Session VIII

Pre-reading for 12 May 2022 session

Shared 9 May 2022

Workplan on a page – progress at 12 May 2022

Meeting	0 (17-12)	1 (03-02)	2 (17-02)	3 (03-03)	4 (17-03)	5 (31-03)	6 (14-04)	7 (28-04)	4-05	8 (12-05)	9 (26-05)	10 (09-06)		23-06	…
Topic	**Dec**	**Feb**		**March**			**April**		**May**				**June**		
Governance	Draft TOR	Agree TOR and budget					Mid point review							Establish next steps	
Engagement			Stakeholder mapping				Webinar prep		Webinar				Webinar		Dissemination event
A. Flexibility needs *What and why (drivers)*				DER potential	Network & Market potential	Value streams and capability			Seek feedback		Address feedback				
B. Product definitions *What and how (technical requirements)*					Need cases	Service & technical requirements	Service & technical requirements		Seek feedback		Address feedback				
C. Market access and participation *Who and how (commercial)*							Transacting flexibility	Transacting flexibility		Transacting flexibility			Get feedback		Address feedback
D. Market opportunities *Where and for how much*											Valuing flexibility		Get feedback		Address feedback
E. Practical, scalable and least-regret steps *Implementation*											Review outputs			Review outputs	Seek feedback
F. Support ongoing learning and collaboration														Establish next steps	

We are here...

Further sessions needed…perhaps 2 or 3?
Subject to outcome of discussion on scope/approach to completing key tasks – see pages 12-19

Session overview – topics and decisions

Five items

1. A perspective from the UK – Octopus Energy
    a) For discussion. Alex Schoch Head of Flexibility Octopus Energy UK will provide a UK perspective on transacting flexibility
2. Experience from NZ – Transpower trial
    a) For discussion. Insights from the Transpower demand response trial regarding terms of trade and the minimum provisions of an effective contract between seller and buyer
3. Follow up on SIDG draft roadmap discussion
    1. For discussion. Views on the interaction between the FlexForum work and SIDG draft roadmap and SIDG feedback on FlexForum work
4. Workplan, engagement and communications
    a) Review outcomes of webinar # 1 and approach to responding to feedback
    b) Discuss scope and approach to starting and completing key tasks required to deliver the workplan
5. Administration – governance, budget and funding
    a) Update

A perspective from the UK – Octopus Energy

Alex Schoch Head of Flexibility Octopus Energy UK and Margaret Cooney, Head of Customer, Octopus Energy NZ, will provide a UK perspective on transacting flexibility

Octopus may have insights on:

1. What is your view of the key practical requirements for using contracted flexibility?
2. How do prospective flexibility providers know a service is required? When?
3. What are the most important terms of trade?
4. What is the interaction between price flexibility and contracted flexibility?
5. What is your view the most important thing to get right up front to successfully transact flexibility?
6. What was the most surprising thing learned about transacting flexibility between 2017 and now?

Experience from NZ – Transpower trial

Quintin Tahau, Che Lewis & Mick Richardson will provide insights from the Transpower demand response trial regarding terms of trade and the minimum provisions of an effective contract between seller and buyer

Transpower may have insights on:

1. What is your view of the key practical requirements for using contracted flexibility?
2. What are the most important terms of trade?
3. What is the interaction between price flexibility (ie, distribution charges and retail tariffs) and contracted flexibility?
4. What is your view of the most important thing to get right up front to successfully transact flexibility?
5. What was the most surprising thing learned about transacting flexibility during the trial?

Follow up from discussion of SIDG draft roadmap

Glenn Coates will:

- outline views on the interaction between the FlexForum work and SIDG draft roadmap
- provide SIDG feedback on the FlexForum work

Webinar # 1 on 4 May 2022 – short discussion of outcomes and actions

Webinar # 1, 4 May 2022. About 91 people joined including the speakers from 100+ registrations

- questions and poll results are on the next pages
- the paper setting out thinking on topics A and B was sent to everyone who registered on Thursday 5 May

All feedback received – on the paper and from the webinar (ie, questions) – will be collated for consideration at the 26 May session

- **What feedback is each member of the FlexForum planning to provide?**
- **What can the FlexForum do to encourage engagement and feedback?**

Options include:

- a follow-up email (soon) outlining questions asked at the webinar and initial reactions
- sector focused workshops to get feedback on the paper initially and potentially on remaining tasks to be completed, ie, distributor members arrange a workshop with other distributors to get detailed input

Questions & poll results (1)

Audience questions:

Technical questions

- The needs and use cases slide mentions network needs at Tx and Dx, but System Operator doesn't differentiate between these. Should it?
- Could you please explain the difference between peak shifting, gen adjustments and demand adjustments? Aren't the latter two just ways to achieve peak shifting?
- What is being done to introduce sensible, consistent interfaces to EDB market? ie what is being done to establish a nationwide DSO?
- What global examples have been looked at?
- Has the AEMO's Project Edge (which looks like a marketplace for DER services) factored into this work?

Context & scope questions

- Customer appeared to be a common answer to the first question of the most important stakeholder. What extent of input have customers had in this process?
- Does the group have a view on what the most significant challenge in enabling DER's potential to be fully harnessed might be?
- Do you envisage a more flexible future disproportionately benefiting the wealthy? Have social outcomes of this future been considered?
- The Electricity Authority was mentioned at the start as being key in unlocking flexibility, but their logo is not on the website - is EA involved / supportive?

Poll # 1

Who is most critical to the energy flexibility ecosystem?

Questions & poll results (2)

Poll # 2 – Are there other reasons for potentially using flexibility – responses:

Congestion management – corrective & predictive

- Transmission / Network deferral
- Long-term demand reduction (e.g. seasonal)
- Short term fix before building something more stable
- defer investment
- More efficient usage of dry year firming resource
- reducing loading during equipment outages
- Ability to make constrained (managed) connection offers, with flexibility used to support when constraint binds?
- Construction risk management
- sharing infrastructure (e.g. batteries)
- Climate impacts will stress existing infrastructure. Dynamic adaptive planning potential in flexibility

Generation adequacy

- Back up power for consumers (can't remember if that was on there)

Balancing

- quality of supply in constrained areas

Customer propositions / price optimisation

- Community based solutions
- Unlocking decarb opportunities (I.e. transition of ff process heat with flex agreements)
- enabling new business models that deliver consumer benefit eg. sector coupling and bundling of electricity and end consumer appliances (eg "heat as a service")
- Community led solutions and participation
- Enables Peer to Peer trading.
- Mitigate climate change related risks

Other

- Improved mapping of energy allocation
- Land sparing
- A better question is: what is the nature and scale of the different flexibility uses?

Questions & poll results (3)

Poll # 3 – What challenges do you face in regard to flexibility and are these being addressed through any other forums? – responses:

Technical challenges

- Government leadership/investment to help develop flexibility markets sooner than later
- Reliability of demand response or flexibility is key when comparing to network solutions
- technology interoperability
- access to data
- Institutional bias towards traditional solutions
- standard interfaces to markets esp as the edbs continue to develop solutions

Customer proposition challenges

- End User takeup and understanding
- Methods to incentivise customers to participate - what is the carrot
- Big hurdle to get customers onboard (usually needs CAPEX e.g. new HWC)
- keeping it simple and easy for the customer.
- Expansion of Flexibility to go beyond power, to function and other community-based use cases
- We struggled to get demand management engagement going with industrial customers on our network, even with avoided cost of distribution (peaking generation avoided costs) on the table.

Other challenges

- Geopolitical instability in securing critical minerals in a world experiencing climate breakdown
- Regulator is behind the 8-ball (e.g. Part 6)
- Compliance with the Electricity code and appropriate legislation
- Transmission / Distribution conflicts
- Existing codes / regulations
- Skills shortages. Not being addressed as far as I know
- Regulatory

Commercial challenges

- understanding what flexibility is available for what price
- Lack of flex providers that meet distributor needs
- determining the value of services
- different stakeholders wanting different (and sometimes mutually exclusive) outcomes
- Making the business case work
- Very little market structure to commercialise
- commercial viability in a fragmented market
- DER proponents looking for subsidies
- How flexibility is paid for?
- Industry co-ordination is a challenge for Flex providers or consumers
- Open access to participate
- One-off DER Service payments make it difficult to sustain aggregated small DER volumes. Need Services payments that are more continuous - availability payments.
- How to extract value from a Flex market
- EDBs not aligned with 3rd party involvement
- aligning commercial interests – collaboration
- Need more Flex Traders
- Realistically coordinating different users to value stack
- Understanding value proposition. Being addressed potentially through heatmaps via ComCom ID process
- split incentives
- Multiple energy prices, diff rates for reactive power, line conditioning ect
- inability of 3rd parties to deliver big and fast
- Standardised format/procurement for flexibility support

Workplan – scope and approach to key remaining tasks

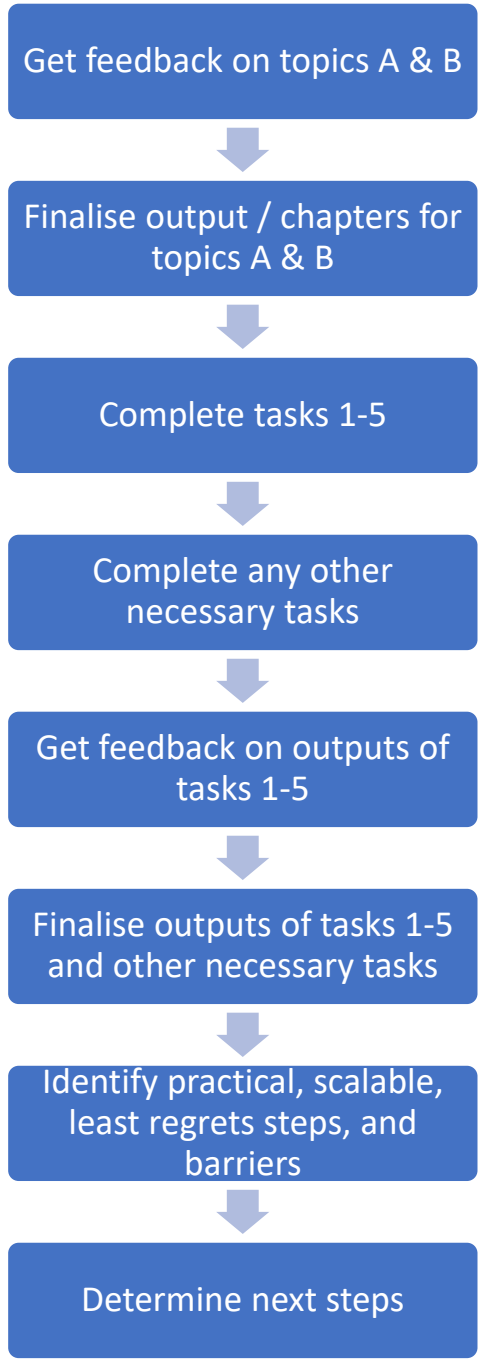
This is a list of the key tasks – the must haves – taken from the blue tile diagram (next page) which are not yet started

1. Exchange mechanisms – when to use price v contracted flexibility
2. Terms of trade – minimum contract terms
3. Sending and receiving of instructions, measurement and validation
4. Valuing flexibility and compensation structures
5. Populating the commercial product templates for each service

These tasks need to be completed to move to topics E & F and to determine the practical, scalable and least-regrets actions and how these can be implemented

- A scope and approach for completing each of these tasks is outlined on pages 14 to 18
- Timelines – where known – are outlined on page 19

Is there a task critical to producing a useful output that is missing from the list?



Five main services and three types of response to network, system & market conditions

Peak shifting to obtain…
- Portfolio optimisation
- Predictive congestion management
- Generation capacity adequacy

Demand adjustment to obtain…
- Portfolio optimisation
- Corrective congestion management
- Generation capacity adequacy
- Balancing

Generation adjustment to obtain…
- Portfolio optimisation
- Corrective congestion management
- Balancing

Characteristics of service
- Shift load
- Shed load
- Shimmy load (up or down) over short timescales
- Shape load (up or down) routinely over long timescales

Planning & operational criteria of service
- Detection & location
- Procurement & deployment timeframe
- Lifespan
- Speed & duration of response

Technical (topic B)

Exchange (procurement) mechanism
- Price flexibility (indirect)
- Contracted flexibility (direct via buyer or platform)

Services used to respond to a need
- standard specification (ie, the technical characteristics and criteria)

Counterparties
- who are the contracting parties
- who operates the exchange mechanism

Payment & compensation
- How is value calculated
- How is value signposted

Workplan topic D

Terms of trade
- Conditions on participation, eg registration
- Liability & non-performance
- Option to deliver

Commercial (topic C and D)

Communication & connectivity
- Sending & receiving instructions requesting delivery (type & timing)
- Performance & measurement of delivery

Coordination
- Tx & D interface
- Wholesale market

Operational (topic C)

Investment information
- Planning information. Actual or forecast demand for a need & response
- Signalling information. Timing and location of need & response

Planning (Topic D)

Customer proposition
- Factors enabling or blocking creation of attractive and effective propositions for transacting flexibility

Implementation (topic E)

Start when key tasks are done

- Key tasks not yet started
- Tasks being completed by FF or others

Key task 1 – exchange mechanisms

There are two exchange mechanisms or methods of procuring flexibility:

- **Price-based flexibility** (indirect or implicit flexibility) in which energy demand or generation responds to the price of energy and network use (via retail tariffs and network charges)
- **Contracted flexibility** (direct or explicit flexibility) in which different entities exchange flexibility with each other and set up procurement contracts for that purpose. Contracted flexibility can be transacted using bilateral contracts or flexibility platforms

Note: these two exchange mechanisms were defined through development of the UK Smart systems and flexibility plan. The most recent version of the Smart systems and flexibility plan 2021 is worth a read

The group has discussed how there will be a role for both price flexibility and contracted flexibility. **The key question is which mechanism to use to procure which services in what circumstances?**

The proposed approach to answering this question is:

- Distributor members to describe the following:
    - Which services can be procured via the price signals in distribution charges, ie, corrective congestion management, predictive congestion management etc
    - Expectations and associated planning assumptions and criteria regarding consumer behaviours/response to specific price signals, and confidence of obtaining the desired service
    - Experience and research which underpins the thinking and practice
- Customer-facing members to describe how they currently respond to the use of the price flexibility mechanism, and what ‘extra’ they need to practically use signals from the price flexibility mechanism in a customer proposition

Key task 2 – terms of trade

Consistent minimum terms of trade will be needed to reduce the cost and hassle of transacting flexibility for buyers and sellers, particularly by avoiding unnecessary variation in contract terms and helping to make buyers and sellers confident that contract terms are fair and reasonable

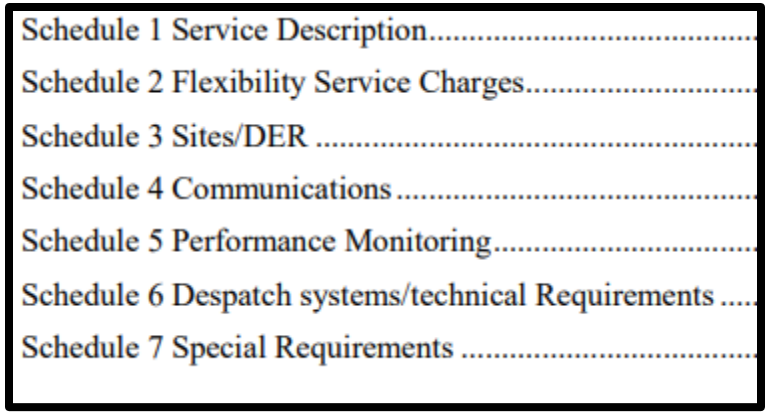
- this Q&A article on Why GB networks need a common and standardised agreement for flexibility services provides useful context on the benefits of consistent minimum terms of trade, even if developing them can be challenging

The task is not to develop fully detailed and comprehensive contract terms, but to provide the foundation and starting point. **The key question is what are the minimum contract terms necessary to provide a starting point for exchanging flexibility?**

The proposed approach to answering this question is to:

- draw on insights from the discussions with Octopus and Transpower at the 12 May session
- review existing contracts for exchanging flexibility to identify the minimum terms needed for an effective contract, including identifying what terms are required to manage the material risks associated with transacting flexibility – a key outcome of this task is trying to ensure a clear relationship between risk and risk mitigation

- A standard agreement developed by ENA (UK) used by Western Power Distribution is available at https://www.flexiblepower.co.uk/downloads/936. It is 49 pages and covers lots of legal stuff, but also important things like…
- What other flexibility contracts should be considered to identify the starting point terms?



Key task 3 – sending and receiving of instructions, measurement and validation

Sending and receiving of instructions, measurement and validation are complementary functions requiring communication capability

- the sending and receiving of instructions function is about who and how an instruction or signal is sent from the buyer to the provider of flexibility
- the measurement and validation function is about how the response – ie, the demand or generation adjustment – is measured and confirmed. Did the provider do what they are getting paid to do?

There are two key questions:

- What are the minimum requirements for sending and receiving instructions?
- What are the minimum data and data quality requirements for measuring and validating delivery of a response?

The proposed approach to answering these questions is:

- get an expert view on the minimum requirements for sending and receiving instructions (Terry Paddy can speak to this)
- determine minimum viable measurement and validation requirements, drawing on approaches adopted in the UK and USA. Measurement and validation is determined by the current and desired communication capability of distributors and DER and data exchange protocols and capability. The validation approach (baselining) used in the UK is described here https://www.energynetworks.org/assets/images/Resource%20library/ON21-WS1A-P7%20Baseline%20Methodologies%20Interim%20Report%20(30%20Jul%202021).pdf. (Matt Smith can speak to this)

Key task 4 – valuing flexibility

Transacting flexibility requires buyers and providers to understand how the value of flexibility will be calculated and compensated

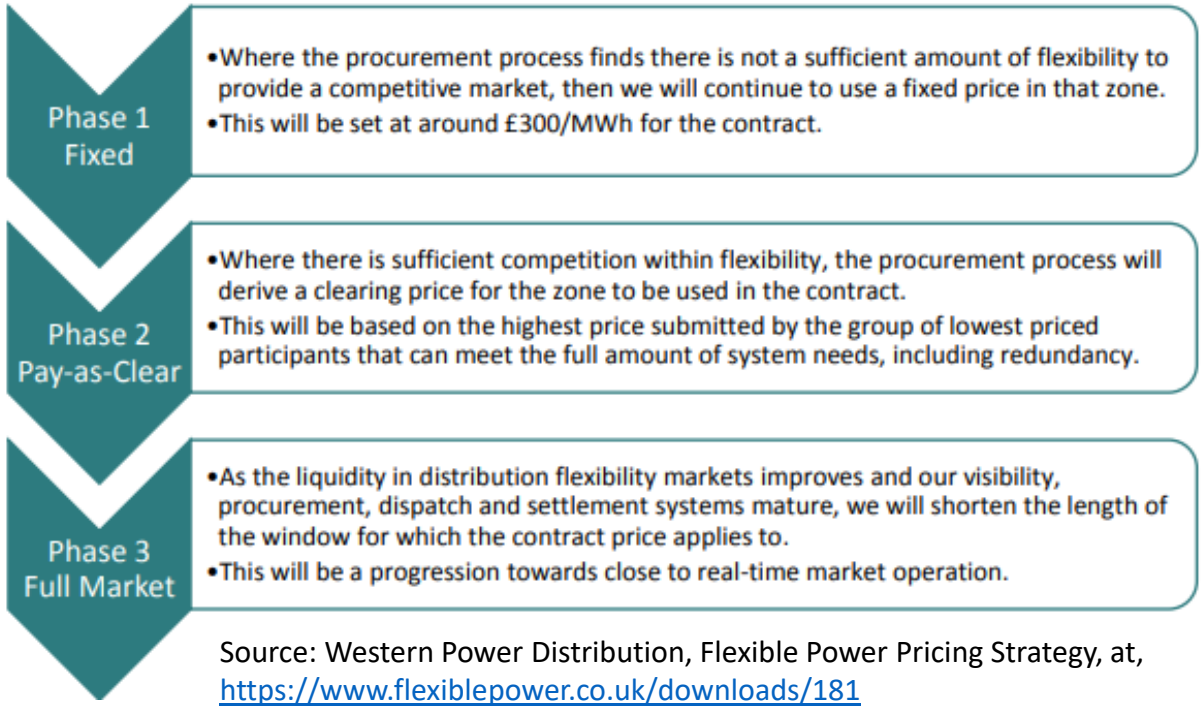
There are two key questions:

1. Is there a standard method or process for calculating the value of flexibility for each service?
2. What compensation structures should be used for each service?

The proposed approach to answering these questions is:

- flexibility buyers in the group to describe the current state of thinking on the method or process for calculating the value of flexibility for services they expect to procure, eg, distributors to describe thinking on calculating the value of congestion management services
- review methods from elsewhere, eg, the common evaluation methodology for network investment decisions developed by ENA (UK) to assist networks to understand the option value available from flexibility …"The value of flexibility (e.g. represented by a ceiling price) increases as load growth becomes more uncertain"
- flexibility buyers and providers to consider economic efficiency and commercialisation implications of compensation structures
    - Payment mechanisms for contracted flexibility used by Flexible Power are described here: https://www.flexiblepower.co.uk/downloads/957

From 2019 onwards, WPD will implement a new pricing strategy, which we see as having three distinct phases:



Source: Western Power Distribution, Flexible Power Pricing Strategy, at, https://www.flexiblepower.co.uk/downloads/181

This excerpt from a flexibility pricing strategy suggests the approach to valuing and compensating flexibility needs to evolve over time

Key task 5 – product templates

The group has requested development of product templates for each service

- Some of the product templates can be populated using material from this IPAG overview of the 'markets' for flexibility at https://www.ea.govt.nz/assets/dms-assets/28/Transpower-DR-programme-review-slide-pack.pdf (see from page 35). The 'mature' services are:
  - Price optimisation – retail and wholesale price management
  - Balancing – ancillary services (instantaneous reserves, extended reserves, frequency keeping, voltage support and black start
- Some of the product templates can be fully populated only once tasks 1-4 (see pages 14-17) are complete
  - Corrective & predictive congestion management
  - Generation adequacy

The proposed approach to this task is to develop and refine the product templates in parallel with tasks 1-4

A possible template for commercial product descriptions

Template to be populated for each commercial product identified

Category	Parameter	Definition
Commercial	Product Name	
	Product description	
	Buyer	
	Exchange mechanism	
	Value exchange method	*How is payment or compensation calculated*
	Price determination	*How is payment or compensation calculated*
	Maturity	*How mature is the market product or service?*
	Timing of procurement	
	Contract term	*If applicable*
Technical requirements	As per technical requirements (topic B)	
Detailed operational specifications	Minimum Flexible Capacity	The minimum Flexible Capacity a Flexibility Provider may make Available. This can be made up of Aggregated or Non-Aggregated DER's.
	Minimum Utilisation	The minimum amount of time a DNO will require the provision of a Flexibility Service from a Flexibility Provider, following a Utilisation Instruction.
	Minimum Utilisation Duration Capability	The minimum amount of time a Flexibility Provider must be able continually hold their Contacted Flexible Capacity, in minutes.
	Maximum Ramping Period	The maximum allowed time, once a Utilisation Instruction has been issued or becomes active, for a Flexibility Provider to reach their Contracted Flexible Capacity.
	Availability Agreement Period	The time period before a Flexibility Service is required by a DNO, in which the DNO and Flexibility Provider may agree the Flexibility Provider's Availability Window.
	Utilisation Instruction Notification Period	The time period before a Flexibility Service is required by a DNO, in which a DNO may issue a Utilisation Instruction to a Flexibility Provider for the provision of a Flexibility Service.
	Dispatch method	
	Metering method	

These parameters and definitions are based on the UK Open Networks flexibility product parameters
Source: https://www.energynetworks.org/industry-hub/resource-library/open-networks-2020-ws1a-p3-final-implementation-plan.pdf

Key tasks, actions and possible timelines

DECISIONS REQUIRED

1. Are these the immediate critical tasks?
2. Who will complete these tasks?
3. When will the group be able to discuss the output of each task?
4. When will the group be ready to seek feedback on a draft output for these tasks?

Task	Description	Responsible	Timeframe
1. Exchange mechanisms	Describe use of price signals, expectations about price response… (see page 14)	Distributor working group	Depends on working group – 26 May or 9 June
	Describe approach to price flexibility mechanisms…(see page 14)	Customer facing member working group	Depends on working group – 26 May or 9 June?
2. Terms of Trade	Document insights from discussions and review contracts / identify minimum contract terms (see page 15)	Secretariat	26 May
3. Sending /receiving instructions, measurement and validation	Get expert views on these (see page 16)	Terry Paddy & Matt Smith	26 May
4. Valuing flexibility	Describe valuation methods, including reviewing CEM etc (see page 17)	Distributor working group	Depends on working group – 26 May or 9 June?
	Compensation structure options and impacts (see page 17)	?	?
5. Product templates	Develop and refine templates for each service (see page 18)	Secretariat	• Mature services could be done by 26 May • Emerging services after tasks 1-4 complete

Administration – governance, budget & funding

Update