Forecasting Reference Group (FRG) DRAFT MINUTES

MEETING: FRG #3 2022

DATE: Wednesday, 30 March 2022

TIME: 2:00pm – 4:20pm AEDT

ATTENDEES:

Name	Organisation	Name	Organisation
Monami Das Gupta	ACCC	Mark Grenning	EUAA
Tom Ralston	ACCC	Cam Potter	FMGL
Andrew Turley	AEMO	Christina Sutherland	GLNG
Daniel Collins	AEMO	Kate Farnsworth	Hydro Tasmania
Greg Staib	AEMO	Jim Crosthwaite	Individual
Holly Casey	AEMO	John Godfrey	Individual
Kent Hahn	AEMO	Sarah-Jane Derby	Origin Energy
Levi Rosenbaum	AEMO	Ben McGregor	Powerlink
Magnus Hindsberger	AEMO	Dean Knight	Powerlink
Oliver Derum	AEMO	Jonathan Dennis	Powerlink
Tim Abernethy	AEMO	Jennifer Brownie	QEUN
Craig Oakeshott	AER	Bret Harper	RepuTex
Elsie Zhao	AGIG	Andrew Manson	SA DEM
Bill Nixey	Ausgrid	Marino Bolzon	SA DEM
Ed White	Ausgrid	Fraser Hampton	SA Power Networks
Navid Haghdadi	Ausgrid	Jerome Devera	SA Power Networks
Scarlett Jiang	Ausgrid	Liam Mallamo	SA Power Networks
Morteza Moallemi	Ausnet Services	Ron Logan	Shell Energy
Paul Graham	CSIRO	Noel John Sligar	Sligar and associates
Ben Ganim	DISER	Joe Hemingway	Stanwell
Lucienne Burnham	DISER	Sharon Raymond	Tasmania Treasury
Zakieh Khorshidi	DISER	Herath Samarakoon	TasNetworks
Caroline Valente	ECA	Julie Morrison	TasNetworks
Abu Abdullah	ElectraNet	Inushka Dassanayake	Total-Eren
Connor Mcleod	Enel	Jahan Peiris	TransGrid
Brad Woods	Energy Australia	Sujeewa Vithana	United Energy
Sam Wilkinson	Energy Policy WA	Catherine Laurie	VIC DELWP
Kerina Heath	Ergon	Jeanpaul Dussaubat	VIC DELWP
Brent Hudson	Essential Energy	Norman Jip	VIC DELWP
Zoe Dowsett	Essential Energy	Bijoy George	Western Power

1. Welcome and Introductions

Daniel Collins (AEMO) welcomed everyone and covered the following:

- Draft FRG Minutes circulated:
  - 23 February 2022

- 2022 Gas Statement of Opportunities (GSOO) and Victorian Gas Planning Report (VGPR) publication and release webinar[1].
- Demand Side Participation (DSP) Information Portal open from 1 April to 30 April 2022.
- Submissions to Energy.forecasting@aemo.com.au are appreciated.

2. Presentation 1 – 2023 Inputs and Assumptions – stakeholder Distributed Energy Resources (DER) topics

Before the February FRG, AEMO polled stakeholders on their topics of interest in relation to the 2023 IASR development, especially those that may influence energy needs in future. Greg Staib (AEMO) began the March FRG by summarising the February FRG meeting's discussion on various long and short term Economics and Multi-sector Modelling topics.

The March FRG meeting then discussed the relative importance of stakeholder-identified PV, battery and Electric Vehicle topics listed below. Error! Reference source not found. shows the final long and short term relative importance as polled by the FRG.

Topic 1 – DER Uptake

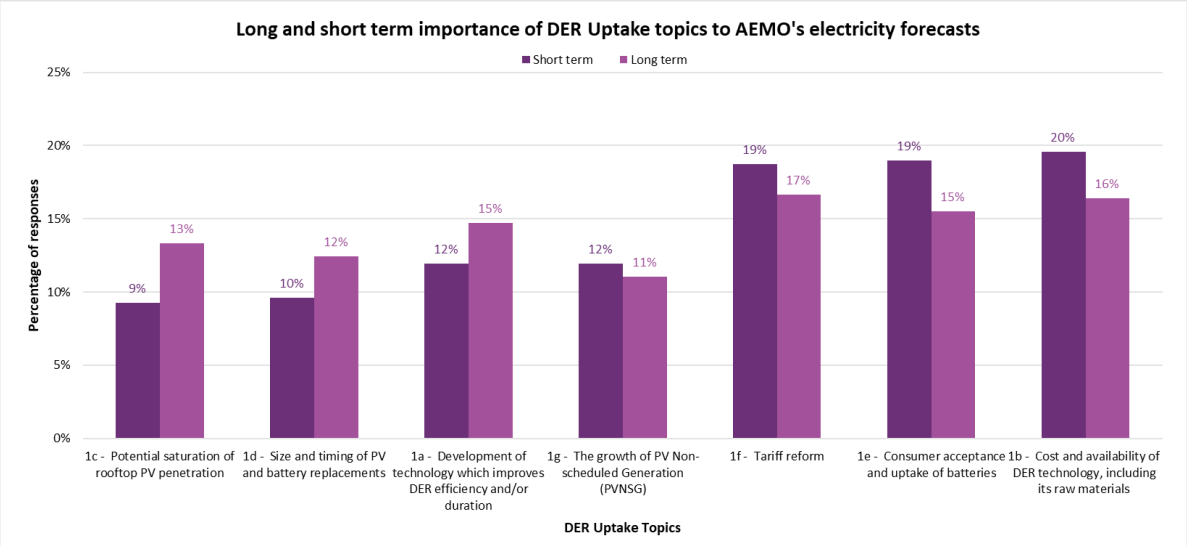
Key topics raised by stakeholders during this session included:

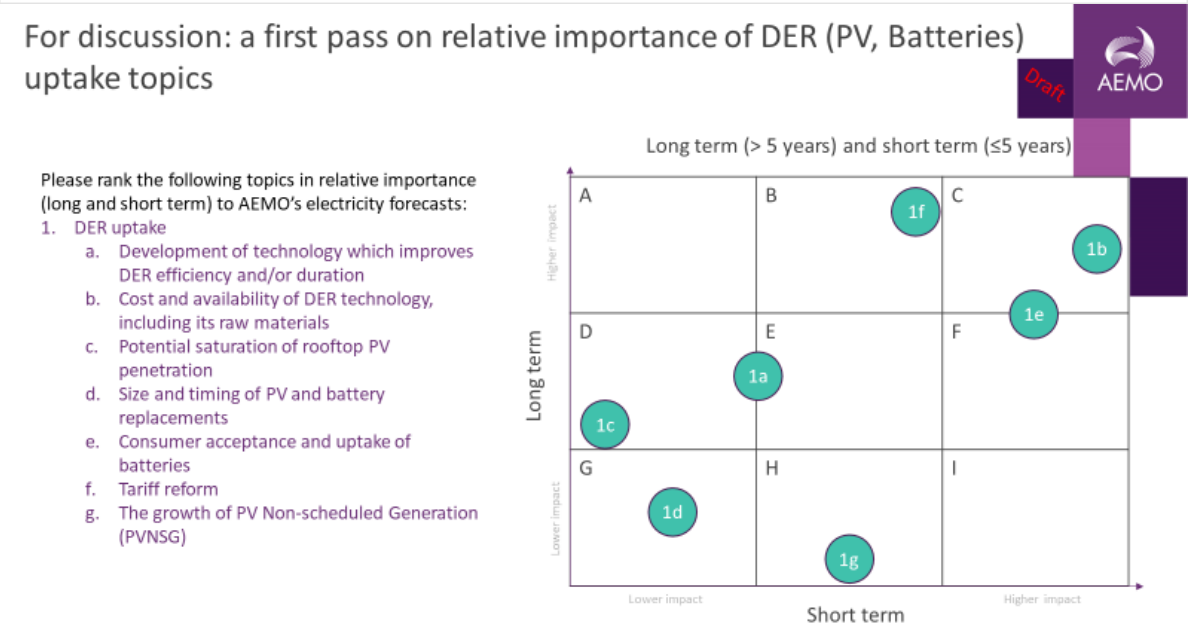
- 1a – *Development of technology which improves DER efficiency and/or duration*
  - Cameron Potter (FFI): This item is intertwined with 1b – costs.
    - AEMO: 1a focuses on long term uptake, while 1b relates to current costs and immediate uptake.
- 1b – *The cost and availability of DER technology and raw materials*
  - Joe Hemingway (Stanwell): Current uncertainty, due to supply chain and political issues, needs to be factored in to reflect the slowing worldwide uptake rate.
- 1c – *Potential saturation of rooftop PV penetration*
  - Liam Mallamo (SAPN): Curtailment in South Australia will occur less than 2% of the time. This slight curtailment has not reduced uptake.
  - Sam Wilkinson (Energy Policy WA): Western Australia now allows distributed PV curtailment, deferring the potential saturation point. This has not reduced uptake.
    - Jennifer Brownie (QEUN): To truly understand consumer behaviour, we need to survey consumers who are not so involved in the market.
      - Liam Mallamo (SAPN): SAPN's surveys found that most people who choose fixed over flexible export did so due to installer misinformation, with less than 10% due to distrust of the network.
- 1d – *Size and timing of PV and battery replacements*
  - Ron Logan (Shell): Combining PV and Battery Energy Storage Systems (BESS) replacement may be difficult due to the immaturity of the BESS market.
  - Ron Logan (Shell): Regarding PV replacements; households would prefer to add new panels rather than fully replacing their old system.
  - Jennifer Brownie (QEUN): Maintenance is another important issue.
- 1e – *Consumer acceptance and uptake of batteries and DER management*
  - Ron Logan (Shell): Consumer education is important for consumers to understand the cost effectiveness of BESS, DER and TOU tariffs.
  - Sam Wilkinson (Energy Policy WA): The value proposition for customers depends on the dynamic operating envelopes of distribution networks.
  - Jim Crosthwaite (Individual): DER uptake requires retailers and governments to build consumer trust through guidance on reputable installers.
  - Connor Mcleod (Enel): How was BESS split between disaggregated and aggregated, through Virtual Power Plants (VPP), in the draft 2022 ISP?
    - AEMO: Scenario settings and consultant advice, informed by VPP trial data in the short term.
  - Jennifer Brownie (QEUN): Batteries are currently too expensive.
    - Ed White (Ausgrid): The uncertainty of home BESS needs to be considered, including the possibility that uptake does not increase, while distributed PV uptake continues increasing.

[1] Presentation slides available at: https://aemo.com.au/en/energy-systems/gas/gas-forecasting-and-planning/gas-statement-of-opportunities-gsoo

- Ron Logan (Shell): We have not seen a cost reduction in home BESS costs. Increasing mineral costs for batteries has seen the BESS market focus on supplying Electric Vehicles (EV) rather than home batteries.

- 1f – *Tariff reform*
  - Joe Hemmingway (Stanwell): Tariff reform could come in the form of bespoke retail arrangements; it may not be a large uniform change. Where possible, consultants should survey the market to understand retailer issues and potential arrangements.
  - Ron Logan (Shell): Tariff reform could depend on how quickly networks and retailers move towards TOU pricing. Consultants should better understand what consumers perceive as the disbenefits to TOU tariffs.
- 1g – *The growth of PV Non-scheduled Generation (PVNSG)*
- **DER Uptake topics poll results:**





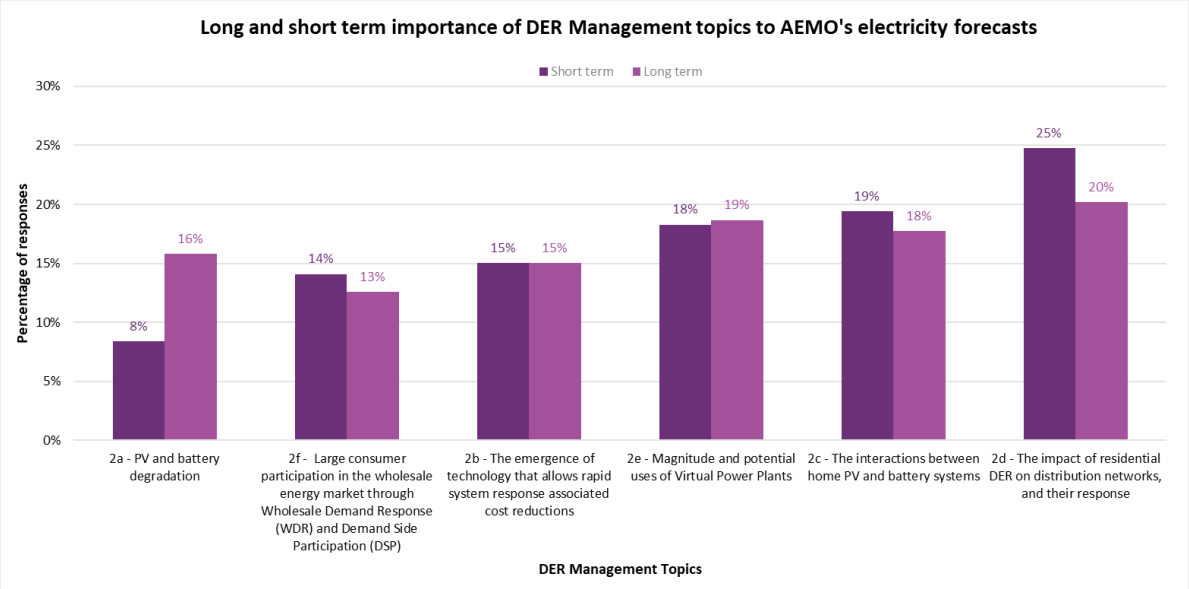
Topic 2 – DER Management

Key topics raised by stakeholders during this session included:

- 2a – *PV and battery degradation*
- 2b – *The emergence of technology that allows rapid system response*
- 2c – *The interactions between home PV and battery systems*
  - Ron Logan (Shell): In the short term, not many home batteries exist.

- Liam Mallamo (SAPN): The ability to send Dynamic Operating Envelope (DOE) instructions to an entire home system will become important to managing DER.

- 2d – *The impact of residential DER on distribution networks, and their response*
  - Sam Wilkinson (Energy Policy WA): It is important to consider whether DER participates in the market directly, or through network operators.
  - Ron Logan (Shell): What responses are available besides curtailment tariffs?
    - Sam Wilkinson (Energy Policy WA): The DOE can limit export more dynamically at different times of the day.
    - Liam Mallamo (SAPN): A trial is underway in which customers can choose a flexible 1.5-10kW export limit. The network wide model predicts expected curtailment of 2%, to mitigate system security risks.
- 2e – *Magnitude and potential uses of Virtual Power Plants (VPP)*
  - Zoe Dowsett (Essential Energy): Are any VPPs connected to networks?
    - AEMO: Trial VPP programs are currently underway[2].
  - Sam Wilkinson (Energy Policy WA): Add technologies that allow for rapid system response and the associated cost reductions.
  - Catherine Laurie (DELWP): Consumer awareness and acceptance is an important consideration for VPPs too.
  - Jennifer Brownie (QEUN): As gentailers choose VPPs rather than traditional generation, maintenance of DER in these VPPs could become a material issue.
- 2f – *Consumer participation in the wholesale energy market through Wholesale Demand Response (WDR) and Demand Side Participation (DSP)*
  - Cameron Potter (FFI): If an individual purchases software to respond to market signals, would they be considered a VPP or WDR/DSP?
    - AEMO: For clarity in this context, assume WDR/DSP are large users. Topic 2e includes coordination of flexible consumer devices.
  - Cameron Potter (FFI): Large consumers will be a critical component in balancing the system in the long term.
- **DER Management topics poll results:**

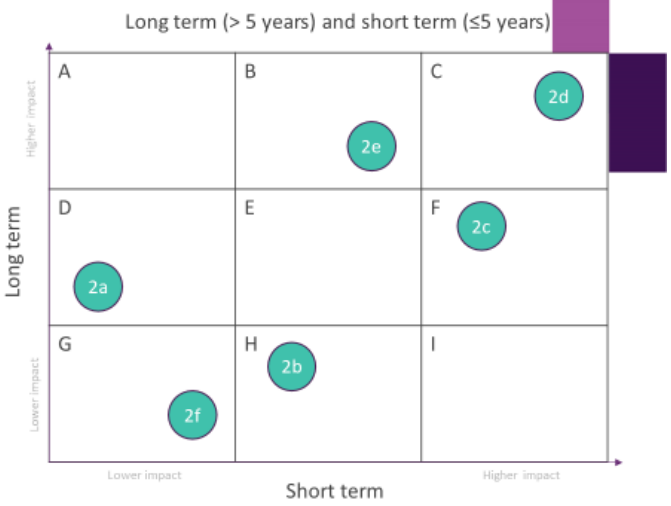


[2] See https://www.ausgrid.com.au/Industry/Our-Research/DMIA-Research-and-trials

For discussion: a first pass on relative importance of DER (PV, Batteries) management topics

Please rank the following topics in relative importance (long and short term) to AEMO's electricity forecasts:

2. DER management
   a. PV and battery degradation
   b. The emergence of technology that allows rapid system response
   c. The interactions between home PV and battery systems
   d. The impact of residential DER on distribution networks, and their response
   e. Magnitude and potential uses of Virtual Power Plants
   f. Consumer participation in the wholesale energy market through Wholesale Demand Response (WDR) and Demand Side Participation (DSP)



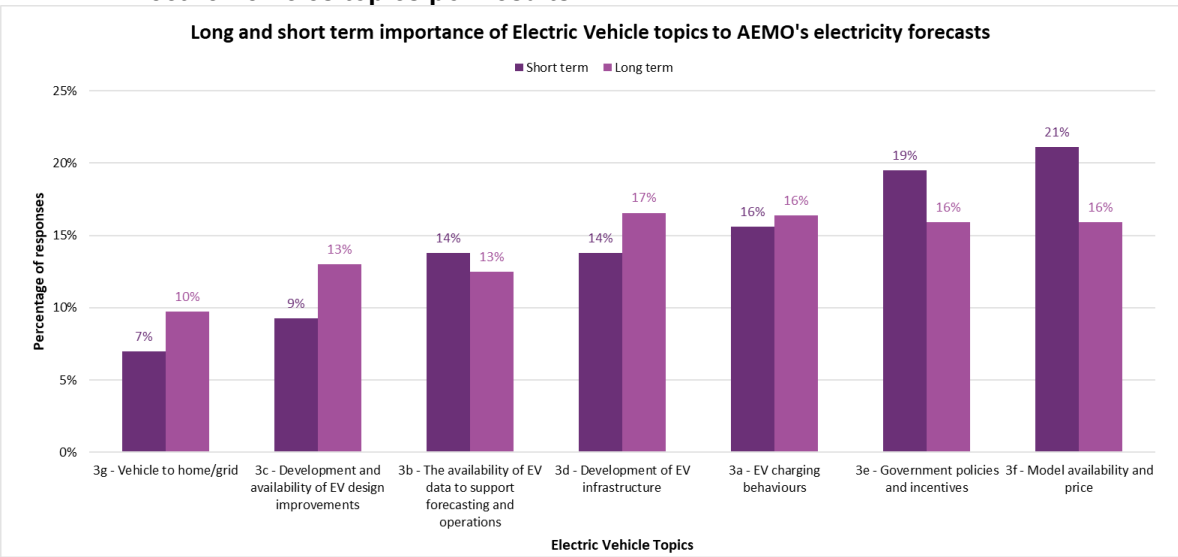
Topic 3: Electric Vehicles (EV)

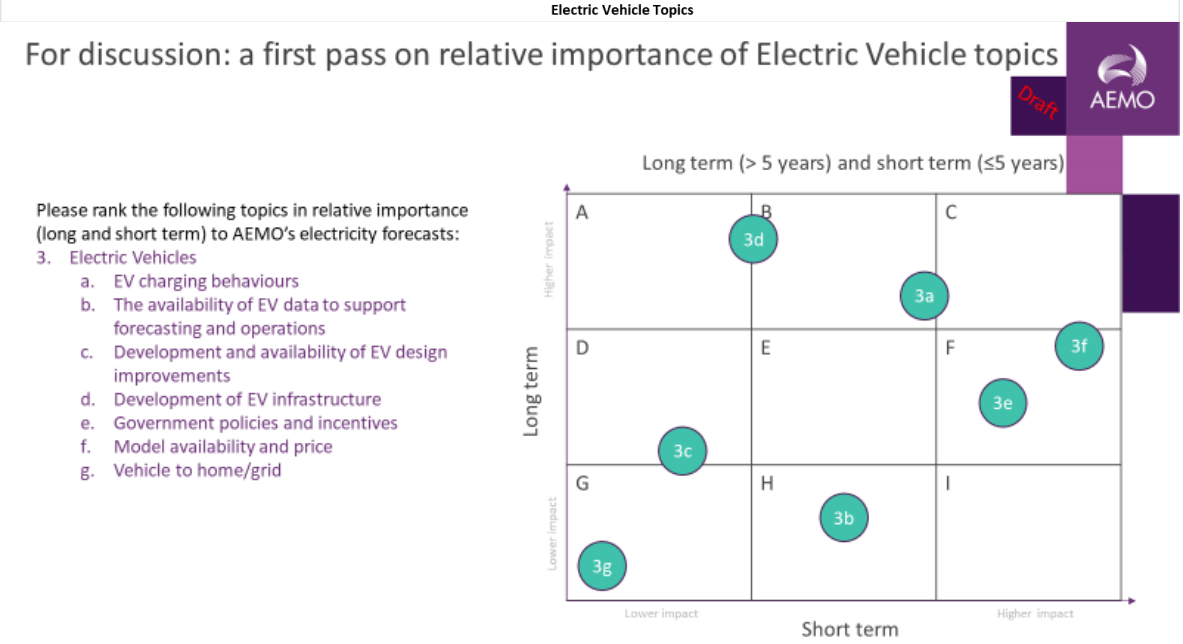
Key topics raised by stakeholders during this session included:

- 3a – *EV charging and discharging behaviours*
  - Joe Hemmingway (Stanwell): This topic will be driven by topic 3b.
  - Sam Wilkinson (Energy Policy WA): It is important to consider what will drive charging behaviours. Interactive and controlled charging will be very important for grid management in the long term.
- 3b – *The availability of EV data to support forecasting and operations*
  - Sam Wilkinson (Energy Policy WA): Is the number of EVs or the electricity use more important to AEMO's forecasts?
    - Ultimately both of these factors are important, as the peak demand, energy consumption, and timing of EV charging (affecting the demand shape) are all influential on the needs of the power system.
  - Liam Mallamo (SAPN): SAPN are interested in EVs from a low-voltage perspective and how they integrate with other household DER technology. However, material grid impacts from significant EV uptake are not expected in the short term.
  - Jennifer Brownie (QEUN): EV data should be reported by new car sales per year, vehicle class and fuel (hybrid, EV or hydrogen).
- 3c – *Development and availability of EV design improvements*
  - Joe Hemmingway (Stanwell): All battery and EV forecasts should consider the cost and availability of parts.
- 3d – *Development of EV infrastructure*
  - Joe Hemmingway (Stanwell): This topic will be driven by topic 3e.
  - Liam Mallamo (SAPN): Network augmentation needs to be considered too.
- 3e – *Government policies and incentives*
- 3f – *Model availability and price*
  - Mark Grenning (EUAA): The price of input materials will drive EV uptake.
  - Caroline Valente (ECA): Fuel prices are an important EV uptake driver too.
  - Ron Logan (Shell): Hybrid cars are affordable as a short term EV option.
    - AEMO: Hybrids are important while EV batteries remain relatively small, although the transition to full electric vehicles will result in a phase-out of hybrids eventually.
  - Catherine Laurie (DELWP): Once a second-hand EV market grows then consumer purchasing decisions will shift.

- AEMO: This may include repurposing EV components, for example there is a trial to use old EV batteries for VPPs[3].
- Jennifer Brownie (QEUN): EV purchasing decisions consider the availability of specialised maintenance and mechanics.
- Ron Logan (Shell): High input costs and low recyclability means that battery and EV costs may not fall according to a generic cost curve. AEMO's scenarios should capture this uncertainty. Mark Grenning (EUAA) supported that AEMO's assumptions should adapt to changing global circumstances affecting EV costs.

- 3g – *Vehicle to home/grid (V2H / V2G)*
  - Jennifer Brownie (QEUN): Not all EVs currently support V2G.
  - Sam Wilkinson (Energy Policy WA): Vehicles without V2G can participate in VPPs, via controlled charging or demand response programs.
- **Electric Vehicles topics poll results:**





3. Meeting close

There will be no April FRG meeting.
The next FRG meeting will be held on Wednesday 25 May 2022, presenting Draft 2022 ESOO consumption forecasts .

[3] See EV Battery Recycling and Second Life Opportunities (topcharger.co.uk)

Appendix A Forecasting Reference Group (FRG) Actions Items

FRG Action Items – CLOSED (at 18 May 2022)

Item	Date Raised	Topic	Action required	Responsible	Details	Status
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