

AusNet Electricity Services Pty Ltd

Electricity Distribution Price Review 2022-26

Appendix 3M: Deep Dive 3 - Repex - Summary Report

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Seed Advisory

Deep Dive Workshop Three – Summary Report

AusNet Services Electricity Distribution Price Review
2021 – 2025

21 June 2019



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Disclaimer

This report is only a summary of key items discussed at the deep dive workshop held on 12 March 2019.

The information in this report is not necessarily reflective of the views of each attendee at the workshop, AusNet Services or Seed Advisory.



1. Introduction

1.1. Background

AusNet Services owns and operates a regulated electricity distribution network delivering electricity to more than 720,000 customers in Melbourne's north, east and across all of eastern Victoria.

Regulated electricity network businesses must periodically (typically every five years) submit a Regulatory Proposal which outline their plans and proposed expenditure to the Australian Energy Regulator (AER) for assessment. AusNet Services is currently developing its 2021 – 2025 Regulatory Proposal. On 12 February 2019 AusNet Services released its draft Regulatory Proposal.

As part of developing its Regulatory Proposal, AusNet Services is undertaking an extensive customer engagement program. One component of this engagement program is a series of 'deep dive' workshops with attendees including customer representatives, consumer advocates, Customer Forum members, AER representatives, consumer challenge panel representatives and other stakeholders.

These workshops are designed to:

- share detailed information;
- consult on and enable open and frank discussion of AusNet Services draft Regulatory Proposal and plans with attendees; and
- enable AusNet Services to consider the feedback and views of attendees while developing its plans and respond accordingly.

AusNet Services engaged Seed Advisory to assist in the preparation and facilitation of these workshops and to develop a summary report for each workshop.

At the time of publishing this report, AusNet Services are planning on holding, or will have held the following workshops:

- Workshop 1: Overview of the draft Regulatory Proposal, customer experience, operating expenses and innovation;
- Workshop 2: Public Lighting;
- Workshop 3: Replacement Capital Expenditure;
- Workshop 4: Innovation and Distributed Energy Resources (**upcoming**); and
- Workshop 5: Information and Communications Technology expenditure (**upcoming**).

1.2. Purpose of this report

This report summarises the key items of discussion from Workshop Three which was held on 12 March 2019 in Melbourne. The names and organisations represented by the attendees at the workshop are included in Appendix A and the complete agenda for the workshop is included in Appendix B.

In brief, the workshop agenda covered four broad areas:

- An overview and discussion of the replacement capital expenditure program in the draft Regulatory Proposal;
- A discussion on the major projects in the replacement capital expenditure program;



- A discussion on the pole replacement program in the replacement capital expenditure program; and
- A discussion on the conductor replacement program in the replacement capital expenditure program.

It is important to note that the information in this report is not necessarily reflective of the views of each attendee at the workshop, AusNet Services or Seed Advisory. This report is only a summary of key items discussed at the workshop. The workshop was held under Chatham House rules, so no comments from attendees have been attributed to any one attendee. AusNet Services responses or comments in relation to matters raised by attendees has been noted as such.

1.3. Other related documents

This report should be read in conjunction with three key documents which are co-located on the same page of the AusNet Services website that contains this report. The documents will provide important information and context when reading this report, the documents are:

- Pre-reading materials developed by AusNet Services for the relevant workshop – this document contains background and other information provided to workshop attendees to prepare them for their workshop attendance;
- Presentation materials developed by AusNet Services for the relevant workshop – this document contains the material presented at the workshop; and
- AusNet Services draft Regulatory Proposal for the 2021 – 2025 period – this document contains the full draft Regulatory Proposal published by AusNet Services on 12 February 2019.



2. Key discussion items

This section contains the key items discussed at the workshop and broadly follows the flow of the agenda. AusNet Services responses or perspectives provided either during or post the workshop are included where relevant and required in the shaded boxes.

2.1. Overall Replacement Capital Expenditure Program

The discussion on the overall replacement capital expenditure program (repex or repex program) covered the following areas.

2.1.1. Forecasts and high-level methodology queries

Stakeholders discussed some high level definitional and methodology questions as well as the overall Repex forecasts. The items discussed include:

- The Repex expenditure in the current regulatory period is expected to be significantly under the approved allowance. This prompted stakeholders to query the reliability of the forecasts in the next regulatory period.
- A request for further clarity on AusNet Service's approach to classifying expenditure as either operating expenditure or capital expenditure.
- A query if assets such as copper wire are replaced with 'like for like' assets or current technology?
- Concerns raised by some stakeholders that some repex forecasts (for example conductors) appear to have materially increased and that assumptions regarding end of life should be based on end of 'engineering' life not end of 'economic' life.
- A query was raised regarding if the connections capital expenditure presented included or excluded customer contributions? Stakeholders noted it should exclude customer contributions and that connection policy changes may make comparisons over time periods difficult without appropriate commentary and detail. Some suggested that it may be beneficial to 'back cast' connections capital expenditure figures when changes in connection policies are made to better enable like for like comparisons.

AusNet Services discussed that:

- the lower than forecast expenditure in the current period is due to the capital efficiencies it has achieved and the re-prioritisation of some programs and expenditure, including due to the Rapid Earth Fault Current Limiting (REFCL) program, and that the forecasts for the upcoming regulatory period are realistic, justifiable and efficient.
- assets are generally replaced with up to date or current technology and not a 'like for like' old technology basis.
- the conductor program forecast expenditure is based on an economic assessment of the cost of replacement versus the risk of failure. The increase in volume is based on assets from different time periods having different age profiles and naturally reaching their end of technical life (not economic life).
- in relation to connections, AusNet Services adopts the national framework (it previously had used the Victorian policy). The connections capital expenditure shown includes customer contributions.



2.1.2. Stakeholder questions

Stakeholders raised the following questions on the overall repex program.

Question 1: How relevant are considerations about emerging markets and their impact on repex or is it a narrower focus? That is, does it only look at historic performance and numbers only?

AusNet Services noted that:

- some aspects of capital expenditure is more effected by emerging trends but that repex is largely about replacing equipment at the end of life.
- any investment in replacement assets must be cognisant of future needs and trends.
- asset replacements of more than \$5 million require an investment test.
- replacement of assets is not automatically assumed, for example if demand has decreased, retirement of assets will be considered instead.

Question 2: In relation to the repex modelling results, how much do you rely on the model? Do you do any cost benefit analysis?

AusNet Services noted that the forecasts shown are their own forecasts. The repex model is not used to forecast specific programs but it is used as a comparison for reasonableness checking purposes.

Question 3: It states that 11% of the overall repex is allocated to safety projects. Can you provide us with more details on these projects? Are the justified on safety grounds or other?

AusNet Services firstly commented that the draft Regulatory Proposal contained more detail on safety than the materials provided for the workshop. The REFCL program, which is a regulatory obligation, is a large component of the safety expenditure.

Question 4: You are missing the build-up story / data for failure rates. You need to tell the story to better justify your stance.

AusNet Services noted this and will provide further information in relation to failure rates and failure data.



Question 5: Who audits the inspectors? What is the inspection process?

AusNet Services noted that inspections are undertaken by a mixture of internal and external resources, and that technology such as drones are used at times and at other times it is a physical (in-person) inspection. For poles and conductors the inspectors make an initial assessment and the data is then provided to engineering teams who make the replacement decisions. There are also auditors who review the assessors and assessments. Assets are generally checked on a 5 year cycle with high risk (such as bushfire areas) inspected on a 2.5 year cycle.

Question 6: It seems that you are showing growth in the ageing asset base. We need to see hard data on failure rates and end of life. There seems to be some inconsistencies across all the data that needs better justification.

AusNet Services noted that total capital expenditure is reducing. The growth in the regulated asset base (RAB) up to 2023 is largely due to the delivery of significant safety programs.

Question 7: Can you provide further information on the interplay with repex projects and REFCL? Including providing information for the current and upcoming periods.

AusNet Services noted this and will provide further information in relation to REFCL expenditure for current and upcoming periods.

Question 8: How does REFCL impact the risk assessment/thinking on risk?

AusNet Services noted that REFCL is considered as part of the risk assessment process. The business uses a 'top-down' approach to the overlap between REFCL and other programs and considerations as to how risk is reduced as a result of the REFCL program. Importantly, REFCLs decrease but do not eliminate the fire risk on the distribution network. For example, 30% of route length is Single Wire Earth Return (SWER), which is not protected by the REFCL. Also, not all replacements are driven by bushfire risk; supply risk is a key driver of replacement in many areas.

Question 9: Do you have the required capability and capacity to deliver all of this work?

AusNet Services believes it has the required capability and capacity to deliver all the forecast work. They noted that the forecast work program is less ambitious than the work undertaken in the previous few years, e.g. in 2014 when the capital program peaked. They also noted that the total capital expenditure forecast is an 18% reduction on actual/expected expenditure during the current period.

2.2. Major Replacement Projects

The discussion on the major replacement projects focused on general comments / observations and then stakeholder questions.



2.2.1. General comments / observations

Stakeholders made a number of observations and comments on the overall major replacement projects, these included:

- Stakeholders welcomed the level of discussion and information provided by AusNet Services and the engagement with the Customer Forum in relation to major projects. However, given the information provided to attendees was generally aggregated (instead of individual project information) stakeholders noted that it would be difficult to provide specific views on individual projects or to make definitive statements.
- The graphs illustrated trade-off between cost and reliability, some stakeholders commented that this may also be useful to be presented as trade off in costs and benefits in dollar terms.
- There was discussion by some that there is added complexity in assessing trade-offs due to the interactions between local costs and benefits vs broader (socialised) costs and benefits.
- Stakeholders welcomed and noted the initial results of a customer survey on their views of reliability, costs of reliability and associated trade-offs. There was some discussion on elements such as representativeness and response rate, but stakeholders acknowledged that this was a work in progress and that surveys of this type can be helpful.

AusNet Services commented that the final Regulatory Proposal will contain significant detail and justification for individual major projects. AusNet Services also noted the other feedback for consideration in the development of the final Regulatory Proposal.

There was discussion on the unique (and higher) costs for replacing decorative lights and that decorative lights represent the majority, but not all of the current MV lights that will require replacement. AusNet Services also noted that the majority of these decorative MV lights requiring replacement exist in only a small number of councils.

These lights have been challenging with councils requesting the lights remain due to their decorative nature. It was noted that it would be preferable for councils to replace these lights especially if they want the replaced light to similarly be decorative.

AusNet Services noted that it would be highly beneficial if these councils would work with AusNet Services to develop a suitable replacement strategy and program so these can be included in the draft Regulatory Proposal and avoid any inefficient costs.

2.2.2. Stakeholder questions

Stakeholders raised the following questions on the major projects program.

Question 10: How was demand management (DM) or other non-network solutions considered across the major projects' portfolio?



AusNet Services commented that DM and non-network solutions are routinely considered as alternatives to major projects, including through regulatory investment tests, and also into the timing of any replacements expenditure more broadly.

Question 11:

- (a) Stakeholders could see that the projects have been cut by geography. However, more of a story (like question 4) is needed around how the major project sites were selected.
- (b) Was each site modelled?
- (c) The reliability justification is interesting. Where does safety get factored in?

AusNet Services noted the need for further information (a story) in relation to major projects and this will be considered in the development of the final Regulatory Proposal. AusNet Services confirmed that each site for a major project is modelled individually. In relation to safety, AusNet Services noted that Energy Safe Victoria and safety related regulations dominantly set the requirements for lines assets, whereas reliability and supply risk generally informs decision making for transformers (though for some assets/stations safety risk is the key driver of replacement).

Question 12: Unplanned outages often occur for reasons not relating to ageing assets therefore are there other options (beyond the proposed projects) that could be considered?

AusNet Services commented that the primary need to invest in the proposed repex major projects is the poor condition of the zone substation assets, potentially resulting in an inability to supply demand in the event that the assets fail. Unplanned outages due to other reasons and for assets outside of the zone substation (such as vegetation or wildlife impacting feeder lines) are not included in these assessments as they are considered in other replacement programs.

Question 13: There is no clarity around how minutes off supply have been calculated. How have other factors been taken into account?

AusNet Services commented that for each station, the number of expected plant failures per year for the preferred timing was calculated. It is assumed that each failure will cause an outage which has an associated mean time to repair (i.e. the time before supply can be restored). For each alternative option, the project timings were altered, resulting in different outcomes for expected failures and hence minutes off supply.

Question 14: Further information relating to the customer survey is required. For example stakeholders commented on the need to view price increases in the 'full picture' with the time dimension.



AusNet Services noted stakeholders concerns and will provide further information on the survey.

Question 15: Stakeholders noted there is no discussion of the reliability impacts occurring. There is a need to consider other factors beyond reliability. What's the outcome of reliability?

AusNet Services noted stakeholders concerns and confirmed that further information will be available in the final Regulatory Proposal. For example, the individual planning reports will present the demand forecasts, asset ratings and the mean time to restore supply following an asset failure, so that typical reliability impacts and key assumptions can be understood.

Question 16: Stakeholders noted the need to provide the individual project information.

AusNet Services commented that the final Regulatory Proposal will contain detail on individual major projects.

Question 17: What factors/criteria is AusNet Services using in the choice of preferred options?

AusNet Services commented that the choice of preferred option is based on optimising the reliability and safety outcome for the lowest cost. The final Regulatory Proposal will contain adequate detail in this regard.

Question 18: Stakeholders noted that capital expenditure is only approved for maintenance of reliability not for the improvement. They queried if AusNet Service's proposal was to maintain reliability and not improve reliability.

AusNet Services recognises that by replacing a poor condition asset with a new asset, the major repex projects will improve local reliability. However, as reliability elsewhere on the network is expected to decline due to deteriorating assets that are not being replaced, overall reliability is maintained. This is consistent with the National Electricity Rules (NER) requirement that networks are funded only to maintain current reliability levels.

2.3. Pole Replacement Program

The discussion on the pole replacement program focused on general comments / observations and then stakeholder questions.

2.3.1. General comments / observations

Stakeholders made some initial observations and comments on the pole replacement program, these included:

- Stakeholders wanted further information on the mixture of concrete versus wood poles, the cost (including inspection costs) of wood versus concrete and the lifespan of wood versus concrete. Stakeholders also queried whether it was more



economical in the long term to replace more poles with concrete given their longer lifespan.

- Questions of detail on aspects such as the proportion of costs of staking a pole vs replacement of the pole, are crossarms included in the cost estimates for pole replacement and is there a limit on time between pole condemnation and replacement?

AusNet Services noted the need for further information which will be provided in the final Regulatory Proposal. Indicative views of some queries were provided at the workshop, but will be confirmed post the workshop. These included:

- The mixture of wood versus concrete poles is changing and more replacements are now with concrete over wood.
- The inspection costs for wood and pole are not substantially different, but the cost of a wood pole is significantly cheaper than a concrete pole (noting that the \$1,400 difference presented did not necessarily account for the full difference in costs).
- The lifespan for a wooden pole is approximately 50 years and a concrete pole potentially up to 100 years.
- Staking poles represent about 5% of total forecast pole replacement costs.
- Crossarm costs are included in the pole replacement unit rate, noting that not all replacements require new crossarms.
- There is a 30 day time limit between pole condemnation and replacement. However if there is a fault on site this must be addressed as soon as possible.

2.3.2. Stakeholder questions

Stakeholders raised the following questions on the pole replacement program.

Question 19: What's the difference between staking vs. replacement in total costs? Given the lifespan differences, what drives the choices of wood vs. concrete?

Refer earlier discussion above. However AusNet Services noted the need for further information in this regard and will provide this information to stakeholders. `

Question 20: Stakeholders required further information on the overall failure rates for poles.

AusNet Services indicative views at the workshop were that failure rates were it the order of 2 to 3 per ten thousand. AusNet Services will confirm the overall failure rates and provide this information to stakeholders.

Question 21: How does AusNet Services recover the costs of 3rd party damage to poles? also, how successful are you at recovering these costs.

AusNet Services will provide information to stakeholders regarding cost recovery for 3rd party damage.

Question 22: Stakeholders also wanted further information on failure rate and replacement rates over time periods to enable better comparisons over time. There was



also a comment that replacements due to safety reasons (such as bushfires) should be removed (where possible) from historical data.

AusNet Services will provide information to stakeholders regarding historic failure rates how safety-driven replacements are accounted for in the expenditure forecast.

Question 23: Stakeholders required further information on the repex model used and the percentage of modelled versus un-modelled replacements.

AusNet Services will provide information to stakeholders regarding the percentage modelled versus un-modelled.

Question 24: Are there any new technologies being used to assess poles? Would it lead to differing outcomes? What's the benefit of using new technologies versus old technologies?

AusNet Services is currently undertaking trials on non-invasive testing approaches for poles. These may enable more informed replacement decisions. AusNet Services noted that the networks are working closely together and sharing data for research.

Question 25: Can AusNet Services provide comparison data on failure rates, benchmarking, best practices, cost rates etc. with other networks?

The AER's repex model is calibrated with data from across the NEM and can be used as a guide to benchmark against other DB's. AusNet Services Regulatory Proposal will provide information on failure rates, their approach to pole replacement and how they ensure their forecast expenditure is prudent and efficient.

Question 26: There is a need to provide more of a qualitative story around pole replacements.

AusNet Services noted that the final Regulatory Proposal will provide a narrative and context in relation to pole replacements.

Question 27: Where do pole tops (crossarms) fit into the forecasts and conversation? In terms of cost and timing. Is a standard pole-top wood? Composite? Concrete?

AusNet Services commented that pole replacements include the pole and the pole top and that costs include the pole top. The pole tops are moving towards steel given they are easier to assemble on the ground. A limited number of composite pole tops have been trialled.

Question 28: What is the testing procedure in leaning poles? What's the number of poles replaced because of a lean?



AusNet Services will provide further information to stakeholders regarding the testing procedures and the number of poles replaced due to leaning.

Question 29: Does AusNet Services know if there are poles on the network that are repeatedly being replaced? In other words, are there black spots?

AusNet Services does not believe there are any black spots but will confirm this. AusNet Services noted that due to the relatively low pole replacement rates there is only anecdotal evidence in this regard which is provided by staff and sometimes VicRoads shares similar information.

Question 30: How is the risk of replacement measured?

AusNet Services commented that the risk of replacement (failure) is based on a statistical model using historic failure rates.

Question 31: What are the replacement costs for 3rd part assets?

AusNet Services commented that third parties pay for their assets on the pole (e.g. Foxtel) and that electricity customers do not have to pay for this.

Question 32: In bushfire areas do pole replacements use concrete or wood?

Both materials are used. Fire zone is not taken into account in deciding material. AusNet Services commented that in high bushfire areas lines are being undergrounded for safety reasons.

2.4. Conductor Replacement Program

Due to time constraints there was limited general comments / observations in relation to conductor replacements. The primary focus of this session was stakeholder questions.

2.4.1. Stakeholder questions

Stakeholders raised the following questions on the conductor replacement program.

Question 33: How are AusNet Services looking at alternatives from a customer's perspective versus engineering options in the replacement program? For example, delaying a replacement by 2 years to put in an alternative solution.

AusNet Services commented that customer perspectives are considered and provided an example such as the rSWER replacement program where the Victorian Bushfire Royal Commission (VBRC) recommend a 10 year replacement timeframe, but AusNet Services is proposing to deliver these replacements over 20 years to better manage customer bill impacts.

Question 34: Can AusNet Services provide information on the number of customers and cost per customers on SWER lines?



AusNet Services will provide further information to stakeholders regarding the number of customers and the cost per customer on SWER lines.

Question 35: Can AusNet Services provide historical data for the last 2 – 3 regulatory periods of the composition of the conductor replacement program including length, unit costs and total costs.

AusNet Services will provide historical data to stakeholders on the composition of the conductor replacement program.

Question 36: Was the aerial bundling cable recently replaced? Why is it being replaced again?

AusNet Services will confirm this query and provide information to stakeholders.

Question 37: How does AusNet Services conductor replacement program differ to Powercor's in codified bushfire areas? Are they similar?

AusNet Services noted that the network businesses have some influence over the speed of the upgrade program. They will provide further information to stakeholders in relation to the similarities and differences between programs, where this is available.

Question 38: Can AusNet Services use smart meter data to inform and better target replacements? Or alternatively can they do more research? Is there an operating versus capital expenditure trade off?

AMI data is currently used for fault detection and to better inform augmentation requirements but as yet not used for predictive conductor replacements. However, further applications of AMI data may be developed in the future.

Question 39: Which repex model did AusNet Services use for conductor replacements?

AusNet Services commented that this will be confirmed and communicated to stakeholders.

Question 40: Does the historic data feeding into the repex model have higher than expected numbers because of the bushfire program?

AusNet Services noted the query and will confirm if there is any impact on the use of historic conductor replacement data due to bushfires.

Question 41: In codified areas, please provide some more information around the cost comparison for undergrounding versus mini grid versus stand-alone power systems.



AusNet Services will provide further information to stakeholders regarding the cost comparisons.

Question 42: Can the reduced volume of proactive replacement (option 2) be used in codified areas if stand-alone power systems are considered acceptable in the future?

AusNet Services noted the comment and will consider this in the analysis for the final Regulatory Proposal.

Question 43: AusNet Services need to be very clear of what has been included in our historical and forecast data and that comparisons are reasonable. For example, historic expenditure in conductor replacement programs includes the expenditure for the Powerline Replacement Fund, has this impacted any forecast cost calculations and model comparisons?

AusNet Services noted the comment and will consider this in the narrative and information provided in the final Regulatory Proposal.

Question 44: Are the historic expenditures for the Powerline Replacement Fund categorised as repex or safety related expenditure?

AusNet Services noted that this expenditure is classified as safety related expenditure.

Question 45: Can AusNet Services provide historical data on conductor and asset failure rates?

AusNet Services noted that failure rates are more likely caused by distribution ties than conductor failure but they will provide further information to stakeholders regarding the historical data on conductor and asset failure rates.

Question 46: There appears to be a large increase in the conductor replacement forecasts for the period 2036-2040 compared to other periods. What is AusNet Services doing to prevent that from eventuating?

AusNet Services noted that the future technologies (e.g. Stand Alone Power Systems) and proactive replacement programs may mitigate this risk. In addition, previous forecasts have sometimes predicted large increases in conductor replacements but these have not eventuated due to management strategies by the business.

Question 47: How much community engagement has been done in relation to the 100km of SWER line that may need to be replaced? This may cause complaints. In addition, will AusNet Services investigate if customers want 3-phase power in that period rather than replacing it with SWER now?



AusNet Services noted the query and will confirm what consumer engagement has already been conducted. They will also consider incorporating it into future engagement if it has not already been appropriately covered.



A. Workshop attendees

Name	Organisation
Leigh Clemow	Department of Economic Development, Jobs, Transport and Resources (Victorian Government)
Mark Grenning	Energy Users Association of Australia
David Headberry (by phone)	Major Energy Users
Catherine O'Neil	Energy Consumers Australia
Tennant Reed	Ai Group
Anthony Seipolt	Australian Energy Regulator
Sarah Soliman	Australian Energy Regulator
Kim Huynh	Australian Energy Regulator
Andy Fahey	Australian Energy Regulator
Clare Stark	Australian Energy Regulator
Mike Swanson	Consumer Challenge Panel
Helen Bartley	AusNet Services Customer Forum
Greg Camm	AusNet Services Customer Forum
John Mumford	AusNet Services Customer Forum
Di Rule	AusNet Services Customer Forum
Tony Robinson	AusNet Services Customer Forum
Rob Ball	AusNet Services
Tom Hallam	AusNet Services
Greg Hannan	AusNet Services
Stephanie Judd	AusNet Services
Jensen Lai	AusNet Services
Tom Langstaff	AusNet Services
Steve Owens	AusNet Services
Jason Pollock	AusNet Services
Deirdre Rose	AusNet Services
Tim Baker	Seed Advisory
Peter Eben	Seed Advisory



B. Workshop Agenda



AGENDA		
Workshop:	AusNet Services Replacement Expenditure Deep Dive	
Date:	Tuesday 12 th March, 2019	Time: 9.30am – 4.30pm
Location:	CPA Building 28 Freshwater Place, Southbank, Victoria 2006	Security: Public
Pre-Reading:	Pre-reading materials provided	
Chairperson:	Peter Eben (Seed Advisory)	

9.30 (10 min)	Welcome and Introductions	
(20 min)	General Repex Overview	
(40 min)	Open discussion on Repex Overview	
10.40 (15 min)	Morning Tea (10 minute break)	
(10 min)	Major replacement projects	
(40 min)	Open Discussion	
(40 min)	Targeted Discussion	
12.25 (40 min)	Lunch	
(10 min)	Pole replacement	
(40 min)	Open Discussion	
(40 min)	Targeted Discussion	
2.35 (15 min)	Afternoon Break	
(10 min)	Conductor replacement	
(40 min)	Open Discussion	
(40 min)	Targeted Discussion	
(10 min)	Next Steps	
4.30pm	Meeting Close	

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