

# Proactive Release

Date: 4 August 2021

The following Cabinet papers and related Cabinet minutes have been proactively released by the Minister of Foreign Affairs:

Title	Reference
Cabinet and External Relations and Security Committee: Scott Base Redevelopment Implementation Paper	ERS-21-SUB-0024
Annex 1: Scott Base Redevelopment Implementation Business Care	
Cabinet External Relations and Security Committee Summary: Redevelopment of Scott Base: Implementation	ERS-21-SUB-0024
Cabinet External Relations and Security Committee Minute of Decision: Redevelopment of Scott Base: Implementation	ERS-21-MIN-0024
Cabinet Minute of Decision - Report of the Cabinet External Relations and Security Committee Period ended 2 July 2021	CAB-21-MIN-0256

Some parts of this information release would not be appropriate to release and, if requested, would be withheld under the Official Information Act 1982 (the Act). Where this is the case, the relevant sections of the Act that would apply have been identified. Where information has been withheld, no public interest has been identified that would outweigh the reasons for withholding it.

Key to redaction codes:

- 6(a): to avoid prejudicing the international relations of the New Zealand Government;
- 9(2)(a): to protect individuals' privacy;
- 9(2)(g)(i): to protect the free and frank expression of opinions by departments;
- 9(2)(j): to avoid prejudice to negotiations; and
- 9(2)(i): to carry out, without prejudice or disadvantage, commercial activities.

Office of the Minister of Foreign Affairs

Cabinet External Relations and Security Committee

## **Redevelopment of Scott Base: Implementation**

### **Proposal**

- 1 This paper seeks:
  - 1.1 Endorsement of the Implementation Business Case for the redevelopment of Scott Base (attached as Annex 2);
  - 1.2 Approval to implement the Scott Base redevelopment project in accordance with the Implementation Business Case;
  - 1.3 Authorisation for the expenditure of public money to be incurred for the project from the amounts appropriated in Budget 2021.

### **Relation to government priorities**

- 2 New Zealand has key strategic interests in Antarctica and the Southern Ocean, including ensuring peace, security and effective governance, sustaining our territorial claim and protecting our environmental, scientific, conservation, reputations and economic interests. These are underpinned by our presence there through Scott Base. The base is nearing the end of its functional life, increasing health and safety risks and diminishing its ability to support current and future scientific endeavours.
- 3 This project supports the Government's priority to create an international reputation we can be proud of and it is fundamental to New Zealand's sovereignty, in ensuring New Zealand's continuous presence in the Ross Dependency. As Antarctic science is important to our understanding of the nature and impacts of climate change, this also supports the Government's priority for a transition to a clean, green and carbon neutral New Zealand.

### **Executive Summary**

- 4 Cabinet has approved the Budget initiative for the full costs of the redevelopment of Scott Base, including the Ross Island wind energy system and a temporary base of 160 beds [CAB-21-MIN-0116.13<sup>1</sup>]. Expenditure is subject to Cabinet's endorsement of the Implementation Business Case and approval of the implementation of the Scott Base redevelopment project.
- 5 This paper therefore seeks Cabinet's endorsement of the Implementation Business Case and approval for Antarctica New Zealand to confirm contracts for construction and implement the Scott Base redevelopment project as set out in the Implementation Business Case. It also seeks authorisation for the

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<sup>1</sup> Our Place in Antarctica – Scott Base Redevelopment

expenditure of public money to be incurred for the project, from the amounts appropriated in Budget 2021.

- 6 In accordance with New Zealand's international obligations and domestic legislation, a Comprehensive Environmental Evaluation (CEE) was earlier released for public consultation and to other countries party to the Madrid Protocol to the Antarctic Treaty. It will be considered at the Antarctic Treaty Consultative Meeting in June 2021. Comments by the New Zealand public and by Antarctic Treaty Parties will be taken into account, before a final CEE is presented to me in approximately September 2021, to permit the activity under the Antarctica (Environmental Protection) Act 1994, if I agree, and enable work to proceed.
- 7 Some work would be undertaken in New Zealand before the approval of the CEE, in order to ensure timely delivery of the project. This is set out in paragraph 34 below. Construction of the new base will start in Antarctica in early 2022, with occupation expected in late 2026 and the project fully completed by 2028.

## **Background**

- 8 In 2017, the previous government agreed to the strategic, environmental, scientific, conservation, reputational and economic interests for a continued New Zealand presence in Antarctica [CAB-17-MIN-0437]. Funding of \$6.14 million was approved for Budget 2017 for preliminary work on options to redevelop Scott Base [CAB-17-MIN-0185.11]. Budget 2019 [CAB-19-MIN-0174.16] approved funding of \$19.4 million for Antarctica New Zealand to continue design work and prepare an Implementation Business Case based on market engagement to confirm costs and provide scaling options for the preferred redevelopment option, including:
  - 8.1 a shorter build duration (with a consequent reduced capacity to support scientists during the construction period);
  - 8.2 additional funding to renew the Ross Island wind energy system, which is due for replacement in 2030.
- 9 The Ross Island wind energy system is a key strategic asset for New Zealand as it demonstrates New Zealand's commitment to responsible stewardship of Antarctica, providing a key contribution to the Joint Logistics Pool between the United States and New Zealand and reducing carbon emissions from and fossil fuel consumption by Scott Base and the US McMurdo Station.
- 10 On 28 May 2019, the Cabinet External Relations and Security Committee endorsed the Detailed Business Case, which outlined options for the redevelopment of Scott Base, and agreed in principle to the preferred redevelopment option 2b [ERS-19-MIN-0011].
- 11 On 12 April 2021, Cabinet approved the Budget initiative for the full costs of the redevelopment of Scott Base, including the Ross Island wind energy

system and a temporary base of 160 beds, for inclusion in Budget 2021 [CAB-21-MIN-0116.13] and agreed that:

- 11.1 expenditure from the amounts of the appropriation changes approved for Budget 2021 was subject to its endorsement of the Implementation Business Case and approval of the implementation of the Scott Base redevelopment project;
  - 11.2 when considering the Implementation Business Case, Cabinet should make decisions on matters across the life of the project, such as the amount of project contingency, nature and timing of report back, and drawing down of any tagged contingencies.
- 12 This paper seeks Cabinet's endorsement of the Implementation Business Case, approval of the implementation of the Scott Base redevelopment project as set out in the Implementation Business Case and authorisation for the expenditure of public money for the redevelopment of Scott Base from the amounts appropriated through Budget 2021.
- 13 Approval of the project by the Minister of Foreign Affairs under the Antarctica (Environmental Protection) Act 1994 will still be required for activities undertaken in Antarctica. This approval will be sought in approximately September 2021, based on a Comprehensive Environmental Evaluation. Further information is in paragraphs 32 – 33 below.

### **The Project**

- 14 The Implementation Business Case attached as Annex 2 contains: reconfirmation of the Strategic Case for the redevelopment; the Economic Case, including the preferred way forward for the wind farm; and the Commercial, Financial and Management Cases. The Ministry of Foreign Affairs and Trade, the Treasury, the New Zealand Infrastructure Commission and the Ministry for Business, Innovation and Employment (MBIE) have engaged with Antarctica New Zealand throughout the preparation of this Implementation Business Case.
- 15 The design as approved by Cabinet in 2019 includes three large, interconnected buildings for, respectively: accommodation and welfare spaces; science and operations; and engineering vehicle workshops and storage. The proposed methodology that has been developed since 2019 is to build the entire base in New Zealand and ship it to the site in Antarctica in large modular sections. This approach will require the chartering of a large flat deck roll on/roll off vessel and access to an ice-breaker.
- 16 The build will take place over eight years and is scheduled for completion in December 2028. A temporary base will be established for much of this period to minimise both disruption to science and health and safety risks, as well as to house construction staff.
- 17 Canterbury firm Leighs Construction has been selected as the preferred supplier and has been engaged to support design work on the project in an



“early contractor involvement” (ECI) role. Approval of the Implementation Business Case will result in further detailed design to work and construction contracts to be signed.

- 18 The construction methodology has been chosen on the basis that it:
- 18.1 is acceptable to the preferred contractor;
  - 18.2 allows the majority of the construction and critical commissioning tasks to take place in New Zealand (with a positive impact on regional jobs and significantly mitigating risk); and
  - 18.3 results in a shorter project duration, while reducing the impact on research activities.
- 19 In addition, a “value engineering” exercise has been undertaken. This was to ensure the project resulted in a fit for purpose and modest facility that was designed to, and not beyond, the business needs identified in the Detailed Business Case while still meeting the user requirements. The result has been:
- 19.1 A reduction in size through creating more multi-use areas, reducing the number of single-person bedrooms, reducing the size of work areas and using smaller storage and plant room areas;
  - 19.2 Confirming the ongoing use of the existing marine laboratory and of McMurdo Station for helicopter operations (with the proposed helicopter hangar and replacement marine laboratory no longer included in the design);
  - 19.3 Design changes to ensure the base is safe and fit for purpose and focused on functionality, thereby maintaining the “humble and egalitarian” culture of Scott Base.
- 20 The redevelopment of Scott Base will create jobs in New Zealand. This is expected to peak in 2023/25 when it is forecast 170 personnel will be employed in the construction of Scott Base in New Zealand. It is estimated that \$273 million will be spent with New Zealand point of sale suppliers (including the construction company) over the duration of the project.
- 21 Officials will take advantage of any opportunities for synergies with other countries actively investing in the region, in particular with the US in the context of its redevelopment activities at McMurdo Station, Scott Base’s immediate neighbour 3 kilometres away. The United States’ programme of modernisation of McMurdo Station continues to require close logistics planning with New Zealand and the exploration of possibilities for the joint use of items such as heavy equipment. In addition, a co-ordinated group has been established across National Antarctic Programmes to improve environmental infrastructure footprints.

## Governance and assurance

- 22 An assurance plan has been developed and is subject to continuing reviews. Independent quality assurance has been provided on procurement by MBIE through oversight of the process and by Audit New Zealand in respect of the probity aspects. <sup>s9(2)(j), s9(2)(i)</sup>
- 23 Gateway Review 3 - Investment Decision has been completed for the Scott Base Redevelopment project. The overall rating confidence was assessed as Amber/Green reflecting the inherent risks and complexity of the project in the world's harshest environment. The report commented on the strong project management disciplines in place, the modified and strengthened project governance arrangements and the highly valued level of engagement, consultation and transparency by the stakeholder groups. There were four recommendations, predominantly around fine tuning governance and organisational change preparedness should the project progress to the construction phase. Two areas were noted as exemplars, being the use of dashboards as the primary reporting tool and the early on-boarding of suppliers, in particular the construction partner through an early contractor engagement process. Future Gateway Reviews have been scheduled at key milestones over the next four years.
- 24 Antarctica New Zealand has established a governance structure, a team of internal resources, main contractor, sub-contractors and advisors to ensure that the project has appropriate experience for delivering this type of project in the Antarctic environment. A central Government group comprising the Ministry of Foreign Affairs and Trade, the Treasury, the Infrastructure Commission and MBIE will continue to provide monitoring for the Project. It is proposed that this monitoring group provide status updates to the Minister of Foreign Affairs on a six monthly basis for the duration of the redevelopment project.
- 25 The Infrastructure Commission has reviewed the implementation plan. It has reported to me that: redevelopment is the only practicable way to ensure long-term scientific operations in the Ross Dependency; Antarctica New Zealand demonstrates a sustained focus on improving the quality of decision-making; there are strong project management disciplines in place; project risks are generally well understood and actively managed; and the project faces several significant uncontrollable risks that are beyond active management or mitigation.

## Contingency and risks

- 26 There are complex logistics in a project of this scale in Antarctica, where all material has to be shipped in advance and can only be shipped once a year in late summer, the costs of transport to Antarctica are high and most construction activity can only take place during the summer season. In

addition, for this project, contingency has been calculated using quantitative risk analysis to a confidence level of P85<sup>2</sup>.

- 27 Project contingency included within the project costs is based on a risk framework that considers all project risks, not only those that Antarctica New Zealand or its contracted parties have an ability to control. This includes risks to completing the groundworks on time, damages to materials during transportation, delays due to commissioning issues, plant and container shipping delays, systemic risks, scope changes and harm. The controls for these risks are very different. As a primary control, the risks are allocated to the party best positioned to control them. Project wide review of all risks and controls is undertaken monthly, with critical risks, emerging risks and controls also reviewed at the Project Steering Group level.
- 28 This framework includes extreme uncontrollable risks related to logistics (very low likelihood but high impact risks) that are unique to the Antarctic environment, such as changing sea conditions or an iceberg grounding and preventing access to the site by the vessel carrying the building sections. Should an uncontrollable risk occur and depending on the situation in which it eventuates, it is proposed that further Ministerial direction would be sought given the cost implications.
- 29 COVID-19 has so far not affected the project. Antarctica New Zealand will continue to take precautions so that the build programme does not introduce COVID-19 to Antarctica. The risk of impacts of COVID-19 on availability of staff and on logistics will be managed as part of the overall project risk management process.

### **Depreciation**

- 30 Depreciation of the redeveloped Scott Base and wind farm assets will not be funded. Due to the unique nature and location of Scott Base, it is considered appropriate for the Crown to make funding decisions on the next replacement facility based on context at that time (likely 40-50 years from now) and for appropriate Cabinet approval to be sought at the time for those decisions.

### **Capital charge**

- 31 The funding approved for Budget 2021 includes the additional capital charge arising from the redevelopment project.

### **Next steps**

- 32 Any activity in Antarctica, including construction, is subject to the rules under the Protocol on Environmental Protection to the Antarctic Treaty. This is given effect in New Zealand through the Antarctica (Environmental Protection) Act 1994 (the Act). A Comprehensive Environmental Evaluation (CEE) was released in February 2021 for public consultation and to other Protocol Parties, in accordance with section 19 of the Act [CAB-21-MIN-0009]. The

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<sup>2</sup> P85 refers to the confidence level regarding the probability of the cost not being exceeded 85% of the time.

CEE will be considered at the Antarctic Treaty Consultative Meeting in June 2021. Comments by the New Zealand public and by Antarctic Treaty Parties will be taken into account, before a final CEE is presented to me in approximately September 2021, to permit the activity under the Act, if I agree, and enable work to proceed.

- 33 Work under that permit can begin in Antarctica 60 days after the final approved CEE has been circulated to the Antarctic Treaty Parties. Any work on the continent would be undertaken from that point, with proposed occupation of the new base in December 2026. The project is expected to be fully completed by 2028.
- 34 Some work would be undertaken in New Zealand before the approval of the CEE, in order to ensure timely delivery of the project. This includes:
- 34.1 Engagement of project key personnel;
  - 34.2 Confirmation of the terms and conditions of the construction contract with Leigh's Construction;
  - 34.3 Securing of a slot in the heavy vessel schedule by way of a contract and deposit;
  - 34.4 Confirmation of location and port for construction and on-loading facilities;
  - 34.5 Procurement processes for equipment required for dispatch to Scott Base on the cargo vessel scheduled for departure in January 2022.

### **Report-back**

- 35 It is proposed that progress reports are provided to Cabinet from 2022, no less frequently than every 2 years, or as required. Reports may be provided indicatively as follows:
- 35.1 July 2022: Design and detailed planning, site preparations and beginning of construction;
  - 35.2 July 2024: Progress report on New Zealand based construction, Scott Base temporary works, demolition, bulk earthworks and building sub-structures and impact on science;
  - 35.3 July 2026: Completion of above, shipment of buildings, Temporary Base operations and impact on science;
  - 35.4 July 2028: Installation and occupation of new buildings, demobilisation and realisation of benefits.

### **Financial Implications**

- 36 On 12 April 2021, Cabinet approved the following changes to appropriations to implement the project: (1) \$309 million capital expenditure and (2) \$244

million operating expenditure<sup>3</sup>, as set out in Annex 1. This paper seeks approval to incur expenditure against the appropriations already agreed.

- 37 The project contingency set aside to manage risks, based on the Quantitative Risk Assessment is as follows:

<b>Contingency Amount</b>	<b>Approval Authority</b>
Contingency @ P50 [\$36 million]	Chief Executive of Antarctica New Zealand
Contingency @ P85 – P50 [\$11 million]	Project Steering Group

### Legislative Implications

- 38 There are no legislative implications in this proposal.

### Regulatory Impact Statement

- 39 This paper does not require a regulatory impact analysis.

### Climate Implications of Policy Assessment

- 40 This paper does not require a Climate Implications of Policy Assessment.

### Population Implications

- 41 This proposal will not affect particular population groups. Scott Base and its associated infrastructure does not currently, and is not intended to, comply fully with disability-related legislation. It is neither reasonable nor practical to make provision for people with disabilities given the health and safety risks related to travel to/from and living and working in the hostile environment of Antarctica.

### Human Rights

- 42 This paper presents no inconsistencies with the New Zealand Bill of Rights Act 1990 and the Human Rights Act 1993.

### Consultation

- 43 The following Departments and Agencies were consulted in preparing this paper and concur with its contents: Antarctica New Zealand; Ministry of Business, Innovation and Employment; Ministry of Defence; New Zealand Defence Force; Treasury; Ministry for Primary Industries; Department of Conservation; Department of Prime Minister and Cabinet.

<sup>3</sup> Of these amounts, \$306m of the capital expenditure is within the 10 year capital forecast period and \$38m of the operating expenditure is within the four year operating forecast, which is what was included in budget press releases. The remaining amounts are outside that forecast period (see Annex 1 for operating and capital spending over each year).

- 44 A Comprehensive Environmental Evaluation has been submitted to Antarctic Treaty Consultative Parties and to the New Zealand public for consideration. After feedback has been taken into account as appropriate, the activity will be subject to my approval under the Antarctica (Environmental Protection) Act in September 2021.

### **Communications**

- 45 The funding decision was included in the Budget 2021 announcements. It is not intended that this paper generate a public statement.

### **Proactive Release**

- 46 I intend to release this Cabinet paper, with appropriate redactions, within 30 business days of decisions being confirmed by Cabinet.

### **Recommendations**

The Minister of Foreign Affairs recommends that the Committee:

- 1 note that in 2017 the previous government agreed to the strategic, environmental, scientific, conservation, reputational and economic interests for a continued New Zealand presence in Antarctica [CAB-17-Min-0437] and approved funding of \$6.14 million for preliminary work on options to redevelop Scott Base [CAB-17-MIN-0185.11];
- 2 note that Budget 2019 approved funding of \$19.4 million for Antarctica New Zealand to prepare an Implementation Business Case [CAB-19-MIN-0174.16], endorsed the Detailed Business Case and agreed in principle to the preferred redevelopment option [ERS-19-MIN-0011];
- 3 Note that the fundamentals of the case for change and the proposed conceptual design for the new Scott Base are unchanged since the Detailed Business Case was endorsed;
- 4 Note that Cabinet approved the Budget 2021 initiative for the full costs of \$309 million capital expenditure and \$244 million operational expenditure for the redevelopment of Scott Base (including the Ross Island wind energy system and a temporary base of 160 beds) [CAB-21-MIN-0116.13] and agreed that:
  - 4.1 Expenditure from the amounts of the appropriation changes approved for Budget 2021 was subject to its endorsement of the Implementation Business Case and approval of the implementation of the Scott Base redevelopment project;
  - 4.2 When considering the Implementation Business Case, Cabinet should make decisions on matters across the life of the project, such as the amount of project contingency, nature and timing of report backs, and drawing down of any tagged contingencies.

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- 5 Note that project contingency has been calculated using a quantitative risk analysis to a confidence level of P85;
- 6 Note that the project contingency does not include extreme non-assessable risks unique to the Antarctic environment and the Ministry of Foreign Affairs and Trade and Antarctica New Zealand will seek further Ministerial direction should such an event occur;
- 7 Note that a Gateway review has assessed the overall rating confidence as Amber/Green in relation to the final Implementation Business case and the Infrastructure Commission has expressed confidence that the project can be successfully delivered;
- 8 Endorse the Implementation Business Case [attached as Annex 2];
- 9 Approve the implementation of the Scott Base redevelopment project in accordance with the Implementation Business Case;
- 10 Agree to the Scott Base redevelopment project incurring expenditure from the amounts appropriated in Budget 2021;
- 11 Note that, subject to approval of the Comprehensive Environmental Evaluation by the Minister of Foreign Affairs under the Antarctica (Environmental Protection) Act 1994, construction of the new base will start in Antarctica in early 2022, with occupation expected in late 2026 and the project fully completed by 2028;
- 12 Note that a monitoring group comprised of officials from central Government agencies will provide six monthly status updates to the Minister of Foreign Affairs for the duration of the redevelopment project;
- 13 Agree that the Minister of Foreign Affairs will report to Cabinet on the progress of the project no less frequently than every 2 years from July 2022 until July 2028.

Authorised for lodgement

Hon Nanaia Mahuta  
Minister of Foreign Affairs

**S E N S I T I V E**

**Vote: Foreign Affairs: Appropriation Changes: Our Place in Antarctica – Scott Base Redevelopment<sup>4</sup>**

	<b>\$m – increase/(decrease)</b>				
	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>	<b>2023/34</b>	<b>2024/25</b>
Operating Balance Impact	-	2.000	6.000	13.000	22.000
Debt Impact	-	18.000	66.000	114.000	69.000
No Impact	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>20.000</b>	<b>72.000</b>	<b>127.000</b>	<b>91.000</b>
	<b>2025/26</b>	<b>2026/27</b>	<b>2027/28</b>	<b>2028/29</b>	<b>2029/30</b>
Operating Balance Impact	20.000	26.000	16.000	13.000	13.000
Debt Impact	36.000	1.000	2.000	-	-
No Impact	-	-	-	-	-
<b>Total</b>	<b>56.000</b>	<b>27.000</b>	<b>18.000</b>	<b>13.000</b>	<b>13.000</b>
	<b>2030/31</b>	<b>2031/32</b>	<b>2032/33</b>	<b>2033/34</b>	<b>2034/35</b>
Operating Balance Impact	12.000	14.000	12.000	12.000	12.000
Debt Impact	-	-	-	-	-
No Impact	-	-	-	-	-
<b>Total</b>	<b>12.000</b>	<b>14.000</b>	<b>12.000</b>	<b>12.000</b>	<b>12.000</b>
	<b>2035/36</b>	<b>2036/37</b>	<b>2037/38</b>	<b>2038/39</b>	<b>2039/40</b>
Operating Balance Impact	11.000	11.000	10.000	10.000	9.000
Debt Impact	-	1.000	-	-	2.000
No Impact	-	-	-	-	-
<b>Total</b>	<b>11.000</b>	<b>12.000</b>	<b>10.000</b>	<b>10.000</b>	<b>11.000</b>
	<b>2040/41 &amp; Outyears</b>				
Operating Balance Impact	-				
Debt Impact	-				
No Impact	-				
<b>Total</b>	<b>-</b>				

<sup>4</sup> This includes funding for capital charge



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	\$m – increase/(decrease)				
	2020/21	2021/22	2022/23	2023/34	2024/25
<b>Non-Departmental Output Expenses:</b> Antarctic Research and Support	-	2.000	6.000	13.000	22.000
<b>Non-Departmental Capital Expenditure:</b> New Zealand Antarctic Institute	-	18.000	66.000	114.000	69.000
	2025/26	2026/27	2027/28	2028/29	2029/30
<b>Non-Departmental Output Expenses:</b> Antarctic Research and Support	20.000	26.000	16.000	13.000	13.000
<b>Non-Departmental Capital Expenditure:</b> New Zealand Antarctic Institute	36.000	1.000	2.000	-	-
	2030/31	2031/32	2032/33	2033/34	2034/35
<b>Non-Departmental Output Expenses:</b> Antarctic Research and Support	12.000	14.000	12.000	12.000	12.000
<b>Non-Departmental Capital Expenditure:</b> New Zealand Antarctic Institute	-	-	-	-	-
	2035/36	2036/37	2037/38	2038/39	2039/40
<b>Non-Departmental Output Expenses:</b> Antarctic Research and Support	11.000	11.000	10.000	10.000	9.000
<b>Non-Departmental Capital Expenditure:</b> New Zealand Antarctic Institute	-	1.000	-	-	2.000
	2040/41 & Outyears				
<b>Non-Departmental Output Expenses:</b> Antarctic Research and Support	-				
<b>Non-Departmental Capital Expenditure:</b> New Zealand Antarctic Institute	-				

S E N S I T I V E



# Cabinet External Relations and Security Committee

## Minute of Decision

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### Redevelopment of Scott Base: Implementation

**Portfolio** Foreign Affairs

On 29 June 2021, the Cabinet External Relations and Security Committee (ERS):

1 **noted** that:

- 1.1 on 15 August 2017, the previous government agreed to the strategic, environmental, scientific, conservation, reputational and economic interests for a continued New Zealand presence in Antarctica [CAB-17-MIN-0437];
- 1.2 Budget 2017 approved funding of \$6.14 million for preliminary work on options to redevelop Scott Base [CAB-17-MIN-0185.11];

2 **noted** that:

- 2.1 on 28 May 2019, ERS endorsed the Detailed Business Case, which outlined options for the redevelopment of Scott Base, and agreed in principle to the preferred redevelopment option [ERS-19-MIN-0011];
- 2.2 Budget 2019 approved funding of \$19.4 million for Antarctica New Zealand to prepare an Implementation Business Case [CAB-19-MIN-0174.16];

3 **noted** that the fundamentals of the case for change and the proposed conceptual design for the new Scott Base are unchanged since the Detailed Business Case was endorsed;

4 **noted** that on 12 April 2021, Cabinet:

- 4.1 approved the Budget 2021 initiative for the full costs of \$309 million capital expenditure and \$244 million operational expenditure for the redevelopment of Scott Base (including the Ross Island wind energy system and a temporary base of 160 beds);
- 4.2 agreed that expenditure from the amounts of the appropriation changes approved for Budget 2021 was subject to Cabinet endorsement of the Implementation Business Case and approval of the implementation of the Scott Base redevelopment project;
- 4.3 agreed that when considering the Implementation Business Case, Cabinet should make decisions on matters across the life of the project, such as the amount of project contingency, nature and timing of report backs, and drawing down of any tagged contingencies;

[CAB-21-MIN-0116.13]

- 5 **noted** that the project contingency has been calculated using a quantitative risk analysis to a confidence level of P85;
- 6 **noted** that the project contingency does not include extreme non-assessable risks unique to the Antarctic environment, and that the Ministry of Foreign Affairs and Trade and Antarctica New Zealand will seek further Ministerial direction should such an event occur;
- 7 **noted** that a Gateway review has assessed the overall rating confidence as Amber/Green in relation to the final Implementation Business case, and that the Infrastructure Commission has expressed confidence that the project can be successfully delivered;
- 8 **endorsed** the Implementation Business Case, attached as Annex 2 to the paper under ERS-21-SUB-0024;
- 9 **approved** the implementation of the Scott Base redevelopment project in accordance with the Implementation Business Case;
- 10 **agreed** to the Scott Base redevelopment project incurring expenditure from the amounts appropriated in Budget 2021;
- 11 **noted** that, subject to approval of the Comprehensive Environmental Evaluation by the Minister of Foreign Affairs under the Antarctica (Environmental Protection) Act 1994, construction of the new base will start in Antarctica in early 2022, with occupation expected in late 2026 and the project fully completed by 2028;
- 12 **noted** that a monitoring group comprised of officials from central government agencies will provide six monthly status updates to the Minister of Foreign Affairs for the duration of the redevelopment project, in addition to the three reports that the Minister receives from Antarctica New Zealand each year, or further reports from the Antarctica New Zealand Board as the Minister might request;
- 13 **invited** the Minister of Foreign Affairs to report to ERS on the progress of the project no less frequently than every two years from July 2022 until July 2028.

Janine Harvey  
Committee Secretary

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**Present:**

Rt Hon Jacinda Ardern (Chair)  
Hon Grant Robertson  
Hon Kelvin Davis  
Hon Andrew Little  
Hon David Parker  
Hon Nanaia Mahuta  
Hon Poto Williams  
Hon Kris Faafoi  
Hon Peeni Henare  
Hon Dr David Clark

**Officials present from:**

Office of the Prime Minister  
Officials Committee for ERS



# Cabinet External Relations and Security Committee

## Summary

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### Redevelopment of Scott Base: Implementation

<b>Portfolio</b>	Foreign Affairs
<b>Purpose</b>	This paper seeks endorsement of the Implementation Business Case for the redevelopment of Scott Base, and approval to implement the project.
<b>Previous Decisions</b>	<p>On 28 May 2019, ERS endorsed the Detailed Business Case, which outlined options for the redevelopment of Scott Base [ERS-19-MIN-0011].</p> <p>On 2 February 2021, Cabinet noted that any construction activity in Antarctica is subject to the rules under the Protocol on Environmental Protection to the Antarctic Treaty, and that the Minister of Foreign Affairs intended to release a Comprehensive Environmental Evaluation for public consultation and to the Parties to Protocol [CAB-21-MIN-0009].</p> <p>On 12 April 2021, Cabinet approved funding for the redevelopment of Scott Base, and noted that Cabinet has yet to consider the redevelopment Implementation Business Case or approve the implementation of the implementation project [CAB-21-MIN-0116.13].</p>
<b>Proposal</b>	<p>Approval is sought for Antarctica New Zealand to confirm contracts for construction, and to implement the Scott Base redevelopment project, as set out in the <b>attached</b> Implementation Business Case.</p> <p>The project includes the construction of three large, interconnected buildings for accommodation and welfare spaces, science and operations, and engineering vehicle workshops and storage. The proposal is to build the entire base in New Zealand and ship it to the site in Antarctica in large modular sections (discussed on <b>pages 3-4</b> of the paper).</p> <p>A Comprehensive Environmental Evaluation is to be considered at the Antarctic Treaty Consultative Meeting in June 2021. Comments from Antarctic Treaty Parties and from the public consultation undertaken earlier this year will be taken into account, before a final Evaluation is presented to the Minister of Foreign Affairs for approval for this activity under the Antarctica (Environmental Protection) Act 1994.</p>
<b>Impact Analysis</b>	Not required.
<b>Financial Implications</b>	Budget 2021 approved funding for the redevelopment of Scott Base (outlined in <b>Annex 1</b> ).

<b>Legislative Implications</b>	None.
<b>Timing Matters</b>	Subject to the necessary approvals under the Antarctica (Environmental Protection) Act 1994, the construction of the new base is expected to start in early 2022, with occupation expected in late 2026 and the project fully completed by 2028.
<b>Communications</b>	None.
<b>Consultation</b>	<p>Paper prepared by MFAT. DOC, DPMC, MPI, MBIE, Defence, NZDF, Treasury and Antarctica NZ were consulted.</p> <p>The Minister of Foreign Affairs indicates that ERS Ministers, the Minister of Research, Science and Innovation, Minister of Transport, Minister of Customs, and Minister for Disarmament and Arms Control were consulted, and that the Green Party was also consulted.</p>

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**The Minister of Foreign Affairs recommends that the Committee:**

- 1 note that:
  - 1.1 on 15 August 2017, the previous government agreed to the strategic, environmental, scientific, conservation, reputational and economic interests for a continued New Zealand presence in Antarctica [CAB-17-MIN-0437];
  - 1.2 Budget 2017 approved funding of \$6.14 million for preliminary work on options to redevelop Scott Base [CAB-17-MIN-0185.11];
- 2 note that:
  - 2.1 on 28 May 2019, the Cabinet External Relations and Security Committee (ERS) endorsed the Detailed Business Case, which outlined options for the redevelopment of Scott Base, and agreed in principle to the preferred redevelopment option [ERS-19-MIN-0011];
  - 2.2 Budget 2019 approved funding of \$19.4 million for Antarctica New Zealand to prepare an Implementation Business Case [CAB-19-MIN-0174.16];
- 3 note that the fundamentals of the case for change and the proposed conceptual design for the new Scott Base are unchanged since the Detailed Business Case was endorsed;
- 4 note that on 12 April 2021, Cabinet:
  - 4.1 approved the Budget 2021 initiative for the full costs of \$309 million capital expenditure and \$244 million operational expenditure for the redevelopment of Scott Base (including the Ross Island wind energy system and a temporary base of 160 beds);
  - 4.2 agreed that expenditure from the amounts of the appropriation changes approved for Budget 2021 was subject to Cabinet endorsement of the Implementation Business Case and approval of the implementation of the Scott Base redevelopment project;

- 4.3 agreed that when considering the Implementation Business Case, Cabinet should make decisions on matters across the life of the project, such as the amount of project contingency, nature and timing of report backs, and drawing down of any tagged contingencies;

[CAB-21-MIN-0116.13]

- 5 note that the project contingency has been calculated using a quantitative risk analysis to a confidence level of P85;
- 6 note that the project contingency does not include extreme non-assessable risks unique to the Antarctic environment, and that the Ministry of Foreign Affairs and Trade and Antarctica New Zealand will seek further Ministerial direction should such an event occur;
- 7 note that a Gateway review has assessed the overall rating confidence as Amber/Green in relation to the final Implementation Business case, and that the Infrastructure Commission has expressed confidence that the project can be successfully delivered;
- 8 endorse the Implementation Business Case, attached as Annex 2 to the paper under ERS-21-SUB-0024;
- 9 approve the implementation of the Scott Base redevelopment project in accordance with the Implementation Business Case;
- 10 agree to the Scott Base redevelopment project incurring expenditure from the amounts appropriated in Budget 2021;
- 11 note that, subject to approval of the Comprehensive Environmental Evaluation by the Minister of Foreign Affairs under the Antarctica (Environmental Protection) Act 1994, construction of the new base will start in Antarctica in early 2022, with occupation expected in late 2026 and the project fully completed by 2028;
- 12 note that a monitoring group comprised of officials from central government agencies will provide six monthly status updates to the Minister of Foreign Affairs for the duration of the redevelopment project;
- 13 invite the Minister of Foreign Affairs to report to ERS on the progress of the project no less frequently than every two years from July 2022 until July 2028.

Janine Harvey  
Committee Secretary

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**Hard-copy distribution:**

Cabinet External Relations and Security Committee



**Antarctica  
New Zealand**

## **Our Place in Antarctica**



# **Scott Base Redevelopment Implementation Business Case**

Commercial in Confidence



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# 1 Executive Summary

This investment proposal builds on the Indicative Business Case (IBC) and the Detailed Business Cases (DBC) previously submitted and follows the Better Business Case guidance. This Implementation Business Case (ImBC) uses the five-case structure designed to demonstrate that the investment proposal:

- Is supported by a compelling case for change – the ‘Strategic Case’
- Optimises value for money – the ‘Economic Case’
- Is commercially viable – the ‘Commercial Case’
- Is financially affordable – the ‘Financial Case’, and
- Is achievable – the ‘Management Case’.

The purpose of this ImBC is to:

- Identify the supplier offer that optimises value for money.
- Set out the refined and confirmed approach for the redevelopment of Scott Base.
- Set out the negotiated commercial and contractual arrangements with the main contractor, Leighs Construction Limited (Leighs Construction).
- Reconfirm that the proposed arrangements are affordable.
- Put in place detailed management arrangements for the successful delivery of the redevelopment.

*This ImBC seeks approval to finalise the construction contract and invest up to \$344million over the period of 2021 – 2028 for the redevelopment of Scott Base.*

## Introduction

Scott Base is New Zealand’s place in Antarctica. It is a place from where New Zealand researchers carry out world-leading science to understand Antarctica and the Southern Ocean, develop strong diplomatic ties through collaborating with other National Antarctic Programmes, protect the environment of Antarctica and strengthen the Antarctic Treaty System. The scientific research enabled by Scott Base has direct relevance to policy, in particular, climate change policy, as well as informing a general understanding of the natural world. Under the unifying theme of global change, three high level scientific research outcomes encompass:

- Climate, cryosphere, atmosphere and lithosphere: Improved understanding of the past and current state of Antarctica, its significance and implications of the role of Antarctica in global change, and implications of global change in Antarctica.
- Inland and coastal ecosystems: Improved understanding of inland and coastal ecosystems of the Ross Sea region, leading to enhanced knowledge, conservation and protection priorities in Antarctica.
- Marine systems: Improved conservation and resource management of the Antarctic marine environment.

New Zealand has had a continuous presence at Scott Base since 1957. However, the overall condition of Scott Base continues to deteriorate and the need for redevelopment increases in urgency. If the risks to people at Scott Base became too high New Zealand’s continued presence in Antarctica for over 60 years would be compromised. The IBC and DBC outlined the case for change for redeveloping Scott Base to ensure New Zealand has a safe, fit-for-purpose facility that enables the benefits to continue to be realised and enhanced.

Redeveloping Scott Base takes much more than the construction of a building in New Zealand. Scott Base needs to be a completely self-contained and resilient facility due to its remote location and the harsh Antarctic environment. The construction of the new Scott Base will be challenging and complex due to:

- The need for Scott Base to be fully self-contained, requiring all the supporting infrastructure to support a community in the most hostile of environments.
- Buildings and infrastructure need to operate without failure in the polar environment.
- The site’s remote location; Scott Base is 3,800km south of Christchurch.

- Work takes longer in Antarctica due to the climate and the protocols of how people can safely work.

The 63 years of experience operating in the Antarctic environment makes Antarctica New Zealand well positioned to deliver on the redevelopment of Scott Base. The organisation has demonstrated the ability to deliver outcomes in this environment while supporting a full schedule of science events, managing logistics collaboratively with other National Antarctic Programs and constructing new facilities.

Since the endorsement of the DBC, Antarctica New Zealand has continued to prepare itself and its many stakeholders for the build and delivery phase of this nationally and scientifically important project.

This ImBC outlines the organisations readiness to commence the next phase of this project, in particular Antarctica New Zealand has:

- A design for Scott Base that is fit-for-purpose, value for money, and meets the requirements of the science community and the organisation, whilst reflecting the humble and egalitarian nature of Scott Base.
- Developed a logistics and construction methodology that is proven, minimises risk and reduces project duration.
- Established a productive and collaborative relationship with the main contractor through an Early Contractor Involvement (ECI) phase.
- Built a team that is ready to deliver the project. Antarctica New Zealand has built a fit for purpose governance structure, a team of internal resources, a main contractor, sub-contractors and advisors to ensure the project has appropriate experience for delivering this type of project in the Antarctic environment. The team is capable, contains the relevant skills and knowledge and is supported by suitable project processes and systems.
- Completed a Gateway Review; received an amber/green delivery confidence rating.

## Strategic Case

The Strategic Case confirms the need for change and the investment logic set out in the DBC. It notes that while the strategic context largely stays the same, there is continued deterioration of the Scott Base assets and the need to replace them has become more urgent and critical to New Zealand maintaining a continuous presence in Antarctica. The two key problems this ImBC sets out to address are:

1. s6(a)
2. New Zealand's **deteriorating infrastructure in Antarctica** is limiting our ability to provide safe and effective logistics and support to conduct high priority science relevant to New Zealand's policy, interests and prosperity.

The investment logic remains the same from the DBC and is outlined in Figure 1.

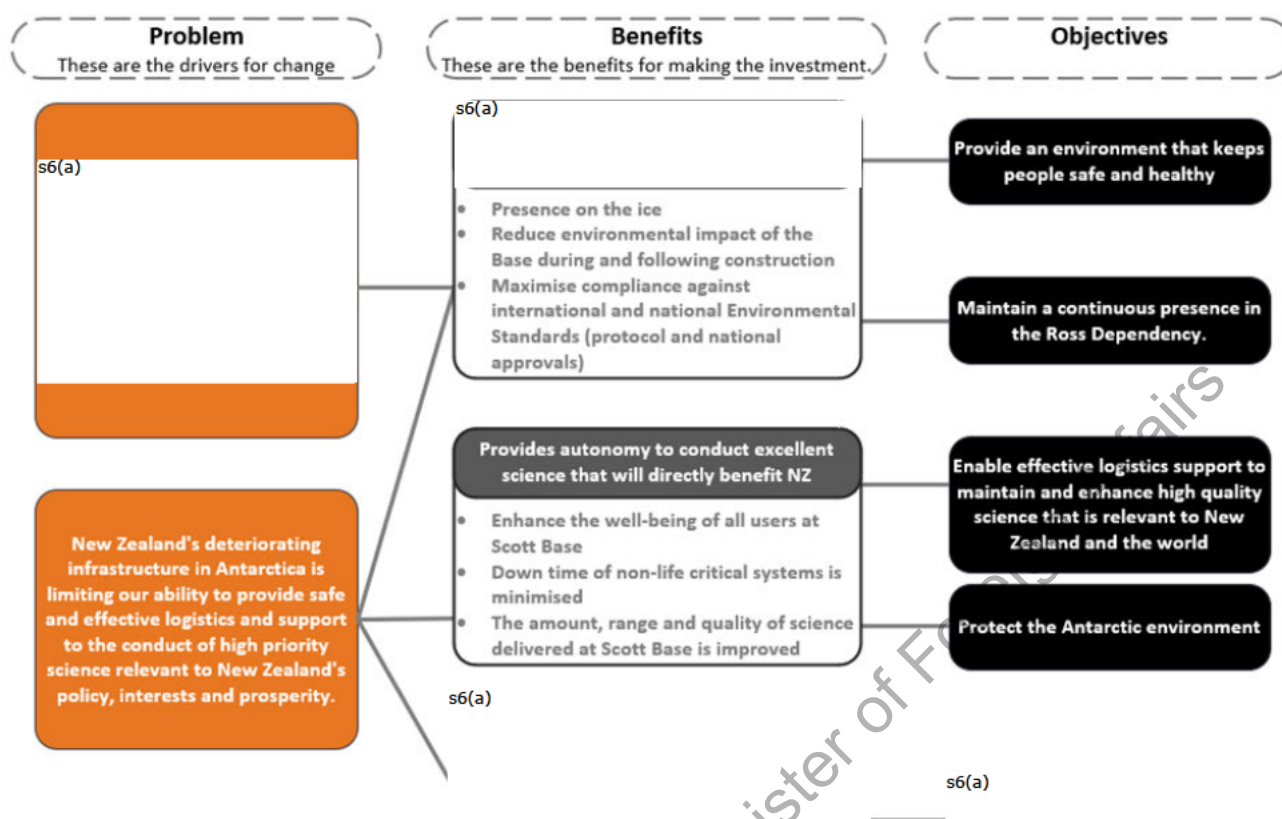


Figure 1: Investment logic map

### Economic Case: Confirming the Preferred Option

As outlined in the DBC, design of option 2B has progressed. Option 2B was the redevelopment option with the design reflecting a fit-for-purpose facility that represents the culture of Scott Base. A value engineering exercise has been undertaken to ensure investment results in value for money. The design has also been developed to reflect the logistics and construction methodology proposed by the main contractor.

Antarctica New Zealand worked with Matapopore to develop a cultural design framework to ensure the new base has a sense of Māori concepts and narratives into the heart of Scott Base in a cohesive and meaningful way. The framework is centred on the whakatauki "Ka titiro whakamuri, Kia anga whakamua - We look to our past, to face our future." This whakatauki relates to the purpose of Scott Base and the importance of the work that is undertaken there to extend the understanding of the natural environment and the effects of climate change.

The logistics and construction methodology have evolved since the DBC. The DBC assumed a traditional containerisation and stick build construction approach would be used. However, the main contractor proposed an alternative methodology that involves building Scott Base in New Zealand and then shipping the completed structures on a heavy lift ship to Pram Point. This will require the construction of a temporary base, temporary wharf and a haul road. This methodology follows four key phases:



Figure 2: Four key methodology phases

The building of Scott Base in New Zealand, by a Christchurch-based main contractor, will create jobs for New Zealanders. Based on the methodology, Scott Base will be built at a New Zealand port. This approach also minimises construction time in Antarctica, reducing the health and safety risk and wellbeing impacts, increasing productivity and reducing carbon emissions resulting from fewer return flights to Antarctica being required.

Cabinet requested Antarctica New Zealand to assess potential scaling options to reduce the duration of the project, including the subsequent ability of the organisation to continue to provide logistical support to science. The revised logistics and construction approach reduce the duration of the project by three years. Antarctica New Zealand identified a further year could be reduced for the project duration by working double shifts during the summer season in the labour-intensive period of earthworks, resulting in a scheduled commissioning of the redeveloped Scott Base in December 2026. The proposed approach involves building capacity in the temporary base for 160 people. This would enable construction to continue without disruption to the delivery of high-quality science at Scott Base.

The Scott Base wind farm's operational and design life comes to an end in 2030. Cabinet requested the ImBC included a preferred approach for the replacement of the wind farm in alignment with the Scott Base redevelopment project. <sup>s6(a)</sup>

The wind farm will be built at the same time as the redevelopment of Scott Base to ensure the new base is almost entirely operated on renewable energy from the completion of the SBR project.

<sup>s9(2)(i), s9(2)(j)</sup>

As the project has progressed and the logistics and construction methodology has evolved, the risks, constraints and dependencies have become better understood. A further category of risks, uncontrollable risks, have been identified and excluded from the QRA. These risks are binary in nature – they either occur or don't occur. The likelihood of them occurring is minimal but the consequences of these risks are significant. In the instance of the redevelopment of Scott Base they are likely to delay the project schedule by at least one season and could include events such as an iceberg blocking the entrance to Pram Point, sudden unavailability of an ice breaker or Scott Base building components being damaged or lost from the heavy lift ship. It is likely these uncontrollable events are unable, or uneconomic, to insure against.

Antarctica New Zealand would advise Ministers at an early stage should any of these risks materialise.

### Commercial Case: Contracting for the Project

Since the DBC, a Registrations of Interest process was completed and the five longlisted respondents then attended a site visit to Scott Base. The site visit aimed to ensure the respondents thoroughly understood the Antarctic environment and to ensure Antarctica New Zealand received comprehensive reports to shortlist between one and three respondents for the ECI phase.

A rigorous procurement process, overseen by MBIE and compliant with its procurement rules, was undertaken and Leighs Construction was selected as the only respondent to continue to participate in the ECI phase with the intention to become the main contractor. Audit New Zealand provided independent probity oversight of the process. Only one respondent was selected as the main contractor as they were significantly ahead of the other respondents in the evaluation.

On selection of the main contractor a pre-construction services agreements (PCSA) was entered into for the remainder of the ECI phase. Negotiations included the identification and allocation of risk and the key terms to the construction contract. These are set in the Commercial Risk Allocation Plan agreed by the parties. The intent is to allocate risk to the party who is in the best position to manage it, to achieve the best project outcomes and to ensure transparency when communicating and controlling risk allocation between parties.



## Financial Case: Funding the Project

The total investment for the redevelopment of Scott Base is approximately \$357m over 19 years (including cost escalation). This comprises a one-time investment of \$344 million plus post-implementation whole-of-life costs of \$13 million for the period, but excludes the impact of the capital charge.

<b>Scott Base Redevelopment Cost Summary (\$ Millions)</b>	<b>Capital \$m</b>	<b>Operating \$m</b>	<b>Total \$m</b>
<b>Investment One-time Costs (to June 2027)</b>			
Scott Base Redevelopment @ P85	272	36	308
Windfarm replacement @ P85	34	2	36
<b>Sub Total</b>	<b>306</b>	<b>38</b>	<b>344</b>
<b>Ongoing Costs (13 years from July 2027)</b>			
Scott Base	1	14	15
Windfarm	2	(4)	(2)
<b>Sub Total</b>	<b>3</b>	<b>10</b>	<b>13</b>
<b>Total Investment Required (excluding capital charge *)</b>	<b>309</b>	<b>48</b>	<b>357</b>
* Capital Charge is an average cost of \$10 million per annum until 2040			

Table 1: Total investment required analysed between capital and operating costs

It is requested that the Crown fund the investment to redevelop Scott Base and the wind farm. Should any alternative funding streams be identified, they will offset the Crown's funding.

Better Business Case guidance would usually require depreciation to be fully funded as part of the investment proposal. For the redevelopment of Scott Base, Antarctica New Zealand and Treasury have agreed:

- **Depreciation:** It is assumed that the annual depreciation charge will not be funded by the Crown. The consequence of this decision is that annual operating results will report deficits equivalent to unfunded depreciation. Any future investment in Scott Base will require further funding at the time because a replacement reserve will not have been built up.
- **Capital charge:** Antarctica New Zealand has a limited capacity to pay the additional capital charge arising from the redevelopment of Scott Base, it is requested that the Crown provide funding over and above the existing capital charge funding.

Because of the significant size of the redevelopment of Scott Base relative to the size of Antarctica New Zealand's existing business activities, this approach helps to ensure good financial stewardship.

## Management Case – Planning for Successful Delivery

Antarctica New Zealand has built a strong team to redevelop Scott Base that has been working together since 2016. It is supported by the main contractor and numerous subcontractors who have experience working in remote and challenging environments. Antarctica New Zealand and the main contractor have successfully delivered projects at Scott Base previously, including the construction of the Hillary Field Centre and the current Wind Farm. The team is ready, capable and confident in its ability to redevelop Scott Base.

A governance and management structure has been operationalised for the project with membership from within Antarctica New Zealand and externally - people with relevant experience to the project and / or organisation. A risk mitigation approach has been developed to manage retention of key team members and employees.

Antarctica New Zealand and Scott Base have many diverse stakeholders including members of the public, the New Zealand science community and other National Antarctic Programs. Stakeholders are comprehensively engaged while expectations are being managed.

A change management strategy has been developed for the project and an initial change readiness assessment and baseline survey has been undertaken. Change management will have a particular focus on the new ways of operating within the transition to the temporary base and then into and within the new Scott Base.



The depth and breadth of experience of the team working in Antarctica and on logistics and construction projects ensures that project risk is well understood, including risks in logistics and the Antarctic environment. The team have a robust and standard risk management framework. Risks have been allocated to those who understand and can manage them best.

Antarctica New Zealand acknowledges this project is a significant undertaking. It has developed a rigorous assurance framework for the delivery of the project, including financial and operational assurance and both formal and informal project assurance. The formal assurance processes include a Gateway Review, IQA of the financial model and QRA and ongoing statutory organisational audits. Informal assurance includes learning from and working with other national Antarctic programs that have extensive experience in Antarctic logistics and construction, specifically in station infrastructure development.

The next section provides background to the Scott Base Redevelopment project.

Proactively Released by The Minister of Foreign Affairs

## 2 Background

### Antarctica's Importance to New Zealand

New Zealand has significant and longstanding scientific, environmental, economic and diplomatic interests in Antarctica and the Southern Ocean, in particular the Ross Dependency.

New Zealand is committed to the responsible stewardship of Antarctica and the Southern Ocean for the benefit of present and future generations. This was reaffirmed in the 2017 Cabinet Paper: Antarctica and Southern Ocean; New Zealand's Strategic Interests (CAB-17-Min-0437).

These strategic interests in Antarctica have been consistent since the adoption of the Antarctic Treaty in 1959 when New Zealand was one of the 12 original signatories. The treaty established a collaborative governance framework for Antarctica and confirmed the region as a place for peace and science.

New Zealand values a safe and secure Antarctica and is committed to:

- Protecting the environment of Antarctica
- Strengthening the Antarctic Treaty System
- Supporting science that contributes to understanding Antarctica and the Southern Ocean.

To deliver on our strategic interests, New Zealand has a range of tools that include the following:

#### **A continuous safe presence in Antarctica**

This is essential to support our future science and environmental protection needs. Our presence in Antarctica needs to be safe and fit for purpose for future generations.

#### **A credible Antarctic science programme**

From an Antarctic Treaty System perspective, science is the currency of Antarctica. A credible scientific research programme provides influence at the Antarctic Treaty System decision-making table. It delivers strategic and scientific value.

#### **Strong environmental credentials**

New Zealand has environmental goals and achievements that include our activities being exemplars of environmental protection. New Zealand has proven leadership in environmental protection.

#### **International collaboration**

Antarctic cooperation deepens some of New Zealand's most important bilateral relationships.

### Joint Logistics Pool

New Zealand and the United States have been cooperating in Antarctic operations since 1957. The Joint Logistics Pool is a resource sharing arrangement between the two nations' Antarctic programmes, to provide benefits to both parties. Contributions are made relative to the shared resources used and allow both parties to utilise their respective strengths. For example, New Zealand contributes logistics resources in Christchurch and renewable energy in Antarctica to support the United States Programme. The United States provides New Zealand with runway and port access in Antarctica. The Joint Logistics Pool allows both Antarctic programmes to share assets on an equitable basis and contributions are formally agreed between the parties annually.

### Christchurch as a Gateway to Antarctica

Christchurch's Antarctic Gateway strategy confirms Christchurch's role as one of only five gateway cities to Antarctica in the world. The annual national direct economic contribution of the Christchurch gateway is \$190m (of which it is estimated that \$131m benefits the Canterbury region directly).

### Scott Base: New Zealand's Place in Antarctica

s6(a)

Delivering a credible, high-quality science programme with strong environmental credentials is also necessary s6(a)

Established in 1957, Scott Base is New Zealand's Antarctic research station. It has operated continuously, supporting scientific research and recording valuable scientific data sets. Today, the base is the workplace

and home for up to 86 people including scientists and support personnel. Some of these people can spend up to 13 months living and working at Scott Base.

A permanent base is essential for carrying out important science programmes, including those already funded under New Zealand's Strategic Science Investment Fund – Antarctic Science Platform.

Scott Base is the location and means by which New Zealand can show leadership in issues relating to the safe, sustainable stewardship of Antarctica.

The Strategic Context for the Scott Base Redevelopment has not changed since the DBC.

**Further relevant information includes:**

1. In May 2019, Cabinet (ERS-19-MIN-0011) endorsed the DBC for the redevelopment of Scott Base and agreed in principle to the preferred redevelopment option 2B subject to the approval of final costs. This option is outlined in the Economic Case.
2. The overall condition of Scott Base continues to deteriorate, and the need for redevelopment gains urgency. Of particular concern is the safety of Antarctica New Zealand staff operating Scott Base during the harsh winter months and the ramifications of not operating over winter should the risk to human life become unacceptable. If this were to occur, New Zealand's continuous presence in Antarctica for over 60 years would be compromised, as would Scott Base which is not designed to be operated remotely.
3. The Minister of Foreign Affairs has requested that the renewal of the wind farm in Antarctica be included in the future funding request for the Scott Base Redevelopment <sup>s6(a)</sup>. The wind farm provides renewable energy to both the New Zealand and the United States facilities in Antarctica, and its replacement is incorporated in the Economic Case within this ImBC.
4. The Minister of Foreign Affairs published a statement in June 2019 of New Zealand's commitment to Antarctica and the Southern Ocean outlining the values that underpin New Zealand's engagement in the region. <https://www.mfat.govt.nz/en/environment/antarctica/ourcommitment/>
5. Other National Antarctic Programmes are progressing the redevelopment of existing bases or the development of new ones, and there is an increasing focus on other nations' activities in Antarctica. 30 members of the Committee of Managers of National Antarctic Programmes (COMNAP) are currently planning, have completed plans or are currently involved in the modernisation of their Antarctic stations. A significant investment is being made by other nations in Antarctica.
6. The Antarctica Science Platform, a \$49m research fund over seven years hosted by Antarctica New Zealand, was contracted by the Ministry of Business, Innovation and Employment (MBIE) in late 2018 and is now well established. It supports four large-scale research projects to conduct excellent science to understand Antarctica's impact on the global earth system, and how this might change in a +2°C (Paris agreement) world.
7. The development of the Comprehensive Environmental Evaluation (CEE) is progressing on schedule. This detailed environmental impact assessment is required under the Antarctica Environmental Protection Act 1994. International consultation on the document will take place in February 2021. Once approved by the Minister of Foreign Affairs, the final document will be provided to the Antarctic Treaty meeting in July 2021.
8. The impacts of the COVID-19 pandemic are ongoing and far-reaching. Whilst Antarctica New Zealand has, and will continue to have operational protocols for managing COVID-19, it does not detract from the imperative for the redevelopment of Scott Base.

**Project Progress on the Scott Base Redevelopment since the DBC**

1. Further consultation has taken place with subject matter experts, and through user group workshops, the detailed user requirements documented have been approved, and the design drawings and specifications updated.
2. Stakeholder engagement has extended to include a wide range of stakeholders beyond the immediate users of Scott Base.
3. A procurement process for a main contractor has been undertaken, and a preferred contractor engaged.
4. The preferred contractor has engaged in a collaborative Early Contractor Involvement (ECI) process to contribute to the design, construction methodology, risk assessments, health and safety, logistics and environmental assessments, including the Green Star processes.





5. The preferred contractor has also proposed its logistics and construction methodology. This approach replaces much of the containerisation and construction at Scott Base and provides an alternative approach by constructing the buildings in New Zealand and then shipping the completed external structures on a heavy lift ship to Pram Point, which is the site of Scott Base. This approach reduces the duration of the project.
6. The preferred site for the redeveloped Scott Base is on the site of the current Scott Base, therefore there is a requirement for a temporary base. The temporary base needs to keep people safe during earthworks and construction, maintain science and deliver the project to the earliest timeline. The temporary base will have the capacity for science, operations and construction.
7. The project will include realignment of the transition road outside Scott Base. This will de-conflict the site and road traffic movements, provides additional usable space on the base and reduces the dust, noise and vibrations generated by passing vehicles. The roadworks will provide necessary additional fill material to use in the main base earthworks.
8. Cabinet's request for the inclusion of scaling options in the ImBC for the replacement of the wind farm is included for approval for both construction and funding. Cabinet also requested scaling options for the delivery of the project and what options exist to shorten project duration and understand the impacts on cost, risk and continued delivery and support of science. Both of these options are considered in the Economic Case.

### Redeveloped Scott Base Design

The DBC outlined the preferred design option for the redevelopment of Scott Base. This option was called 2B – Redevelop. The design has continued to progress since the DBC in alignment with the preferred option and the key features of the redeveloped Scott Base are outlined below:

- Three large, interconnected buildings:
  - Building A: Accommodation and welfare spaces
  - Building B: Science and operations
  - Building C: Engineering, vehicle workshops and storage.

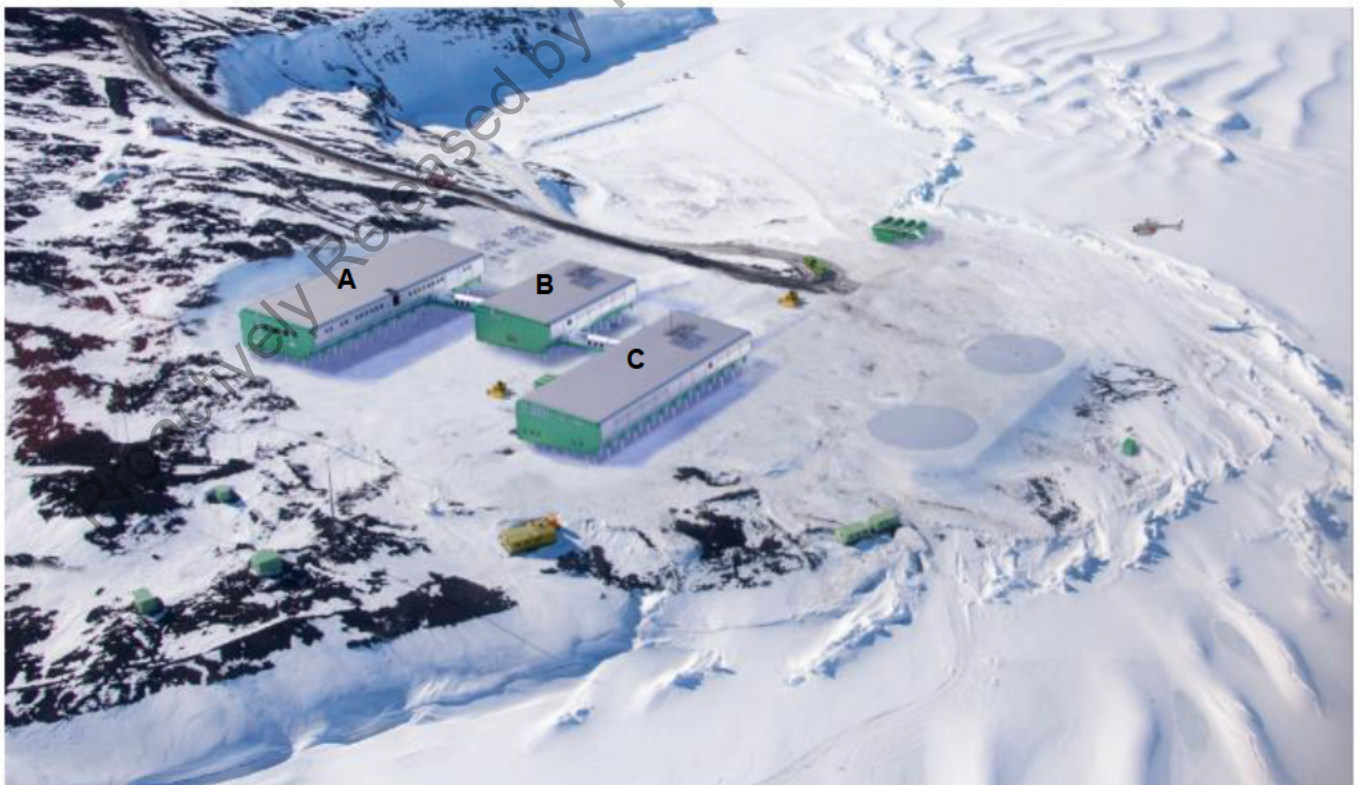


Figure 3: The preferred option



- The top building is the main accommodation containing bedrooms, dining space, recreation areas and the main entrance. The middle building includes science staging areas, laboratories, offices and administration functions. The lower building contains engineering workshops and warehousing. The buildings are connected with link bridges. Plant is distributed through the buildings in an arrangement which maximises resilience.
- A strong emphasis has been placed on creating a sense of cultural identity in the base by integrating the history of Scott Base, the heroic era of exploration and māoritanga into the design and a focus on connecting people to the natural environment.
- Antarctica New Zealand worked with Matapopore to develop a cultural design framework to guide the integration of Māori concepts and narratives into the heart of Scott Base in a cohesive and meaningful way. The framework is centred on the whakatauki “Ka titiro whakamuri, Kia anga whakamua - We look to our past, to face our future.” This whakatauki relates to the purpose of Scott Base and the importance of the work that is undertaken there to extend the understanding of the natural environment and the effects of climate change.
- Interior design concepts include:
  - Single, twin and quad sleeping arrangements to alleviate the overcrowding issues in the existing base.
  - Open plan working spaces to encourage collaboration.
  - Multi-purpose wellbeing areas.
- The buildings are steel framed and wrapped in a thermally efficient building shell. Each has the same cross-section. Zones have been created to facilitate service distribution and to ease maintenance. The buildings have mono-pitch roofs and a chamfered leading edge to reduce wind drag.
- The buildings are elevated on legs at least one metre above the ground so that the wind accelerates underneath preventing snow from accumulating under the buildings or in the immediate vicinity.
- The base will be designed and constructed to a five-star Green Star performance rating.
- There will be a focus on what is required to support science to avoid unnecessary construction or logistics planning.
- The design has evolved to reflect the interdependencies with the logistics and construction methodology in the following ways:
  - It has been developed with a high degree of repetition to allow for efficient construction and maintenance.
  - It has been designed to enable transportation on a heavy lift ship to Pram Point and then placed in situ through self-propelled modular transporters along the haul road to the construction site.

The following business case outlines Antarctica New Zealand's readiness to proceed with the redevelopment.

### 3 Strategic Case: Reviewing the Case for Change

#### Strategic Context Summary

1. s6(a)
2. New Zealand's deteriorating infrastructure in Antarctica is limiting our ability to provide safe and effective logistics and support to conduct high-priority science relevant to New Zealand's policy, interests and prosperity.

The Strategic Case comprises the following sections:

1. Reconfirming the case for change: This section reconfirms the case for change for the redevelopment of Scott Base as defined in the DBC, including the need for change, investment objectives, business requirements, high-level benefits and risk, dependencies and constraints.
2. Risks, dependencies and constraints: This section outlines the strategic risks, constraints and dependencies for Antarctica New Zealand and the redevelopment of Scott Base.

#### 3.1 Reconfirming the Case for Change

This Strategic Case reconfirms the case for change for the redevelopment of Scott Base as defined in the DBC, including the need for change, investment objectives, business requirements, high-level benefits and risks, dependencies and constraints.

##### 3.1.1 Reconfirming the Investment Objectives

Antarctica New Zealand has reassessed the case for change as set out in the DBC, and together with feedback from regular engagement with stakeholders, confirms that the case for change is further strengthened due to continued decline in the condition of Scott Base given the long lead time to replace it.

As outlined in the DBC, the objectives of investing in the redevelopment of Scott Base will enable New Zealand to maintain a credible presence in Antarctica and address the deteriorating infrastructure of Scott Base.

1. Provide an environment that keeps people safe and healthy
2. Maintain a continuous presence in the Ross Dependency
3. Enable logistics to support high-quality science
4. Protect the Antarctic environment

s6(a)

##### 3.1.2 Reconfirming the Benefits and Investment Logic

Figure 4 outlines the benefits identified in the DBC and how these link to the two key problem statements and the objectives for investing in the redevelopment of Scott Base.



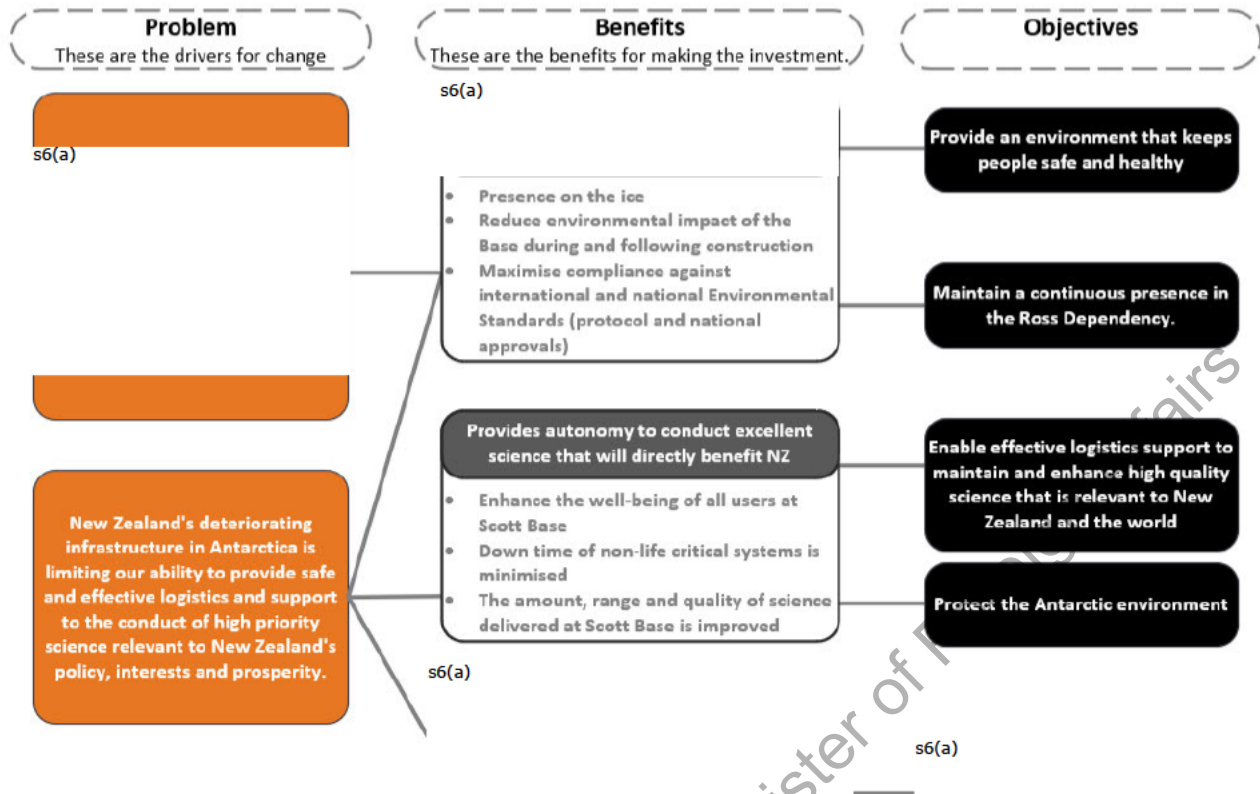


Figure 4: Investment logic map

The proposed benefits from investing in the redevelopment of Scott Base are still valid, and the project should proceed to implementation. The benefits are further defined in the Economic Case.

### 3.2 Risks, Constraints and Dependencies

The following strategic risks, constraints and dependencies have been identified for the Scott Base Redevelopment.

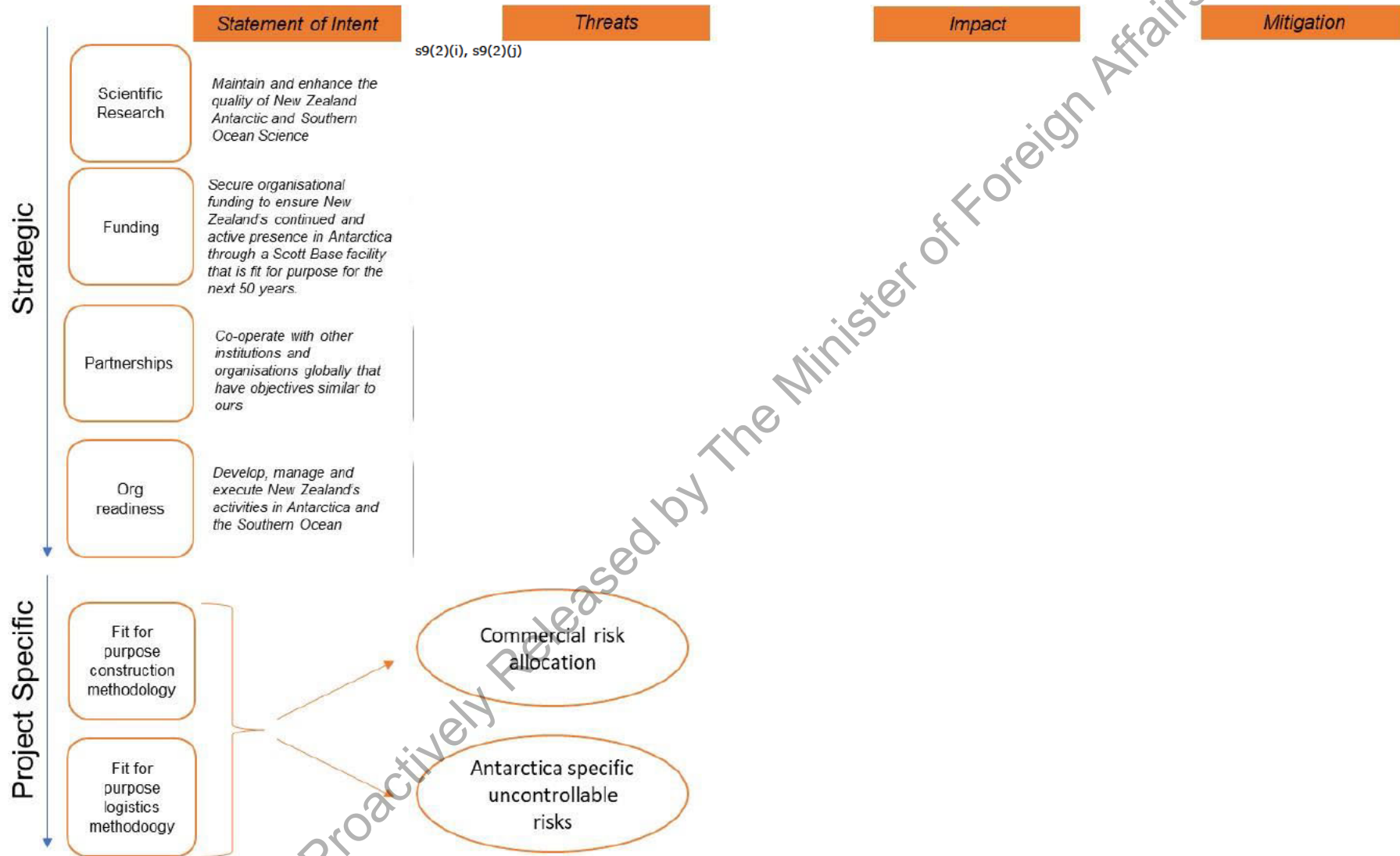


Figure 5: Scott Base Redevelopment Strategic risks, constraints and dependencies



## 4 Economic Case: Reviewing the Preferred Option

### Economic Case Summary

1. Design of the 2B option has progressed, a value engineering exercise has been undertaken and design has been aligned with the logistics and construction methodology.
2. Logistics and construction methodologies have been developed and agreed. This involves constructing the proposed base in New Zealand and then shipping the building in large modules on a heavy lift ship to Pram Point. This methodology is split in to four key phases as set Figure 6.
3. Project progress has included the identification of a requirement for a haul road, temporary base and temporary wharf at Pram Point. Planning and design for these is well advanced.
4. As requested by Cabinet, a preferred approach for the replacement of the wind farm has been determined.
5. A scaling option has been analysed to determine an approach that minimises disruption to long-term science whilst reducing project duration.

The Economic Case comprises the following sections:

1. Reconfirming the preferred option: This section reconfirms that the preferred design option for the Scott Base Redevelopment put forward in the DBC remains, and outlines the value engineering exercise that has been undertaken.
2. The project delivery methodology: This section outlines the logistics and construction methodology for the redevelopment of Scott Base that has evolved subsequent to the DBC.
3. Scaling option one: Reducing the duration of the redevelopment of Scott Base and understanding the impacts on continuing to support science (as requested by Cabinet on the approval of the DBC).
4. Scaling option two: An options analysis for the wind farm replacement: This section addresses Cabinet's request to provide options and a recommendation for additional funding to renew the wind farm, which comes to the end of its operational and design life in 2030.
5. Scott Base Redevelopment benefits: This section outlines the benefits of the redevelopment of Scott Base, as outlined in the DBC.
6. Overall cost summary: This section outlines the overall capex and whole-of-life cost estimates for the project.
7. Uncontrollable risks, project risks and quantitative risk analysis (QRA).
8. The recommendation.

### 4.1 Reconfirming the Preferred Scott Base Redevelopment Option

#### 4.1.1 Reconfirming Key Design Assumptions

The DBC examined a number of investment options for addressing the issues facing Scott Base, including revisiting a do-nothing option. A broad range of stakeholders were involved in the assessment of options.

A preferred option (2B - Redevelopment) was identified by Antarctica New Zealand and agreed in principle by Cabinet (ERS-19-MIN-0011) to deliver a safe, fit-for-purpose facility to ensure that New Zealand maintains a continuous presence in Antarctica.

The various options considered in the DBC remain valid and all further information and project progress confirms 2B is still the preferred option for the redevelopment of Scott Base plus wind farm replacement option 3a (as above). Together, this forms the scope for the redevelopment of Scott Base.

#### 4.1.2 Value Engineering

The ECI process included a value engineering exercise. This was undertaken to ensure the redevelopment of Scott Base resulted in a fit-for-purpose facility that was designed to, and not beyond, the business needs identified in the DBC, whilst still meeting user requirements.

To drive efficiency, prioritisation through the value engineering process has enabled Antarctica New Zealand to balance user requirements with affordability. This was achieved through the following:

- Reduction in size – analysis of amenity value and science functionality identified that gross floor area could be reduced by creating more multi-use spaces than previously identified. It also identified that single bedrooms for short-term visitors were not necessary, and so the mix between single, double and four-person bedrooms was revised. The process also identified that the same operational functionality could be maintained with slightly smaller storage and workshop areas. The process confirmed the continuing use of the existing marine laboratory and the ongoing use of McMurdo Station for helicopter operations.
- A functional base – the culture of Scott Base is humble and egalitarian. Whilst the redevelopment of Scott Base has been designed to reflect New Zealand's culture, environment and people, there were some design changes made to focus on more functional design features and finishes than in the previous plan to be more in keeping with the desired humble and egalitarian culture of the base.

Apart from the functionality of the helicopter hanger and marine lab (which can still be developed at a later stage through containerisation and construction at Scott Base), the design revisions through value engineering have resulted in a facility that meets all the business needs as identified in the DBC.

#### 4.2 Project Delivery Methodology

Main contractor Leighs Construction, proposed an alternative methodology to the on-site Scott Base construction and containerised transport approach included in the DBC. This new high-level approach is based on the following:

- 1a. New Zealand – build the proposed base at a New Zealand port
- 1b. Antarctica – groundworks, decommissioning of existing Scott Base and construction of the temporary base
2. Logistics – ship building modules from a New Zealand port to Pram Point
3. Antarctica – assembly and commissioning of the proposed base.



Figure 6: Four key methodology phases

This alternative logistics and construction methodology will reduce the project duration by four years. Completion of building construction is brought forward from 2029 to 2026 and overall project completion (including schedule contingency) from 2032 to 2028.

The proposed methodology is to build and commission the entire base in New Zealand. Following a public viewing the building would then be separated into modules and shipped to Pram Point using a specialist polar rated vessel. This will require decommissioning the existing base and returning it to New Zealand. Antarctica New Zealand's experience in construction in Antarctica has shown that building as much as possible away from Antarctica mitigates significant risk.

Although overall this is a new methodology for Antarctica New Zealand, most components of the methodology are familiar to Leighs Construction and their supply chain or proven in other areas of the world including the Arctic region. For example:





- It is Leighs Construction's core business to construct buildings in New Zealand.
- The modular approach to construction, as opposed to traditional stick build, has successfully been used by other Antarctic nations such as the British Antarctic Survey's Halley VI base.
- The use of a heavy lift ship to transport the modular buildings to Scott Base is new for Antarctica New Zealand; however, these vessels usually operate in Arctic environments and are capable of, and commonly, carry significantly larger loads.
- Temporary bases are a common component of construction in Antarctica and have recently been successfully used by the Brazilians at their new Comandante Ferraz base and the new Korean station Jang Bogo. The use of a temporary base will not only minimise disruption and risk, but it will also enable Antarctica New Zealand to continue to support science throughout the redevelopment.
- Antarctica New Zealand and Leighs Construction are experienced in working together in construction in Antarctica.

#### 4.2.1 Project Delivery Approach Benefits

- Reduction in project duration and escalation costs.
- Minimises construction time at Scott Base, reducing health and safety risk and wellbeing impacts and increasing productivity.
- Significant reduction in construction time due to construction being in New Zealand and the ability to operate in normal working hours, year-round – this makes the construction similar to many other New Zealand construction projects.
- The buildings can be rigorously tested in New Zealand before being transported to Pram Point, where it would be more difficult to resolve construction issues.
- Construction in New Zealand provides an opportunity for training users of Scott Base in how the base will operate, be maintained and the ways of working before being transported to Pram Point. It also creates public interest and engagement opportunities for the Scott Base Redevelopment in New Zealand.
- Minimises the risk of components or materials being lost or forgotten through the containerisation process and reduces reliance on and congestion around McMurdo Sound and other existing activities on Ross Island.
- Reduction in carbon emissions resulting from fewer return flights to Antarctica being required.

#### 4.3 Scaling Option One: Project Duration

The DBC was approved on the condition Antarctica New Zealand assesses scaling options to understand how the project duration could be reduced. This also required Antarctica New Zealand to understand the impact a reduced duration would have on the ability to continue to support science.

Leighs Construction's proposed logistics and construction approach has already reduced the project duration by four years from the delivery dates proposed in the DBC.

By way of background, an exercise was undertaken in September and October 2020 with Leighs Construction to understand the opportunities and consequences of minimising the project duration.

Two key options were identified as a result of this exercise:

1. The project duration could be reduced by bringing forward the shipment of plant, equipment and the temporary base from the 2022/2023 season to the 2021/2022 season.
2. Compressing the earthworks/demolition by one season by working double shifts over the 2024/2025 season. This would result in Scott Base being shipped a year early and commissioned in December 2026 instead of December 2027.

Option 1 was dismissed by the Senior Leadership Team due to the unlikely achievability of this option. This is because of tight approval timeframes, procurement lead-in times, potential impacts of COVID-19 and dependency on ship availability.

Option 2 was further assessed to understand the viability of this approach. The outcomes of this assessment included:





- The reduction in project duration would result in project savings of \$7m.
- The double shifting would require more construction personnel on-site.
- The temporary base will require a capacity of 160 beds to provide a continued level of support science activity.
- The incremental capital cost to provide a continued level of support to science is \$4m.

Following this analysis, the shorter duration and a 160-bed temporary base has been adopted as the project schedule. The remainder of this ImBC is based on this schedule. The schedule is outlined in Figure 7.

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#### 4.3.1 Project Sequencing

The timeline outlines the sequencing of the project for the preferred option to complete the commissioning of the redeveloped Scott Base in December 2026 with project closeout in 2028.

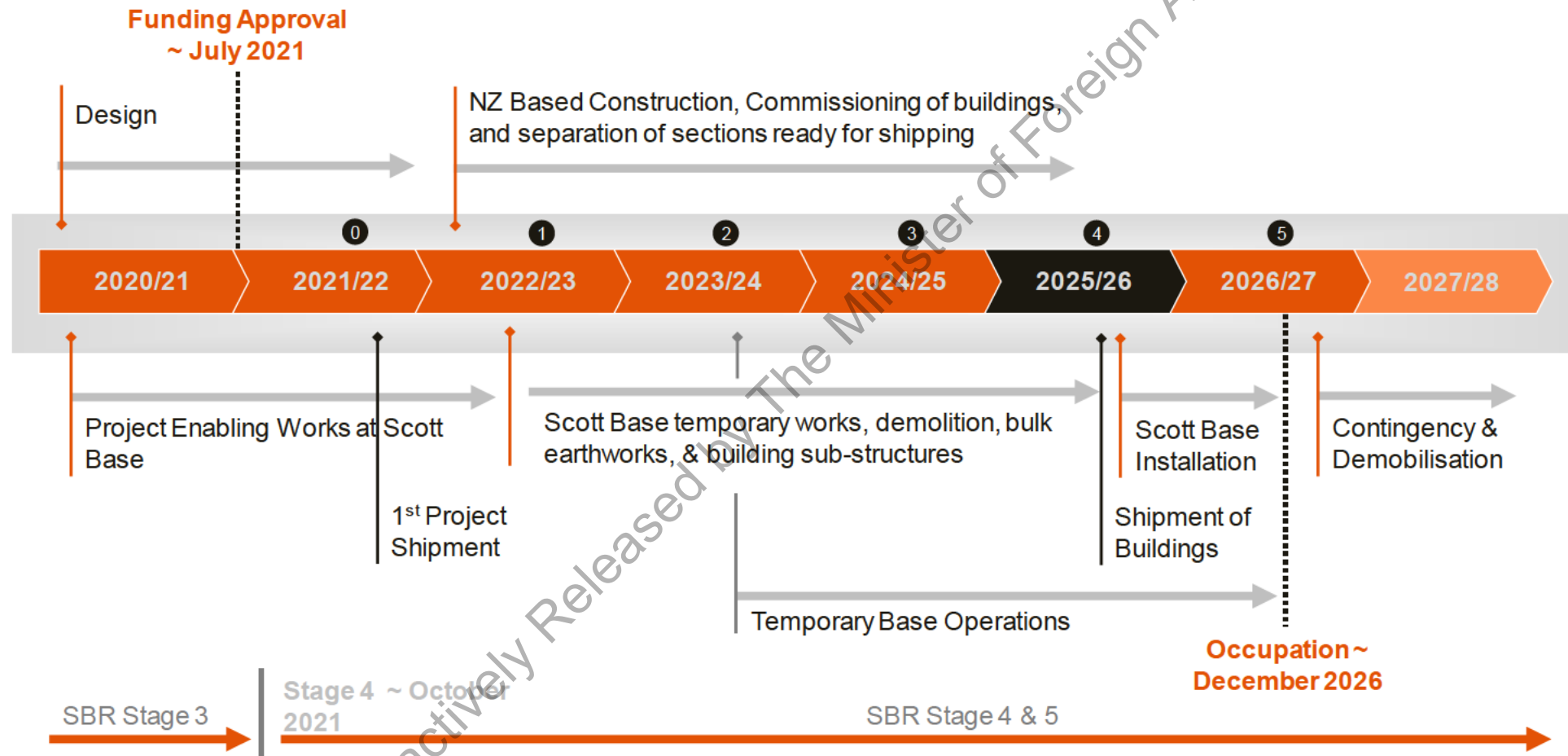


Figure 7: Project component sequencing



## 4.4 Scaling Option Two: Ross Island Wind Energy System Replacement (the wind farm)

### 4.4.1 Introduction

Commissioned in 2010, the three existing Enercon E33 (330kW) wind turbines supply renewable energy to Scott Base and the neighbouring United States McMurdo Station. The Ross Island Wind Energy System (the wind farm) links the electrical grids of both bases and is dynamically operated as one Ross Island micro-grid. This reduces the operational costs and carbon footprint of the Antarctic operations on Ross Island as a whole, as well as the environmental risks associated with transporting diesel fuel (AN8) to, and within, Antarctica.

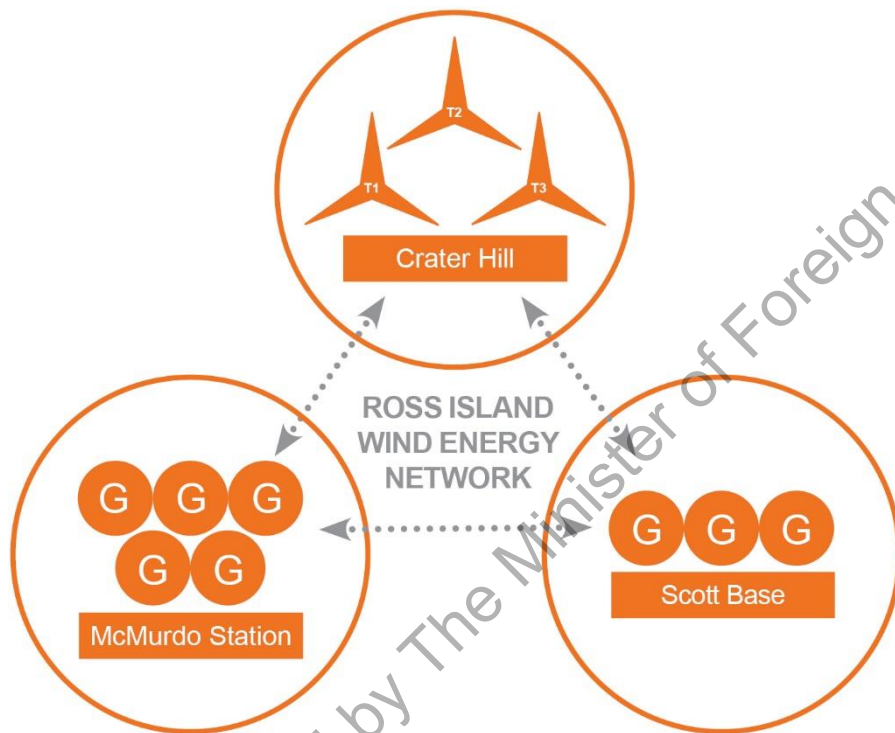


Figure 8: Existing wind farm system (G refers to the number of diesel generators)

The wind turbines that power the wind farm will come to the end of their operational and design life in 2030 and will need to be replaced or decommissioned. Other component parts of the wind farm, balance of plant, need replacement now. Balance of plant refers to all the supporting components and auxiliary systems needed to deliver energy, excluding the wind turbines themselves. Within the agreement to proceed with the preferred Scott Base Redevelopment option 2B, Cabinet (ERS-19-MIN-0011) requested an option be provided to replace the wind farm as part of the overall Scott Base Redevelopment Project.

In the drive for sustainability and efficiency, Antarctica New Zealand has assessed relevant forms of renewable energy to decrease the overall reliance on fossil fuels to power the new Scott Base. Antarctica New Zealand's objective is to provide between 80% and 100% per annum through renewable energy solutions to Scott Base while maintaining the existing level of energy commitment to McMurdo Station through the Joint Logistics Pool. This aligns with the Government's policy to achieve 100% renewable energy supply in New Zealand by 2030.

The wind farm is a key strategic asset for New Zealand because it provides the following benefits:

- It demonstrates New Zealand's commitment to responsible stewardship of Antarctica by providing leadership in managing the Antarctic environment and minimising environmental impacts.
- It contributes value in Antarctica in the form of renewable energy to both Scott Base and the nearby United States McMurdo Station, which helps reduce both stations' fossil fuel consumption and carbon emissions.

s6(a)



- It supports the efficient operation of New Zealand's Scott Base <sup>s6(a)</sup>

The above benefits are wholly aligned with the redevelopment investment objectives, highlighting the importance of a safe and secure, low carbon energy supply in the remote and challenging physical environment of Antarctica.

<sup>s6(a)</sup>

#### 4.4.2 Why Now?

- The redeveloped Scott Base has been designed with sustainability as a major consideration and to be operated primarily on renewable energy.
- Aligning the replacement with the Scott Base Redevelopment provides opportunities to leverage logistics and labour to achieve efficiencies. It will also minimise disruption to Scott Base that would likely occur if replacement were to happen post the redevelopment.
- Replacement in alignment with the Scott Base Redevelopment allows for the new base to operate predominantly on renewable energy from the time of commissioning, as opposed to waiting until 2030. The years from commissioning of Scott Base through 2030 will see a significant increase in fuel consumption and carbon footprint if the wind farm is not replaced.
- Some key components of the wind farm balance of plant are failing now. This is evidenced by the \$1.4m of the balance of plant that needed to be written down in Antarctica New Zealand's 2018/19 financial statements. It is proposed that some aspects of the balance of plant are replaced immediately to keep the existing wind farm operating. The replaced balance of plant will continue to support the existing turbines and will be incorporated into the new wind farm.

#### 4.4.3 Nature and Scope

In March 2020, Antarctica New Zealand commissioned the Hydro-Electric Corporation (trading as Entura) to conduct a feasibility and options study on replacing and upgrading Antarctica New Zealand's wind farm. The scope of the study included three scenarios:

1. Decommissioning the existing system and operating the redeveloped Scott Base on diesel only.
2. Meeting 80% of Scott Base's energy demand with renewable energy <sup>s6(a)</sup>
3. Meeting as close to 100% of Scott Base's energy demand with renewable energy <sup>s6(a)</sup>

The range between 80% and 100% was derived from considerations of sustainability together with providing value-for-money scaling options.

Entura has provided the following contextual information:

- The site characteristics limit the number of wind turbine options available. These characteristics include high wind speed, denser than normal air due to cold temperature, cold climate impacting materials suitability and challenging logistics due to the remote location. The wind turbines are required to be certified to international electrotechnical commission class I (high) wind conditions.
- Wind turbines, in combination with battery energy storage systems, are the only feasible option for providing a substantial quantity of renewable energy to achieve the target of 80% or 100% renewable energy. Large-scale solar photovoltaic installations were considered; however, the size and scale required to produce the same output as wind turbines were estimated to be 20,000m<sup>2</sup> with considerable associated maintenance costs. This was not deemed environmentally acceptable and was discounted as the main source of generation.
- What was considered a large wind turbine ten years ago is currently at the very small end of what is now available from major suppliers Vestas, Siemens Gamesa, GE, Nordex Acciona and Goldwind.
- As the wind turbines increase in size, so does the complexity of logistics and construction in Antarctica.



#### 4.4.4 Options to Address this Issue

s9(2)(i),  
s9(2)(j)

considered all wind turbine suppliers throughout the feasibility and option study, and after expert review, it has advised that s9(2)(i), s9(2)(j) is the only supplier that meets Antarctica New Zealand's needs for the reasons outlined below:

s9(2)(i), s9(2)(j)

The four options identified and analysed by s9(2)(i), s9(2)(j) are as follows:

- Option 1: Decommissioning the existing wind farm, and running the redeveloped Scott Base on diesel only – the do-nothing option.
- Option 2: Three s9(2)(i), s9(2)(j) turbines with 4 MWhr battery energy storage system (BESS) – 87% renewable energy penetration.
- Option 3a: Four s9(2)(i), s9(2)(j) turbines with 10 MWhr BESS – 97% renewable energy penetration.
- Option 3b: Two s9(2)(i), s9(2)(j) with 10 MWhr BESS – 98-100% renewable energy.

Note, the model numbers above refer to the diameter of the rotor blade.

s9(2)(i), s9(2)(j)

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#### 4.4.5 Assessing the Options

##### 4.4.5.1 Qualitative assessment

Qualitative assessment of each option against the critical success factors is summarised in Table 2.

s9(2)(i)

##### 4.4.8.1 Option 1

Option 1 was dismissed as it would not provide any renewable energy to Scott Base s6(a)

##### 4.4.8.2 Option 2

Option 2 is considered feasible. This option would still meet all of the requirements of the scope of work; however, it has smaller impacts to long-term base operating costs, overall Scott Base renewable energy penetration and Joint Logistics Pool contributions. However, it doesn't meet the goal of 100% renewable energy.

##### 4.4.8.3 Option 3a

Option 3a is the preferred option. This option combines a high level of renewable energy penetration with a lower risk profile. The preferred option also has the following advantages:

- The installation of a fourth turbine provides significant advantages from a construction staging perspective – one new turbine can be commissioned before the existing three are replaced, generating renewable energy before the complete wind farm replacement comes online.
- The s9(2)(i) turbines provides significantly reduced construction and logistical risks.
- The target level of renewable energy penetration aligns with the wider government policy for a 100% renewable New Zealand by 2030.



- Additional BESS capacity allows for smoothing of loads and transitions to generators (if required) when there are low wind periods.

#### 4.4.8.4 Option 3b

Option 3b is considered feasible. <sup>s9(2)(i), s9(2)(j)</sup> turbines increase the renewable energy penetration percentage; <sup>s9(2)(i), s9(2)(j)</sup>

They are as follows:

<sup>s9(2)(i), s9(2)(j)</sup>

#### 4.4.9 Option Cost Comparison

##### 4.4.9.1 Assumptions

- Depreciation, capital charges, interest and other financing costs are excluded from the analysis.
- Diesel fuel costs – assumed as \$1.75 per litre, equal to the current landed fuel cost in Antarctica.
- All other assumptions are consistent with those set out in the Financial Case.

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Following page withheld under S9(2)(i) and S9(2)(j)

#### 4.4.10 Identifying the Preferred Wind Farm Option

The preferred wind farm replacement is option s9(2)(i), s9(2)(j)

This option aligns with the strategic benefits outlined in the DBC and achieves between 97% and 100% renewable energy penetration per annum for the redeveloped base.

s6(a)

In identifying the preferred option, it is recommended that the balance of plant is replaced immediately to ensure that Scott Base and McMurdo Station continue to benefit from renewable energy generated by the current wind farm. This balance of plant will continue to support the new turbines.

#### 4.4.11 Recommended Approach

Reducing the duration of the project reduces project risk while still enabling continued science activity at Scott Base.

Therefore, the recommended approach for this ImBC is:

1. Scott Base Redevelopment design 2B
2. Planned approach for delivery – continue to support science throughout the project
3. Wind farm option 3a – s9(2)(i), s9(2)(j) (97% renewable energy).

The following sections set out the benefits, costs and qualitative risk assessment (QRA) for this option.

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## 4.5 Scott Base Redevelopment Benefits

Table 4 outlines the benefits of investment in the redevelopment of Scott Base. The high-level benefits were identified during the DBC, but this table outlines

Investment Objectives	Benefit	Performance measure	Metric	SBR Contribution to Metric	SPE	Metric Owner	Benefit Recipient
2,4,5	s6(a)	s6(a)	1.1.1. Maintained credible presence at Scott Base		Y	CEO	New Zealand
			1.1.2. Reduction in downtime of life critical system and infrastructure			GM Engineering	
		1.2. Reduce environmental impact of Scott Base and maximise compliance against international and national environmental standards (protocol and national approvals)	1.2.1. Increase the quantity of waste treated on site to reduce the quantity of waste returned to New Zealand			GM PES	
			1.2.2. Reduction in the amount of carbon emissions			GM PES	
			1.2.3. Reduction in the reliance on fossil fuels			GM PES	
			1.2.4. Reduced risk of intercontinental and intracontinental transfer of non-native species			GM PES	
1,3	2. Provides autonomy to conduct excellent science that will directly benefit New Zealand	2.1. Enhance the wellbeing of all users at Scott Base	2.1.1. Reduced risk of health and safety (harm) to people		Y	GM PES	International community and environment
			2.1.2. Improved wellbeing for visitors to Scott Base		Y	GM PES	
		2.2. Improvement in availability of non-life critical systems and infrastructure	2.2.1. Reduction in downtime of non-life critical system and infrastructure			GM Engineering	
			2.3.1. Increase in the number of papers published by researchers supported by Antarctica New Zealand		Y	CSA	
		2.3. The amount, range and quality of science delivered at Scott Base is improved	2.3.2. Increase in the number of person-days supported in Antarctica for science activities		Y	CSA	
2,5	3. Strengthen international collaboration that contributes to New Zealand's reputation and influence.	3.1. Enhanced international science collaboration	3.1.1. Enhanced international science collaboration from Scott Base		Y	CSA	New Zealand
		3.2. Enhanced international operational collaboration	3.2.1. Improved efficiency of Antarctica New Zealand's contribution to the Joint Logistics Pool			GM AO	
			3.2.2. Increase in international bilateral interactions and activities under individual co-operation agreements		Y	GM AO	

the metrics that have been established for the project. The process for measuring and managing benefits is contained in the Management Case.

Table 4: Benefits realisation framework

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#### 4.6 Overall Cost Summary

Table 5 sets out the estimated risk adjusted (P85) cost for the SBR preferred option:  
s9(2)(i)

Table 5: Grand total (escalated costs)

Table 6 sets out the DBC risk adjusted (P50) cost of the preferred option (Option 2B), adjusted for scope changes between the DBC and ImBC:  
s9(2)(i)

Detailed Business Case (consistent basis)	\$291.4	100%
Difference in cost between Implementation and Detailed Business Cases (consistent basis)	\$52.9	

Table 6: DBC and ImBC reconciliation



Changes between the DBC and ImBC cost estimates represent the progression of estimates that are made over the evolution of the design process from concept design (DBC) through preliminary and developed design (ImBC).

There are multiple reasons for the difference in composition of cost estimates due to the changes in the logistics and construction methodology. However, this methodology costs approximately <sup>s9(2)(i), s9(2)(j)</sup> less than the methodology assumed in the DBC, which is not reflected in the difference noted above. The proposed methodology also shortens the build programme by four years.

Differences in the composition of the overall project cost structure are:

- Building construction and commissioning costs are <sup>s9(2)(i), s9(2)(j)</sup> higher in the ImBC based on bottom-up pricing. These costs also include earthworks in Antarctica based on greater accuracy of volumes from site survey data.
- Temporary base costs of \$17m have been included in the ImBC for the duration of the construction period. It was assumed with the DBC the current base could be fully utilised for scientific operations and construction workers.

s9(2)(j), s9(2)(i)

- Professional fees and insurance are <sup>s9(2)(i), s9(2)(j)</sup> in the ImBC based on proposals rather than <sup>s9(2)(i), s9(2)(j)</sup> estimates.
- Contingency (P50) has increased by <sup>s9(2)(i), s9(2)(j)</sup> since the DBC estimate based on the latest QRA calculation (see below).
- Cost escalation is <sup>s9(2)(i), s9(2)(j)</sup> in the ImBC reflecting a shorter build duration, timing of cash flows and a lower inflation forecast (based on latest Treasury estimates).

The current ImBC cost, based on developed design and with contractor and sub-contractor quotations included, provides a significantly more certain cost estimate for the project than previously. However, based on previous experience the level of project contingency has not reduced to reflect this, but rather increased to a P85 confidence level of successfully delivering the project within this cost envelope.

s9(2)(i), s9(2)(j)



## 5 Commercial Case: Contracting for the project

### Commercial Case Summary

1. Five longlisted respondents to a request for Registrations of Interest (ROI) attended a site visit to Scott Base to ensure they fully understood the Antarctic environment and that Antarctica New Zealand received comprehensively informed reports to shortlist between one and three respondents for the ECI phase.
2. A rigorous procurement process, overseen by MBIE and compliant with its procurement rules, was undertaken and Leighs Construction Limited was selected as the only respondent to continue to participate in the ECI phase with the intention to become the main contractor. Audit New Zealand provided independent probity oversight of the process.

s9(2)(j), s9(2)(i)

The Commercial Case comprises the following sections:

1. Outline of the DBC Commercial Case
2. Progress since the DBC Commercial Case
3. Scott Base Redevelopment Procurement Plan
4. Main contractor procurement process
5. Risk Allocation Methodology
6. Outline of the NZS3910:2013 contract (including services required, key contract terms and payment mechanisms).

### 5.1 Outline of the DBC Commercial Case

The DBC Commercial Case outlined the following:

- Procurement for the main contractor was proposed to be a two-phase approach.
  - Phase 1 was initiated by an ROI to longlist respondents, followed by a visit to Scott Base and submission of an ECI report (to a shortlist of between one and three respondents).
  - Phase 2 was an ECI engagement followed by a request for proposal (RFP) to finalise pricing with the preferred respondent.
- The proposed approach for contracting for the redevelopment was a traditional design then build approach.
- Confirmation the NZS3910:2013 contract form will be used for contracting with the main contractor.

### 5.2 Progress since the DBC Commercial Case

The key areas of progress and changes since the DBC are as follows:

- The selection of Leighs Construction as Antarctica New Zealand's ECI and main contractor.

s9(2)(i), s9(2)(j)



- Further development of required services to reflect the main contractor's proposed construction methodology.

s9(2)(i)

### 5.3 Scott Base Redevelopment Procurement Plan

The SBR – Main Contractor Procurement Plan identifies a competitive process to be undertaken, in alignment with the Government Procurement Rules, to determine on optimal procurement outcome and select the main contractor.

To enable the market to determine the level of risk in the project, build knowledge around working in Antarctic conditions and provide feedback to the proposed design, a two-phase process was run. The timeline is summarised in Table 8.

#### 5.3.1 Procurement Timeline

Activity	Date
Registration of interest/longlisting	September - December 2019
Scott Base visit for longlisted respondents	February 2020
ECI phase 1	February - April 2020
ECI shortlisting	April 2020
ECI contract negotiation	July - September 2020
ECI phase 2	May - October 2020
ECI contractor's initial pricing	August - October 2020
Budget bid submitted	December 2020
Preferred respondent's final pricing	March 2022
Construction contract awarded	June 2022

*Table 8: Scott Base Replacement Main contractor procurement timeline*

The benefits of this approach are included in the SBR – Main Contractor Procurement Plan, which provides more detail on the procurement process and evaluation methodology used.

#### 5.3.2 Other Procurement Plan Features

s9(2)(i), s9(2)(j)

- The Government Procurement Rules Broader Outcomes were factored into the procurement approach and evaluation process.
- Due to the level of investment, external probity has been provided by Audit New Zealand.

s9(2)(i), s9(2)(j)

- The Construction Sector Accord is a joint commitment from Government and industry to work together to create a high-performing construction sector for a better New Zealand. Antarctica New Zealand and Leighs Construction are committed to the accord by abiding to the following principles during the build of Scott Base in New Zealand:
  - Build trusting relationships
  - Be bold





- Value our people
- Act with collective responsibility.

## 5.4 Main Contractor Procurement Process

### 5.4.1 Registration of Interest

The first step in the procurement process was an ROI. The ROI was focused on reducing the wider market to approximately five respondents. The ROI process was completed between September and December 2019.

The initial evaluation criteria included in the ROI was a pass or fail criterion. It was designed to inform the market of the level of commitment, skill, and resourcing required. The preconditions enabled the market to determine its ability to meet the basic requirements of the construction works and enabled Antarctica New Zealand to exclude any respondents that did not meet the basic requirements.

Respondents were required to pass each precondition to progress through to the evaluation of the weighted attributes:

1. Must be an established construction company that has traded for more than five years.
2. Must have a turnover higher than s9(2)(i) per annum.

This was followed by the weighted evaluation criterion:

Criteria	Weighting
Capability of the respondent to deliver	25%
Relevant experience	20%
Workforce	20%
Collaboration	20%
ECI experience	15%

Table 9: Main contractor ROI evaluation criteria

The evaluation of responses from the ROI resulted in five respondents being longlisted.

### 5.4.2 ECI Report (including Scott Base site visit)

Following the ROI process and the shortlisting of the five respondents, a comprehensive supplier briefing and site visit to Scott Base took place for each of the longlisted respondents. The intention of this process was to ensure a positive and engaged market response.

The site visit to Scott Base took place in February 2020. Two representatives from each respondent visited Scott Base for a week. The site visit provided the respondents with an opportunity to understand the challenges and commercial risks, including the unique logistical requirements involved in safely living, building and working in Antarctica.

As well as being shown the construction area and the existing Scott Base, the contractors visited a number of important long-term research sites. They also underwent Antarctic Field Training and experienced what it is like to be outside in the freezing environment for a continual period of time and how to keep safe outdoors.

The visit was a key component of Antarctica New Zealand identifying the right partner for the project and ensuring the respondents were able to propose the best logistical, construction and commercial responses for the ECI reports which were submitted one-month post-visit.

On the evaluation of the ECI reports, Antarctica New Zealand intended to shortlist between one and three respondents to participate in the ECI process and then submit pricing through a response to a final request for proposal (RFP). The ECI reports enabled Antarctica New Zealand to assess the respondents against the following:

- Capability to comply with the Antarctica New Zealand Environmental Management System and environmentally sustainable construction
- Quality management processes
- Proposed timeframes for construction stages and potential impacts on the existing base



- Operations and winter month working options
- Behaviour and collaboration during the ROI process, and the proposed team's capability and culture
- Actual works methodologies including pre-fabrication
- Proposed approach to containerise materials to and from Scott Base, including quality assurance and manifesting
- Proposed process for disposing of recovered plant, equipment, waste and materials
- Compliance and ability to improve compliance with the CEE
- Price.

The weighted evaluation criteria for the ECI reports were as follows:

Criteria	Weighting
Proposed construction and deconstruction methodology	60%
Key design information required to support pricing (developed design and 30% detailed design)	20%
Risks and opportunities	20%
Schedule (indicative)	Not weighted
Cost (indicative)	Not weighted
Appendix	Not weighted

Table 10: Main contractor ECI report evaluation criteria

The SBR – Main Contractor Procurement Plan identified that between one and three respondents would be shortlisted. However, the panel recommendation was to shortlist only one respondent, Leighs Construction, as the preferred main contractor. s9(2)(i), s9(2)(j)

The panel made this recommendation based on the following factors:

s9(2)(i), s9(2)(j)

- Should the main contractor not fulfil the requirements of the RFP, respondents from the longlist can be re-engaged.
- Main contractor capability was assessed irrespective of methodology. This gave the panel confidence that they could perform the services regardless of the final methodology chosen.
- A sole respondent would enable the Design Team to consider the methodology in design as it progressed, and reflect any key changes.

s9(2)(j), s9(2)(i)

#### 5.4.3 Main Contractor Due Diligence

To provide confidence in the ability of the main contractor to undertake the project, a due diligence process was undertaken as part of the ECI report shortlisting process. The due diligence process comprised of two components:

- Financial due diligence provided by Deloitte
- Non-financial due diligence provided by the Procurement Lead at MBIE:
  - Health and safety certifications, prequalification and management system
  - Environment certification and management system
  - Employee turnover
  - Reference checks.





## 5.5 Risk Allocation Methodology

s9(2)(i), s9(2)(j)

### 5.6 Outline of NZS3910:2013 Construction Contract

The DBC confirmed a construction agreement using the NZS3910:2013 would be entered into between the main contractor and Antarctica New Zealand in 2022. This will follow a successful budget bid in Budget 2021, the approval of the ImBC and receipt of lump sum fixed pricing that is acceptable to Antarctica New Zealand.

Antarctica New Zealand and Leighs Construction have agreed to adopt the principles of a partnering concept which includes:

- The establishment of a relationship based on mutual trust.
- The shared intention to maximise each of their respective benefits.
- Openness, promptness, consistency and fairness in all dealings and communications; and non-adversarial dealings and constructive mutual steps both to avoid differences and to identify solutions.

#### 5.6.1 Key Contract Terms

s9(2)(i), s9(2)(j)

#### 5.6.2 General Comments

s9(2)(i), s9(2)(j)



s9(2)(i), s9(2)(j)

### 5.6.3 Contract Price

s9(2)(i), s9(2)(j)

### 5.6.4 Schedule / Timing

A key risk for the project is delays to the completion of the works in New Zealand and Antarctica that are required to be undertaken in the pre-shipping phase so that the works can be shipped to and be received in Antarctica. The following mechanisms endeavour to mitigate this risk.

s9(2)(i), s9(2)(j)

Proactively Released by The Minister of Foreign Affairs

Following two pages withheld under s9(2)(i), s9(2)(j)



## 6 Financial Case: Funding the project

### Financial Case Summary

1. It is requested that the Crown fund the redevelopment of Scott Base including the increased capital charge arising on the investment.
2. Depreciation on the redeveloped Scott Base is not funded by the Crown

The Financial Case comprises the following sections:

1. Progress since the DBC Financial Case
2. Financial costing model
3. Summary of total capital and operating costs
4. Funding sources
5. Contingencies and funding
6. Impacts on the financial statements.

### 6.1 Progress Since the DBC Financial Case

The main progress and changes to the DBC Financial Case are as follows:

1. Cost estimates have been prepared <sup>s9(2)(i), s9(2)(j)</sup> and are based on developed design. They include estimates provided by the main contractor, Leighs Construction. <sup>s9(2)(j), s9(2)(i)</sup>
2. Appropriate contingencies to a P85 level of confidence have been included in the forecasts using quantitative risk analysis.
3. Financial costing model assumptions have been confirmed with Treasury.
4. Cash flow forecasts have been further developed reflecting the change in logistics and construction methodology and the resulting reduction in project duration.
5. Future operating costs of the new assets have been estimated based on developed design.

### 6.2 Financial Costing Model

<sup>s9(2)(j), s9(2)(i)</sup>

#### 6.2.1 Timing

Antarctica New Zealand is using a period of 13 years post-construction to profile the financial implications of the redevelopment of Scott Base.

The redeveloped Scott Base will be commissioned in December 2026, followed by final demolition and earthworks in the first half of 2027. The remaining timeline covers the base's operational use until 2040.

The wind farm replacement has been modelled for the same period.

#### 6.2.2 Capital Expenditure

Antarctica New Zealand has four asset groups:

- Scott Base buildings and infrastructure
- Wind farm
- Other business assets (vehicles, remote huts, extreme weather clothing, computers)



- Intangibles (computer software).

Only the Scott Base buildings, infrastructure and wind farm assets are relevant to this ImBC.

The remaining two asset groups will be funded from Antarctica New Zealand's existing depreciation funding and cash reserves.

### 6.2.3 Key Assumptions

The following assumptions have been used to determine the costs of the project:

s9(2)(i)

Proactively Released by The Minister of Foreign Affairs



s9(2)(i), s9(2)(j)

### 6.3 Scott Base Redevelopment Capital and Operating Costs

The total investment for the redevelopment of Scott Base is approximately \$357m over 19 years (including cost escalation). This comprises a one-time investment of \$344 million plus post-implementation whole-of-life costs of \$13 million for the period, but excludes the impact of the capital charge.

Table 12 summarises the total investment required. Table 13 analyses it between capital and operating costs and Table 14 summarises it on an annual basis.

Appraisal Period (Years) <sup>4</sup>	19 years to 2040	
	Real Escalated \$m	Net Present Cost \$m
<b>Scott Base – Option 2b</b>		
<b>One-time costs:</b>		
Capital costs (including contingency)	271.7	s9(2)(i), s9(2)(j)
Operating costs	36.2	s9(2)(i), s9(2)(j)
<b>Total</b>	<b>307.9</b>	s9(2)(i), s9(2)(j)
<b>Changes to ongoing costs over the period:</b>		
Capital costs (first asset replacement cycle – 10 years)	1.3	s9(2)(i), s9(2)(j)
Operating costs	13.8	s9(2)(i), s9(2)(j)
<b>Total</b>	<b>15.1</b>	s9(2)(i), s9(2)(j)
<b>Total investment required:</b>	<b>323.0</b>	s9(2)(i), s9(2)(j)
<b>Wind farm replacement – Preferred Option</b>		
<b>One-time costs:</b>		
Capital costs (including contingency)	34.5	s9(2)(i), s9(2)(j)
Operating costs	1.9	s9(2)(i), s9(2)(j)
<b>Total</b>	<b>36.4</b>	s9(2)(i), s9(2)(j)
<b>Changes to ongoing costs over the period:</b>		
Capital costs (first asset replacement cycle – 15 years) <sup>5</sup>	2.1	s9(2)(i), s9(2)(j)

<sup>4</sup> Appraisal period is 13 years post construction completion to 2040.

<sup>5</sup> As noted in the financial assumptions, depreciation is not funded which means that future capital asset replacements will require funding. s9(2)(i)



Operating costs	(4.0)	s9(2)(i), s9(2)(j)
<b>Total</b>	<b>(1.9)</b>	s9(2)(i), s9(2)(j)
<b>Total investment required:</b>	<b>34.5</b>	s9(2)(i), s9(2)(j)
<b>Total investment</b>		
<b>Total one-time costs:</b>	<b>344.3</b>	s9(2)(i), s9(2)(j)
<b>TOTAL ongoing costs:</b>	<b>13.2</b>	s9(2)(i), s9(2)(j)
<b>Total investment required:</b>	<b>357.5</b>	s9(2)(i), s9(2)(j)

Appraisal Period (Years)	19 years	
	Real Escalated \$m	Net Present Value \$m
<b>Associated costs (Capital Charge)</b>		
<b>Ongoing costs:</b>		
<b>Incremental Change in Capital Charge</b>	<b>195.7</b>	s9(2)(i), s9(2)(j)

Table 12: Total investment required

Scott Base Redevelopment Cost Summary (\$ Millions)	Capital \$m	Operating \$m	Total \$m
<b>Investment One-time Costs (to June 2027)</b>	s9(2)(i), s9(2)(j)	s9(2)(i), s9(2)(j)	s9(2)(i), s9(2)(j)
Scott Base Redevelopment @ P85			
Windfarm replacement @ P85			
<b>Sub Total</b>	<b>306</b>	<b>38</b>	<b>344</b>
<b>Ongoing Costs (13 years from July 2027)</b>	s9(2)(i), s9(2)(j)	s9(2)(i), s9(2)(j)	s9(2)(i), s9(2)(j)
Scott Base			
Windfarm			
<b>Sub Total</b>	<b>3</b>	<b>10</b>	<b>13</b>
<b>Total Investment Required (excluding capital charge *)</b>	<b>309</b>	<b>48</b>	<b>357</b>
* Capital Charge is an average cost of \$10 million per annum until 2040			

Table 13: Total investment required analysed between capital and operating costs

Following page withheld under s9(2)(i)



## 6.4 Funding Sources

### 6.4.1 Funding Sources

Funding sources for this type of investment are extremely limited due to the following:

- Antarctica New Zealand's capacity to pay interest on borrowings (the capital charge noted above).
- The lack of revenue sources arising from the proposed investment
- There are no user-based charges for science supported by Antarctica New Zealand, other than a nominal per diem cost recovery
- The limited cost savings realised from the redevelopment.
- The significant size of the proposed investment relative to Antarctica New Zealand's existing income stream and asset base, approximately 17 times and 6 times respectively.
- The nature and remote location of the proposed investment being a Crown-owned asset subject to the rules of the Antarctic Treaty System.

The financial model assumes the request for funding from the Crown will be successful. Should any alternative funding streams be identified, they will offset the Crown's funding.

Without funding for depreciation, it must be emphasised that any future investment in Scott Base will require funding at that time. This is because a replacement reserve will not have been built up as depreciation on this investment proposal is unfunded.

### 6.4.2 Depreciation Funding

#### Current level of depreciation funding

For the year ending 30 June 2021 Antarctica New Zealand will have approximately \$3m per annum in depreciation funding, free cash reserves of \$5m (excluding creditors and tagged funds), non-Scott Base Redevelopment capital commitments and a \$3m intercontinental flight reserve. This is only sufficient to cover the routine replacement of other business assets not associated with the building and infrastructure at Scott Base, including vehicles, remote huts, extreme weather clothing, computer assets and software.

There are insufficient cash reserves built up from depreciation on the current Scott Base to meet the cost of the proposed redevelopment of Scott Base and the wind farm replacement. This section sets out why.

#### Depreciation on Scott Base

When Antarctica New Zealand was established on 1 July 1996 by the New Zealand Antarctic Institute Act 1996, a formal valuation of all New Zealand Crown assets at Scott Base was completed.

At this time, the Crown as represented by the Ministry of Foreign Affairs and Trade (MFAT) resolved to retain ownership of the Scott Base buildings and infrastructure to reduce the liability for Antarctica New Zealand upon its establishment. Antarctica New Zealand was not considered a substantial enough organisation to manage the size of the liability of the Scott Base buildings and infrastructure.

On 1 January 1999, ownership of these assets was transferred from MFAT to the Treasury and finally, in December 2003, to Antarctica New Zealand. At this time, the Scott Base buildings and infrastructure were valued at \$3.288m (\$4.438m less \$1.150m depreciation). Annual depreciation was \$153,000.

s9(2)(g)(i)

Over the 40-year life of the Scott Base assets, construction and associated logistics costs have increased significantly, further exacerbating the funding shortfall.

### Depreciation on the Wind Farm

The wind farm was constructed in 2009 by Meridian Energy Ltd. (Meridian). It was not funded by the Crown outright. Instead, funding was provided by lease finance from Meridian with a Crown baseline funding increase to Antarctica New Zealand of \$320,000 per annum covering the shortfall in lease interest charges. Antarctica New Zealand subsequently used its productivity and efficiency savings to repay the lease finance early.

Crown funding was not provided for depreciation to fund the replacement of the wind farm.

### Proposed Approach to Depreciation

Better Business Case guidance is to include funding for depreciation to ensure sufficient funding is available to replace an asset at the end of its useful life.

The redeveloped Scott Base and wind farm assets will be depreciated over their useful lives. It is assumed that the annual depreciation charge will not be funded by the Government.

The consequence of this decision is that over the expected life of the assets Antarctica New Zealand's annual operating results will report deficits equivalent to unfunded depreciation. The deficits will be applied to the Government's net equity investment in Antarctica New Zealand.

The reasons for assuming depreciation should not be funded are as follows:

- The unique nature and location of Scott Base, therefore it is considered appropriate for the Crown to make funding decisions on the next replacement facility based on context at that time (i.e., 40-50 years from now).
- If depreciation is funded, then Antarctica New Zealand's cash balances accumulate rapidly which are then further compounded by interest income earned. For example, after the redeveloped base has been operational for 10 years, interest income is approximately \$2m per annum with cash balances of approximately \$150m.
- If depreciation is funded, the operating surplus arising from the interest income will further increase the capital charge, for which Antarctica New Zealand will require further Crown funding.

The build-up of a substantial balance of liquid assets will skew the balance sheet of a Crown entity the size of Antarctica New Zealand and introduce financial stewardship risks.

s9(2)(g)(i)

### 6.4.3 Capital Charge

Better Business Case guidance is to include financing costs. The current capital charge is 5%.

It is requested that the Crown will provide funding over and above the existing capital charge of \$2.6m per annum (dropping to \$1.7m from 2024/25) as Antarctica New Zealand has a limited capacity to pay the additional capital charge arising from the redevelopment of Scott Base.

Treasury has confirmed the assumption that the capital charge will be funded.

## 6.5 Contingencies and Funding

Arrangements for the drawdown of contingency funding have been discussed with Treasury and are as follows:

Contingency Amount	Approval Authority
Contingency @ P50	Chief Executive
Contingency @ P85 - P50	Project Steering Group

*Table 15: Contingency drawdown delegated authority*

s9(2)(g)(i)

Following page withheld in full under S9(2)(i)

## 7 Management Case – Planning for successful delivery

### Management Case Summary

1. Antarctica New Zealand has built a strong team to redevelop Scott Base and this team has been working together since 2017. It is supported by the main contractor and numerous subcontractors who have experience working in remote and challenging environments. Antarctica New Zealand and Leighs Construction have successfully delivered projects at Scott Base previously, including the construction of the Hillary Field Centre. The team is ready, capable and confident in its ability to redevelop Scott Base.
2. A strong governance and management structure has been operationalised for the project with membership from within Antarctica New Zealand and externally – people with relevant experience to the project and/or organisation. A risk mitigation approach has been developed to manage retention of key team members and employees.
3. Antarctica New Zealand and Scott Base have many diverse stakeholders, including members of the public, the New Zealand science community and other national Antarctic programs. Stakeholder engagement is well advanced and there is a keen interest in the project, while expectations are being managed.
4. A Change Management Strategy has been developed for the project and an initial change readiness assessment and baseline survey have been undertaken. A dedicated Change Manager will be recruited to manage the change for both Antarctica New Zealand and the science community. This will have a particular focus on the new ways of operating within the temporary base and then within the new Scott Base.
5. The depth and breadth of experience within the Scott Base Redevelopment Team ensures that project risk is well understood, including risks in logistics and the Antarctic environment. The team has a robust risk management framework and risks have been allocated to those who understand and can manage them best.

The Management Case comprises the following sections:

1. Outline of the DBC Management Case
2. Progress since the DBC Management Case
3. Project Governance and Management (including summary Terms of Reference, structure and members)
4. Project Management Framework
5. Change Management
6. Stakeholder Engagement
7. Benefits Management
8. Risk Management
9. Contract Management
10. Project Assurance.

### 7.1 Outline of the DBC Management Case

The DBC Management Case outlined the following:

- The importance and rationale for Antarctica New Zealand to lead the redevelopment of Scott Base.
- The three key activities of the project:
  - Project management and logistics – Antarctica New Zealand led
  - Design: architectural, structural, civil and building services – consultant led

- Construction – main contractor led.
- The governance and decision-making structure for the project including key roles and responsibilities.
- Antarctica New Zealand will use its proven project management approach, based on the Project Management Institute (PMI) methodology.

s6(a)

- The project sequencing for the redevelopment.
- The risk management framework and high-level delivery risks.
- The risks Antarctica New Zealand is best placed to manage, relating to logistics, extreme weather, major delays and environmental permitting.

## 7.2 Progress since the DBC Management Case

- External advisors, Will Peet and John O'Dea, with extensive experience in large Crown-funded capital projects, are contracted onto the Project Steering Group (PSG) to provide independent advice. Principal Infrastructure Advisor, Blake Lepper, represents the New Zealand Infrastructure Commission on the PSG to provide expert advice from the Government's perspective on project delivery. David Prentice has been contracted as an advisor to the Antarctica New Zealand Board and sits on the PSG.
- Formation of the broader redevelopment Project Team, including the main contractor. A project charter has been developed, and the team participated in an induction day in September 2020.
- Further development of the benefits framework, change request process, schedule and cost management, project planning and risk and opportunity management with a shift in focus from a design and planning to delivery of the project.
- Extensive engagement with the wider Antarctic stakeholder community has been undertaken through presentations, webinars, media releases and education campaigns.
- Development of a Change Management Strategy with a particular focus on the transition from the current Scott Base, to the temporary base and then on to the new Scott Base facilities.

## 7.3 Project Governance and Management

Antarctica New Zealand has previously delivered successful projects at Scott Base, most recently the Hillary Field Centre. This experience ensures the organisation appreciates the role a strong project governance and management framework will play in its success. An important role for the governance and management structure is to identify at an early stage when the project may not be proceeding as planned and to have the skills, experience and insight to make decisions and take corrective action.

This requires specific experience and skillsets for such a unique and challenging project. Antarctica New Zealand has over 60 years' experience in Antarctica, including construction projects. This experience will be critical to the successful delivery of the project and is complemented by external advisors and project resources with relevant experience and knowledge. Key members and the skills and experience they contribute are included in section 7: Key Personnel

The Governance Terms of Reference are outlined in Table 16.

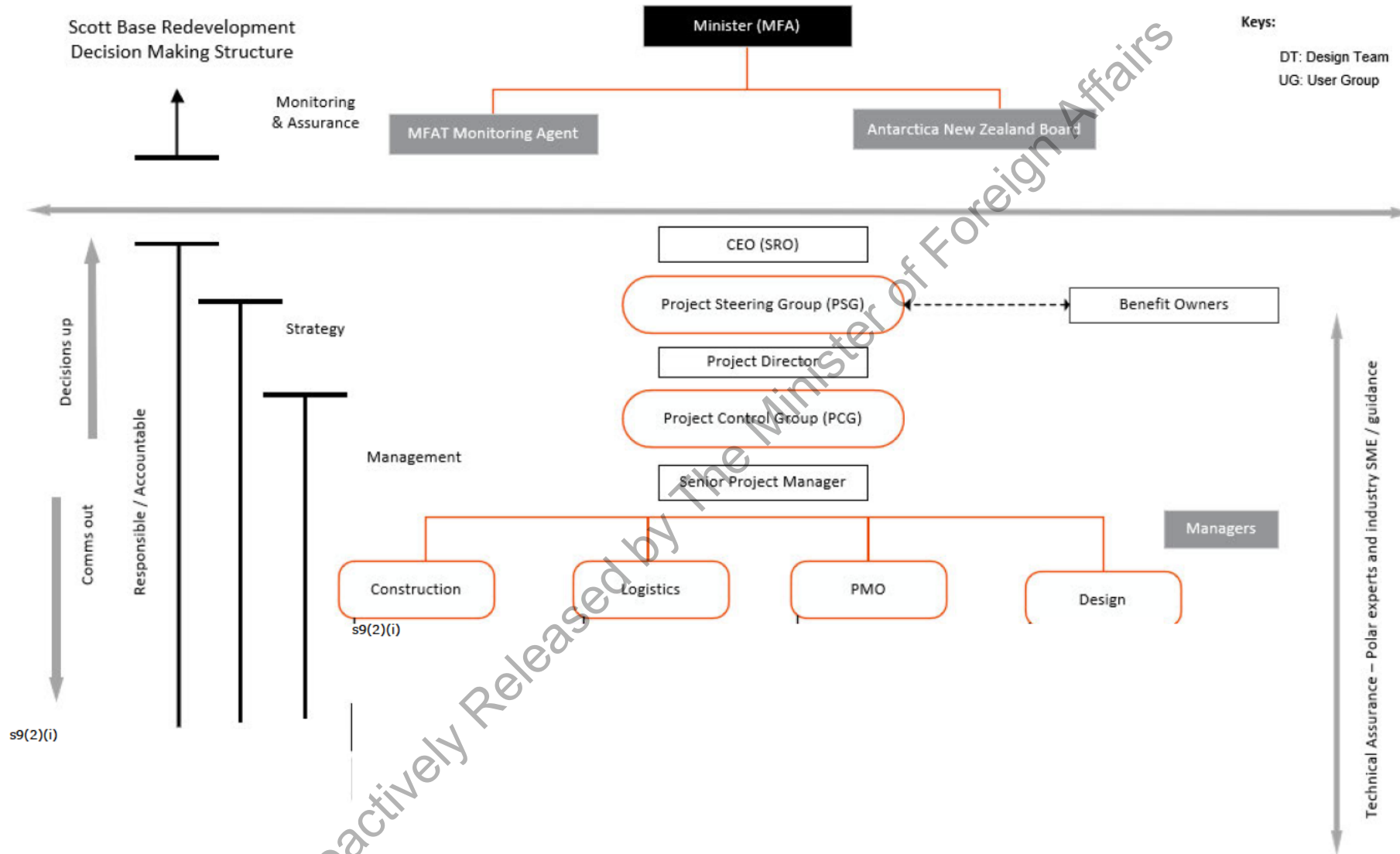


Figure 13: Scott Base Redevelopment Decision Making Structure



	Antarctica New Zealand Board	Project Steering Group	Project Control Group
<b>Accountable to:</b>	Responsible Ministers	Antarctica New Zealand Board	Project Director
<b>Scope:</b>	The Antarctica New Zealand Board is responsible for the overall governance of the organisation, including the Scott Base Redevelopment project. It will review progress at each meeting through a report from the Chief Executive and commentary from the Board Advisor. The Board receives a copy of the minutes of the PSG	<ul style="list-style-type: none"> <li>Ensures the requirements of stakeholders are met by the project's outputs</li> <li>Helps balance conflicting priorities and resources</li> <li>Provides guidance to the Project Control Group, as requested</li> <li>Considers risks, ideas and issues raised</li> <li>Reviews the progress of the project</li> <li>Checks adherence of project activities to standards of best practice, both within the organisation and in a wider context</li> </ul>	<ul style="list-style-type: none"> <li>Ensures that project scope, budget allocation and scheduling of works are clearly identified and managed throughout the project's duration</li> <li>Identifies key internal and external stakeholders and develops agreed channels of communication between stakeholders and particularly the Project Team</li> <li>Manages escalation in variations to user requirements, allocated budget and scheduled timelines/milestones and any other factors to ensure that the project is delivered within the terms of the originally budgeted business case</li> <li>Reviews and confirms the suitability of key project documentation including progress, design and construction reports prepared by the Project Team</li> <li>Ensures all project risks are identified, assessed and managed through the use of appropriate mitigation actions and contingency plans</li> </ul>
<b>Chair:</b>	Board Chair	External Advisor	Senior Project Manager
<b>Members:</b>	s9(2)(i)	s9(2)(i)	s9(2)(i)
<b>Meets:</b>	Quarterly	Monthly	Monthly

Table 16: Summary of SBR Project Governance Terms of Reference



### 7.3.1 Key Personnel

Successful redevelopment relies on key people in roles that hold Antarctic-specific, critical knowledge and experience to contribute to its success. These key people strengthen the likelihood of the project's success at different levels of governance and management and provide both the Antarctica New Zealand Board and responsible Ministers with confidence and assurance of the successful delivery as well as maintaining business as usual throughout the project.

The risk register addresses staffing loss and its impact on the project. Staff turnover would see a loss of organisational and project-specific knowledge. This would result in the need for new appointments and corresponding training costs, an interruption on progress and momentum, a likelihood of reduced quality, and an increase in overall cost. The current level of risk is assessed as high (moderate/possible).

To mitigate this risk, Antarctica New Zealand has appointed and continues to appoint, appropriately skilled and experienced employees and contractors. Employee retention and recognition are paramount. The Senior Project Manager works with all members of the Project Team to ensure that staff turnover is minimised as much as possible. Key members of the main contractor team and other consultants are bonded to the project.

A key personnel mitigation plan was endorsed by the PSG in August 2020.

Key members of the project and their relevant skillsets are set out below.

### 7.3.2 Project Steering Group

#### **Sarah Williamson – Chief Executive Officer and Senior Responsible Officer**

Sarah joined Antarctica New Zealand in June 2019 following a long career with Air New Zealand in a range of roles.

Sarah's most recent role was Group General Manager Business Performance, accountable for strategic procurement, aircraft operations, supply chain management, new aircraft programmes, continuous improvement and leading Air New Zealand's global property portfolio. Over this time, Air New Zealand completed the building and renovation of customer-facing, lounge, warehousing and office space across multiple locations as part of an ongoing plan for much-needed capacity improvements which saw a combined investment of more than \$500m over a two-year programme.

With a Master of Science in Psychology and a Bachelor of Science in Geography and Psychology, Sarah has always been impressed with the work Antarctica New Zealand does to support science in Antarctica and the Southern Ocean.

#### **Will Peet – Independent Advisor, Project Steering Group Chair**

Will Peet is an independent consultant and has previously held senior executive roles in public and private sectors including as Chief Executive Officer of NZ Railways Corporation (as Ontrack and as interim CE of KiwiRail) and Chief Operating Officer of New Zealand Defence Force.

A civil engineer, he brings experience with planning and delivery of major projects in safety-critical and remote environments including undertaking consulting assignments in Afghanistan and the Cook Islands. He is currently an external member on several governance groups. He is a Fellow of Engineers New Zealand and a Fellow of the Chartered Institute of Logistics and Transport.

He has been to Antarctica twice and has a thorough understanding of the challenges the redevelopment of Scott Base will encounter.

#### **John O'Dea – Independent Advisor**

John is an independent advisor to the PSG. John was recently appointed as the General Manager of Property at Christchurch International Airport (CIAL) and is the Project Director for the rebuild of the Lincoln campus at Lincoln University. John has extensive experience in asset and project management of large-scale property portfolios and capital projects and brings this experience and knowledge to the Scott Base Redevelopment Project.

Prior to CIAL, John was the Infrastructure Director at AgResearch and prior to that John was the Development Manager at Lyttelton Port Company. John's role involved setting long-term plans and strategic direction for the Port's key projects. Overseeing a team of more than 40 staff across various portfolios, John led the business case preparation for all of the company's developments.

John's former roles include Project Director and Commercial Manager at Christchurch Earthquake Recovery Authority, and General Manager of Assets and Facilities at Vbase Limited.

#### **David Prentice – Board Advisor**

David brings extensive engineering experience to the project. He is an appointed Fellow of Engineers New Zealand and was most recently Chief Executive and Managing Director of Opus International Consultants as well as a non-independent and executive of the Opus Board.

David is currently Chief Executive Officer of Trustpower and is Chair of Martin Jenkins and has previously held the role of Chair of the Interim Committee for Climate Change. David contributes strong engineering and governance experience to the PSG and reports to Antarctica New Zealand's Board of Directors.

### **7.3.3 Project Team Members**

#### **Simon Shelton – Senior Project Manager**

Simon commenced his career with Antarctica New Zealand in 2011. Simon has led the Project Team from the initiation of the project in 2016. Before this, he successfully delivered the \$6.3m upgrade to the Hillary Field Centre at Scott Base. Simon has been to Antarctica nineteen times, wintered at Scott Base twice, once as the Scott Base Winter Leader, and in 2015 as Project Manager. Before joining Antarctica New Zealand, Simon worked on commercial, industrial and humanitarian projects in Australia, Afghanistan, India and New Zealand, following his passion for remote and challenging projects. He enjoys leading teams, environmental stewardship and science.

#### **Nick Murdoch – Logistics Manager**

Nick has over 20 years' experience working in global logistics and operations management around the world, with a passion for delivering to the remotest and most complex destinations around the world. Through a mix of roles in commercial and public sector organisations, Nick brings a wealth of practical knowledge and experience to the team which is backed up by a Master of Science in Logistics and Supply Chain Management and Bachelor of Commerce in Transport Studies.

#### **Karissa Hyde – Construction Manager**

Karissa's experience is evidenced by her qualifications through her registration as a Project Management Professional and as a Chartered Professional Engineer (Engineering New Zealand). Karissa was heavily involved in the main contractor appointment process, where she gained a significant understanding of the functionality and challenges of working at Scott Base throughout the procurement process. Karissa has led the development of the construction process as well as the options and preferred approach for the temporary base.

Her previous roles working on local government and ministerial projects have given her a solid background in both the legal requirements and best practice guidance associated with procurement, contracts, health and safety, the environment, archaeology and contaminated materials. She has managed projects involving works in sensitive environments, including works below groundwater, in live waterways, inanga spawning areas, archaeological sites and on contaminated land.

### **7.3.4 Other Key Antarctica New Zealand Personnel**

#### **Simon Trotter – General Manager, Antarctic Operations**

Simon has been involved with the Antarctic field operations, planning and science support for over ten years. Simon will be responsible for operating Scott Base and supporting science throughout the delivery of the Scott Base Redevelopment. Simon has interests in search and rescue and represents Antarctica New Zealand on the New Zealand Search and Rescue Consultative Committee and at the Committee of Managers of National Antarctic Programmes (COMNAP) as part of the Safety Advisory Group. As General Manager Antarctic Operations, Simon is passionate about the relationships between other National Antarctic Programs, the team environment within the organisation and supporting the customers of Antarctica New Zealand.

#### **John Cottle – Chief Science Advisor**

John has been a Professor of Geology at the University of California Santa Barbara for the past 12 years and has spent ten field seasons on the ice working with the New Zealand, United States and Italian programs as both a guide and scientist. His research interests centre on the geologic evolution of Antarctica and the Himalaya, and he has published more than 120 scientific papers.

He began his career at the University of Otago undertaking an MSc in Antarctic geology. This was followed by a DPhil at the University of Oxford and a postdoctoral position at the British Geological Survey.

John leads the Antarctica New Zealand science team, supporting the delivery of world-class research and the communication of research findings.

#### **Ceisha Poirot – GM Policy, Environment and Safety**

Ceisha has been involved in Antarctic policy and environmental management for 12 years, working in both the Science and Policy, Environment and Safety teams at Antarctica New Zealand. She has led the development and management of the Environmental Management System and, more recently, the Health and Safety Management System, focusing on the organisation's commitment to Zero Harm. She is currently the New Zealand representative to the Committee for Environmental Protection and the expert group leader of the Council of Managers of National Antarctic Programmes Environmental Protection Group.

### **7.3.5 Main Contractor**

#### **Leighs Construction Limited – Anthony Leighs and team**

As the founder and Managing Director, Anthony Leighs has been at the forefront of the business since 1995, growing Leighs Construction to its current and ongoing success.

Throughout this time, Anthony's abilities and achievements have been acknowledged by the industry, earning him the New Zealand Institute of Building (NZIOB) Young Achiever Award, NZIOB Supreme Award and Innovation Award early in his career.

Anthony has led the construction team on another Antarctica New Zealand project, the upgrade of the Hillary Field Centre. Leighs Construction has been the only main contractor outside of the New Zealand military to complete construction at Scott Base. Anthony and his team understand wellness and good leadership are critical to a well-functioning team and believes the fundamental focus when delivering projects in Antarctic conditions must be on productivity.

## **7.4 Project Management Framework**

The redevelopment of Scott Base will be utilising Antarctica New Zealand's standard project management methodology. This is aligned with the Project Management Institute's, PMBOK. This project methodology is used on all Antarctica New Zealand projects, and members of the Project Team are trained and experienced in this methodology. It was used on the Hillary Field Centre project which took place at Scott Base from 2015 to 2017. Leighs Construction and Antarctica New Zealand delivered this project on time and on budget. The project management framework is detailed in the SBR – Project Management Plan.

### **7.4.1 Project Delivery**

Leighs Construction proposed an alternative logistics and construction approach as part of its ECI report. This alternative approach of constructing the buildings in New Zealand and then shipping the completed buildings to Pram Point differed from the proposed approach in the DBC of containerisation and construction at Scott Base. It also requires a temporary base and temporary port to be developed at Pram Point.

A suitable site with port facilities will be leased in New Zealand as the construction and loading site for an estimated period of up to four years. The approach will include using a heavy lift ice-strengthened ship and icebreaker to transport the buildings to Pram Point. Self-propelled modular trailers will be utilised and a haul road constructed to transport the building sections on and off the ship and into final position.

The benefit of the alternative approach is reduced project risk, duration and cost.

#### 7.4.2 Temporary Base

There is a three-year period between the decommissioning of the existing base and the commissioning of the new base. This is because the new base is optimally sited directly over the top of the old base. Therefore, a temporary base will be constructed at Pram Point while the site is prepared for the arrival, construction and commissioning of the new Scott Base. The temporary base will enable the effective delivery of science, operations and construction in support of Antarctica New Zealand's vision to support world-leading science and maintain New Zealand's strategic presence in Antarctica.

The scope of the temporary base is as follows:

- Accommodation for 160 personnel including kitchen, dining, recreation, ablution and sleeping facilities in two and four-bedroom dormitories with shared bathrooms (to accommodate Antarctica New Zealand operations, the science community and the construction team).
- Science, operations and limited construction staging, office and support facilities.
- Mechanical plant and equipment to ensure life safety systems for 160 personnel in summer and 12 to 30 personnel in winter.
- Re-use of existing base where possible

A Temporary Base Feasibility Study was undertaken to assess different options for the temporary base location and how it could be constructed. Consideration was given to how science can continue to be supported and how to minimise disruption to people caused by groundworks and the inconvenience of operating out of a temporary base. <sup>s9(2)(i)</sup>

<sup>s9(2)(j)</sup>

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Following four pages withheld under  
S9(2)(i)

### 7.4.3 Project Timeline

The project timeline is aligned with the sequencing of the project, as outlined in the Economic Case. A significant amount of due diligence and analysis has taken place through both the ECI process and subsequent development and refinement of the logistics and construction methodology. The timeline is underpinned by the knowledge and experience gained by Antarctica New Zealand in delivering previous projects and takes account of the dependencies on seasonal activity and the inherent risks involved in working in the Antarctic environment.

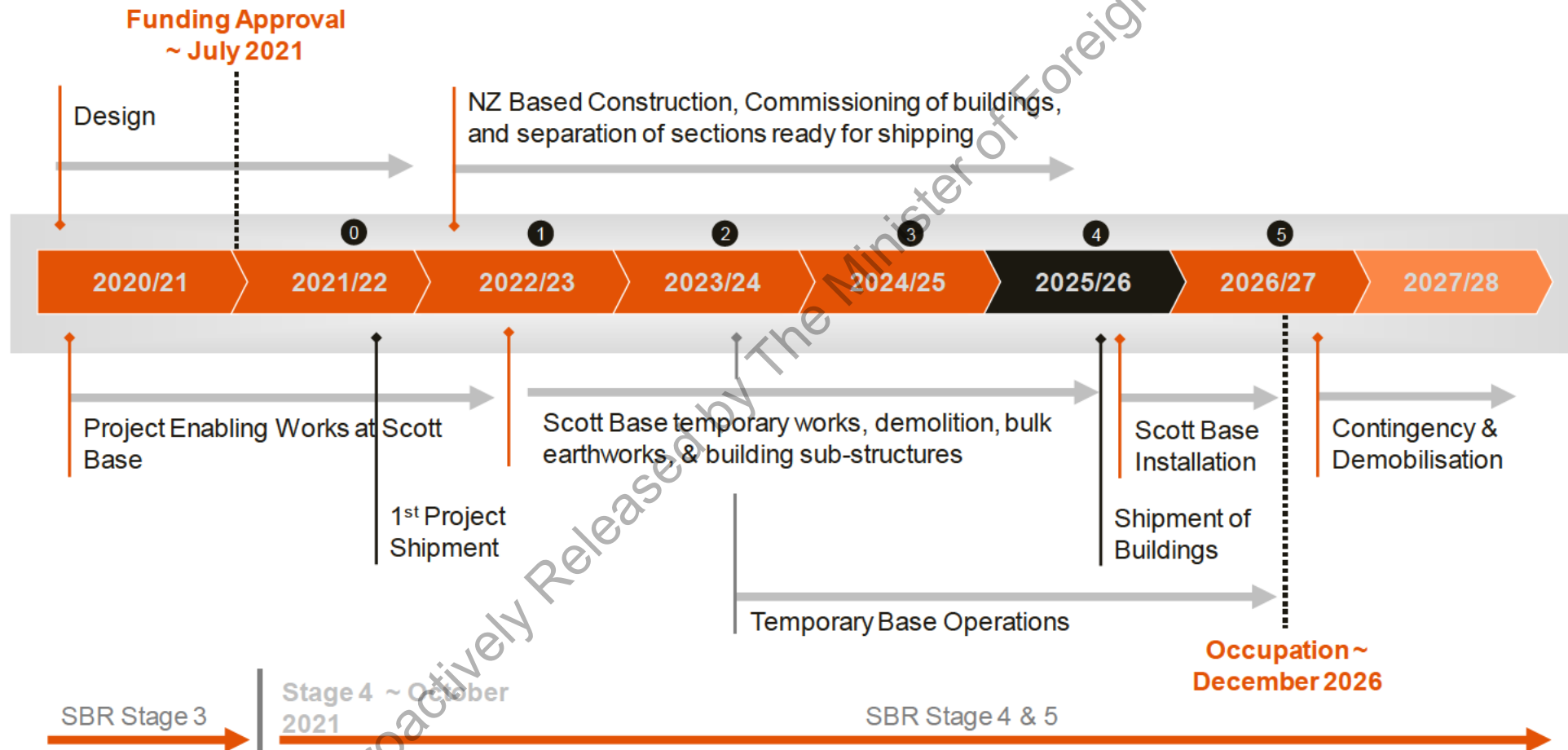


Figure 18: Scott Base Redevelopment project timeline



## 7.5 Change Management

Antarctica New Zealand understands that the redevelopment of Scott Base will involve immense change and the organisation is ready and determined to support its people through that process, both in Christchurch and in Antarctica. The Change Management Strategy is ultimately focused on the sustainable change necessary to achieve project benefits. It focuses on the people side of change over a lengthy project duration, including changes to organisational systems and processes to assist the transition. Change management has already commenced as Antarctica New Zealand leads its stakeholders through user group workshops, drop-in sessions, one-on-one meetings and feedback opportunities. The initial change management work undertaken has focused on the following:

1. High-level impact assessment
2. Antarctica New Zealand change readiness assessment
3. High-level Scott Base Redevelopment Change Management Strategy
4. Baseline staff survey.

Initial high-level impact analysis has identified the four main areas of impact:

1. New Scott Base – moving to something new.
2. The requirement for Antarctica New Zealand to support multiple facilities during redevelopment.
3. How Antarctica New Zealand supports the plant and equipment in the new facilities, including handover through to maintenance and health and safety.
4. The requirement to provide logistical support and support science throughout the redevelopment.

The Scott Base Redevelopment Change Management Strategy is based on recognised best practice with three phases of change: prepare, manage and embed. There are five major changes required that focus on management across the project, these are detailed in Table 17.

	Major Changes	Change Details	Transition Effort
1	Design and Planning	<ul style="list-style-type: none"> <li>• New project staff and contractors</li> <li>• Intensive consultation</li> <li>• Major build decision-making</li> </ul>	2 years – slow increase in effort
2	Transition from current base to the temporary base	<ul style="list-style-type: none"> <li>• Physical move while supporting science</li> <li>• New ways of working</li> <li>• Extra workers for construction</li> <li>• Demolition and build of new base</li> </ul>	Change Manager contracted 6 months prior and 1 month post 5 months prior – engage Training Lead
3	Transition to the new ways of working for the temporary base	<ul style="list-style-type: none"> <li>• New operating model and different ways of working</li> <li>• Responsibilities and accountabilities across construction and Antarctica New Zealand staff</li> </ul>	Organisational design, learning and development
4	Transition from the temporary base to the new base	<ul style="list-style-type: none"> <li>• Physical move while supporting science</li> <li>• New ways of working</li> </ul>	Change Manager contracted 6 months prior and 1-month post
5	Transition to the new ways of working for the new base	<ul style="list-style-type: none"> <li>• New operating model and different ways of working</li> <li>• Focus on delivering project benefits</li> </ul>	Organisational design, learning and development

Table 17: Major changes identified as a result of SBR

The initial high-level impact and readiness assessment is detailed in Figure 19.



## Impacts

The quality and comprehensiveness of assessing change impacts will play a large part in determining the success of the project. Detail overlooked or not captured during the project will be quickly identified by people and stakeholders after go-live, and could impact the successful adoption of the project. The process to analyse our impacts is shown below.

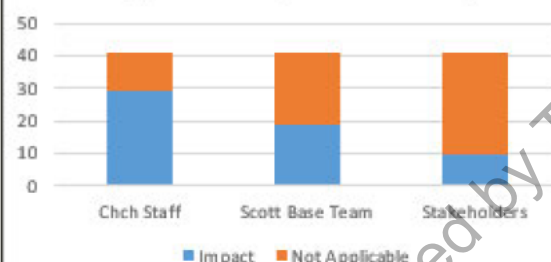


## High Level Impacts

41 high level impacts have been captured:

- 29 impact Antarctica NZ Christchurch Staff
- 19 impact the Scott Base team
- 10 impact external Stakeholders

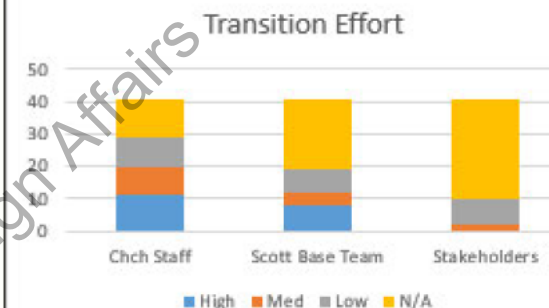
High Level Impacts - Summary



Transition workload is highest for Chch staff, as they learn how the new base operates. Policy, processes & training will need to be updated.

During transition, facilities need to be maintained to ensure function, safety & compliance; and additional logistics will be required to support construction & science in parallel.

Transition effort will be low for external stakeholders, as only 20% are returnees.

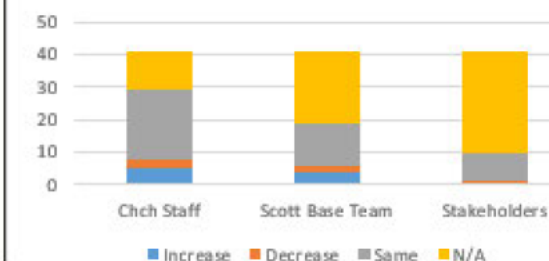


For Chch staff & the Scott Base team, ~80% of changes will reduce BAU workload or stay the same.

There will be increased BAU workload if supporting multiple facilities, and workload could reduce given new plant & equipment may bring operational efficiencies.

BAU workload remains similar for stakeholders, although their fatigue will decrease in the new base.

BAU Workload



## Impacted Business Areas

The diagram below summaries how the high level change impacts are likely to be felt across Antarctica New Zealand.



Figure 19: High-level impact and readiness assessment

## 7.6 Stakeholder Engagement

Antarctica New Zealand has a diverse and expansive group of stakeholders at a local, national and global level. The Stakeholder Engagement Plan sets out how to maintain the engagement of these groups throughout the project, which is particularly challenging given the long duration of the project and the number of stakeholders with different needs. Antarctica New Zealand defines its organisational stakeholder ecosystem as set out in Figure 20.



Figure 20: Antarctica New Zealand's organisational ecosystem

The organisational stakeholder ecosystem has been redefined for the project based on stakeholders' needs and their level of participation in the project:

- Inform – to provide information to assist in the understanding of the project.
- Consult – to obtain feedback on aspects of the project.
- Involve – to work directly with to ensure aspirations are understood and considered.
- Collaborate – to partner within each aspect of the project's decision-making.
- Empower – to make a final decision.

The SBR – Stakeholder Engagement Plan also includes a comprehensive overview for the 30 stakeholder groups that have been identified to date. A longer-term stakeholder engagement strategy is being developed for the duration of the project. Table 18 outlines the key stakeholder groups and the engagement approach for each group that has been identified to date.

Stakeholder Group	Information Needs	Method	Milestones
Funder (the Crown)	<ul style="list-style-type: none"> <li>• Inform</li> <li>• Consult</li> </ul>	<ul style="list-style-type: none"> <li>• Briefing</li> <li>• Meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Endorsement of the ImBC</li> <li>• Funding approval</li> <li>• Project completion</li> </ul>
Government agencies	<ul style="list-style-type: none"> <li>• Involve</li> <li>• Inform</li> <li>• Consult</li> <li>• Collaborate</li> </ul>	<ul style="list-style-type: none"> <li>• Briefings</li> <li>• Meetings</li> <li>• Email</li> </ul>	<ul style="list-style-type: none"> <li>• Endorsement of the ImBC</li> <li>• Funding approval</li> <li>• CEE approval</li> <li>• Project completion</li> <li>• Opening</li> </ul>
Antarctica New Zealand staff	<ul style="list-style-type: none"> <li>• Involve</li> <li>• Inform</li> <li>• Consult</li> <li>• Collaborate</li> </ul>	<ul style="list-style-type: none"> <li>• Workshops</li> <li>• Meetings</li> <li>• Presentations</li> <li>• Events</li> </ul>	<ul style="list-style-type: none"> <li>• Endorsement of the ImBC</li> <li>• Funding approval</li> <li>• Temporary base operations</li> <li>• CEE approval</li> <li>• Shipping operations</li> <li>• Project completion</li> <li>• Opening</li> </ul>
Science community	<ul style="list-style-type: none"> <li>• Consult</li> <li>• Collaborate</li> </ul>	<ul style="list-style-type: none"> <li>• Workshops</li> <li>• Conferences</li> <li>• Digital media</li> <li>• Meetings</li> <li>• Briefings</li> </ul>	<ul style="list-style-type: none"> <li>• Funding approval</li> <li>• Temporary base operations</li> <li>• Final design</li> <li>• Opening</li> </ul>
New Zealand Antarctic community	<ul style="list-style-type: none"> <li>• Inform</li> <li>• Collaborate</li> <li>• Consult</li> </ul>	<ul style="list-style-type: none"> <li>• Workshops</li> <li>• Briefings</li> <li>• Digital and print media</li> <li>• Exhibitions</li> </ul>	<ul style="list-style-type: none"> <li>• Funding approval</li> <li>• CEE approval</li> </ul>
New Zealand public	<ul style="list-style-type: none"> <li>• Involve</li> <li>• Inform</li> </ul>	<ul style="list-style-type: none"> <li>• Digital and print media</li> <li>• Presentations</li> <li>• Public events</li> </ul>	<ul style="list-style-type: none"> <li>• Funding approval</li> <li>• Colour campaign</li> <li>• Building base in Port</li> <li>• Ship departing NZ</li> <li>• Opening</li> </ul>
International Antarctic community	<ul style="list-style-type: none"> <li>• Involve</li> <li>• Inform</li> </ul>	<ul style="list-style-type: none"> <li>• Digital and print media</li> <li>• Presentations</li> <li>• Public events</li> </ul>	<ul style="list-style-type: none"> <li>• Funding approval</li> <li>• CEE approval</li> </ul>

Table 18: Scott Base Redevelopment key stakeholder groups and engagement approach



## 7.7 Benefits Management

The SBR – Benefits Realisation Plan provides further detail on how the investment in the redevelopment will contribute to the benefits identified in the DBC. The Economic Case outlined the benefits of investment as follows:

1. s6(a)
2. Provides autonomy to conduct excellent science that will directly benefit New Zealand.
3. s6(a)

These benefits were identified in the DBC through a series of workshops with the Antarctica New Zealand Senior Leadership Team and further refined as part of the ImBC process. Following the DBC, the Senior Leadership Team has defined performance measures, and targets to track these benefits and these were confirmed at a benefits workshop held in June 2020.

The SBR – Benefits Realisation Plan will be reviewed on an annual basis to ensure its ongoing appropriateness and relevance to the project. It will be the responsibility of each metric owner to reconfirm the ongoing applicability and relevance of each metric or recommended change to the PSG.

### 7.7.1 Benefits Realisation Framework

The SBR – Benefits Realisation Plan sets out a number of performance measures for each of the benefits identified in the DBC. The performance measures describe how Antarctica New Zealand will measure the realisation of each benefit. Each performance measure also has an associated metric which determines how the targets for each performance measure will be calculated.

For each metric it identifies:

- Whether the metric is aligned with the Antarctica New Zealand Statement of Performance Expectations.
- The frequency the metric is to be reported – both the baseline and further measurements and the Senior Leadership Team owner of the metric.
- The relative contribution the redevelopment of Scott Base will make to each benefit.
- Targets for each year identified for benefits measurement.

### 7.7.2 Review and Assessment

The General Manager of Corporate Services and Strategy will be accountable for the development of a data model to underpin the Benefits Realisation Framework and drives the reporting on metrics to the PSG and Antarctica New Zealand Board. Benefits will be realised at three points in time, post-completion of the redevelopment.

Table 19 outlines the benefits measurement schedule:

	Timing	Notes
Baseline	Average of 2017/2018, 2018/2019 and 2019/2020	Average of three years taken to avoid any outlier metrics over the period. 2020/2021 excluded to reflect reduction in science events due to COVID-19
1 <sup>st</sup> Measurement	Year 1 post-operational (Quarter 1 2028)	This measurement will re-baseline metrics post-operationalisation of the redeveloped Scott Base
2 <sup>nd</sup> Measurement	Year 2 post-operational (Quarter 1 2029)	This measurement will assess the benefits of redevelopment once logistics, processes, science activity and event management have been embedded at Scott Base
3 <sup>rd</sup> Measurement	Year 5 post-operational (Quarter 1 2032)	This measurement will assess whether benefits have continued to be maintained and/or further efficiencies and benefits have been realised or enhanced

Table 19: Benefits measurement schedule

### 7.7.3 Benefits Realisation – Critical Success Factors

The following are being put in place to ensure the benefits of redevelopment in Scott Base are achieved:

- Benefit owners understand their roles and have the ability and resources to actively measure the benefits.
- Successful completion and construction of Scott Base according to the current project schedule as set out in the Management Case.
- Successful implementation of the change management programme and a successful change and communications programme that develops buy-in from employees and the science community on the benefits associated with working at Scott Base.

## 7.8 Risk Management

Antarctica New Zealand is committed to ensuring reliable, robust risk management occurs throughout the organisation to strengthen other corporate governance objectives such as providing a safe working environment for its people, protecting the environment, safeguarding its assets, and improving stakeholders' confidence and trust in the organisation. Risk management is critical to the successful delivery of the redevelopment of Scott Base.

Antarctica New Zealand has a supporting Risk Management Framework in place to deliver on its commitment. This includes documenting risks, and the actions to manage them in risk registers which have been established for a specific purpose and audience (i.e., strategic risk register; organisational risk register; project risk register etc.). Each of these risk registers follows the Antarctica New Zealand Risk Management Framework (based on ISO 31000: 2018). However, these individual risk registers are intrinsically linked.

To successfully redevelop Scott Base, a holistic approach is required so as to consider the entire risk profile of the organisation, instead of focusing on each risk register individually to ensure full visibility over strategic, organisational and project activity-related risks.

### 7.8.1 SBR Risk Management Plan

The SBR – Risk Management Plan defines how project risks are identified, assessed and managed to produce the most favourable result for the project. It provides a standard procedure for team members on managing, reporting and mitigating project risks. The plan will be reviewed throughout the project's lifecycle to confirm its effectiveness and for continual improvement.

The risk management tools and techniques identified in the PMI PMBOK and the Practice Standard for project risk management have also been adopted.

The objectives of risk management within the project are to minimise the adverse effects of potential events on the project's objectives and enhance the impact of any opportunities. This will be achieved through the following objectives:

- Continuation of a proactive risk management culture throughout the project's lifecycle.
- Effective evaluation and efficient management of identified risks at all levels within the project team.
- Relevant and robust analysis and reporting to support decision-making.
- Ongoing monitoring and review of the risk management process to ensure mitigation mechanisms are maintained and improvement opportunities are identified, evaluated and developed.

The SBR – Risk Management Plan covers the management of all risks associated with the establishment, planning, design, logistics, construction, demolition, health, safety and environmental activities of the project. Each of these is required to safely and successfully support, deliver and handover the project.

This SBR – Risk Management Plan addresses all aspects of the project risk management process, including risk identification, risk analysis, treatment, reporting and close-out. Although the Risk Management Plan covers all phases of the project, the risk register included in this Management Case is focused on the risks relevant to the remainder of the construction in New Zealand, shipping logistics and Antarctic construction and commissioning.

## 7.9 Contract Management

s9(2)(i), s9(2)(j)

The contract will generally be managed in accordance with good industry practice for New Zealand contracts in the construction industry.

### 7.9.1 Relationship Management

In addition to the responsible parties noted above, Table 20 identifies key relationships which have been established to ensure the successful running of the project during the main construction contract:

Relationship Level	Phase	Antarctica New Zealand	Leighs Construction
CEO/Project Governance	All	Sarah Williamson (CEO and Senior Responsible Officer)	Anthony Leighs (Managing Director)
Senior Management	All	Simon Shelton (Senior Project Manager)	s9(2)(a)
Contract Management (NZS3910:2013)	Construction	Engineer to the Contract	
		Construction Manager	Contractors Representative
Site Management (Antarctica)	Construction	Construction Manager	Project Manager

Table 20: Key contract relationships

### 7.9.2 Relationship Building

To develop a strong team culture and partnership with the Leighs Construction, the following activities have been undertaken as part of ECI phase 2:

- Work with the Leighs Construction to develop the approach for the collaborative ECI process.
- Team building workshop to review and update the Project Team charter and introduce the main contractor to the broader Project Team.
- Collaborative working space in the project office, out of which key members of the main contractor, the Design Team and the Antarctica New Zealand team regularly work together.
- A series of detailed, collaborative workshops to define the proposed construction methodology in detail to determine the feasibility, impact on design and to gain buy-in from the whole team.
- Anthony Leighs met with both the PSG and the Antarctica New Zealand Board to establish a relationship at the senior governance level.
- Contract negotiations were undertaken in detail and in accordance with the principles of partnering mentioned above.
- Team activities to celebrate successes plus key milestones and recognise the efforts of the whole team.

Similar activities will continue to be held throughout the duration of the construction contract to maintain and strengthen these relationships.

### 7.9.3 Performance

s9(2)(i)



## 7.10 Project Assurance

### 7.10.1 Assurance

An assurance plan has been developed to guide independent quality assurance (IQA) through the key stages of the project.

IQA has been ongoing throughout the project and includes the following:

Key project phase	Assurance
Procurement	<ul style="list-style-type: none"> <li>Procurement guidance and advice has been provided throughout the project by the MBIE commercial pool</li> <li>Probity oversight provided by Audit New Zealand</li> </ul>
Financial	<ul style="list-style-type: none"> <li>s9(2)(i)</li> <li>s9(2)(j)</li> </ul>
Professional Consultants and Advisors	<ul style="list-style-type: none"> <li>Specialist experts have been engaged on the project to provide expertise that is not available within Antarctica New Zealand, e.g., architectural design, civil engineering, structural engineering and quantity surveying. Quality assurance of advice is provided internally within each professional organisation</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>A CEE has been prepared in parallel with this ImBC</li> <li>As a requirement of the Committee for Environmental Protection of the Antarctic Treaty System, the CEE will be circulated to all parties for comment</li> </ul>

Table 21: Independent quality assurance

Technical quality assurance will be undertaken as follows:

Key project phase	Assurance
Design and Construction in Antarctica	<ul style="list-style-type: none"> <li>There are limited designers across the world that have experience in this environment. Although the Design Team for the project is experienced and the majority of team members have prior experience working in Antarctica or cold climate environments, there is a desire to undertake a polar peer review at the completion of design to ensure that best practice has been incorporated and knowledge transferred from other Antarctic designers is provided and considered. The Polar Expert Panel is yet to be confirmed but will likely be made up of members from the following: s6(a), s9(2)(i)</li> </ul>
Logistics Methodology	<ul style="list-style-type: none"> <li>As part of the logistics planning process for the heavy-lift/roll-on roll-off methodology, a logistics peer reviewer with global management and leadership experience in heavy-lift/roll-on roll-off experience will be engaged. This includes experience working with the logistics subcontractors. The scope will include the logistics method statement, related documents to ensure relevant</li> </ul>



Key project phase	Assurance
	priorities, issues and challenges associated with the project logistics are addressed and a logistics gap analysis
Design and Construction	<ul style="list-style-type: none"><li>Independent qualified engineering reviews and certification</li></ul>

Table 22: Technical quality assurance

#### 7.10.2 Gateway Reviews

This investment proposal has been assessed as high risk using the Treasury's Risk Profile Assessment tool.

Gateway Review 3 (Investment Decision) was completed in February 2021 and the project received an amber-green confidence rating. A report was provided by the review panel with a small number of recommendations.

#### 7.10.3 Lessons Learned

Lessons from other Antarctic programmes, Government organisations, Gateway Reviews, and internal Antarctica New Zealand projects will continue to be reviewed. There will also be regular ongoing reviews of the project's progress throughout its phases and seasons. Lessons learned and how the project uses these to its benefit will be captured and updated within the Assurance Plan.

#### 7.10.4 Post-Project Reviews

A post-implementation review will be undertaken following delivery of the project.

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8 Annexes

Annex 1

8.1.1 SBR Statement of Financial Performance  
s9(2)(j), s9(2)(i)

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# Cabinet

## Minute of Decision

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*This document contains information for the New Zealand Cabinet. It must be treated in confidence and handled in accordance with any security classification, or other endorsement. The information can only be released, including under the Official Information Act 1982, by persons with the appropriate authority.*

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### **Report of the Cabinet External Relations and Security Committee: Period Ended 2 July 2021**

On 5 July 2021, Cabinet made the following decisions on the work of the Cabinet External Relations and Security Committee for the period ended 2 July 2021:

ERS-21-MIN-0024 **Redevelopment of Scott Base: Implementation**  
Portfolio: Foreign Affairs

CONFIRMED

Michael Webster  
Secretary of the Cabinet

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