GB TERRE Implementation Group

16 December 2020

nationalgridESO

Agenda

Item	Topic	Purpose	Presenter	Time
1	Welcome	Information	Graham Dolamore	5 mins
2	Interconnector working group update	Information	Tom Ireland	5 mins
3	Implementation plans	Discussion	Graham Dolamore	30 mins
4	Next steps for group	Agreement	Graham Dolamore	10 mins

Notes

- Please use the raise hand function to ask questions. We will invite questions at the end of each slide
- We are recording the meeting to aid minute capture. Anonymised minutes will be published on the ESO website. The recording will not be published.
- Slides, minutes and further industry information is published here.

Item 2 – Interconnector working group update

Tom Ireland

Item 2 – Interconnector WG update

Latest meeting – 15 December

- Scenario discussion & IC agreement consequences
  - 1A – Standalone mode: No IC component
  - 1B – EU access via Bilaterals: Revised IC agreements plus new agreements with SO (RTE)
  - 2 – FTA allow TERRE access: Revised IC agreements
- Feedback on previous project plan
- Development of draft plans for 1B and 2
  - High sensitivity on the output of the FTA

Item 3 – Implementation Plans

Context

TERRE pause explained

The ESO's approach to not deploy the TERRE code into production was based on the following considerations:

- **Remove operational risk** - deployment of code would enable input from external systems that we are not expecting inputs from; if those systems should send us unexpected data this would be an overhead on the control room and also pose a potential operational security risk
- **Cost to the consumer** – removes the month on month IT operational cost

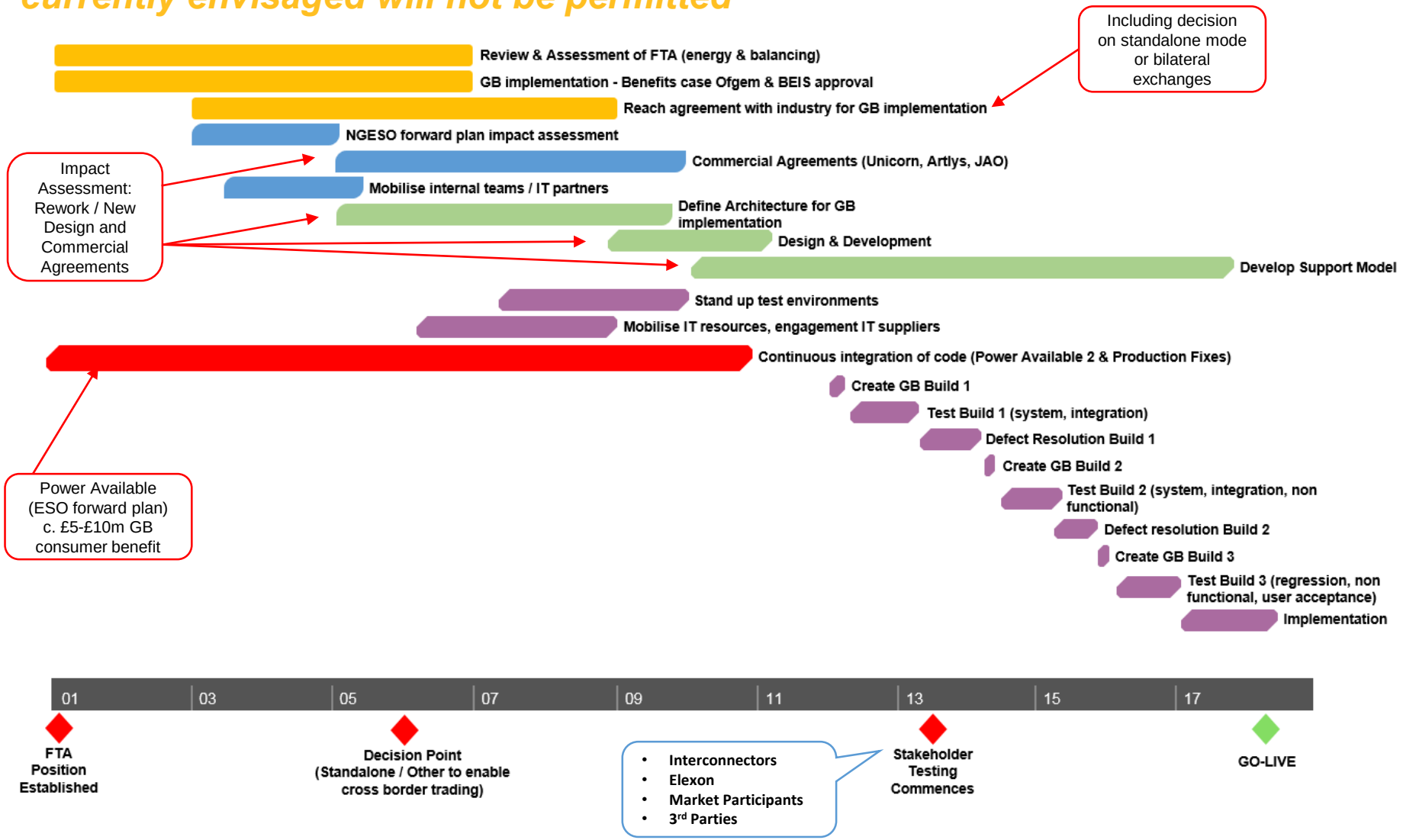
Integration considerations for any new solution

- **Impact assessment:** A GB only implementation requires the design and delivery of a UK based IT solution, additional development of IT operational support, and development of contractual and commercial arrangements. It then needs to be integrated with the existing TERRE functionality delivered to date
- **Legacy platform constraints**: our current systems do not facilitate parallel changes. This will be rectified as part of our RIIO-2 transformational plans
- **Continuous integration (eg Power Available Phase 2)**: to speed-up integration, the TERRE codebase will be continuously maintained to take account for other system changes as per the ESO Forward Plan
- **Non-BM changes**: updates to other systems need to be developed and tested
- **Internal testing**: we need to check the interaction between TERRE and other existing systems to ensure continued compatibility and functionality
- **External testing**: all external market participants will need to perform integration testing to ensure they can submit and receive RR data and conduct operational testing for all RR processes

Further detail on these points can be found in Annex 2

Scenario 1 — Wait for legal clarity before proceeding

'FTA or no FTA means that our participation as a third country to exchange RR using TERRE in the way currently envisaged will not be permitted'

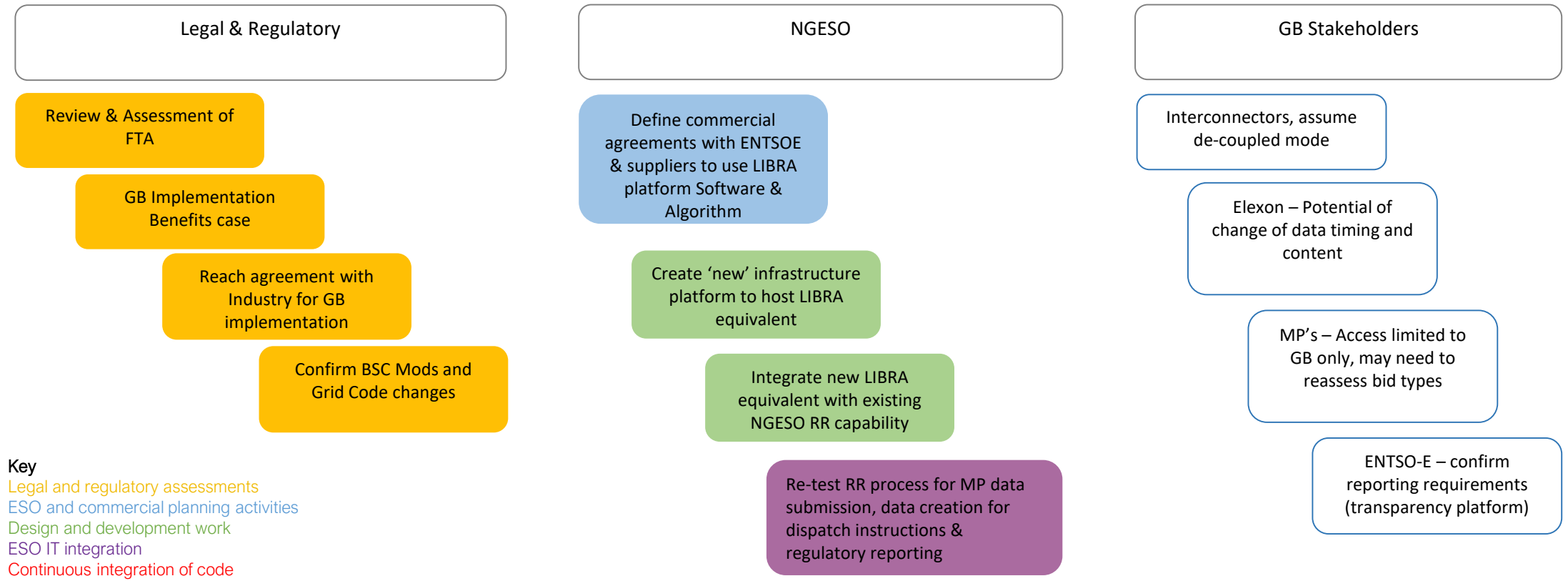


Risks	Mitigation
FTA assessment & review takes longer the base assumption	Continued engagement with BEIS / Ofgem and regular review via this group.
CBA presents minimal benefits case	Seek alternative solutions or do not proceed
High-level of re-work needed for standalone mode	Incorporated into the CBA
No access to algorithm to facilitate standalone model	Engagement with RR provider for EU and leverage IP rights.
End-to-end integration needed across multiple party systems	Continuous engagement with affected parties to understand knock-on effects
Cross Border Arrangements- greater scale of change required (agreements, operation and settlements)	Interconnector sub group coordination.

Key
- Legal and regulatory assessments
- ESO and commercial planning activities
- Design and development work
- ESO IT integration
- Continuous integration of code

1a – Standalone Mode

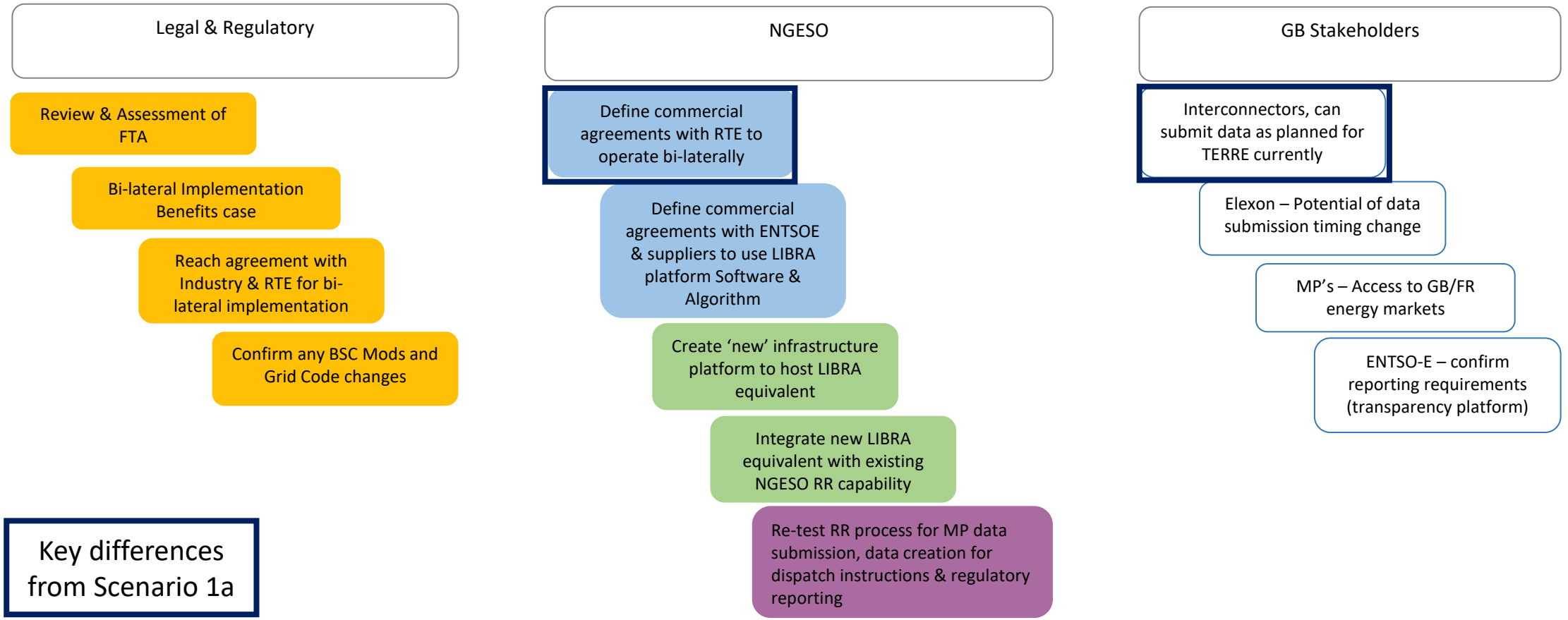
Assumes NGESO will build an equivalent of the 'LIBRA' platform to operate a GB RR market.
Assumes NGESO have access to the LIBRA platform software/algorithm



Order and sequence to assess and agree impacts post FTA

1b – Bilateral agreements

Assumes NGESO will build an equivalent of the 'LIBRA' platform to operate a GB/FR RR market, and that RTE will operate the RR market with EU TSO's in parallel
Assumes NGESO have access to the LIBRA platform software/algorithm

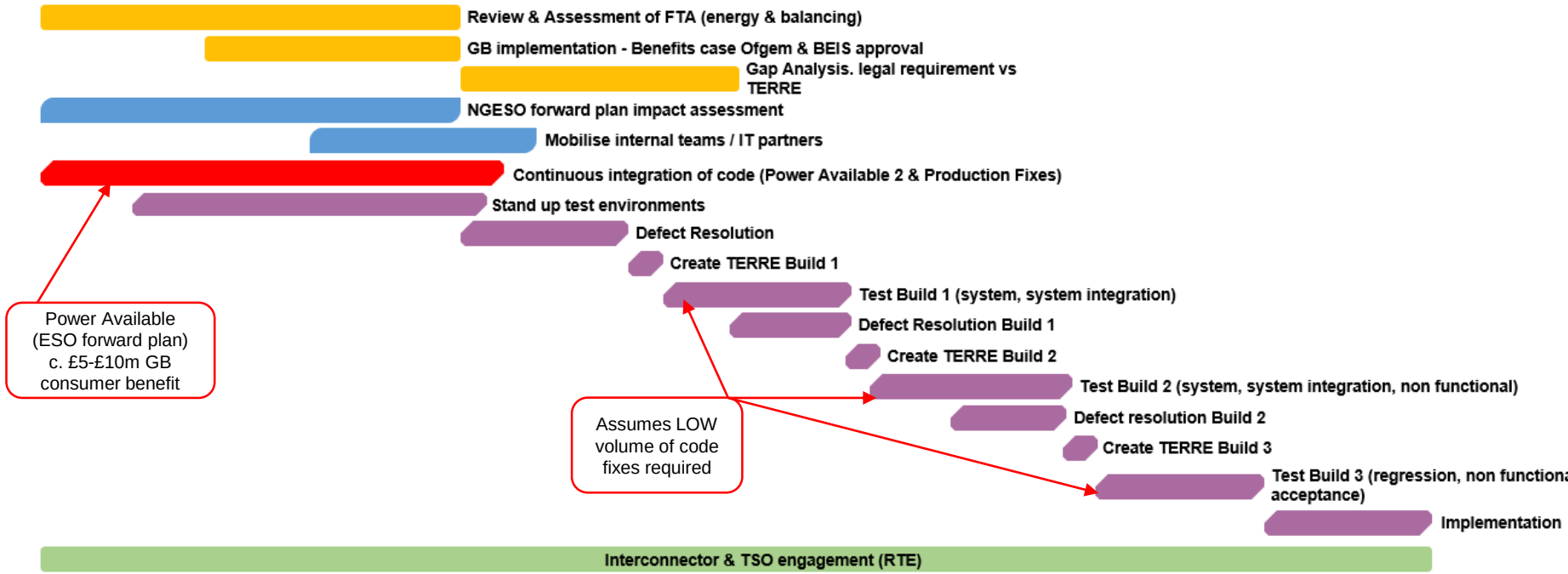


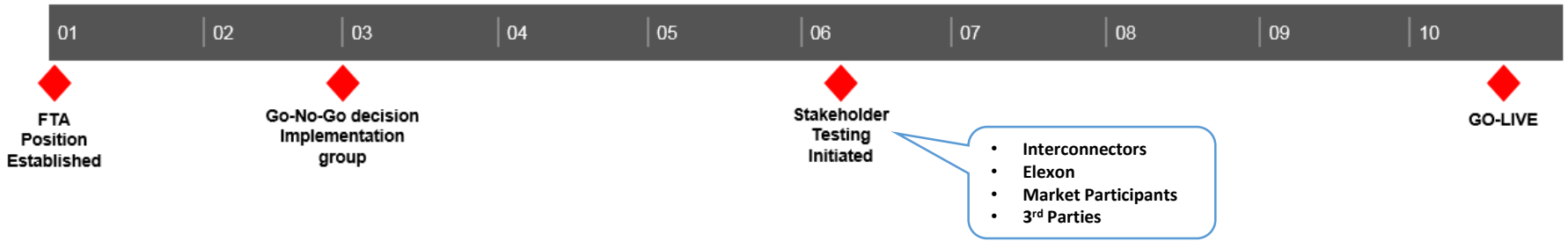
Key differences from Scenario 1a

Order and sequence to assess and agree impacts post FTA

Scenario 2 - Wait for legal clarity before proceeding (Technology delivery restart M4)

'FTA means the EC will allow GB to exchange RR using TERRE'





Risks	Mitigation
FTA assessment & review takes longer the base assumption	Continued engagement with BEIS / Ofgem and regular review via this group.
Plan assumes flexibility in all 3rd party plans to deliver baseline assumption	Continued engagement, via this group, implementation and go-live coordination.
End-to-end integration needed across multiple party systems	Go-live implementation sub group formed.
Cross Border Arrangements- greater scale of change required (agreements, operation and settlements)	Interconnector sub group coordination.

Key
- Legal and regulatory assessments
- ESO and commercial planning activities
- Design and development work
- ESO IT integration
- Continuous integration of code

Item 4 – Next steps for group

Next steps

ESO to publish open letter:

- Progress of Implementation Group
- Implementation plans based on Scenarios 1 and 2
- Request for feedback on:
  - Process
  - Where industry need more clarity on key milestone outcomes and decision points

Next meeting

Wednesday 6 January, 12-1pm

Agenda:

- Review of FTA status
- Next steps to make progress against plan, with clear actions for each party

Annex 1

Summary of feedback received to date

Feedback received to date (1/3)

Channel	Feedback	ESO comment
Post 9 December meeting	Interconnectors not on the critical path for any of the options.	Discussed at 15 December interconnector working group
	There are 'no regrets' actions such as the NGESO ECP4 upgrade that have already impacted the TERRE timeline and should be completed ASAP to de-risk the overall delivery of any option. Similarly the system to system flow methodology can be advanced and presumably is to be imminently completed for IFA2.	

	Scenario 1 has two very different outcomes with very different interconnector impacts.
	• Scenario 1a: TERRE is run in stand-alone mode, presumably with no use of interconnectors
	  • Alternate balancing arrangements to TERRE need to be part of the IOP and BASA
	  • Interconnectors will need to remove the TERRE functionality from their systems
	• Scenario 1b: TERRE is run using bilateral FR-GB arrangements
	  • We don't think this is credible in the short-term as the main work here would be on the regulatory arrangements, especially in France
	Both scenarios would also mean that approaches on future arrangements such as MARI need to be reviewed	

	Scenario 2: The starting point for the work on interconnector agreements (BASA and OP) will be confirmation on the framework that will apply. This 'framework' includes (but is not limited to) the modification/replacement of the TERRE CA between NGESO and the TERRE TSOs, and resolution on the application/replacement of the European methodologies with local/regional alternatives approved by NRAs (e.g. TSO-TSO settlement methodology, TERRE IF, EBGL). The timeline associated with this is entirely dependent on the outcome of the FTA negotiations and is (for the most part) an external responsibility. The BASA and OP work can start once this framework has been confirmed – i.e. the 12-week plan circulated by NGESO only starts at this point.	
	The 12-week plan was agreed to by all FR-GB parties in summer 2020 but others then did not follow the plan. It would be useful to get feedback from those parties on why this was not possible and ensure that the plan is adapted accordingly. We suggest that that plan also needs to be validated/updated to consider the following known gaps/issues: • Settlement data flows and data definitions (LIBRA, JAO, NGESO, RTE, and interconnectors) • RTE settlement proposal • GB settlement clarifications (e.g. currency, exchange rate) • LIBRA changes to align with TSO-TSO settlement methodology (resolve congestion rent calculation errors) and define/update rounding rules (for settlement) • ATC notification/publication • Process performance testing using NGESO ECP4 file transfers – there is a very short window from TERRE results being available to reference programs being sent to TSOs involving multiple calculations and data transfers with as little as 6 minutes to complete • Regulatory timelines, i.e. if alternate rules to cover methodologies such as TSO-TSO Settlement require consultation and approval beyond the go/no-go point • Intraday (XBID) changes could be on a similar timescale and require changes to the current data provision timelines in the TERRE OP • Impact of any upcoming TERRE-LIBRA changes – for example, it was previously notified that there would be a move to ½ hourly cross border scheduling within 2 years of TERRE go-live, and then ¼ hourly two years later. These changes would require modification to the FR-GB interconnector hourly ramping requirements defined by NGESO and RTE which must then be implemented by FR-GB interconnectors	
	Scenario 4: This was initially discussed as TERRE not being used. For interconnectors this would align with scenario 1a and require similar actions (alternate balancing arrangements and remove of code from interconnector systems).	

Feedback received to date (2/3)

Channel	Feedback	ESO comment
9 December meeting	Scenario 1 – are code modifications needed and how long would they take? Changes are likely to be needed across multiple codes.	Covered under “reach agreement with industry for GB implementation”. Indicative view of 6 months.
	Scenario 1 - is contingency built into the plan?	The presented plan is optimal; final plans would include contingency.
	Scenario 1 - is there a specific deadline for go-live?	No specific deadline. Month 1 on the timeline is assumed to be January 2021, indicating mid-2022 for go-live, dependent on a suitable benefit case.
	Scenario 1 – the timetable seems long given most implementation details should have been confirmed	The impact assessment will determine were re-work is needed due to the implementation of other systems (such as Power Available), new commercial arrangements and how the solution interacts with an integrated European platform. ESO to provide further details on each item in the plan
	Scenario 2 – would a cost-benefit analysis be needed if implementation were an obligation?	No
	Scenario 2 – why is the “continuous integration of code” line shorter in scenario 2 than 1.	Assumed level of change is lower under scenario 2.
	Scenario 2 – baseline assumption is that if the FTA allowed the use of TERRE it should be able to be implemented quickly.	Power Available Phase 2 has been prioritised given the consumer benefit case. The current Balancing Mechanism system does not facilitate parallel development.

Feedback received to date (3/3)

Channel	Feedback	ESO comment
Post 2 December meeting	Does scenario 2 represent an *opportunity* or *obligation* to participate in TERRE?	Obligation for the ESO, opportunity for market participants
	Need to split scenario 1 – standalone mode and bilateral exchanges	To be discussed at interconnector working group on 15 December 2020
	In scenario 1 and 2 there should be a CBA before any go / no decision and before bulk of remaining implementation work is undertaken by ESO	Will consider this in the implementation plans
	Does GB TERRE Implementation Group have sufficient representation	Invite was sent out to our Balancing distribution list and placed on website. Further representation is welcome.
2 December meeting	Scenario 3 not feasible. Material risk of change and stranded spend. Might be difficult to get industry engagement	Decision not to take scenario 3 forward for more detailed planning
	Scenario 1 is the only credible scenario. Need scenario 4 as decision point in scenario 1.	Combine scenario 4 as decision point in scenario 1. Proceed with scenarios 1 and 2 for more detailed planning
	Need to consider impact on MARI if work on TERRE is stopped. Suggestion that work on MARI should stop too.	Noted
	What is the ESO view on scenarios?	As per the industry update of 4 September, work is currently paused.
Post 25 November meeting	Support for scenario 4. Could form part of least worst regrets pathway.	2/12 - Combine scenario 4 as decision point in scenario 1. Proceed with scenarios 1 and 2 for more detailed planning
	Scenario 4 could be seen as a nuance of scenario 1	
	Scenario 1 is only credible scenario	
	Scenario 1 – split standalone mode and bilateral exchanges into distinct scenarios.	Discussed at 2/12 meeting and agreed to further develop at Interconnector working group
	No regrets items such as ECP4 upgrade and system-to-system flow methodology should proceed now	To be discussed at the Interconnector working group
	Seek clarification that the design of the TERRE solution has not changed. Need to be mindful of impact of further industry testing on other initiatives	Noted
25 November meeting	Could the ESO take a local copy of the TERRE algorithm and associated software and use in standalone mode	In theory yes, but this would not allow replacement reserve exchange with Europe which is central to the benefit case. A CBA would be needed.
	Does any IT work need to happen now to avoid delaying the scenarios?	Work is continuing on testing ESO systems with the Libra platform. The consideration then is whether the ESO should start to implement code that affects internal and external parties and systems that may need unwinding, representing a potential regret spend.
	How far does waiting for legal clarity push back delivery, assuming we can access TERRE by 1 January 2021.	From a non-technology perspective we need to understand whether the final trade agreement means the commercial arrangement are the same as what we currently expect and make any necessary changes. In terms of technology, there will be a remobilisation plan but this would be impacted by a change freeze over the Christmas period as is standard practice for operators of critical national infrastructure
	Is there a credible scenario assuming we are not going to have access and then re-start if the situation changed.	Combined with post meeting feedback, this became scenario 4.
	Would changes to Article 19 that would remove our obligation to be part of TERRE apply across all scenarios	Presume this is the case.

Annex 2

Further detail on TERRE integration

Further detail on TERRE integration

TERRE Pause explained

The ESOs approach to not deploy the TERRE code into production was based on the following considerations:

- **Remove operational risk** - Deployment of code would enable input from external systems that we are not expecting inputs from; if those systems should send us unexpected data this would be an overhead on the control room and also pose a potential operational security risk
- **Cost to the consumer** – removes the month on month IT operational cost

Integration considerations for any new solution

Impact Assessment: Every TSO participating in TERRE is connected to the LIBRA platform hosted by RTE. It is assumed that a GB implementation will require a UK hosted 'IT platform' (LIBRA equivalent) to enable the exchange of RR data. A GB implementation only will require the design and delivery of a UK based IT solution, and the additional development an IT operational support model/organisation and the underpinning contractual and commercial agreements. This 'GB IT platform' will then be integrated with the existing TERRE functionality that we have developed and tested to date.

Legacy Platform constraints: The ESO's legacy balancing mechanism has evolved from technology originally introduced in the late 70's. The primary constraint of the legacy technology is the BM's inability to maintain parity with more contemporary platforms via it's rate and pace of change. Whereas more modern platforms are componentised / modular i.e. multiple modules that act together and allow multiple changes to take place in parallel, the complexity within the BM means code is only merged into the mainstream baseline when it becomes close to production-ready, resulting in code merges that are a significant undertaking.

Continuous Integration: The TERRE codebase will be 'continuously maintained' to include all changes made to the production (operational) baseline. All planned changes to the BM are depicted within the ESO forward plan (regulatory & operational changes). The point at which TERRE restarts will determine the level of effort and timeframes to reintegrate the TERRE code into the 'production baseline'. Once integrated thorough testing (both internal & external) is required to ensure the integrity of the BM is maintained, thus reducing the risk of outage and risk to supply.

The following non BM changes will also need to be implemented and reintegrated into the current production baseline, and will also undergo the same rigorous testing cycles.

- NED & Modis – Market reporting, RR instruction data to enable settlements and energy and capacity reporting
- ECP – Communications platform providing external interfaces to Libra and Interconnectors
- CRM – Web portal for management of existing and new market participants (All unit types: Primary, secondary and additional and ancillary market units)
- Registration Database – Distribution of markets participants data (eg unit information to BM and other internal NG systems)
- API – Programmatic Web interface for access to the balancing mechanism for market participants to submit and receive data (ie bids and instructions)

Testing Internal systems: All IT systems in scope of TERRE will need to ensure that functional changes (projects and operational) through the ESO forward plan do not break or interfere with TERRE functionality, and equally importantly TERRE functionality does not break or interfere with existing functionality, thus causing either a risk to supply, incorrect market reporting, or create a cyber risk to pose a security threat to our Critical National Infrastructure.

External testing: All external market participants will need to perform integration testing to ensure that they can submit and receive RR data to the balancing mechanism. National grid and market participants will also need to perform operational testing for all RR process introduced e.g. registration, balancing settlements and reporting.


nationalgridESO