



COVERSHEET

Minister	Hon Megan Woods	Portfolio	Energy and Resources
Title of Cabinet paper	December 2020 Update on the NZ Battery Project	Date to be published	22 February 2021

List of documents that have been proactively released		
Date	Title	Author
16 December 2020	December 2020 Update on the NZ Battery Project	Office of the Minister of Energy and Resources
16 December 2020	CBC-20-MIN-0090	Cabinet Office

Information redacted	YES / NO
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Office of the Minister of Energy and Resources

Chair, Cabinet

December 2020 Update on the NZ Battery project

Proposal

- 1 This paper provides a progress update on the project known as ‘the New Zealand Battery’, a project to investigate the feasibility of options to address New Zealand’s dry year problem in a highly renewable electricity system. The paper also seeks a revision to reporting lines on the project.

Relation to government priorities

- 2 This proposal relates to the Government’s goal of accelerating the recovery and rebuild from the impacts of COVID-19, of which 100% renewable is one of the key planks. It also relates to the goal of laying the foundations for the future, including addressing key issues such as climate change response.

Background

- 3 The purpose of the NZ Battery project is to investigate options to resolve New Zealand’s dry year risk problem in a highly renewable electricity system. Dry year risk refers to the shortfall in electricity generation than can occur in a year where inflows to hydro lakes are significantly below normal and the lakes are ‘dry’.
- 4 Currently, New Zealand relies on coal and gas fired generation to ensure reliable electricity supply in a dry year. While new baseload generation investment in New Zealand is expected to be renewable (wind, solar and geothermal), electricity scenarios modelled by the Interim Climate Change Committee (ICCC) and others suggest that some gas-fired generation will be used to ensure reliable electricity supply during dry years under the status quo. The ICCC considered a number of options to fully replace gas and achieve a 100 percent renewable electricity system but found that all of them had relatively high carbon abatement costs. However it recommended more detailed analysis of some options, particularly large pumped hydro storage, to completely eliminate the use of fossil fuels in the electricity system.
- 5 Dry year risk is a contributing factor to high electricity prices because the electricity market factors the cost of scarcity into electricity forward prices. The NZ Battery project will investigate ways to reduce this effect, thereby allowing electricity price to better follow the downwards trend of new electricity generation investment costs.
- 6 The project will assess the viability of pumped hydro as part of its primary objective, and consider this solution against alternative technologies if they are identified through the process. While a different technology may prove a viable alternative, the Government is committed to fully investigating the potential of pumped hydro, particularly at Lake Onslow, through the NZ Battery Project.

- 7 Cabinet agreed to fund the NZ Battery Project as an Infrastructure Reference Group (IRG) ‘shovel ready’ initiative [CAB-20-MIN-0341 refers]. The \$100.08 million funding bid supported the development of a feasibility study for Lake Onslow pumped hydro and other options to ensure reliable supply in a 100 percent renewable electricity system, leading to the development of a Final Investment Decision (FID) should the feasibility study be supported.
- 8 In September 2020, I reviewed the high level objectives for the first evaluation phase of the project proposed by the Ministry of Business Innovation and Employment (MBIE), and directed that the criteria must reflect the 100 per cent renewable electricity target.
- 9 The revised criteria are:
- 9.1 Objective – To manage or mitigate dry year risk in the electricity system
 - 9.2 Criteria - Any proposal or group of proposals will be assessed against its ability to:
 - 9.2.1 provide at least [5,000 GWh]¹ of energy storage or equivalent energy supply flexibility
 - 9.2.2 provide significant levels of employment for post COVID-19 recovery
 - 9.2.3 reduce emissions either directly or indirectly through facilitating decarbonisation
 - 9.2.4 maximise renewable electricity in order to provide a pathway to achieve the goal of 100 per cent renewable electricity
 - 9.2.5 lower wholesale electricity prices, and
 - 9.2.6 be practical and feasible.
 - 9.3 Any proposals that meet the above criteria will be assessed against the detailed work that will be undertaken on pumped hydro, which will be the primary focus for the project.

Setting up the NZ Battery Project team

- 10 MBIE has commenced the establishment of an Energy Projects and Programmes team that will manage the first stage of the NZ Battery project, a stage that will require an evaluation of the different options that can feasibly satisfy the objective and criteria.
- 11 MBIE has appointed a technical project manager for the project who will take up the position in the first week of December and the rest of the small in-house project team is expected to be in place by mid-December 2020.

¹ The potential magnitude of the dry year problem in 2030 given expected changes in electricity supply and demand, will be investigated as part of the project.

- 12 The NZ Battery project will also utilise contracted technical resources to provide specialist evaluation skills for the analysis of each option, where internal staff do not have the relevant technical skills or experience. I understand that MBIE will tender for a significant portion of this external resource in Q1 2021.
- 13 MBIE has also recently issued a tender for some preliminary analysis work to help define the scope of the later project work. This initial tender is for desktop studies to provide views and analysis on:
 - 13.1 What the dry year risk will be in 2030, given expected changes in electricity supply and demand, and in climate.
 - 13.2 A framework for considering how different potential options could affect and interact with the electricity market.
- 14 The successful tender should commence in early December and complete in Q1 2021.

Establishing good project governance and validity of analysis

- 15 The NZ Battery project has significant public and stakeholder interest. I am aware that already some parties have formed the view that a project decision has already been made. To address this issue and to better ensure that the evaluation process will be fair, robust and unbiased, I will ensure several mitigation strategies are adopted, including:
 - 15.1 Appointing a technical reference group
 - 15.2 Appointing an expert advisory panel
 - 15.3 Regular communication updates, and
 - 15.4 Regular official reporting.

Appointing a technical reference group

- 16 A Technical Reference Group (TRG) will provide advice to MBIE to ensure the evaluation of options is robust. The role of the TRG is to provide technical expertise and sector knowledge relating to the quantitative analysis MBIE will be undertaking. This includes modelling, and advice on other relevant social, cultural or environmental issues that may be brought to the group and lie within its expertise.
- 17 The TRG will not have any decision making role. It will review and provide input into proposals and analysis brought to the TRG by MBIE, in periodic meetings as required.
- 18 The group will consist of around eight participants outside of MBIE. However, this number may be extended as requirements change. A range of skills and backgrounds will be sought to avoid the risk of bias toward any specific interest group.
- 19 The TRG's overall purpose is to provide quality assurance socialise some of the key analysis assumptions across a representative group of peers. This will help to improve

the validity of the analysis by allowing important assumptions and methodologies to be tested early.

Appointing an expert advisory panel

- 20 An expert panel will provide a second governance and validation check on the NZ Battery project. The expert group will not have any decision making role. The intention is for this group to provide more strategic level advice while the TRG is focused on technical advice.
- 21 The panel will provide expert advice on work being planned for and undertaken by the NZ Battery project. This may take the form of advice on the scope of work being proposed, advice on interim results of work or its analysis, or advice and review of completed work. The group may also act as peer reviewers of work commissioned by the project.
- 22 The group will consist of three to four skilled or knowledgeable experts (including in matauranga Māori) at a senior level. As with the TRG, a range of skills and backgrounds will be sought to avoid the risk of bias toward any specific interest group, though with a smaller group options may be more limited.
- 23 MBIE is running a nominations process with environmental, iwi and industry stakeholders to ensure people with a range of skills and backgrounds can be selected to be on both the TRG and the expert panel.

Regular communication updates

- 24 The NZ Battery project has the potential to raise considerable public interest in some of the proposals that may be evaluated. Such interest arises both because some options may have significant environmental or social impacts, while others may impact existing commercial positions.
- 25 The absence of clear messaging on progress of the project may encourage speculation on its likely outcome. To mitigate this risk MBIE will maintain a website for communication on project progress against key milestones.

Regular reporting

- 26 In July 2020 IRG Ministers agreed [Briefing 2021-0420 refers] that the NZ Battery project did not need to follow the more frequent reporting process established for other projects funded through the Covid recovery funding which requires monthly reporting in a standard template via Crown Infrastructure Partners (CIP).
- 27 Instead, IRG Ministers agreed that a lesser quarterly report to IRG Ministers via the CIP would suffice.
- 28 I have now had time to reflect on this earlier reporting decision and given the importance of this project, current portfolio allocations and the good governance arrangements being established by MBIE, I now propose that a more efficient

reporting process is direct to the Minister of Energy and Resources who can then provide updates on this project directly to Cabinet.

NZ Battery Project timelines and key milestones

- 29 The NZ Battery is a multi-stage project, with the first stage being the evaluation of the different options to address the dry year issue within the constraints of the agreed objective and criteria. This stage is funded at up to \$30 million.
- 30 The results of this stage of the project will be reported to Cabinet in a paper seeking Cabinet’s decisions on which options should proceed to the second stage of the project (funded at up to \$70 million). I will also determine relevant public communications at that time. The higher cost for this stage reflects the potential requirement for extensive field work for some of the potential options that will be evaluated.
- 31 The first stage of the project is expected to take around one year. This stage will commence in January 2021 after the project team is fully established. It is planned to complete in Q1 2022, which will provide sufficient time for the procurement of additional specialist technical advisers and contractors by tender.
- 32 The second stage will commence only after a Cabinet decision in early 2022. The completion date of this stage is unknown as it will depend on the options that are selected for this stage. Depending on the options chosen therefore, this stage may end in a years’ time in mid-2023, or may take longer until late 2023 or early 2024.
- 33 Stage two will also end with a report suitable for public release and a Cabinet paper for further decision. Steps beyond stage two will require further Cabinet decision and funding.
- 34 Key milestone dates for the first stage of the New Zealand Battery project are provided in the table below.

Milestone	Timeframe
Complete Establishment of Project Team, Technical Stakeholder Workgroup and Expert Advisory Panel	Jan 2021
Complete design of scenario base case analysis, and award contracts for specialist advisers	Mar 2021
Complete evaluations for all options	Mar 2022
Draft report and brief Minister on all options	Apr 2022
Complete Final Report	May 2022
Cabinet paper	May 2022

Financial Implications

- 35 There are no financial implications at this stage.
- 36 Funding of \$100.08 million was provided for the project, but to date no expenditure has occurred.

Legislative Implications

37 There are no legislative implications at this stage of the project.

Impact Analysis

Regulatory Impact Statement

38 A regulatory impact statement is not required as no policy implications are proposed at this stage of the project.

Climate Implications of Policy Assessment

39 A Climate Implications of Policy Assessment (CIPA) is not required at this stage of the project.

Population Implications

40 There are no population implications.

Human Rights

41 There are no Human Rights implications.

Consultation

42 The Treasury has been consulted on this paper.

Communications

43 MBIE is developing a comprehensive strategy for communication on progress on this project.

Proactive Release

44 The Minister of Energy and Resources intends to delay the release of this Cabinet paper to allow time for the communications strategy and the project advisory groups to be established.

Recommendations

The Minister for Energy and Resources recommends that Cabinet:

1 note that Cabinet agreed to fund the NZ Battery Project as an Infrastructure Reference Group (IRG) 'shovel ready' initiative [CAB-20-MIN-0341 refers]. The \$100.08 million funding bid supported the development of a feasibility study for Lake Onslow pumped hydro and other energy storage options

2 agree that the assessment criteria for the NZ Battery Project are:

2.1 Objective – To manage or mitigate dry year risk in the electricity system

I N C O N F I D E N C E

- 2.2 Criteria - Any proposal or group of proposals will be assessed against its ability to:
- 2.2.1 provide at least [5,000 GWh]² of energy storage or equivalent energy supply flexibility
 - 2.2.2 provide significant levels of employment for post COVID-19 recovery
 - 2.2.3 reduce emissions either directly or indirectly through facilitating decarbonisation
 - 2.2.4 maximise renewable electricity in order to provide a pathway to achieve the goal of 100 per cent renewable electricity
 - 2.2.5 lower wholesale electricity prices, and
 - 2.2.6 be practical and feasible.
- 3 note the assessment of any option will take into account wider social, cultural and environmental factors as well as those factors identified in the criteria above.
- 4 agree that the NZ Battery Project will assess the viability of pumped hydro as part of its primary objective, and consider this solution against alternative technologies if they are identified through the process.
- 5 note that MBIE has commenced the first stage of the project (funded up to \$30 million) which is the process of recruiting a small internal team and engaging external technical consultants
- 6 note that to ensure good project governance MBIE will be establishing a project technical reference group for advice on project analysis and an expert advisory group comprising three to four skilled or knowledgeable experts (including in matauranga Māori) at a senior level to advise of overall project issues
- 7 note that MBIE anticipates commencing the analysis work for the first stage of the project in January 2021 and completing this in Q1 2022
- 8 note that the reporting process agreed earlier by IRG Ministers for the NZ Battery project was a quarterly report to Crown Infrastructure Partners and IRG Ministers
- 9 agree that reporting arrangements for the NZ Battery project will be direct to the Minister of Energy and Resources who will update Cabinet on a quarterly basis or when significant project milestones have been met.

Authorised for lodgement

² The potential magnitude of the dry year problem in 2030 given expected changes in electricity supply and demand, will be investigated as part of the project.

IN CONFIDENCE

Hon Dr. Megan Woods

Minister for Energy and Resources

IN CONFIDENCE