Te Whatu Ora
Health New Zealand
Te Tai Tokerau

PROJECT PIHI KAHA

Whangārei Hospital Redevelopment

18 August 2022	Detailed Business Case

This document was prepared by Te Whatu Ora Te Tai Tokerau district in partnership with the Te Whatu Ora Infrastructure and Investments team (formerly the Health Infrastructure Unit) and with support by a technical consulting team including Beca (Engineering), Klein Architects (Health Planning and Architecture), Ernst & Young (Modelling and Commercial Case), KPMG (QRA), Rider Levett Bucknall (Quantity Surveyor) and Woods Harris (Construction Programming)

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1.0 Executive Summary

1.1 Overview

This detailed business case (DBC) seeks approval to invest in Whangārei Hospital to replace a large section of the main block and add capacity. It recommends shortlist option 3 at a cost of $944 million, but Te Whatu Ora Te Tai Tokerau[1] understands that this is not currently affordable for the Government. The DBC therefore includes an option 2A at a cost of $759 million, which is near what the Ministry of Health's Capital Investment Committee (CIC) has advised is the level of reserved funding for the project.

Option 3 includes:

- An acute services building (ASB) for theatres, ED, ICU, a coronary care unit, a cardiac catheter laboratory, radiology and support services
- A ward tower for an acute assessment unit and four medical-surgical wards
- Rebuilding the existing child health unit (CHU) and whanau house in the western part of the campus; these are currently on the site of the proposed acute services building.

Option 2A does not build the ward tower, but the ASB and the relocation of the CHU and whanau house are largely the same as option 3. If further funding is made available in the future to build the ward tower, option 2A would meet the investment objectives and deliver the benefits of option 3 as described in this business case. Option 2A on its own does not meet the investment objectives. If decision-makers select option 2A in this business case, we expect that Te Whatu Ora would submit a business case for the additional funding of $185 million required to deliver option 3 in 2024/25. To avoid disruption to the project, funding for the ward tower would need to be confirmed in 2024, ahead of the scheduled start of construction in 2026.

1.2 Strategic Case

One third of Northland's population is Māori and they have worse health outcomes than non-Māori, as measured by life expectancy and rates of amenable mortality. The proposed project is a key part of improving health equity in Northland, particularly in terms of improving access to secondary health services for Māori.

The three sets of building issues that prompted the need for a large-scale redevelopment of Whangārei Hospital are either unchanged or more urgent from when Northland DHB submitted the programme business case (PBC) for this project in 2020. These are:

- Condition – large sections of the main block are unsafe and past the end of their economic lives
- Fitness for purpose – areas within the hospital are too small or not fit for purpose when assessed against standards such as the Australasian Health Facility Guidelines
- Capacity – the hospital is close to capacity overall.

The condition of the main block creates safety risks for occupants and without investment it is likely we will have to decommission parts of the building within 10 years. There is nowhere to decant services as the hospital is at capacity, so asset failure would cause significant disruption. Remediation would also be disruptive and would not be economical. A loss of services at Whangārei Hospital

[1] This refers to the part of Te Whatu Ora which was Northland DHB before 1 July 2022.

would increase travel distances and associated barriers to treatment for some of the most deprived communities in New Zealand.

The fitness for purpose and capacity issues have a significant impact on services and health outcomes, for example by increasing waiting lists and treatment thresholds. For some planned care services, Te Whatu Ora Te Tai Tokerau has increased treatment thresholds but waiting lists have continued to grow. Unmet need has therefore increased, as fewer patients are eligible for treatment, while those who are eligible are still waiting too long. The benefit measures we are using in this business case focus on assessing these impacts on patients and services.

For the cost of option 3, the government would begin to address the building issues, which in turn would enable:

- Improvements in health equity, as measured by rates of amenable mortality by ethnicity[2]
- Improvements in performance on the six-hour target for ED stays
- Reductions in waiting lists for planned care
- Reductions in hospital acquired complications (associated with the improved fitness for purpose of facilities)
- Mitigation of risks to safety and disruption from building condition issues
- Reductions in carbon emissions from increasing the proportion of the hospital that meets Green Star building standards.

As central government has been supportive of the need for a redevelopment, this DBC focuses on how to redevelop Whangārei Hospital, rather than arguing that redevelopment is needed. As part of Budget 2022, the Government announced that it had set aside $572 million for the project in Budget 2021 and that further funding would be made available in Budget 2022 pending this business case. In 2021, Treasury's Gateway reviewers noted that they felt the strategic case for investment was unarguable and that the main question was how to redevelop the hospital. CIC has also been supportive of the redevelopment.

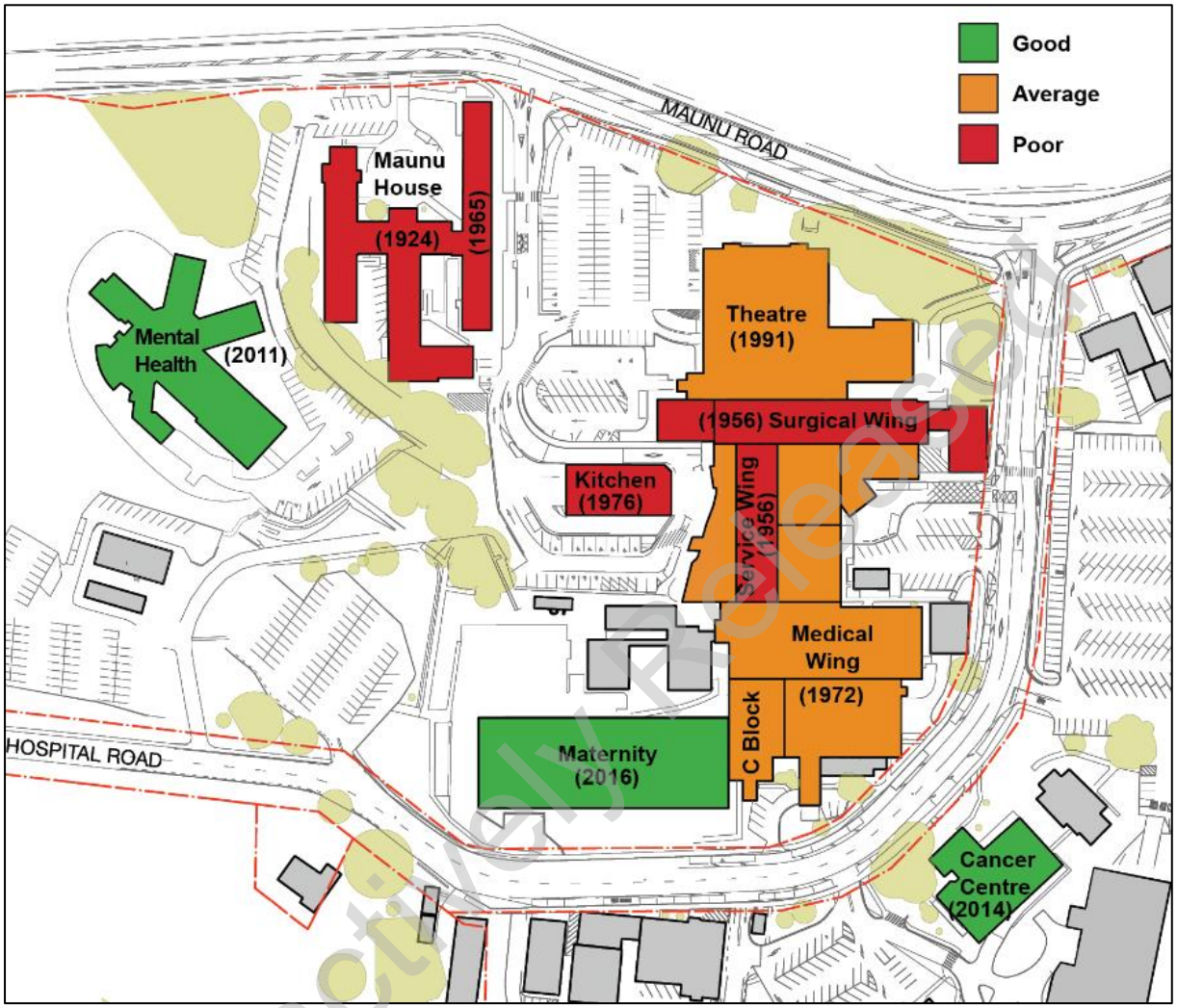
This DBC therefore does not reproduce detail from the PBC about the issues at Whangārei Hospital that are driving the need for the redevelopment, however the sections below briefly summarise these issues as background for the discussion in the DBC.

[2] Attachment 1 describes the expected causal sequence between achievement of the investment objectives and improvements in these benefit measures. In terms of amenable mortality, we expect that under the status quo, growing capacity constraints and the likely decommissioning of parts of the hospital will end the recent improvements in rates of healthcare-amenable mortality for all ethnic groups in Northland during the 2020s, leaving the rate for Māori at around its current level of more than twice the rate for non-Māori.

1.2.1 Condition issues

The image below shows the condition of the main clinical areas at Whangārei Hospital.

Image 1: Condition of Whangārei Hospital



The parts of the main block that are in the worst condition are the surgical and service wings, which were built in the 1950s and are nearly 70 years old. They accommodate ED, ICU, four inpatient wards, outpatient services, radiology, the laboratory, the helipad and the kitchen. Failure of the building would also affect the adjacent theatre block. The surgical wing has poor seismic resilience, compromised fire cells, weather-tightness issues and fragile electrical infrastructure. It is also leaning slightly, which increases the frequency of maintenance required for the lifts. Asbestos makes remediation and maintenance difficult and costly. The ED and ICU are in areas that do not have a code of compliance certificate.

Beca undertook the most recent condition assessment in 2019, which detailed these issues. The scores were either poor or very poor across all categories. Our quantity surveyor has estimated that the costs of remediating and replacing the building are about the same, indicating that replacement would have far lower whole of life costs. The surgical and service wings accommodate 16 clinical areas in total, including the theatres.

The medical wing is newer and appeared to have fewer serious condition issues, though a sewage soil stack in the building has recently failed and this issue alone requires an extensive and prolonged

(two year) remediation because of asbestos. Maunu House is the oldest building on site and accommodates mostly administrative services.

The CHU and Whanau House are in temporary buildings that are at end of life. The CHU is spread across several relocatable buildings as a temporary measure. A number of these buildings have exceeded their regulatory allowance and are non-compliant in areas including structural and fire safety.

1.2.2 Fitness for purpose

In 2019, the Ministry of Health's clinical facility fitness for purpose (CFFFP) assessment compared a sample of spaces at Whangārei Hospital with the Australasian Health Facility Guidelines (AHFG). The spaces included two inpatient wards, theatres, ICU and ED and the assessment found that all of these areas were undersized. The most extreme was ED, which is around 38 percent of the recommended size: it has 19 square metres per bed where AHFG recommends 50 square metres. While the theatre block overall is larger than recommended, the theatres, central sterilising unit and patient bays are much smaller than AHFG recommendations. The surgical wing ward assessed is 75 percent of the recommended size. The four negative pressure rooms have shared bathrooms and are not compliant with AHFG.

Other areas not included in the CFFFP assessment are also too small and not fit for purpose. The laboratory is at risk of losing its International Accreditation New Zealand (IANZ) accreditation due to issues with its accommodation. Our architects have assessed ophthalmology, ENT and dental outpatient services as being between 100 and 400 square metres too small based on a review of comparable facilities. Radiology is undersized and lacks space for a direct observation facility as well as inpatient bed spaces.[3]

The 12 areas with the most significant fitness for purpose issues that are not being addressed through other funded projects are: ED, ICU, theatres, four medical-surgical wards in the surgical wing, radiology, ophthalmology, ENT, dental and audiology. This is adversely affecting patient care, flow and health outcomes, as well as staff safety.

1.2.3 Capacity

We commissioned Ernst & Young (EY) to model future demand for services at Whangārei Hospital. EY have assessed demand in terms of inpatients, outpatients, theatres and ED presentations. We have updated these assessments from the ones used in the PBC. The points below summarise demand and capacity issues in each of these areas:

- Inpatients – we expect demand to begin to exceed capacity in the mid-2020s. The hospital currently has 303 beds including a recently opened 12-bed acute assessment unit (AAU). We are adding more beds in existing wards by replacing patient lounges, so it will have 310 beds by 2024. EY project that demand will exceed this level by 2025 and that the hospital will need 390 beds by 2039
- Outpatients – while it is harder to assess capacity for outpatient services, we estimate that demand will also begin to exceed overall physical capacity by the mid-2020s. It already exceeds capacity for some of the largest services, such as general surgery and cardiology

[3] In addition to the size of the clinical areas, the buildings are not fit for purpose in several other ways. For example, the floor to ceiling heights is too small to install air conditioning in the ceiling cavity and internal temperatures have reached 30°C in the summer. We have now installed wall-mounted air conditioning systems in the worst-affected areas, but they are often ineffective due to the joinery and overcrowding in the wards. Most services are also landlocked and cannot expand in any direction.

- ED – demand for ED presentations already exceeds capacity. ED has 29 points of care providing capacity for just over 31,000 presentations per year, while the actual number of presentations exceeded 40,000 in 2018 and 2019 before dipping in 2020. We expect the AAU will reduce pressure on ED by around 4,000 to 5,000 presentations per year, but projected demand for ED presentations including AAU still exceeds capacity
- Theatres – in May 2021 we completed an extension to the theatre block at Whangārei Hospital, taking the total number of theatres from six to eight. This briefly provided enough capacity, but projected theatre demand already exceeds this level. The theatres also lack enough support spaces such as recovery and sterilising areas.

In developing the demand model and the associated size of the redevelopment we have sought to balance two sets of risks:

1. If projected demand is underestimated, spaces within the redeveloped hospital would be too small, which would prevent the project from realising benefits such as reductions in waiting times for planned care and shorter stays in ED
2. If projected demand is overestimated, the redeveloped hospital would be too large, and the project would cost more than it needs to.

The demand and capacity sections of this DBC discuss how we have tried to balance these risks. This includes managing demand using existing resources and ambitious model of care changes, as discussed in the Clinical Services Plan (CSP) that we submitted with the PBC in 2020. These initiatives aim to deliver services more efficiently and to reduce the amount of space required at Whangārei Hospital, mainly by maximising utilisation of rural hospitals and moving services into the community where possible. For example, the demand projections for inpatient bed days assume a 10 percent reduction over 20 years through implementation of CSP initiatives.[4]

However, we are concerned that the demand projections are likely to be significantly underestimated because they are based on Stats NZ population projections. Stats NZ has revised its Northland projections upwards nearly every time it has updated them over the last decade. This is unique within New Zealand. We therefore believe there is a high likelihood demand could begin to exceed capacity earlier than expected. This is discussed further in sections on risk and demand modelling.

[4] Since we submitted the CSP we have implemented other initiatives that were not included in it. For example, we have established a short stay surgical ward which is critical to rapid turnover of surgical inpatients and we are investing $5m annually into addressing the workforce crisis in primary care in Northland.

1.3 Revisiting the case for change

The strategic case we presented in the PBC is largely unchanged. This section summarises what has changed.

The investment objectives of the proposed redevelopment align with the three problem statements above and are generally unchanged from the PBC, though we have updated them to reflect other work on the hospital that we expect to complete before the redevelopment. The updated investment objectives are:

1. Improve the condition of buildings at Whangārei Hospital so that no more than **six of the 16** patient areas that are in buildings that create safety or decommissioning risks remain in use on completion of the project
2. Improve the fitness for purpose of Whangārei Hospital so that **11 of the 12** areas where the size and configuration of facilities affecting services are accommodated in facilities that meet modern standards and AHFG benchmarks on completion of the programme
3. Provide enough capacity at Whangārei Hospital to meet projected demand until **2031.**

In terms of the strategic context for the redevelopment, the most significant change has been the Crown funding that can be made available for the project. In December 2021, the Chair of CIC wrote to Northland DHB advising that the reserved budget for the Whangārei Hospital redevelopment is $711m. While the Chair did not specify a maximum budget for the project, he noted that the reserved budget included funding from the health capital envelope contingency pool, which is oversubscribed. Discussions about funding availability have progressed from previous iterations of this business case.

While we have tried to reduce the scope of the recommended option 3 so that it can be delivered for the available funding, this is not possible without further compromising the investment objectives and the project benefits. However, shortlist option 2A is close to CIC's funding guidance at $759m. If this option is selected, there is an opportunity to make available additional funding to deliver the scope of option 3 in the 2024/25 budget, which would enable the project to meet the investment objectives and deliver benefits as described in this business case. Without this additional investment there would be a bed shortage, an ASB without an operational front of house, an ED without a co-located AAU, and the surgical wing, our highest risk building, would need to remain operational.

1.4 Economic case

The economic case discusses the long and shortlist options for the project, the results of a multi-criteria analysis of the shortlist options and a quantitative risk assessment of the preferred option. This section also discusses the shortlist options in the context of planned future stages of the redevelopment.

1.4.1 Long list

The long-list analysis in the PBC aimed to show that Northland DHB had thought broadly about how the investment objectives could be achieved, including considering non-property solutions. The DBC reviews the long list and argues the recommended approach to redeveloping the Whangārei Hospital site delivers better value for money than alternatives.

The most feasible non-property solution was to reduce demand at Whangārei Hospital through model of care changes, increasing utilisation of rural hospitals and other initiatives set out in Northland DHB's 2020 Clinical Services Plan (CSP). Te Whatu Ora Te Tai Tokerau is continuing to implement these initiatives, but even in a best-case scenario where they achieved a substantial reduction in

demand at Whangārei Hospital, they would not eliminate the need for a hospital or the need to address the condition and fitness for purpose issues.

Using the available funding to remediate the existing hospital would not be economical as discussed above in the section on building condition. The long list therefore focused on assessing the best locations for replacing the existing buildings. The preferred option is to rebuild the hospital in a mostly vacant part of the site across the road from the existing buildings.

This requires a large part of the hospital to move at the same time to maintain functional relationships. For example, the first stage of the project could not move ED into new accommodation across the road without also moving theatres and ICU. If only ED moved, it would be too far away from the other services, which would compromise the quality of care and patient safety.

To try to find a way of completing the project in smaller stages, we explored rebuilding on the western side of the existing main block. We did not pursue this option because it would have required a lot of investment in end-of-life buildings. For example, the front entrance to the hospital and the kitchen would have had to move elsewhere in the existing buildings before potentially being replaced when the new buildings opened. It would therefore have cost more to deliver the same amount of hospital space as the recommended option.

Based on the long-list assessment, we are confident that the proposed way of redeveloping the site offers better value for money than alternatives.

1.4.2 Shortlist

The table below summarises the DBC shortlist options. All except the status quo rebuild the hospital across the road from the existing main block as described above and all build a link bridge between the medical wing and the new acute services building. All options also relocate the child health unit and whanau house, which are on the site of the proposed acute services building.

Table 1: DBC shortlist options

Option	Description	Cost
1	Status quo • Retain existing buildings and manage the issues and risks	$0[5]
2A	Do minimum short term • Build an acute service building for theatres, ICU, ED, a coronary care unit, a cardiac catheter laboratory and radiology, as well as some support spaces • Do not build a ward tower or remediate the existing hospital • Includes design fees to allow for construction of the ward tower	$759m
2B	Do minimum long term • Build an acute service building for theatres, ICU, ED, a coronary care unit, a cardiac catheter laboratory, radiology and AAU, as well as support services • Remediate the existing hospital and recommission vacated wards, move four outpatient services to other vacated areas • Do not build a ward tower	$889m
2	Do less than intermediate (previous do minimum) • Build an acute service building for theatres, ICU, ED, a coronary care unit, a cardiac catheter laboratory and radiology, as well as support services • Build a ward tower for AAU with the remaining floors left as shell space to be fitted out later as medical-surgical wards • Do not remediate the existing hospital, but expand four outpatient services by moving them into vacated areas	$882m
3	Intermediate • Build an acute service building for theatres, ICU, ED, a coronary care unit, a cardiac catheter laboratory and radiology, as well as support services • Build a ward tower for AAU and four medical-surgical inpatient wards • Do not remediate the existing hospital, but expand four outpatient services by moving them into vacated areas • Vacate and decommission the existing surgical wing	$944m

The options progressively add scope and cost to the project to provide decision-makers with a clear cost-benefit trade-off, as discussed in the multi-criteria analysis below.

All options apart from the status quo build an acute services building (ASB) that accommodates theatres, ICU, ED, a coronary care unit, a cardiac catheter laboratory, radiology and support services. In addition to the ASB, option 2 builds a ward tower that would accommodate an acute assessment unit, with the rest of the building left as shell space. Option 3 is largely the same as option 2, but it

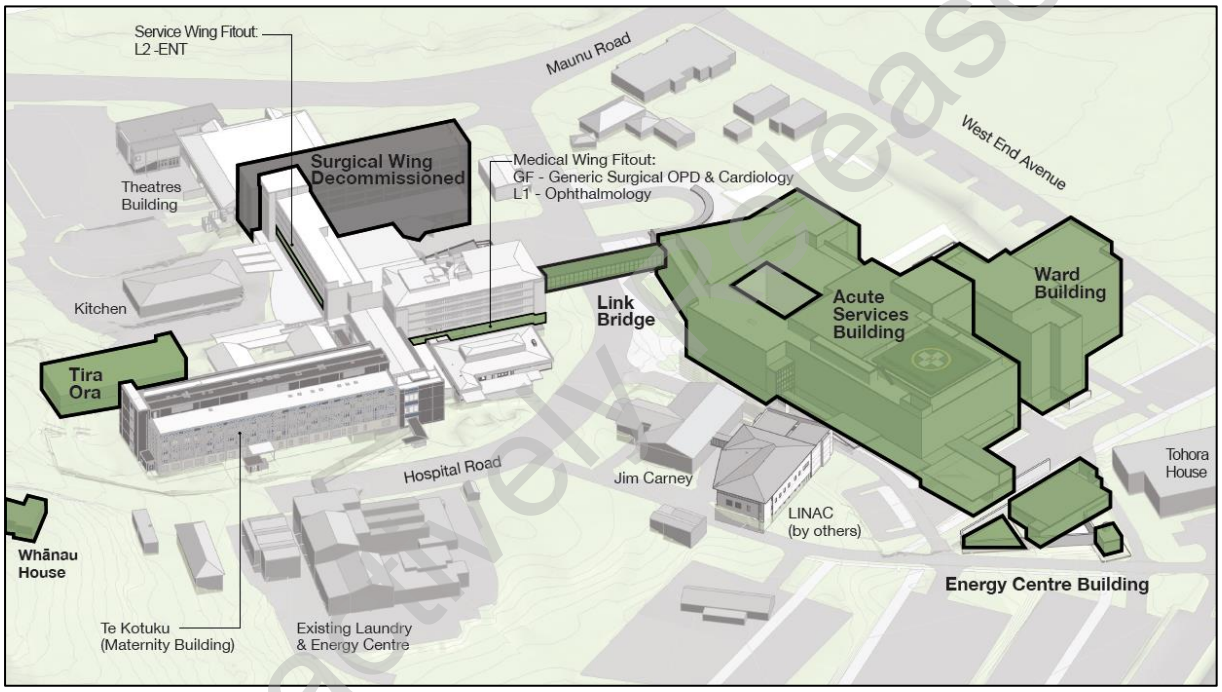
5 While the status quo requires Crown capital funding now, the actual cost to Te Whatu Ora and the government to maintain the current level of hospital capacity in Whangārei would be significant.

completes the fit out of four wards in the ward tower. Option 3 provides enough additional capacity to allow us to vacate and decommission the surgical wing, our oldest and most at-risk building.

Under options 2A and 2B, the ward tower is not built and in option 2B the acute assessment unit would be included in the ASB. The existing child health unit and whanau house are on the site of the ASB and under all options these relocate to the west of the existing maternity block. Options 2B, 2 and 3 also include some expansion of outpatient services that remain in the existing hospital, which is enabled by services moving into the new buildings. This work is a relatively small proportion of the total cost of these options.

The image below shows the Whangārei Hospital site from the southwest, with the ASB and ward tower that would be built under options 2 and 3, and the Tira Ora child health unit relocated to the western part of the site.

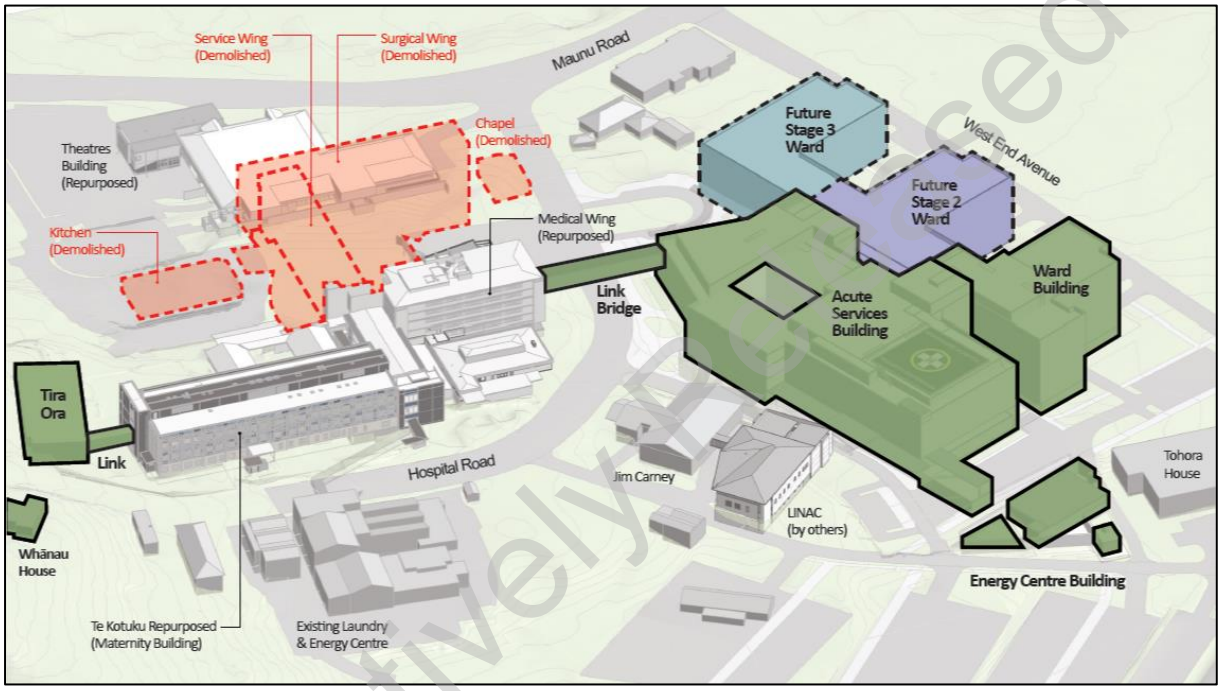
Image 2: The acute services building and ward tower



1.4.3 Future Stages

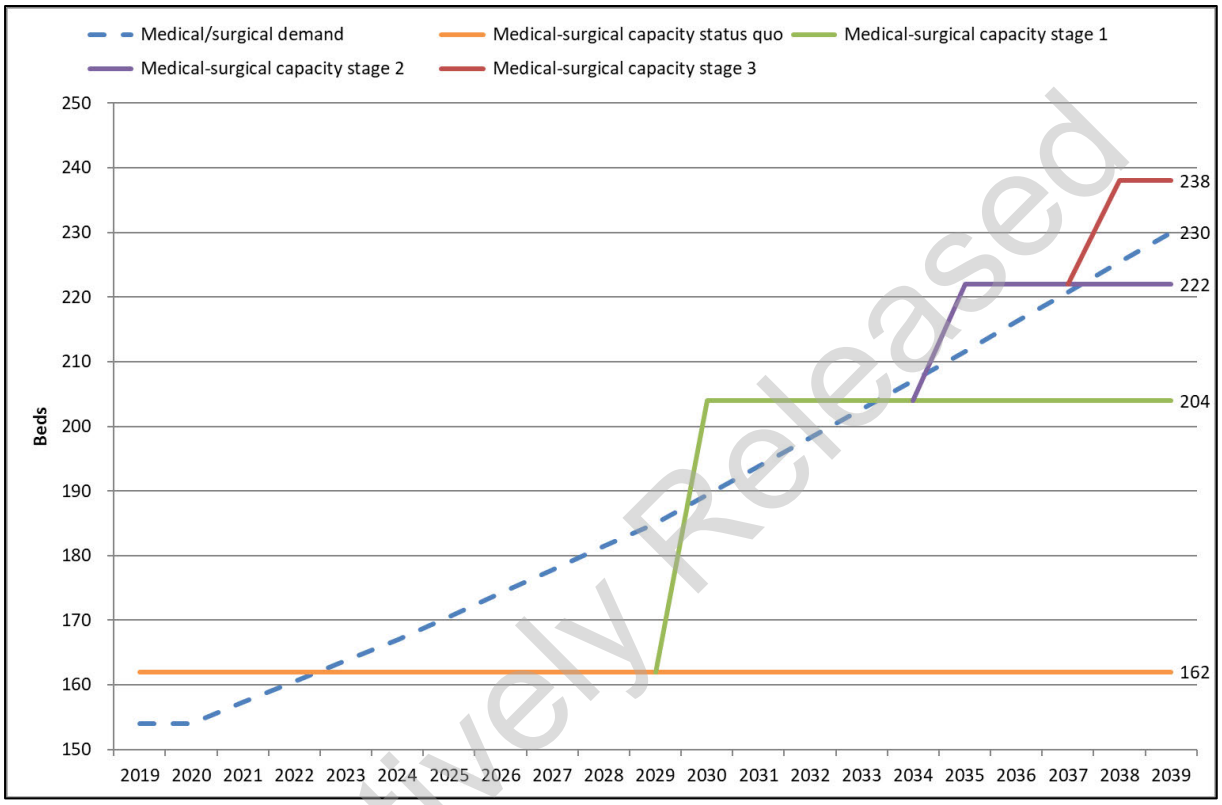
The PBC included options to approve the second and third stages of the redevelopment. These involved building two additional ward towers next to the ASB, as shown in the image below. The second ward tower would provide enough additional capacity to allow us to vacate and demolish the service wing which also has significant condition issues. In the site master plan end-state, the new buildings become an acute and inpatient precinct while the existing hospital becomes an outpatient precinct. The second and third stages of the redevelopment are not part of the shortlist options in this DBC due to the Ministry of Health's affordability concerns and will be subject to future funding requests.

Image 3: End-state of the site master plan



The second and third stages of the redevelopment future-proof stage 1 and allow us to expand the hospital as demand grows. The graph below illustrates this with medical-surgical beds. Under the recommended option 3, the first stage of the redevelopment provides medical-surgical beds to meet projected demand to 2034. Based on current demand projections, the second and third stages would then be needed in the mid to late 2030s to keep up with demand. Providing enough capacity to meet demand is crucial for realising benefits of the redevelopment, as discussed further below.

Graph 1: Medical-surgical bed demand and capacity



1.4.4 Performance against investment objectives

Following discussions with Treasury, we have kept the investment objectives generally the same as in the PBC. At the same time, we have removed scope from the shortlist options to reflect advice about the amount of Crown capital funding available for the project. As a result, only the recommended option 3 meets all the investment objectives as illustrated by the green shading.

Table 2: Performance against investment objectives

Investment objective	Status quo	Option 2A	Option 2B	Option 2	Option 3
1. Of the 16 high-risk, poor-condition clinical areas, no more than six remain in use on completion of the project	15/16	11/16	11/16	9/16	6/16
2. Of the 12 services that are in accommodation that is not fit for purpose, 11 are in fit for purpose accommodation on completion of the project	0/12	5/12	7/12	7/12	11/12
3. Provide enough capacity to 2031	2022	2025	2034	2025	2034

1.4.5 Multi-criteria analysis

We have taken a multi-criteria approach to assessing the costs and benefits of the shortlist options. We have focused on developing benefit measures that assess the impact of building issues on patients and staff. The benefit measures include rates of mortality amenable to healthcare by ethnicity in Northland, waiting list measures, Health Roundtable measures, a mitigated risk of disruption score, a staff turnover measure and a carbon emissions measure. We recommend option 3 because the additional benefit it delivers over options 2A, 2B and 2 on most measures is far greater than the additional cost.

The table below shows the options' performance on the highest-weighted benefit measures with the green shading illustrating the highest performance. Attachment 1 describes the measures and how we assessed the status quo baseline, while Attachment 3 discusses the impact of the shortlist options.

Table 3: Benefits by shortlist option

Benefit	Status quo	Option 2A	Option 2B	Option 2	Option 3
Rates of amenable mortality by 100,000 population for Māori (M) and non-Māori (NM) in 2040	M – 142 NM – 70	M – 142 NM – 70	M – 49 NM – 52	M – 142 NM – 70	M – 49 NM – 52
Elective services patient flow indicator 2 (ESPI 2) in 2040	97%	97%	65%	65%	65%
Elective services patient flow indicator 5 (ESPI 5) in 2040	97%	96%	94%	96%	94%
Shorter stays in ED – % of presentations meeting six-hour target in 2040	78%	90%	93%	90%	93%
Hospital acquired complications as a proportion of total episodes by 2040	2%	1.7%	1.9%	1.7%	1.6%
Relative stay index by 2040	122%	116%	118%	116%	112%
Percentage of building risk addressed	0%	34%	66%	69%	100%
Capital cost	**$0**	**$759m**	**$889m**	**$887m**	**$944m**
Rank	**5**	**2**	**4**	**3**	**1**

Performance on the benefit measures reflects the scope of each option. For example, option 2B performs better on the elective services patient flow indicator 5 (ESPI 5) waiting list measure[6] than options 2A and 2 because it delivers more recovery beds for surgical procedures. However, most of these additional beds are in surgical wing wards that are too small and not fit for purpose, so option 2B performs poorly on hospital acquired complications and the relative stay index. Option 2A performs worse than option 2 on two benefit measures, but we have ranked it higher because of the cost difference between the options. The economic case discusses the benefit value the options deliver relative to their cost differences.[7]

To illustrate how the shortlist options affect the benefit measures, we highlight performance on the shorter stays in ED measure. The Ministry of Health's target is that 95 percent of people presenting to emergency departments should be admitted, discharged or transferred within six hours. Poor performance on this measure indicates an ED is often overcrowded, which in turn is associated with poorer clinical outcomes, reduced privacy and dignity and poor patient flows.[8]

6 ESPI 5 is the proportion of patients given a commitment to treatment but not treated in the required timeframe. It measures waiting times for services such as hip operations that involve surgical procedures and associated inpatient stays, so performance is affected by the number of beds, theatres and procedure rooms relative to demand. A higher percentage on ESPI 5 indicates worse performance and our target is 0 percent.

7 Attachment 1 discusses baseline performance on the benefit measures and the proposed causal sequence between achievement of the investment objectives and performance on the benefit measures. Attachment 4 discusses how we expect the benefit measures to vary under the shortlist options.

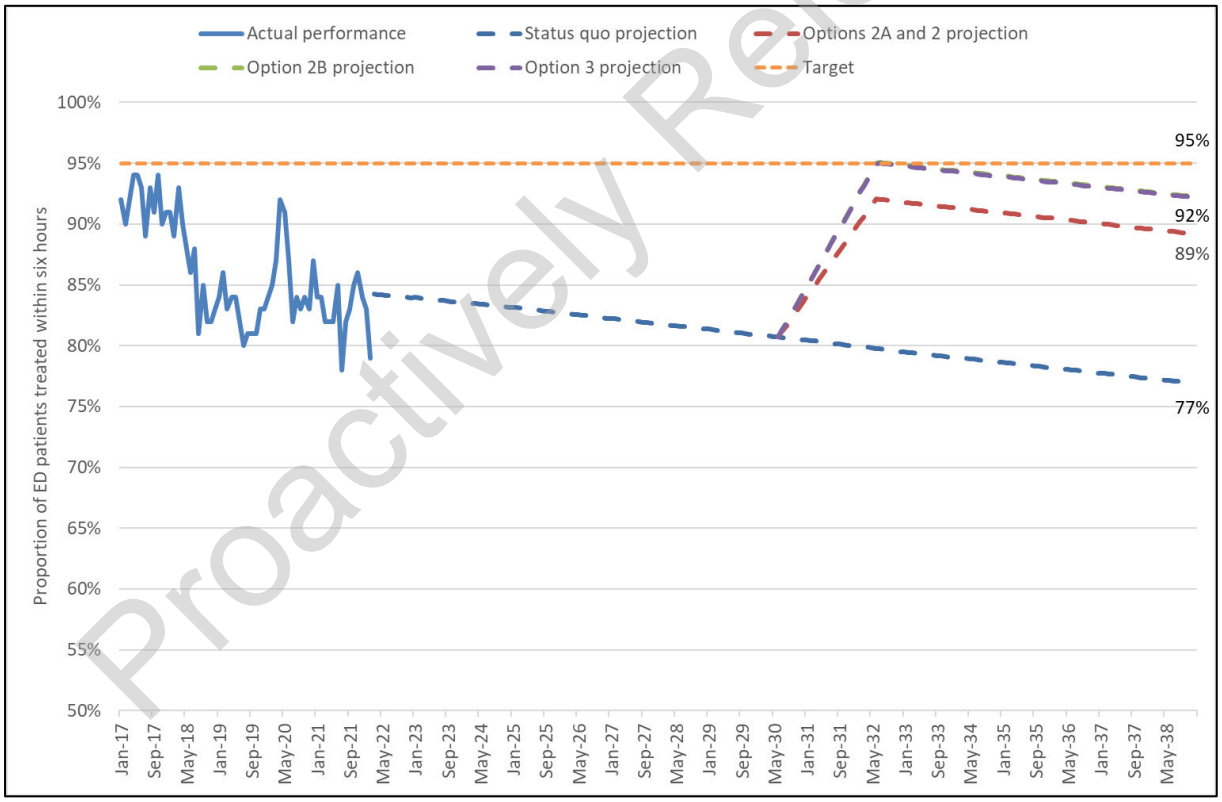
8 Targeting Emergencies: Shorter Stays in Emergency Departments (moh.govt.nz)

As noted above, Whangarei Hospital's ED is currently too small both in terms of the capacity needed to meet demand and in the size of the spaces available. In addition, bed demand is beginning to exceed capacity, so patients sometimes have to stay longer than necessary in ED due to a lack of bed capacity.

Both factors affect performance on the six-hour target: monthly demand relative to capacity in ED and in medical-surgical beds have together been a good predictor of performance on the six-hour target since 2017.[9] Assuming the relationship between the variables continues over the planning period, performance on the six-hour target declines to 77 percent by 2040 as capacity deficits in ED and medical-surgical beds grow under the status quo.

All the shortlist options except the status quo expand the ED from 29 to 41 points of care. Options 2B and 3 also build enough medical-surgical bed capacity to meet demand while options 2A and 2 do not. As shown in the graph below, all options improve performance on the six-hour target by expanding ED, but the additional bed capacity provided in options 2B and 3 results in better performance, as there is a reduced likelihood that bed blockages will prevent patients from transferring out of ED.[10]

Graph 1: Projected performance on the six-hour target



9 The average error of the predicted performance is 3.8 percent, better than the linear trend or either of the demand-capacity variables individually. This is discussed further in Attachment 1.

10 Once additional physical capacity becomes available, we assume services will take two years to employ more staff and increase resourced capacity.

1.4.6 The preferred option

We recommend option 3 based on the shortlist options' relative performance on the investment objectives and project benefits. However, only option 2A meets the cost guidance for the project as the Chair of CIC advised in December 2021 and Te Whatu Ora Te Tai Tokerau acknowledges that the government may therefore select option 2A in response to this business case. In this situation, there would still be an opportunity to achieve the investment objectives and realise the project benefits if further funding is made available in 2024 to deliver the scope of option 3.

Option 3 performs best in the multi-criteria analysis because it is the smallest project that allows us to vacate and decommission the surgical wing, which is the part of the existing hospital that is in the worst condition and creating the most significant health and safety risks for patients and staff. Option 2 shows that even a relatively small reduction in scope from option 3 (i.e., not fitting out four wards in the ward tower) results in only a 6 percent cost saving but a substantial reduction in benefits, as we would have to continue to use the surgical wing with its condition-related risks and poor fitness for purpose.

Option 2B shows that remediating the surgical wing would be uneconomical, as it costs more than option 2. While it delivers more bed capacity by re-commissioning old wards in the surgical wing, these would not be fit for purpose and would not mitigate the risk of hospital acquired complications and other issues. Remediation of the surgical wing under option 2B would also cause disruption to the services that continue to use the building.

Option 2A is close to the cost guidance the Chair of CIC advised in December 2021. On its own, option 2A would require us to continue to use the surgical wing, so like options 2B and 2 it fails to meet the investment objectives, and the loss in benefit value compared with option 3 is arguably greater than the cost difference between the options. Under all options that do not build or fit out the ward tower, patients and staff would have to travel several hundred metres to get from the medical-surgical wards to the acute section of the hospital, which would compromise services and patient safety.

1.4.7 Summary of the option 3 and 2A

The table below summarises the capacity delivered under options 3 and 2A.

Table 4: Areas delivered under the preferred option and phasing option 2A

Area	Department	Option 3	Option 2A
Acute services building	Theatres and surgical sterilising unit (SSU)	10 theatres	10 theatres
	ICU/HDU	12 beds	12 beds
	ED	41 + 3 shell bed bays, 4 resuscitation beds	41 + 3 shell bed bays, 4 resuscitation beds
	Paediatric AAU	4 beds, shell	4 beds, shell
	Acute and satellite radiology*	2 CT, 2 ultrasound, 2 x-ray and 1 MRI	2 CT, 2 ultrasound, 2 x-ray and 1 MRI
	Coronary care unit	8 beds	8 beds
	Acute cardiac catheter laboratory	1 room	1 room
	Front of house	729m^2	729m^2
	Back of house: kitchen, loading dock, non-clinical support and environmental services	1,991m^2	1,991m^2
Ward tower	Acute assessment unit (AAU)	23 beds	Not included
	Medical-surgical beds adjacent to AAU	7 beds	Not included
	Medical-surgical ward 1	32 beds	Not included
	Medical-surgical ward 2	32 beds	Not included
	Medical-surgical ward 3	32 beds	Not included
	Medical-surgical ward 4	32 beds	Not included
Existing hospital**	ENT expands	5 rooms	Not included
	Ophthalmology expands	6 rooms	Not included
	General surgery expands	7 rooms	Not included
	Cardiology expands	4 rooms	Not included
Child health unit	Consult rooms	7 plus 1 shell	7 plus 1 shell
	Treatment rooms	2	2
	Associated support space including gym, therapy and playrooms, open plan administration space	-	-
Whanau house	Bedrooms	5	5

* Existing radiology remains in the service wing while these support acute services in the ASB. The ASB includes shell space for radiology to move across in stage 2.

** Attachment 2 discusses the definition of an outpatient 'room' for the purposes of assessing demand and capacity.

1.4.8 Cost of the preferred option

As noted above, option 3 exceeds the Chair of CIC's cost guidance for the project. When we submitted the previous iteration of this DBC in May 2021, the cost of option 3 was $711m.[11] Since then, we have reduced the floor area, but the cost has still increased to $944m predominantly due to costs increasing in the order of $5,000 per square metre. The main reasons costs have increased despite the floor area reduction are:

- Higher than expected construction cost inflation over the last year and higher projected inflation
- Additional infrastructure requirements following more detailed investigations
- Inclusion of digital enablement work in the project scope.

1.4.9 Split funding for option 3

While this DBC recommends option 3, decision-makers could deliver the scope of option 3 by approving option 2A now and approving the difference between the two options in 2024. If decision-makers chose to split funding in this way, we expect Te Whatu Ora would submit a business case for the balance of the funding in 2024/25.

Based on current estimates, the funding sought in this business case would be $184.585m. This would include costs for building the ward tower and remodelling parts of the existing hospital to expand accommodation for outpatient services.

In order to enable the split in funding for option 3, we have included the costs of designing the ward tower in the current cost for option 2A.[12] Under the programme for option 3, developed and detailed design work would continue until late 2025, allowing construction to start on the ASB and ward tower in mid-2026. Under a split funding scenario, if the design of the ward tower is not funded now but funding is approved in 2024, it would further delay and disrupt the project.

11 Northland DHB has self-funded the various business cases to this point and could not afford to fund full concept designs. Following submission of the first iteration of this DBC, the Ministry of Health allocated funding to allow us to progress concept designs. We subsequently completed a significant value management exercise informed by external peer reviews jointly commissioned by Northland DHB and the Ministry of Health.

12 The costs are around $14m. While this sounds like a lot, it would cover developed designs, detailed designs, engineering assessments and consents and the work would take around three years. Work on building replacement accommodation for child health and whanau house would continue during this period and is scheduled to be complete by mid-2025 to allow construction of the ASB to start.

The table below summarises how option 2A and the balance of option 3 would fit together in a split funding scenario.

Table 5: Staging summary for option 3

	Stage 1 (option 2A)	Stage 2 (balance of option 3)
Cost	$758.982m	$184.585m
Funding approval	2021/22	2024/25
High-level scope	ASB (with some shelled areas) Child Health Unit Whanau house Link bridge to medical wing	Ward tower Fit out of ASB – front of house, kitchen, staff support areas etc. Remodel areas of the existing hospital for outpatient services Surgical wing decommissioned
New beds built	20	158
Total bed capacity	311	361[13]
Square metres	27,437m2	13,216m2
Design completion	September 2025	September 2025
Construction start	June 2026	June 2026

1.5 Commercial case

Although this DBC is focused on Project Pihi Kaha, the Commercial Case considers both Project Pihi Kaha and Project Whakatupuranga, the Nelson Hospital redevelopment, which form Tranche 1 of the Regional Hospital Redevelopment Programme (RHRP). Te Whatu Ora's Infrastructure and Investments team has applied a programme-wide approach across the redevelopments recognising the commonality in the size, scale and complexity of the projects and the potential to achieve synergies and efficiency gains across both.

1.5.1 Market engagement

To support the development of the Commercial Case, the former Health Infrastructure Unit (HIU) in partnership with Northland DHB and Nelson Marlborough Health undertook a three-step market engagement process, which was facilitated by EY and included participation from Te Waihanga. In undertaking this process, the HIU and its partners[14] sought to leverage the experience and insights of the private sector by allowing an open, two-way dialogue between the client and design consultants, construction contractors, major subcontractors and other project advisors.

[13] Option 3 also decommissions beds in the surgical wing, so the total additional bed capacity compared with option 2A is less than the additional new beds built.

[14] HIU has now moved into Te Whatu Ora and renamed as the Infrastructure and Investments Group, while Northland and Nelson Marlborough DHBs are districts within Te Whatu Ora. Hereafter this is referred to as the 'project group', except where there is a specific reference to the pre-amalgamation organisations.

In general, there was significant interest in the redevelopments from industry, with suppliers eager to be involved under the right conditions. Many emphasised that that their interest in the redevelopments is conditional on the approach that is taken for project delivery, including packaging, procurement approach and risk allocation, with the key themes from the feedback received outlined in the below table.

Table 6: Market engagement key themes

Key theme	Descriptor
Being a better client through smarter planning and delivery	To maximise outcomes of the RHRP, HNZ needs to make a significant upfront investment in time and resources. This includes developing program-wide positions on standardisation, off-site construction, outcomes and procurement.
Working collaboratively with the market	Industry showed clear appetite to move towards more collaborative models and approaches. Central to this is establishing a team structure and expectation that encourages the right behaviours and best-for-project outcomes.
Involving the industry early	There was a strong desire for the market to be engaged much earlier in the project lifecycle. Early engagement – though not necessarily Early Contractor Involvement (ECI) – was a way to meaningfully influence the design, buildability and delivery of the redevelopments.
Achieving a fair and transparent allocation of risks	Suppliers highlighted a preference for procurement models that allow risks to be allocated collaboratively and fairly on a best-for-project basis, in alignment with the Construction Sector Accord.
Taking a programme-wide approach	There is significant opportunity to develop a whole-of-programmed approach to governance, building client-side capabilities and implementing consistent systems. This was an important way of addressing market capacity constraints.

1.5.2 Procurement strategy

A range of potential delivery and risk transfer approaches to procuring the redevelopments were then considered. The types of procurement models comprise three broad categories – traditional models, collaborative models and bundled models – that reflect differing risk transfer, contract duration and private sector participation. These models were evaluated through a series of workshop. The evaluation was guided by the key objectives sought in the optimal procurement model, including time to completion, flexibility, cost certainty, innovation and incentives, market attractiveness, as well as supply chain integration.

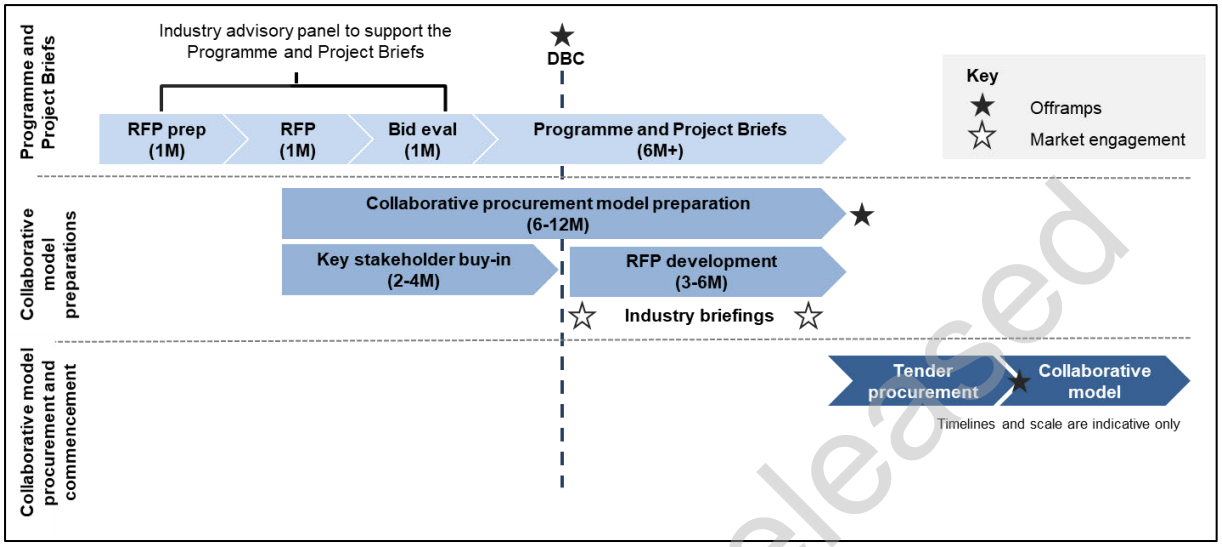
Based on the assessment, it is recommended that the redevelopments are procured through a collaborative procurement model. Collaborative procurement models have the potential to help the project group address previous inefficiencies in New Zealand health infrastructure delivery and best respond to feedback identified during the market engagement process. These models allow industry partners to be engaged early and meaningfully influence the design, build and delivery of the projects from the outset. The team structure, expectations-setting and shared responsibility inherent to these models promotes a high-level of knowledge transfer and incentivises behaviours that deliver best-for-project as opposed to best-for-party outcomes. Collaboration also lends itself to delivering maximum flexibility and adaptability, thereby allowing the project group to best respond to unknowns relating to project scope, risks (such as supply chain risk) and cost.

This procurement approach represents a significant shift in how the health sector has traditionally planned, procured and delivered major infrastructures projects. A separate workstream being led by the I&I team is underway to understand the planning and preparation required, outcomes sought, key risks areas and potential trade-offs. It will also explore the potential to package and/or bundle services across the redevelopments. At the time of finalisation of the DBC, this workstream was in its early stages, however, the initial thinking has helped inform the procurement plan.

1.5.3 Procurement plan

In procuring the redevelopments, the project group has identified three key phases to be undertaken, with these and indicative timeframes provided in Figure 1.

Figure 1: Illustrative procurement plan overview



The project group will lead development of a Programme Brief for the RHRP that details the objectives, requirements and programme-wide positions (e.g., governance, design standardisation, operational and functional requirements, data and digital and offsite construction) prior to commencing subsequent design phases. A Project Brief for each redevelopment will also be developed that includes the site-specific considerations alongside the final planning and design. The development of the Programme and Project Briefs is intended to be a highly collaborative process between Government and industry to harness innovation and learnings from the market and seek support, input and expert advice on key RHRP decisions.

Alongside development of the Programme and Project Briefs, the project group will undertake preparations for the collaborative procurement approach. This includes further investigating the approach and assembling an integrated team to lead procurement and delivery, generating buy-in from key stakeholders and developing the procurement and contractual document that forms the basis of the RFP. Through this phase, it is expected that the capability and organisational readiness within the project group will be enhanced, which will support the shift in working mentality and behaviours required for success.

Once the project group has comfort that it is sufficiently prepared to proceed with collaborative procurement, the next crucial step is collaborative model procurement and commencement. The project group will release the RFP to the market and then engage with bidders through a series of interactive workshops that cover all aspects of the RFP and allow for two-way dialogue to support the development of responses. These will then be evaluated largely on quality (non-price attributes), after which the successful bidder will form an integrated delivery team with the project group. This team will then progress design, establish relationships with the supply chain, confirm packaging and/or bundling and agree costs (if not already negotiated).

Importantly, this procurement plan represents the project group's initial thinking, and will be further developed and refined alongside internal stakeholders, external advisors and the market following

completion of the DBC. Through this process, HNZ retains the optionality to change the preferred procurement approach. There are four key off-ramps throughout the procurement plan, including approval of the DBC, finalisation of the Programme Brief, generating stakeholder buy-in and tender procurement. At these off-ramps, the project group can look to pursue alternative models, such as a form of early contractor involvement under a Design and Build or Construct Only model.

1.5.4 Potential implications of a collaboration model

Preliminary work has been undertaken on the potential time and cost implications of adopting a collaboration model. Given this would be the first use of the model by Te Whatu Ora, the development of detailed procurement procedures and the time taken to select a preferred Collaboration participant and execute a Collaboration agreement is estimated to add approximately ten months to the Master Programme which could have cost implications (based primarily on additional escalation).

1.6 Financial case

The financial case discusses the capital costs of the recommended option and assesses the overall affordability of the project for Te Whatu Ora. We are seeking Crown funding for the project's capital costs and we expect to meet the consequential operating costs using the funding framework that will replace the population-based funding formula for DHBs.

A key point is that the costs of the shortlist options other than the status quo are overestimated because maintaining an operating hospital at its current capacity under the status quo will require significant investment. In the economic case, the capital and whole of life costs of the status quo option are $0, which refers only to the amount of Crown capital funding required for the proposed project and ignores the broader consequences of not investing.

We have not comprehensively assessed the cost of the status quo because it would complicate the multi-criteria analysis in the economic case: if we add costs to the status quo we would also have to add benefits to make it a fair comparison, so the status quo could no longer be an appropriate baseline comparator. However, our quantity surveyor has estimated the cost per square metre of remediating the surgical wing is higher than the equivalent cost for building the ward tower and ASB, indicating the costs of the status quo would be significant. The remediated surgical wing would still not be fit for purpose and would still have higher ongoing maintenance costs than the new buildings.

Inputs into the capital cost estimates of the shortlist options include:

- the demand model discussed above and the associated size of the proposed buildings, which were based on concept designs, international peer reviews and value management
- geotechnical assessments of the Whangārei Hospital site
- infrastructure assessments
- a digital blueprint assessing costs of digital enablement in the new hospital
- costs of relocating the child health unit and whanau house
- condition assessments of the existing buildings.

The table below summarises the capital costs of the shortlist options.

Table 7: Cost breakdown by shortlist option

9(2)(b)(ii), 9(2)(j)

The costs are based on a conservative programme schedule that finishes in 2031 and includes cost escalation for this period. Subject to timely funding approval and governance decision-making, we believe it will be possible to deliver the project faster than this and to achieve savings in escalation.

The table below highlights escalation included in each shortlist option by removing it from the construction and digital cost lines. The escalation provision is based on New Zealand Institute for Economic Research projections and the project's quantitative risk assessment, which is discussed further in the risk section (4.5) of the economic case.

Table 8: Cost breakdown with escalation split out

9(2)(b)(ii), 9(2)(j)

The largest operating cost impact of the redevelopment is the additional staff needed to deliver services from the expanded facilities. For example, ED increases from 29 bed bays to 41 bed bays as

part of the redevelopment. The financial model assumes that ED staff numbers will increase to meet demand over two years following completion of the redevelopment.

EY have estimated that the recommended option would directly create 2,781 jobs and add $233m to the regional economy.

1.7 Management case

We have developed the management case in consultation with the Infrastructure Commission and Treasury. The management case covers how the project will be managed and governed, as well as plans for managing the changes enabled by the redevelopment, delivering the associated benefits and managing the project risks.

The project governance arrangements are based on the Infrastructure Commission's project governance guide, which sets out what public sector agencies should consider in establishing governance arrangements for large infrastructure projects. The proposed arrangements aim to ensure that project decision-making is effective, efficient and transparent and that there is a single point of accountability through the Senior Responsible Owner, supported by a governance board and a project management team.

The amalgamation of DHBs into Te Whatu Ora from 1 July 2022 will affect the institutional context and the governance arrangements for the Whangārei Hospital redevelopment. The transfer of key staff to one organisation will help to streamline existing processes, however a key consideration will be to ensure that the governance team is sufficiently empowered to manage and implement the project as efficiently and effectively as possible to avoid delays and any associated cost implications.

As noted in the discussion of the demand model above, changing models of care to better manage demand is crucial to realising the benefits of the proposed investment. Northland DHB implemented initiatives set out in its 2020 CSP and others not included in that document. These include:

- Allocating $5m for primary care workforce initiatives
- Establishing four Kaupapa Māori Locality hubs and a Clinical hub to support unenrolled patients
- Implementing Regional Collaborative Community Care (RCCC)
- A new electronic medical record for Whangārei Hospital at least two years ahead of completion of the redevelopment to ensure we have a digitally sustainable hospital which will help enable and drive data driven healthcare, consistent decision making and reduced variation, as well as other new ways of working yet to be envisaged in the Clinical Services Plan.

Te Whatu Ora Northern Region is working on a regional clinical services plan which would guide this work following DHBs' amalgamation into Te Whatu Ora.

As noted above, the budget includes costs for digital enablement of the new hospital. This covers everything needed for the hospital to operate to an acceptable standard. Our consultants and the Ministry of Health have confirmed that the scope of the digital enablement work aligns with that planned for the redevelopment of Nelson hospital and other recent projects. We expect that Te Whatu Ora will progress work on digitally enabled models of care in the northern region in parallel with the Whangārei Hospital redevelopment and part of the change management will be aligning these two projects.

Given the scale of the project, a key part of delivering the expected benefits is ensuring that we understand the impacts of the project across the organisation and that we are prepared to use the

new facilities. We have developed a change management plan to assess these changes and set out how we will engage stakeholders. We are also developing a workforce plan, which will cover how we plan to recruit staff for the new facility, which is likely to become more challenging given projected demographic changes over the next 10 years.

The management case also discusses how we will track whether the benefits of the project are being realised, how we will monitor and manage key risks and the assurance framework for the project. The project went through Gateway reviews 0 and 2 and we are planning a second Gateway review in the middle of 2022.

2.0 Introduction

This detailed business case (DBC) seeks approval to invest in Whangārei Hospital to replace a large section of the main block and add capacity. The business case process is organised around a five-case structure designed to systematically ascertain 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
- is achievable – the management case.

Whangārei Hospital has significant building condition, fitness for purpose and capacity issues. Northland DHB had been planning the proposed redevelopment since 2015 and this is the fourth business case we have developed. In 2020, we submitted a Programme Business Case (PBC) that argued there was a need for large-scale programme of investment in Whangārei Hospital.

In May 2020, the Ministry of Health's Capital Investment Committee (CIC) endorsed the PBC, but ministers have not formally considered or approved it. Due to the urgency of the property issues at Whangārei Hospital, Northland DHB resolved to proceed with a Detailed Business Case (DBC) without ministerial approval and CIC has supported this decision.

Northland DHB and Te Whatu Ora Te Tai Tokerau have been working closely with the Ministry of Health, Treasury and the New Zealand Infrastructure Commission on this DBC. It has gone through several iterations and the current version includes the results of concept designs, international peer reviews of different aspects of the project, a quantitative risk assessment of the project contingency and market engagement on procurement models and work packaging.

While the PBC was not formally approved, central government stakeholders have been supportive of the need for a redevelopment and CIC has advised there is funding set aside for this project. This DBC therefore focuses on how to redevelop Whangārei Hospital, rather than arguing a redevelopment is needed.

To do this it reviews the PBC case that the recommended way of redeveloping the site offers better value for money than long list alternatives such as remediation or building in a different location. The shortlist options then deal with the trade-off between cost and scope for the first stage of the redevelopment and how to balance affordability constraints and the need to meet the investment objectives.

The cost of the recommended option 3 is $944m, which exceeds the reserved funding of $711m while the cost of the do minimum option 2A is close to this level at $759m, but option 3 meets the investment objectives and option 2A does not. To resolve this, it is possible for decision-makers to approve option 2A now and to fund the difference between option 2A and option 3 in the 2024/25 Budget ($185m). This would deliver the scope of option 3 and meet the investment objectives while staging the funding in a way that is affordable for the Government.

3.0 Revisiting the Case for Change and Confirming the Short List

The purpose of this section is to review and confirm both the case for change and the shortlist options considered in this DBC. The intent is to briefly outline any significant changes that may have occurred since the PBC.

3.1 Review of the Case for Change

Te Whatu Ora Te Tai Tokerau has reassessed the strategic case for the Whangārei Hospital redevelopment as set out in the PBC and we confirm that the strategic context and the case for change remain largely unchanged. This section provides a brief overview of the strategic case and highlights areas that have changed.

The building condition and capacity issues that prompted us to seek funding for a large-scale redevelopment of Whangārei Hospital are unchanged or even more urgent than when we submitted the PBC. The hospital still has buildings that are at the end of their useful lives, areas that are not fit for purpose and hinder clinical care, and physical capacity constraints in several service areas. The project's investment objectives are therefore generally unchanged, though we have updated them to reflect the impact of smaller projects we expect to be complete before the redevelopment. The investment objectives are:

1. Of the 16 clinical areas in high-risk, poor-condition accommodation, no more than six remain in use on completion of the project
2. Of the 12 services that are in accommodation that is not fit for purpose, 11 are in fit for purpose accommodation on completion of the project
3. Provide enough capacity to 2031

Following a recommendation from Treasury, we have tried to keep the investment objectives relatively unchanged from those we used in the PBC. At the same time, we have removed scope from the shortlist options to reflect CIC's advice about the amount of Crown capital funding available for the project. As a result, only the recommended option 3 meets the investment objectives. Attachment 3 provides more detail on the performance of the shortlist options against the investment objectives.

The health and demographic challenges Northland faces have also either stayed the same or become more urgent over the past two years. These include health inequities, a rapidly growing and ageing population and challenges associated with serving a dispersed, rural district with high levels of deprivation. Other key elements of the strategic case remain largely unchanged, including the project's contribution to existing strategies, stakeholder analysis, risks and key constraints.

3.2 Changes

This section discusses the main changes to the PBC strategic case, ordered by their expected impact on the project:

- Constraint – changes to capital funding availability
- Stakeholder engagement – since the PBC, we have consulted in more detail with local Iwi and with users on the concept designs
- Dependency – addition of a dependency in relocating Whangārei Hospital's Child Health Unit and whanau house
- Strategic context – changes to the institutional and planning environment for health services in New Zealand
- Dependency – changes to project dependencies associated with other capital projects that have progressed or received funding approval since we submitted the PBC
- Constraint – an additional project constraint in terms of changing hours of work to increase utilisation of existing assets
- Risk – an increased likelihood rating for the risk of population and demand projections being underestimated
- Benefits – changes to the project benefit measures.

3.2.1 Constraint – capital funding

CIC advised Northland DHB in December 2021 that the current reserved budget for the project is $711 million. While CIC has not specified a maximum budget for the project, it notes that the reserved budget includes money from the Health Capital Envelope contingency pool. Funding availability has changed from previous iterations of this business case; for example, in the 2020 PBC we sought to develop a recommended option for between $500 and $700 million. A central issue discussed in this DBC is how to balance the funding constraints and the need to meet the investment objectives and address the building issues at Whangārei Hospital.

3.2.2 Stakeholder engagement

The 2020 PBC outlined Northland DHB's engagement with internal and external stakeholders since we started planning the project in 2015. Since we submitted the PBC, we have undertaken more detailed consultation including developing the models of care, functional briefs and concept designs in partnership with clinicians and iwi. We have also worked closely with central agencies, particularly the Ministry of Health, in developing this DBC. The sections below outline the cultural engagement and engagement with clinicians on the concept designs.

3.2.2.3 Cultural engagement and equity

The original Whangārei Hospital was built on the Pūkauakaua Pa site and opened in April 1901. The site holds significance to the mana whenua Te Parawhau hapu and it is important that the new hospital is designed with Māori and for Māori.

Cultural engagement on the DBC, concept designs and models of care has been significant and has included:

- Development of a mana whenua and Māori engagement plan for the project
- Establishment of Ti Ahi Kaa, a cultural advisory group consisting of Mana Whenua - Representatives/Uri of Te Parawhau hapū. This group will operate for the duration of the project

to advise on incorporation of tikanga and mātauranga Māori relevant to the project, the project site and wider cultural landscape

- Engagement with Kaunihera Kaumātua – Te Whatu Ora Te Tai Tokerau's Kaumātua Council, made up of different kaumātua from all Te Tai Tokerau hospitals
- Engagement with Te Tai Tokerau Iwi/Māori health providers from across Te Tai Tokerau, including Te Kahu o Taonui
- Engagement with Kaimahi Māori representatives from across the organisation and across the Tai Tokerau rohe including a survey
- Whānau focus groups made up of various whānau communities, including Hauā (disability), Takatāpui and others
- Engagement and overwhelming endorsement by Te Kahu o Taonui, Te Tai Tokerau Iwi Chairs
- Development of cultural design principles for the project.

The cultural design principles are included in Attachment 5 and these will guide the detailed design work for the project. The work is a key enabler for Northland DHB's priority of achieving health equity, which will remain a priority under Te Whatu Ora and the Māori Health Authority. The five cultural design principles aim to make the hospital welcoming, aligned with Māori spirituality and worldview, reflective of the natural environment and supportive of whanau and community connections. This work also included giving the project a Māori name: Pihi Kaha which means 'growth back to health and strength'.

3.2.2.4 Engagement with clinicians and staff

In developing the models of care, functional briefs and concept designs, the project team consulted extensively with staff. Engagement started in July 2021 and has included establishment of user and advisory groups with over 80 engagement sessions, Whangārei Hospital drop in sessions and numerous presentations to stakeholders.

Our design team has now completed the models of care, functional briefs and concept designs including revisions following engagement and advice from the Ministry of Health and international peer reviewers. Attachment 6 is the summary schedule of accommodation for the project while Attachment 7 lists the models of care and functional briefs undertaken as part of the stakeholder engagement. The project team prepared these in partnership with the Ministry of Health and they can be provided on request.

3.2.3 Dependency – Child Health Unit and Whanau House

The PBC did not include provision for alternative accommodation for the CHU and whanau house, which are on the site of the proposed acute services building. We therefore need to provide replacement accommodation for these services before construction of the ASB can begin. We propose to build this in the western part of the hospital site at a cost of $35 million and the review of the economic case below provides more detail about this.[15]

3.2.4 Strategic context – Institutional and planning changes

Since we completed the PBC, the government announced major changes to the institutional environment for health services based on the recommendations of the Health and Disability Review.

[15] We are referring to this as a dependency because it is on the critical path for the broader project, but it may be more accurate to call it a scope change as it is a part of the project. In the better business case framework, dependencies are external factors that will affect the success of the project.

These changes are likely to affect the strategic environment for health and the governance and management arrangements for the project. Changes to the project management and governance arrangements are discussed in the management case and the strategic issues are discussed below.

The new institutional arrangements are likely to involve changes to local, regional and national strategic goals. We believe it is unlikely that there will be significant misalignment between these revised goals and those of the proposed programme, as achievement of the programme goals is vital to delivering health services to an acceptable standard in Northland. If anything, it is likely to strengthen alignment as one of the explicit goals of the health reforms is to eliminate post-code healthcare, and Whangārei Hospital is a classic example of that post-code healthcare.

At a local level, Northland DHB recently completed a new health strategy for the whole health and social sector. While this may be superseded by local or regional health strategies under Te Whatu Ora, its development preceded the reforms, and we expect the issues and strategies to remain relevant in the new institutional environment. The strategy's primary aim is to achieve health equity, which is also the key driver for the Whangārei Hospital redevelopment.

Regionally, DHBs and the Northern Regional Alliance have progressed work on the Northern Region Capital Roadmap, which will supersede the 2018 Northern Region Long-term Investment Plan. The Whangārei Hospital redevelopment is a regional priority in both documents. From a regional perspective, a key driver for expanding Whangārei Hospital has been to avoid spill-over demand at Auckland metro hospitals, which would exacerbate their capacity issues. We expect the Northern Region Capital Roadmap to remain a key planning document in the new institutional environment.

The Health and Disability Review recommended developing a NZ Health Plan based on the NZ Health Strategy, which would set the overall parameters for planning in the system and would be the basis for capital, digital and workforce planning. We understand the NZ Health Plan is at an advanced stage of development, and we do not believe the strategic goals for the overall health system would change to the extent that it would affect the value for money assessment of the proposed redevelopment of Whangārei Hospital.

3.2.5 Dependency – other projects

Since we submitted the PBC, we have progressed other projects underway or in planning at Whangārei Hospital.

Some projects involve work on buildings that would be affected by the redevelopment. For example, we are currently expanding a community dental centre so that dental services can move out of Whangārei Hospital and ophthalmology services can expand into the space they are vacating. This involves work on level 5 of the surgical wing. Under the recommended option in this DBC the surgical wing would be decommissioned, and ophthalmology would move into the medical wing. We are proceeding with this project because there is an urgent need to increase ophthalmology capacity at Whangārei Hospital and the remodelling of level 5 is relatively minor. However, this highlights the need for an agreed and funded redevelopment programme so that we can begin to address the building issues at Whangārei Hospital in an efficient and coordinated way.

Other large projects, such as the Te Kotuku maternity expansion and the recently-approved linear accelerator facility, can progress in parallel with the redevelopment and give effect to the Master Plan for the Hospital site. We are moving our community mental health clinics and mental health administration into a facility off site into central Whangārei. We have moved our district nurses and associated clinics into leased community facilities. We are growing the capacity of Bay of Islands

Hospital and continue to increase services at Kaitaia Hospital. Wherever possible we are using mobile services like the surgical and dental buses to reach our communities. More detail about these and their relationship with the redevelopment can be provided on request.

3.2.6 Constraint – increasing utilisation of existing assets

The PBC did not discuss constraints on increasing utilisation of existing assets by increasing working hours. Changes such as completing elective procedures on weekends would allow us to increase capacity in response to increasing demand. However, we are restricted in doing so by employment arrangements, such as the multi-employer collective agreements that many staff are part of. Increasing utilisation would not on its own address capacity deficits given the gap between demand and capacity and related issues such as staff shortages, but it is a constraint on current and projected service capacity in Northland and elsewhere. While there have not been specific changes in this area that would affect the project since the PBC, readers may ask why this option is not being pursued if it is omitted as a constraint.

3.2.7 Risk – underestimating health service demand

We commissioned Ernst & Young to update the demand model they completed for the PBC. A key assumption of their methodology is that future demand for health services is determined mainly by the size and age of Northland's future population and they base their assessments on Stats NZ's population projections. We are concerned that Stats NZ's projections underestimate Northland's population growth: the projections have increased nearly every time they have been updated over the last decade. They also do not consider significant regional projects that could affect population growth. This is discussed further in Attachment 2.

The largest contribution to Northland's annual population growth of over 2 percent since 2013 is internal migration and there is no reason to expect this to decrease. However, Stats NZ projections drop to 0.8 percent growth within the next few years and progressively decline to 0.3 percent during the late 2020s.

Compared with the PBC, we have therefore recorded an increased likelihood of the risk of demand projections being underestimated and demand exceeding the additional redevelopment capacity earlier than expected. This in turn would limit the benefit the redevelopment achieves in terms of reducing waiting times and unmet need. Again, nothing specific has changed that would affect the project, but Te Whatu Ora Te Tai Tokerau has further developed its collective view on this issue since the PBC. Attachment 2 provides more background on the Northland population projections and their implications on demand at Whangārei Hospital.

3.2.8 Benefits – changes to benefit measures

We have made some changes to the benefit measures used in the economic case and Attachment 1 discusses these in more detail. We have reviewed the benefits based on the following principles:

- Focus on benefits to the New Zealand public (following the Better Business Case guidance)
- Focus on the 20 percent of benefits that provide 80 percent of the programme's benefit value (following the Better Business Case guidance)
- Ensure that there are measures that capture the benefits of achieving each of the three investment objectives: condition, fitness for purpose and capacity
- Within the capacity investment objective, measure the benefit of addressing capacity deficits in each of the four areas we are assessing demand and capacity: inpatients, outpatients, theatres and ED

- Focus on measures where the assumed causal sequence from achievement of the investment objectives to improvement in performance is the most direct and likely.

We have also added an emissions measure following advice from central agencies and the government's decision that the public sector should decarbonise by 2025.

3.3 Review of the Economic Case

This section reviews the long and shortlist options from the PBC. We reaffirm the long-list option analysis from the PBC and discuss how we established the minimum scope of the proposed redevelopment. This section also discusses the changes to the shortlist options from the PBC, in particular the changes to the cost and scope of the recommended option, and it puts the proposed redevelopment into the context of the master plan for the Whangārei Hospital site.

3.3.1 Long-list review

The long-list analysis aims to provide assurance that Te Whatu Ora Te Tai Tokerau has considered all feasible alternatives (including non-property solutions) for meeting the investment objectives and that the preferred option offers the better value for money than these alternatives.

The most feasible non-property solution involved moving services out of Whangārei Hospital and into the community or district hospitals where possible, as discussed in the 2020 Clinical Services Plan. This failed to meet the investment objectives and the other critical success factors in the PBC: even in a best-case scenario where it achieved a substantial reduction in the space required at Whangārei Hospital, it would not address its condition and fitness for purpose issues and is likely to create capacity issues elsewhere.

Using the available funding to remediate the existing buildings would not be economical. Our quantity surveyor has estimated the costs of remediation and a like-for-like replacement of the surgical wing are about the same, indicating that replacement has lower whole of life costs.[16] Remediation would also not address the building's fitness for purpose issues as for some services, such as ED, it would be difficult to expand in or around their current locations. Remediation-focused options therefore would not meet the investment objectives, so we have focused on options that replace the surgical wing.

The long list included nine property solutions, which involved rebuilding the hospital in different parts of the site. Long-list option 8 rebuilds the hospital on a mostly empty part of the site across the road from the existing main block and this performed best against the critical success factors. In the PBC we shortlisted small to large scope options within option 8 and the DBC shortlist options discussed below follow the PBC shortlist options with some variations.

16 While we have less evidence about the service wing, it was built at the same time as the surgical wing and has similar issues.

The image below shows the general locations of long-list options 6, 7 and 8 relatives to the existing main block.

Image 4: Long-list option locations

We are confident that option 8 offers the best value for money of the long-list options, even though it has a lower limit in terms of the work that needs to be completed in one tranche. As the new buildings would be separated by a road and some distance from the rest of the hospital, the acute services that need to maintain functional relationships with each other would need to move together. For example, the new buildings would need to accommodate theatres, ED and ICU. If we built a smaller building that only accommodated ED, it would be far from the acute theatres and ICU, which would compromise services and patient safety.

To try to split the work into smaller tranches we explored in detail options that rebuilt the hospital in stages on the western side of the existing main block (options 6 and 6A). We did not shortlist these options because they would have required a lot of work on existing buildings that are at the end of their lives. For example, the front entrance to the hospital as well as the kitchen and its service dock would have had to be relocated within the existing buildings while the work was underway before being replaced in the new buildings, so it would cost a lot more to deliver roughly the same amount of hospital space as option 8. There would also have been a long period of disruption to the hospital from construction noise and other activities, which is mitigated in option 8.

Long-list option 7 also performed well on the critical success factors, but this faces similar issues to option 8 in that the new buildings would be some distance from the current locations of acute services. We preferred option 8 to option 7 because there is less scope for future expansion in the part of the site that the option 7 buildings would occupy.

As argued below, the shortlisted do minimum options (2A and 2B) offer poorer value for money than the recommended option 3. However, the do minimum options still offer better value for money than other ways the same amount of money could be spent on the Whangārei Hospital site, i.e., by building in other parts of the site or by remediating buildings.

3.4 Short-list review

This section outlines the shortlist options and how they have changed from previous iterations of this business case. It then describes the options in more detail and discusses how we have tried to structure decision-makers' choices for investing in Whangārei Hospital.

3.4.1 Changes to the shortlist

To reflect the purpose of a detailed business case of seeking approval for a project within a programme, we have shortlisted the options from the PBC that can be completed in one tranche. As noted in the introduction, ministers have not agreed to the PBC, but Te Whatu Ora Te Tai Tokerau is proceeding with the DBC with the support of central agencies, and we are working on the basis that the recommended intermediate option in the PBC has been approved.

The 2020 PBC included five shortlist options that progressively added costs and benefits to the project, as summarised in the table below.

Table 8: PBC shortlist option summary

Option	Description	Cost
1	Status quo – retain existing buildings and manage the issues and risks	$0
2	Do minimum – build an acute service building and one ward tower, limited fit out, one tranche. Retain the existing buildings	$517m
3	Intermediate – build an acute service building and one ward tower, extensive fit out, one tranche. Decommission the existing surgical wing	$572m
4	Do more – build an acute service building and two ward towers, extensive fit out, two tranches. Decommission the existing service and surgical wings	$804m
5	Do maximum – build an acute service building and three ward towers, full fit out, three tranches. Decommission the existing service and surgical wings	$1,002m

For the DBC, we have restructured the options as below.

Table 9: DBC shortlist option summary

Option	Description	Cost
1	Status quo – unchanged	$0
2A	Do minimum short term – removes the ward tower from PBC option 2 scope; does not upgrade or remodel the existing hospital	$759m
2B	Do minimum long term – removes the ward tower from PBC option 2 scope; upgrades and remodels the existing hospital	$889m
2	Do less than intermediate – largely the same as PBC option 2	$887m
3	Intermediate – largely the same as PBC option 3	$944m

We have dropped options 4 and 5 from the PBC and added two revised do minimum options. To avoid confusion, we have retained the option numbering from the PBC, so the revised do minimum options are labelled 2A and 2B. The costs of the equivalent shortlist options have increased since 2020 and this is discussed later in this section.

3.4.2 Option descriptions

The sections below discuss the scope of each option and their purpose in the context of this business case, i.e., how we have tried to frame decision-makers' investment choices and the associated trade-offs. We also assess the performance of each option against the investment objectives to give an indication of the implications of the scope-cost trade-offs presented. This is discussed further in the multi-criteria analysis in the economic case. Only option 3 meets the investment objectives. There is a lot of detail included in the scope of each option and we have sought to summarise it here.

For more detail:

- Attachment 2 discusses the capacity each option provides in different service areas and this is summarised after the option descriptions below
- Attachment 3 discusses the performance of the shortlist options against the investment objectives
- Attachment 8 includes diagrammatic images and stacking diagrams of the options and the relocation of services, as well as floor plans of Option 3.

3.4.3 Shortlist option summary

The four main elements of the proposed project are:

- a new acute services building (ASB)
- a new ward tower adjoining the ASB
- upgrades and remodelling of the existing hospital
- a new child health unit (CHU) and whanau house.

All options other than the status quo build the ASB, which accommodates the acute services that are currently in or next to the poor-condition surgical wing: theatres, ED, ICU and a satellite radiology unit. The acute assessment unit (AAU) would also move from the medical wing to the ASB or in the adjoining ward tower in options 2B, 2 and 3. As discussed in the long list section, these services need to be co-located as splitting them would compromise patient safety.[17]

Options 2 and 3 build the adjoining ward tower. Under option 3 this would accommodate AAU and the remaining surgical wing inpatient wards, allowing us to decommission the surgical wing. Under option 2 it would accommodate AAU while the four wards would be left as shell space. Options 2B, 2 and 3 include remodelling of vacated spaces within the existing hospital to allow expansion of outpatient services. Option 2B also remediates condition issues to extend the life of the areas that we would continue to use.

All options involve the relocation of the CHU and whanau house. They all also include supporting elements such as a new central plant building, earthworks, a link bridge between the new hospital and the medical wing and provision for digital services.

The table below summarises what is included in the shortlist options 2A, 2B, 2 and 3 for the main elements of the redevelopment. Where the options all deliver the same kind of space, there is no difference in the size of these spaces; for example, the ED is the same size in all options.

[17] Under option 2B, the AAU moves into the ASB in shell space for future radiology, with the idea that it would relocate to the first ward tower when it is built. We have not included this move in option 2A in order to reduce the cost to the reserved funding. Instead, the AAU would be built in the ward tower if decision-makers select option 2A and approve further funding for option 3 by 2024.

Table 10: Areas delivered by option

Element	Option 2A	Option 2B	Option 2	Option 3
ASB	Theatres and SSU	Theatres and SSU	Theatres and SSU	Theatres and SSU
	ICU	ICU	ICU	ICU
	ED	ED	ED	ED
	Radiology satellite	Radiology satellite	Radiology satellite	Radiology satellite
	Front of house and support amenities shell space	Front of house, café and staff support amenities	Front of house, café and staff support amenities	Front of house, café and staff support amenities
	Back of house shell space	Back of house and support	Back of house and support	Back of house and support
	Coronary care unit	Coronary care unit	Coronary care unit	Coronary care unit
	Acute cardiac catheter laboratory	Acute cardiac catheter laboratory	Acute cardiac catheter laboratory	Acute cardiac catheter laboratory
	Radiology shell space	AAU – in radiology shell space	Radiology shell space	Radiology shell space
Ward tower	Not built	Not built	AAU	AAU
			Mortuary undercroft space only (remains in surgical wing in stage 1)	Mortuary undercroft space only (remains in surgical wing in stage 1)
			Ward shell space	Medical/surgical ward 1
			Ward shell space	Medical/surgical ward 2
			Ward shell space	Medical/surgical ward 3
			Ward shell space	Medical/surgical ward 4
Existing hospital	No changes, except as required on Level 1 of the medical wing to accommodate the link bridge. Medical-surgical wards and outpatients remain in surgical wing, while ED and ICU are decommissioned	**Surgical wing** – remediated to address seismic, weather-tightness and fire safety issues; areas vacated by ED and ICU converted to wards	**Surgical wing** – retained but not remediated. It continues to accommodate three medical-surgical wards, which would move into the ward tower once the shell space is fitted out. Mortuary retained on lower ground floor	**Surgical wing** – decommissioned but not demolished, only mortuary still in use on lower ground floor

Element	Option 2A	Option 2B	Option 2	Option 3
Existing hospital		**Service wing** – space vacated by lab on level 2 is fitted out for ENT. Level 1 fitted out for generic consulting and ophthalmology admin. AAU on lower ground fitted out for general surgery and cardiology outpatients	**Service wing** – space vacated by lab on level 2 is fitted out for ENT. Level 1 fitted out for generic consulting and ophthalmology admin. AAU on lower ground fitted out for general surgery and cardiology outpatients	**Service wing** – space vacated by lab on level 2 is fitted out for ENT. Level 1 fitted out for generic consulting and ophthalmology admin. AAU on lower ground fitted out for general surgery and cardiology outpatients
		Medical wing – level 1 is fitted out for ophthalmology and access for link bridge	**Medical wing** – level 1 is fitted out for ophthalmology and access for link bridge	**Medical wing** – level 1 is fitted out for ophthalmology and access for link bridge
Child health unit and whanau house	Rebuilt to the west of the maternity block	Rebuilt to the west of the maternity block	Rebuilt to the west of the maternity block	Rebuilt to the west of the maternity block

3.4.4 Investment objectives recap

The table below summarises the problem statements and associated investment objectives for the project. The following sections show how each option performs against the investment objectives.

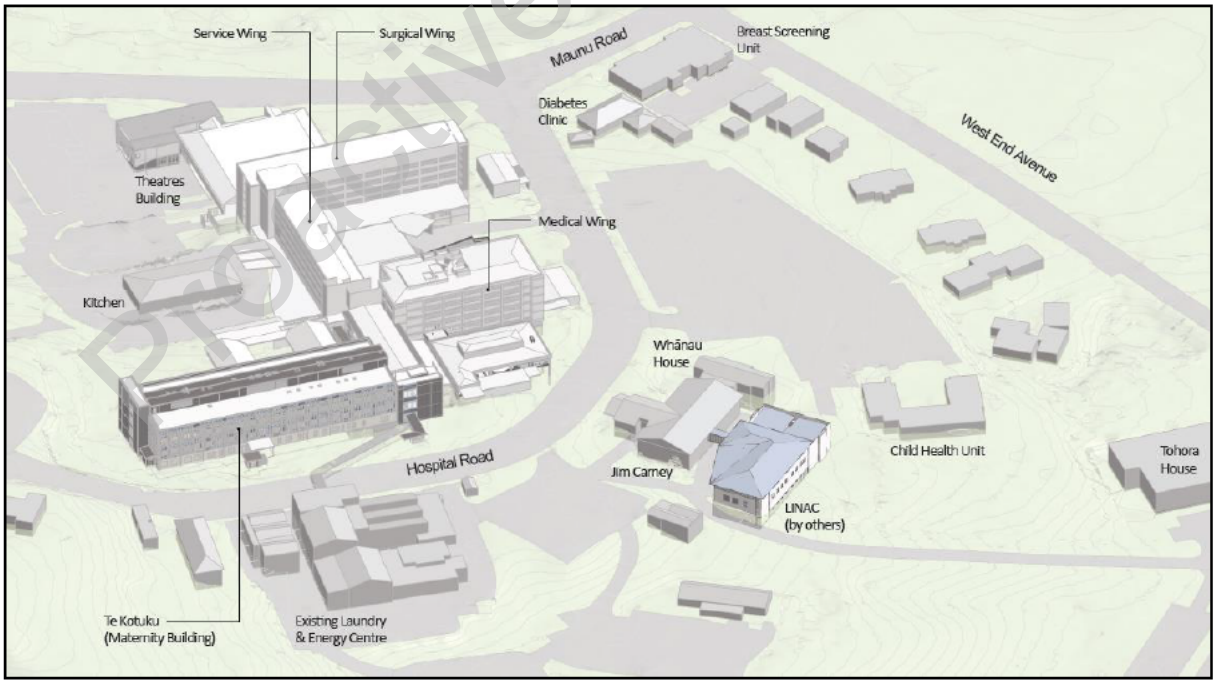
Table 11: Problem statements and investment objectives

Problem statement	Investment objective
Condition: currently 16 service areas are in buildings that create safety and decommissioning risks	Of the 16 service areas in high risk, poor-condition accommodation, no more than six remain in use on completion of the project
Fitness for purpose: currently the accommodation for 12 service areas is not fit for purpose relative to AHFG and other benchmarks	Of the 12 services that are in accommodation that is not fit for purpose, 11 are in fit for purpose accommodation on completion of the project
Capacity: Whangārei Hospital is currently at capacity	Provide enough capacity to 2031

3.4.5 Status quo

The status quo option retains the existing buildings and does not add capacity to the hospital. This would still require effort and resource, as Te Whatu Ora would have to manage issues and risks associated with the condition of the main block, fitness for purpose of different areas and increasing capacity constraints. As discussed in the financial case, the capital cost of the status quo is zero in the context of this business case, but the actual cost of keeping Whangārei Hospital operational over the next 20 years will be significant. The status quo is used as the baseline for most of the project benefits discussed in the multi-criteria analysis below. The image below shows the status quo, including a linear accelerator (LINAC) facility that the government recently funded but is not yet built.

Image 5: Status quo



The status quo does not meet the investment objectives, as shown in the table below.

Table 12: Performance of option 2A against the investment objectives

Investment objective	Performance
Condition	**Not met:** 15 of the 16 clinical areas in poor-condition, high-risk buildings remain in use
Fitness for purpose	**Not met:** none of the 12 areas would be in accommodation that is fit for purpose
Capacity	**Not met:** there would not be sufficient capacity to meet demand in 2031

3.4.6 Option 2A – Do minimum short term

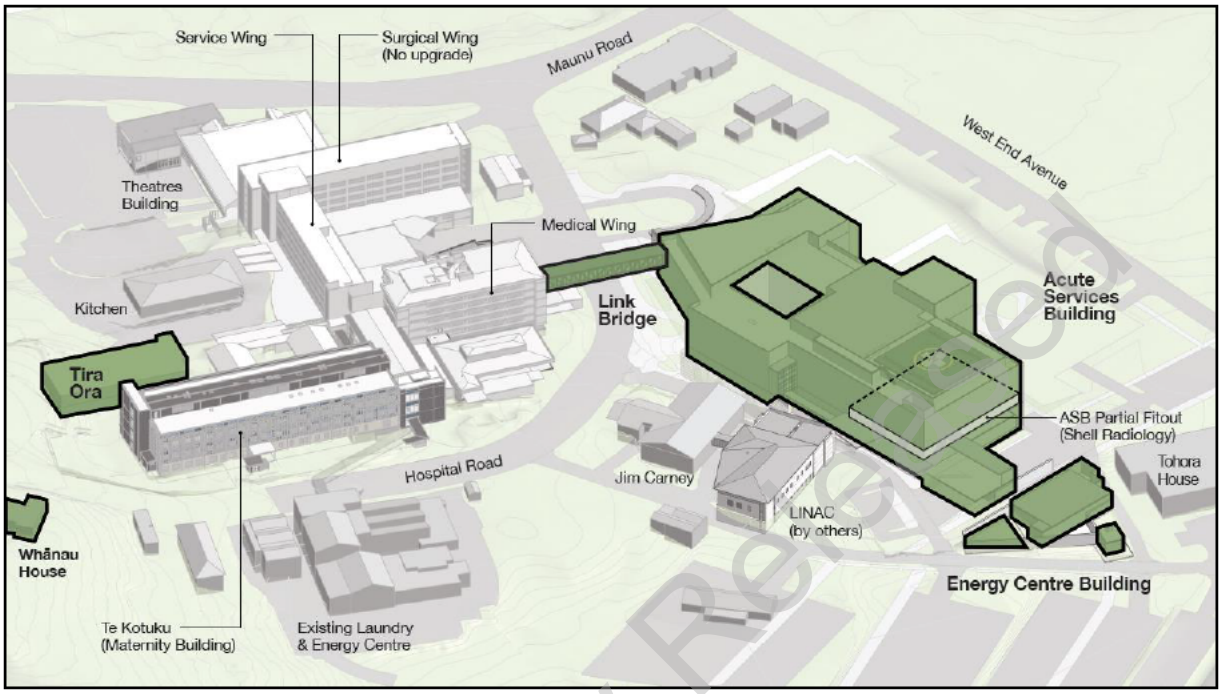
This option is the minimum of what could be completed in one tranche while the hospital could continue operating at an adequate standard. It aims to meet the government's funding guidance of delivering the redevelopment for less than $711m. We have removed any scope other than what is needed to allow the core acute services to operate in the ASB.

Option 2A builds the ASB but no ward tower and does not remodel or upgrade the existing hospital, except to accommodate a link bridge between the medical wing and the ASB. With these exclusions, our quantity surveyor's cost estimate for this option is $742m, but to get to a P85 risk level (i.e. having a 15 percent probability of going over budget) based on the quantitative risk assessment, we have increased it to $755m.

As discussed elsewhere in this DBC, the Government could deliver the scope of option 3 by approving option 2A now and making available the additional funding required for option 3 by 2024. With this in mind, we have also removed from scope the AAU, which is included in the ASB future radiology shell space in option 2B. If there is a second funding allocation to deliver the scope of option 3, the AAU would be built in the ward tower, so it would not need to be included in the ASB.

As the ward tower is not built in this option, the surgical wing would continue to be used and would accommodate three wards, outpatient services and mortuary. The image below illustrates the main elements of this option.

Image 6: Do minimum short term



From the point of view of allowing option 3 to be funded in two stages as described above, option 2A is preferable to option 2B because it does not upgrade the existing hospital. Option 2B includes extensive work on the surgical wing to extend its life; this is likely to make it uneconomical to build the ward tower and demolish the surgical wing in the near future. Option 2 would also allow option 3 to proceed in an efficient way, but its cost exceeds the reserved funding.

As a standalone option, 2A does not meet the investment objectives and would at best be difficult to operate because of the scope reductions. The table below summarises the performance of this option against the investment objectives.

Table 13: Performance of option 2A against the investment objectives

Investment objective	Performance
Condition	**Not met:** 11 of the 16 clinical areas in poor-condition, high-risk buildings remain in use
Fitness for purpose	**Not met:** five of the 12 areas would be in accommodation that is fit for purpose
Capacity	**Not met:** there would not be sufficient capacity to meet demand in 2031

3.4.7 Option 2B – Do minimum long term

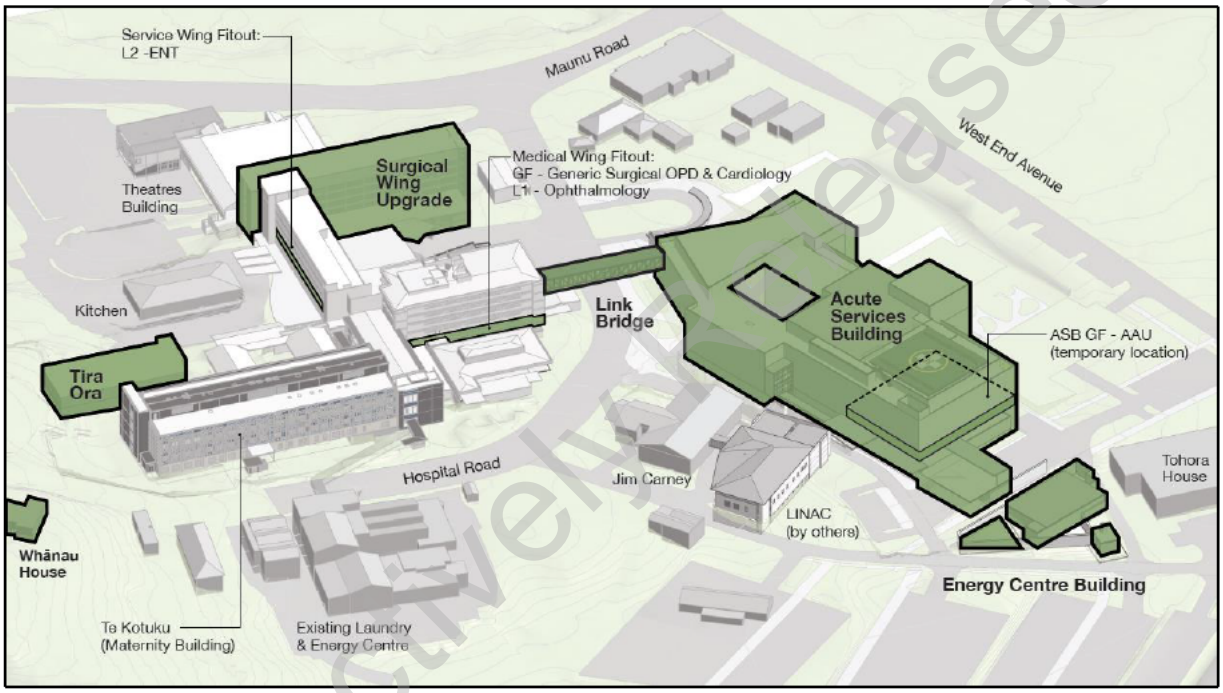
The aim of this option is to highlight that the existing surgical and service wings are at the end of their lives and would be uneconomical to repair. Option 2B is largely the same as option 2A except that it remediates the surgical wing to address seismic, weather-tightness and fire safety issues. It also remodels areas vacated by ICU as a ward and converts the paediatric ward on level 2 of the surgical wing into an adult medical-surgical ward. As a result, it delivers a similar number of beds to the recommended option 3 below, but these are in accommodation that is not fit for purpose and does not meet Australasian Health Facility Guidelines.

Option 2B includes some scope that we have now taken out of the ASB for option 2A, including the front of house, staff support and kitchen areas, as well as fitting out the future radiology shell space to accommodate the AAU in the ASB.

As well as adding wards in the surgical wing of the existing hospital, option 2B moves outpatient services out of level 5 of the surgical wing and into larger areas in the service and medical wings. ENT moves to level 2 of the service wing and ophthalmology moves into level 1 of the medical wing, where it shares space with a thoroughfare for the link bridge between the medical wing and the ASB.

As in option 2A, the ward tower is not built, and the AAU is accommodated in the ASB until it would move into a ward tower in a future stage. The image below illustrates this option.

Image 7: Do minimum long term



Option 2B meets the capacity investment objective by continuing to use the surgical wing for inpatient services. As a result, it also performs worse on the investment objective of moving services out of areas with serious condition issues. The additional wards in the surgical wing would be too small and would not meet Australasian Health Facility Guidelines.

Table 14: Performance of option 2B against the investment objectives

Investment objective	Performance
Condition	**Not met:** 11 of the 16 clinical areas in poor-condition, high-risk buildings remain in use
Fitness for purpose	**Not met:** seven of the 12 areas would be in accommodation that is fit for purpose
Capacity	**Met:** there would be enough capacity to meet demand in 2031

3.4.8 Option 2 – Do less than intermediate

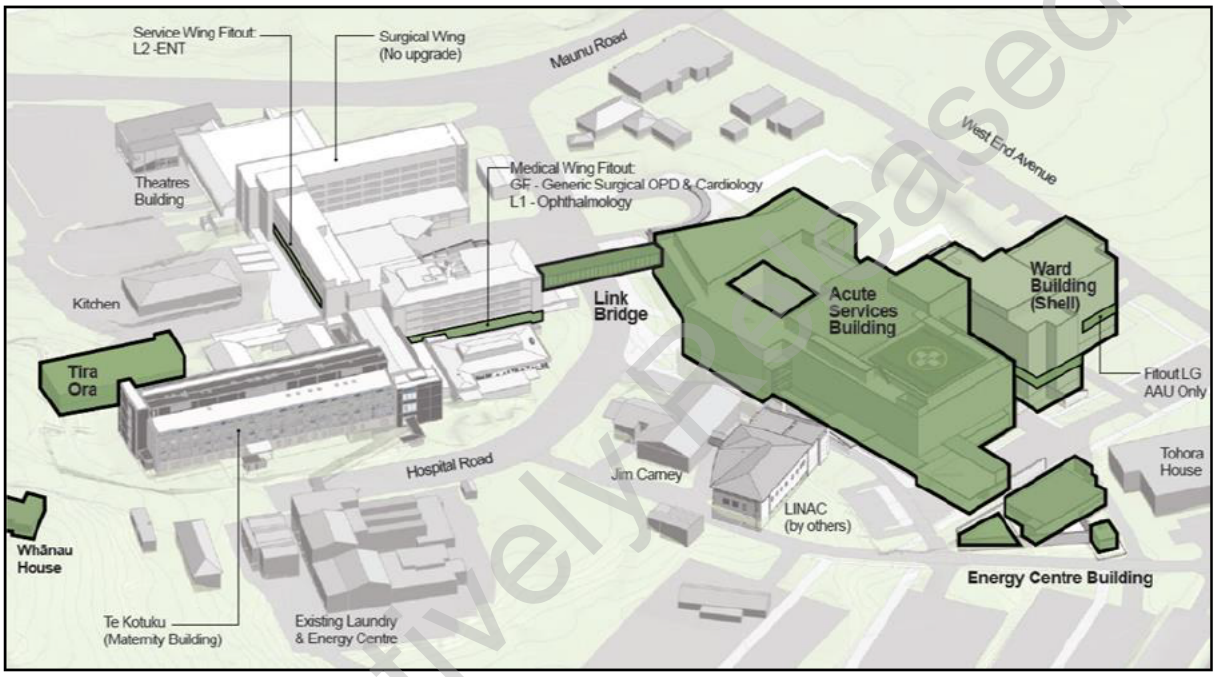
This is largely the same as the do minimum option from the PBC. In addition to the ASB, it builds one ward wing which accommodates an AAU, with the four other floors left as shell space for inpatient wards and under croft space for a mortuary in the basement level. Three inpatient wards would need to remain in the existing surgical wing, and we would not be able to fully vacate and decommission

this building. Like option 2B, option 2 moves outpatient services out of level 5 of the surgical wing, but it does not remodel ED, ICU or ward 2 for continued use.

The aim of this option is to show that we would lose a lot of benefit value from removing a relatively small amount of scope from the recommended option 3. By not fitting out the wards in the new ward tower, we reduce the cost slightly compared with option 3 at the expense of having to continue to use the surgical wing to accommodate inpatient wards. Option 2 therefore does much less to mitigate the risk of disruption to services from having to decommission the surgical wing and this is reflected in the multi-criteria analysis below.

The image below illustrates this option, showing the ward tower behind the ASB.

Image 8: Do less than intermediate



Option 2 performs worse than option 2B on the capacity investment objective as it adds fewer beds. It performs better on the condition investment objective as it does not increase utilisation of the end-of-life surgical wing, but it still does not meet this objective or the fitness for purpose objective.

Table 15: Performance of option 2 against the investment objectives

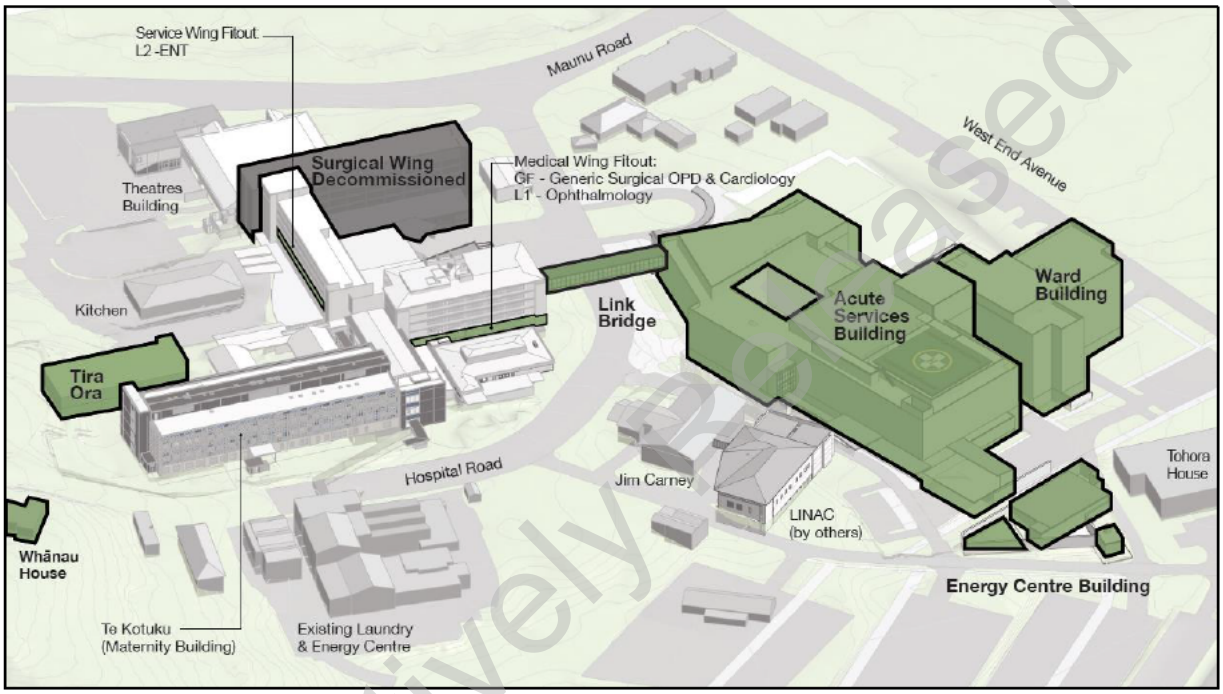
Investment objective	Performance
Condition	**Not met:** nine of the 16 clinical areas in poor-condition, high-risk buildings remain in use
Fitness for purpose	**Not met:** seven of the 12 areas would be in accommodation that is fit for purpose
Capacity	**Not met:** there would not be enough capacity to meet demand in 2031

3.4.9 Option 3 – Intermediate

This is the same as option 2, except the new ward tower is fitted out to accommodate four medical/surgical inpatient wards in addition to the AAU. As with option 2, the space occupied by AAU in option 2B is left as shell for future radiology while the AAU is included in the ward tower. Outpatient services are moved to other parts of the existing hospital as in options 2B and 2. The mortuary remains in its current location and would be transferred to the basement of the ward tower in a future stage.

Option 3 is effectively the minimum scope that allows us to fully vacate and decommission the surgical wing of the existing block. By fitting out the four medical-surgical wards in the ward tower, it provides enough inpatient bed capacity to accommodate the three inpatient wards that remain in the surgical wing in option 2. This is the critical difference between option 3 and the other options in terms of the benefit value it delivers. If the surgical wing is retained and used, there is a risk it could be decommissioned due to its seismic, fire, weather-tightness or infrastructure issues, which would cause significant disruption to services as there is no decant space at the hospital. This is discussed further in the multi-criteria analysis below.

Image 9: Option 3 Intermediate



Option 3 meets all the investment objectives, as shown in the table below.

Table 16: Performance of option 3 against the investment objectives

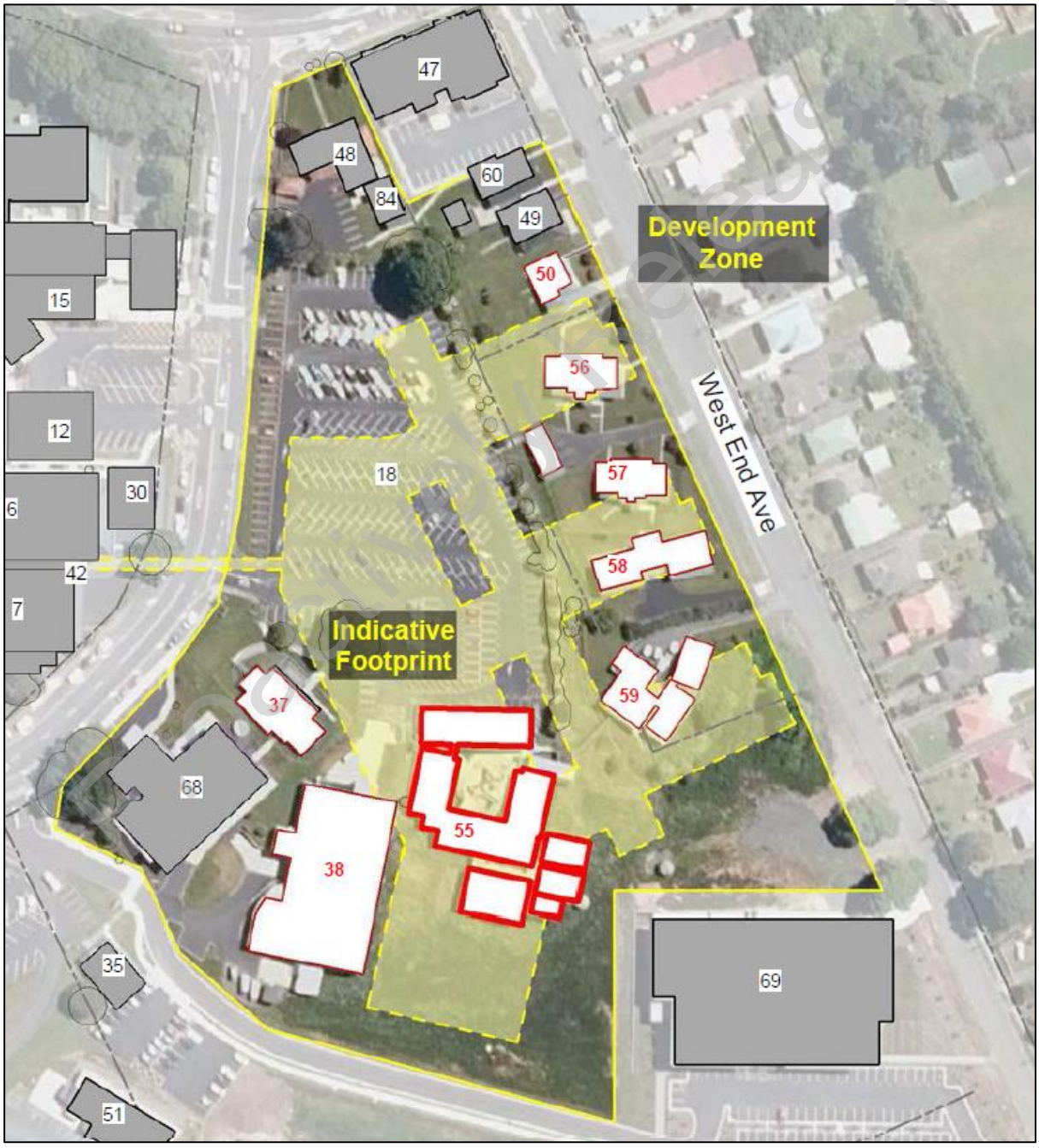
Investment objective	Performance
Condition	**Met:** six of the 16 clinical areas in poor-condition, high-risk buildings remain in use
Fitness for purpose	**Met:** 11 of the 12 areas would be in accommodation that is fit for purpose
Capacity	**Met:** there would not be enough capacity to meet demand in 2031

Under all shortlist options, the child health unit moves into new accommodation on the western side of the maternity block. We considered alternative locations around the site and this aligned best with the current and future locations of services. CHU accommodates paediatric outpatient services and under the master plan the western part of the site would become an outpatient precinct (as discussed in section 1.4.3 Future Stages).

3.4.10 Child Health Unit and Whanau House

The image below shows the existing buildings that are on the footprint of the proposed acute service building and ward towers. The buildings in white would need to be removed to make way for the new buildings. Building 55 is the child health unit and building 37 is whanau house. Building 38 is a disused storage facility which we are demolishing to make way for a separately funded linear accelerator facility. Building 59 is Te Roopu Kimiora, the child mental health unit, which will move as part of another project before redevelopment work would start. The other buildings (50, 56, 57 and 58) are used as accommodation for locum doctors. These are on the site of future ward towers that are not built as part of the current project.

Image 10: Buildings on the site of the ASB



Our architect's images of what the CHU will look like are included in Attachment 9. Images of the whanau house rebuild are included in Attachment 10.

3.5 Demand capacity summary

This section summarises the capacity delivered by each of the shortlist options relative to projected demand for the services that would move in stage one of the redevelopments.

Attachment 2 provides more detail about how we have projected demand and how we have tried to balance the risks of under and over-building the redevelopment. If demand is underestimated, the proposed buildings would be too small, and the project would not realise benefits such as reductions in waiting times for planned care. If demand is overestimated, the buildings would be too large, and the project would cost more than it needs to. We believe the assumptions we have made about projected demand, efficiency improvements and model of care changes achieve an appropriate balance between these risks. As discussed in the attachment, we expect the project to be complete in 2031 and we propose to build enough capacity to meet demand until 2034.

The options differ in terms of the number of medical surgical beds, AAU beds and outpatient spaces they provide. They all provide the same amount of capacity for theatres, ED, ICU/HDU and the coronary care unit. The table below summarises the differences in medical-surgical beds. Under all options, the proposed ICU builds 12 beds and projected demand in 2034 is for five beds. If there are no changes to ICU models of care and demand remains at five, the seven additional beds could be used to make up for the deficit in medical-surgical beds (for more detail see Attachment 2). Column B in the table below shows the medical-surgical bed capacity provided under each option plus the seven ICU beds.

Table 17: Medical-surgical (MS) bed demand and capacity by option

	A. Pre-completion MS beds	B. MS beds added	C. Post-completion MS beds	D. Demand in 2034	Difference C - D
Option 2A	162	-	158*	207	(49)
Option 2B	162	36**	198	207	(9)
Option 2	162	-	158	207	(49)
Option 3	162	135	197	207	(10)

* All options remove 12 medical-surgical beds from the medical wing to make way for the link bridge to the new buildings and add eight beds by repurposing the medical wing coronary care unit beds when this moves into the ASB, so there is a net loss of four medical-surgical beds. Options 2B and 3 add medical-surgical beds in other areas but options 2A and 2 do not.

** Option 2B adds beds by recommissioning existing wards in the surgical wing that do not meet AHFG.

As shown in the table, options 2A and 2 do not build enough medical-surgical bed capacity to meet demand in 2034. Option 2B provides more bed capacity by fitting out areas vacated in the end-of-life surgical wing. Option 3 provides close to the amount of medical-surgical bed capacity likely to be needed in 2034 by building and fully fitting out the new ward tower.

For the AAU, options 2B, 2 and 3 provide a 23-bed AAU in the ASB or the ward tower, while option 2A retains the current 12-bed AAU in the existing hospital. The projected level of AAU demand in 2034 is 23 beds, so there is no surplus or deficit under options 2B, 2 and 3, while under option 2A there would be a deficit of 11 AAU beds.

All the shortlist options provide the same amount of capacity for theatres, ED, ICU and coronary care unit. The table below shows this capacity relative to demand in 2034.

Table 18: Theatres, ED and other wards demand and capacity

	A. Capacity provided	B. 2034 demand	Difference (A – B)
Theatres	10	10	0
ED points of care	41	41	0
ICU beds	12	5	7
CCU beds	8	7	1

As shown in the table, ICU has seven beds more than projected demand and these beds would be used to accommodate medical-surgical patients if there are no changes to the ICU models of care. As discussed in Attachment 2, we propose to build these as ICU/HDU beds rather than medical-surgical beds because New Zealand has a very low number of ICU beds per capita compared with other OECD countries and because it would support future pandemic planning. This reduces the medical-surgical bed deficit in 2034, as noted in table 17 above.

Only option 2A does not move outpatient services within the existing hospital. Options 2B, 2 and 3 move general surgery, cardiology, ophthalmology and ENT into larger areas that are vacated as part of the redevelopment. This provides them with sufficient space to meet demand until 2034 or beyond. Attachment 2 provides more detail on this.

3.6 Costs

This section discusses the costs of the shortlist options. It covers the different cost elements of the shortlist options, the cost per bed delivered and provides an overview of how the costs have changed over time.

3.6.1 Cost breakdown

The table below sets out the cost estimates for the main elements of the project.

Table 19: Cost breakdown by shortlist option

9(2)(b)(ii), 9(2)(j)

Key points about the costs are:

- The largest cost differences between the options relate to the main project elements such as building and fitting out the ward tower, and their associated on-costs, such as project management fees and the contingency, which are often calculated on a percentage basis. These are included in the first three lines of the table
- The cost of remediating the existing hospital is the main difference for option 2B and the cost of remediation at $79.4m comes to $13,506 per square metre excluding on-costs. The equivalent figure for building the new, fit for purpose ASB in option 3 is $11,456. This highlights that the surgical wing is at the end of its economic life
- The total cost of option 2B, which remediates the surgical wing for continued use, is greater than option 2, which builds the ward tower but does not fit out the medical-surgical wards
- We increased the contingencies of all options to meet the P85 level for the quantitative risk assessment; see discussion in section 4.2 below for more detail

- The cost of the ASB is higher in option 2B because it includes additional fit out for the AAU, which is in the ward tower in options 2 and 3.
- Central plant costs are higher in options 2A and 2B because a new central plant building is needed to accommodate plant that is in the basement of the ward tower in options 2 and 3.

3.6.2 Phasing

As noted above, while this DBC recommends option 3, decision-makers could deliver the scope of option 3 by approving option 2A now and approving the difference between the two options in 2024.

3.6.3 Cost per bed

The table below shows the cost per bed under each option. The first column is the total number of beds at Whangārei Hospital upon completion of the redevelopment, excluding ED and theatres. It shows the new beds built under each option and the net beds added relative to the total expected bed capacity prior to the redevelopment, which is 309. It shows the total cost of each option and the cost per new bed built.

Table 20: Cost per bed

	Total hospital beds on completion	New beds built	Net beds added	Total cost ($m)	Cost per new bed built ($m)
Option 2A	311	20	2	758.982	37.949
Option 2B	362	43	53	889.237	20.680
Option 2	322	43	13	887.356	20.636
Option 3	361	178	52	943.567	5.301

Option 2A only builds a 12-bed ICU and an 8-bed CCU, so builds 20 new beds. Options 2B and 2 build the same number of new beds: a 23-bed AAU, a 12-bed ICU and an 8-bed CCU. In addition to this, option 3 builds 135 medical/surgical beds in the ward tower.[18]

The cost per new bed-built bed is high under options 2A, 2B and 2 because a large part of the project cost is for building areas such as theatres and ED that are not part of the bed count. The cost per new bed is lowest under option 3 because it delivers a fully fitted-out ward tower.

3.6.4 Cost changes

This section outlines how the costs of the shortlist options have changed over time and the challenges Te Whatu Ora Te Tai Tokerau has faced in developing an option that meets both the investment objectives and the Government's affordability constraints.

The cost of the recommended option 3 was $572m in the 2020 PBC. When we submitted the first iteration of this DBC in May 2021, the cost of option 3 was $711m and it has increased to $944m in this business case.

[18] Option 2B refurbishes and recommissions wards in the existing hospital (such as the old paediatric ward), so the net beds added is larger than the new beds built. In the other options wards in the existing hospital are decommissioned or repurposed, so the net beds added is less than the new beds built.

Before it submitted the May 2021 iteration of the DBC, Northland DHB had self-funded all the planning work for the proposed project since 2015 and could not afford to commission concept designs. After Treasury confirmed that the DBC should be based on full concept designs, the Ministry of Health allocated funding to allow us to progress concept designs and other planning work. The project team completed concept designs in December 2021 and the costs of option 3 increased to over $1bn.

Northland DHB and HIU subsequently commissioned external peer reviews of the project and we completed a significant value management exercise informed by these reviews. This has brought the cost down to its current level. While we made a significant effort to reduce the cost of option 3 to less than $800m to meet CIC's cost guidance, this was not possible without compromising the investment objectives or project benefits.

Since the completion of the concept designs, we have removed the following scope from the project:

- Shell space from the designs in several areas and instead making provision for future growth in the ward towers built in stages two and three. Removing two shelled theatres from the top floor of the ASB allowed us to reduce the building's floor plate, which enabled a substantial cost reduction
- Six HDU beds and instead using the 12-bed ICU to deliver an HDU service
- Additional space provision for pandemic planning
- Non-clinical areas from stage one, including the mortuary, transit lounge, spiritual centre and pharmacy
- Demolition of the surgical wing, which we would instead decommission and demolish as part of a future stage or separate project
- Car parking.

Since the 2020 PBC, costs have increased for several reasons. One issue was an error in the floor area calculation for the PBC which led to the cost being underestimated. The project team accepts responsibility for this error, and we have taken steps to ensure it has not happened again in the current cost estimates. Other factors include:

- Higher than expected construction cost inflation over the last two years and higher projected inflation
- Additional infrastructure requirements following more detailed investigations
- Development of a digital blueprint for the redevelopment. While this is a large scope change and has added $61m in cost, we understand it is substantially less than the equivalent figure for the Dunedin Hospital redevelopment.

Following value management, the total gross floor area delivered in the recommended option 3 has decreased slightly from the May 2021 designs which were the basis for the $711m estimate in the first iteration of this DBC. The table below shows that while we have reduced the floor area, it has not had a commensurate impact on the total project cost, as indicated by the cost per square metre. The main reasons for this are the three factors noted above.

Table 21: Costs of option 3 by design iterations

Estimate	Gross floor area	Total cost (m)	Cost per m2
May-21 – Feasibility	46,899	$711.000	$15,160
Dec-21 – Concept	53,179	$1,039.905	$19,555
Mar-22 – Value Managed Concept	44,330	$937.745*	$21,154

* To make a fair comparison with the earlier cost estimates, the value managed concept cost excludes the quantitative risk assessment adjustment, which increases the total cost to $943.567m to reduce the likelihood of going over budget to 15 percent. The earlier estimates were not adjusted in this way.

4.0 Economic Case

The purpose of the Economic Case is to undertake a more detailed analysis of the costs, benefits and risks of the short-listed options. The intention is to demonstrate the relative value for money that the preferred option is likely to deliver. This analysis informs the recommendation of a preferred option and includes:

- a multi-criteria analysis including monetary costs and non-financial benefits
- an assessment of risk and uncertainty.

4.1 Economic Assessment of the Short-Listed Options

The purpose of this analysis is to ensure that decision-makers are well-informed about the implications and trade-offs of using economic resources and are provided with a consistent basis for assessing and ranking competing options.

The assessment methodology used is a multi-criteria analysis that builds on the analysis completed for earlier versions of this business case and stakeholder engagement. We prefer multi-criteria to a full cost-benefit analysis because most of the project's benefits are difficult to monetise in a consistent way. While benefits relating to health outcomes could be monetised (e.g. on a willingness-to-pay basis), a broad range of conditions would be affected in different ways by the proposal.[19] The shortlisted options differ substantially in the benefits they deliver, so we believe the multi-criteria analysis below provides a sufficiently robust value for money assessment to support the recommended option.

Most of the project's benefits sit within the health wellbeing domain, but we have added an environmental benefit following advice from central agencies and the government's decision that the public sector should decarbonise by 2025.

[19] For example, monetising the benefits could involve assessing the quality-adjusted life years gained through expanding capacity for ophthalmology services at Whangārei Hospital so that we can reduce waiting times for a first specialist appointment to less than four months (i.e. ESPI 2). To assess the improvement in quality-adjusted life years, we would need to know the kinds of conditions treated by the ophthalmology service and the impact that losing access to services or waiting too long to access them would have for each condition. The impacts could range from blindness to discomfort and the quality-adjusted life years assessment would need to reflect this.

The table below summarises the assumptions underlying the multi-criteria analysis. Attachment 1 provides more detail about the assumptions used to develop specific benefit measures while the financial case discusses how we developed the whole of life cost assessment.

Table 22 Multi-criteria analysis assumptions

Area	Assumptions	Note
Assessment period	• Start date: August 2022 • Construction completion and benefits realisation: from 2031 • Assessment period: start date to 2040.	While the economic life of any new buildings would be 50 years from the date of completion, we believe projections of the project's benefits would become too uncertain over such a long period (or may even become less relevant), so we are projecting costs and benefits from the start date to 2040.
Discount and inflation assumptions	• 5 percent per annum.	As the benefits are not monetised, the discount rate is applied to the project costs. All costs are expressed in today's dollar terms. An adjustment for optimism bias is not included in the cost estimates as this could potentially double count the risk adjustments included in the discount rate.
Estimated costs	• Depreciation, capital charges, interest and other financing costs are excluded from the analysis.	The financial case discusses how we developed the assessment of the capital and consequential operating costs of the project.
Taxation	• All dollar figures are expressed in GST exclusive terms.	

Benefits assessment

We have been planning this project for several years and the benefit measures have evolved over time with input from internal and external stakeholders. While it is difficult to monetise the benefits, we have sought to quantify them where possible and to project baseline performance out to the end of the 2030s, roughly 10 years after the proposed redevelopment would be complete. We believe this enables a more robust assessment than subjective ranking or scoring methodologies.

The benefit measures we are using in the DBC are tabled below, as well as the evidence used to project performance and the baseline performance which we will use to evaluate the shortlist options.

Table 23: Non-monetary benefits from the investment proposal

	Benefit measure	Description	Evidence	Strategic alignment	Baseline
1	Rates of mortality amenable to healthcare in Northland by ethnicity	A measure of premature deaths (i.e. usually before the age of 75) from diseases for which effective health interventions exist that might prevent death, expressed as a rate per 100,000 population	• Ministry of Health data	• Health equity is a key driver of the proposed programme • We expect improvement on this measure from meeting **all investment objectives**	Under the status quo, we project that by 2040 the rate of amenable mortality per 100,000 population for Māori in Northland to be 142, double the rate of non-Māori of 70
2	Elective services patient flow indicator 2 (ESPI 2)	The proportion of patients waiting longer than the required timeframe for their first specialist outpatient appointment	• Te Whatu Ora Te Tai Tokerau records • EY demand projections • Past ESPI 2 performance	• We expect improvement on this measure from meeting the **capacity and fitness for purpose** investment objectives	We project our overall ESPI 2 score will exceed 90% by 2040 under the status quo; it is currently 42%
3	Elective services patient flow indicator 5 (ESPI 5)	The proportion of patients given a commitment to treatment but not treated within this timeframe	• Te Whatu Ora Te Tai Tokerau records • EY demand projections • Past ESPI 5 performance	• We expect improvement on this measure from meeting the **capacity and fitness for purpose** investment objectives	We project our overall ESPI 5 score will exceed 90% by 2040 under the status quo; it is currently 55%
4	Shorter stays in ED	The proportion of emergency department patients who are admitted, discharged or transferred within six hours of presentation	• Te Whatu Ora Te Tai Tokerau records • EY demand projections • Past performance on the six-hour target	• We expect improvement on this measure from meeting the **capacity and fitness for purpose** investment objectives	By 2040, we project 78% of ED presentations will meet the six-hour target under the status quo. This considers the impact of establishing an AAU at Whangārei Hospital in 2021
5	Relative stay index (RSI)	Inpatients' actual lengths of stay relative to their expected length of stay, which is based on the performance of peer group hospitals	• Past performance on the relative stay index measure • The performance of peer group hospitals on the relative stay index measure	• We expect improvement on this measure from meeting the **capacity and fitness for purpose** investment objectives	We project RSIs will be 122% by 2040 under the status quo

	Benefit measure	Description	Evidence	Strategic alignment	Baseline
6	Hospital acquired complications (HAC)	A complication for which clinical risk mitigation strategies may reduce (but not necessarily eliminate) the risk of that complication occurring. The measure is the number of these complications as a proportion of total hospital episodes	• Past performance on the hospital acquired complications measure • The performance of peer group hospitals on the hospital acquired complications measure	• We expect improvement on this measure from meeting the **capacity and fitness for purpose** investment objectives	We project HACs will be 2% of total hospital episodes by 2040 under the status quo
7	Mitigated risk of disruption	A score for each hospital area that reflects its utilisation and likelihood of being decommissioned due to building condition issues within the next 20 years. If a building condition issue is addressed, this score is the benefit delivered	• Beca's 2019 assessment of the surgical wing • Other condition assessments • NZ Fire Service data • Geonet data	• We expect improvement on this measure from meeting the **condition** investment objective	The status quo option achieves a mitigated risk of travel score of 0 because it does not address any of the condition issues that may force us to decommission parts of the surgical wing over the next 20 years
8	Staff turnover	The proportion of Te Whatu Ora Te Tai Tokerau staff who leave the organisation during a quarter	• Quarterly turnover data from the National Health Workforce database	• We expect improvement on this measure from meeting all the investment objectives	Based on the linear trend since 2010, quarterly staff turnover would reach 13.7% by 2040 under the status quo
9	Carbon emissions	A measure of the carbon emissions associated with electricity and gas use in hospital buildings and how this will vary with the Green Star rating of the buildings	• Te Whatu Ora Te Tai Tokerau records • Research on the benefits of Green Star standards	• We expect improvement on this measure from meeting the **condition** investment objective	We estimate the current hospital buildings emit 50kg of Co2 per square metre per year. New buildings that do not meet Green Star standards emit 45kg per square metre per year and new Green Star buildings emit 21kg per square metre per year

Attachment 1 provides more detail about these measures and how we projected their baseline performance. For benefits 1 to 8, the baseline is the projected performance on the measure under the status quo option. For the carbon emissions benefit, the baseline for each option is delivering the same option without meeting Green Star standards.

4.2 Multi-criteria analysis

The results of multi-criteria analysis are tabled below, including the capital and whole of life costs of each option (table 24), their performance against the investment objectives (table 25), and their performance against the project benefits (table 26). The tables summarise assessments discussed elsewhere in this DBC:

- Attachment 3 – how options perform against the investment objectives
- Attachment 4 – how we expect performance on the benefit measures will change depending on which shortlist option is chosen
- Financial case – how we calculated the whole of life costs.

The shortlist options' performance on the benefit measures is based on their scope and whether they meet the investment objectives. For example, the options' performance on ESPI 2 and 5 is linked to the amount of additional capacity they provide for physically constrained planned care services. Attachments 3 and 4 describe how capacity relative to demand would change under the shortlist options and the associated impact on the number of patients waiting too long for planned care.

For other benefit measures, the causal sequence from achieving the investment objectives to improvements on the measures cannot be quantified in the same way, but is still plausible. For example, option 3 delivers four medical-surgical wards in modern, fit for purpose accommodation, while option 2B delivers approximately the same number of medical-surgical beds in the existing surgical wing, which is not fit for purpose. We therefore expect option 3 to perform better on the hospital acquired complications and relative stay index measures, as the existing surgical wing wards would be more crowded and less likely to reduce the baseline level of cross-infection risk.

Table 24: Option costs

	Status quo	Option 2A	Option 2B	Option 2	Option 3
Analysis period (year)	20	20	20	20	20
Capital funding sought for stage 1 ($m)	0	758.982	889.237	887.356	943.567
Whole of life costs ($m)	0	666.080	787.852	786.143	835.343

Table 25: Investment objectives

Investment objective	Status quo	Option 2A	Option 2B	Option 2	Option 3
1. Of the 16 clinical areas in high-risk, poor-condition accommodation, no more than six remain in use on completion of the project	15/16	11/16	11/16	9/16	6/16
2. Of the 12 services that are in accommodation that is not fit for purpose, 11 are in fit for purpose accommodation on completion of the project	0/12	5/12	7/12	7/12	11/12
3. Provide enough capacity to 2031	2022	2025	2034	2025	2034

Table 26: Multi-criteria analysis

Benefit	Weighting	Status quo	Option 2A	Option 2B	Option 2	Option 3
Rates of amenable mortality by 100,000 population for Māori and non-Māori by 2040	10%	Māori – 142 Non-Māori – 70	Māori – 142 Non-Māori – 70	Māori – 49 Non-Māori – 52	Māori – 142 Non-Māori – 70	Māori – 49 Non-Māori – 52
Elective services patient flow indicator 2 (ESPI 2) in 2040	15%	97%	97%	65%	65%	65%
Elective services patient flow indicator 5 (ESPI 5) in 2040	15%	97%	96%	94%	96%	94%
Shorter stays in ED – % of presentations meeting six-hour target in 2040	15%	78%	90%	93%	90%	93%
Hospital acquired complications as a proportion of total episodes	10%	2%	1.7%	1.9%	1.7%	1.6%
Relative stay index	10%	122%	116%	118%	116%	112%
Percentage of building risk addressed	15%	0%	34%	66%	69%	100%
Quarterly staff turnover	5%	13.7%	12.7%	12.7%	12.7%	11.7%
Reduction in carbon emissions from meeting Green Star standards (tonnes per year)	5%	N/A	832	832	1,071	1,071
Multi-criteria analysis rank (out of 5)		**5**	**2**	**4**	**3**	**1**

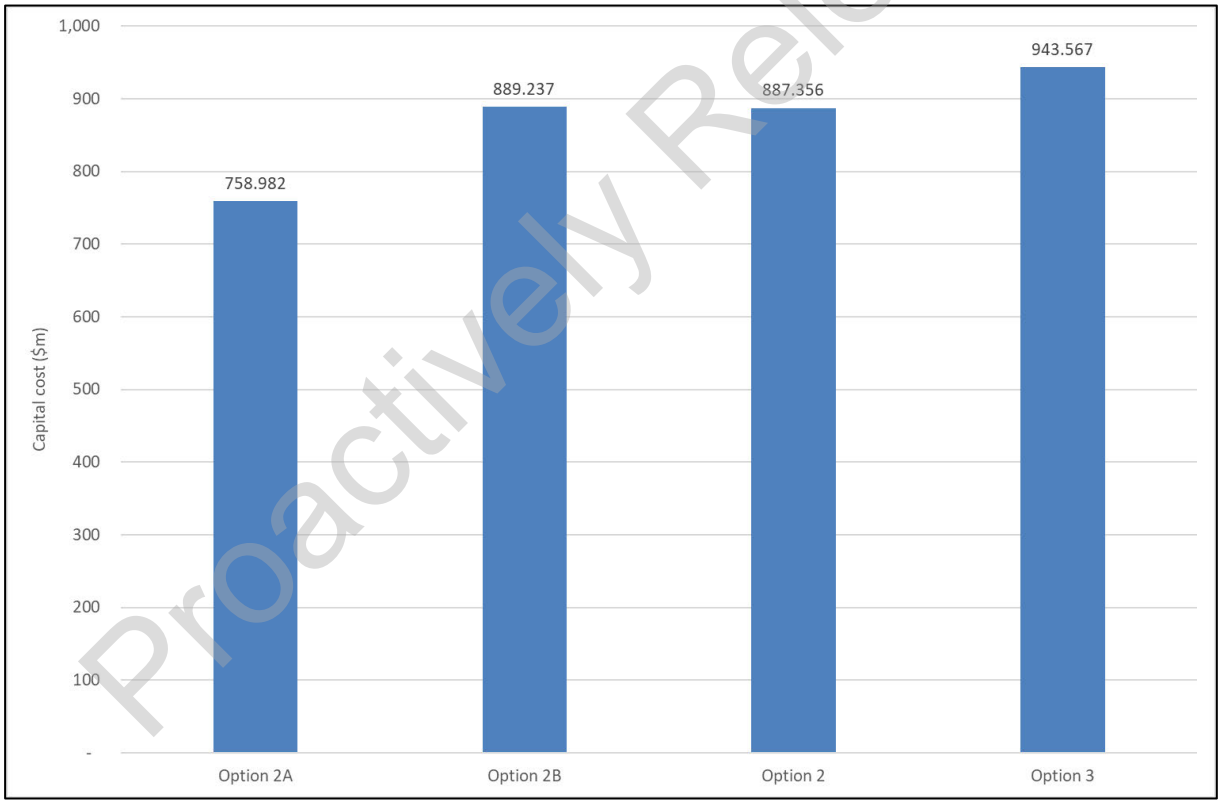
4.3 Testing the preferred option by sensitivity analysis

The purpose of this section is to identify the preferred option, test the robustness of this option using sensitivity analysis and present the overall results of the options analysis. It focuses on the recommended option 3 and on option 2A, highlighting the implications of selecting this option without delivering the scope of option 3 as a second stage.

4.3.1 Option 3

On most measures, option 3 delivers substantially more benefit than the cost difference between options 2A, 2B and 2. The graph below shows the cost difference between the shortlist options. Options 2B and 2 achieve only a 5 to 6 percent cost saving over option 3 but lose significant value as we would have to continue using the end-of-life surgical wing. Option 2A achieves a 20 percent cost saving but loses more value than options 2B and 2 by not expanding outpatient areas and doing less to mitigate the impacts of asset failure in the surgical wing. The sections below discuss these issues in more detail.

Graph 2: Option costs



Using option 2 as the denominator, option 3 costs 6 percent more than option 2. Calculating the benefit increase the same way, the table below sets out the additional benefits option 3 delivers for the additional cost.

Table 27: Additional benefit delivered by option 3 over option 2

Benefit measure	Difference in performance between options 2 and 3
Amenable mortality	**100 percent improvement**: option 3 reduces the gap between Māori and non-Māori in rates of amenable mortality to close to zero by 2040. Under option 2, the rate of amenable mortality for Māori is double the rate for non-Māori (142 to 70). As discussed in Attachment 1, this assumes improvements over the last 10 years level off as demand exceeds capacity in all areas at Whangārei Hospital in the mid-2020s.
ESPI 2	**No difference:** Both options expand outpatient services in the same way, so we expect they would achieve the same improvement on ESPI 2.
ESPI 5	**Three times as much improvement**: option 2 improves ESPI 5 by 1 percent from 97 to 96 percent, while option 3 improves it by 3 percent from 97 to 94 percent. The difference between the options is not large in absolute terms and 94 percent of patients would still be waiting too long for planned care under option 3. A sustained improvement in ESPI 5 would only be possible with the additional bed capacity delivered in stage 2. However, option 3 is still preferable because it builds more bed capacity, which allows a greater interim improvement before stage 2 is complete and would leave less of a backlog to address. We estimate that 34,000 fewer patients would be waiting too long for procedures in 2040 under option 3 compared with option 2.
ED six-hour target	**Twice as much improvement**: while all options expand ED to the same size, they provide different numbers of medical-surgical beds. Because option 2 provides fewer medical-surgical beds than projected demand, there are more likely to be bed blockages that prevent patients being transferred out of ED within six hours. We therefore project that option 2 would achieve 90 percent on this measure while option 3 would achieve 93 percent.
RSI	**72 percent improvement**: option 2 reduces RSI from 122 to 116 percent, an improvement of 6 percent. Option 3 achieves an RSI of 112 percent, a 4 percent improvement over option 2. Option 3 plus stage 2 provides enough capacity to reduce RSI to around 100 percent, i.e. the average of Whangārei Hospital's peer group hospitals.
HAC	**Nearly twice as much improvement**: option 2 improves HAC performance by 0.1 percent to 1.9 percent. Option 3 improves HAC performance by a further 0.3 percent to 1.6 percent.
Percentage of building risk addressed	**45 percent improvement**: option 3 delivers a mitigated risk of disruption score of 81,309 and option 2 delivers a score of 55,922. Option 3 addresses 100 percent of the building risks associated with the surgical wing while option 2 addresses 69 percent of the risk.
Staff turnover	**Twice as much improvement**: option 2 reduces staff turnover from 13.7 to 12.7 percent while option 3 reduces it to 11.7 percent.

Compared with option 2, option 3 therefore delivers a substantially improved performance on amenable mortality, ESPI 2, HAC, RSI and the mitigated risk of disruption score. The differences between the options on these measures is far greater than the 6 percent difference in costs in relative terms. In absolute terms, the projected performance under option 3 is unlikely to be satisfactory for some of the benefit measures, but subsequent stages of the redevelopment would result in a more sustained improvement and the greater interim improvement option 3 achieves over option 2 is still proportionately greater than the cost difference between the options.

The table below sets out the benefits delivered by option 3 over option 2B for a 6 percent increase in cost.

Table 28: Additional benefit delivered by option 3 over option 2B

Benefit measure	Difference in performance between options 2B and 3
Amenable mortality	**No improvement**: both options reduce the gap between Māori and non-Māori in amenable mortality to zero by 2040.
ESPI 2	**No difference**: Like option 2, option 2B expands the same outpatient areas as option 3 and achieves the same improvement on ESPI 2.
ESPI 5	**No difference**: option 2B delivers almost the same number of medical-surgical beds and theatres as option 3, so there should be no difference in expected performance on ESPI 5.
ED six-hour target	**No difference**: both options expand the ED and provide enough beds to meet demand, avoiding bed blockages. We therefore expect their performance on the six-hour target to be similar.
HAC	**Three times as much improvement**: option 2B reduces HACs by 0.1 percent from the status quo to 1.9 percent, while option 3 reduces HACs to 1.6 percent. Both options provide a similar number of beds but option 3 achieves a greater improvement because the wards are modern and meet AHFG. Under option 2B, the wards are more likely to be crowded, increasing cross-infection risks and other issues.
RSI	**Over twice as much improvement**: option 2B achieves a 4 percent improvement from 122 to 118 percent, while option 3 achieves a 10 percent improvement from 122 to 112 percent. As with HAC, this is associated with the new beds meeting AHFG under option 3.
Percentage of building risk addressed	**50 percent improvement**: option 3 scores 81,309 (100 percent addressed) and option 2B scores 54,069 (66 percent addressed).
Staff turnover	**Twice as much improvement**: option 2B reduces staff turnover from 13.7 to 12.7 percent while option 3 reduces it to 11.7 percent.

Option 3 therefore delivers benefits over option 2B on HAC, RSI, percentage of building risk addressed and staff turnover that are proportionately greater than the 6 percent cost increase. While option 2B achieves similar performance on benefit measures that are driven mainly by capacity, it performs much worse on HAC and RSI, which are affected by the fitness for purpose of the clinical areas delivered. It also increases building risk by moving services into the surgical wing, though it achieves a net improvement on this measure by moving other services out.

The table below sets out the benefits delivered by option 3 over option 2A for a 24 percent increase in cost.

Table 29: Additional benefit delivered by option 3 over option 2A

Benefit measure	Difference in performance between options 2A and 3
Amenable mortality	**100 percent improvement:** option 3 reduces the gap between Māori and non-Māori in rates of amenable mortality to zero by 2040. As with option 2, the rate of amenable mortality for Māori under option 2A is double the rate for non-Māori (142 to 70).
ESPI 2	**An improvement from 97 percent to 65 percent**: option 2A delivers no improvement on ESPI 2 relative to the status quo as it does not expand any outpatient areas.
ESPI 5	**Three times as much improvement**: like option 2, option 2A improves ESPI 5 by 1 percent from 97 to 96 percent, while option 3 improves it by 3 percent from 97 to 94 percent.
ED six-hour target	**Twice as much improvement**: as with option 2, option 2A expands the ED to the same size as option 3, but the deficit in medical-surgical beds is still likely to prevent improvements on the six-hour target.
HAC	**Nearly twice as much improvement**: option 2A achieves the same improvement on HAC performance as option 2, reducing it from 2 percent to 1.9 percent. Option 3 improves HAC performance by a further 1 percent to 1.8 percent.
RSI	**72 percent improvement**: option 2A also delivers the same RSI benefit as option 2: it reduces it by 6 percent from 122 to 116 percent. Option 3 achieves an RSI of 112 percent, a 4 percent improvement over option 2.
Percentage of building risk addressed	**190 percent improvement**: option 3 scores 81,309 (100 percent addressed) and option 2A scores 28,051 (34 percent addressed).
Staff turnover	**Twice as much improvement**: option 2 reduces staff turnover from 13.7 to 12.7 percent while option 3 reduces it to 11.7 percent.

Compared with option 2A, option 3 delivers improved performance on all eight benefit measures that is proportionately greater than the 25 percent cost difference between the options.

4.3.2 Option 2A

The tables below show the same pairwise comparison of option 2A and the other shortlist options. It does not compare options 2A and 3 as this is already discussed above.

The table below shows the additional benefits delivered by option 2B for an 17 percent cost increase over option 2A.

Table 30: Benefits of option 2B relative to 2A

Benefit measure	Difference in performance between options 2B and 2A
Amenable mortality	**100 percent improvement:** option 2B reduces the gap between Māori and non-Māori in rates of amenable mortality to zero by 2040 while option 2A achieves no improvement over the status quo: the rate of amenable mortality for Māori is double the rate for non-Māori (142 to 70).
ESPI 2	**An improvement from 97 percent to 65 percent**: option 2A delivers no improvement on ESPI 2 relative to the status quo as it does not expand any outpatient areas.
ESPI 5	**Three times as much improvement**: option 2A improves ESPI 5 by 1 percent from 97 to 96 percent, while option 2B improves it by 3 percent from 97 to 94 percent.
ED six-hour target	**Twice as much improvement**: while all options expand ED to the same size, they provide different numbers of medical-surgical beds. Because option 2A provides fewer medical-surgical beds than projected demand, there are more likely to be bed blockages that prevent patients being transferred out of ED within six hours. We therefore project that option 2A would achieve 90 percent on this measure while option 2B would achieve 93 percent.
HAC	**Worse performance:** option 2A reduces HACs from 2.0 percent to 1.7 percent of hospital episodes by 2040, while option 2B only reduces them to 1.9 percent. As discussed in Attachment 4, option 2B adds capacity by re-commissioning old wards that are not fit for purpose, so we do not expect it will substantially reduce cross infection risks from current levels.
RSI	**Worse performance:** as with HACs, option 2B performs worse than option 2A: option 2A reduces RSI from 122 percent to 116 percent while option 2B reduces it to 118 percent. This is because most of the additional beds delivered under option 2B are not fit for purpose.
Percentage of building risk addressed	**93 percent improvement:** option 2B achieves a mitigated risk of disruption score of 54,069 (66 percent addressed), while option 2A scores 28,051 (34 percent addressed).
Staff turnover	**No improvement:** under both options quarterly turnover reduces from 13.7 percent to 12.7 percent.

While option 2B achieves a large improvement over option 2A on five of the eight benefit measures, it performs worse on HACs and RSI, so the Government would be paying $130m more for poorer outcomes in these areas. For these reasons we have assessed option 2A as slightly preferable to option 2B in the multi-criteria analysis, though both perform worse than option 3.

The table below shows the additional benefits delivered by option 2 for a 17 percent cost increase over option 2A.

Table 31: Benefits of option 2 relative to 2A

Benefit measure	Difference in performance between options 2A and 2
Amenable mortality	**No improvement:** Both options achieve no improvement over the status quo: rates of amenable mortality for Māori remain double those of non-Māori by 2040. Like option 2A, option 2 does not build enough capacity to keep up with demand, which we have assessed as the main determinant of performance on this measure, as discussed in attachments 1 and 4.
ESPI 2	**An improvement from 97 percent to 65 percent**: option 2A delivers no improvement on ESPI 2 relative to the status quo as it does not expand any outpatient areas.
ESPI 5	**No improvement:** both options 2 and 2A reduce ESPI 5 by only 1 percent from 97 to 96 percent because they do not build enough medical-surgical beds to keep up with demand.
ED six-hour target	**No improvement:** both options improve performance on the six-hour target from 78 percent to 90 percent. Both expand ED but do not build enough beds to eliminate the risk of bed blockages.
HAC	**No improvement:** both options reduce HAC from 2.0 percent to 1.7 percent of total hospital episodes
RSI	**No improvement:** both options reduce RSI from 122 percent to 116 percent.
Percentage of building risk addressed	**99 percent improvement:** option 2 achieves a mitigated risk of disruption score of 55,922 (69 percent addressed), while option 2A scores 28,051 (34 percent addressed).
Staff turnover	**No improvement:** under both options quarterly turnover reduces from 13.7 percent to 12.7 percent.

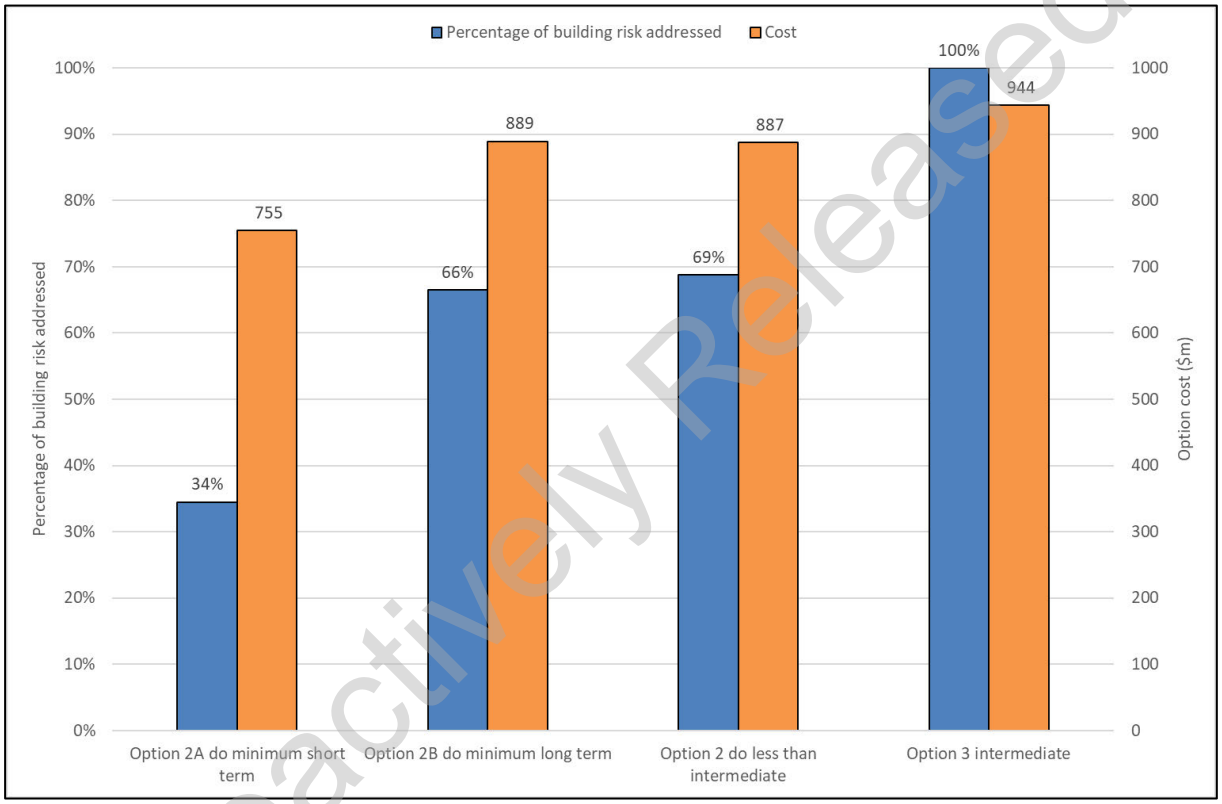
Compared with option 2A, option 2 only achieves an improvement on two of the eight benefit measures for an additional $128m in cost. We therefore assess option 2A as being slightly preferable to option 2, though both are inferior to option 3, as discussed above.

4.3.3 Cost-benefit illustration

The broadest benefit measure is the percentage of building risk addressed, which we measure using a mitigated risk of disruption score. This is the probability of a part of the hospital being decommissioned multiplied by its impact in terms of the number of patients affected. Addressing building condition issues with an area that has a high probability of failure and high utilisation therefore delivers higher mitigated risk of disruption score (i.e. greater benefit) than addressing condition issues with an area that is less likely to fail and/or has lower utilisation. This is similar to a quantitative risk assessment methodology, except it focuses on patient impacts rather than financial impacts.

The graph below is the difference in the options' capital costs compared with the difference in how much of the building risk they address. Option 3 achieves the maximum possible mitigated risk of disruption score of 81,300,[20] which reflects the number of bed days, ED presentations and outpatient appointments that would be at less risk of disruption due to asset failure compared with the status quo. The graph shows that the costs of each option increase more slowly than the benefits on this measure: option 3 nearly triples the improvement in the mitigated risk of disruption score over option 2A for a 24 percent increase in cost. Similarly, option 3 achieves a 30 percent improvement over options 2B and 2 for a 6 percent cost increase.

Graph 3: Option costs and mitigated risk of disruption benefits



The improvements that option 3 achieves in reducing building risk delivers represent thousands of fewer bed days and outpatient appointments that are at risk of disruption if the existing hospital buildings fail. As discussed in Attachment 1, there is a high probability that the buildings will fail in the next 10 years due to seismic, fire, weather-tightness and infrastructure issues. Preventative maintenance would mitigate these risks, but it would also disrupt services and would not be economical as the buildings are at the end of life. The risks mostly continue under shortlist options 2A, 2B and 2 as the surgical wing remains in use.

[20] In calculating the percentage of building risk addressed, the denominator is the total risk that *can* be addressed under the shortlist options, not as the total building risk at Whangārei Hospital. None of the shortlist options remediate the service wing, which has similar condition issues as the surgical wing. Option 3 therefore does not address 100 percent of the building risk at the hospital.

4.4 The preferred option

We recommend option 3. This is the smallest project that allows us to vacate and decommission the surgical wing, which is the part of the existing hospital that is in the worst condition. It therefore delivers far greater benefit than options 2A, 2B and 2 in terms of reducing the risk that already-stretched services will be further disrupted by the need to undertake preventative or reactive maintenance of the surgical wing.

Option 2 shows that relatively small reductions in the cost and scope from option 3 would remove significant benefit value by forcing us to continue using the surgical wing. The loss of benefit value comes from having to continue to deliver inpatient services in a building that is not fit for purpose and at risk of being decommissioned due to condition issues. If these risks are realised, they would increase barriers to accessing services and affect health outcomes.

Option 2B shows that remediating the surgical wing would be uneconomical, as it costs more than option 2. While it delivers more bed capacity by recommissioning old wards, these would be in the surgical wing and would not be fit for purpose. Remediation of the surgical wing under option 2B would also cause disruption to the services that continue to use the building.

Option 2A meets the cost guidance the Chair of CIC advised in December 2021. It would allow the scope of option 3 to be delivered if additional funding is made available to cover the cost difference between the two options while detailed design work is underway over the next few years. However, this would create significant uncertainty and risk for the project. On its own, option 2A would require us to continue to use the surgical wing, so like options 2B and 2 it fails to meet the investment objectives. Under all options that do not build or fit out the ward tower, inpatient wards would have to travel several hundred metres to get to the acute section of the hospital, which would compromise services and patient safety.

4.5 Risk and Uncertainty

4.5.1 Risk identification and measurement

We have divided the risk assessment for this project into two parts: risks to achievement of the investment objectives and risks to the project's time, cost and quality. While there is some overlap between the two categories, we have separated them because the second set is the subject of a quantitative risk assessment. As this focuses on assessing the adequacy of the project budget, it does not include some key risks to the achievement of the investment objectives.

4.5.1.1 Risks to the investment objectives

Only option 3 meets the investment objectives for this project and we have developed the risk register with reference to this option. This discusses the risks themselves in more detail and the management case discusses our approach to planning for and managing risk. The risk register can be provided on request.

Here we highlight four high-likelihood non-project risks that could affect the achievement of the investment objectives or project benefits:

1. Buildings may require extensive reactive or preventative maintenance prior to the completion of the redevelopment, forcing us to decommission clinical areas and creating disruption to services

2. Demand based on Stats NZ population projections may be underestimated and the additional capacity built fills up quicker than expected, limiting the benefit the project delivers in terms of improving access by reducing waiting lists and treatment thresholds
3. Under the split funding scenario (where option 2A is approved now and the balance of funding required to deliver is approved in 2024) there is a risk that the additional funding required to deliver option 3 will be delayed or deferred, disrupting the project and preventing it from being delivered on time and to budget
4. The digital blueprint for the redevelopment does not include costs for delivering the regional Information Systems Strategic Plan (ISSP), which is a plan for implementing applications, such as an electronic medical record, across the northern region. The ISSP is much broader than the Whangārei Hospital redevelopment and is going through separate budget approval processes. If the ISSP is not funded and implemented, it would limit the efficiency of the new facility and the realisation of benefits such as reductions in waiting times for planned care.

We are highlighting the first two risks because they are exacerbated by delays to the project. The longer we have to keep using the end-of-life surgical wing, the higher the likelihood that condition issues may make it unusable. For example, Beca have noted that the seismic resilience of the surgical wing is so poor that a one-in-25-year earthquake is likely to cause building services to fail and may even cause structural damage. A one-in-25-year earthquake has a 40 percent chance of occurring in a given 10-year period and an 80 percent chance of occurring in a 20-year period (see discussion in Attachment 1). There is therefore some urgency with progressing the redevelopment.

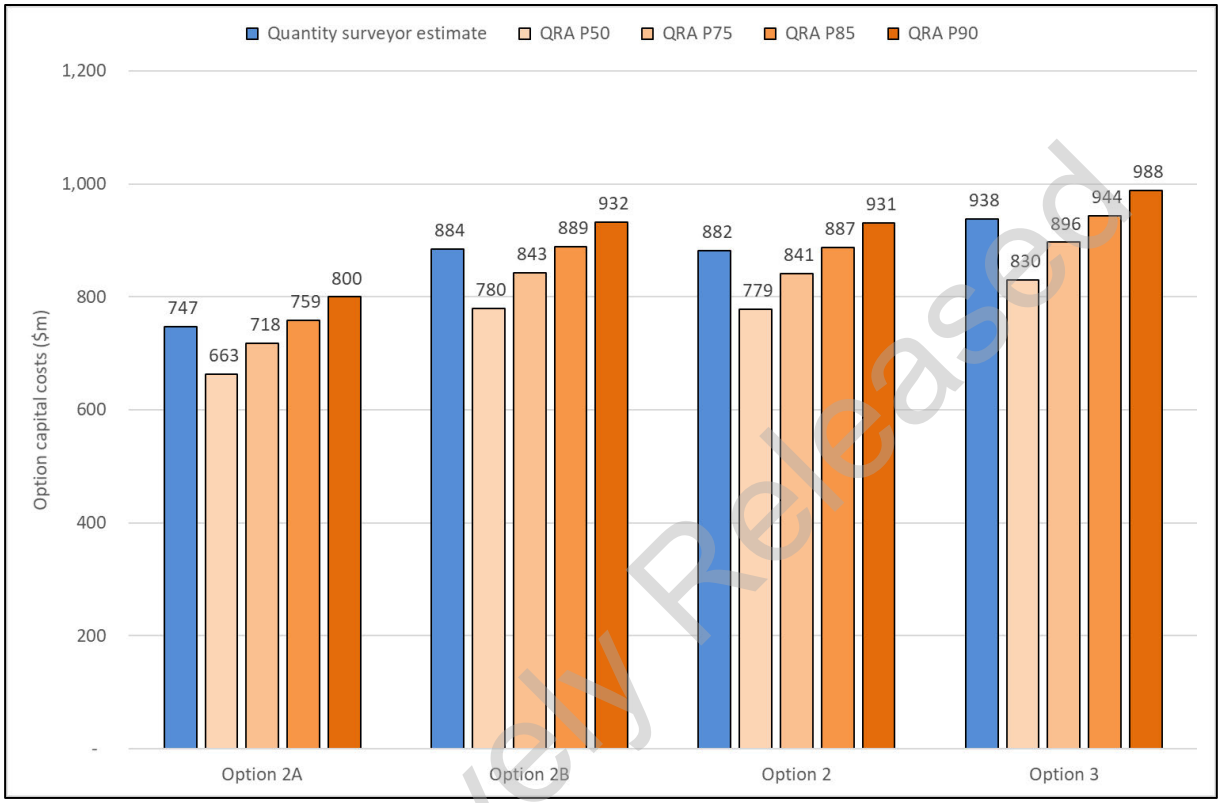
4.5.1.2 Risks to the project – quantitative risk assessment

Te Whatu Ora Te Tai Tokerau engaged KPMG to develop a quantitative risk assessment (QRA) for this project and this document can be provided on request. To identify the project risks and their impacts we held a series of workshops with our consultants including the quantity surveyors, programmer, engineers and architects. The assessments were based on their experiences with other large health capital projects. For each risk, the group estimated a likelihood and a financial consequence. These included direct financial costs or delays, which were converted into impacts on escalation (i.e. a budget provision for future construction cost inflation).

The results of the QRA are presented as p-values for a project budget, indicating the likelihood that the project can be delivered within that budget. For example, a project budget at P85 level indicates there is a 15 percent chance the project will go over budget given the likelihood and impact of the project risks. If the budget for the same project scope is raised or lowered it would decrease or increase the likelihood of the project going over budget. The budget components that change to meet different levels of risk appetite are the contingency and escalation.

The graph below shows our quantity surveyor's cost estimates for the shortlist options compared with what the QRA found the budgets would need to be at the P50, P75, P85 and P90 levels. Following advice from the Ministry of Health, we have adjusted the costs of each option to the P85 level.

Graph 4: Quantitative risk assessment results



5.0 Commercial Case

5.1 Introduction

This Commercial Case examines the procurement approach for delivering the Recommended Option as described in the Economic Case. As part of developing this Commercial Case, the HIU and its partners, Northland DHB and Nelson Marlborough Health (NMH),[21] undertook a formal market engagement process in which both redevelopments in Tranche 1 of the RHRP – Nelson Hospital and Whangārei Hospital – were discussed. As such, this Commercial Case describes the approach for both Nelson and Whangārei Hospital redevelopments.

Briefly, this Commercial Case considers how the objectives of the project group can be balanced against expectations from the market to help encourage participation in the projects and provide long-term value for money. In doing so, the Commercial Case:

- Explores the national and local market context for delivering the redevelopments
- Considers feedback observed during the project group's market engagement process
- Considers synergies and potential efficiency gains in applying a programme-wide approach across Tranche 1 and the Regional Hospital Redevelopment Programme (RHRP) more broadly
- Describes the scope of services required, but does not dictate the preferred packaging structure for these services
- Describes and assesses potential procurement options that could be applied to deliver the projects, including identifying a preferred procurement option
- Outlines initial thinking on the procurement plan for the projects.

5.2 Market context

This section summarises the national and local market context that has been considered in developing the appropriate delivery model for the redevelopments.

5.2.1 National context

New Zealand is expected to see an unprecedented level of infrastructure investment over the coming years. The National Construction Pipeline Report published by the Ministry of Business, Innovation and Employment has suggested national infrastructure activity is expected to steadily increase throughout 2021 to 2026, reaching $11.2 billion per annum by 2026.[22] Of this, significant expenditure is required in the health sector to address growing demand and to remediate and replace ageing assets. This includes the RHRP, which was created in August 2021 by Joint Ministers and comprises five regional hospital redevelopments – Nelson, Whangārei, Hawke's Bay, Tauranga and Palmerston North – with capital expenditure phased over the next fifteen years.

The New Zealand construction sector has faced some significant disruption in recent years, largely resulting from the impact of COVID-19. This has introduced or exacerbated existing challenges in the sector and has resulted in widespread workforce shortages, supply chain constraints and a sharp surge in costs. While the regional location of the redevelopments, and the RHRP more broadly, means

[21] These teams are all now part of Te Whatu Ora and hereafter we refer to them as the project group.

[22] Ministry of Business, Innovation and Employment, National Construction Pipeline Report 2021, https://www.mbie.govt.nz/dmsdocument/18150-national-construction-pipeline-report-2021.

these projects have a greater exposure to these risks, providing the market with certainty may help to address these constraints by creating a visible and reliable pipeline of work that gives the market the confidence to invest in building capacity and capability.

5.2.2 Local context

The redevelopment, and the RHRP more broadly, are expected to have a transformational impact on not only health care delivery for patients and whānau in the regions, but also on the wider New Zealand construction industry. There is a significant opportunity for the project group to identify broader outcomes that can be delivered as part of this substantial investment and to use the projects as a platform to contribute to lasting change.

The project group recognises there will be challenges in delivering a project of this size, scale and complexity in the Nelson and Northland regions as a result of constrained local supply chains and a shortage of specialist sub-trades. The project group is eager to work with communities, industry and other Government agencies to identify and best respond to these challenges as early as possible.

5.3 Market engagement

As previously mentioned, in developing this Commercial Case, the HIU and its partners undertook a formal market engagement process, which was facilitated by EY and included participation from Te Waihanga. Both redevelopments were included in this process, recognising the commonality in the size, scale and complexity of the projects, as well as the potential synergies in applying a programme-wide approach to both projects. The full market report is available on request.

In undertaking the market engagement process, the HIU and its partners sought to leverage the experience and insights of the private sector by allowing an open, two-way dialogue between the HIU and design consultants, construction contractors, major subcontractors and other project advisors (e.g., project managers, quantity surveyors). The market had the opportunity to consider and provide comment on the objectives, scope and status of the redevelopments. This was also intended to increase the HIU's understanding of current market conditions, key risks and other project-specific issues in order to inform the efficiency and quality of procurement and delivery approaches for each project.

5.3.1 Market engagement process

Figure 2 outlines the three-phase market engagement process, in line with the Te Waihanga Market Engagement Guidance.[23]

Figure 2: Market engagement process

5.3.2 Key themes

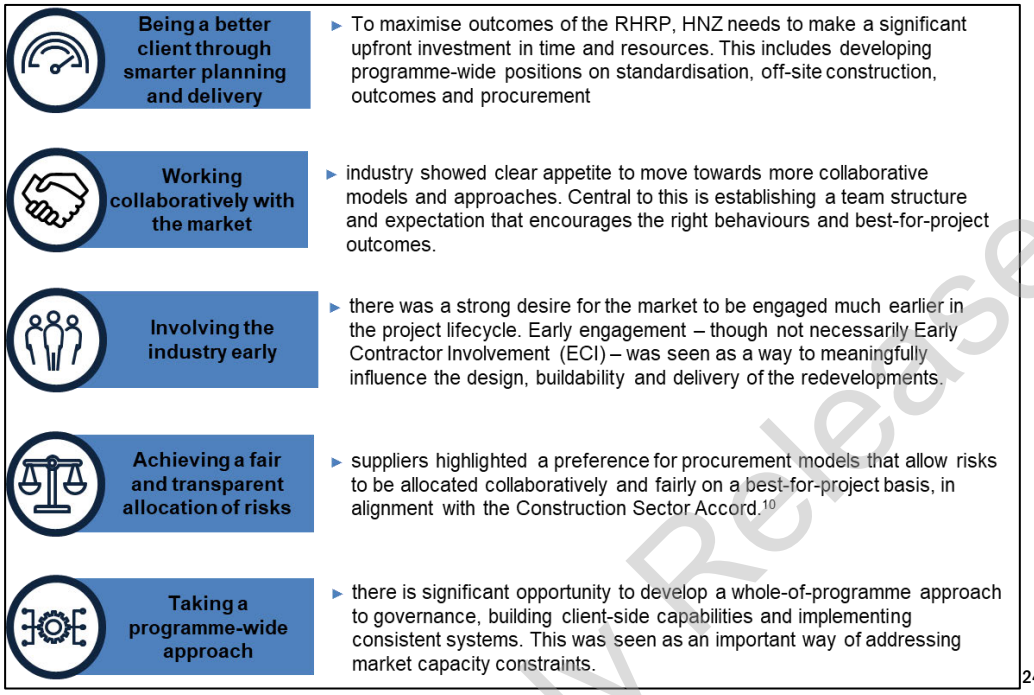
There was significant interest in the projects from industry, with suppliers eager to be involved in delivering the redevelopments under the right conditions. Many emphasised that that their interest in the projects is conditional on the approach that the project group takes for project delivery, including the packaging, procurement approach and risk allocation.

In general, suppliers recognised the opportunity that the RHRP presents for both the project group and the design and construction industry, and understood the need to explore new and innovative ways of delivering this significant investment in New Zealand's health infrastructure.

[23] Te Waihanga – New Zealand Infrastructure Commission, Market Engagement Guidance, https://www.tewaihanga.govt.nz/assets/Uploads/4190489_ITU-Market-Engagement-Guidance.pdf.

*Figure*3 outlines the key themes observed during the project group's market engagement process.

Figure 3: Key themes from market engagement



[24]

5.4 Procurement strategy

This procurement strategy sets out the analysis undertaken to arrive at the preferred approach to market for the redevelopments. The redevelopments have been considered as Tranche 1 of the RHRP and within the context of the wider RHRP. Applying a holistic view across the Tranche 1 redevelopments recognises the commonality in the size, scale and complexity of the projects, as well as the potential synergies in applying a programme-wide approach.

Initially, three workshops were held with the HIU, its partners and advisors to develop the evaluation criteria, explore potential packaging options, agree the long list of procurement models and complete an initial assessment. Following the market engagement process, this long list assessment was revisited in a single workshop to review the scoring decisions and rationale in light of the feedback received from industry. A further discussion was then held to discuss the potential advantages and disadvantages of the short listed models.

[24] Construction Sector Accord, The Accord, Home | Construction Accord

5.4.1 Evaluation criteria

The HIU, alongside key internal and external stakeholders, developed evaluation criteria to aid in selection of the optimal procurement model, as outlined below in Table 31. The HIU was responsible for discussing and attributing weightings for each criterion, hence weightings reflect the HIU's priorities.

Table 31. Procurement model evaluation criteria

Criteria	Description	Weighting
Time to completion	To what extent does the procurement model enable the project group to optimise the delivery programme of the redevelopments, including with respect to ensuring clinical in-service dates are met?	10%
Flexibility	To what extent does the procurement model allow the project group to make changes to the scope/design/outcomes/programme throughout delivery of the redevelopments?	15%
Price / cost certainty	To what extent does the procurement model give the project group confidence in the accuracy of the final delivery costs of the redevelopments at the time each stage is entered?	15%
Innovation and incentives	To what extent does the procurement model create the opportunity for the project group and its delivery partners (design, construction, subcontractors) to seek innovative solutions in how the redevelopments are designed and delivered?	20%
Market attractiveness	To what extent does the procurement model allow for fair and transparent allocation of risks between the public and private sectors, and enhance market appetite in delivering the redevelopments?	20%
Supply chain integration	To what extent does the procurement model enable integration of the supply chain (e.g., products, services) through the design and delivery of the redevelopments?	20%

The project group has identified that industry capacity and the ability to use innovation to address a constrained supplier market are key risks to successfully delivering the redevelopments. As such, the evaluation criteria for market attractiveness, supply chain integration and innovation and incentives were weighted higher than the other criteria.

Although the ability of a procurement model to encourage broader outcomes was tabled as an evaluation criterion, the decision was made to exclude this as a standalone criterion on the basis that delivery of broader outcomes should be a priority for the project group independent of its choice of procurement model. Initial thinking relating to broader outcomes is explored in further detail in section 5.7.1.

5.4.2 Packaging optionality

There remains optionality around how these services are packaged and bundled across the redevelopments. With this in mind, the descriptors in this section are focused on the scope of the packages as opposed to how they are bundled. In exploring packaging options, the HIU, its partners and advisors identified the range of services required to deliver the redevelopments and considered the advantages and disadvantages of different combinations of these services. These key services to be procured include design, enabling works, construction, provision of specialty items, maintenance and costs incurred by Te Whatu Ora.

While the entire programme of works to redevelop Nelson Hospital will be delivered across six phases, this DBC explores procurement of all services for Phase 1 (enabling works, sitewide infrastructure and

Acute Services Building (ASB)), as well as design only services for Phase 2 (IPU Tower 1). Similarly, while it is expected that the Whangārei Hospital redevelopment will be delivered across three stages, this DBC explores procurement of all services for Stage 1 only (enabling works, Ward Tower – Stage 1, ASB, and existing hospital).

5.4.3 Design

The project group will look to engage design consultancy services to continue progressing design of the redevelopments. Whilst roles are yet to be confirmed, it is anticipated this team will include the following:

- **Clinical** – Health Planner (independent of the Architect), Major Medical Equipment Planners and Radiation Protection Planner.
- **Design** – Architect, Building Information Modelling (BIM Manager, Design Manager, ESD Services, Landscape Architects and Kaupapa Māori Design Advisor.
- **Engineers** – Acoustic Engineer, Building Services Engineer, Façade Engineer, Helipad Engineer, ICT Engineer, Traffic Engineer, Structural Engineer and Civil Engineer.
- **Fire Service** – Fire Engineer, Fire Protection Planner and Fire Evacuation Planner.
- **Project Management** – Programme and Project Advisors.
- **Other** – Quantity Surveyor, Construction Programmer and Town Planner.

Market feedback highlighted industry's view that it is critical that the project group engages contractors, sub-contractors and other project advisors early in design development to allow these parties to meaningfully influence the design, buildability and delivery of the redevelopments. Suppliers noted that the project group's decisions relating to standardisation in design and offsite construction, both identified as key areas for innovation and efficiency gains, must be made early to maximise their value to the redevelopments. Industry feedback indicated that allowing sufficient time for the project group (in partnership with clinical user groups, mana whenua, and the wider community) to develop detailed Project and Programme Briefs would position the redevelopment and the RHRP for long-term success. This is discussed in further detail in section 5.6.

There also remains optionality as to whether design is bundled with construction - the benefits, risks and trade-offs associated with different approaches will be explored as part of the procurement model assessment.

5.4.4 Enabling works

The project group's recommendation is that enabling works should remain separate from the main construction works for sitewide infrastructure and ASB, and should commence immediately to maximise overall programme and cost efficiencies. Providing a 'clean' site for construction works is also expected to de-risk the sites for the contractor, reducing interfaces and allowing the project group to understand and bear the actual costs of enabling works, rather than attracting potentially significant contingencies if priced by contractors as part of a combined enabling/construction works package.

The scope of these packages will be refined prior to the project group issuing tenders for site enabling works and there is an opportunity to procure this package using more traditional procurement methods while collaborative models are considered for the other packages of works. Market feedback

highlighted there is an opportunity for these packages to not only include enabling works, but also other early works that may help deliver programme and efficiency gains.

5.4.5 Construction

The project group will engage a private sector contractor(s) to build the new Nelson and Whangārei Hospitals. The contractor(s) will be required to provide all labour, materials, supply chain and services necessary to construct the completed design of the new hospitals, certain furniture fittings and equipment (FF&E), backbone infrastructure for information and communication technologies (ICT) and clinical equipment.

5.4.6 Furniture, fixtures, and equipment

As noted above, the contractor(s) will be required to provide certain FF&E, ICT and clinical equipment, however, the project group's expectation is that some specialty items will be procured separately from the main construction works, in particular, major medical equipment such as radiological imaging equipment. This approach provides the project group sufficient flexibility in selecting this equipment to help best respond to changing clinical trends and technological advancements, particularly given the project's lengthy construction period.

5.4.7 Maintenance

The maintenance contract will be procured by the project group. At this stage, there remains some optionality around whether maintenance is procured separately from the main construction contract or not. This will be considered as part of the procurement model evaluation.

It is expected the maintenance contract will commence at the conclusion of the agreed commissioning period. To help address whole-of-life solutions, the project group will seek input from maintenance providers during the design phase and consider long dated contracts.

5.4.8 Costs incurred by Te Whatu Ora

In addition to the key packages outlined above, Te Whatu Ora will incur a range of indirect costs. These include personnel costs and expenses (e.g., consultants), any planning and consenting costs (e.g., Resource Management Act), as well as administration costs (e.g., procurement documentation). These will be funded by the Crown and included in the budget for the projects.

5.5 Procurement model evaluation

A range of potential delivery and risk transfer approaches to procuring the redevelopments were considered in the procurement model evaluation. The types of procurement models comprise three broad categories – traditional models, collaborative models and bundled models – that reflect different outcomes in respect to risk transfer, contract duration and private sector participation. A summary of each of these broad procurement categories is provided in Table 32 below.

Table 32. Summary of procurement model categories

Procurement models	Description
Traditional models	• Traditional models are typically used to deliver less complex (lower-risk, smaller scale) projects. • Offers greater cost certainty at contractual close than more collaborative models. • There is generally limited collaboration between teams awarded different contracts, e.g., separate design and construction teams, which can increase interface risk. • Contract structures mean there is generally a high degree of risk transfer. This can lead to adversarial contracting relationships; however, this is highly context dependent.
Collaborative models	• Collaborative models are generally employed for more complex (large-scale, higher risk) projects as they provide greater flexibility to respond to unknowns in scope, cost and/or risk. • Generally, there is early engagement with contractors and consultants to allow them to meaningfully influence design and delivery. Contracts often commence in the design/planning phase and continue through to delivery. • Collaborative models often require agencies to trade off flexibility and risk transfer against price and programme certainty. • The commercial structure can help incentivise collaboration, enabling more efficient problem solving, better supply chain management and increased innovation.
Bundled models	• Bundled models combine one or more traditionally separate components, e.g., a design, build and maintenance contract. • Bundling can help maximise value, driving price down through economies of scale, and decrease interface risk. • Bundling supports collaboration between providers and increases the potential for innovation, e.g., a maintenance provider inputting through design can improve whole-of-life outcomes, depending on the incentive mechanisms.

5.5.1 Long list assessment

A range of procurement models for procuring the redevelopments were considered as part of the long list assessment, including:

- Direct managed
- Construct Only (C)
- Construct Only with Early Contractor Involvement (C(ECI))
- Design and Build (DB)
- Design and Build with Early Contractor Involvement (DB(ECI))
- Construction Management (CM)
- Managing Contractor (MC)
- Alliance (A), used in this analysis as a proxy for a range of collaborative procurement models
- Design, Build and Maintain (DBM)
- Public Private Partnerships (i.e. Design, Build, Finance, Maintain (Operate))

From the outset, it was established that the following models would not be suitable for delivering the redevelopments, with rationale detailed alongside:

- **Direct managed** – would require a significant increase in resource and capability within Te Whatu Ora, with the project group directly managing all aspects of the delivery of the project works (including design, preliminaries, construction and quality control). This is not feasible for a project of this scale, size and complexity.
- **Public Private Partnerships (PPPs)** – current Government policy precludes agencies from using PPPs to procure projects in the education, health and corrections sectors (refer Section A, Clause 80, Cabinet Office Circular CO(19)6), 10 Oct 2019).

The project group assessed the remaining long list of procurement models against the agreed evaluation criteria using the scoring scale provided in Table 33. This assessment was informed by a practical understanding and knowledge of the procurement models, lessons learned from recent health infrastructure projects, as well as assumptions regarding current regional and national supplier market conditions. The results are shown overleaf in Table 34.

Table 33. Long list assessment scoring scale

1	2	3	4	5
Very small extent	Small extent	Moderate extent	Large extent	Very large extent

Table 34. Initial long list assessment summary

Evaluation criteria		Delivery model							
Criteria	**Weighting**	**C**	**C (ECI)**	**DB**	**DB (ECI)**	**CM**	**MC**	**A**	**DBM**
Time to completion To what extent does the procurement model enable the project group to optimise the delivery programme of the redevelopments, including with respect to ensuring clinical in-service dates are met?	10%	2	3	2	3	3	2	3	2
Flexibility To what extent does the procurement model allow the project group to make changes to the scope/design/outcomes/programme throughout delivery of the redevelopments?	15%	3	3	2	2	4	3	5	1
Price / cost certainty To what extent does the procurement model give the project group confidence in the accuracy of the final delivery costs of the redevelopments at the time each stage is entered?	15%	3	2	4	3	2	3	1	5
Innovation and incentives To what extent does the procurement model create the opportunity for the project group and its delivery partners (design, construction, subcontractors) to seek innovative solutions in how the redevelopments are designed and delivered?	20%	2	4	4	5	2	3	5	5
Market attractiveness To what extent does the procurement model allow for fair and transparent allocation of risks between the public and private sector and enhance market appetite in delivering the redevelopments?	20%	4	5	2	3	3	4	4	2
Supply chain integration To what extent does the procurement model enable integration of the supply chain (e.g. products, services) through the design and delivery of the redevelopments?	20%	1	4	5	5	3	4	5	5
Unweighted score		15	21	19	21	17	19	23	20
Unweighted ranking		8	2	5	2	7	5	1	4
Weighted score		2.5	3.7	3.3	3.7	2.8	3.3	4.0	3.5
Unweighted ranking		8	2	5	3	7	4	1	6

Following the long list assessment, the HIU and its partners conducted a detailed market engagement process (refer to Section 0) to seek industry feedback on how the choice of procurement model might impact the market's appetite and capacity to deliver the redevelopments. The HIU then revisited its long list assessment to confirm that its scoring decisions and rationale remained appropriate for the redevelopments based on feedback and insights received from the market.

Based on this feedback, the following models were excluded from further assessment:

- Construct Only – although the model is well understood by the market, the absence of early engagement / ECI was unattractive to some contractors who cited negative experiences where they had been asked to assume design risks on projects where they had not had any material input during the design phase. Further, the fixed-price nature of a typical Construct Only model (e.g. fixed-price lump-sum contracting under an NZS3910) was seen as unattractive to many contractors in an environment of high cost escalation, where contractors were asked to assume significant cost risk.

- Design and Build / Design, Build and Maintain – although the model is well understood by the market, feedback suggests there is limited design management capability within Tier 1 and Tier 2 contractors to effectively manage (and hence accurately price) design risks for a project of this scale. In addition, some domestic design consultants did not support a DB model that meant their firm (or a subset of its people forming the client-side design team) would be novated to a construction contractor partway through the design development process.

The outcomes of the final long list assessment, as informed by the HIU's detailed market engagement process, are summarised in

Table *35* overleaf. From this evaluation, the three highest-scoring models were shortlisted for further consideration – Alliancing, Design and Build (ECI) and Construct Only (ECI).

Table 35. Revised long list assessment summary

Evaluation criteria		Options				
Criteria	**Weighting**	**C (ECI)**	**DB (ECI)**	**CM**	**MC**	**A**
Time to completion To what extent does the procurement model enable the project group to optimise the delivery programme of the redevelopments, including with respect to ensuring clinical in-service dates are met?	10%	3	3	3	2	3
Flexibility To what extent does the procurement model allow the project group to make changes to the scope/design/outcomes/programme throughout delivery of the redevelopments?	15%	3	2	4	3	5
Price / cost certainty To what extent does the procurement model give the project group confidence in the accuracy of the final delivery costs of the redevelopments at the time each stage is entered?	15%	2	3	2	3	2
Innovation and incentives To what extent does the procurement model create the opportunity for the project group and its delivery partners (design, construction, subcontractors) to seek innovative solutions in how the redevelopments are designed and delivered?	20%	3	5	2	3	5
Market attractiveness To what extent does the procurement model allow for fair and transparent allocation of risks between the public and private sector and enhance market appetite in delivering the redevelopments?	20%	4	3	4	3	4
Supply chain integration To what extent does the procurement model enable integration of the supply chain (e.g. products, services) through the design and delivery of the redevelopments?	20%	4	5	3	4	5
Unweighted score		19	21	18	18	24
Unweighted ranking		3	2	4=	4=	1
Weighted score		3.25	3.65	3	3.1	4.15
Weighted ranking		3	2	5	4	1

The HIU's revised longlist assessment was undertaken following the market engagement process, and takes into account industry feedback on potential procurement models for the redevelopments. Changes in market attractiveness scores (affecting C(ECI), CM, MC) reflect how the project group believes the choice of procurement model will affect market appetite and capacity to deliver the redevelopments, based on supplier feedback. Changes in scoring for innovation (affecting C(ECI)) and price certainty (affecting Alliancing) were informed by further context from suppliers on the New Zealand market's expertise in certain models, the availability of specialist skillsets and suppliers' experience of the practical implications of different commercial frameworks.

From the revised long list assessment, Alliancing (as a proxy for a range of potential collaborative procurement models) emerged as the preferred procurement approach for the redevelopments. The project group will now undertake a separate workstream to evaluate the suitability of collaborative procurement models for the redevelopments and the RHRP at a programme-level.

5.5.2 Short list assessment

The short list models were discussed in detail in a series of workshops to further understand the advantages, disadvantages and trade-offs of each procurement approach. The key considerations for each model are summarised below in Table 36.

Table 36. Short list assessment summary

Model	Considerations
Alliancing (or other collaborative procurement models)	Collaborative procurement models, including Alliances, involve a high level of integration between the owner/client, designers, contractors and sub-contractors throughout project planning and delivery. This integration enables more effective problem solving, better supply chain management and increased innovation. In the case of an Alliance, there is a single integrated team that is incentivised to work together on a best-for-project basis through a pain/gain share mechanism, striving to achieve pre-defined project outcomes such as cost and programme savings, innovation, design and construction efficiencies, etc. Collaborative procurement models provide the ability to effectively manage complex interfaces through the integrated delivery team, and provide more flexibility to respond to uncertainty. Collaborative procurement models can also enable a high level of supply chain integration, a key consideration given that the redevelopments will be delivered in regional New Zealand, where workforce and supply are significantly constrained. Generally, collaborative procurement models are adopted for large, complex and risky projects that require flexibility, which are features consistent with the redevelopments. A further consideration specifically for an Alliance is that the shift in ways of working and team culture that would come from employing an Alliance model will ultimately encourage collaboration and best-for-project outcomes, and likely provide greater benefits in subsequent tranches of the RHRP. This applies as long as the project group and the project delivery team are able to get an effective understanding of the structure and requirements of the model. Collaborative procurement models would likely require a significant resource commitment from the project group to manage the delivery team relationship and a shift in working mentality away from arms-length contracting arrangements. If the redevelopment is delivered through an Alliance, the project group will need to make a large upfront investment to ensure organisational readiness (as mentioned in section 0). This organisational readiness phase presents the risk of increased upfront costs and minor programme delays, however overall timelines may still be achievable (or potentially accelerated) as a result of design and construction efficiencies from this collaborative, programme-wide approach to delivery. A key risk to the project group of collaborative procurement models is the reduced level of price certainty the project group would have versus a more traditional fixed price contract model. For example, Alliancing utilises a target out-turn cost mechanism where cost overruns/savings are shared between the project group and contractor(s), but there is no fixed price.
Design & Build (ECI)	Both the project group and the market are familiar with the DB(ECI) model, which performs well against traditional commercial objectives of programme and cost certainty. A DB(ECI) would allow the project group access to private sector design innovation, bringing contractor/subcontractor advice on practical design elements into the design early. The collaborative nature of ECI encourages the contractors(s) to drive innovation, using the Programme Brief (as mentioned in section 0) as a guide. Whilst collaboration is encouraged through the ECI phase, there is a risk that (as with all arms-length contracts) these behaviours may cease at contract handover. This is contrary to industry feedback which indicated that there is a clear appetite from suppliers for the project group to consider collaborative approaches that better integrate all parties throughout every stage of planning and delivering the redevelopments.

Model	Considerations
Construct Only (ECI)	Similar to DB(ECI), a Construct Only model with an ECI ('C(ECI)') phase typically delivers well on programme and cost certainty, dependent on the completeness and accuracy of design documentation. For the redevelopments, this should be enhanced and enabled by the Programme Brief. C(ECI) is a model that both the project group and the market have prior experience with and allows the project group to maintain a high degree of control through the design phase. A main consideration is that C(ECI) may be a cost-effective route if the Programme and Project Briefs contain sufficient detail on design. The arms-length nature of the Construct Only model tends to limit opportunities for collaboration and innovation. This is somewhat offset by the ECI phase, however only until contract handover. The lack of collaboration and integration throughout the supply chain may present issues given the complex nature of the builds, delivered in regions with significant capacity constraints. It also introduces more interfaces than both Alliancing and DB(ECI), which increases risks, and a project-only view may restrict investment in programme-wide efficiencies through pre-fabrication and offsite construction.

5.5.3 Preferred procurement model

From the short list evaluation, a form of collaborative procurement (potentially involving Alliancing) was identified as the preferred model for procuring the redevelopments. The project group recognises the opportunity for considerable synergies in delivering Tranche 1 of the RHRP as a single package, however, there remains optionality around how the projects will be bundled.

Collaborative procurement models have the potential to help the project group address previous inefficiencies in New Zealand health infrastructure delivery. These models allow industry partners to be engaged early and meaningfully influence the design, build and delivery of the projects from the outset. The team structure, expectations-setting and shared responsibility inherent to these models promotes a high-level of knowledge transfer and incentivises behaviours that deliver best-for-project as opposed to best-for-party outcomes. Collaboration also lends itself to delivering maximum flexibility and adaptability, thereby allowing the project group to best respond to unknowns relating to project scope, risks (such as supply chain risk) and cost.

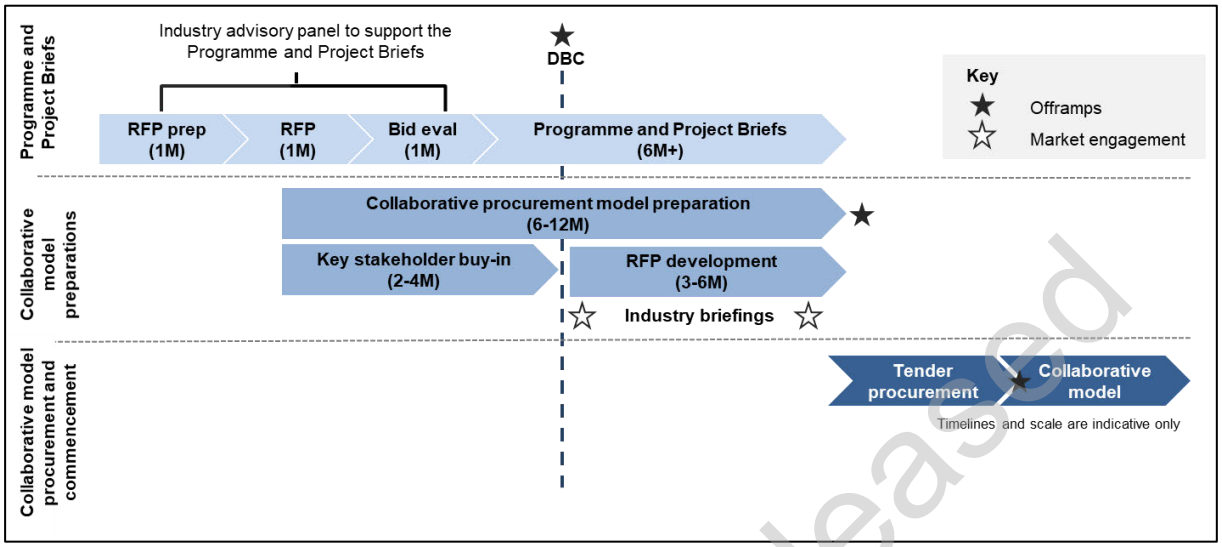
Notwithstanding the above, proceeding with collaborative procurement models for the redevelopments and wider RHRP would represent a significant change in how the health sector has traditionally planned, procured and delivered major infrastructure projects. These models will likely require the project group to make trade-offs between cost and programme certainty, and the flexibility and risk-sharing benefits available under collaborative procurement. To best enable success under collaborative models, the project group is undertaking a separate workstream to understand planning and preparation required, outcomes sought, key risk areas and potential trade-offs. This work is already underway and is expected to conclude following submission of the DBC, however, initial thinking has helped inform the approach to the procurement plan.

5.6 Procurement plan

The procurement plan identifies a go-to-market strategy for how the project group can implement the recommended option as described in the economic case. Importantly, the preferred procurement approach identified in this commercial case represents the project group's initial thinking and will be further developed and refined alongside internal stakeholders, external advisors and the market following completion of the DBC.

The figure below is an illustrative proposed timeline that summarises each step of the procurement plan. Further details on each workstream are provided in this section, with Figure acting as a guide.

Figure 4: Illustrative procurement plan timeline



5.6.1 Programme Brief

Feedback from the market engagement highlighted the need for significant upfront investment in time and resources to position the redevelopments and other RHRP projects for long-term success. It was recommended that the project group develops a Programme Brief for the RHRP that details the objectives, requirements and scope for the redevelopments prior to commencing subsequent design phases.

Scope

The project group will lead development of the Programme Brief to ensure centralised oversight of the desired outcomes the project group is seeking from delivery of the RHRP. The Programme Brief is intended to be a highly collaborative process between Government and industry to harness innovation and learnings from the market and seek support, input and expert advice on key RHRP decisions. Industry involvement in developing the Programme Brief is expected to comprise consultancy-type arrangements with selected industry participants including designers, engineers, contractors, sub-contractors and other project advisors.

Although the scope of the Programme Brief will be further developed by the project group before going to the market via a RFP, it is anticipated it will detail programme-wide positions on:

- **Project governance and organisation** – outline of project execution plans, governance arrangements and project controls and administration, across the programme and within each redevelopment project.
- **Te Tiriti partnership** – establishing partnering relationships and expectations with mana whenua, including engagement with kaupapa Māori design and tikanga advisory services for each project.
- **Broader outcomes** – developing an RHRP-wide position on what the project group wishes to achieve in terms of broader outcomes, including to seek dedicated funding in project budgets for the market to deliver these broader outcomes (as discussed in Section 0).
- **Design standardisation** – including the extent to which the project group can leverage existing designs, Ministry of Health Design Guidance or the AusHFG to standardise elements within the individual redevelopment projects and across the RHRP (e.g., room design, plant items, FF&E).

The opportunity for standardised design across the redevelopments is largely with regard to standard clinical and non-clinical room layouts which comprise up to 80 percent of a building.

- **Operational and functional requirements** – regarding clinical and non-clinical systems and processes which require specific responses in the built environment including kaupapa Māori design, and nurse call systems, ESD requirements including waste management, energy efficiency, water conservation, security requirements, linen supply, facility management and maintenance.
- **Data and digital** – identification of the service requirements at an early stage and confirmation of BIM requirements through design, construction and handover to the health service.
- **Innovation** – identifying priority areas of the projects and the RHRP where the project group wishes to incentivise innovation.
- **Offsite construction** – opportunities to achieve construction efficiencies (including cost, lead times and onsite workforce requirements) across the RHRP by requiring contractors to explore the use of prefabrication and/or modularisation of various building components.
- **Sequencing –** optimising project sequencing and programming in a way that most efficiently utilises local and national supply chains to address ongoing market capacity constraints.

Timeframes

Feedback from the market, along with recent experience from the project group, suggests that the Programme Brief will take approximately eight months to develop. This includes approximately six months to develop programme-wide positions on design principles, standardised design, innovative and efficient construction methodologies (e.g., modularisation), supply chain planning, broader outcomes, etc. A further 1-3 months may also be required to procure industry advisors to support the Programme Brief, and additional time for governance approvals upon completion of the brief.

Project Brief

In addition to the Programme Brief, the project group will develop a Project Brief for each of the redevelopments. The Project Briefs for Project Pihi Kaha and Project Whakatupuranga will, like the Programme Brief, be developed prior to procuring the design team and entering subsequent design phases. The Project Briefs will build on standards developed in the Programme Brief to reflect specific site constraints (e.g., topography, location, geotechnical requirements) and finalise planning and designs for each location. This includes identifying functional (e.g., adjacencies, SoAs), technical (e.g., flexibility, building services) and management (e.g., budget, governance, risk, change control) requirements. This approach recognises that regional differences in culture, demographics, workforce and clinical service planning will drive local facility variations.

5.6.2 Collaborative procurement model preparations

A collaborative procurement approach will require a significant resource commitment from the project group and a shift in working mentality and behaviours. As such, three key workstreams will be undertaken in order to build capability and establish the project group's organisational readiness, with an overview of key activities for each provided in Table 36.

Importantly, key stakeholder buy-in and RFP development can occur in parallel to collaborative procurement model preparation, although, it is expected that stakeholder buy-in will need to occur before RFP development can commence.

Table 36. Collaborative procurement preparation workstreams

Workstream and estimated timeframe (tbc)	Key activities
Collaborative procurement model preparation (6 – 12 months)	• Appoint / identify an internal collaborative procurement champion to lead participation from the Infrastructure and Investments team. • Engage with other Government agencies who have adopted collaborative procurement approaches for lessons learned and case studies. • Identify roles and responsibilities required for the project group to operate as part of an integrated team – these may be sourced internally or externally depending on capability requirements. • Develop standard collaborative procurement proforma documents including leveraging other Government agencies' experience.
Key stakeholder buy-in (2 – 4 months)	• Central to a successful collaborative procurement approach is internal buy-in and understanding of behaviours. • Engage advisors / coach with collaborative procurement experience. • Promote internal cultural changes to adopt collaborative contracting e.g., sharing control by leadership decisions, approach to price certainty.
RFP development (3 – 6 months)	• Define scope, set objectives, identify key success factors, risks and opportunities. • E.g., develop procurement and contractual documentation for discussion

5.6.3 Collaborative model procurement and commencement

Once the Programme Brief has been developed and the project group has comfort that it is sufficiently prepared to proceed with collaborative procurement, the next crucial step is collaborative model procurement and commencement. The market engagement process highlighted complex procurement processes can hinder appetite to participate, so the project group should look to utilise processes that are as simple as reasonably possible. Any approach would be tested with the market, then confirmed during RFP development during collaborative procurement model preparations.

The tender process begins when the RFP is issued to the market. Through the tender process bidders will have the opportunity to participate in interactive workshops that cover all aspects of the RFP and engage in two-way dialogue with the project group to support the development of responses. Once responses are received, evaluation will then focus largely on quality (non-price) attributes, procurement model dependent (as in some collaborative procurement models, cost is not agreed prior to the bidder being appointed). The successful bidder will form an integrated delivery team with the project group.

Once contracts are confirmed, the integrated delivery team will then:

- Commence design development, using the Programme Brief as a guide to enable programme-wide efficiencies,
- Establish relationships with, plan, and procure subcontractor(s) and supply chain
- Decide packaging and bundling of projects
- Develop costs (if not already negotiated)

These activities will enable the delivery team(s) to begin the delivery of the redevelopments.

5.6.4 Off-ramps and alternative options

As the project group explores more collaborative methods for procuring major capital projects, it is important that sufficient flexibility is retained to enable a change in the preferred procurement approach, in the event that the market experiences additional significant fluctuations that require a different response.

Programme Brief

The project group intends to develop a detailed RHRP Programme Brief prior to tendering for design and construction partners for the Tranche 1 projects. The scope of this Programme Brief is designed to be independent of the choice of procurement model, meaning that on completion of this brief the project group would still retain some flexibility to proceed with a commercial model(s) other than a collaborative procurement model.

Off-ramps

There are four proposed off-ramps throughout the procurement plan, beginning with the DBC and finishing at tender procurement. These off-ramps are in place to ensure that optionality remains around the procurement model for the redevelopment, and include:

- **DBC** – if the CIC does not approve the DBC under a collaborative procurement model.
- **Programme Brief** – the project group reserves the right to proceed with an alternate procurement model using the completed Programme Brief. If the Brief contains sufficient detail on design, the procurement model could switch to a C(ECI).
- **Stakeholder buy-in** – if there is no internal-buy in to the collaborative procurement model, this presents an opportunity to convert to a DB(ECI) or C(ECI) model
- **Tender procurement** – if the tender process fails, can return to the market for a DB(ECI) or C(ECI).

Early Contractor Involvement

The procurement options analysis identified a form of early contractor involvement ('ECI') as an alternative method of procuring the projects. The ECI model has been used on previous health infrastructure projects (e.g., New Dunedin Hospital Inpatients Building, Taranaki Base Hospital) and was supported by industry in the recent market engagement process.

ECI is seen to achieve some of the benefits of other collaborative procurement models, e.g., greater collaboration with suppliers, early industry involvement and the ability to mitigate the risks associated with constrained regional supply chains. ECI when used with a more traditional model can also provide HNZ with more cost certainty. However, ECI models retain some downsides of more traditional procurement models, including high risk pricing as a result of fixed price contracts entered at the end of the ECI period; a lack of price tension once the ECI contractor is brought onboard; and limited opportunities for the contractor to add value unless ECI scope and deliverables are very clearly defined.

The offramps highlighted above provide HNZ the ability to pursue an ECI model once the viability of implementing a more collaborative procurement model is understood.

Potential trade-offs

As a collaborative procurement model represents a shift away from traditional delivery methods that the project group is familiar with, the collaborative procurement model preparation and key stakeholder buy-in workstreams are included in the procurement plan. In developing this procurement plan, Te Whatu Ora and its partners will need to consider potential trade-offs in pursuing a collaborative procurement model.

- **Programme** - the additional workstreams mentioned above will have an impact on programme, potentially delaying shovel-in-ground timing. However, overall timelines may still be achievable (or potentially accelerated) as a result of design and construction efficiencies from this collaborative, programme-wide approach to delivery. Understanding the overall programme impact for Nelson and Whangārei, including benefits for subsequent tranches, will be a key part of the initial assessment.
- **Cost** – A key risk to the project group of collaborative procurement models is the reduced level of price certainty the project group would have versus a more traditional fixed price contract model. Further, the additional workstreams represent a cost, and the delays in programme may cause some level of cost escalation of materials and labour. The upside is collaborative procurement models provide the ability to effectively manage complex interfaces, have higher levels of supply chain integration, provide more flexibility to respond to uncertainty and enable innovative problem-solving, which can reduce costs.
- **Resources / capability** – employing a collaborative procurement model for the redevelopments will require a significant resource commitment from the project group to manage the delivery team relationships and a shift in working mentality away from arms-length contracting arrangements. This means project group will need more internal capability and/or contractors with specialist knowledge to be able to effectively manage delivery of the redevelopments through a collaborative procurement model.

Impact of Health Reform

The health sector reforms will create opportunities to manage the redevelopments in a way that delivers more efficiencies and standardisation.

5.7 Commercial principles

The key commercial principles underpinning a procurement model are usually outlined in a DBC. As this DBC does not recommend a specific procurement model but rather a category of procurement models, the commercial principles section has not been completed. Importantly, this represents initial thinking from the project group that will be further developed as part of the collaborative procurement model preparation phase.

As the project group and its partners further develop their thinking as part of the RHRP Procurement Strategy, and later through the collaborative procurement model preparation phase itself, a number of items will have to be considered, including:

- Collaborative procurement model structure – Structure is highly dependent on the specific collaborative procurement model used. The project group will need to consider the opportunity to include major subcontractors and specialist suppliers as named parties within collaborative contract models. Involving subcontractors provides them with certainty (resources and supply chain) and allows trade-specific input into design.

- Governance structure – what governance, delegations and decision-making functions the project group will need to be established to allow the delivery team to function effectively while maintaining appropriate accountability to Government.

- Contractual framework – what the most appropriate form of contract is to deliver the redevelopments. The project group will need to be cognisant of special conditions, as the complexity of a contract is often correlated with tender pricing. Further it will be critical to have an independent peer review and assurance during the contract process.

- Risk allocation - Feedback from market engagement indicated that a fair and transparent allocation of risk will incentivise industry to bid for the redevelopments. The project group must consider how to best allocate risks, being cognisant that a collaborative procurement model may mean the HUI will need to accept a higher level of project risk than under traditional models where the risk allocation is well understood at contract commencement. For Tranche 1 of the RHRP, key risk areas that will need to be managed include overall delivery timetable risk and interface risk between delivery team(s) and user group stakeholders.

- Payment mechanism - what the most appropriate fee and payment structure is. Procurement models help shape contract type and therefore potential payment terms. These vary by model, and collaborative procurement models tend to have a larger focus on non-price attributes and can occur on an open-book basis. If non-price attributes are focused on, the project group could use independent estimators and cost benchmarking to ensure project costs are on-market, providing greater transparency in how the project group demonstrates value for money.

- Performance framework - how the project group can incentivise consultant and contractor performance. Collaborative procurement models often utilise key performance indicators (KPIs) to evaluate contractors' and consultants' performance and to incentivise them to achieve and/or outperform targets. It is expected that the outcomes the project group seeks to achieve will be explored as part of the Programme Brief, then further refined within the integrated delivery team(s).

5.7.1 Broader Outcomes

The project group recognises that regional projects of this size and scale are not only an opportunity to achieve greater public value, but are also a means of delivering wider social, cultural, economic and environmental outcomes. It is expected that the procurement model used to deliver the redevelopment will enable achievement of broader outcomes, including:

Figure 5: Broader outcomes for the redevelopment

In delivering broader outcomes through the redevelopment, the project group and its partners would look to co-define broader outcomes with the delivery team prior to construction. This ensures that there is a focus on broader outcomes from planning through to delivery, and that goals are achievable, with input from industry players and key stakeholders increasing the opportunities for innovation outcomes. As mentioned previously, the delivery of broader outcomes is procurement model agnostic

5.8 Conclusion

This DBC recommends a collaborative procurement mode as the preferred model for procuring the redevelopments, either independently or together. The project group recognises there are considerable synergies in delivering Tranche 1 as a single package, however, there remains optionality around how the projects will be bundled.

These models will allow industry partners to be engaged early and meaningfully influence the design, build and delivery of the project from the outset. The team structure, expectations-setting, and shared responsibility inherent to these models promotes a high-level of knowledge transfer and incentivises behaviours that deliver best-for-project as opposed to best-for-party outcomes. Collaboration also lends itself to delivering maximum flexibility and adaptability, thereby allowing the project group to best respond to unknowns relating to scope, risk and cost.

The Commercial Case undertook a qualitative evaluation of various procurement options within a series of structured workshops attended by the project group, its partners and key advisors. Feedback from market engagement indicated that the construction industry has a strong preference for

delivering the redevelopments through a collaborative procurement model that minimises interfaces and maximises collaboration. The project group's recommended procurement strategy addresses many of the considerations raised in the market engagement, including that the project group should seek to involve industry early, achieve a fair and transparent allocation of risks, and take a programme-wide approach to delivery.

In addition, feedback from market engagement indicated that the project group will need to make a significant upfront investment to position the Projects of the RHRP for long-term success. This is included in the procurement plan for the redevelopments, where both a Programme and Project Briefs will be undertaken prior to procuring the design team(s). The Programme Brief will detail programme-wide positions on aspects such as standardised designs, efficient construction methodologies, and broader outcomes, and the Project Briefs will then build on this to complete the remainder of design and reflect local nuance, demographic differences and site-specific requirements.

To best enable success under collaborative procurement models, the project group will undertake two separate workstreams, one, the RHRP Procurement Strategy, to investigate collaborative procurement models, and two, the collaborative procurement model preparation workstream, to ensure organisational readiness for delivery under such a model. The RHRP Procurement Strategy evaluates planning and preparation required, outcomes sought, key risk areas and potential trade-offs. This work is already underway and is expected to conclude following submission of the DBC, however, initial thinking has helped inform the approach to the procurement plan.

The collaborative procurement model preparation workstream within the procurement plan occurs in parallel to the Programme Brief, and while this phase presents the risk of increased upfront costs and minor programme delays, overall timelines may still be achievable (or potentially accelerated) as a result of design and construction efficiencies from this collaborative, programme-wide approach to delivery. In the procurement plan there are also opportunities inbuilt for changes from the preferred collaborative procurement model to an alternative option, as the project group recognises the importance of retaining sufficient flexibility to enable a change in the preferred procurement approach, in the event that the market experiences additional significant fluctuations that require a different response.

The shift in ways of working and team culture that come from employing a collaborative procurement model will ultimately encourage collaboration and best-for-project outcomes, and likely provide greater benefits in subsequent tranches of the RHRP, given that the project group and the project delivery team are able to get an effective understanding of the structure and requirements of the model. The project group will proceed to procuring industry advisors for the Programme Brief, which is procurement-model agnostic, and complete the RHRP Procurement Strategy workstream, before beginning collaborative procurement model preparation and undertaking procurement and commencement for the redevelopments. Following this, the project delivery team(s) will be formed, at which point the main works will commence.

6.0 Financial Case - Affordability and Funding Requirements

6.1 Outline

The purpose of the financial case is to present an assessment of the potential financial implications of the recommended option in a project view. This financial case covers:

- Funding requirements and funding sources: an outline of the funding requirements and sources available for the delivery of the new solution
- Financial assessment: an assessment of the potential financial arrangements for the new solution, including a summary of the key assumptions considered and applied as part of the development of the financial model
- Summary of overall affordability assessment: an assessment of the overall affordability of the new solution against projected revenues.

It discusses option 3 and option 2A: while option 3 is recommended, the capital costs for option 2A are within the reserved funding for the project and decision-makers can deliver option 3 by approving 2A now and the difference between the two options by 2024. The affordability assessment for option 2A below is based on a scenario where the second stage of funding to deliver the scope of option 3 is *not* made available, so it assesses the consequential operating costs of option 2A alone. If decision makers select option 2A and then approve additional capital funding to deliver the scope of option 3 by 2024, the consequential operating costs would be the same as option 3.

6.2 The Financial Costing Model

6.2.1 Financial costing approach

Te Whatu Ora is seeking $943.567m in Crown funding for the capital costs of the proposed redevelopment. As discussed in the economic case, this includes an increase in the contingency to reduce the risk of the project going over budget to 15 percent, based on the quantitative risk assessment. Without this increase, our quantity surveyor's cost estimate for option 3 was $937.745m and the sections below use this as the basis for the financial case assessment.

This DBC seeks Crown funding for the capital costs, while the consequential operating costs would be funded from population-based revenue funding (PBFF) or a replacement funding system under Te Whatu Ora. Given the size of the project, there are limited opportunities for seeking other funding sources for the capital costs, such as charitable contributions or debt.

The table below breaks down the capital costs of the recommended option 3. The detailed schedule for options 3 and 2A is included in Attachment 11.

Table 38: Capital costs ($m, nominal)

9(2)(b)(ii), 9(2)(j)

The capital requirements have been refined from the PBC stage through engagement with the commissioned quantity surveyors (QS), and workforce demand modelling has been refined to provide a clearer view of the future staffing needs of Te Whatu Ora Te Tai Tokerau. Additionally, we have modelled for the increased maintenance and GreenStar benefits associated with the new buildings.

6.3 Financial Assessment

6.3.1 General Provisions

The financial model was developed to assess the incremental financial costs associated with the recommended option over a 20-year period (FY22 to FY41), with delivery by FY32. This assessment is based on the core assumptions underpinning the costs outlined in the economic case, the implications of the delivery model recommended in the commercial case, and the timeframes described in the management case. The following assumptions have been applied in the development of the financial model:

- The assumptions specific to the baseline spend and recommended option are based on the estimates/assumptions agreed by Te Whatu Ora Te Tai Tokerau
- The core assumptions underpinning the costs are consistent with the economic case; e.g. the approach to staffing projections
- Only the incremental costs of the recommended option have been assessed; i.e. the additional cost requirements on top of existing baseline funding.

The table below details assumptions relating to the financial assessment.

Table 39: Financial assumptions

Assumptions	Value	Source and commentary
Capital Charge	5%	As per Treasury guidance - Capital charge is calculated and charged twice a year based on equity in December and June
Discount Rate	5%	As per Treasury guidance
Modelling period	20 years	As discussed in the economic case
Depreciation/Amortisation		
Design fees and project management	4%	Te Whatu Ora Te Tai Tokerau assumptions
Contingency	4%	
Fees and Margins	4%	
Land and buildings	2%	
Demolition and decanting	2%	
Fit out	7%	
FF&E (clinical equipment)	17%	
Escalation Factors		
CPI	2%	
LCI	2%	
Capital costs	0%	Included in QS provided estimate (3.5%) and does not need to be applied to capital estimates.
Population based revenue funding	4%	Te Whatu Ora Te Tai Tokerau growth rate assumption
Other Benefits / Costs		
Energy, repairs and maintenance	$200.14/sqm change in GFA	Te Whatu Ora Te Tai Tokerau research
GreenStar infrastructure – direct benefits	$22.78/sqm change in GFA	Te Whatu Ora Te Tai Tokerau research on cost saving per sqm. The surgical wing GFA change is omitted as it is not a GreenStar building. **Indirect benefits applied in the economic assessment only.*
GreenStar staff productivity -direct benefits	$61.28/sqm change in GFA	
GreenStar staff productivity -indirect benefits*	$176.19/sqm change in GFA	

6.4 Staff costs

A major component of the additional operating costs is associated with the redevelopment is staff costs and we assume that these change relative to the capacity the shortlist options deliver.

During the 2020s, demand exceeds physical capacity in most areas of the Whangārei Hospital, so we assume there would be limited staff growth. At other Northland hospitals, we assume staff numbers grow with demand over the planning period. Under the status quo baseline, we assume that the limited staff growth at Whangārei Hospital continues to the end of the planning period. Once additional physical capacity becomes available in 2031 under the shortlist options, we assume staff numbers grow to meet demand over two years.

Options 2B and 3 provide enough bed capacity to meet demand, so over two years staff numbers increase to the level needed to meet demand and thereafter grow in proportion to demand until the end of the planning period. This assumes that Te Whatu Ora delivers subsequent stages of the redevelopment as demand grows, so physical capacity constraints no longer limit staff growth after the first stage.

Under options 2A and 2, there is insufficient bed capacity to meet demand on completion of the first stage, so while staff numbers increase, they do not increase to the level required to meet projected demand. However, as with options 2B and 3, we assume Te Whatu Ora will deliver subsequent stages of the redevelopment as demand grows, so from the mid-2030s, staff numbers under options 2A and 2 grow to meet demand and increase with demand to the end of the planning period.

Attachment 14 provides a breakdown of current and post-redevelopment FTE numbers for all of the services that are affected by the redevelopment.

6.5 Costs and projections

This assessment shows the financial impact of Te Whatu Ora Te Tai Tokerau's delivery of this project current financial statements. This will then be compared against the baseline in the affordability assessment. This covers option 3 and option 2A. Details included in this section are:

- **Capital expenditure:** Table 41 includes a detailed breakdown of nominal Capital costs across each element of the Preferred Option.
- **Profit and Loss (net profit):** Table 42 includes the Profit and Loss assessment which outlines the amortisation and capital charge costs, as well as the operating profit in nominal terms. This includes the direct savings due to the GreenStar rated buildings, the increase in energy repairs and maintenance due to the GFA growth, the anticipated population growth funding revenue, and additional population revenue uplifts to meet staffing demands.
- **Whole of Life costs:** Table 43 presents the Whole of Life cost of the programme for the new solution, which separately identifies the incremental Capital and Operational costs over the defined time period in real terms. This also includes the whole of life costs for the project if GreenStar benefits are not accounted for.

6.5.1 Option 3

Table 41: Option 3 capital expenditure and funding breakdown (nominal terms)

9(2)(b)(ii), 9(2)(j)

Table 42: Option 3 project view of the Profit and Loss impact (nominal terms)

PROFIT AND LOSS $m, nominal	Yr1 FY 22	Yr2 FY 23	Yr3 FY 24	Yr4 FY 25	Yr5 FY 26	Yr6 FY 27	Yr7 FY 28	Yr8 FY 29	Yr9 FY30	Yr10 FY31	Yr11 FY32
Total revenue											
Base case plus additional	710.9	739.3	768.9	799.6	831.6	864.9	899.5	935.7	973.1	1,012.0	1,066.8
Additional revenue											
Capital Charge	-	0.46	2.69	7.35	15.81	23.65	30.78	38.19	44.78	46.89	46.89
Additional Revenue Uplift	-	-	0.00	0.00	0.00	0.22	0.22	0.22	14.58	61.47	86.48
Additional Revenue Uplift Escalation (4%)	-	-	-	0.00	0.00	0.00	0.01	0.02	0.03	0.61	3.07
Operational Expenditure											
Staff Costs	-	-	-	-	-	-	-	-	(14.37)	(43.97)	(64.12)
Clinical supplies	-	-	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(6.83)	(13.93)
Productivity Benefits (Direct)	-	-	-	-	-	0.12	0.12	0.12	0.13	3.29	3.36
Infrastructure Benefits	-	-	-	-	-	0.04	0.04	0.05	0.05	1.22	1.25
Energy Repairs and Maintenance Costs	-	-	-	-	-	(0.39)	(0.39)	(0.40)	(0.41)	(15.79)	(16.11)
Capital Charge	-	(0.46)	(2.69)	(7.35)	(15.81)	(23.65)	(30.78)	(38.19)	(44.78)	(46.89)	(46.89)
OPERATING PROFIT	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	(2.62)	(2.62)	(2.62)	(34.63)	(53.92)	(53.92)
NET PROFIT	**-**	**-**	**-**	**(0.00)**	**(0.00)**	**(2.62)**	**(2.63)**	**(2.63)**	**(34.66)**	**(54.53)**	**(56.98)**

PROFIT AND LOSS $m, nominal	Yr12 FY 32	Yr13 FY 33	Yr14 FY 34	Yr15 FY 35	Yr16 FY 36	Yr17 FY 37	Yr18 FY 38	Yr19 FY 39	Yr20 FY40	TOTAL
Total revenue										
Base case plus additional	1,277.9	1,331.2	1,388.2	1,448.2	1,508.6	1,571.4	1,637.4	1,704.0	1,773.6	**25,623.2**
Additional revenue										
Capital Charge	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	**679.49**
Additional Revenue Uplift	94.21	100.18	107.98	116.76	123.94	131.33	139.69	146.34	153.69	**1,277.32**
Additional Revenue Uplift Escalation	6.53	10.30	14.30	18.62	23.29	28.25	33.50	39.09	44.95	**222.56**
Operational Expenditure										
Staff costs	(72.64)	(80.47)	(90.03)	(100.40)	(109.63)	(119.78)	(130.29)	(140.18)	(150.57)	**(1,116.45)**
Clinical supplies	(16.37)	(18.04)	(20.05)	(22.53)	(24.91)	(26.85)	(29.69)	(31.79)	(34.33)	**(245.32)**
Productivity Benefits (Direct)	3.43	3.49	3.56	3.64	3.71	3.78	3.86	3.94	4.01	**40.56**
Infrastructure Benefits	1.27	1.30	1.33	1.35	1.38	1.41	1.43	1.46	1.49	**15.08**
Energy Repairs and Maintenance Costs	(16.43)	(16.76)	(17.09)	(17.44)	(17.78)	(18.14)	(18.50)	(18.87)	(19.25)	**(193.75)**
Capital Charge	(46.89)	(46.89)	(46.89)	(46.89)	(46.89)	(46.89)	(46.89)	(46.89)	(46.89)	**(679.49)**
OPERATING PROFIT	-	-	-	-	-	-	-	-	-	-
Depreciation	(53.92)	(53.92)	(41.70)	(30.96)	(30.96)	(30.96)	(30.96)	(30.96)	(30.96)	**(485.62)**
NET PROFIT	**(60.44)**	**(64.21)**	**(56.00)**	**(49.59)**	**(54.26)**	**(59.21)**	**(64.47)**	**(70.05)**	**(75.91)**	**(485.62)**

Table 43: Option 3 project view of the Whole of Life costs (real terms)

WHOLE OF LIFE COSTS $m, real	Yr1 FY 22	Yr2 FY 23	Yr3 FY 24	Yr4 FY 25	Yr5 FY 26	Yr6 FY 27	Yr7 FY 28	Yr8 FY 29	Yr9 FY30	Yr10 FY31	Yr11 FY32
Capital Expenditure	-	(35.63)	(63.08)	(158.30)	(146.36)	(125.42)	(126.14)	(133.65)	(46.76)	-	-
Operational Expenditure / Revenues											
Clinical supplies	-	-	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(5.60)	(11.20)
Staff Costs	-	-	-	-	-	-	-	-	(12.02)	(36.07)	(51.56)
Productivity Benefits (Direct)	-	-	-	-	-	0.10	0.10	0.10	0.10	2.70	2.70
Infrastructure Benefits	-	-	-	-	-	0.04	0.04	0.04	0.04	1.00	1.00
Energy Repairs and Maintenance Costs	-	-	-	-	-	(0.34)	(0.34)	(0.34)	(0.34)	(12.95)	(12.95)
Revenue Funding	-	-	0.00	0.00	0.00	0.20	0.20	0.20	12.22	50.92	72.01
WHOLE OF LIFE COST	**-**	**(35.63)**	**(63.08)**	**(158.30)**	**(146.36)**	**(125.42)**	**(126.14)**	**(133.65)**	**(46.76)**	**0.00**	**(0.00)**

WHOLE OF LIFE COSTS $m, nominal	Yr12 FY 33	Yr13 FY 34	Yr14 FY 35	Yr15 FY 36	Yr16 FY 37	Yr17 FY 38	Yr18 FY 39	Yr19 FY40	Yr20 FY41	TOTAL
Capital Expenditure	-	-	-	-	-	-	-	-	-	**(835.34)**
Operational Expenditure / Revenues										
Clinical supplies	(12.91)	(13.94)	(15.19)	(16.74)	(18.14)	(19.17)	(20.78)	(21.81)	(23.10)	**(178.60)**
Staff Costs	(57.27)	(62.20)	(68.23)	(74.59)	(79.85)	(85.53)	(91.21)	(96.20)	(101.31)	**(816.03)**
Productivity Benefits (Direct)	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	**30.13**
Infrastructure Benefits	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**11.20**
Energy Repairs and Maintenance Costs	(12.95)	(12.95)	(12.95)	(12.95)	(12.95)	(12.95)	(12.95)	(12.95)	(12.95)	**(143.85)**
Revenue Funding	79.42	85.39	92.67	100.57	107.23	113.95	121.24	127.26	133.65	**1,097.15**
WHOLE OF LIFE COST	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**(0.00)**	**(0.00)**	**0.00**	**(0.00)**	**(835.34)**

INVESTMENT EVALUATION (Yr20)	
Incremental Net Present Value (Discount Rate 5%)	**(623.39)**

6.5.2 Option 2A

The tables below provide the same information for option 2A. As with option 3, this excludes the quantitative risk assessment adjustment, which increases the cost to $759m.

Table 44: Option 2A Capital Costs ($m, nominal)

9(2)(b)(ii), 9(2)(j)

Table 45: Option 2A capital expenditure and funding breakdown (nominal terms)

9(2)(b)(ii), 9(2)(j)

Table 46: Option 2A project view of the Profit and Loss impact (nominal terms)

PROFIT AND LOSS $m, nominal	Yr1 FY 22	Yr2 FY 23	Yr3 FY 24	Yr4 FY 25	Yr5 FY 26	Yr6 FY 27	Yr7 FY 28	Yr8 FY 29	Yr9 FY30	Yr10 FY31	Yr11 FY32
Total revenue											
Base case plus additional	768.9	799.6	831.6	864.9	899.5	935.7	973.1	1,012.0	1,064.6	1,124.0	1,175.3
Revenue											
Capital Charge	-	0.37	2.18	6.14	13.33	19.40	24.75	30.46	35.66	37.35	37.35
Additional Revenue Uplift	-	-	0.00	0.00	0.00	0.22	0.22	0.22	12.38	29.60	37.14
Additional Revenue Uplift Escalation	-	-	-	0.00	0.00	0.00	0.01	0.02	0.03	0.52	1.71
Operational Expenditure											
Staff Costs	-	-	-	-	-	-	-	-	(5.33)	(16.31)	(22.19)
Clinical supplies	-	-	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(2.52)	(5.15)
Productivity Benefits (Direct)	-	-	-	-	-	0.12	0.12	0.12	0.13	2.27	2.32
Infrastructure Benefits	-	-	-	-	-	0.04	0.04	0.05	0.05	0.85	0.86
Energy Repairs and Maintenance Costs	-	-	-	-	-	(0.39)	(0.39)	(0.40)	(7.25)	(14.40)	(14.69)
Capital Charge	-	(0.37)	(2.18)	(6.14)	(13.33)	(19.40)	(24.75)	(30.46)	(35.66)	(37.35)	(37.35)
OPERATING PROFIT	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Depreciation	-	-	-	-	-	(2.65)	(2.65)	(2.65)	(26.32)	(40.93)	(40.93)
NET PROFIT	**-**	**-**	**-**	**-**	**-**	**(2.65)**	**(2.65)**	**(2.65)**	**(26.32)**	**(40.93)**	**(40.93)**

PROFIT AND LOSS $m, nominal	Yr12 FY 33	Yr13 FY 34	Yr14 FY 35	Yr15 FY 36	Yr16 FY 37	Yr17 FY 38	Yr18 FY 39	Yr19 FY40	Yr20 FY41	TOTAL
Total revenue										
Base case plus additional	1,235.0	1,319.0	1,393.8	1,453.5	1,513.8	1,576.3	1,642.1	1,708.5	1,777.9	**25,519.2**
Revenue										
Capital Charge	37.35	37.35	37.35	37.35	37.35	37.35	37.35	37.35	37.35	**543.13**
Additional Revenue Uplift	51.35	87.97	113.53	122.08	129.05	136.24	144.40	150.87	158.04	**1,173.31**
Additional Revenue Uplift Escalation	3.19	5.24	8.76	13.31	18.19	23.35	28.80	34.58	40.61	**178.31**
Staff Costs	(37.55)	(68.74)	(90.03)	(100.40)	(109.63)	(119.78)	(130.29)	(140.18)	(150.57)	**(991.01)**
Clinical supplies	(5.25)	(12.51)	(20.05)	(22.53)	(24.91)	(26.85)	(29.69)	(31.79)	(34.33)	**(215.58)**
Productivity Benefits (Direct)	2.37	2.41	2.46	2.51	2.56	2.61	2.66	2.72	2.77	**28.16**
Infrastructure Benefits	0.88	0.90	0.92	0.93	0.95	0.97	0.99	1.01	1.03	**10.47**
Energy Repairs and Maintenance Costs	(14.98)	(15.28)	(15.59)	(15.90)	(16.22)	(16.54)	(16.87)	(17.21)	(17.56)	**(183.67)**
Capital Charge	(37.35)	(37.35)	(37.35)	(37.35)	(37.35)	(37.35)	(37.35)	(37.35)	(37.35)	**(543.13)**
OPERATING PROFIT	-	-	-	-	-	-	-	-	-	-
Depreciation	(40.93)	(40.93)	(31.81)	(24.88)	(24.88)	(24.88)	(24.88)	(24.88)	(24.88)	**(379.07)**
NET PROFIT	**(40.93)**	**(40.93)**	**(31.81)**	**(24.88)**	**(24.88)**	**(24.88)**	**(24.88)**	**(24.88)**	**(24.88)**	**(379.07)**

Table 47: Option 2A Project view of the Whole of Life costs (real terms)

WHOLE OF LIFE COSTS $m, real	Yr1 FY 22	Yr2 FY 23	Yr3 FY 24	Yr4 FY 25	Yr5 FY 26	Yr6 FY 27	Yr7 FY 28	Yr8 FY 29	Yr9 FY 30	Yr10 FY 31	Yr11 FY 32
Capital Expenditure	-	(28.49)	(52.59)	(137.79)	(114.39)	(93.83)	(96.20)	(105.30)	(37.51)	-	-
Operational Expenditure / Revenues											
Clinical supplies	-	-	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(2.07)	(4.14)
Staff Costs	-	-	-	-	-	-	-	-	(4.46)	(13.38)	(17.84)
Productivity Benefits (Direct)	-	-	-	-	-	0.10	0.10	0.10	0.10	1.87	1.87
Infrastructure Benefits	-	-	-	-	-	0.04	0.04	0.04	0.04	0.69	0.69
Energy Repairs and Maintenance Costs	-	-	-	-	-	(0.34)	(0.34)	(0.34)	(6.06)	(11.81)	(11.81)
Additional Revenue Funding	-	-	0.00	0.00	0.00	0.20	0.20	0.20	10.38	24.71	31.24
WHOLE OF LIFE COST	**-**	**(28.49)**	**(52.59)**	**(137.79)**	**(114.39)**	**(93.83)**	**(96.20)**	**(105.30)**	**(37.51)**	**-**	**-**

WHOLE OF LIFE COSTS $m, real	Yr12 FY 33	Yr13 FY 34	Yr14 FY 35	Yr15 FY 36	Yr16 FY 37	Yr17 FY 38	Yr18 FY 39	Yr19 FY 40	Yr20 FY 41	TOTAL
Capital Expenditure	-	-	-	-	-	-	-	-	-	**(666.08)**
Operational Expenditure / Revenues										
Clinical supplies	(4.14)	(9.67)	(15.19)	(16.74)	(18.14)	(19.17)	(20.78)	(21.81)	(23.10)	**(154.96)**
Staff Costs	(29.61)	(53.13)	(68.23)	(74.59)	(79.85)	(85.53)	(91.21)	(96.20)	(101.31)	**(715.33)**
Productivity Benefits (Direct)	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	**20.94**
Infrastructure Benefits	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	**7.78**
Energy Repairs and Maintenance Costs	(11.81)	(11.81)	(11.81)	(11.81)	(11.81)	(11.81)	(11.81)	(11.81)	(11.81)	**(137.02)**
Revenue Funding	43.00	72.05	92.67	100.58	107.24	113.96	121.25	127.27	133.65	**978.59**
WHOLE OF LIFE COST	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**0.00**	**(666.08)**

INVESTMENT EVALUATION (Yr20)	
Incremental Net Present Value (Discount Rate 5%)	**(508.08)**

6.6 Overall affordability

6.6.1 Affordability Summary

The table below summarises the overall affordability of the recommended option. This includes the total costs over the forecast period. This presents the impact on financial statements, considering the existing baseline funding (Base Case) over the modelling period (FY22 to FY41).

Table 48: Summary of costs

Cost Category	Recommended option 3 ($m)	Affordable option 2A ($m)
Capital Funding Requirement (nominal)	937.75	746.97
Revenue Uplift requirement (incl. escalation)	1,499.88	1,351.62
Operating Profit (nominal)	(0.00)	(0.00)
Whole of Life (real)*	(835.34)	(666.08)
NPV (real)*	(635.56)	(508.08)
Depreciation (nominal)	(485.62)	(379.07)
Capital Charge (nominal)	(679.49)	(543.13)

** Assumes operating cash flow remains at zero due to the revenue uplifts to meet the increased staffing and maintenance demands. This also excludes Green Star productivity and infrastructure benefits.*

Additionally, by undertaking the recommended option Te Whatu Ora Te Tai Tokerau will capture the benefits that have been outlined in this business case.

6.6.2 Major operating costs items

Excluding depreciation, the total revenue uplift needed under option 3 is $1,500m between FY22-FY41. We have assumed increases in funding to meet these projected costs, however, as we always have, we will work with the Ministry of Health to attempt to manage costs within the constraints of the funding envelope. The sections below outline the main components of these costs for option 3.

6.6.2.1 Staffing

Most of the additional operational expenditure is related to the staffing demands: 90 percent of the total. The workforce model anticipates an additional 1,017 FTEs in 2041: 40 percent over the baseline growth, with an average salary of approximately $115k (escalated at LCI over the period).

These additional FTE's are required to meet anticipated demand in the region and the benefits outlined in the business case. Much of the underlying increase in FTEs is driven by anticipated growth in the over-80 demographic of approximately 160 percent between 2019-2038. By contrast the 20 to 79 age group grows by 8 percent and there is little change in the under-20 age group.

6.6.2.2 Energy, repairs and maintenance costs

Before GreenStar benefits are applied, whole of life costs of $876.68m are forecast over the period. These are based on the change in GFA due to the development. However, GreenStar benefits of $41.34m is expected, reducing the overall costs to Te Whatu Ora to $835.34m.

6.6.2.3 Depreciation

Depreciation equates to a $485.62m impact over the modelling period, with 43 percent being a result of elements related to the Fitout. We have not factored in any revenue increases to meet the increased depreciation costs.

6.5.3 Sensitivity analysis

We tested both the capital and operational costs with different sensitivities against the financial outputs. We used a difference of plus or minus 15 percent because it aligns with the capital contingency (15 percent). The sensitivities were applied to the net profit, whole of life costs and net present value outputs. The tables show how different combinations of capital and operational cost variations will impact the overall outcome for the financial metrics, first for option 3 then for option 2A. Note that the net profit sensitivity is not impacted by changes in capital expenditure as capital charge is refunded to DHBs.

Table 49: Option 3 Capital and Operational sensitivities - Net Profit

Net Profit $m, nominal	Operational Cost					
Capital Cost	Cost Change (%)	-15%	-7.5%	0%	7.5%	15%
	-15%	(224.59)	(355.11)	(485.62)	(616.13)	(746.65)
	-7.5%	(224.59)	(355.11)	(485.62)	(616.13)	(746.65)
	0%	(224.59)	(355.11)	(485.62)	(616.13)	(746.65)
	7.5%	(224.59)	(355.11)	(485.62)	(616.13)	(746.65)
	15%	(224.59)	(355.11)	(485.62)	(616.13)	(746.65)

Table 50: Option 3 Capital and Operational sensitivities – Whole of Life costs

Whole of Life $m, nominal	Operational Cost					
Capital Cost	Cost Change (%)	-15%	-7.5%	0%	7.5%	15%
	-15%	(572.26)	(641.15)	(710.04)	(778.93)	(847.82)
	-7.5%	(634.91)	(703.80)	(772.69)	(841.58)	(910.47)
	0%	(697.56)	(766.45)	(835.34)	(904.23)	(973.13)
	7.5%	(760.21)	(829.10)	(897.99)	(966.89)	(1,035.78)
	15%	(822.86)	(891.75)	(960.64)	(1,029.54)	(1,098.43)

Table 51: Option 3 Capital and Operational sensitivities - NPV

NPV $m, nominal	Operational Cost					
Capital Cost	Cost Change (%)	-15%	-7.5%	0%	7.5%	15%
	-15%	(475.22)	(507.72)	(540.23)	(572.73)	(605.23)
	-7.5%	(522.89)	(555.39)	(587.89)	(620.39)	(652.90)
	0%	(570.55)	(603.06)	(635.56)	(668.06)	(700.56)
	7.5%	(618.22)	(650.72)	(683.23)	(715.73)	(748.23)
	15%	(665.89)	(698.39)	(730.89)	(763.40)	(795.90)

Table 52: Option 2A Capital and Operational sensitivities - Net Profit

Net Profit $m, nominal	Operational Cost					
Capital Cost	Cost Change (%)	-15%	-7.5%	0%	7.5%	15%
	-15%	(151.81)	(265.44)	(379.07)	(492.71)	(606.34)
	-7.5%	(151.81)	(265.44)	(379.07)	(492.71)	(606.34)
	0%	(151.81)	(265.44)	(379.07)	(492.71)	(606.34)
	7.5%	(151.81)	(265.44)	(379.07)	(492.71)	(606.34)
	15%	(151.81)	(265.44)	(379.07)	(492.71)	(606.34)

Table 53: Option 2A Capital and Operational sensitivities – Whole of Life costs

Whole of Life $m, nominal	Operational Cost					
Capital Cost	Cost Change (%)	-15%	-7.5%	0%	7.5%	15%
	-15%	(442.63)	(504.40)	(566.17)	(627.94)	(689.72)
	-7.5%	(492.58)	(554.36)	(616.13)	(677.90)	(739.67)
	0%	(542.54)	(604.31)	(666.08)	(727.86)	(789.63)
	7.5%	(592.50)	(654.27)	(716.04)	(777.81)	(839.59)
	15%	(642.45)	(704.23)	(766.00)	(827.77)	(889.54)

Table 54: Option 2A Capital and Operational sensitivities - NPV

NPV $m, nominal	Operational Cost					
Capital Cost	Cost Change (%)	-15%	-7.5%	0%	7.5%	15%
	-15%	(375.12)	(403.49)	(431.87)	(460.24)	(488.62)
	-7.5%	(413.22)	(441.60)	(469.97)	(498.35)	(526.73)
	0%	(451.33)	(479.70)	(508.08)	(536.46)	(564.83)
	7.5%	(489.43)	(517.81)	(546.19)	(574.56)	(602.94)
	15%	(527.54)	(555.92)	(584.29)	(612.67)	(641.05)

6.7 Economic impact

We commissioned EY to assess the broader economic impact of the recommended option. They found that it would directly create 2,781 jobs and add $233m to the regional economy. EY's assessment can be provided on request.

7.0 Management Case - Planning for Successful Delivery

The Management Case confirms that the proposal is achievable and details the arrangements needed to both ensure successful delivery and to manage project risks, while maintaining a focus on delivery of benefits.

7.1 Project Management

7.1.1 Project management arrangements

The project is currently resourced, governed and managed by Te Whatu Ora's northern region with programme oversight from the centre. The health sector reforms will change the current project management environment and presenting an opportunity to bring together and build on health infrastructure capabilities, capacity and ways of working. A new operating model is being established and this will guide the future project management arrangements for the redevelopment.

7.1.2 Proposed project governance arrangements

The project governance will give effect to the New Zealand Infrastructure Commission's project governance guide.[25] The guide details relevant considerations for a public sector agency in establishing appropriate project governance for major infrastructure projects, including:

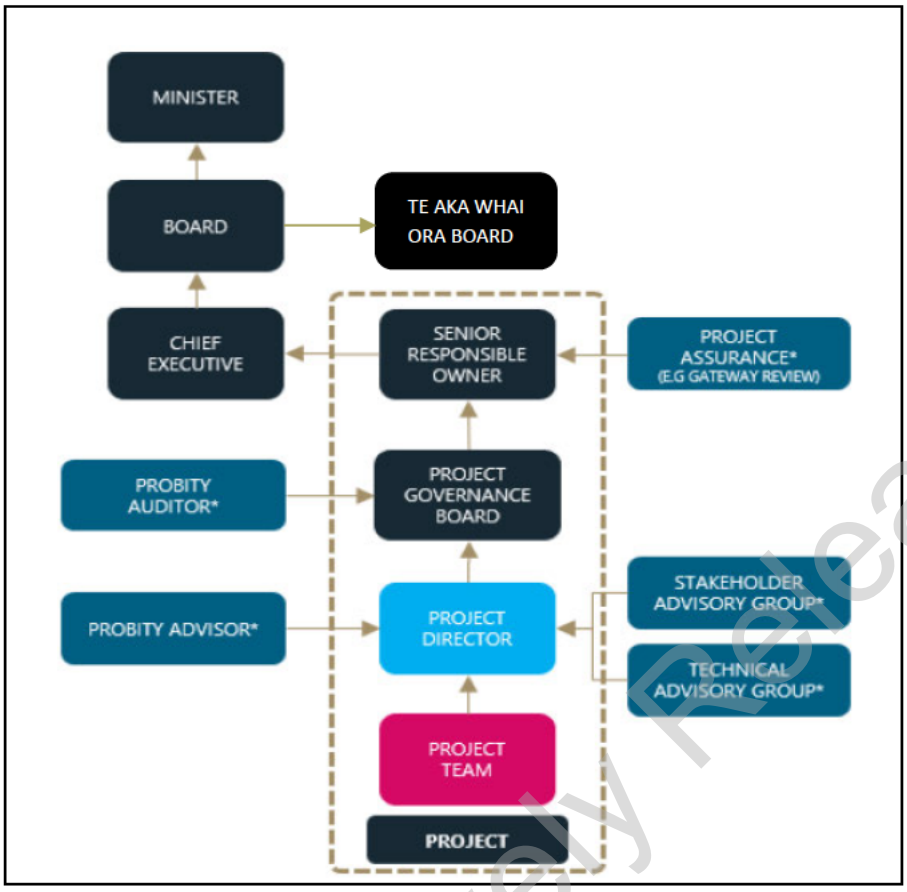
- Project governance challenges and the key questions that project governors should be asking in relation to major infrastructure project investment.
- Responsibility of public sector agencies for investment management and performance.
- Principles of good project governance and the roles and responsibilities of different participants in governance and project delivery.
- Effective project governance and governance framework, including use of governance boards, advisory expertise, delegations, reporting and probity.
- Structure, reports and assurance frameworks to enable project governance to be effective and perform its role and function.
- Probity and the importance of upholding the principles of probity to support ethical conduct, encourage participation and protect the Government from legal risk.

Governance of the project will be established to enable decisions to be made effectively, efficiently and transparently. It is the system by which the project will be directed and controlled such that it is able to convert the government's investment decisions into value and deliver the anticipated benefits. The governance will enable the sustained focus and timely decision making needed for the project to succeed. It will enable a single point of accountability for the success of the project through the Senior Responsible Owner, empowering them to focus on the project, its objectives and benefits. The role will be supported by a project governance board and a project management team led by the project director (refer to figure 2 below).

Once the decision to invest has been approved, the project governance framework will be confirmed in accordance with Infrastructure Commission Guide. Terms of reference will align with the framework and guide project governance board meetings.

[25] https://infracom.govt.nz/assets/Uploads/4190498_ITU-Project-Governance-Guidance.pdf

Figure 6: Project governance structure



7.1.3 Project roles and responsibilities

The project will incorporate the roles and responsibilities as set out in the table below. The following sections provide more detail about the roles of the senior responsible owner (SRO) and the project governance board. We expect that the new institutional environment for health will allow a better balance of national and local expertise and simplify the way the centre and the region work together.

7.1.3.1 Senior Responsible Owner

Good project governance calls for the need to have an individual as the single point of accountability. The SRO will chair the project governance board and is the link between the organisation's executive and the project. As Chair of the project governance board, the SRO is responsible for owning the investment business case; delivering the agreed outcomes and benefits, optimising value, managing risk, ensuring timely delivery to schedule, meeting project performance requirements; and determining remedial action should the project not perform to plan. The SRO will also ensure that appropriate project assurance processes, such as Gateway reviews, are scheduled and responded to in a timely manner. The SRO will provide leadership on culture and values, makes timely decisions, obtains required resources, upholds probity principles and manage relationships. Importantly the SRO engages with project stakeholders, governing communications and managing any issues or risks.

7.1.3.2 Project governance board

Project governance board decisions will reflect the rationale for the infrastructure investment approval. The project governance board will also recognise and manage risk to achieve the desired outcomes. The group will have members who bring multiple perspectives, who debate issues robustly, and who

in turn speak with unity of voice and message about the decisions made. The board will ensure that the project achieves its intended outcome and will proactively monitor, mentor, challenge and support the SRO; asking the right (and searching) questions, offering alternatives and making timely decisions.

Membership of the project governance board will include:

- The SRO as the Chair
- expertise in governance
- expertise of leading and delivering major infrastructure projects; investment, procurement, finance, design, construction
- health sector expertise
- digital and data expertise
- members with understanding of government as the investor, i.e. what is required to ensure accountability, cross agency roles and responsibilities
- expertise in whole of life asset management
- members accountable for third party enabling of infrastructure delivery, asset management and operation
- business change manager(s) responsible for leading the agency change required to ensure outcomes and benefits are achieved and where possible optimised.

The table below sets out the roles and responsibilities of project governors.

Table 55: Project governance roles and responsibilities

Role	Project Governance Responsibility
Senior Responsible Owner	Provides project leadership, owns the business case and is responsible and accountable for the project's success. This includes optimising value, managing risk, ensuring timely delivery, meeting project performance requirements and determining remedial action if required. Ensures appropriate project assurance processes, such as Gateway reviews, are scheduled and responded to in a timely manner. Provides leadership on culture and values, obtains required resources, upholds probity principles and manages relationships (stakeholders, governance board etc.). Has the authority to make decisions. Is the link between the organisation's senior executive body and the project.
Project Governance Board Chair	The SRO will chair the governance board.
Project Governance Members	Understand the investment context and support the SRO to make required decisions. Can hold the SRO to account in fulfilling their role. Provide strategic direction, monitor the project and make key decisions and/or recommendations to the SRO and responsible Ministers in accordance with the Terms of Reference and overall governance framework. The board approves and/or endorses a range of project documentation. All members should read and familiarise themselves with the business case, Cabinet approvals and any other documents that aid understanding of the investment, its objectives, and their accountability to ensure its delivery. The project governance board will have members with robust construction expertise to inform conversations and decision making.
Project Director	Leads and manages the project team on a day-to-day basis reporting to the SRO and Project Governance Board. Responsible for supporting organisational change management, managing key relationships and keeping the project team motivated and supported. Responsible for preparation of all project documentation and prepares reporting to support the role of the SRO, the Project Governance Board, Executive Leadership, Ministers and Cabinet as required. This includes developing and updating the project management plan, project schedule, RAID registers (Risks, Actions, Issues, and Decisions) via team reporting, probity requirements and project reporting. The project director will also resolve planning and implementation issues, manages progress and budget, structures project delivery and provides specialist resources and skills necessary to deliver a project to an agreed scope, quality, schedule and budget. The project director has well-developed project, risk, relationship and commercial management skills. Knowledge of government processes, procurement experience, infrastructure or construction industry experience and experience developing and negotiating contractual agreements.
Project Team	Responsible for completing tasks and activities required for delivering project objectives against the approved project scope. Responsible for delivering input into project governance reporting and or project deliverable status information at the request of the project director.

The table below notes the skills and experience matrix that we expect project governance board members to provide.

Table 56 Skills and experience matrix

EXPERIENCE	SKILLS											
Role	**Project Governance**	**Infrastructure delivery**	**Clinical design and operations**	**Finance**	**Risk Management**	**Business Case Preparation**	**Procurement**	**Central Government**	**Leadership**	**Stakeholder Relationship Management**	**Ability to influence**	**Strategically focussed**	**Commercial Acumen**
Senior Responsible Owner	✓✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓	✓
Independent Clinical Expert	✓	Exp.	✓✓✓	✓	✓✓	Exp.	Exp.	✓✓	✓✓	✓✓✓	✓✓✓	✓✓	Exp.
Independent Infrastructure Delivery Expert	✓✓✓	✓✓✓	Exp.	✓✓	✓✓✓	✓	✓✓✓	✓✓	✓✓	Exp.	✓✓	✓✓✓	✓✓✓
Commercial Advisor	✓✓	✓✓	Exp.	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓	✓	Exp.	✓✓	✓✓	✓✓✓
Programme Lead	✓✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓

The Programme Lead is not a member of the Programme Board however has been included on this matrix to set out the skills and experience required for this key role. Exp. Indicates exposure, peripheral or little experience/skill. Keys for the tick marks are:

✓ Some experience/skill

✓✓ Considerable experience/skill

✓✓✓ Critical experience/skill

The sections below provide more detail about the role of the project governance board.

Terms of Reference

The project governance board will operate within predefined Terms of Reference specific to the needs of the project. These will make clear the government's expectations for the investment with reference to the business case. The Terms of Reference will document membership of the project governance board and outline the type of reporting it will ask for and receive. Operational matters such as receipt of papers, location and regularity of meetings, managing conflicts of interest, required quorum for decisions, confidentiality and communications, and secretariat support and liaison, will also be covered in the Terms of Reference.

Delegation

The delegation framework is a critical aspect of the Terms of Reference. The framework makes it clear who (through to Ministers and Cabinet) is accountable for specific decisions, what decisions the project governance board is expected to make, what recommendations they will be asked for, and what endorsements they may provide in support of the project team.

Project risk management

Identifying, understanding and managing risk is an integral part of project governance. Risk is the effect of uncertainty on objectives. Standard risk management practice will includes establishing a risk management context (political, economic, social, legal, environmental, organisational, investment, project, cultural), identifying factors that can have a negative impact on the project (e.g. cost, time, quality, value, legal challenge, or stakeholder acceptance), analysing potential impacts (minor to severe) and likelihood (rare to certain). Once understood, risks will be treated and mitigated such that they are avoided or their impact reduced. The risk management framework and risk register will align with Te Whatu Ora Te Tai Tokerau's formal risk management policy and methodology.

Project assurance

Assurance undertaken by the project will be rigorous and in line with project governance and sponsor expectations. Assurance will include both internal and external review. External assurance will be provided via Gateway Reviews and Independent Quality Assurance specifically for the SRO. Assurance appraisals will provide confirmation that the project is on track to deliver the intended outcomes and benefits, including advice on what may be required to ensure success, identifying any technical and management challenges. It will also provide advice that informs governance decisions. A project assurance plan can be provided on request.

Advisory Groups

Reference groups will consist of people with the requisite skills to address particular project issues and comprise technical experts. They will be engaged by the project director.

Stakeholder advisory group will provide forums for identified stakeholders to have input into the project. They will be engaged by the project director and build on already established relationships both internally and externally. Stakeholder consultation is a key component of communication and consultation in the risk management. A key advisory group will be Ti Ahi Kaa: a cultural advisory group consisting of Mana Whenua representatives/Uri of Te Parawhau hapū who have been actively engaged in the project to date.

Use of special advisors

Northland DHB established Iwi and Tangata Whenua advisory groups which are guiding the project's alignment with the government's vision for Māori health, including pae ora (healthy futures), mauri ora

(healthy individuals), whānau ora (healthy families), and wai ora (healthy environments). Cultural Design Principles have been established for the project, and the concept design and models of care give effect to Māori values and principles in order to aid Māori confidence in the healthcare environment and to ensure cultural integrity in the design through Iwi Māori partnership.

Probity

Once funding has been approved a Probity Plan will be put in place with the purpose of ensuring that probity principles are adhered to and considered throughout the process for procuring an investment. The Plan will:

- minimise the risk of material conflicts of interest not being identified and appropriately managed
- ensure compliance with all process requirements, thereby promoting the use of best practice and minimising the risk of procedural or other challenge
- maintain integrity by generating and preserving confidence in the process
- ensure that processes and decision-points are relevant, readily identifiable, and well understood by all those associated with the project
- ensure that roles and responsibilities within the process are clearly allocated, providing a strong basis for decision-making and enabling those responsible to be held accountable for their actions, and
- ensure that the process results in an outcome which delivers the best possible value for the Crown while being consistent with the process objectives.

The Probity Plan will provide the basis for decision-making on probity issues, and to record tasks and actions.

In addition to a Probity Plan, an independent Probity Advisor will be appointed to give added assurance that probity principles are being adhered to and that those participating in the infrastructure investment have confidence in the process. The Probity Advisor will provide on-going advice on probity matters and issues and craft relevant COI declaration templates, Conflict Management Plans, and various protocols as may be needed. The Project Director will be responsible for assuring probity requirements are met.

7.2 Project plan and milestones

Detailed below are the programme and key milestones for Project Pihi Kaha. Following Ministerial approval of the DBC, and prior to the design work beginning, it is expected that an establishment phase will get underway to:

- Complete the client-side team consisting of both HNZ staff and required external advisers, including legal, commercial and any project management assistance
- Establish governance groups and develop and finalise the Terms of Reference, including for the Project Board, Project Control Groups, Project User Groups, Clinical Reference Groups and Project Working Groups
- Develop the Programme Brief
- Engage consultants/contractors to proceed with the enabling works (CHU and Whanau House).

This approach provides the opportunity for further work to be done on the best procurement and delivery model for design and construction of the main works. The parallel work being undertaken by HNZ to explore the potential application of a Collaboration model for major health capital projects will be a key input into this.

The Project Team has worked with specialist programmers from Woods Harris to develop a Master Programme for the design, consenting and construction phases to deliver Project Pihi Kaha. The current Master Programme based on a traditional design-bid-build model is provided in Attachment 12. Key deliverables and milestones are contained in table below, however, it should be noted these are all subject to change until final Cabinet sign-off is received and the procurement model is confirmed as noted in section 5 of the DBC.

Table 57: Summary of key programme milestones

Key milestone/deliverable	Completion date
CIC meeting/endorsement	October 2022
Joint Ministers' approvals (following Cabinet approval)	March 2023
CHU and whanau house	
Procurement – design team	May 2023
Detailed design	June 2024
Procurement – contractor	November 2024
Construction	May 2026
ASB and ward tower	
Procurement – design team	July 2023
Preliminary design	March 2024
Developed design	January 2025
Detailed design	September 2025
Procurement – contractor	June 2026
Construction	September 2030
Remodelling existing hospital	
Procurement – design team	June 2023
Detailed design	August 2024
Procurement – contractor	February 2026
Construction	December 2031

Following DBC approval, the Project Director will be responsible for establishing and managing a formal delivery schedule with the appropriate scheduling tools. For scheduling and reporting purposes, progress will be tracked in terms of major milestones relative to the current stage, phase and investment gate.

7.3 Change Management Planning

Effective change management is critical for the successful implementation of the programme. This includes both change management in terms of ensuring training and adequate preparation prior to implementation of change and change control. A Change Management Plan has been prepared which includes a change impact assessment and a communications plan. The sections below highlight key aspects of the plan and note how we intend to implement the new ways of working discussed in our Clinical Services Plan. It also discusses what is included in the project's digital blueprint and how this relates to other work on digitally-enabled models of care.

7.3.1 Change control

Management of scope change will be undertaken through change control. This is a systematic approach to managing change, to ensure that no unnecessary changes are made, that all changes are documented, that services are not unnecessarily disrupted and that resources are used efficiently.

Each approved project will develop a project plan. This will define the scope, resources allocated and budget. Any subsequent change is likely to result in re-work and impact the end of date of the project. Ideally each project would be frozen after each process and redesign stage. However, a total freeze is not always possible and therefore a strong change control process will be implemented. This will allow potential change to be assessed and impact evaluated, and the appropriate role within the governance structure to approve or reject the change request.

7.3.2 People change management

Adequate advance planning will be crucial to minimise service disruption and reduce the risk of adverse events. Where services are relocated or models of care are changed, preparation will be a key to ensure that all staff are adequately prepared to provide services in the new model or location. The change management approach will be in line with the Te Whatu Ora Te Tai Tokerau's prepare, manage and reinforce philosophy of change. On a project by project basis, detailed impact assessments and change management plans will be developed to ensure staff are well-prepared. Activities will be tailored and may include, for example, staff training, communication events, detailed logistical planning, education activities etc. Change management will be tailored to the projects as required. No specific resource has been allocated to this function, as any training/preparation will be managed within the project. Project Managers will be responsible for project delivery and will be supported by change managers for the management of the associated changes. A stakeholder engagement and communications plan for the project has also been prepared and will continue to be updated as the project evolves. This is available on request.

7.3.3 Clinical Services Plan

The former Northland DHB updated its Clinical Services Plan (CSP) when it submitted the PBC and this is included as Attachment 13. One of the main aims was to reduce the cost of the redevelopment by moving services out of Whangārei Hospital and into community hubs or district hospitals where possible, thereby reducing the amount of space needed at the hospital. From a change management perspective, the CSP is relevant in that it guides service changes that we need to make before the redevelopment is complete as well as the changes that will be enabled by the redevelopment. While the 2020 CSP will be updated every three years or so, we expect that most of the CSP's goals and proposed model of care changes will endure.

Some points of difference are within primary and community care. A significant primary care workforce crisis has developed in Northland with a significant number of GPs retiring or leaving in the last two to three years. Te Whatu Ora Te Tai Tokerau is investing $5m annually into addressing these workforce issues but they will delay the effectiveness of some of the strategies including Neighbourhood Healthcare Homes. On the positive side, Covid Care in the Community has led to the development of four locality Kaupapa Māori hubs covering Tai Tokerau, and a clinical hub in Whangārei which supports practices where there are GP workforce shortages as well as afterhours care. We expect to support the continuation and broadening of the focus of these hubs to support primary care and localities to improve access, ensure earlier intervention and reduce demand on hospital services.

The ongoing and expanded use and development of our four rural Hospitals (including the trust-owned Hokianga Hospital) is also key to reducing demand on Whangārei hospital. All of them are having or have had considerable refurbishment and in most cases, expansion and the range of services they provide is also expanding particularly at Bay of Islands and Kaitaia Hospitals.

Some recent changes are not noted in the CSP. We already have a short stay surgical ward which is critical to rapid turnover of surgical inpatients while trying to maximise DOSA and day case surgery. We have also established an Acute Assessment Unit by moving medical outpatients, and we are expanding the stroke unit significantly as stroke is our most common reason for medical admission.

We have increased our use of telehealth and virtual care significantly over the past two years which should assist with more timely access to care for many of our patients, although this is countered by COVID lockdowns and the Omicron surge creating a huge backlog of patients waiting for planned and non-urgent care.

Before the redevelopment is complete, we expect that the changes to models of care set out in the CSP will enable us to reduce the amount of additional space that needs to be built and the associated cost of the redevelopment. The demand projections used in the PBC and the DBC assume a reduction in demand at Whangārei Hospital due to implementation of CSP initiatives. For example, ED demand projections assume a 17.5 percent reduction in presentations at Whangārei Hospital following the implementation of an AAU and Healthcare Homes initiatives. A key part of the change management process will therefore be to track the implementation of the CSP changes and to assess their impact on patient volumes at Whangārei Hospital.

A priority area is managing changes to the radiology service. Under all shortlist options, the ASB will include a radiology satellite unit to support the services there, including ED, AAU and ICU. Radiology will also remain in its current location in the service wing. In the second stage of the redevelopment, radiology in the ASB would expand as the service wing including existing radiology is demolished. The current plans aim to ensure that the service as a whole has sufficient capacity to meet demand and that the two areas are able to support co-located services. However, radiology is a highly technical service and changes in technology over the next 10 years may affect how it is delivered. This is therefore an area we need to prioritise from a project management and change management perspective: the space and capacity requirements may change from the current baseline projections based on new technology and new ways of working identified by the service.

7.3.4 Digital blueprint

Once the redevelopment is complete, the CSP will guide how we use the new facilities. In addition to the general change management approach noted above, the changes enabled by improved IT infrastructure will be an important area. The CSP goals for technology include simplifying and rationalising IT applications, developing an integrated electronic health record and expanding use of telehealth across the region. While we can make progress in these areas independently of the redevelopment, further development will also be dependent on infrastructure enabled through the redevelopment, such as dedicated spaces for telehealth. A focus for the project's change management will be coordinating the project team and users to enable this.

Under all options, the digital costs included in the funding sought covers everything needed for the hospital to operate to an acceptable standard, including the infrastructure required to deliver a "digitally capable" facility. This includes an uplift to the core campus infrastructure, additional devices to support the redevelopment, and an allowance to extend existing corporate, patient support and clinical software systems (reconfiguration, integration, and additional licensing).

Additional digital scope and investment will be required (specifically new and enhanced corporate, patient support and clinical software systems) to support the redesign of clinical services and enable new models of care. The Northern Region Information Systems Strategic Plan (ISSP) articulates a 10-year programme for implementing these new systems and we assume implementation of the ISSP will progress in parallel with the redevelopment and be funded separately.

Our consultants and the Ministry of Health have reviewed the digital blueprint for the redevelopment and confirmed that it is similar in scope to the one produced for the Nelson Hospital redevelopment. We also understand it is similar in scope to the stage 1 business case for digital enablement for the New Dunedin Hospital.

7.4 Benefits Management Planning

The economic case sets out the benefits we expect to realise from this investment following completion of the project in 2031. Following the DBC guidance, we intend to report back to Cabinet within on the actual level of benefits achieved compared with those outlined in the Cabinet-approved investment within a year of completing the project. We will also report to Treasury at regular intervals on the actual benefits delivered compared with our projections. The SRO would have overall responsibility for the realisation of benefits.

Te Whatu Ora Te Tai Tokerau is working to align benefits management for this project with the emerging DHB-wide benefits management processes. We intend to collate organisational benefit measures so that they can be managed and reported on in a consistent way. Over the life of the project there may be changes in how we collate and report on the benefits data, but we do not expect to change the overarching concept of centralising benefits capture and reporting.

7.5 Risk Management Planning

Practicing good risk management means fewer surprises, better use of time, increased probability of success, appropriate and cost-effective allocation of resources and improved safety for patients, employees, visitors and assets. This section discusses how we intend to manage project risks in general and risks associated with the recently-announced Health and Disability reforms.

Te Whatu Ora Te Tai Tokerau has an enterprise risk management approach. To deliver on this approach, the DHB has in place:

- A Risk Management Policy which provides guidance regarding the management of risk to support the achievement of objectives, protect employees and business assets, and ensure financial sustainability.
- A Risk Management Framework which supports the implementation of the Risk Management Policy, by detailing the elements outlined in the strategic process, such as risk culture and commitments, accountabilities, governance and operational reporting structures and continuous improvement processes.

The process follows the Australian/New Zealand Standard ISO31000:2009. The aim is to assure stakeholders, sponsors and monitoring agencies that the programme and project teams are proactively identifying and mitigating risks as the programme progresses.

The risk register would be a living document and would be updated continually to reflect the current status of any risks or issues arising. All key risks and issues would be reported and monitored by the SRO and Programme Control Groups, with escalation as appropriate.

Key issues, or those which have changed materially since the last reporting period, will be actively managed at project meetings with written reports (monthly or more frequently as directed). Where key issues cannot be resolved at a project level, an escalation process will be actioned.

The specific strategies and approaches for effective management of risks for the Programme include:

- Establishment of a Programme Control Group to oversee the Programme, tranche and project design and implementation
- Development of a comprehensive risk register with allocated risk owners and agreed mitigation strategies/contingency plans
- Early warning and regular reporting
- Risk review workshops to assess existing and new risks, for tranches and projects within each tranche
- Dedicated time at Control Group meetings to review the highest risks and issues
- Defined escalation plan for risks and issues, plus a contingency plan to deal with issues.

The Health and Disability reforms aim to improve the quality and consistency of healthcare in New Zealand by strengthening the functions, structures and organisations that deliver healthcare. As part of these changes, all DHBs have been amalgamated into Te Whatu Ora. This will affect the governance arrangements for the Whangārei Hospital redevelopment. The transfer of key staff to one organisation will help to streamline existing processes. A key consideration will be to ensure that the governance team is sufficiently empowered to manage and implement the project as efficiently and effectively as possible to avoid delays.

7.5.1 Risk register

The economic case (section 4.5) discusses how we have identified and categorised risks for the project and the results of the quantitative risk assessment. This section discusses how we intend to manage the project risks.

The risk register lists all risks identified in this and earlier business cases, and the results of their analysis and evaluation. Information on the status of the risk is also included. The risk register will be regularly and frequently updated and reviewed throughout the course of the project.

Table 58: Top 10 risks to achievement of the investment objectives

	Risk	Impacts
1	Failure of current infrastructure before the redevelopment is complete e.g. old main electrical switchboards	Closure of affected areas and disruption to service delivery during remediation; impacts on unmet need, waiting times for planned care and other benefit measures
2	Demand is underestimated and the additional capacity provided as part of the redevelopment fills up quicker than expected	Project benefits are not realised, in particular reductions in waiting lists for planned care and an improvement in the six-hour target for ED stays
3	Option 2A is approved and additional funding is not made available in FY 24/25 to deliver the scope of option 3	If funding is delayed, the project would not be delivered on time or to budget. If funding is not made available, the project would not meet the investment objectives.
4	The digital blueprint for the redevelopment does not include costs for delivering the regional Information Systems Strategic Plan (ISSP), which is a plan for implementing applications, such as an electronic medical record, across the northern region. The ISSP is much broader than the Whangārei Hospital redevelopment and is going through separate budget approval processes.	If the ISSP is not funded and implemented, it would limit the efficiency of the new facility and the realisation of benefits such as reductions in waiting times for planned care.
5	The construction market cannot deliver project	Progress not maintained by contractor(s) or suppliers; increased cost for additional or alternative contractors; sequencing disrupted
6	Value management/engineering results in reduced scope	The project would not deliver the expected benefits
7	Continued growth in construction costs, uncertainty in that market, reluctance to enter into fixed price contracts	Access to contractors reduced; increased costs or timeframe
8	Clinical practices remain the same and clinicians do not take advantage of the potential new model changes	Process changes not supported or accepted; Collegial requirements; lack of consultation; professions not aligned
9	DHB fails to secure adequate funding for all scope of works	Unable to achieve expected gains
10	Scale of works saturates the site	Service delivery, patient access, parking are disrupted

We have rated value management as a high likelihood and consequence risk, as there are a number of budget risks (as set out in the QRA) and price certainty is a priority, as discussed in the commercial case. In order to manage this risk, we plan to ensure that the governance board has a clear view of both budget pressures and tracking of benefits and that they will be able to make early decisions about any cost-benefit trade-offs during the project.

Along with all the risks, the redevelopment presents a huge opportunity to help drive change, to ensure that we deliver on the necessary model of care changes to ensure the redevelopment is adequate to meet the needs of our population.

7.6 Project and business assurance arrangements

7.6.1 Post-Project Evaluation Planning

Te Whatu Ora Te Tai Tokerau would implement a comprehensive internal and external assurance framework to inform and support the overall Programme governance. This would include:

- **Review of the programme and detailed business cases** would be undertaken by an independent external agency, with further review and guidance provided by New Zealand Treasury and the Ministry of Health. The case will be subject to internal review by Te Whatu Ora and its Board.
- **Internal Quality Assurance** would be provided through governance of the project.
- **Independent Quality Assurance** would be provided by an independent, external specialist assurance practice. This would focus on periodically reviewing progress and the processes, standards, guidance and practice used to manage and govern an initiative. IQA would work with the project team to identify and mitigate risks that could jeopardise the programme delivering to its intended outcomes.
- **Independent Probity Assurance** would be provided by an independent, external specialist assurance practice and would focus on ensuring that procurement processes are consistent with procurement policies and procedures, Government Procurement Rules, Audit Office procurement guidelines and public sector best practice and incorporates the necessary probity principles. Probity assurance would work with the project team to identify and mitigate potential probity risks to minimise the risk of probity failure.
- **Independent Quantity Surveyor Reviews** would be provided by an independent, specialist assurance practice. This would focus on ensuring that the Programme's financial position of construction projects is accurately reported and controlled effectively throughout. QS would work with the project team to monitor project finances and contractual relationships, including auditing spend.

7.6.2 Gateway Reviews

The proposal is subject to on-going Gateway reviews. A Gateway 2 (Delivery strategy) has been undertaken on the project as part of the development of this Detailed Business Case. Further Gateway reviews will be held at appropriate points in the project as agreed with the Treasury's Gateway Unit. Gateway 0 and 2 review is scheduled for later in 2022.

8.0 Next Steps

This DBC seeks formal approval from Cabinet. Following approval of the DBC, the immediate next steps are to establish the Core Team, drive the development of the Programme Brief and begin the procurement of design and construction services.

The 'roadmap' for the creation of the Core Team and the key tasks to be undertaken is provided in the draft Project Management Plan, with critical early steps being to:

- Finalise the PMP, and the suite of documents (e.g., plans, registers) required for the control and management of Project Pihi Kaha. This will include establishing and managing a formal delivery schedule with the appropriate scheduling tools.
- Establish governance groups and develop and finalise the Terms of Reference, including for the Project Board, Project Control Group, Project User Group, Clinical Reference Group and Project Working Group.
- Engage the required external advisers to support the team including legal, commercial and any project management assistance.
- Agree the support provided to Project Pihi Kaha from within HNZ and set up the required administrative and operational support relationships, including HR and recruitment, legal, financial management and reporting, facilities and IT and support for the various governance layers.
- Finalise and begin to implement the Stakeholder Communications and Engagement and Change Management Plans. This will help ensure that stakeholder understanding and engagement is high from day one, and impacts on the business due to changes associated with Project Pihi Kaha are well understood.

Images of the proposed redevelopment are included in Attachment 8.