.

The overwhelming majority of those who responded to our questions noted that TMO1 to TMO3 would require a separate offshore process and agreed that TMO4 was the most aligned process for offshore developments. However, there was a request for more clarity as to how it could work with some feedback suggesting offshore could follow a more central plan, as well as needing to be integrated into the Offshore Transmission Network Review workstreams.

Therefore, our final recommendation is for offshore projects to be treated consistently with other technology types (i.e. within TMO4), with a couple of exceptions, set out as follows.

3.5.1 Leasing Round Capacity Requests/Reservations

A potential area of offshore divergence relates to our continued work with The Crown Estate and Crown Estate Scotland to determine the feasibility and appropriateness of aligning TMO4 and the seabed leasing processes.

This could extend to leasing round capacity requirements being applied for (or reserved) by The Crown Estate and Crown Estate Scotland, rather than by project developers. This could even involve the ESO contracting with those parties for this capacity, with those connection contracts being novated to project developers once the outcome of the seabed leasing round is known.

This could be possible as, unlike for onshore projects (and some offshore projects), there is a specific area (and in some cases an associated capacity) leased which is allocated to the winning bidders.

So, there is already a greater element of central planning in relation to offshore wind seabed leasing rounds. For offshore capacity not subject to leasing rounds, we envisage that developers would continue to apply directly to the ESO in the relevant application window.

We intend to continue our engagement with The Crown Estate and Crown Estate Scotland on this matter and if appropriate to map out existing processes to determine where and what changes may need to be made. We will explore whether this can be introduced, either in similar timescales to the TMO4 MVP or to a different and appropriate timeline. Until this change is introduced (or if it later becomes apparent that it is not appropriate to introduce this change) any capacity related to seabed leasing rounds will follow the core TMO4 process.

Either way, the approach to be taken in the inaugural application window will be clearly communicated in good time prior to the commencement of the application window.

3.5.2 LoA Equivalent for Offshore Projects

As a potential further area of offshore divergence, in the event that The Crown Estate and/or Crown Estate Scotland apply for capacity themselves (as considered in Section 3.5.1), the LoA equivalent requirement will not be applicable, due to the status of those organisations.

This will be different if the application relates to a future leasing round, but is from a project developer, or if it is not related to a leasing round (e.g. for interconnectors). In such circumstances we continue to consider that an LoA equivalent document (signed by the relevant leasing entity) will be required to enable a developer to submit their application to the ESO within an application window. We will work with The Crown Estate and Crown Estate Scotland to develop an appropriate LoA equivalent which could be provided to offshore developers to facilitate their connection applications.

We anticipate this LoA equivalent being of a broadly similar complexity and cost to obtain as an onshore LoA, and our continued work with The Crown Estate and Crown Estate Scotland will test whether there are any specific offshore challenges which could warrant a slightly different approach.

We propose that an LoA equivalent for offshore projects should be developed and implemented within a similar timeline to onshore arrangements (i.e. TMA D1 and TMA D4, as considered in Section 3.1).

Our final recommendation is to continue to explore and develop these two potential core process divergences for offshore projects (i.e. Leasing Round Capacity Requests and LoA equivalents) in Phase 3.

3.6 Network Competition

In our consultation we noted that any reformed connections process will need to consider that in future there is the potential for interaction between the connections process and competitive processes and competitively appointed parties e.g. through Network Services Procurement (Pathfinders), Competitively Appointed TOs and Offshore TOs.

Our initial recommendation was that TMO4 is the best model to incorporate these competitive processes as it is the option which includes the most design time at an early stage in the end-to-end process. As a result, there is more time to identify and consider the impacts and options in respect of transmission network (or underlying network needs) which has been (or could be) competed via network competition processes.

In the responses to our consultation, at a high-level there was:

- Tacit[16] majority support for our initial recommendation with a minority of these stakeholders adding that design time at an earlier stage could help reduce uncertainty, which is a potential barrier to competition. They added that it allows more time for checks to correct/adapt any design work and make it fit for purpose;
- A request for more detail, notably whether or not the competition model will be early or late and further understanding the links between the Centralised Strategic Network Plan (CSNP) and the connections process;
- A minority of stakeholders, including some who supported the initial recommendations, were unconvinced that TMO4 necessarily was the most aligned to network competition, with some of these stakeholders noting that network competition can still be implemented under one, some or all of the other TMOs; and
- A minority of stakeholders argued that during the assessment window an option to use a competitively appointed 'Independent TO' should be offered to deliver and adopt connection assets.

Further commentary on the stakeholder feedback can be found in Annex 1.

Although there was only tacit majority support for our recommendation, we maintain that TMO4 is the best model for facilitating network competition.

However, we accept the view that network competition could be implemented under the other TMOs (although in our view, not as effectively). We also agree that there is a need for more detail, notably including whether or not the competition model will be early or late and further understanding of the links between the CSNP and the connections process.

We also note the comment on having an option to use a competitively appointed Independent TO to deliver and adopt any connection assets. This is a matter for Ofgem to determine, but if this option is taken forward in future, we believe that TMO4 would be the best model to facilitate efficient design and delivery of connections via Independent TOs.

We also note there are live code modifications[17] that further enable contestability into the connections process and specifically provide an option for Users to construct assets that are solely for their use before such assets are adopted by the relevant TO. These code modifications are currently with Ofgem for decision, but we note that the presence or absence of additional contestability should not materially affect the design of the reformed connections process. However, we consider that efficient contestability or competition in the construction of assets should reduce connection costs and timescales when combined with the wider changes we recommend via TMO4. It should also help promote more innovative connections design, including potentially substation and/or substation bay redesign to allow more projects to connect.

Therefore, our final recommendation is that we will further explore how TMO4 can best facilitate the application of various competitive processes.

[16] Noting that a significant number of stakeholders (i.e. around 50%) did not answer this question.
[17] CMP330/CMP374 https://www.nationalgrideso.com/industry-information/codes/cusc/modifications/cmp330cmp374-allowing-new-transmission-connected
CMP414 https://www.nationalgrideso.com/industry-information/codes/cusc/modifications/cmp414-cmp330cmp374-consequential-modification
CM079 https://www.nationalgrideso.com/industry-information/codes/stc/modifications/cm079-consideration-stcstcp-changes-relation-cmp330374

3.7 TMA A: Access to Self-Service Tools

In our consultation TMA A considered access to self-service tools and provision of greater information to project developers, accessed through providing indicative project information. There was universal support for any improvements that can be made at the Pre-Application Stage and a clear requirement for granular and up to date datasets. The overwhelming majority of consultation responses were in favour of progressing TMA A and highlighted the need for improvement of information provision at the Pre-Application Stage.

Self-service tools that we could provide in the short term (i.e. by end-March 2024 as a target date), based on data owned by the ESO, include a mixture of enhancements to existing datasets and reports, as well as new tools designed specifically to give customers more granular data and information at the Pre-Application Stage as follows:

- **Transmission Entry Capacity (TEC) Register** – an enhanced TEC Register that includes additional data fields relating to queue position and historic rates related to Modification Applications. This dataset will enable customers to see what is connected and contracted to connect to the transmission system at a project level of granularity.
- **Transmission Works Register (TWR)** – an enhanced TWR including additional data fields for geospatial analysis. This dataset details all the transmission reinforcement works across the transmission system at a project level of granularity.
- **Queue Analysis** – new datasets showing the transmission queue at a technology type level of granularity. The dataset will also include attrition assumptions and the current contracted position against the Future Energy Scenarios.
- **Geospatial Analysis** – a new interactive map providing the following information at the TO, regional and substation level of granularity:
    - Connected capacity;
    - Future contracted capacity;
    - Number of in-flight applications; and
    - Latest offered connection date.

Additional tools and analysis to be developed and made available in the medium term (with timescales to be confirmed as subject to collaboration and data exchange with the TOs - we expect the target date to be in the next financial year) with the ESO, TOs and Distribution Network Operators (DNOs) working collaboratively to provide further geospatial analysis, which could include more granular information such as substation capacity, substation headroom and available connection bays.

As well as progressing these additional tools the ESO will continue working with the Energy Networks Association and DNOs towards a position of being able to consolidate and publish a combined transmission and distribution queue. This work will feed into whole system tools that can be used by parties looking to connect at both transmission and distribution level. In line with the requirements under the CAP, the ESO will produce an implementation plan for the progression of whole system tools by the end of February 2024.

It is clear through the reform consultation responses and other feedback received by the ESO for some time that more detailed information related to the contracted background and queue is required in order for customers to make more informed decisions regarding where to connect on the transmission system. The above list is not exhaustive but will address the vast majority of what has been asked for in consultation responses and should reduce the number of speculative applications.

All enhanced and new pre-application datasets and tools are to be made available through the ESO website and data portal and will therefore be publicly available to all, without the need to register or apply or pay for a pre-application meeting (as considered in Section 3.9).

Therefore, our final recommendation is to provide various additional self-service tools by end-March 2024 and to develop and make available additional tools and analysis in the medium term (timescale to be confirmed).

We consider these final recommendations to be part of the MVP in respect of TMO4.

3.8 TMA B: Getting the best out of Pre-Application Meetings

In our consultation TMA B considered getting the best out of pre-application meetings and is defined as ensuring the pre-application meeting is structured and there is a checklist filled out prior to booking a meeting so that all parties maximise the use of the meeting.

It is clear from the consultation responses that pre-application meetings are valuable to developers and even with the introduction of new tools and datasets formal pre-application meetings will still have their place in the process.

If, after exhausting the proposed new pre-application datasets and tools, customers still require a formal pre-application meeting, this will be applied for through the ESO Connections Portal. As part of the process customers will have to register on the portal and will also be asked to complete a form detailing key information about the proposed project. Functionality to book a pre-application slot through the portal will also be introduced.

Pre-application meetings will consist of a set agenda, including as a minimum:

- Customer overview of the proposed project(s);
- TO summary of network conditions in proposed area(s);
- Indicative TO view of connection timescales;
- Explanation of the connections process, including on the relevant contractual concepts e.g. User Commitment (UC), Charging Methodologies and Queue Management; and
- Questions (provided by the customer in advance)

Outputs of the meeting will include customer access to any slides presented as well as notes from the meeting, which will be made available on the ESO Connections Portal.

Meeting attendees will be pre-defined and will consist of a minimum of the following:

- Customer party;
- TO commercial representative;
- TO engineering representative; and
- ESO commercial representative.

Finally, it is clear from the consultation responses that there is ongoing frustration at pre-application meeting lead times, and although in many cases it is acknowledged that this is attributed to the increase in connection applications, it is a clear area for improvement. Therefore, a ‘to be determined’ and defined Service Level Agreement should be introduced for a pre-application meeting taking place. We will further explore the appropriate timescale and mechanism for this during Phase 3.

Therefore, our final recommendation is that customers can apply for a formal pre-application meeting through the ESO Connections Portal, which will be clearly structured and will be based on a 'to be determined' and defined Service Level Agreement.

We consider these final recommendations to be part of the MVP in respect of TMO4.

3.9 Pre-Application Stage Fee

The consultation included an initial recommendation for a Pre-Application Stage Fee to facilitate access to self-service tools and to a pre-application meeting.

The consultation responses were mixed on this topic and although many were not against the prospect of such a fee, many respondents expressed concern at the quality and output of the current pre-application meetings and noted that this should certainly be an area for improvement if a paid service were to be introduced.

Based on the consultation responses, our view is that self-service tools and datasets should be made available to all through the ESO website, and not just to parties who register on the relevant portals or request a pre-application meeting. It is also our view that the introduction and availability of high quality and up-to-date tools and datasets will reduce the requirement for formal pre-application meetings and therefore where a formal pre-application meeting is required it should attract a proportionate fee.

We propose that the fee for any pre-application meeting(s) would be added to the application fee invoice and would form a non-reconcilable part of the application fee. In the event a customer has a pre-application meeting and does not go on to submit an application within a defined period of time, they will be charged the pre-application meeting fee. A fee would also be incurred if a customer failed to attend an organised pre-application meeting. The value of these Pre-Application Stage fees will be determined in Phase 3 and made clear within our annual statement of use of system charges.

Therefore, our final recommendation is to introduce a Pre-Application Stage Fee that would be added to the application fee invoice and would form a non-reconcilable part of the application fee.

A Pre-Application Stage Fee will be progressed as part of the MVP application fee review/refresh under Section 3.11.

3.10 TMA C: Appropriate use of optioneering route

In our initial recommendations, we set out our views that an optional optioneering route should remain open to developers. We received limited stakeholder feedback on this aspect of our consultation, although it was noted that further development of this aspect of the initial recommendations is not the highest priority in the context of connections reform.

Our final recommendation is that an optional optioneering route should remain an option for developers within the reformed connections process.

However, we do not believe this should be part of the MVP and as such we propose to develop this as part of our work on secondary processes (as considered in TMA O).

3.11 TMA H: Structure and Value of Application Fees

In our consultation we initially recommended a review of the structure and value of application fees to align to the reformed connections process. A clear majority of those who provided a view in response agreed with our initial recommendation, but many also wanted clarity on the process and value of fees. A significant proportion of those not who did not expressly support, or who rejected this initial recommendation, cited the need for clarity before they could decide.

We therefore continue to recommend a review of the structure and value of application fees to align with the reformed connections process.

We consider this to be part of the MVP for TMO4.

The aim of this review will be primarily to ensure that application fees remain cost reflective of the work required under the reformed connections process.

However, a consequence of aligning applications fees to the reformed connections process in a cost-reflective way, is that it could result in increases or decreases to application fees, relative and in proportion to the stages of the reformed connections process.

Whilst not pre-empting the outcome of the review of the structure and value of application fees in Phase 3, we foresee a proportionate application fee being applied and (if not fixed) reconciled separately in relation to the initial application leading up to Gate 1 and any separate future application in relation to Gate 2.

We note that the CAP considers the potential for increasing financial requirements in relation to attaining a connection or holding connection capacity and asks the ESO and network companies to bring forward recommendations to the CDB in Q1 2024. Due to this, if the level of applications and projects within the contracted background continues to increase at the recent rate, we will investigate further whether to materially increase fees as a deterrent to less viable projects.

3.12 TMA I: Criteria for ESO to reject an application and TMA N: Criteria for ESO to reject a modification

In our consultation we noted that that there could be merit in developing clear and transparent criteria where we are able to reject connection applications based on (for example) location or technology type e.g. in the event any applications did not align with a central plan, if this were to be developed in future. We also separately noted that guidance should be published on what the maximum permitted scope of a Modification Application should be e.g. in relation to maximum changes before it becomes a new application rather than a Modification Application.

Of those who provided a response, most focussed on the application rejection element of these TMAs, where there was a mixed response, with some opposed noting that technology or location should not be used as rejection criteria. Others who supported the ability to reject in such circumstances noted the need for clear criteria being published in advance.

In relation to application rejection, whilst we already have this right under certain circumstances, we note the opposition from some stakeholders. However, in a reformed connections process we continue to believe that there needs to be some ability (based on clear criteria) to not allow an application to proceed in certain pre-defined circumstances in future, such as if it is not clearly in line with any clearly defined relevant government and/or regulatory policy at the time (for example, a potential future Strategic Spatial Energy Plan (SSEP)).

As such, to future proof the reformed connections process we continue to recommend an ability for the ESO to have the ability to reject applications in certain clear and pre-defined circumstances.

Whilst not necessarily part of the MVP this should be progressed in parallel to future proof TMO4.

To reduce stakeholder concerns about the ESO becoming the general arbiter of who can apply (which is not our intent), we would make it clear when such powers could be used in advance through clear and pre-defined criteria, as developed and agreed with Government and/or Ofgem. Any associated guidance would also be expected to provide examples of when these powers may and may not be used by the ESO. Two examples of what may constitute grounds for rejection are as follows:

- If government stipulates no new connections, or a limit of capacity/overall numbers, of a particular project type or technology, and/or at a defined location; and/or
- If the SSEP becomes a directive, and a project not aligning with it applies to connect.

In relation to Modification Applications, we continue to plan to provide guidance on what is considered to be permissible within a Modification Application and what modifications to a connection agreement would require a new connection application.

Whilst important this is not considered to be part of the MVP.

3.13 TMA J: Optionality provided in an offer

In our consultation we initially recommended continuing with the status quo approach of providing a single offer to an application, with the ability to advance connections dates later in the project's development cycle (TMA J2). This would be rather than moving to an alternative approach, such as providing a small range of connections offer options. Of those limited number of stakeholders who provided a direct response there was majority support for our initial recommendation. There was however some minority support for greater formalised optionality in offers, with suggestions being provided on how this could be achieved within the process. However, we continue to believe that formal provisions for two or more connections design offers within the process significantly increases complexity and as a result we do not propose to introduce them. We would continue to expect that design optionality is discussed with developers where it is naturally identified within the connections process and can be accommodated without detriment to the delivery of the process.

Our final recommendation is to continue to provide a single connection offer to an application, with the ability to advance connections dates later in the project's development cycle (TMA J2) and with the ability to discuss design optionality with developers where it is naturally identified within the connections process and be accommodated without detriment to the delivery of the process.

3.14 TMA K: Capacity products in an offer

To provide connections to and use of the transmission system, we have a range of products which provide capacity. The main product (albeit only for some projects) is TEC and there are also less frequently used products to exchange or temporarily increase TEC. Other access rights to use the transmission system such as demand capacity, or 'non-firm' capacity are currently not formally defined. TMA K considered better defining or clarifying these access rights, which the connections contracts would then provide for in future. TMA K was split out into the following 7 specific proposed options (i.e. K1 to K7), shown in Figure 7 as follows.

Figure 7: TMA K initial proposed options

Ref	Title	Description	SS
K1	Fundamental review of time-limited products	Redesign the current range of time-limited capacity products to provide a wider range of products as well as temporary capacity decreases.	-1
K2	Clarification of existing time-limited products	Retain existing (i.e. LDTEC and STTEC) products but provide more detailed guidance on when/why they can be used. This would maintain the status quo products.	0
K3	Define and formalise new 'non-firm capacity' products	Define what is meant by 'non-firm' and create a range of products that formalise 'non-firm' capacity.	+11
K4	Define and formalise new demand capacity products	Define and create a new TEC-equivalent product for demand capacity.	+1
K5	Fundamental review of capacity trading products	Redesign the current capacity trading products to provide a wider range of options for connecting customers to trade capacity between them.	+3
K6	Clarification of existing capacity trading products	Retain the existing (i.e. Temporary TEC Exchange) product but provide more detailed guidance on when/why they can be used. This would maintain the status quo products.	0
K7	Define and formalise new 'access trading' products	Design a new product whereby capacity isn't traded (i.e. TEC) but 'non-firm' access (as per K3) is exchanged between connecting customers.	-1

The initial recommendations from our consultation were as follows:

- **A better definition of Transmission Import Capacity (TMA K4)** to support data transparency and contract management, with the introduction of a Transmission Import Capacity Register and contracted import access values in the same way as exists for export values.
- **A better, clearer definition of 'non-firm' access (TMA K3)** to support a common understanding and use of the term 'non-firm' at Transmission and avoid confusion with the use of the same term in respect of Distribution.
- **Simplification of the existing temporary (and exchange) capacity products (TMA K2 and K6)** i.e. Short-Term TEC, Limited Duration TEC, Temporary TEC Exchange and TEC Trade which will support process and code simplification.

We did not propose to broaden these concepts e.g. to apply to capacity prior to connection, or to provide for exchange without reference to the ESO, or other related suggestions which we discussed as part of our stakeholder engagement on capacity products. However, we noted that it may be worth exploring whether the simplified products could be made more dynamic than they are at the moment e.g. more frequently requestable and/or available for shorter time periods. Once implemented, we also stated that there may also be scope to further consider this in conjunction with TMA K3, to explore if and how it could be possible for a project with non-firm access to temporarily increase their 'firmness' under such arrangements.

TMA K3 received strong stakeholder support to progress, as stakeholders felt it could help enable earlier connection dates via non-firm access. Stakeholders also felt arrangements would need to be consistent across distribution and transmission.

Our initial recommendations on TMA K2 and TMA K6 also received majority support from stakeholders, and for such capacity products to be more transparent and simplified and to offer quicker and more innovative ways to connect to the transmission system.

There was also some interest from stakeholders on a more formalised definition of Transmission Import Capacity (TMA K4) and its potential inclusion in a corresponding register.

Our final recommendation is to continue to progress with TMA K2, TMA K3, TMA K4 and TMA K6.

Although desirable, these improvements are not essential. We therefore do not propose that the above should form part of the MVP for the reformed connections process.

3.15 TMA L: Requirements to accept an offer

In our consultation we initially recommended a review of UC arrangements, solely in relation to ensuring that the prevailing methodology is aligned with the reformed connections process, rather than to change any of the underlying principles of UC.

Of those who provided a view, the overwhelming majority of stakeholders agreed that a review should be done but only in so far as how UC applies to the reformed connections process.

Therefore, our final recommendation continues to be that UC should be reviewed to ensure alignment with the reformed connections process.

This is considered to be part of the MVP for TMO4.

Since our consultation we have given further thought to what the impact of our final recommendations could be on UC. Whilst this will be subject to the code modification process, we set out some of these more detailed initial thoughts on UC alignment as follows:

- There may be a need to remove the ability for developers to fix their securities, or to reconsider how and when developers can elect to fix their securities. The reason is that the transmission reinforcement works upon which securities are based may be set at Gate 1 in a way which results in a level of over-securitisation, depending how reinforcement works are set at Gate 1 and then potentially amended at Gate 2 (if an advancement application is submitted);
- Due to the way in which capacity and transmission reinforcement works could be allocated within each application window, we need to ensure that the security requirements remain proportionate. For example, reinforcement works allocated in relation to a co-ordinated network design connection date could in some cases result in over-securitisation if those works are later reduced at Gate 2 (if a project's connection date is accelerated). Therefore, we plan to explore the introduction of some form of an adjustment factor up or down (alongside, or through amendments to, the existing Strategic Investment Factor and/or Local Asset Reuse Factor). This adjustment factor could apply to each project to make sure that the total securities held by the ESO in any securities period remain proportionate;
- We need to ensure that the current bi-annual securities processes align with the application window processes. Once there is further clarity on the frequency and duration of application windows (and the timing of the stages within those application windows), we will undertake a review as to whether a bi-annual security process is still the most appropriate method of securing (e.g. an alternative could be an annual process) and re-map the processes to prevent a potential unnecessary resource bottleneck across the ESO, TO and developers; and
- There will be a need to review whether an application window based batched approach results in reinforcement works becoming specific to each application window. As such, we will need to explore whether the reinforcement works designed within an application window should only be secured by those who applied within that application window, or whether these works may still be secured by projects across different application windows. We will also need to explore whether those projects in the first (and later) application windows continue to secure any works which are ongoing at the time of their application, rather than being newly designed within an application window.

In our consultation we also considered the introduction of some form of capacity holding charge or capacity holding security in addition to UC.

However, we did not initially recommend this be introduced and whilst there was limited stakeholder support for the concept we are not recommending that this be introduced at this stage. However, please see Chapter 5 in relation to this and other options being considered under packages of additional changes that we could make to the connections process before or in parallel with 'go live'.

We note that the CAP considers the potential for increasing financial requirements in relation to attaining a connection or holding connection capacity and asks the ESO and network companies to bring forward recommendations to the CDB in Q1 2024. Due to this, if the level of applications and projects within the contracted background continues to increase at the recent rate, we will investigate further whether to materially increase UC and/or introduce a capacity holding charge (or security) as a deterrent to less viable projects.

3.16 TMA M: Timeframe for updating contracts

In our consultation, we noted that due to the lead-time between a connection contract first being signed and that project connecting, it is likely that the contract will need to be updated to reflect project or network related changes. TMA M proposed a number of options for such contractual updates e.g. ad hoc changes as now, an annual review, a 6-monthly review, etc. Our initial recommendation was for ad hoc changes as now (i.e. TMA M1) as it allows the most flexibility to respond to requests.

Of those who provided a view, there was majority support for the initial recommendation but most then did not provide any specific comments. The majority of the comments received were related to the need for more proactive contract management and defined timescales for updating contracts (including Agreements to Vary). A minority of stakeholders did not support the initial recommendation and argued for an annual review cycle where all contracts are reviewed (i.e. TMA M2) that would capture changes on the network and/or when key milestones are reached i.e. (TMA M5).

However, we believe that defining the timescale for when contractual updates are made adds inflexibility and additional administrative burden (particularly for the options that obligate a more frequent review, which may not be needed).

Therefore, our final recommendation is to continue to apply the current status quo option where contracts are updated on an ad hoc basis i.e. TMA M1.

However, we agree with stakeholders that there should be Service Level Agreements on contract updates (where updates are required) and we will consider this as part of the detailed process design and implementation of TMO O in respect of secondary processes (as below).

3.17 TMA O: Secondary Processes

In our consultation we initially recommended that there should be a review of secondary processes prior to implementation of a reformed connections process. We stated that it should explore the appropriate timescales related to secondary processes with the aim that these be undertaken quicker than the primary process. This review will ensure that secondary processes are clear and aligned with the primary process. We set out that we envisaged that secondary processes would include:

- Charging only changes (TMA O1);
- Corrections and administrative changes (TMA O2);
- Contract novations (TMA O3); and
- No transmission system impact applications (TMA O4).

We highlighted that Modification Applications could fall within the primary process or a secondary process depending on the circumstances and that this would require further clarification.

Of those limited number of stakeholders who provided a direct response there was majority support for this initial recommendation. One stakeholder asked for the ESO to consider including capacity reductions (i.e. TMA O7) to incentivise freeing up of capacity and to include connection site changes (i.e. TMA O9) (if outside of the developer's control) in the scope.

We continue to believe that a review of secondary processes is required, including timescales. This review should consider exactly what the secondary processes are, having first clearly set out what is required to go through the primary process.

Our final recommendation remains unchanged from our initial recommendation - we will further review and clarify exactly what is considered to be a secondary process and exactly what is considered to require the primary process, including in respect of Modification Applications. This will be undertaken in detailed process design and implementation as part of Phase 3

Whilst clarification of what is to be within the primary process is considered to be MVP, the subsequent development of changes to existing secondary processes is not necessarily part of the MVP, but it could be beneficial to develop any such changes in similar timescales.

3.18 TMA P: Dual Track Process

In our consultation, we noted that priority projects (as per TMA F) will need to be managed differently to regular projects to reflect their priority status.

TMA P proposed three options for the process these priority projects should progress through:

- Use the main TMO process (TMA P1);
- Use a quicker secondary process for non-material changes developed under TMA O (TMA P2); and/or
- Use a bespoke priority project process (TMA P3).

We initially recommended that only TMA P1 should be progressed as it is simplest to implement and avoids any potential preferential treatment or conflict with TMO4.

Of those stakeholders who provided a view, there was majority support for our initial recommendation, as those providing a view generally felt that ‘priority projects’ should follow the same timeline and process to ensure efficient network design.

Therefore, our final recommendation is that priority projects should progress through the same process as other projects i.e. TMO4.

3.19 TMA Q: Financial Compensation

In our consultation, we initially recommended the current status quo option (i.e. TMA Q1) where, as part of the connections process, applicants can opt to pay more on their connection charges to fund liquidated damages which are paid if the connection date is delayed.

We also considered three other options which were:

- TMA Q2 (Price Control) - a new price control mechanism would be applied to the ESO and/or TO by Ofgem. This incentive mechanism would transfer a value from ESO and/or TOs to applicants in the event of a contract change e.g. related to a delayed connection date;
- TMA Q3 (Network Charges) - a value would be transferred from the ESO to the developer in the event of a contract change e.g. related to a delayed connection date. This value would be socialised and recovered by the ESO via network charges; and
- TMA Q4 (Applicant Fund) - all contracted developers contribute towards a central fund and this central fund is then used to compensate individual projects if they are subject to a contract change e.g. related to a delayed connection date.

However, we did not initially recommend progressing any of these as they would dramatically affect the balance of risk between parties and so we set out that we considered it prudent to maintain the status quo (i.e. TMA Q1) unless Ofgem deem this balance should be adjusted in future, such as via price control arrangements.

At a high-level (from those who provided a view), in response to our consultation:

- There was majority support for the initial recommendation, albeit there was also significant minority opposition to it, although most of these responses did not provide specific comments.
- Within the minority opposition it was argued that the initial recommendation does not go far enough, and more obligations need to be placed on network companies (e.g. via price controls) to deliver to time and any financial impact of delays should be shared between customers, the ESO, and TOs.

Further commentary on the stakeholder feedback can be found in Annex 1.

Given the majority support (albeit tacit) for our initial recommendation and the commercial challenges for the other options, we propose to retain our initial recommendation. However, we note the feedback on the need for stronger obligations on network companies and sharing costs of delays and we have shared this feedback with Ofgem so they can then consider as part of price control arrangements. We imagine that this will be considered by Ofgem in their review of connection incentives, obligations and requirements by Q2 2024, as detailed within the CAP.

Our final recommendation is to continue with the current status quo option (i.e. TMA Q1) where, as part of the connections process, applicants can opt to pay more on their connection charges to fund liquidated damages, which are paid if the connection date is delayed. In the event that Ofgem later determine an alternative approach to financial compensation we will seek to accommodate this within a reformed connections process in future.

3.20 TMA R: Management of Underutilised Capacity

In our consultation, we initially recommended the introduction of 'Use it or Lose it' (UIOLI) arrangements for connected projects to ensure that their contracted capacity is being fully utilised and to monitor how much is actually used by projects once they have connected, so as to be able to reclaim any unused capacity. Of the stakeholders who provided a view, there was majority support for this initial recommendation. There were however some comments seeking further information on how this approach could be implemented. For example, on timelines and communication before removal of any unused capacity, on there being clear rules on when capacity is relinquished, and on there being an appeals process where the reasons for underusing contracted capacity can be justified.

A minority of stakeholders did not agree with the UIOLI approach with one stakeholder asking the ESO to consider a 'Use it or Share it' approach rather than the proposed UIOLI approach. Another stakeholder argued that the UIOLI approach is impractical, and another argued that if connectees are willing to pay the appropriate costs for their connection size, they should have the right to that capacity and added the case for stronger signals to discourage oversizing connections would be better contained within the network charging methodology.

Our final recommendation is that introducing a UIOLI mechanism for connected projects will ensure more efficient capacity reallocation where projects are no longer using their contracted capacity but are yet to relinquish it.

This is not considered to be part of the MVP for TMO4.

Being mindful of stakeholder feedback, we expect that detailed process design will need to consider the potential for unintended consequences, such as in relation to projects which intermittently use their contracted capacity, but use it periodically, or may have a requirement to use it mostly or only for non-wholesale market reasons. There will also need to be clear communication from the ESO where there is an intent to seek to remove unused capacity.

3.21 TMA S: Fast Track Dispute Process

In our consultation, we initially recommended that a fast-track dispute process must be put in place for situations where an applicant decides to challenge an ESO decision on whether a project has or has not met the requirements for applying and/or progressing through a gate.

This initial recommendation received considerable support from stakeholders who provided a view, with the only opposition being from a stakeholder who disagreed with the initial recommendations as a whole and argued that an appeals process is therefore unnecessary. There were only a handful of comments, but these were asks to ensure the process is clear, fair and transparent and needs to be agreed with Ofgem.

Our final recommendation is therefore that we will work closely with Ofgem to define and develop a fast-track dispute process which would be fair and transparent to all parties.

This is considered to be part of the MVP for TMO4.

Stakeholders have expressed the need for fairness and transparency across the reformed process, and a fast-track dispute resolution process will provide developers the opportunity to challenge decisions where they feel that a decision is unfair or unreasonable.

We also think that where there is a related dispute, before any formal dispute is raised with Ofgem, there should be an informal process (as there is with the current disputes process) to seek to resolve the dispute within a specified timeframe. The requirement for an informal escalation prior before deciding to raise a formal dispute or complaint will minimise the risk of complaints which can potentially be resolved more quickly with the ESO/TO, rather than going directly to Ofgem. This may prevent unnecessary delays to progressing projects.

Chapter 4: Detailed Process Design and Implementation

4.1 Chapter Overview

This chapter sets out our plans for Phase 3 of our Connections Reform programme i.e. Detailed Process Design and Implementation. Within this chapter we explore the governance structure we intend to put in place, alongside the Department for Energy Security and Net Zero and Ofgem, and our proposed implementation programme. We also set out our planned approach in relation to stakeholder engagement and code change. We also highlight where our plans and approach are different for the Minimum Viable Product (MVP) aspects of our proposals (when compared to the Non-MVP aspects of our proposals).

4.2 Governance and engagement

As set out in Ofgem and the Department for Energy Security and Net Zero's Connections Action Plan (CAP), we understand that Ofgem is to create a Connections Delivery Board (CDB) to provide strategic steer to all changes to the connections process (at transmission and distribution level) and to hold organisations to account for timely and coordinated delivery. As a result of the formation of the CDB, we will discontinue the Delivery Partners Executive Group (which provided steer on connections reform during Phase 2). The scope of the CDB will also cover other connections improvements being delivered through the 5-Point Plan, the Energy Networks Association (ENA) led Strategic Connections Group (SCG) and any additional major changes we make over the coming year (see Chapter 5 for further information).

We think it is also important to provide appropriately focussed robust external governance in relation to detailed design and implementation. This should allow industry to advise on detailed process design and code modifications, but within the envelope of the parameters we set out in these final recommendations. To achieve this, we intend to create a Connections Process Advisory Group (CPAG), with an independent chair and broad representation from across industry, to supplement the existing code change governance frameworks, and to replace the existing Connections Reform Steering Group. The purpose of the CPAG is to provide guidance and steer to support ESO in undertaking more detailed design and implementation planning for changes to the connections process. The CPAG will support timely and efficient design and implementation of changes and promote coordination across workstreams and other relevant industry groups. This will include the initial scoping of necessary industry code changes prior to any relevant code changes being delivered via the existing governance. As such the CPAG will work collaboratively to:

- Advise on and support the development and documentation of a coordinated end-to-end reformed connections process and associated policy areas and provide stakeholder group views in respect of these activities e.g. in respect of the customer journey.
- Support the development of and discussion on any (if any) necessary additions to the 5-Point Plan.
- Support the development of and discussion on any (if any) additional arrangements before 'go live' of the reformed connections process.
- Identify and scope potential defects and potential solutions in respect of industry code changes prior to code changes being raised via the agreed governance processes as a result of the above.
- Advise on and highlight potential licence changes required as a result of the above.

- Advise on the most appropriate coordination of policy and processes across transmission and distribution networks, including ensuring that Transmission / Distribution Interface arrangements (including the concept of Reserved Developer Capacity (RDC)) developed through the ENA SCG Sub-Group align with the overall end-to-end process.
- Ensure that discrete aspects of the end-to-end connections process remain cohesive and appropriately aligned with the relevant final recommendations as they are developed across various forums.

The proposed draft Terms of Reference for CPAG can be found in Annex 5.

We will continue to provide regular updates and engagement opportunities through our connections newsletters and seminars, by participating in industry groups and via bilateral engagement.

4.3 Implementation Plan

We propose 1 January 2025 as the 'go-live' date for these connection reforms i.e. from 1 January 2025 any new connection applications, or significant Modification Applications[18] would be progressed under the reformed connections process. We consider that this is achievable but challenging, and as such will require substantial input and commitment from delivery bodies (i.e. ESO, Transmission Owners (TOs), Distribution Network Operators (DNOs) and Ofgem) and the rest of the industry, particularly those involved in code modification work groups. The implementation plan is presented in Figure 8.

[18] With 'significant' to be later defined in Phase 3.

Figure 8: Implementation Plan

IMPLEMENTATION PLAN	2023			2024												2025		
	Q4			Q1			Q2			Q3			Q4			Q1		
TASK	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
GOVERNANCE																		
Final reform recommendations published																		
PHASE 3 Mobilised																		
Expected decision on additional changes to be made																		
Connections Delivery Board																		
Connections Process Advisory Group																		
Communications strategy																		
PRE 'GO-LIVE' CHANGES																		
Letter of Authority - base-level implemented*																		
Pre-Application - enhanced industry information on ESO website				Part 1			Part 2											
Online portal pre-Application stage functionality																		
REFORMED PROCESS - MVP																		
Process mapping and detailed design of end-to-end process																		
Network design methodology																		
Licence change - Ofgem-led																		
Urgent Code Changes - CUSC, STC, STCP (GC & DCUSA tbc)																		
Identify changes required, draft changes through CPAG																		
Raise code changes at Panel																		
Code Change Process																		
IT and systems																		
Data and processes																		
Develop secondary processes																		
People - Recruit additional staff (ESO, TOs, DNOs)																		
People - Training for ESO, TO, DNO staff																		
Industry guidance (pre-launch, then annual review)																		
Internal guidance, SOPs and training																		
REFORMS GO-LIVE																		
Publish guidance																		
Release portal functionality																		
Stakeholder events																		
Launch communications																		
REFORMS LIVE - WINDOW 1 OPENS																		

Note:

** An enhanced Letter of Authority will also be included within proposed code changes*

The "Non-MVP" reformed process changes timetable is to be confirmed

4.4 Code Change Strategy

As we identified in our consultation, we expect that licence and code change will be required to enable implementation of the reformed connections process.

In light of stakeholder feedback on implementation (especially in relation to Question 28) we think pace, control and stakeholder engagement (as well as cross-system co-ordination) are essential to detailed process design and implementation.

For those aspects of the reformed process which require code change we cannot foresee a route other than open governance available at this point in time. As a result, we plan to prioritise the development of the MVP (as described in Table 4) and to then raise a package of urgent (subject to the normal process to request urgency) code modifications, for those aspects of the MVP which require code change[19].

Our ambition is for these to be formally raised in April 2024, which means that they ideally need to be drafted in February 2024 to allow effective engagement and refinement in advance.

It is likely that we will pursue a code change strategy where we codify in proportion to the existing code, and endeavour to use supporting guidance where possible. For example, when we are making changes to Section 15 of the Connection and Use of System Code (User Commitment Methodology) we plan to do so at a comparable level of detail to what exists, whereas when introducing entirely new concepts, such as the Connections Network Design Methodology, we plan to do so at a high-level from a code perspective, with detailed arrangements being set out in supporting documentation.

Other aspects of the MVP which do not require code change will be progressed in parallel. We may also elect to further develop and process some of the Non-MVP related changes in parallel to the MVP where they could potentially add significant value to the MVP.

Any remaining Non-MVP aspects of our proposals will be further developed and progressed at a later stage once the MVP is sufficiently developed and progressed, so as not to put the detailed process design and implementation of the MVP at risk by overburdening stakeholders and governance groups with reform-related change proposals.

A similar table covering Non-MVP aspects of our final recommendations which require future action (including those to be progressed in parallel to the MVP) can be found in Annex 6.

4.5 MVP and Final Recommendation Firmness

We set out below in Table 4 all the aspects of our final recommendations which we consider to be the MVP. We also set out for each aspect of the MVP the extent to which we consider the final recommendations to be firm, semi-flexible or fully flexible i.e. the level of discretion we propose in the detailed design process and implementation phase to deviate from these final recommendations.

Table 4: MVP Components

Reform Component	Firmness	Notes

[19] With this approach there is a risk of licence change and code change misalignment, as ideally code change would follow licence change. However, to mitigate this we will work closely with Ofgem as they develop any necessary licence changes to ensure that the code change process and the licence change process remain aligned and that one or the other can adapt at the earliest opportunity if a potential misalignment is identified in future.

Target Model Add-on (TMA) A and TMA B	Semi-Flexible	Some (but not necessarily all) improvements to the Pre-Application Stage should ideally be made prior to 'go live'. In line with the requirements of the CAP, the ESO will produce an implementation plan for the progression of whole system tools by End February 2024.
Early Application Window and Gate 1	Firm	All new projects connecting to, impacting on or using the electricity transmission system must go through an early application window as envisaged within the overall design of Target Model Option (TMO) 4. Connection contract offers will be made at Gate 1.
Primary Process and Secondary Processes Clarification	Semi-Flexible	Anything materially impacting the system should go through the primary process (i.e. TMO4). The detailed criteria for determining what goes through the primary TMO4 process (i.e. the process for new connection applications and for any significant Modification Applications), and what goes through secondary processes (i.e. for other types of contractual change, such as the novation of existing connection contracts, etc.), can be agreed in detailed process design and implementation. As can be the detailed design of those secondary processes.
Frequency and Duration of application windows	Semi-Flexible	Must not be longer than 12 months in duration or less frequent than every 12 months. However, any operable process which is shorter and/or more frequent, without impacting the expected benefits, would be suitable.
Gate 2 (TMA F3)	Semi-Flexible	There must be a Gate 2 to allow for potential for connection date advancement. The exact potential for advancement and the appropriate project milestone for Gate 2 can be agreed in detailed process design and implementation but should be based on the broad final recommendation proposals.
TMA F1 and TMA F2	Semi-Flexible	'Priority' projects in categories TMA F1 and TMA F2 should be capable of being accelerated under the reformed connections process. Government should define transparent criteria for what constitutes a priority project under TMA F1. ESO will provide further clarity on the criteria for TMA F2. ESO will provide further clarity on the rules for relative priority between TMA F1 and TMA F2 (and TMA F3).
Queue Allocation	Semi-Flexible	Must enable first ready first served. Should either be via the original co-ordinated network design connection date approach (i.e. queue position within a window allocated at Gate 2) or stakeholder alternative approach to queue allocation (i.e. queue position within a window allocated at Gate 1), unless a significant reason is identified for it not to be in detailed network design and implementation.
Queue Management (TMA G)	Semi-flexible	Should be Reactive Queue Management+ unless a version of Proactive Queue Management could be used that would deliver material additional benefits without also creating material additional risks.

Inter-Window Queue Management	Semi-Flexible	Open to refinements to approach so long as projects moving into capacity/dates allocated by an earlier window do not materially detriment: i) those projects that are progressing that were included within earlier windows; ii) consumers.
Transmission and Distribution (T/D) Interface and RDC Arrangements	Semi-Flexible	Must include T/D Interface Arrangements. Those must include RDC concept and approach to allocation of RDC must suitably balance risk to consumers and risk to developers. For the avoidance of doubt the means of developing the RDC forecasting methodology (and its incentives and obligations) are semi-flexible i.e. so long as there is a suitable balance, as above, the approach should be agreed within the ENA SCG Sub-Group, but in line with our final recommendations within Section 2.2.2.
Construction Planning Assumption (CPA) Methodology	Semi-Flexible	The CPA Methodology must be updated, but how it is updated depends on broader developments within detailed process design and implementation.
Connections Network Design Methodology (including TMA E4)	Firm	There must be a connections network design methodology developed for use within TMO4. The content of this is flexible so long as it comprehensively covers the requirements of TMO4 e.g. including RDC, the capacity allocation approach, etc.
Aspects of Offshore Considerations	Semi Flexible	Must be clear ahead of the first application window whether developers must apply to ESO as part of an application window or whether The Crown Estate and/or Crown Estate Scotland would instead reserve capacity. There is flexibility around the mechanics of how The Crown Estate and/or Crown Estate Scotland would then apply in the event that this were to be implemented for the first application window.
User Commitment (UC) (TMA L)	Semi Flexible	How UC is secured must be known ahead of the first application window, although how that takes shape is flexible. Whether fixing is postponed or removed is also semi-flexible, in the sense that one of the options must be chosen.
Fast Track Disputes (TMA S)	Semi-Flexible	There must be an appropriate disputes process within TMO4.
Application Fees (TMA H) and the introduction of a new Pre-Application Stage Fee	Semi-Flexible	Application fees must be reviewed and clarified prior to the first application window, but how those fees are adjusted requires further consideration.

4.6 Measuring Benefits

We note that Ofgem and the Department for Energy Security and Net Zero's CAP sets out various metrics which will be used to measure success of our ongoing tactical initiatives (as described in Chapter 1) and of enduring connections reform.

At this stage, before implementation, we consider that it is very difficult to quantitively forecast the expected benefits of the reformed connections process, especially with a moving baseline through the ongoing tactical initiatives. We will however work with network companies to report regularly and robustly against the metrics set out in the CAP.

In the interim, we set out the areas in which we would expect to be able to quantify improvements:

- connection dates: after an application window has concluded we could compare the average delta between what connection dates developers asked for and what connection dates they are offered at Gate 1, and we could compare that to the status quo arrangements. We could further compare this data when projects reach Gate 2, to show how much closer to their originally requested connection date they are able to be advanced at Gate 2.
- network design: after an application window has concluded we could highlight case studies where it is reasonable to determine that the status quo process would likely have resulted in a different outcome. This would show the benefits created through the co-ordinated network design, for example in terms of cost or environmental impact). This could include case studies where anticipatory investment has been unlocked and/or where developer input into the process has led to a better outcome.
- entry requirements: after an application window closes, we could compare the number of properly submitted applications within the process with an appropriate average of applications received over a comparable period under the status quo arrangements.
- customer and stakeholder satisfaction: after an application window has concluded we could compare the customer and stakeholder satisfaction score under the status quo arrangements with the customer and stakeholder satisfaction score under the reformed connections process.

We do not currently think it would be practicable to show what connection dates and/or network design costs would have been offered under TMO1, TMO2 or TMO3 as undertaking a full counterfactual network design exercise would be an inefficient and resource intensive process.

Chapter 5: Additional changes we could make before or in parallel with 'go live' of the reformed process

Ofgem and the Department for Energy Security and Net Zero set out in the Connections Action Plan (CAP) that while the actions being taken now via the 5-Point Plan and the 3-Point Plan are reducing connection timescales, in their view, these do not go far enough. The CAP therefore sets out where Ofgem and the Department for Energy Security and Net Zero think that more is needed. This includes a list of actions for the ESO and network companies in 2024 and beyond. We consider that our final recommendations, as set out in Chapters 3 and 4, address most of these actions. However, the CAP includes some actions for us to consider that go above and beyond our final recommendations. These actions mainly relate to further potential steps to address the size and mix of the current queue, in order to further accelerate connection dates and ensure a pipeline of expected projects and connection dates that is consistent with net zero targets.

In our view, the need to consider further steps to address the scale of the current queue is driven by two main factors:

The current connections queue has been growing substantially over the last few months, with circa 125GW of capacity added to the transmission connected queue over the last 6 months, and over 175GW of capacity added over the last year. The total transmission queue currently stands at 420GW and this alone represents over 7 times more capacity than the current peak demand in Great Britain (of 58GW) and over 4 times more capacity than the potential peak demand in Great Britain in 2050 (of 98GW) under the 'Leading the Way' scenario in our Future Energy Scenarios (FES) 2023.

In addition, the current mix of capacities of project technologies in the queue deviates very materially in a number of technology areas from the mix anticipated in the 'Leading the Way' scenario in the FES 2023. Analysis comparing the contracted background against the FES scenarios will be published at regular intervals on the ESO website from Q1 2024.

Ofgem's recent decision on the introduction of queue management milestones (Code Modification Proposal (CMP) 376) should help reduce application rates and start removing projects from the queue. However, this will take time to start terminating any material number of projects (potentially into 2025, depending on whether/how customer modify their connections). As part of implementation of CMP376 projects have the choice to either keep their current connection date and have Queue Management Milestones applied to that date or submit a Modification Application and have Queue Management Milestones applied to the new date. Going forwards customers will still have the ability to submit a Modification Application to push back their connection date. However, the Queue Management Milestones will not change unless an exception is submitted and accepted. Depending on the technology of projects that are terminated via CMP376, it may also have little or no impact on the mix of technology capacity referred to within bullet/point 2 above.

It is important that we therefore consider other opportunities to maximise the benefits of the reformed connections process, in a coherent way across the system, and with a clear view and alignment to longer term policy. Any additional actions we take to improve connections need to align with our final recommendations for the reformed process. They also need to be agile and responsive to the market and to wider policy changes as described earlier in this document, for example the Transmission Acceleration Action Plan, including the potential introduction of Strategic Spatial Energy Planning (SSEP), and through the Review of Electricity Market Arrangements (REMA).

Ofgem and the Department for Energy Security and Net Zero set out in the CAP that they expect recommendations on further beneficial actions, based on well-developed proposals, to be taken forward and shared with the Connections Delivery Board (CDB) as soon as possible, and in time to enable decision the end of Q1 2024, or earlier where possible, moving swiftly to implementation.

Any further actions would therefore need to be introduced either before or alongside 'go live' of the reformed connections process, in order to reduce connection dates for as many projects as possible and to deliver the benefits of the reformed connections process as soon as possible.

What additional actions should we consider?

As set out in our initial recommendations, our overall objective for a reformed connections process in Great Britain is: "*To ensure quicker connection to and use of the electricity transmission system, in a more coordinated and efficient way, in order to help meet Net Zero ambitions*".

We consider that addressing the five key areas set out in Table 5 is essential to delivering that objective in a timely and efficient manner.

Table 5: Key areas to delivering our overall objective for a reformed connections process in Great Britain

	Key area	Example
i	Reduce the size of the contracted queue for connection so that projects that are likelier / readier to connect are able to connect more quickly	By terminating connection contracts of projects that don't meet delivery milestones
ii	Reorder the queue for connection, so that projects that are likelier / readier to connect [and that are of greater value to GB consumers / in line with Net Zero ambitions] are able to connect more quickly	By moving to a first ready first connected approach and/or strategic spatial planning
iii	Create more capacity on the network so that projects that are likelier / readier to connect are able to connect more quickly	Through changes to network modelling studies, and/or introducing innovative technological or market-based ways to free up capacity. Or by planning and building network more quickly / efficiently
iv	Reduce the numbers of [speculative] projects applying to connect or slow down the rate at which they apply to connect	Through introducing higher entry requirements
v	Otherwise support efficient implementation of the reformed connections process	By allowing more time to embed new processes and allow efficient transition to the new processes

The 5-Point Plan, 3-Point Plan and reformed connections process (Target Model Option (TMO) 4 – once it is introduced at 'go live') are addressing, or will be addressing, each of the above key areas in Table 6 as follows:

Table 6: Key Area Initiatives

Initiative	Key area	Who benefits?	By when
Queue Management (CMP376)	i	All projects in the queue and new applicants	Material levels of terminations from late 2024
Allocate future freed up capacity to priority projects Reactive Queue Management+	ii	All projects in the queue and new applicants	Material impact from late 2024
Allocate initial queue position to priority projects	ii	New applicants	2025 (window 1)
Use windows to create a coordinated network design, including using Reserved Developer Capacity	iii	New applicants	2025 (window 1)
Non-firm offers for battery energy storage systems	iii	Battery energy storage systems projects (in the queue and new applicants)	From late 2023
Non-firm offers for embedded projects via tech limits (iii)	iii	All embedded projects in the queue and new embedded applicants	From late 2023
Updated Construction Planning Assumptions (as used for the Transmission Works Register)	iii	All projects in the queue and new applicants	From Q1 2024
Pre-application: improved data, access to self service tools	iv	New applicants	From Q1 2024 Improvements in tranches thereafter
Introduce Letter of Authority as an entry requirement for new applications	iv	New applicants	From Q2 2024

What else could we do?

The initiatives listed above are addressing four out of the five key areas. But in some cases the level of impact of those initiatives is lower than we might hope, or the time to deliver impact is longer. This is because either the initiative only benefits new applicants, or because the impact of the initiative is dampened or deferred to a later date by the significant numbers of new projects applying to connect and joining the connections queue. Additionally, none of the current initiatives are actively targeted at supporting an efficient transition to the new reformed connection process.

We have therefore been working with network companies, Ofgem and the Department for Energy Security and Net Zero to seriously consider additional actions to further address the five key areas set out in Table 5, with a view to increasing the pace at which we can deliver our overall objective.

We have also been collaborating with the Energy Networks Association's (ENA) Strategic Connections Group (SCG), as it takes further steps to extend its programme of work (we expect the ENA to shortly publish an update on its plans to extend its programme). In addition we have engaged with our external governance groups for connections reform (i.e. the Steering Group and Delivery Partners Executive Group) to test out high level proposals for further actions that could be considered.

We set out further detail below on a list of possible further actions - this list is derived from an initial longlist of 28 options. These are a mix of one-off actions (e.g. to materially reduce or reorder the current queue) that would be introduced before or in parallel to 'go live' of the reformed process; and enduring actions that could be easily incorporated into the design of the reformed connections process at or following 'go live', as they would be compatible with the overall design of TMO4.

We have grouped the actions into the following sets of indicative packages, to reflect coherent themes or combinations of actions that would provide additional impact if taken forward together:

- A package of 'low regret' or 'enabler' actions;
- A package of actions that focus on whether and/or how to change network modelling tools to reduce the amount of network reinforcement that needs to be built;

- A package of actions that may support a transition towards strategic energy system planning, by designing network connections based on a more central view of what the system needs;
- A package of actions that focus on using the power of markets to try to re-order and reduce the queue so that the most viable projects are prioritised; and
- A hybrid of packages 3 and 4.

Packages 1 and 2 could be taken forward alongside any of packages 3, 4 or 5.

Packages 3, 4 or 5 would be mutually exclusive.

We set out a brief summary of each of the actions included within each package below. Some actions are 'either/or' i.e. you would only take forward one of the 'either/or' actions. When we refer to 'impact' below this relates to by how much / how quickly the action / package is likely to meet the overall objective. When we refer below to 'risk' of each action / package, this relates to the likelihood of legal challenge and/or risk of undermining investor confidence (or other unintended risk to generation and large demand projects) and/or implementation risk (e.g. difficult / complex implementation).

Finally, although not included as a specific package, we also include later in this chapter a grouping of potential additional actions to support the efficient transition towards implementation of the reformed connections process. These include for example a brief moratorium on new connection applications to allow more time for network companies and customers to become accustomed to and transition towards the new processes and arrangements that will be used after 'go live'.

Package 1 – Low regret options / enablers

This package focuses on low regret options and/or options that are key enablers to support efficient delivery of benefits from the 5-Point Plan / 3-Point Plan and from the reformed connections process. These would be relatively low risk but may by themselves (or in combination) not deliver sufficient impact sufficiently quickly.

Review and update information to customers to help them decide between Transmission and Distribution connections – The ENA SCG intends to review and reform the guidance for customers taking the decision of whether to connect to the Distribution Network Operator (DNO) network or the Transmission Owner (TO) network in their preferred location. This should result in additional guidance for customers from transmission and distribution networks to accelerate the processing of applications by improving the efficiency of how customers interact with DNOs or TOs.

Changes to charging for smaller Embedded Generation (EG) at local Grid Supply Points (GSPs) – The ENA SCG is developing a solution to socialise the charging of transmission connection assets similar to the Significant Code Review (SCR) approach. This is intended to address inequitable charging of distribution customers for reinforcement works by potentially introducing shallow charging rules in line with SCR, to remove blockers to connection for smaller customers. We note that any such change would be subject to Ofgem decision.

Better sharing of queue data across the Transmission / Distribution (T/D) boundary – The ENA SCG is developing a proposal to increase the level of data exchange across the transmission and distribution boundary to better manage queues and inform efficient network development. This would enable optimal use of existing network capacity, thereby providing greater access to capacity for new distribution connections and informing targeted network development across the T/D boundary.

Contestability in design / delivery of connections – as set out earlier, we consider that introducing efficient contestability into the design and delivery of connections should reduce connection costs and timescales when combined with the wider changes we recommend via TMO4. It should also help promote more innovative connections design, including potentially substation and/or substation bay redesign to allow more projects to connect. We note that any such changes would also be subject to Ofgem decision.

Substation bay reallocation / redesign – we consider that efficient substation bay reallocation is crucial to securing timely benefits from Reactive Queue Management + (RQM+) provisions. This is so that priority projects can be allocated bays/substation locations that were previously allocated to other projects that have subsequently had their contracts terminated. In order to have a material impact on connection dates of projects in the current queue, bay reallocation needs to be capable of being applied to existing bays/substations. Alternatively or in addition, bays need to be designed flexibly so that they are capable of 'plug and play' by allowing a range of different possible projects to connect, depending on which project ultimately secures 'priority project' status and has its connection accelerated. Bay redesign is also important in terms of considering innovative ways to connect more projects into substations, given the shortage and relatively long lead time for delivery of bays and substations.

Package 2 – Further network planning revisions

This package focuses on whether and/or how to change network modelling tools / assumptions to reduce the amount of network reinforcement that needs to be built, and therefore to allow more projects to connect to the network more quickly.

Any decision to implement one or more of these actions would need to be based on a robust cost-benefit assessment of the benefits of connecting more projects compared to the operational, health and safety and balancing/constraint costs/risks of doing so. This would also require some further thought as to the balance of risk between consumers and project developers (e.g. in access arrangements), to ensure that the risk is not skewed too far one way or the other.

It is also worth considering that applying these network planning revisions to the existing contracted queue would require a further Transmissions Works Review (TWR), which will take time. Also, until any revised analysis is done in detail on specific contracts, the level of impact will be unclear. It is therefore possible that these revisions within this package may not deliver high impact in terms of significant freeing up of additional capacity and/or significant acceleration of connection dates, particularly for projects towards the back of the queue.

Further flex the assumptions for impact of embedded projects – this would build on the technical limits work in the 3-Point Plan, for example, by either rolling out technical limits to more GSPs, or by developing the concept further so it can be rolled out to the more complex sites (such as shared GSPs). We note that the CAP requests continued roll out of technical limits for all GSPs (including those with import constraints, where a similar approach could be used for demand).

Change pre and / or post fault level assessments and assumptions – this would involve pulling lever Target Model Add-on (TMA) E3 (see 'TMA E' in Chapter 3). If there were a clear overall cost benefit case (and health and safety case) to doing so, it could involve changing the assumptions used around levels of transmission reinforcement required in pre or post fault scenarios on the network.

Further revised Construction Planning Assumptions (CPA) attrition assumptions – this would involve pulling lever TMA E1 (see 'TMA E' in Chapter 3). It could involve making assumptions about increased levels of project attrition to reduce the amount of transmission reinforcement works required and/or reflecting those higher attrition assumptions at a local asset level by building significantly fewer bays/substations and allocating those bays/substations to priority projects. The downside of this approach at a local asset level is that other projects that progress more slowly would need to wait for further bays/substations to be delivered in the event that the bay/substation they had been seeking to connect to was fully occupied. In terms of revised assumptions about project attrition, these could for example include aligning assumptions with FES scenarios and/or Government targets for each technology. We note that the CAP requests recommendations to CDB in this area by Q1 2024.

Review Connect and Manage and/or the definition of Enabling Works – this would involve pulling lever TMA E2 (see 'TMA E' in chapter 3). It could involve applying a stricter definition of enabling works (for example so that these are only the works necessary to connect to the nearest main integrated transmission system node), which may remove significant transmission reinforcement works from contracts. The consumer impact of this could be (partially) mitigated by including transmission reinforcement works as part of the centralised strategic network plan and ensuring those works are built out on a timely basis by TOs (or Competitively Appointed TOs) through the prevailing regulatory framework. Alternatively, the definition and scope of the Connect and Manage regime could be revisited e.g. in terms of introducing a new definition of enabling works, perhaps accompanied by changes to access arrangements for project developers, such as potentially moving away from the concept of a guaranteed firm connection. Such a change would however take longer as any change to Connect and Manage would likely require legislative change, and any changes to access arrangements would need to be aligned with REMA decisions. We note that the CAP requests recommendations to CDB in this area by Q1 2024.

Package 3 – towards strategic energy planning

The purpose of this package would be to ensure the connections queue corresponds with pathways that best meet our net zero targets, with an efficient mix of project capacities and technologies, which minimises costs for the end consumer.

This package therefore seeks to ensure a timely and efficient transition towards a more centrally planned approach to location/timing/technology of large generation and demand projects, if such a centrally planned approach were introduced via the new SSEP. The package therefore seeks to introduce aspects of central planning to re-order / re-size the current connections queue in 2024, as a stepping stone to potential future arrangements under the SSEP from 2025 onwards. We note that the CAP outlines many of the options within this package as reasonable for further consideration.

More specifically, the package looks to introduce measures to deprioritise queue position of some projects (where the current capacity of that technology in the queue very materially exceeds the capacity that might be anticipated under a future SSEP), whilst prioritising queue position of some other projects (where the current capacity of that technology in the queue very materially falls short of the capacity that might be anticipated under a future SSEP.

The actions in this package would deliver more impact, potentially more quickly than packages 1 and 2. For example, the package would actively address 'over-provision' of certain technologies, freeing up capacity for other technologies that are needed but that may take longer to develop. It would also avoid wasted work and focus network design and capacity allocation on more immediately necessary projects by designing network connections based on a more central view of what the system needs. It may also smooth and/or accelerate the transition to future arrangements under SSEP.

However, SSEP is a developing area, and it is currently too soon to determine whether / how this package would align with future SSEP arrangements, so in order to progress this package quickly, some assumptions would need to be made about the future focus/content of the SSEP. Project developers and investors (particularly in technologies where there is 'over-provision') may as a result have concerns about the investment case for their projects. There would therefore need to be some clear accountabilities and responsibilities and governance set around any decisions associated with introducing this package. Finally, some of the actions in this package may be quite complex to implement, particularly on a regional level.

'Stack projects' by technology type OR one-off capacity auction – one of these options would be taken forward (as they are mutually exclusive).

'Stack projects' by technology type - this would involve using an administratively set capacity threshold for each connection technology to reorder the current queue and place currently contracted projects that sit outside that threshold in each technology into a 'stack' or 'waiting room' outside of the queue. The administratively set capacity threshold may potentially be derived from the FES 2024 or the SSEP, once available. It could be set at a national, regional or local level, depending on data availability.

Until the threshold was reached, currently contracted projects below the threshold would retain their current connection dates, or potentially be offered accelerated dates as and when additional capacity is freed up. New connection applicants in a technology that is below the threshold would be allocated connection dates/locations through the prevailing connections process / network design methodology.

Once the threshold has been reached in a particular technology, all currently contracted or future projects above the technology threshold would be allocated the same transmission reinforcement works and connection date as the threshold project in their location / technology. For existing contracted projects this would be enacted through a connection contract modification. These projects above the technology threshold would be in the 'stack'. In practice this would mean reducing/removing some offered/contracted enabling works as any transmission reinforcement work driven by projects in the stack would no longer (in theory) be required. This would have the effect of bringing forward the connection date of projects in the stack (assuming that a significant number of projects are already above the threshold/would be in the stack). It would also mean adding associated earlier CMP376 milestones into the connection contracts of projects in the stack. New applicants in a technology above the threshold would be allocated connection dates/locations based on the above approach i.e. they would also be in the stack, with the same connection date/location as other projects in the same technology stack. Projects could only exit the stack if both of the below occurred:

- Sufficient additional capacity, in the relevant project technology category, becomes available – this could happen through project terminations (of projects of that technology with connection dates below the threshold) and/or there is an increase in the threshold value (one would expect this value to increase year on year towards 2050 as we progress towards Net Zero targets, but it could also increase as a result of changes to Government policy or targets); and
- A project in the stack demonstrates that it is viable and ready to progress (e.g. as per TMA F, (see 'TMA F' in chapter 3) meeting the 'priority project' criteria)

If the two things above were to happen, a project would exit the stack and be allocated the available capacity (and associated transmission reinforcement works), resulting in an earlier connection date.

Projects would remain in the stack until the above two things were to happen, or they were terminated for not meeting their contractual milestones.

The simplest and quickest way to determine whether a current project is in the main connections queue or in the stack would be to decide this on the basis of current queue position. However, this might result in a large number of non-viable or less progressed projects being included in the queue (and a large number of viable / more progressed projects being included in the stack). This risk would be mitigated by CMP376, which would terminate non-viable projects over time, freeing up capacity that could be allocated to projects in the stack. However, this may take some time to take effect (see CMP376 row in Table 6 above).

Therefore alternatively, some other criteria could be used to determine whether a currently contracted project is in the queue or in the stack in the first instance. Following 'go live' of the reformed connections process the 'priority project criteria' (as per TMA F) could be used; however, in the interim while those criteria are finalised, some other criterion could be used (for example projects identified via an Expression of Interest process). However, irrespective of which criteria were used, using this approach would be a form of **Proactive Queue Management (PQM)** (as described in Chapter 3), as it would involve some projects taking the queue position of projects above them in the queue, without those projects having been terminated. As set out in Chapter 3, we have concerns about PQM as an enduring longer-term approach to queue management, because of the potential challenge for project developers / investors if their project could be pushed down the queue as a result of faster progress of other projects. However, it may potentially be acceptable for PQM to be applied on a one-off basis under this 'stack by technology types' option in order to initially determine whether current projects are in the queue or in the stack. RQM+ could then be used on an enduring basis to allow projects to exit the stack.

One-off capacity auction - an alternative to the 'stack by technology types' option under this package would be to run a one-off capacity auction in order to determine queue order. Depending on how the auction was structured it could either seek to terminate the contracts of parties unsuccessful in the auction or push them back below successful auction projects in the queue.

Any such auction would need to be targeted. In our view it would be better designed to allocate capacity and queue position rather than allocate access rights (as access rights allocation should wait for REMA decisions), and it would need to allow for a suitable overall capacity range, mix of technologies and range of connection dates. However, while the auction would be likely more efficient in reducing the queue and ensuring the queue includes more viable projects, it would take significantly longer to implement than the stacking option and be more complex/risky to design and implement. For example, we would need to determine on what basis bids were made (financial or qualitative, or a mix of both) and if financial, what would happen to any money that was bid by successful projects, with a view to avoiding increases to overall wholesale electricity costs.

We set out in our initial recommendations that our initial view was that any decision to introduce capacity auctions or permanently change transmission system access arrangements should be taken once the direction of travel on REMA is clear in terms of how transmission system access arrangements will work in future. For example, if there were any moves away from firm access as standard. As set out in Chapter 2 and in Annex 1, stakeholders generally agreed with this view and our final recommendations as set out in Chapter 2 remain unchanged. However, a one-off capacity auction, to re-order or reduce the queue, would not conflict with our final recommendation, as it would not require capacity auctions to be run on an enduring basis in future under the reformed connections process. Therefore we have included this option in the shortlist of potential actions to be considered, due to its potentially high impact in reordering the current queue so that the most viable projects can progress more quickly.

Finally, it is worth noting the action from Package 2 "**Further revised CPA attrition assumptions"** would probably need to be taken forward to complement either option above as it would be important to ensure that network modelling tools and assumptions align with the capacity/technology mix parameters set for the one-off capacity auction or for the stack by technology option.

Our initial view is that the other actions from Package 2 (with the potential exception of "**Further flex the assumptions for impact of embedded projects**"), would not be included in package 3 on the assumption that package 3 would have enough impact on the queue to ensure projects can connect sufficiently quickly, without the need for further intervention. However, the level of impact of package 3 would need to be kept under review and one or more of the additional actions from package 2 could be taken forward in due course if it was felt that further impact was required.

Package 4 – market-based approach

This package focuses on using the power of the market to influence project developer behaviour try to re-order and reduce the queue. At a high level this would be through a combination of:

- setting substantially higher costs for project developers (such as application fees and/or user commitment and/or capacity holding charges) to incentivise only the more robust projects to remain contracted; and
- allowing projects to acquire the queue position of others above them in the queue, either through trading of capacity and/or trading of queue positions, or by progressing quicker than other projects and thereby taking their queue position (through PQM).

This package provides levers for industry and the market to self-optimise the queue and may provide a simpler and more economically efficient solution to connecting projects more quickly.

However, it by nature creates project winners and losers, which may significantly impact developer and/or investor confidence and risks favouring large projects and/or larger project developers and/or certain technologies. It may also incentivise the acquisition of Transmission Entry Capacity and queue position in order, leading to increased volumes of applications.

We note that the CAP outlines many of the below actions within this package as reasonable for further consideration.

One-off trading window (Pre-Connection) – this would allow projects in the queue (i.e. pre-connection) to trade queue positions and/or capacity with each other where possible (noting the challenges below). At the moment capacity products are only available in very limited ways (see TMA K in Chapter 3) and it is not possible to trade capacity pre-connection via existing products. Neither is it currently possible to trade queue positions, although project developers can sell their project(s) to another project developer.

Under this package these restrictions would be removed with a view to allowing the market to attempt to re-allocate capacity and/or queue position efficiently and for more viable projects to therefore be prioritised higher up in the queue. Additional visibility of the queue (as per our recommendations in TMA A in Chapter 3) might help facilitate this trading process.

There are however in our view a few challenges with this action:

- the ESO would need to introduce some restrictions into the trading process in order to mitigate adverse network impact e.g. only projects with comparable impact on the network (technology and capacity) could/should trade queue positions, otherwise this could lead to additional or network reinforcement requirements and/or increased constraint cost / operational risk;

- trading would need to be a one-off (i.e. restricted to a certain period), ideally before 'go live' of the reformed connections process in order to avoid incentivising an enduring market for projects seeking to acquire capacity and queue position solely for trading purposes (although this may be mitigated to some extent by increased costs referred to below);
- there may be a need to change the current industry codes/frameworks materially to allow this new approach. Particularly if only done on a one-off basis, this may take too long and be too resource-intensive compared to the impact delivered; and
- any additional costs incurred by project developers through trading may ultimately lead to increases to overall wholesale electricity costs.

Significantly increase costs for project developers – this action would be included within this package as an incentive to reduce speculative projects / only focus on the most viable projects, and to provide a deterrent to parties seeking to secure a connection contract only as a means of trading capacity / queue position. The costs that could be significantly increased are:

- application fee; and/or
- user commitment (either increased in total, or alternatively retaining the same overall cost as now but changing the profile so that the costs would be incurred earlier in the project development process); and/or
- a capacity holding charge or security could be introduced (as per TMA L in Chapter 3).

Our previous concern with significantly increasing costs is the proportionately higher impact on smaller project developers and also potentially on certain technologies of project. Our initial view is that the capacity holding charge and potentially the user commitment profiling may be the most progressive options in this regard if this action were taken forward, as they could perhaps be tailored more efficiently to have a similar proportionate impact on projects of all sizes/technologies. If this action were taken forward the overall costs or profile of costs would need to be informed in some way by market intelligence on likely impact on project developer behaviour.

Accelerate 'priority projects' via PQM (see Chapter 3 for a description of PQM). This action is included in this package as it may be required in order to supplement the impact of the other actions, if they did not deliver sufficient impact, quickly enough. Introducing PQM would also be consistent with creating a 'winners' and 'losers' market in connections as per the overall package rationale. However, unlike in package 3, where PQM could be more clearly time-limited to the period for initial consolidation of queue/stack and introduction of SSEP, it may be more challenging to time-limit PQM in package 4 as there would not be as clear an end point. Therefore PQM may need to be an ongoing part of the future enduring regime for several years post 'go live' if this package were taken forward, in order to deliver sufficient impact.

Package 5 – hybrid of packages 3 and 4

This package seeks to create a hybrid of packages 3 and 4 in order to offset some of the challenges / risks of each package. The proposed high-level approach under this package would be to share additional information with the market with a view to providing clear signals to project developers of different technologies, and then facilitating 'queue swaps' under a centrally administered process. Under this package the ESO would proactively share more information with project developers and the market on what technologies may be more needed/valuable based on the current capacity of each technology in the queue compared to the capacity of that technology in the various FES scenarios.

This would illustrate the relationship between the current queue and potential future overall capacity required through to 2050, as well as the spread of capacities of technologies. The ESO would also proactively share information on the queue (as per our recommendations in TMA A in Chapter 3) so that developers have greater visibility of projects ahead of them in the queue.

In parallel the ESO would create and administer a process whereby a project developer could request a queue swap (to push its connection forwards or backwards in time and potentially also change location). The ESO would review these requests and match project developers so that they can swap queue positions. For the reasons given under package 4, it is likely that any such swaps would need to be on the basis of comparable network impact i.e. only projects with comparable impact on the network (technology and capacity) could swap queue positions. There would be no money exchanged as part of this arrangement, mitigating the risk flagged earlier in package 4 about potential increases to wholesale electricity costs.

In order to ensure that this action results in robust and viable projects being accelerated, our view is that any project that was advanced would need to take on the queue management milestones and user commitment/liabilities of the project it has swapped with (and vice versa for the project that has taken a lower queue position). In the event of multiple projects seeking to accelerate up the queue in the same location, there may also be a need to use the 'priority project' criteria (or other criteria if these are not yet in place) to determine which projects have priority to accelerate. In order to incentivise a project higher up the queue to swap and to remove less viable projects from the queue entirely, it may even be appropriate to have an amnesty on some/all costs associated with terminating the contract of any project that moves down into a new substantively lower queue position.

Under this approach there may not be a need to time limit the process in any way as the lack of financial benefit should not incentivise speculative projects. We would however need to consider further whether there would be a need to materially change the current industry codes/frameworks to allow this new approach. Over time it is possible that this approach could facilitate the transition towards SSEP if project developers' responses aligned to the future direction of travel under SSEP.

Of the other actions included in packages 3 and 4, "**Accelerate 'priority projects via PQM"** may be required depending on the level and pace of impact delivered. But "**Significantly increase costs for project developers**" may not be required as there would be fewer incentives for speculative projects.

Potential additional actions to support an efficient transition towards implementation of the reformed connections process

We have included below a couple of additional potential actions to support efficient transition towards implementation of the reformed connections process (key area 'v' in Table 5). These would be temporary, time-limited actions as they would not be necessary following 'go live', although the "lighter touch offer" action has some natural correlation with the "stack by technology" option, were this taken forward as part of package 3.

Lighter touch offer until 'go live'. The purpose of this approach would be to avoid providing unrealistic/inefficient connection offers to new applicants given that the introduction of CMP376 will likely result in the termination of significant volumes/capacities of projects in the current queue. It would also help smooth the transition to the reformed connections process, by reducing workload for resources in network companies in the context of current very high volumes of applications, therefore allowing more time to be spent on managing the most efficient transition to new arrangements.

This approach could involve undertaking a 'lighter engineering' review of some or all new connection applications, or major modification applications, made between the point of introduction and 'go live'.

As a result of the 'lighter engineering' review, the customers' contract offer would still include the local connection works (and hence confirm connection location and associated local transmission works) but would not include all potential 'wider enabling' works e.g. it may only include the same transmission reinforcement works and connection date as the project directly below it in the queue to connect at that location. Due to project terminations (as a result of CMP376) and the potential for viable projects to accelerate into capacity made available by these terminations, it is possible that the customer's connection date may be accelerated, so there would never be a need to include any further 'wider enabling works'. However, where this were not the case, there would need to be a clear plan / timescale provided for how and when customers would receive their 'full engineering' offer e.g. this could be once they reach Gate 2 as envisaged under the reformed connections process).

Brief, time-limited moratorium - from a certain date quite soon before 'go live' of the reformed connections process, for example 3 months before, the prevailing connections process could close to new applications and potentially also to major modification applications. Developers who did not apply (or clock start) before the start of the moratorium would instead be provided with their connection offer within the first application window of the reformed connections process.

This would also help smooth the transition to the reformed connections process, by reducing workload for connections resources in network companies in the context of current very high volumes of applications, therefore allowing more time to be spent on managing the most efficient transition to new arrangements. Customers would also benefit from the improved connection dates and process associated with the reformed connections process.

Conclusion and next steps

Package 1

We propose to further engage closely with Ofgem, the Department for Energy Security and Net Zero and network companies, including DNOs and the ENA on package 1, with a view to taking forward those actions as quickly and efficiently as possible, ideally from Q1 2024. Although, as set out earlier, we note that implementing some of the actions (namely "**Contestability in design / delivery of connections**" and "**Changes to charging for smaller EG at local GSPs**") is dependent on decisions from Ofgem, and the other actions are dependent on close collaborative working with TOs and DNOs and delivery of processes, data and assets by those parties.

Package 2

We propose to investigate the cost benefit case of package 2 and communicate our views to the CDB in Q1 2024, as requested within the CAP.

In our view any decision on package 2 needs to be taken in the context of any decision on packages 3, 4 and 5.

Packages 3, 4 and 5

Given their impact, risk and relationship to wider policy areas such as SSEP and REMA, we consider that any ultimate decision on whether to implement packages 3 or 4 (and as a result potentially also package 5) would need to be made by Ofgem or Government.

As requested within the CAP, we intend to provide further information on how each package could work to CDB in Q1 2024, in order to help facilitate any such decisions.

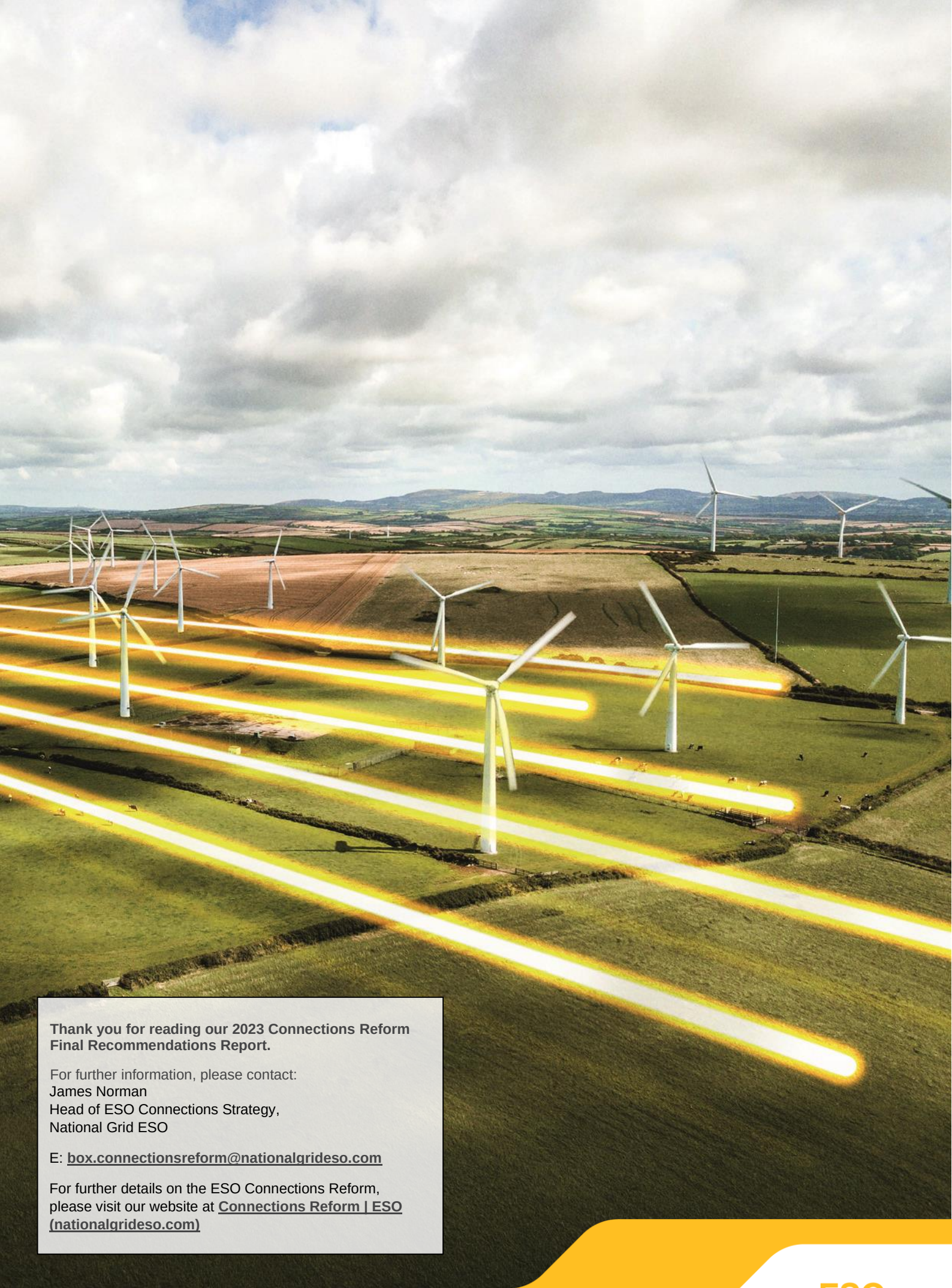
Potential additional actions to support an efficient transition towards implementation of the reformed connections process

Finally, as also requested within the CAP, we also intend to discuss the potential additional actions to support efficient transition towards implementation of the reformed connections process at the CDB in Q1 2024. This is so that a decision can be made on these in good time before 'go live' of the reformed connections process.

Stakeholder views

Although we are not formally consulting with stakeholders at this stage, we would value any stakeholder feedback on the packages and actions set out in within this chapter. We are particularly interested in views on whether:

- We should be considering further actions beyond those referred to in this chapter; and
- Whether stakeholders have any preference at this stage for any particular actions or packages of actions.



Thank you for reading our 2023 Connections Reform Final Recommendations Report.

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For further details on the ESO Connections Reform, please visit our website at Connections Reform | ESO (nationalgrideso.com)

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