

I hereby give notice that an ordinary meeting of the Finance and Performance Committee will be held on:

Date: Tuesday, 12 December 2017
Time: 9.30am
Meeting Room: Reception Lounge
Venue: Auckland Town Hall
301-305 Queen Street
Auckland

Finance and Performance Committee

OPEN ADDENDUM AGENDA

MEMBERSHIP

| | | |
|---------------------------|--------------------------------|-------------------------------|
| Chairperson | Cr Ross Clow | |
| Deputy Chairperson | Cr Desley Simpson, JP | |
| Members | Cr Dr Cathy Casey | Cr Daniel Newman, JP |
| | Deputy Mayor Bill Cashmore | Cr Dick Quax |
| | Cr Fa'anana Efeso Collins | Cr Greg Sayers |
| | Cr Linda Cooper, JP | Cr Sharon Stewart, QSM |
| | Cr Chris Darby | IMSB Chair David Taipari |
| | Cr Alf Filipaina | Cr Sir John Walker, KNZM, CBE |
| | Cr Hon Christine Fletcher, QSO | Cr Wayne Walker |
| | Mayor Hon Phil Goff, CNZM, JP | Cr John Watson |
| | Cr Richard Hills | |
| | IMSB Member Terrence Hohneck | |
| | Cr Penny Hulse | |
| | Cr Mike Lee | |

(Quorum 11 members)

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8 December 2017

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Update on the purchase of additional trains for Metro Rail

File No.: CP2017/26574

Purpose

1. To approve increasing the number of Electric Multiple Units (EMUs) to be purchased from 15 to 17 at a cost of \$18 million and converting the 17 EMUs to Independently Powered Electric Multiple Units (IPEMUs) at a cost of up to \$20 million.

Executive summary

Previous decisions

2. In July 2017, this committee approved the purchase of 17 Independently Powered Electric Multiple Units (IPEMUs) at a total estimated capital cost of \$207 million, with \$101 million of the cost for Auckland Council at an assumed 51 per cent funding contribution from the NZ Transport Agency (NZTA). Subsequent to the approval, Auckland Transport (AT) managed to reduce the total capital cost to \$198 million through further negotiations.
3. In October 2017, this committee rescinded this earlier decision and approved the purchase of 15 EMUs at a capital cost of \$133 million with a confirmed 51 per cent contribution from NZTA, as NZTA had deferred the 17-IPEMU decision subject to further decisions on electrification from Papakura to Pukekohe. AT has until 15 December 2017 to amend the EMU order placed with the supplier CAF to either 17 EMUs or 17 IPEMUs.

Pukekohe electrification

4. Since then, a business case for Pukekohe electrification was prepared by KiwiRail and AT, and was submitted to the Ministry of Transport (MoT). The outcome of the funding is likely to be known by the second quarter of 2018. Nonetheless, KiwiRail has determined the electrification project will take a minimum of five years to complete after funding approval, resulting in operational delivery by mid-2023.

Additional requirement

5. The 15-EMU order only provides for additional capacity on the core network required as a result of rail patronage growth. Two additional EMUs are required to operate a full service pattern of through-running between Britomart and Pukekohe, whether electrification progresses or services are operated under battery power between Papakura and Pukekohe.
6. Battery powered EMUs offer greater resilience and disruption recovery in the event of overhead powerline failure on the network. They could be used to potentially operate during power isolations during the City Rail Link (CRL) construction.

Emerging battery technology

7. Furthermore, new battery technology now under consideration by AT and CAF since October 2017 opens the possibility for the battery systems to be installed without structural modification to the existing EMU design and at a significantly lower cost due mainly to:
 - i) new battery technology that has moved on from Lithium, leading to more power and smaller mass; and
 - ii) the batteries are sized for a design life to match the electrification timeframe to post 2023, instead of the original excess life of 12 years.
8. The estimated cost for installing the potential battery system to the 17 EMUs is targeted at \$1 million per unit, subject to further technical and commercial discussions with CAF and the potential battery supplier Kokam of Korea.

Cost and funding

9. AT re-assessed the benefit of IPEMUs with the updated timing assumption for Pukekohe electrification and the cost of new battery technology, and compared the IPEMU option against the EMU option. AT board recommended the IPEMU solution going forward and an increase in the number of EMUs to be purchased from 15 to 17 at a cost of \$18 million, with an intention to retrofit the 17 EMUs with battery systems at an estimated target cost of up to \$20 million.
10. The total cost in addition to what the council has approved is \$38 million (without a confirmed contribution from NZTA), bringing the overall cost for the package of 17 IPEMUs to \$171 million. This represents a cost reduction of \$36 million compared to the original position in July 2017, and \$27 million compared to AT negotiated position in August 2017. Cost movements are summarised in the table below.

| (\$m) | Event | Purchase | Total cost | AC (49%) | NZTA (51%) | Note |
|---|----------------------------|---------------------------|--------------|-------------|-------------|------------------------|
| 1) | July AC approval | IPEMU x 17 | \$207 | \$101 | \$106 | assumed NZTA 51% |
| 2) | August NZTA submission | IPEMU x 17 | \$198 | \$97 | \$101 | AT negotiated position |
| 3) | October AC approval | EMU x 15 | \$133 | \$65 | \$68 | confirmed NZTA 51% |
| 4) | December AT request | Converted EMU x 17 | \$171 | \$84 | \$87 | |
| | including | EMU x 15 | \$133 | \$65 | \$68 | confirmed NZTA 51% |
| | | EMU x 2 (additional) | \$18 | \$9 | \$9 | assumed NZTA 51% |
| | | IP conversion | \$20 | \$10 | \$10 | assumed NZTA 51% |
| Total cost reduction from original IPEMU position | | | \$36 | \$18 | \$18 | 1) less 4) |
| Total cost reduction from negotiated IPEMU position | | | \$27 | \$13 | \$14 | 2) less 4) |

11. NZTA and Auckland Council is each funding the existing \$133 million for the 15 EMUs base order at 51 per cent and 49 per cent respectively (\$68 million for NZTA and \$65 million for the council). The cost of \$38 million for two additional EMUs and conversion of 17 EMUs to battery-powered does not include any confirmed NZTA subsidy at this point. AT will approach NZTA for further subsidy support for the additional cost.
12. Assuming NZTA provides 51 per cent subsidy to the additional cost, the council's shared of the total cost would be \$84 million. In the worst case scenario where NZTA does not provide any subsidy towards the additional cost, the total cost to the council for this package would be \$103 million (i.e. \$65 million plus \$38 million), \$2 million above the original commitment of the council in July 2017.
13. To ensure the CAF contractual deadline of 15 December 2017 is not missed, council approval is sought for up to an additional \$38 million, comprising \$18 million for two EMUs and up to \$20 million for battery power conversion of the 17 EMUs.

Recommendation/s

That the Finance and Performance Committee:

- a) approve increasing the number of Electric Multiple Units (EMUs) to be purchased from 15 to 17 at a cost of \$18 million and converting the 17 EMUs to Independently Powered Electric Multiple Units (IPEMUs) at a cost of up to \$20 million, noting that:
 - i) a new, more energy dense battery system has been sourced that offers the potential for an IPEMU solution that does not require structural modification to the existing EMU design.
 - ii) the technical assessment is to be confirmed with the EMU supplier and the potential battery system supplier.
 - iii) the total capital cost for 17 IPEMUs is \$171 million, compared to \$207 million originally.
 - iv) Auckland Transport will seek 51 per cent funding contribution from the NZ Transport Agency towards the additional cost of up to \$38 million.

Comments

Previous decisions

14. In July 2017, Auckland Transport was given the approval to purchase 17 IPEMUs at a capital cost of \$207 million to address the rapid growth in patronage and the resulting capacity issue forecast from late 2019. This approval was subject to NZTA funding.
15. Subsequent to the council's decision and just prior to the intended confirmation to proceed by the NZTA board, the election promises suggested an intention to fund electrification from Papakura to Pukekohe. The NZTA board therefore considered that it could not approve the 17 IPEMUs purchase if early electrification would provide a similar service level with the lower cost EMUs. The NZTA board approved the option to purchase 15 EMUs.
16. In October 2017, this committee rescinded the early decision to purchase 17 IPEMUs and approved the purchase of 15 EMUs at a capital cost of \$133 million with a confirmed NZTA contribution of 51 per cent. It was noted that the acquisition would be subject to further decisions on electrification of the North Island Main Trunk from Papakura to Pukekohe. AT has until 15 December 2017 to amend the EMU order placed with CAF.

Pukekohe electrification

17. Since then, a business case for Pukekohe electrification was prepared by KiwiRail and AT, and was submitted to the Ministry of Transport (MoT). AT consider the business case has a strong merit and there was abundant political support apparent during the election campaign.
18. The initial outcome of the submission is expected prior to the Christmas break, in terms of which submissions continue through the MoT's Budget 2018 process and which revert to consideration within the NZTA National Land Transport Fund (NLTF). MoT Budget 2018 funding decisions would be expected in the second quarter of 2018, while the NLTF process and timeframes have yet to be defined but are assumed to be end of the second quarter of 2018 also.
19. KiwiRail has determined the electrification project will take a minimum of five years to complete after funding approval, therefore would be operational by mid-2023 assuming funding is confirmed.

Emerging battery technology

20. The IPEMU business case highlighted that newer technology battery systems were emerging that could enable a reduction in the IPEMU cost premium over standard EMUs. A viable alternative has been identified from Korean supplier Kokam with higher energy density, opening the possibility for the battery systems to be installed without structural modification to the existing EMU design and therefore at a significantly lower cost estimated to be \$1 million per unit.
21. The new battery system would be underframe mounted and enable the IPEMUs to fit within the Waitakere tunnel gauge. However, passenger evacuation would still need to be resolved.
22. It is also envisaged that the battery system would be engineered to enable retrofitting to the existing fleet of 57 EMUs to further enhance passenger safety and service. A smaller battery system with the same modular components is under consideration, which has an estimated target cost of \$0.5 million per unit. This is not included in the request at this time.

IPEMU benefit revisited

23. AT considers the health and safety and operational benefits that IPEMUs provide have been understated in the previous business case. The key Health and Safety risk is that of passengers stranded on stationary trains due to power outages. Operational benefits include the ability to continue operating passenger services through planned work sites with power isolations. The CRL Mt Eden site is an example, where construction activity over three years will require considerable mitigation to maintain a safe work site without disrupting passenger services.
24. Overall, AT preferred the IPEMU option over the EMU option, after re-assessing the benefit and the cost for both, with updated assumption around electrification timing and the cost of new battery technology.

Cost and impact

25. AT board recommended the IPEMU solution going forward and an increase in the number of EMUs to be purchased from 15 to 17 at a cost of \$18 million, and a conversion of the 17 EMUs with battery systems at an estimated target cost of \$1 million per unit.
26. AT is seeking the approval to purchase two additional EMUs at a cost of \$18 million plus up to \$20 million for the conversion of 17 EMUs to IPEMUs. This is the full purchase price and does not include any confirmed NZTA subsidy at this point.
27. AT will seek 51 per cent funding contribution from NZTA towards the additional cost of \$38 million. The remaining balance would be funded by the council from borrowing, which will have an impact on the council's prudential debt ratios. However, it is expected that AT will detail its capital programme through the 2018-2028 Long-term Plan process, to ensure the capital programme including EMU purchase and conversion can be delivered within the agreed funding envelope. Without any further NZTA contribution, the overall funding requirement from the council would be \$103 million, \$2 million higher than the original committee approval in July 2017.
28. To ensure the CAF contractual deadline of 15 December 2017 is not missed, council approval is sought for up to an additional \$38 million, comprising \$18 million for two EMUs and up to \$20 million for battery power conversion of 17 EMUs. Missing this deadline would potentially affect the operational delivery date for the new trains.

Consideration

Local board views and implications

29. Local board views on the purchase of additional trains have not been sought.

Māori impact statement

30. The purchase of two additional EMUs has no specific impact on Māori.

Implementation

31. AT will commence technical discussion with the EMU supplier CAF, the potential battery supplier Kokam of Korea in early December to determine whether IPEMUs can be technically and economically viable. AT will commence the initial design review with CAF in Spain in order to meet expected in-services dates of late 2019.

Attachments

There are no attachments for this report.

Signatories

| | |
|------------|---|
| Author | Mark Lambert – Chief Transport Services Officer, Auckland Transport |
| Authoriser | Matthew Walker - Acting Group Chief Financial Officer |