BUILDING QUEENSLAND

CABOOLTURE HOSPITAL REDEVELOPMENT STAGE 1

BUSINESS CASE/COST BENEFIT ANALYSIS SUMMARY

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PURPOSE OF THIS DOCUMENT	This document provides an overview of the Caboolture Hospital Redevelopment Stage 1 Detailed Business Case. The primary objective of this document is to outline the economic analysis undertaken and the key outcomes.
STATUS	This summary was prepared based on the contents of the detailed business case presented to the Building Queensland Board in Q2 2018. The information presented may be subject to change as the proposal progresses through future stages of development, delivery and operations.

CONTENTS

1 SUMMARY INFORMATION

PROJECT NAME	Caboolture Hospital Redevelopment Stage 1	
LOCATION	South East Queensland	
PROPOSAL OWNER	Metro North Hospital and Health Service Queensland Health	
PROPOSED DELIVERY AGENCY	Metro North Hospital and Health Service (subject to approval by the Director-General, Queensland Health)	
P90 COST ESTIMATES	NOMINAL[1]	PRESENT VALUE[2]
CAPITAL COST	$352.9 million	$255.6 million
INCREMENTAL ONGOING COST		$765.1 million
NET PRESENT VALUE		$1452.1 million
BENEFIT COST RATIO		2.90

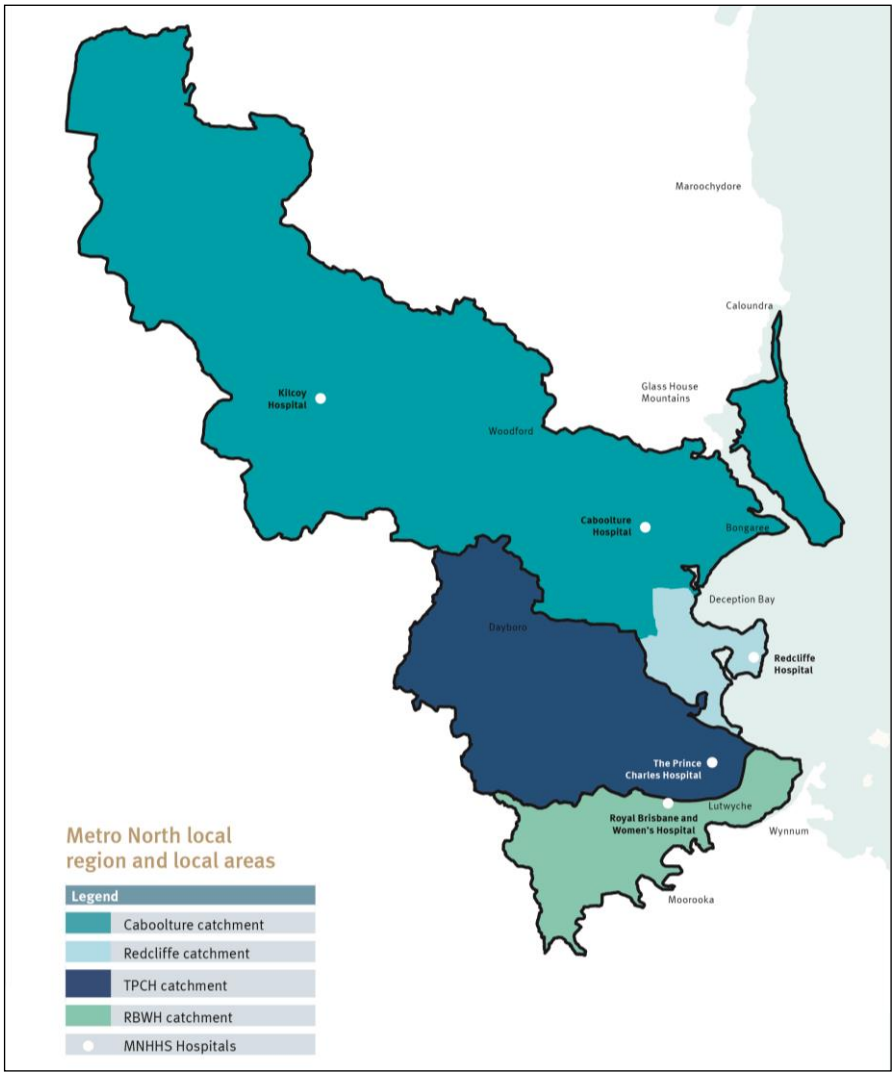
2 PROPOSAL OVERVIEW

Caboolture Hospital, an hour's drive north of Brisbane's central business district (CBD), is one of five hospitals that service the one million people who live in the Metro North Hospital and Health Service (MNHHS) catchment. The MNHHS is Australia's largest public provider of health services. Its catchment covers an area of more than 4,000 square kilometres taking in the northern half of greater Brisbane, beachside neighbourhoods on Bribie Island, the rural townships of D'Aguilar and Woodford, and the urban centres of Morayfield and Caboolture.

Caboolture hospital provides emergency, medical, surgical and birthing services and operates within a system of hospitals including two tertiary referral hospitals in Brisbane's CBD (Royal Brisbane and Women's Hospital and The Prince Charles Hospital), two secondary hospitals for outer suburbs (Caboolture Hospital and Redcliffe Hospital) and one rural community hospital (Kilcoy Hospital).

[1] Financial.
[2] Discounted at 7 per cent.

Figure 1 MNHHS and hospitals



Population growth combined with changing demographics is driving increased demand for local health care services. The Caboolture Hospital catchment population is ageing and has high levels of socio-economic disadvantage and chronic disease. However, separations and emergency presentations have plateaued in recent years as the hospital has reached its physical capacity.

The detailed business case for the Caboolture Hospital Redevelopment Stage 1 (the Redevelopment) re-examined a long list of options to improve health services ranging from building a new hospital in Caboolture to making better use of hospitals nearby. No other option offered the benefits of an on-site redevelopment. Analysis also informed the service priorities provided by the Redevelopment, which offers the following growth to current capacity:

- 16 spaces for a patient transit hub
- 27 Emergency Department treatment spaces
- five medical imaging rooms co-located with the Emergency Department
- two operating theatres, four stage one recovery spaces, pre-operative, staff and peri-operative support
- 130 acute and sub-acute beds
- clinical support and facility support services.

The Redevelopment will grow Caboolture Hospital's Emergency Department, acute and clinical support capacity; establish new sub-acute services not available locally such as rehabilitation and palliative care; and introduce new models of care. It will be delivered via site-enabling works, a new clinical services building with linkages to the existing hospital, and refurbishment of selected areas of the existing hospital. A new multi-storey car park to support the Redevelopment is being examined as a separate project but will closely align with the Redevelopment.

The Queensland Government committed $112.2 million (over four years) in the State Budget 2017–18 for detailed planning and preparatory works for redevelopments at Logan, Caboolture and Ipswich hospitals and $19.6 million for an interim expansion of the Caboolture Hospital Emergency Department.

The State Infrastructure Plan identifies Caboolture West as a Priority Development Area for specific accelerated development with a focus on community development and economic growth. The Redevelopment will be a critical enabler to meet the health care needs of the rapidly growing population close to where people live, which will support community development and economic growth, improve prosperity and liveability, and build community cohesion.

The Redevelopment also aligns with the following key plans and strategies:

- Department of Health Strategic Plan 2016
- My health, Queensland's future: Advancing health 2026
- Queensland Ambulance Service Strategy 2016–2021
- MNHHS Strategic Plan 2016 –2020
- MNHHS Health Service Strategy 2015–2020
- MNHHS Putting People First 2015
- Caboolture Hospital Caring Together 22
- Caboolture Hospital Health Services Plan.

3 SERVICE NEED

Caboolture sits within one of South East Queensland's (SEQ) fastest growing local government areas—Moreton Bay—and hosts one of the few principal activity centres north of the Brisbane River. Elimbah to the north is marked as one of SEQ's top 10 future growth spots. While the catchment population currently accounts for about 16 per cent of the total MNHHS population (2015), it is growing rapidly and is expected to account for 21 per cent by 2036.

MNHHS has increased services at Caboolture Hospital over the past decade in response to growing demand. Emergency Department presentations grew 13 per cent and hospital separations (defined as an episode of care for an admitted patient) increased 35 per cent between 2012–13 and 2016–17. Hospital stays and emergency treatments have however plateaued in recent years as, stretched to the limit of its physical capacity, Caboolture Hospital can no longer keep pace with demand. Caboolture Hospital has exhausted ways to optimise its use of existing physical infrastructure. Initiatives have included:

- a new outpatient services building
- an interim expansion of the Emergency Department
- re-purposing non-clinical space to clinical space

- providing services outside the acute hospital environment
- utilising existing capacity at Kilcoy Hospital
- leveraging support from the private sector
- efficiency measures, workforce enhancements and technology innovations.

Despite these initiatives, demand continues to outstrip service provision. As a result, more than half of local residents needing hospital care are travelling elsewhere to access publicly funded health services mostly to Brisbane's CBD or Redcliffe.

Based on demand projections to 2031–32, Caboolture Hospital needs an additional:

- 52 Emergency Department spaces, and an additional 10 emergency short-stay spaces
- 306 acute beds (overnight and same day)
- 15 medical imaging rooms
- six operating theatres
- two birthing rooms
- 46 outpatient consultant and treatment spaces.

Key drivers of the service need are as follows:

- In 2015–16, a significant proportion of the Caboolture Hospital catchment population had to travel elsewhere to access publicly funded services, namely at other MNHHS facilities.
- Public hospital separations for the Caboolture Hospital catchment population are projected to increase by 101 per cent between 2014–15 and 2031–32.
- Based on Department of Health guidelines, the Caboolture Hospital Emergency Department should have 38 treatment spaces to support the current number of emergency presentations, rather than 22. Despite throughput levels well beyond industry benchmarks, the Emergency Department is not meeting national targets regarding the time patients spend in the department, as the complexity of treatments required is also increasing. Emergency presentations are projected to increase by 87 per cent between 2016–17 and 2031–32, with a greater proportion of presentations expected to be serious illnesses or injuries that require immediate or urgent attention.
- Caboolture Hospital is not currently meeting a key hospital performance indicator measured by government—the delivery of elective surgery within clinically recommended timeframes, referred to as the National Elective Surgery Target (NEST).
- The Caboolture Hospital catchment area is predicted to experience significant growth to 2036 as it contains Caboolture West, one of four planned expansion areas for SEQ and Elimbah. The catchment population is projected to increase to 263,822 by 2036, an increase 68 per cent. This growth rate is more than double that of MNHHS (31 per cent) and well above the growth rate of Queensland (39 per cent).
- The Caboolture Hospital catchment population is ageing, with the largest percentage growth of all age categories to 2036 expected for people aged 65 to 74 years (71 per cent) and 75 years and older (189 per cent).
- The Caboolture Hospital catchment population is socio-economically disadvantaged compared with MNHHS and Queensland, with over half (57 per cent) of its residents within the two most disadvantaged quintiles on the Socio-Economic Index for Areas (SEIFA).

- The Caboolture Hospital catchment population has a high prevalence of chronic disease. Compared to the broader MNHHS area, there are higher levels of chronic and complex disease, more people with a profound or severe disability or experiencing psychological distress and higher rates of potentially preventable hospitalisations and health risk factors such as obesity.
- In some areas within the catchment, only slightly more than one quarter of the population has private health cover, compared with 50 per cent in the broader MNHHS area.

The key benefits sought in response to the identified service need are to:

- improve equitable local access to high-quality health services
- enhance patient safety and outcomes
- improve the health of the local community
- improve quality of life for patients, families, and communities through enhanced access to existing and new services
- deliver new models of care that better meet the Caboolture Hospital catchment population's needs
- improve patient flow and the working environment in the Emergency Department
- deliver person-centred and integrated care under a networked approach
- reduce avoidable hospital admissions through enhanced patient management in community settings
- deliver health care adjacencies that support patient flow, safety, effectiveness and efficiency
- provide a collaborative and productive working environment for staff
- support workforce recruitment, retention and development
- foster opportunities to embed education, research and innovation within the clinical environment.

4 OPTIONS ASSESSMENT

A comprehensive options analysis process was undertaken for the detailed business case. After re-examining a long list of options, the feasibility of shortlisted options was considered against key project drivers. The scope, size, budget, design and program of the reference project was then identified.

The options analysis recommended expanding on the existing hospital site, rather than building on a new site, as it has sufficient infrastructure development capacity, permanent buildings in good condition and an ideal location near major transport routes and Caboolture's business and retail centre. Leveraging existing capacity in other MNHHS facilities would not improve local services and would only exacerbate pressures on these facilities, some of which serve residents from across Queensland.

5 BASE CASE

A portion of the annual funding Caboolture Hospital receives is used to expand existing services. In recent years, growth funding has been used to develop the intensive care unit, construct a 32-bed medical inpatient unit and boost staff numbers in the Emergency Department, which is undergoing an interim expansion.

Caboolture Hospital will continue to receive growth funding, even if the Redevelopment does not go ahead (base case). However, the impact of this funding on activity levels will be constrained by the hospital's physical infrastructure. Efficiency measures, workforce enhancements and technology innovations could be expected to support annual growth in activity levels of one per cent until 2031–32, from which point activity would flatten due to capacity constraints.

More residents will have to travel to other facilities outside the area for care, which will exacerbate equity issues, place greater pressure on other hospitals and increase the overall costs of health services to government. Even with the interim expansion of the Emergency Department complete, the Emergency Department will require significant expansion. Without access to the right service at the right time, levels of illness within the catchment population could be expected to increase.

Hospital occupancy levels are already high, and some infrastructure is outdated and unable to support contemporary models of care. These issues could be expected to undermine the hospital's ability to attract and retain a highly-skilled workforce.

As the gap between supply and demand widens, clinical and safety risks will also increase. Significant investment will be required for Caboolture Hospital to mitigate these risks and keep services and infrastructure functioning. Even then, performance levels will continue to decline.

6 REFERENCE PROJECT

The Redevelopment has a gross floor area of approximately 31,000 square metres, and an estimated total project cost of $352.9 million (P90).

The Redevelopment comprises three packages of work:

- completion of an enabling works package for the new clinical services building
- construction of a new clinical services building (with linkages to the existing hospital)
- refurbishment of selected existing areas for their future re-use.

Figure 2 Proposed new clinical services building

The Redevelopment will deliver growth on the existing capacity through:

- 16 spaces for the patient transit hub
- 27 Emergency Department treatment spaces
- five medical imaging rooms co-located with the Emergency Department
- two operating theatres, four stage one recovery spaces, pre-operative, staff and peri-operative support
- 130 acute and sub-acute beds
- clinical support and facility support services.

7 METHODOLOGY

The economic analysis method applied in this detailed business case is based on the New South Wales Health Infrastructure (2017) *Toolkit for cost-benefit analysis of health capital projects*. This method provides for a monetary valuation of the anticipated health benefits through a reduction in mortality and morbidity. The costs and benefits of the base case and reference project were then compared in a cost benefit analysis.

The key general assumptions and parameters used in the cost benefit analysis are summarised below:

- Evaluation period: The evaluation period used for this appraisal is from 2017–18 to 2047–48 (a 30-year evaluation period).
- Base year: The evaluation has used the financial year 2017–2018 as the base year. All costs and benefits have been discounted to arrive at a present value for 2017–18.
- Unit of account/price year: The economic analysis is conducted in real terms (i.e. it excludes the effects of inflation). All benefits and costs are expressed in constant 2017–18 prices.
- Discount rates: Consistent with Building Queensland cost benefit analysis guidelines, a real discount rate of 7 per cent per annum has been used. Note that this differs from the Financial/Commercial analysis, which used a government bond rate (specifically, the Queensland Treasury Corporation rate).
- Service commissioning: 2022–23.

The costs and benefits assessed in the economic analysis are included in Table 1. Non-quantified/monetised costs and benefits are included in the social impact evaluation.

Table 1 Costs and benefits

COSTS	BENEFITS
Quantified and monetised	
Capital costs	Patient health gains
Asset maintenance costs	Productivity and efficiency (incorporated in operating costs)
Recurrent (operating) costs	
Not quantified	
Lost productivity during construction	Workforce—sustainability, staff retention, attraction, morale
Service disruptions	Safety—reduced clinical errors
Noise and air pollution during construction	Patient and carer travel time and cost savings
	Salutogenic environment
	Amenities/green space
	Environment
	Integration between services and partners

8 DEMAND FORECASTS

The Caboolture Hospital catchment population is projected to increase from 156,678 in 2016 to 263,822 in 2036, an increase of 107,144 or 68 per cent. This growth rate is more than double that of MNHHS (31 per cent) and well above the growth rate of Queensland (39 per cent).

The Caboolture Hospital catchment population is also ageing, has high levels of socio-economic disadvantage, and high prevalence of chronic disease. This is driving a rapid projected increase in service demand based on desired service profile and self-sufficiency levels by the Caboolture Hospital catchment population in areas such as children's services, cancer services, surgical services, general medicine, cardiology, respiratory medicine, renal dialysis, rehabilitation, palliative care, and geriatric evaluation and management, and a community expectation that these services are available locally within the catchment.

The projected service and infrastructure requirements at Caboolture Hospital based on desired service profile and self-sufficiency levels includes:

- an increase of 44,105 emergency department presentations or 87 per cent between 2016–17 and 2031–32 (from 50,849 to 94,954)
- an increase of 46,097 separations or 186 per cent between 2014–15 and 2031–32 (from 24,802 to 70,899). Major growth areas are cardiology, general surgery, orthopaedics, general medicine, palliative care, rehabilitation, ophthalmology, and vascular surgery
- an increase of 52 emergency department spaces, 10 emergency short stay spaces, 306 acute beds, 15 medical imaging rooms, 6 operating theatres, 2 birthing rooms, and 46 outpatient spaces between now and 2031-32.

The current and projected infrastructure requirements for Caboolture Hospital in line with the service directions and projected health service demand based on Caboolture Hospital's desired service profile and self-sufficiency levels.

9 COST BENEFIT ANALYSIS RESULTS

Table 2 summarises the key cost benefit analysis results for the project case.

Table 2 Cost benefit analysis results

COSTS AND BENEFITS	PRESENT VALUE ($M, 30 YEARS @7%)	
INCREMENTAL COSTS (Difference between base case and project case)	P50	P90
Capital costs	240.8	255.6
Lifecycle capital maintenance costs	11.0	12.4
Recurrent costs	513.4	518.8
Residual value	-20.5	-21.7
Total incremental costs	744.7	765.1
INCREMENTAL BENEFITS (Difference between base case and project case)		
Health benefits		
Acute admitted	1,786.7	
Sub-acute and non-acute admitted	74.8	
Mental Health	-12.4	
Emergency Care	-368.1	
Total incremental benefits	2,217.2	
Incremental net present value	1,472.5	1,452.1
BCR	2.98	2.90

10 SENSITIVITY ANALYSIS

A series of sensitivity tests was conducted to analyse the extent to which the results of the cost benefit analysis (i.e. the estimated net present value and benefit cost ratio for each option) are affected when some of the key assumptions underpinning the analysis are varied, including:

- discount rate (4 per cent and 10 per cent instead of 7 per cent, as per Building Queensland guidelines for cost benefit analysis)
- capital expenditure (20 per cent increase and 20 per cent decrease)
- recurrent expenditure (20 per cent increase and 20 per cent decrease)
- health benefits assumptions
  - value of a Statistical Life Year (VSLY) (20 per cent decrease and 20 per cent increase)
  - proportion of patients treated elsewhere for inpatient services (5 per cent lower at 75 per cent and 5 per cent higher at 85 per cent)
  - proportion of patients averting mortality as a result of being treated at the hospital (lower at 0.6 per cent and higher at 1.4 per cent)
  - reduction in disability burden due to treatment (lower at 10 per cent and higher at 30 per cent)
  - remaining life expectancy post-emergency department admission (lower at 5 years and higher at 15 years).

The results of the sensitivity analysis are set out in Table 3.

Table 3 Sensitivity analysis results for project case

SENSITIVITY SCENARIO	P50 COSTS		P90 COSTS	
	NPV ($M)	BCR	NPV ($M)	BCR
Baseline	1,472.5	2.98	1,452.1	2.90
Discount rates				
Lower at 4%	3,442.7	4.36	3,446.4	4.38
Higher at 10%	659.4	2.16	630.1	2.05
Capital costs				
-20%	1,520.7	3.18	1,503.2	3.11
+20%	1,424.4	2.80	1,401.0	2.72
Recurrent costs				
-20%	1,575.2	3.45	1,555.8	3.35
+20%	1,369.8	2.62	1,348.3	2.55
Health benefits key assumptions				
VSLY (-20%)	1,029.1	2.38	1,008.6	2.32
VSLY (+20%)	1,916.0	3.57	1,895.5	3.48
Proportion of patients treated elsewhere (75%)	1,934.8	3.60	1,914.4	3.50
Proportion of patients treated elsewhere (85%)	1,010.2	2.36	989.8	2.29
Proportion of patients averting mortality as a result of being treated at the hospital (0.6%)	1,319.7	2.77	1,299.3	2.70
Proportion of patients averting mortality as a result of being treated at the hospital (1.4%)	1,625.3	3.18	1,604.9	3.10
Reduction in disability burden due to treatment (10%)	746.0	2.00	725.5	1.95
Reduction in disability burden due to treatment (30%)	2,199.1	3.95	2,178.6	3.85
Remaining life expectancy post-emergency department admission (5 years)	1,288.5	2.73	1,268.0	2.66
Remaining life expectancy post-emergency department admission (15 years)	1,656.6	3.22	1,636.1	3.14

11 WIDER ECONOMIC IMPACTS

The Caboolture Hospital Redevelopment is expected to deliver better value for money through implementation of a contemporary model of care and improved facility functional relationships. Improvements in the model of care and functional relationships of the facilities are expected to increase the quantity of health services that the hospital is expected to be able to supply for a given quantity of resources (i.e. increase productivity by increasing technical efficiency). The improvements will also increase the efficiency with which the hospital manage and allocate its resources, thereby reducing the recurrent costs associated with supplying the increased outputs of health services.

By improving the health outcomes of patients who would otherwise not be treated in the absence of the Redevelopment, the Redevelopment will enable their return to the workforce sooner than otherwise, thus raising labour productivity and economic output in the hospital's catchment area.

In addition, the Redevelopment will reduce the strain of rising patient demand on other hospitals in South East Queensland. In the absence of the Redevelopment, an increasing proportion of sick persons and their carers from the hospital's catchment area will have to travel further to access care. In doing so, they will incur travel time costs and increased vehicle operating costs. These benefits of the Redevelopment are small compared with patient health benefits.

Improvements in the model of care and functional relationships of the facilities, as well as access to state-of-the-art equipment, will also make Caboolture Hospital a highly desirable workplace for hospital staff. This will raise staff morale and productivity, as well as increase staff retention (and the avoidance of costly staff turnover re the hiring and training costs associated with new staff). The Redevelopment will also assist Caboolture Hospital in filling vacant staff positions (particularly for specialist roles) by making it easier to attract applicants.

By delivering state-of-the-art health services in a contemporary and attractive setting, the redeveloped Caboolture Hospital will help ensure that its catchment area is viewed as a desirable region that offers a high quality of life, thereby assisting in the retention of existing residents and attraction of new residents to ensure economic vibrancy and sustainability.

12 SOCIAL IMPACTS

The results of the social impact evaluation indicate that the Redevelopment will have a positive net social impact for the hospital's stakeholders and the Caboolture community.

The social impact evaluation identified a total of 20 positive impacts, of which 19 are long-term benefits of operating the redeveloped hospital. In contrast, 11 of the 18 negative impacts are short-term consequences of the construction and transition process associated with the Redevelopment.

Key material positive impacts include increased access to local hospital services, enhanced service reliability and increased cost-effectiveness that will result as the Redevelopment relieves pressure on existing infrastructure and provides an improved working environment for staff. These positive impacts will subsequently drive improved health outcomes for patients.

The negative impacts largely pertain to disruptions and risks that will be caused by the construction process, such as increased dust and noise. Negative impacts that will be managed over the longer-term, include increased traffic, risks to pedestrian safety and community expectations of service delivery.

The Redevelopment will enhance the capacity of the health system to meet the growing health service needs of residents in its catchment areas. This will ensure continued equitable access to high-quality and timely

healthcare, particularly for vulnerable segments of the population and those from a low socioeconomic background. The project thus promotes distributive efficiency, which is achieved when goods and service are received by those most in need of them.

Equitable access to quality healthcare will in turn ensure social cohesion and enhance the building of social capital and community spirit.

13 PROJECT IMPLEMENTATION

It is intended that MNHHS will manage the project from procurement through to construction and commissioning (as per Gates 3-5 in the Queensland Health Investment Management Framework) following the Queensland Health Investment Review Committee endorsement of the detailed business case.

Construction for the Redevelopment is planned to commence in FY2020 (enabling works) and be complete in FY2023. No legislative amendments or planning and environmental approvals are required for works to begin.

In the shortlisting process, Managing Contractor (MC), Design and Construct (D&C) and Construct Only (CO) were considered. Subsequently, post detailed business case considerations including construction interface and resolution of the multi-storey car park business case should assist to support the preferred option.

Scenario modelling has also been undertaken based on an extended program of 12 months.