ATTACHMENTS

Ordinary Council meeting
Separate Attachments 1

Tuesday, 24 May 2022

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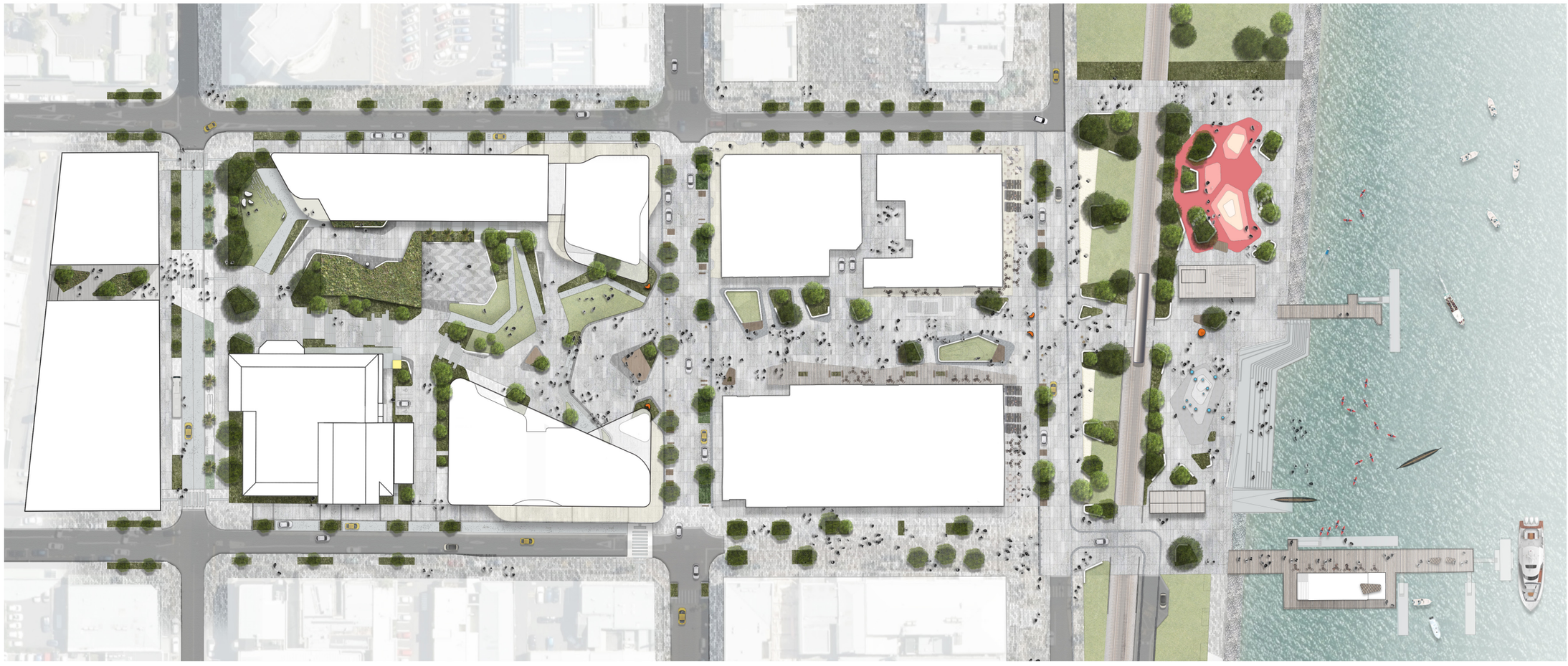


TE MANAWATAKI O TE PAPA - ENHANCED COSTINGS

17 May 2022

Tauranga City

WILLIS BOND

'Indicative Library and Community Hub render

CONTENTS

1. INTRODUCTION

Willis Bond, in partnership with Tauranga City Council, presented the Tauranga Civic Masterplan (Refreshed 2021) Report in December 2021.

Following the issuance of the Masterplan Refresh Report, further investigations have been undertaken to provide more rigour to the Te Manawataki o Te Papa costings presented.

Between January and April 2022, Studio Pacific Architects has progressed the masterplan design to a feasibility level (pre-concept design) to both refine and provide rigour to initial RLB cost estimates. This stage has involved further client briefing with user groups in parallel with design development and coordination across a range of engineering disciplines (structure, geotechnical, building services, civil, fire, traffic, landscaping, marine and sustainability).

This Enhanced Costing stage has also allowed the project team to identify key cost considerations, procurement strategies and critical path items. Strategies to manage these areas will be a focus of the Preliminary Design stage once progressed.

COST ESTIMATE

It is important to note that the costs presented are based on early concept level designs, remain subject to a vast number of assumptions and are exposed to the risk of costs escalating faster than forecast. Additional Council briefing and engineering investigations are required to refine scope and site requirements. As such, the estimates provided should still be considered provisional.

There are potential enhancements that have been costed in addition to the base cost presented (e.g. mass timber 6 Green Star buildings, enhanced wharf), as well as potential value engineering opportunities identified.

While the preference may be to lock in a specific cost number, the very early stage of the design and the volatile macro-economic environment means that this report should be read as indicating the range of likely cost outcomes.

BASE COST

A provisional base cost for the precinct is estimated at $303 million as detailed in the following table. An estimated cost range of **$290 to $326 million** is the outcome of this report, with the upper bound an additional 7.50% uncertainty factor on the presented cost estimate of $303 million.

Item	Cost ($000)
Library and Community Hub	88,200
Exhibition	61,600
Museum	42,600
Waterfront and Wharf	25,400
Civic Plaza	15,700
Civic Whare	15,400
Baycourt upgrade	11,000
Masonic Park	9,400
Willow Street shared street upgrade	8,950
The Strand	7,500
Site A Civil Establishment	7,000
Hamilton Street footpath	3,125
Wharf Street footpath	3,125
Durham Street eastern upgrade	2,900
Art Gallery entry modifications	1,500
Provisional base cost	**303,400**

Indicative render

ENHANCEMENTS

At this early design stage, optionality has been a key focus of the consultant team to allow consideration of different structural and design options.

Several enhancements have been considered, which are estimated to cost an additional $21 million if implemented in the precinct design.

Item	Cost ($000)
Mass timber and 6 Green Star Library and Community Hub	4,500
Mass timber and 6 Green Star Museum Building	2,450
Timber roof and 6 Green Star Exhibition and Civic Whare	3,000
Solar panels - Library, Museum and Exhibition roofs	1,200
Library full facade with 75% solar shade feature screen	2,850
Museum / Exhibition full facade with 75% solar shade feature screen	3,000
Masonic Park timber pergola / canopy	1,475
Wharf enhancements	2,100
Enhanced seating and landscaping - eastern side of The Strand	425
Provisional enhancement cost estimate	**21,000**

Mass Timber / 6 Green Star Options

The cost premium of mass timber construction and targeting 6 Green Star ratings across each of the buildings is considered. In the base case costings, a conventional steel and concrete structure and 5 Green Star rating is assumed.

Council sustainability and carbon reduction aspirations, coupled with a greater understanding of the limitations and risks involved in timber construction must be discussed further to decide on structural materials.

Solar Panels

Utilising solar panels across the site has sustainability benefits, albeit comes at a cost. The estimated cost of PV solar panels across building roofs has been shown. There is potential to look at alternate procurement models or grants to reduce the cost of solar power across the site.

Full Facade

The base case cost assumes solar shade feature screens to c.30% of upper floors of each building. The cost premium for a more extravagant façade to the Library and Community Hub with fuller curtain wall and 75% coverage of solar shade / feature second faced layer for each building is presented.

Masonic Park Timber Pergola / Canopy

A large timber pergola / canopy has been proposed to the southern edge of Masonic Park. This is an addition to Masonic Park scope and has been included as an enhancement option.

Wharf Enhancements

The wharf design and associated structure design presented in this report is aspirational. Given the consultation still required on scope and location of this structure, costings for the smaller wharf and wharf structure presented in the Masterplan Refresh Report have been assumed as the base case.

Enhanced Seating and Landscaping – Eastern Side of Strand

The area of landscaping between The Strand and the railway is likely a transitory space between active landscaping areas. The base costings reflect this, with limited seating and landscaping. The additional cost to enhance this area and provide more seating options is shown.

VALUE ENGINEERING (COST SAVING) OPPORTUNITIES

The project team has identified a number of value engineering opportunities for further interrogation within the Preliminary Design stage.

To materially reduce project costs, a reduction in gross floor area (GFA) across the precinct would be required. Each square metre reduction in GFA would drive c.$10,000 in project cost savings. To achieve this, Council would need to further interrogate the building briefs to consolidate and find efficiencies of uses. It is noted that not all the reduction would be through usable floor area, with a reduction in usable floor area resulting in lower plant and circulation requirements.

2.
COST OVERVIEW

NZD in thousands	Site A Civil Establishment	Library and Community Hub	Baycourt	Civic Plaza	Waterfront and wharf	Wharf St footpath	The Strand	Hamilton St footpath	Durham St footpath	Exhibition	Masonic Park	Civic Whare	Art Gallery	Willow Street	Museum	Total
Construction and Infrastructure Cost	4,350	55,050	6,075	9,225	14,225	1,785	4,325	1,790	1,650	35,755	4,800	8,735	750	4,980	23,520	**177,015**
Escalation	480	7,350	925	1,570	2,550	320	780	325	300	7,300	980	1,850	165	1,100	5,600	**31,595**
Total construction cost	**4,830**	**62,400**	**7,000**	**10,795**	**16,775**	**2,105**	**5,105**	**2,115**	**1,950**	**43,055**	**5,780**	**10,585**	**915**	**6,080**	**29,120**	**208,610**
Direct costs	900	14,250	1,700	2,280	3,555	455	1,080	470	430	9,950	1,715	2,425	230	1,290	6,775	**47,505**
FF&E	-	3,500	1,000	-	500	-	-	-	-	3,000	100	1,000	100	-	2,800	**12,000**
Contingency	1,270	8,050	1,300	2,625	4,570	565	1,315	540	520	5,595	1,805	1,390	255	1,580	3,905	**35,285**
Total cost	**7,000**	**88,200**	**11,000**	**15,700**	**25,400**	**3,125**	**7,500**	**3,125**	**2,900**	**61,600**	**9,400**	**15,400**	**1,500**	**8,950**	**42,600**	**303,400**
GFA*	-	5,924	2,400	-	-	-	-	-	-	3,911	-	712	1,305	-	2,429	
$/m²	-	9,149	2,427	-	-	-	-	-	-	9,007	-	11,973	575	-	9,522	
Estimated completion date	2024	2025	2025	2025 - 27	2026	2026	2026	2026	2026	2027	2027	2027	2027	2026 - 28	2028	**2028**
Contingency	22%	10%	10%	20%	22%	22%	21%	21%	22%	10%	24%	10%	20%	21%	10%	**13%**
Escalation	11%	13%	15%	17%	18%	18%	18%	18%	18%	20%	20%	21%	22%	22%	24%	**18%**

** Note GFA values include plant area*

ALLOWANCES

Escalation

Escalation is assumed based on current RLB forecasts. It is noted there has been recent rapid construction cost inflation, which is expected to continue in the near term. There has been a $3.6 million increase in escalation values from the Masterplan Refresh costings prepared in November 2022. Further discussion on escalation is provided later in this section.

Direct costs

Direct costs include:

- Design fees. Allowance of 12% for civil and site work projects and 14% for buildings.
- Planning, consents, levies and insurance. Allowance of 2.25%.
- Other direct costs. Allowance of 6%.

FF&E

Provisional FF&E allowances have been made for loose furniture, equipment, free standing shelving, ICT works and AV equipment.

A FF&E allowance of $3.5 million has been assumed for the Library and Community Hub. Further investigation is required, with FF&E costs typically ranging from $2.5 to $5.0 million for a building of this size depending on specification, scale and bespoke requirements. Fixed shelving costs are provided within the construction cost, with a c.$300 psm allowance.

FF&E allowances of $3.0m, $2.8m and $1.0m are provided for the Exhibition, Museum and Civic Whare respectively providing for specialised permanent fitout.

There are allowances for significant cultural artworks within construction cost estimates, with 16 metre high waharoa on the edges of the Library and Community Hub and Museum buildings, a waharoa gateway in Masonic Park and sculptural pou at the waters edge.

No additional allowance has been made for significant artwork, sculptures, or exhibition specific fitout requirements across the site, e.g. sculptures for sculpture garden, significant artwork / sculptures for Museum / Exhibition buildings.

Contingency

Contingencies vary across projects. Contingencies on the buildings are assumed at 10%, increasing to 20% for the less well defined Art Gallery refurbishment.

Civil and site works have a 10% contingency, plus an additional risk contingency for civil works alternative procurement models, civil margin, traffic management, P&G risks, etc. This results in an overall average 22% contingency for civil and site works projects.

The contingencies have not been assessed on a building by building basis. A risk workshop in the next stage will be undertaken to drill into individual contingency allowanced per risk item to provide greater accuracy.

LIBRARY AND COMMUNITY HUB

Engineering investigations and briefing processes have allowed the design of the Library and Community Hub to progress significantly from November 2021. Given the nature of the building, there are significant plant requirements.

A temperature controlled archive space has been added to the ground floor of the building which was not considered in the Masterplan Refresh process.

Cost savings can be driven through GFA reductions and further integration of Council brief. This would require the brief to be reassessed and options for colocation of spaces within the building and across the site considered.

CIVIC WHARE AND EXHIBITION

The Civic Whare and Exhibition are closely related and should therefore be considered together. These buildings are expected to be developed in one stage. Majority of the plant for the Civic Whare sits within the Exhibition footprint.

The small scale of the Civic Whare, coupled with the aspirations for the site to be a key feature of the precinct results in a higher per square metre construction cost comparative to the other buildings. The roof of the Civic Whare is assumed to be mass timber in the base cost.

Given the area requirements of the exhibition space, the footprint of the exhibition building is relatively fixed.

MUSEUM

The Museum joins the Exhibition building to frame the northern site boundary. Some uses are combined between the two buildings, with a combined GFA excluding plant closely aligned to the briefing provided.

Given the proposed location of plant on the Exhibition roof, the Museum could not operate as a stand alone building.

Further cost savings could be driven by a reduction in Museum area and a further consolidation of spaces.

BAYCOURT

There has been limited briefing provided for the Baycourt refurbishment. At present, $11 million has been allocated to this project, albeit there is limited support to this value without further discussion on scope and aspirations. Once scope is determined, there may be potential to reduce the Baycourt budget to reallocate to other buildings.

The Baycourt cost would include the provision of an outdoor accessible lift, estimated at c.$1 million.

ART GALLERY MASONIC INTERFACE

Again, the art gallery has had limited briefing. A $1.5 million total cost has been assumed to relocate the main entrance to Masonic Park. Further engagement is required to refine this number, with a large contingency allowed for.

CIVIC PLAZA

The Civic Plaza is a large area with a significant slope, meaning the civil and landscaping requirements are complex. It would be expected that construction of the civic plaza is staggered to align with the construction of each building within the precinct.

Cost saving for this area could be driven by replacing hard scape areas with addition soft scape and planting.

COST REVIEW

WATERFRONT AND WHARF

The waterfront is a complex area with multiple components. An overview of the cost breakdown is presented below:

Waterfront and Wharf overview	($000s)
Demolition and site clearance	875
Hard landscaping	4,820
Soft landscaping and trees	1,030
Rail crossing alterations / fencing	850
Whare waka building	1,150
Wharf and ferry pontoons (base case)	4,150
Wharf building (base case)	760
Launching ramp	480
Relocated sculpture park (Hairy Maclary)	110
Escalation	2,550
Direct costs	3,555
FF&E	500
Contingency	4,570
Provisional Waterfront and Wharf cost	**25,400**

There is potential to scale back scope of some waterfront areas, allowing for both congregation spaces and simpler throughfare roues.

MASONIC PARK

Masonic Park is a key link between Site A and the waterfront. A glass / perspex cover of the archaeological area has been assumed, removing the need for balustrades.

Murals have been costed along the adjourning walls, with no upgrades to buildings. A large canopy down the southern edge has been costed as a below the line item.

ROADING UPGRADES

The Strand and Willow Street are proposed to become pedestrian favoured slow spaces.

Upgrades to Hamilton Street, Durham Street and Wharf Street cover to the curb edge surrounding Site A.

SITE A CIVIL ESTABLISHMENT

This budget includes allowances for general site clearance and landscaping removal, sitewide hoardings and site preparation costs.

A 11kv HV power cable has been identified running through the site that needs to be relocated. This is a significant risk item in terms of programme and cost. This budget also includes an estimated Powerco contribution to this relocation and temporary transformer cost to enable relocation of the cable.

EXCLUSIONS FROM COST ESTIMATES

- Demolition costs for existing Willow Street Library building.
- Café fitouts, cold shell fitouts assumed for Library and Community Hub and Museum cafes. Commercial kitchen included within the Exhibition building.
- IL4 or base isolation requirements (IL2 assumed for Library and Community Hub, IL3 for Museum and Exhibition).
- Durham Street full upgrade. Footpath upgrades adjourning Site A costed, with remaining works expected to occur during Site B construction
- Wharf Street and Hamilton Street upgrades beyond Site A curb edge.
- Hamilton Street to Masonic Park laneway.
- Building upgrades to Masonic Park, beyond minor Art Gallery refurbishment.
- Lightening protection systems.
- Significant height increase to waterfront area to protect against 100 year sea level rises.
- Significant generators or batteries beyond UPS / Archive Genset provision.
- Extensive re-routing of HV line if required by Powerco. $750K Transformer and HV Switchgear contribution currently allowed for.
- Significant asbestos removal or in ground contamination (minor allowances included).
- Sculptures to Sculpture Garden.
- Significant Artwork, Sculptures, or Museum / Exhibition type scope.
- Waterfront playground area and associated public toilets.
- Land, funding or financing costs.
- Existing waterfront tidal stairs and pier (no upgrades proposed to these areas).
- Site B – Performance and Convention Centre and Hotel.
- Public transport bus stops, shelters or EV charging type infrastructure.


Indicative render

COST OVERVIEW

ESCALATION

ESCALATION ALLOWANCE

The construction industry is currently seeing significant escalation, which is expected to continue in the near term.

The escalation forecast used is produced by RLB directors across New Zealand in conjunction with economists from the NZIER (New Zealand Institute for Economic Research). It is important to note that the forecast does not differentiate between regions or building types.

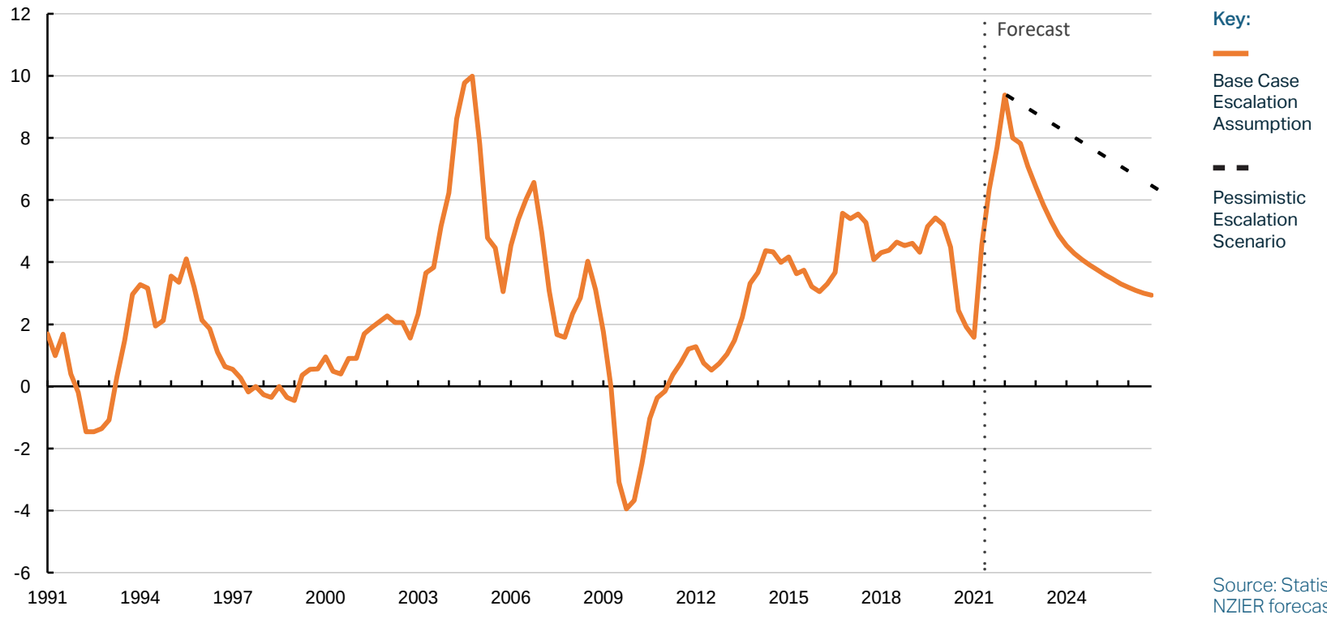
Non-residential construction cost inflation picked up in the December 2021 quarter, with the 2.2% quarterly increase bringing annual construction cost inflation to 7.7% for the 2021 year.

A further increase in annual construction cost inflation is expected, even as quarterly growth in non-residential construction costs stabilises over the first half of 2022. RLB forecasts annual non-residential construction cost inflation will peak at 9.4% in March 2022. Beyond that, a relaxation of border restrictions later in 2022 should alleviate labour shortages and drive a moderation in construction cost inflation from late 2022.

The forecast peak in annual construction cost inflation is lower than that seen in the 2004 building boom, but a more protracted period of elevated construction cost inflation is expected given the high inflation environment.

Escalation is a key risk of this project and cannot be understated. There is potential for escalation to materially exceed forecasts and to manifest itself in spikes in commodity prices, wage rates and supply chain disruptions. Willis Bond has witnessed significant recent inflation in timber and structural steel prices. Antidotally, structural steel has increased in price from $4,000 per tonne in late 2021 to $7,000 per tonne currently.

Non-residential building cost escalation
CGPI-NRB index, annual % change



Source: Statistics NZ. NZIER forecasts

ESCALATION ALLOWANCE

Escalation is calculated in two parts for each area.

1. Escalation from March 2022 to the approximate tender date using quarterly forecasts; plus
2. Escalation from tender date to completion x 40%.

This is a typical methodology used and accounts for the fixed price nature of a typical construction contract to completion, with consideration for fixed prices of materials, wage inflation as the works proceed, and for trades that commence in the second half of the build phase.

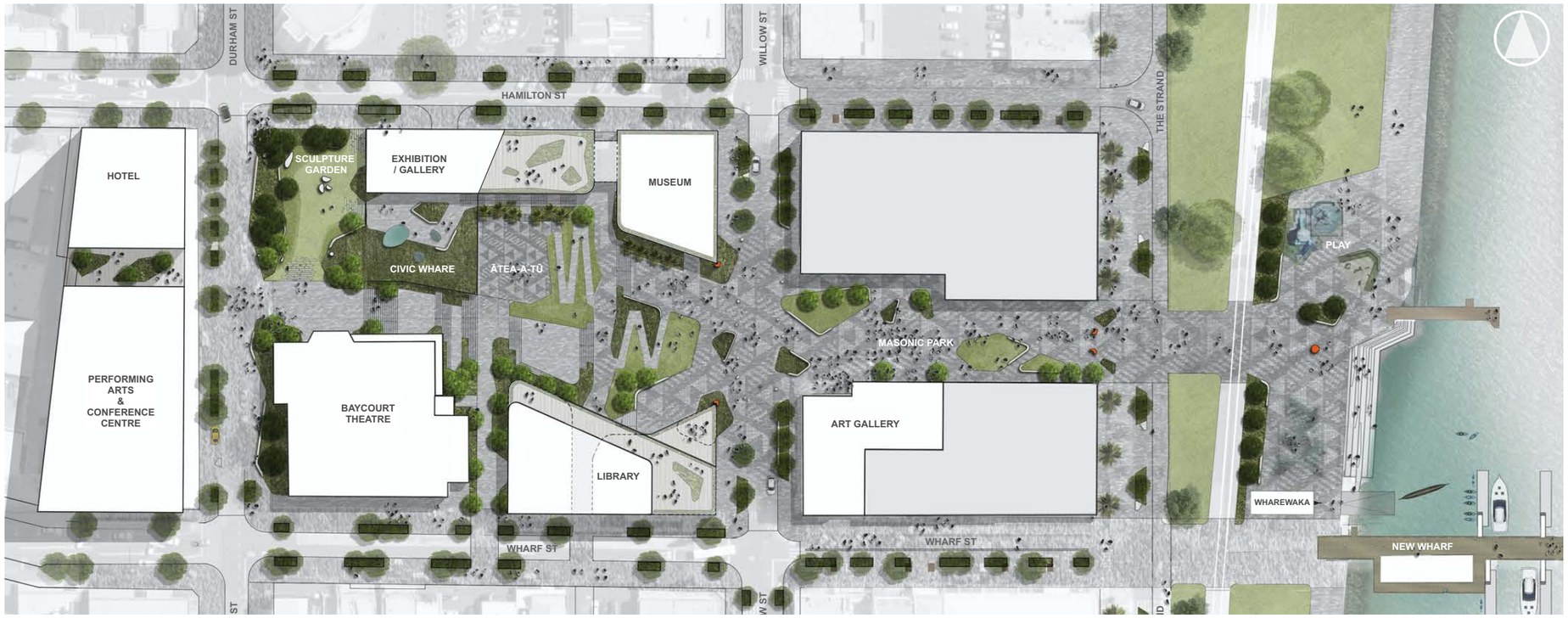
NZD in thousands	Construction + Infrastructure Cost	Present day	Mid point build	Escalation	Escalation (%)
Site A Civil Establishment	4,350	Mar-22	Mar-24	480	11.0%
Library and Community Hub	55,050	Mar-22	Sep-24	7,350	13.4%
Baycourt	6,075	Mar-22	Jun-25	925	15.2%
Civic Plaza	9,225	Mar-22	Sep-25	1,570	17.0%
Waterfront and Wharf	14,225	Mar-22	Sep-25	2,550	17.9%
Wharf St footpath	1,785	Mar-22	Dec-25	320	17.9%
The Strand	4,325	Mar-22	Dec-25	780	18.0%
Hamilton St footpath	1,790	Mar-22	Dec-25	325	18.2%
Durham St footpath	1,650	Mar-22	Dec-25	300	18.2%
Exhibition	35,755	Mar-22	Jun-26	7,300	20.4%
Masonic Park	4,800	Mar-22	Sep-26	980	20.4%
Civic Whare	8,735	Mar-22	Sep-26	1,850	21.2%
Art Gallery	750	Mar-22	Dec-26	165	22.0%
Willow Street	4,980	Mar-22	Dec-26	1,100	22.1%
Museum	23,520	Mar-22	Jun-27	5,600	23.8%

Net present day construction cost	177,015		
Escalation provisions	31,595	*17.8%*	*on net construction cost*
Direct costs	47,505	*22.8%*	*on construction cost + escalation*
FF&E, AV and ICT	12,000	*9.2%*	*on building only construction costs - c.$750 psm*
Total contingency provisions	35,285	*13.2%*	*on all project costs*
Total provisional base estimate	**303,400**		

3. MASTERPLAN PROGRESSION

The briefing and consultation undertaken during the enhanced costing process, coupled with structural, servicing, fire, and civil engineering input has allowed the design of each building and the site landscaping to progress. Design will progress further throughout Preliminary Design as more detailed briefing sessions occur with council and requirements are refined.

TAURANGA CIVIC MASTERPLAN (REFRESHED 2021)



TE MANAWATAKI O TE PAPA ENHANCED COSTINGS SCOPE

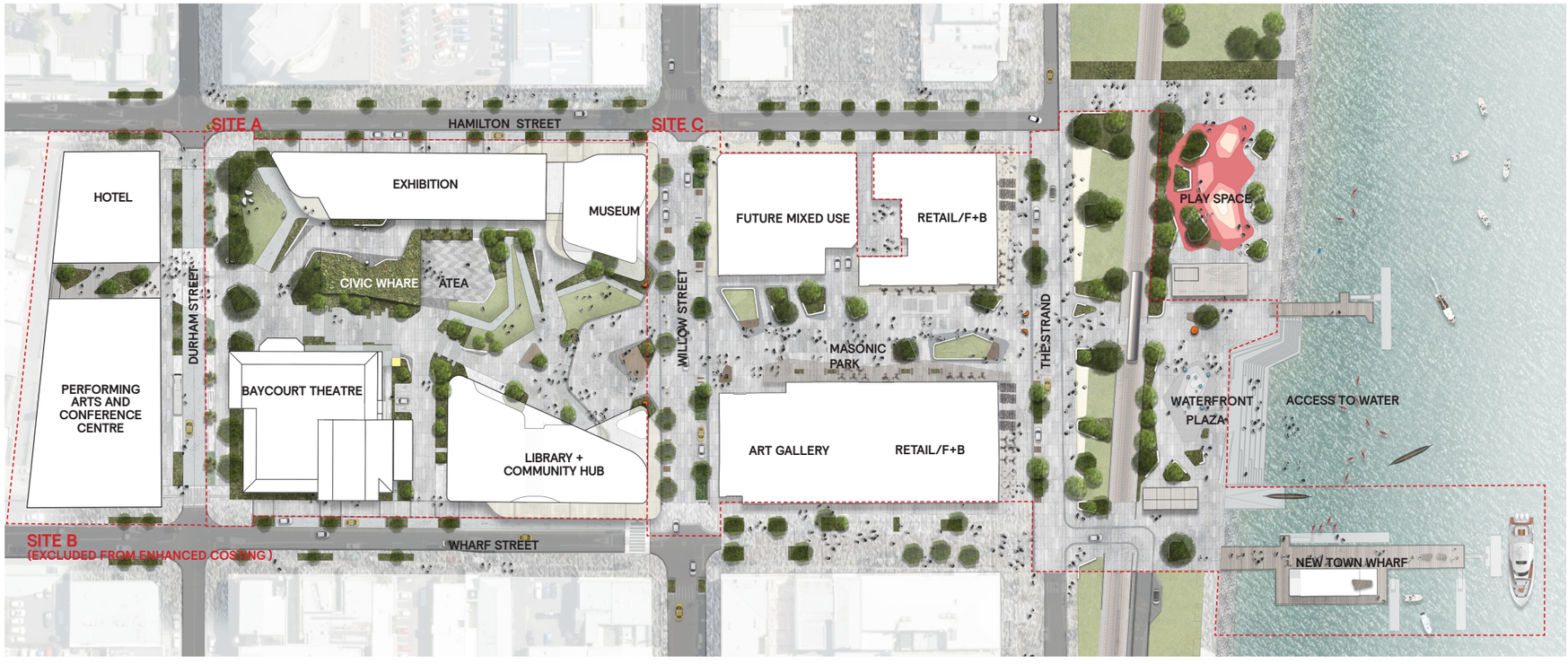
The area considered in the enhanced costing scope is outlined below.

Site B, incorporating a Performing Arts / Conference Centre and adjacent Hotel is excluded from this scope.

Site A is costed to the curb edge of Durham, Wharf and Hamilton Streets.

Site C, incorporating Willow Street, Masonic Park, The Strand, Waterfront area and Wharf is costed. Note the northern play space and associated public bathrooms are excluded as these items sit within the separate Waterfront Playground Budget. There are no changes proposed to the existing waterfront tidal stairs and pier.

ENHANCED COSTINGS REVISED MASTERPLAN



4.
ARCHITECTURE PROGRESSION

The focus for this enhanced costing workstream has been on understanding constraints and opportunities for each of the buildings, with a focus on the key cost drivers including GFA requirements, building uses and Library archive aspirations.

Preliminary briefings have been received for the Library and Community Hub, and consultation has been provided from a specialised museum consultant for the Museum and Exhibition requirements.

The design presented aims to provide a sensible footprint and arrangement to achieve the space aspirations provided. For each building there may be opportunities to further consolidate site uses as design progresses (e.g. kitchens, offices, end of trip facilities).

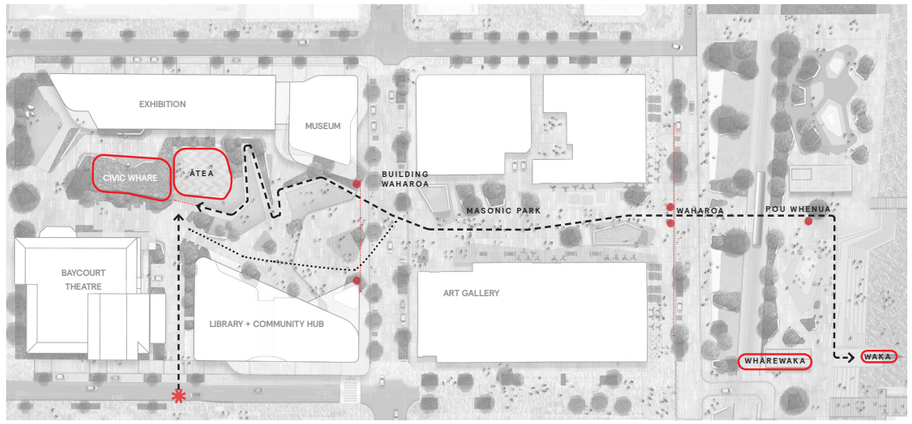
Optionality has been a focus of the costing exercise to access what façade treatment, green star rating and building material is optimal across each building.

In addition to the services, structural, civil and fire engineering recommendations noted throughout this report, the following key design updates from the December 2021 masterplan design have been made:

CIVIC WHARE

The Civic Whare design has remained largely in line with the 2021 masterplan. Focus for this building has been on forming a strategy for the structural, fire and servicing requirements which are closely integrated with the Exhibition, and the integration of the building into the landscape. The Civic Whare remains the focal point of the site, with the site wide landscaping revolving around the procession and linkage from the moana to the Civic Whare.

Procession to Civic Whare



LIBRARY

- Rationalisation of vertical circulation, third lift now goods only.
- Terrace introduced to Level 1 for contained childrens play access.
- Reduction of overall rooftop terrace space.
- Inclusion of canopies over footpaths
- Reduction / removal of separate retail spaces following initial briefing and ground floor rationalisation and testing.
- Relocation of Ground Level café towards centre of site to draw people onto precinct, activate plaza and take advantage of moana views.
- Introduction of temperature-controlled archive space, reading room and related plant.
- Increase in rooftop plant area following services engineering review. Refinement to floor areas and arrangements as briefings have progressed (refer to GFA table).
- Rationalisation and reduction of voids and roof terraces to improve site efficiency.
- Removal of upper floor, including the removal of proposed Rooftop Bar. This encourages site dining within the central plaza and reduces logistical challenges of afterhours access to a rooftop dining area.
- Introduction of mezzanine adjacent to dockway for serices and returns processing and to rationalise levels
- Increase in floor to floor heights for timber structure and to resolve ground level changes
- Increase in rooftop plant area following services engineering review.
- Increase in glazing proportions following initial library briefing conversations.
- Straight plaza facing building façade with shaped panels compared to a waved openings and panel design in the 2021 masterplan.

MUSEUM AND EXHIBITION

- Refinement to floor areas and arrangements as briefings have progressed (refer to GFA table)
- Rationalisation and reduction of voids and roof terraces to improve site efficiency.
- Addition of vertical circulation including addition of a public lift and a separate large goods lift following mueum specialist and services feedback.
- Rationalisation of circulation routes and lift locations and removal of internal ramp from lower lobby to Civic Whare.
- Lengthening of Exhibition building to meet spatial requirements, resulting in a reduction in sculpture garden area and increased ground floor BOH areas.
- Removal of upper level of Exhibition / office space following museum specialist, structural, fire and services feedback.
- Increase in rooftop plant area following services engineering review.
- Consideration within proposed design to allow introduction of space suitable for group sleeping following museum specialist feedback.
- Increase in floor to floor heights following museum specialist, structural and services feedback.
- Provision for museum café offering following museum specialist input.
- Increase in BOH areas following museum specialist briefing.
- Rationalisation of meeting locations and exhibition area clear spans / footprint.
- Inclusion of canopies over footpaths. Rationalisation of firecells.
- Enclosing through site link to through lobby link.
- Interior, irrigated green wall allowed for along the exhibition main stair.
- Straight plaza facing building facade compared to a waved panel design in the 2021 masterplan.

BAYCOURT AND ART GALLERY

An allowance has been made for a refurbishment of the Baycourt Community and Arts Centre and for the repositioning of the Art Gallery entrance to Masonic Park. Without more detailed on-site investigations and scope refinement, we are unable to give a firm indication of where costs will sit for these items. As such, the initial budgets provided for each have been retained.

Early investigations and sketches have been undertaken to assess the design opportunities for these sites. Analysis has found the seismic performance of Baycourt to be acceptable, we do not expect further strengthening works to be required. Plans provided indicate the roof area is uninsulated, as such roof upgrades may be required.

LIBRARY SHELVING RECOMMENDATIONS

Compactor shelving use is discouraged for public areas within the library. This is line with a significant decrease in compactor shelving use in new regional library and office developments over the past five years. Structural implications, cost, future flexibility and importantly health and safety concerns drive this recommendation.

Health and safety constraints

There are health and safety risks around using compactor shelving, particularly in public spaces. These risks include:

Risk of crush injuries during operation.

Risk of crush injuries or tipping or failure during seismic events. It is noted the use of physical blocks or bolts to stop shelves from closing often fail in seismic events.

Misuse leading to injury including strain by untrained users.

Limited ability to restrict and monitor children.

Low visibility within stacks during use.

Tracks may act as trip hazards.

Compactor shelving requires additional staff supervision. Its use is recommended to be limited to areas with limited public use and training / access protocols, such as the archive.

Structural constraints

The loading requirements of compactor shelving are significantly greater than alternative shelving units. At 2.4 metres, compactor shelving loading requirements would be 140% higher than the typical loading requirements of a library. The use is therefore more suitable on the ground floor, where the archive is proposed.

If a timber structure is adopted, timber construction tends to have additional deflection over time which may affect the performance (or require re-levelling) of the compactor rail system.

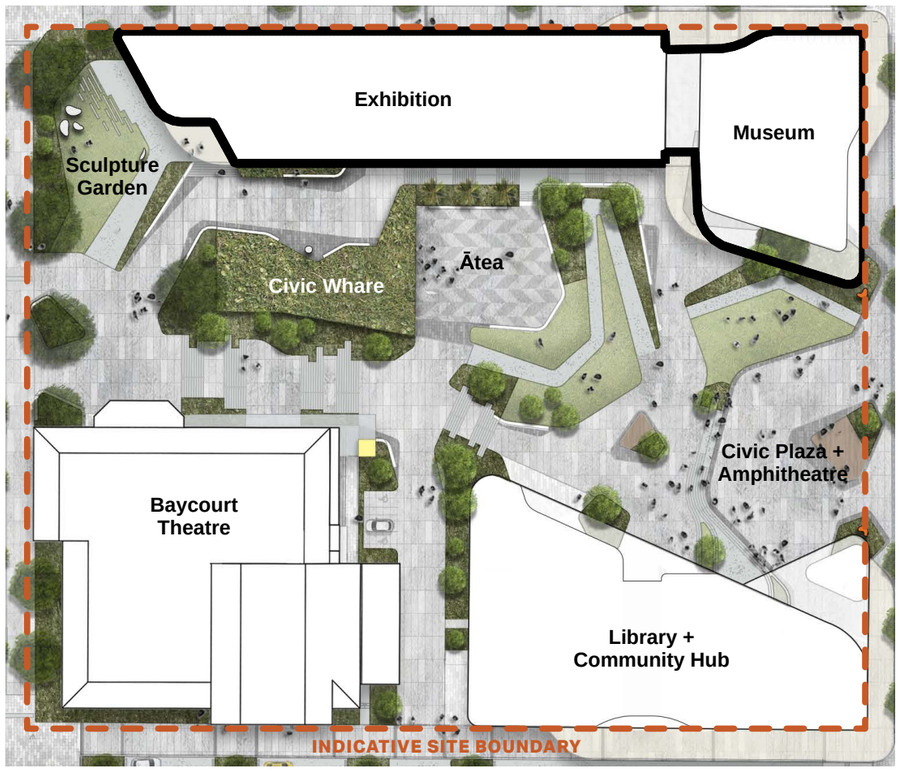
Other shelving considerations

Maximum general storage height in the library is recommended at 2.4m to mitigate additional fire protection measures which would not be considered typical for a library of this scale and have not been costed. Shelving higher than this level would require ladder access for staff or public use which brings additional health and safety risks.

If additional storage is required, stack type back of house arrangements can be considered, particularly to ground or mezzanine level. There are also opportunities for offsite bulk storage.

ARCHITECTURE PROGRESSION

CIVIC WHARE, EXHIBITION & MUSUEM



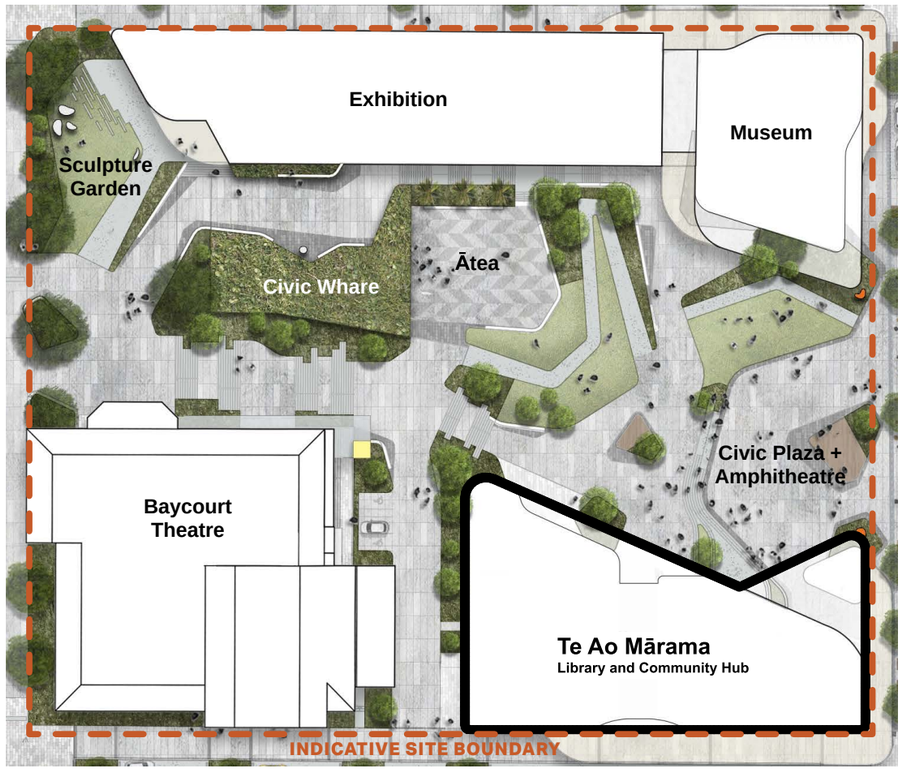
m²	Current design	Brief	Difference	Notes
Museum	483	470	13	*Museum lobby, retail and isite*
Museum Exhibit Space	828	843	(15)	*BOP stories, wet workshop, education, discovery centre and story pod*
Meeting	280	543	(263)	*Including 100 person theaterette*
Exhibition	881	1,043	(162)	*Ability to split area into four rooms - 250m², 200m², 215m², 215m² Opportunity to increase plus overflow to theatrette .*
Back of House	859	514	345	*Workshop, storage, dock, admin and storage spaces. Note additional storage for each level, café and 50m² staff meeting rooms included*
Amenity	285	141	144	*Also serves Civic Whare - subject to refinement on toilet numbers*
Circulation	1,086	1,128	(42)	*Including display areas*
Commercial	65	-	65	*Additional Offering*
Area comparative to brief	**4,767**	**4,682**	**85**	

Gross floor area - Museum	**2,429**
Gross floor area - Exhibition	**3,911**
Gross floor area - Civic Whare	**712**

Note: GFA includes roof top plant

ARCHITECTURE PROGRESSION

TE AO MĀRAMA - LIBRARY AND COMMUNITY HUB

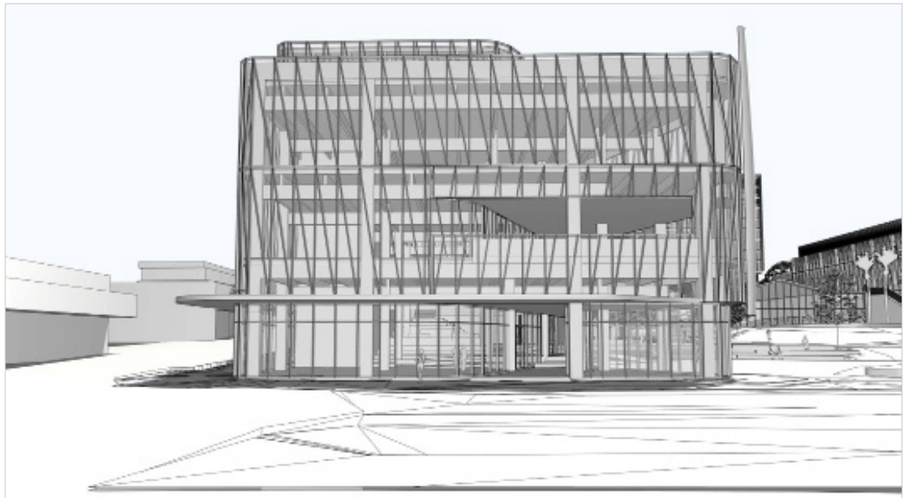


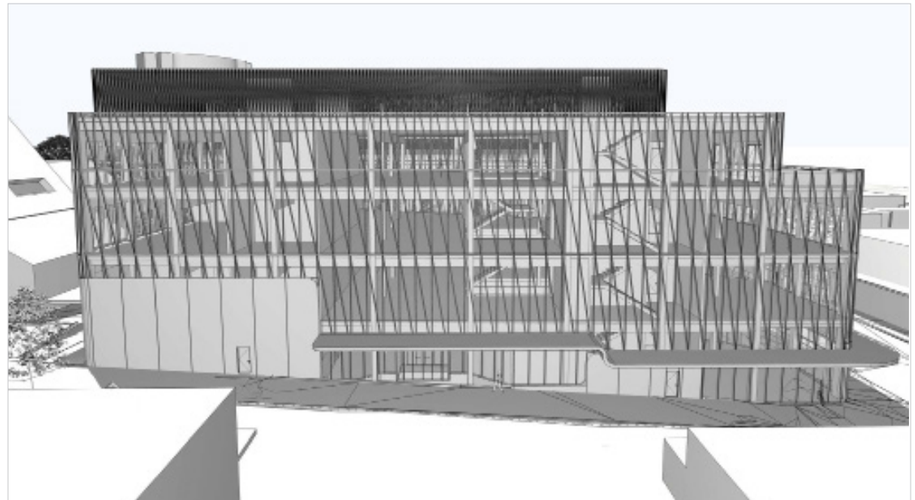
m²	Current design	Brief (v4)	Difference	Notes
Back of house	1,015	1,000	15	*200m² of archive and briefing areas, 300m² workrooms & storage, 100m² transactions, 300m² collection management and admin, 100m² staff amenity*
Commercial	132	75	57	*Café & Kiosk*
Public amenity	194	200	(6)	*Toilets & Parents Rooms*
Public space (excl. Terrace)	3,033	2,975	58	*400m² research, 50m² reading room and briefing areas, 400m² Children's, 100m² YA, 850m² Adults/Lending, 550m² Flexible Community Spaces, 200m² Technology*
Reduction in area to reflect future consolidation of uses	(325)		(325)	
Area comparative to brief	**4,049**	**4,250**	**(201)**	

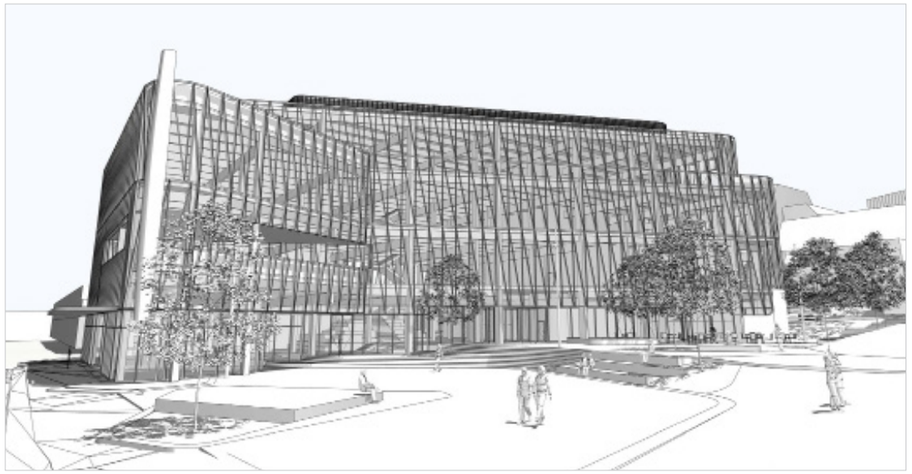
Gross floor area	**5,924**

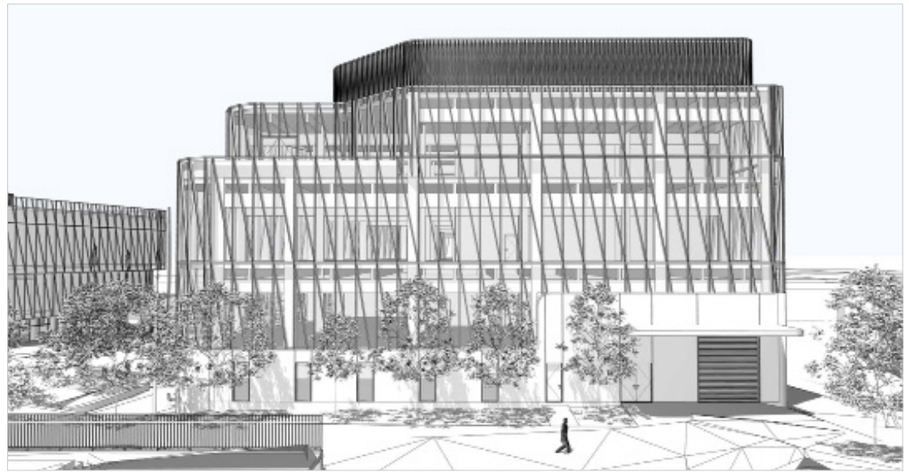
Note: GFA includes roof top plant

Te Ao Marama - Indicative 3D View

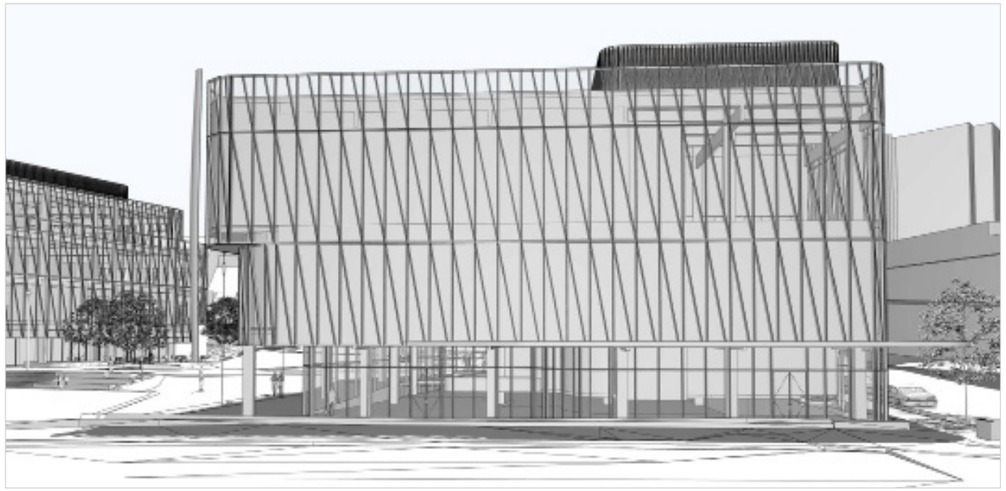


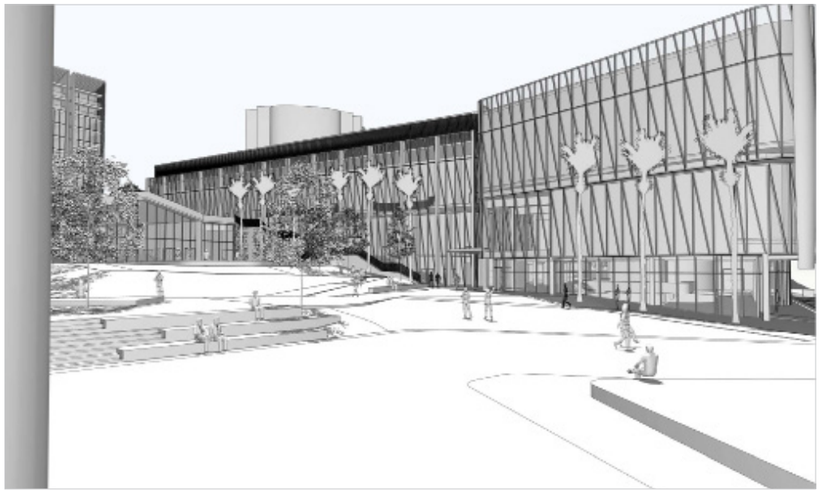


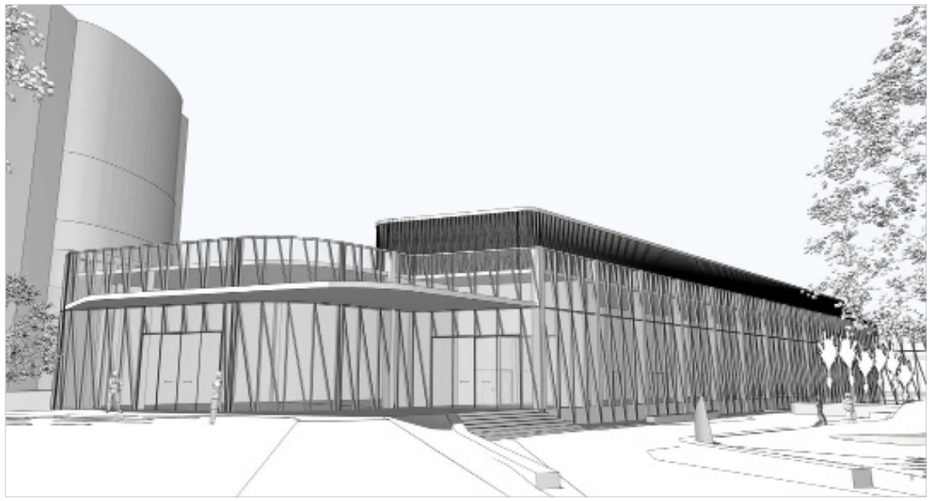


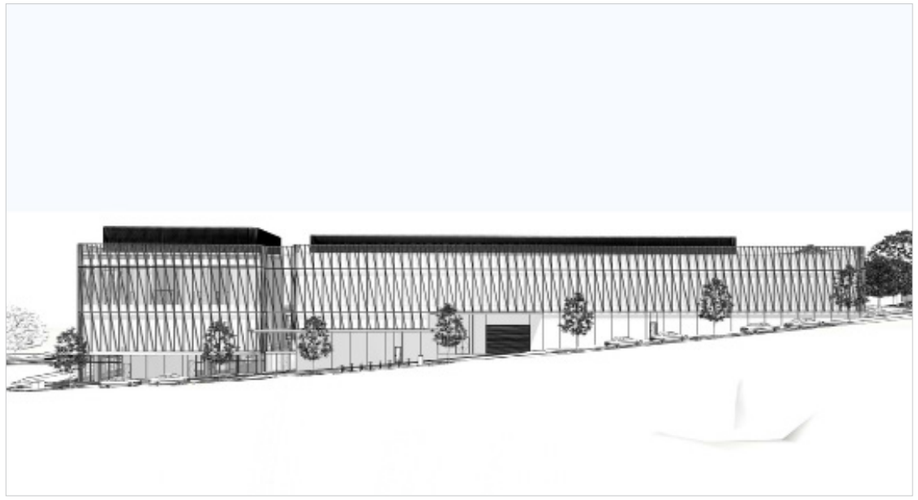


Civic Whare, Exhibition and Museum - Indicative 3D View









ARCHITECTURE PROGRESSION

FAÇADE OPTIONS

Four façade options have been considered for the Library and Community Hub, Exhibition and Museum buildings.

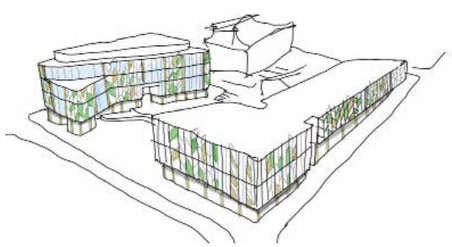
Note that the proposed façade treatments reference the interior precinct facing edge of each building, the back edges may have a combination or more simple façade treatment.

The preferred option will be selected during Preliminary Design, considering cost, appearance, and performance of each.

OPTION A - GLAZED UNITISED FAÇADE

Fully glazed unitised curtain wall system with back panel narrative pattern and Louvre sunscreen. An example of this façade is being used on the Takina Wellington Convention and Exhibition Centre under construction.

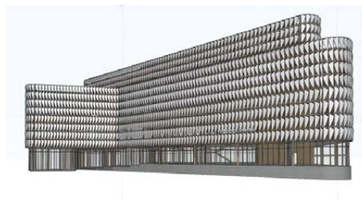
Coloured and patterned panels combined with areas of clear glazing have been explored. Images exploring the Rau Kumera pattern and a clear façade with simple vertical divisions between panels are shown below.



OPTION B UNITISED FAÇADE WITH PANEL

Unitised curtain wall system with integrated panel or fin to exterior façade.

Projecting and flat aluminium fins have been explored, along with different curved and angled shapes. Different repetitions and scales have been tested. The preference would be to proceed with a panel that does not adhere purely to a floor-to-floor module.



OPTION C - SCREEN FINE

Fine screen varied in size, colour or spacing around façade to form openings, sun shading and narrative.

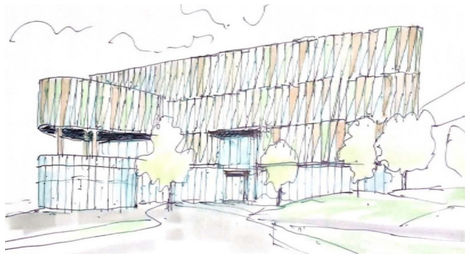
Test renders of a fine vertical screen are shown. The screen is tightly spaced in areas without glazing and more loosely spaced in areas with higher glazing requirements. It can be configured ot different depths.

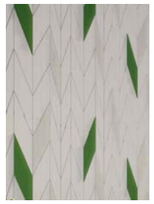
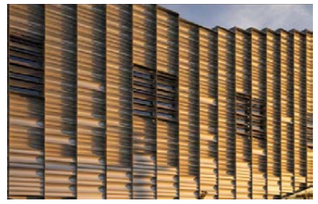



OPTION D - LARGE RAINSCREEN / PANEL

Rainscreen or cladding system with back panel, narrative pattern and louvre sun screen.

Sketches are shown of the building clad in large rainscreen panels. The screen can be made up on matte, glazed and textured panels.



ARCHITECTURE PROGRESSION

FAÇADE CONSIDERATIONS

Advantages and disadvantages of each façade option are shown below.

Base costings presented assume curtain wall façade solar shade feature screens to c.30% of upper floors. The cost premium for a fuller certain wall and c.75% solar shade screens / feature second faced layers across each building is presented as an enhancement option.

	Option A	Option B	Option C	Option D	Option E
Description	Glazed Unitised Façade Fully glazed unitised curtain wall system with backpanel, narrative pattern and louvre sunscreen. Note: *Fully glazed is proposed to exhibition south façade.*	Unitised Façade with Panel Unitised curtain wall system with integrated panel or fin to exterior face.	Screen Fine Fine screen varied in size, colour or spacing around façade to form openings, sunshading & narrative.	Large Rainscreen / Panel Cladding Rainscreen or cladding system with narrative panel or colour variation. Note: *Most likely for enclosed spaces and north façade of exhibition.*	Mixed Proposal likely to proceed with mix of above façade options in response to functional, environmental and aesthetic requirements.
Pro	Variation through colour and screening. Opportunities for narrative at range of scales and intensities with co-design input. Substantial glazing areas for views. Façade differs to respond to environmental factors but has unified look. Commercial system. Design, manufacture and installation by 3rd party and producer statements.	Opportunities for strong narrative panels with co-design input. Opportunities for visually distinct shapes and façade patterns when viewed from distance. Building form may be simplified and secondary to expressed pattern and rhythm of façade. Opportunities for less glazing. Commercial system. Design, manufacture and installation by 3rd party and producer statements.	Expresses the buildings as strong civic forms. Potential to simplify building shape by using screen to create curves and corners. Opportunities to create patterns and narrative through size, colour and texture of “off the shelf” components. Variation across facades to respond to environment and functional requirements. Pattern, texture and warmth to the façade offered through material choice.	Opportunity to express buildings as strong civic forms. Wider range of material options for panels. Opportunities for colour and texture to vary across panels and buildings and tell narrative along streetscape. Windows applied where required.	Adaptive and responsive to functional, environmental, aesthetic and cost drivers
Con	Potential for commercial office appearance. Narrative may interrupt views. May appear less civic if all glazed - however refer Tākina Wellington for this approach used on civic building. Importance of expression or resolution of curved corners. Additional solar shading devices offset from and with structural supports from façade. H1 (energy efficiency) compliance to be confirmed - additional screening or back panels may be required with Building Code changes. Glazing is not required to all areas, especially to CWEM so unlikely to be best option for all facades.	Potential for commercial office appearance. H1 (energy efficiency) compliance to be confirmed for additional back panel and shading requirements.	Additional screen support and space from façade requires engineering input. High cleaning and maintenance requirements. Potentially less cost effective than other approaches. When used in a mixed approach may appear less cohesive.	Design, detailing and engineering by consultant team and façade engineer rather than 3rd party. Producer statements to be confirmed.	Requires integrated design response across buildings to ensure cohesive selections.


Indicative render

5. ENGINEERING INVESTIGATIONS

STRUCTURAL DESIGN

MASS TIMBER VS CONCRETE STRUCTURE

Both a hybrid timber / steel structure and more traditional concrete / steel structure have been assessed across the Library and Community Hub and Museum buildings, with the grid and floor to floor design proposed suitable for both materials. This has allowed us to provide cost estimates for each option.

The Exhibition / Civic Whare buildings are less suitable for mass timber construction. Options have been assessed as both a concrete / steel structure with a timber roof, and with a traditional roof.

Timber structures are significantly lighter than concrete and can reduce the whole of life carbon emissions impact. The use of mass timber in construction is a relatively new practice, particularly for structures of this scale and complexity. This is viewed as the best outcome for the building from a sustainability and design view, however must be balanced against cost, procurement challenges and limitations of timber structures.

A timber structure has been priced at a modest premium to a traditional option. Recent rapid cost escalation in steel has narrowed the cost premium between these options. Further discussion is required to determine Council's sustainability aspirations, understand any limitations of timber structures and make a decision on the approach.

The concrete / steel design is a more traditional structure that can allow for statement timber design features to be incorporated (e.g. staircases). If this was the preferred approach, a review of structural design would be undertaken to optimise construction, providing potential value engineering opportunities in the Preliminary Design phase.

A timber roof is proposed for the Civic Whare under both scenarios considered.

BUILDING PERFORMANCE

The Library and Community Hub and Museum buildings have similar structures. Eccentric Braced Frames are proposed to brace the building for seismic and wind events. Reinforced concrete walls and concentric steel bracing frames are proposed for the Exhibition / Civic Whare. Both systems are commonly used for this purpose both in New Zealand and internationally.

Lightweight and long-span floor structures are susceptible to perception of vibration induced by people walking on them. The floor of each building has been designed to minimise these effects.

IMPORTANCE LEVEL

The importance level (IL) rating of each building has structural design implications. IL2 is recommended for the Library and Community Hub, and IL3 for the Exhibition and Museum. These ratings can be investigated further during Preliminary Design.

IL2 is the typical level given to large scale office buildings and standard library buildings. By example, Tauranga's future office building at 90 Devonport Road will have a IL2 rating.

Triggers to move from an IL2 rating to an IL3 rating include congregations of more than 300 people in one area, tertiary facilities with a capacity of over 500 people, or civil defence uses. There is no limit on overall people capacity of an IL2 rated building, the limit relates to congregation in single areas. Recent library buildings with IL3 ratings incorporate large gathering / theatre spaces or civil defence uses.

Given the characteristics of the Exhibition, Museum, Baycourt and future conference centre buildings, it is likely large congregations will occur across these buildings rather than the Library and Community Hub.

GROUND IMPROVEMENT

Foundation designs are based on initial investigations by CMW Geoscience.

The site is at risk of liquefaction given ground conditions and the slope of the site. The sites at higher risk located on soft marine deposits and fill include the eastern side of the Library and Community Hub, the Museum, and potentially some of the Civic Whare. 12 metre long piles at a 1.5m triangular grid are recommended below these building footprints, extending 6 metres beyond in all directions.

The western side of the Library and Community Hub and the Civic Whare are on terrace deposits that are generally not liquefiable under IL2 calculations. Some ground improvement, however no piling, is likely required under isolated ground bearing elements for these buildings.

The ground improvement assumptions used are seen as worst case in terms of extent and depth. Further invasive site investigations will be undertaken during Preliminary Design.

BUILDING SERVICES

The focus of the building services review has been on resolving key service requirements and plant and riser sizes / locations.

A specialised temperature controlled archive area has been introduced into the Library and Community Hub following the Masterplan Refresh. Consultation on the archive requirements has been a key focus of the building service investigations.

Co-location of the Civic Whare, Exhibition and Museum allows a number of services to be shared between these buildings, with the main plant room on the Exhibition roof.

ELECTRICAL

Two transformer and switchgear rooms are required across Site A. The new transformer rooms are proposed to be located on the Ground floor of the Library and Community Hub and on Level 1 of the Exhibition building, each with adjacent main switchboard MSB rooms.

A single transformer will be located within Site C that will provide power to the wharf building and bathrooms.

A generator (30-60kVa) is proposed for the Library and Community Hub to serve the ~200m2 archive space and plant. A generator is not currently proposed for the Museum and Exhibition buildings. A connection point will look to be provided for a temporary containerised generator if required.

There is an option for solar PV panels to be located

on roofs across the site. This would assist with offsetting the carbon consumed through the grid, support Green Star certification and provide a visual statement of the building's green credentials.

Energy efficient LED lighting is proposed across the buildings, with specialist lighting within foyer areas and the Exhibition space. External power and lighting will be provided throughout Site A to allow for external events.

COMMUNICATIONS

Communication demarcation rooms are proposed to be located on the Ground Floor of the Library and Community Hub and Level 1 of the Exhibition building to house any telecoms equipment and receive the incoming fibre from local network providers.

The civil review has identified ultra-fast fibre is available across the site from Wharf St.

One communications riser is proposed for the Library and Community Hub, one for the Exhibition space and one in the Museum.

A communications cupboard is proposed to be located in the wharf building to house telecoms equipment and receive incoming fibre.

AIR CONDITIONING

Air cooled chillers / heat pumps will be located on the roofs of the Library and Community Hub and Exhibition buildings to service the Site A buildings.

Variable Air Volume Air Handling Units (AHUs) will service the buildings, with three to four AHUs located on the Library and Community Hub roof, a minimum of four AHUs on the Exhibition roof and two AHUs on the Museum roof. This configuration allows the Exhibition and Museum buildings to have the ability to provide tight temperature and humidity control.

A 50% improvement on the outside air rates compared to code will be provided.

A natural / assisted ventilation strategy is proposed for the Atea a Tu within the Civic Whare, with motorised roof louvres enabling the release of heat.

The Library and Community Hub will house an archive space that consists of two temperature and relative humidity controlled areas that run 24/7. These must be controlled at 2 degrees (coolroom) and 15-16 degrees (archival space) respectively. These spaces will have their own standalone air-conditioning systems. The coolroom will include a close controlled refrigeration system with humidification control. The archival space will include close controlled process cooling air conditioning systems with humidification control. There will be no water pipes within this space.

A BMS will be provided within the building to control the mechanical systems and to monitor all building services systems (including water and air quality).

PLUMBING AND DRAINAGE

There are existing 100mm mains within Wharf Street and Hamilton Street that can provide potable water to the Site A buildings. The water supply of each will need boosting due to the height of the buildings.

Hot water plant will be located within the rooftop plant of the Library and Community Hub and Exhibition buildings.

A portable water supply has been identified near the wharf that can service the café and wharf bathrooms.

The Civic review has identified that stormwater runoff can connect into the existing stormwater networks on Wharf Street and Hamilton Street. Sanitary drainage can connect into manholes on Wharf Street and Hamilton Street. It is proposed the Museum has a separate stormwater and sanitary connection to the Exhibition to allow for potential staging of development.

A rainwater harvesting system is to be considered in the Library and Community Hub and Exhibition buildings to meet Green Star requirements. This will provide non-potable water to the toilet facilities within the buildings and irrigation to the wider precinct. Based on the Civil review there is no requirement for stormwater attenuation and detention tanks.

Library and Community Hub - Ground Floor Archive Requirements

VERTICAL TRANSPORTATION

Modelling has been done using 1,000kg lifts, the size typically used in New Zealand libraries, however further investigation is required to determine if this is appropriate. Two 1,000kg lifts are recommended for the Library and Community Hub. A goods lift is also recommended for allowing Library staff to move materials across floors.

Two 1,275kg lifts and a goods lift are recommended across the Museum and Exhibition buildings. The Te Papa Touring team has recommended an Exhibition space goods lift with a footprint of 5.5m by 3.0m. As the Exhibition space has ground floor access for large exhibition items, it may be possible to reduce the goods lift size during the briefing process.

ENGINEERING INVESTIGATIONS

FIRE ENGINEERING

A Fire Engineering feasibility design has been carried out across the Library and Community Hub and Exhibition/Museum/Civic Whare buildings.

Because there are many open voids and unenclosed stairs spanning between floor levels, both buildings will each require a one-out-all-out simultaneous fire alarm evacuation (the two buildings being separate from the other).

Fire separation locations have been coordinated to keep each firecell to less than 1000 people to avoid mechanical smoke extract / make-up and smoke curtains. As the design progresses, space use and fitout partition locations will need to be continually checked to maintain escape route choices.

MUSEUM CLASS SLEEPOVERS

The Museum brief has expressed a desire for occasional overnight sleeping of school groups among the Museum exhibits. There has been no requirement provided for overnight sleeping in the Library and Community Hub.

Additional fire safety compliance measures will apply to accommodate a sleeping use. Level 2 has been identified by the Architect as a preferred location. If there are no voids from the lower level, the level 2 Museum space can become a single firecell. Sleeping groups may be possible in this area with a certain occupant load and museum fuel load exhibit limitations. Preliminary modelling indicates capacity for ~60 people to sleep amongst the exhibitions in this area.

Providing an area appropriate for sleeping has constraints, including the inability to house large combustible exhibits in the space and the inability to have full height subdividing partitions in the space.

BUILDING SERVICES RELEVANT TO FIRE ENGINEERING

The sprinkler system across the buildings has been tentatively classified as a Class C1. Based on the current town main and pressure, sprinkler water tanks should not be required. This will be further validated during future design stages.

It is recommended that any paper storage within the Library and Community Hub is limited to 2.4 metres, the maximum paper height for a standard sprinkler system.

The archive and workroom spaces within the Library and Community Hub require additional fire protection and suppression system considerations. It is expected the rooms will incorporate an inert gas suppression system with interfaced aspirated detection. Additionally, a dry-pipe pre action sprinkler system provides another independent layer of suppression. Pre-action systems normally operate on a double knock basis, either activated by an interfaced fire detection system plus sprinkler head activation, or require at least two sprinkler heads to activate. These types of systems help protect water sensitive areas from false activations.

MATERIALS AND SURFACE FINISHES

This feasibility study has analysed the suitability of mass-timber construction and multiple façade options. The current structural fire resistance is being designed to withstand a 60-minute fire resistance rating on a mass-timber structure.

If extensive timber elements are used in the construction, careful selection of fire stops is required, noting there is generally a lack of fire stops tested on timber substrates. This will be investigated extensively during the Detailed Design phase.

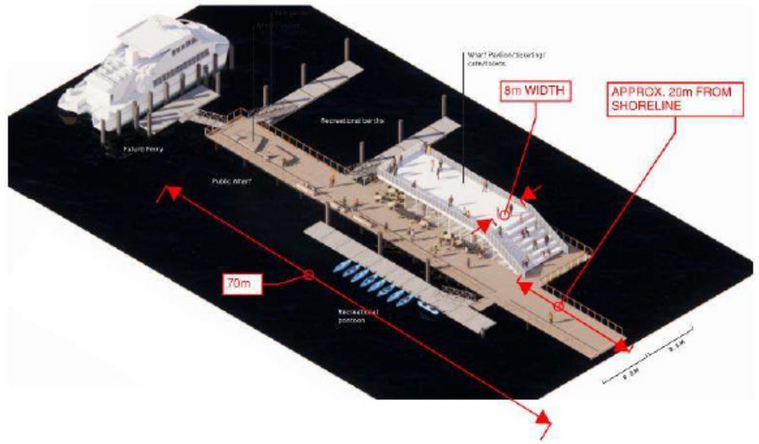
WHARF AND CAFÉ BUILDING

It is understood that for wharf structures the escape routes / dead-end / occupant load restrictions are typically not applied for unenclosed external structures.

The viewing platform design above the café currently has a gross width of 8 metres. If the capacity of this space was greater than 50 people, an additional stair would be required (approx. 10 metres total width). An alternative solution may be possible, to be investigated during Preliminary Design.

Fire engine access within 20 metres of a building entry is typically required. To meet these requirements as much as possible, footpath loading should support FENZ loadings up to the start of the wharf. No hydrants are required on the wharf to meet the building code, however stainless steel fire hose reels spaced among the accessways could be considered .

Wharf Fire Safety Considerations



SUSTAINABILITY

LOW CARBON TARGET

Minimising the embedded carbon footprint of the development is a strong theme in the refreshed masterplan and in the Tauranga City Council sustainability stocktake.

Aspirational certification options such as Zero Energy, Zero Carbon or the Living Futures Core certifications continue to be considered. These offer an opportunity to gain recognition with international best practice approaches to carbon but do come at a higher cost and more onerous certification requirements.

In addition to carbon reduction, there are a number of other key aspirations including ecology and water systems, creating a vibrant CBD and enhancing cultural connections. These aspirations align well with a more holistic assessment tool such as a Green Star rating.

GREEN STAR RATING

The initial brief for the project is a target of 5 Green Star certification or “New Zealand Excellence” for the Library and Community Hub, Museum, and Exhibition Facility and an uplift to 6 Green Star certification for the Civic Whare which represents “World Leading” sustainable design.

Analysis during this feasibility stage has found the Civic Whare may not meet the Spatial Differentiation criterion, a requirement the project is clearly distinct from surrounding buildings. This may require the Civic Whare, Exhibition and Museum buildings to all target the same Green Star rating. The intention is for the Civic Whare to incorporate extensive timber elements regardless of the rating sought.

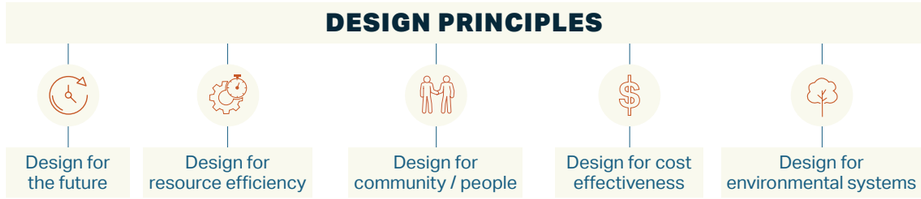
As part of the feasibility study we have investigated the design and cost implications for taking all buildings to either a 5 or 6 Green Star standard.

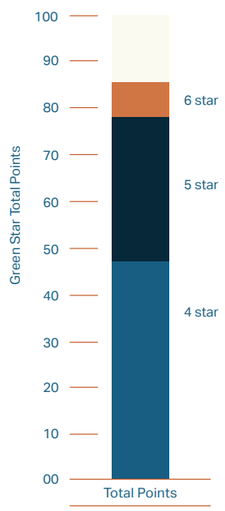
An updated version of the Green Star rating tool, version 1.1, represents a significant step change in compliance requirements. All projects registered after August 2022 are required to use this new version. This may result in the buidlings being registered prior to August to sit within the exisitng requirements.

There are new mandatory requirements relating to embodied carbon and increased minimum performance requirements for energy efficiency. The use of timber or hybrid timber structures and incorporating a high level of energy efficiency into the system design is therefore going to be a fundamental part of Green Star certification at all star rating levels, and in particular 6 Star developments. The cost premium for all buildings to reach 6 Green Star, with mass timber construction, is estimated at $10 million.

An analysis of the proposed Green Star pathway for the Site A buildings has been undertaken, with the confidence of reaching 5 and 6 Green Star provided. The most challenging credits identified at this stage relate to energy efficiency and delivery of a low carbon timber structure.

Current designSite wide sustainability aspirations and targets will be a key focus of the Preliminary Design works.





Category	Total Points Available	Credit Confidence		
		High	Medium	Low
Management	15	13	+3	-
Indoor environment quality	17	5	+6	+1
Energy	22	9	+5	+2
Transport	10	5	+3	-
Water	10	8	-	-
Minerals	16	1	+7	+4
Land use and ecology	5	2	+1	-
Emissions	5	4	+1	-
Innovation	10	-	+5	-
Total	110	47	+31	+7
Total score		**47**	**78**	**85**

ENGINEERING INVESTIGATIONS

CIVIL ENGINEERING

The Te Manawataki o Te Papa site is challenging as it has a substantial gradient change. The Site falls steeply from Durham Street to Willow Street, with a difference in level between the two streets of between 8 and 11 metres.

EXISTING SERVICE CHALLENGES

An existing 11kV cable has been identified running through Site A with existing transformers. This will need to be redirected prior to the Library and Community Hub development commencing. Discussions have commenced with Powerco regarding the relocation, with an indicated c.18 month relocation timing.

There are several new underground service connections required to the buildings. These will require significant spatial coordination and coordination with the utility providers.

An existing Asbestos Cement water line in Durham Street has been identified as clashing with proposed raingardens. It is likely due to the fragile nature of this pipework that it will need replacing.

CATCHMENTS AND HYDROLOGY

Sea level rise will start to affect the waterfront areas of the project within the next 50 years.

Existing flooding is indicated on some low level areas of the site and The Strand when considering a 1 in 100 year rainfall event. It is likely this flooding results from capacity constraints of existing stormwater systems coupled with tidal influence on The Strand. Overland flowpaths, the route runoff will take to discharge in the event of pipe network blockages, exist in Wharf Street, Hamilton Street, Willow Street and The Strand.

The proximity of Masonic Park and the Waterfront to the coastal marine area will result in future coastal inundation as sea level rises impact the Tauranga harbour. Current research indicates an expected increase in sea levels in the order of 1.05m over the next 100 years in the Tauranga harbour. This will have significant impacts on the existing waterfront properties. To future proof these properties and the wider waterfront area, an increase in overall site level would be required. The waterfront area under consideration can not be considered in isolation, any future rise in levels would need to be assessed in the context of the wider area. These costings assume there is no increase in overall site level.

The proposed buildings on site A are outside the area of inundation, therefore the impacts of sea level rises on Site A are considered minor.

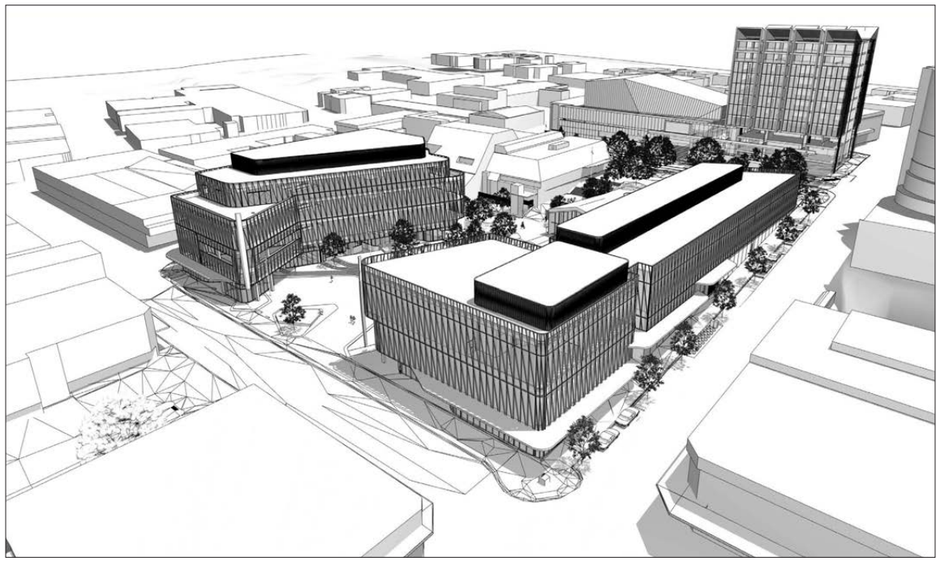
EARTHWORKS

Significant Earthworks are required across Site A to the west of Willow Street to form the proposed building platforms and fill to the external plaza areas. Masonic Park and the Waterfront are generally replicating the existing site levels and earthworks will be limited to the formation of treepits, raingardens and service trenches.

A solid measure cut volume for Site A has been estimated at 5800m3and a solid measure fill volume for Site A of 5500m3has been estimated. These volumes will be further refined during Preliminary Design. Geotechnical investigations are required to ascertain if excavated material is suitable for use as engineered fill.

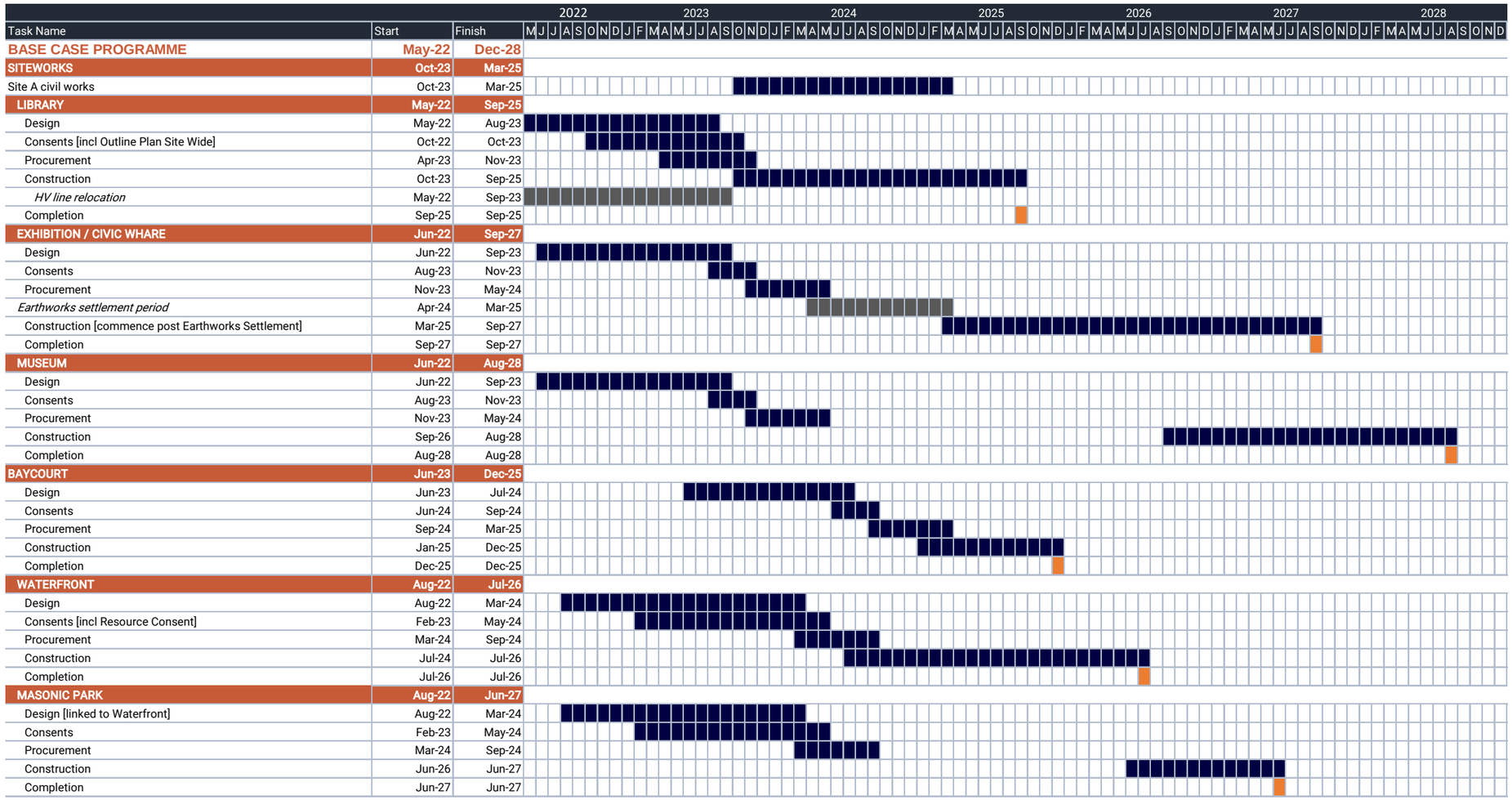
STORMWATER MANAGEMENT

A reticulated stormwater management system will be provided throughout the new civic spaces. Trafficked areas in Durham Street, Willow Street and The Strand will be discharged to raingardens for treatment, with a reduction in total suspended solids of 80% being targeted.



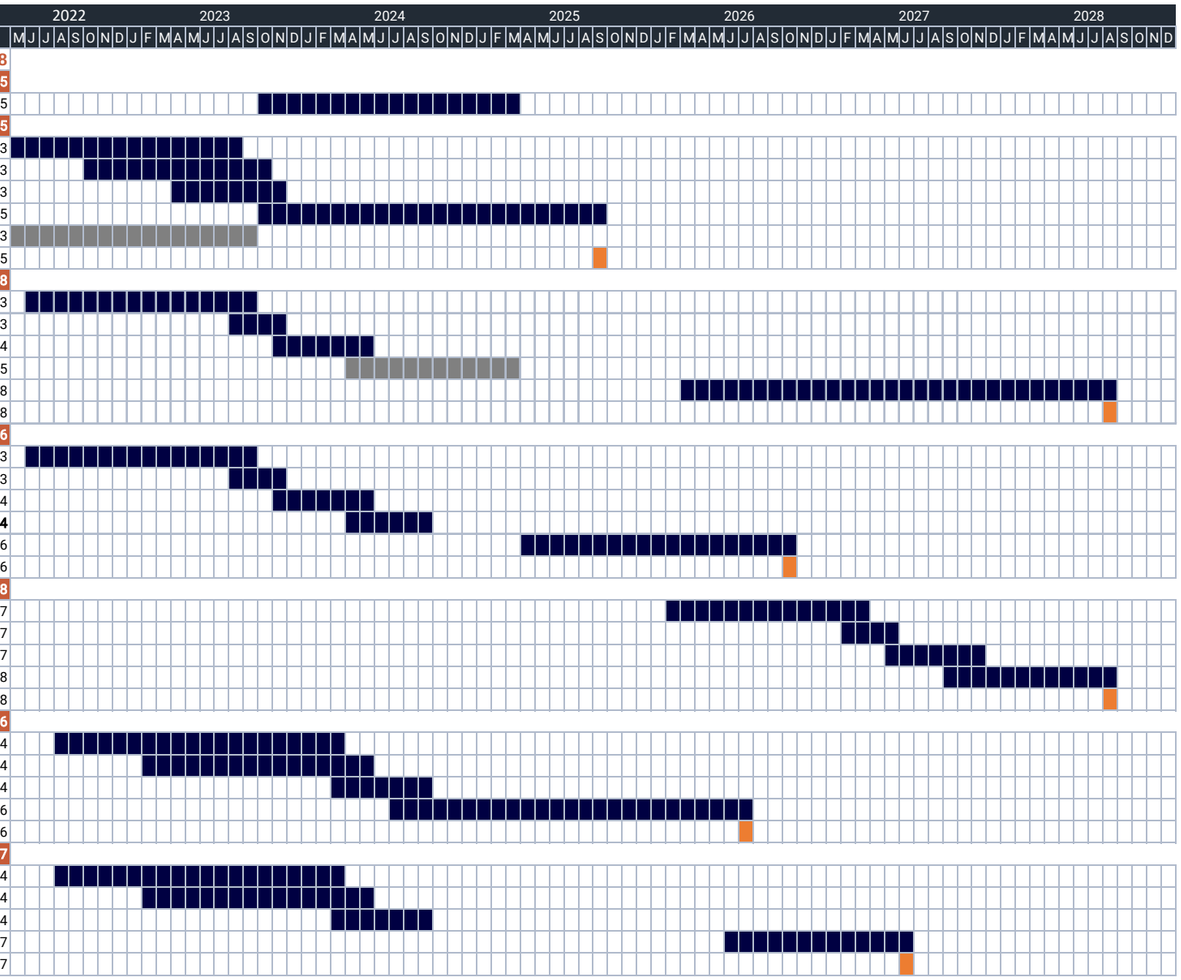
6.
PROGRAMME - BASE CASE

Task Name	Start	Finish
BASE CASE PROGRAMME	**May-22**	**Dec-28**
SITEWORKS	**Oct-23**	**Mar-25**
Site A civil works	Oct-23	Mar-25
LIBRARY	**May-22**	**Sep-25**
Design	May-22	Aug-23
Consents [incl Outline Plan Site Wide]	Oct-22	Oct-23
Procurement	Apr-23	Nov-23
Construction	Oct-23	Sep-25
HV line relocation	May-22	Sep-23
Completion	Sep-25	Sep-25
EXHIBITION / CIVIC WHARE	**Jun-22**	**Sep-27**
Design	Jun-22	Sep-23
Consents	Aug-23	Nov-23
Procurement	Nov-23	May-24
Earthworks settlement period	Apr-24	Mar-25
Construction [commence post Earthworks Settlement]	Mar-25	Sep-27
Completion	Sep-27	Sep-27
MUSEUM	**Jun-22**	**Aug-28**
Design	Jun-22	Sep-23
Consents	Aug-23	Nov-23
Procurement	Nov-23	May-24
Construction	Sep-26	Aug-28
Completion	Aug-28	Aug-28
BAYCOURT	**Jun-23**	**Dec-25**
Design	Jun-23	Jul-24
Consents	Jun-24	Sep-24
Procurement	Sep-24	Mar-25
Construction	Jan-25	Dec-25
Completion	Dec-25	Dec-25
WATERFRONT	**Aug-22**	**Jul-26**
Design	Aug-22	Mar-24
Consents [incl Resource Consent]	Feb-23	May-24
Procurement	Mar-24	Sep-24
Construction	Jul-24	Jul-26
Completion	Jul-26	Jul-26
MASONIC PARK	**Aug-22**	**Jun-27**
Design [linked to Waterfront]	Aug-22	Mar-24
Consents	Feb-23	May-24
Procurement	Mar-24	Sep-24
Construction	Jun-26	Jun-27
Completion	Jun-27	Jun-27



6.
PROGRAMME - ALTERNATIVE

Task Name	Start	Finish
ALTERATIVE PROGRAMME	**May-22**	**Dec-28**
SITEWORKS	**Oct-23**	**Mar-25**
Site A civil works	Oct-23	Mar-25
LIBRARY	**May-22**	**Sep-25**
Design	May-22	Aug-23
Consents [incl Outline Plan Site Wide]	Oct-22	Oct-23
Procurement	Apr-23	Nov-23
Construction	Oct-23	Sep-25
HV line relocation	May-22	Sep-23
Completion	Sep-25	Sep-25
EXHIBITION / CIVIC WHARE	**Jun-22**	**Aug-28**
Design	Jun-22	Sep-23
Consents	Aug-23	Nov-23
Procurement	Nov-23	May-24
Earthworks settlement period	Apr-24	Mar-25
Construction [commence post Earthworks Settlement]	Mar-26	Aug-28
Completion	Aug-28	Aug-28
MUSEUM	**Jun-22**	**Oct-26**
Design	Jun-22	Sep-23
Consents	Aug-23	Nov-23
Procurement	Nov-23	May-24
Ground improvement / piling / sub-structure	**Apr-24**	**Sep-24**
Construction	Apr-25	Oct-26
Completion	Oct-26	Oct-26
BAYCOURT	**Feb-26**	**Aug-28**
Design	Feb-26	Mar-27
Consents	Feb-27	May-27
Procurement	May-27	Nov-27
Construction	Sep-27	Aug-28
Completion	Aug-28	Aug-28
WATERFRONT	**Aug-22**	**Jul-26**
Design	Aug-22	Mar-24
Consents [incl Resource Consent]	Feb-23	May-24
Procurement	Mar-24	Sep-24
Construction	Jul-24	Jul-26
Completion	Jul-26	Jul-26
MASONIC PARK	**Aug-22**	**Jun-27**
Design [linked to Waterfront]	Aug-22	Mar-24
Consents	Feb-23	May-24
Procurement	Mar-24	Sep-24
Construction	Jun-26	Jun-27
Completion	Jun-27	Jun-27



PROGRAMME COMMENTARY

The programmes presented are ambitious, with no contingency factors built in. Key assumptions and critical path elements are detailed below.

BASE CASE VS ALTERNATVE

The base case programme is reflected in the base escalation costs. A second programme is presented showing an alternative staging. In both scenarios the Library and Community Hub is constructed first.

Base Case Programme

There are ambitions for the Civic Whare to be the next building constructed given its significance within the precinct. This is reflected in the base case programme, with the Civic Whare and Exhibition built as one stage. Given the expected earthworks settlement period, there is a lag between Civic Whare / Exhibition procurement and construction commencement.

Alternative Programme

The alternative programme shows the Museum built ahead of the Civic Whare and Exhibition building. As the Museum largely sits outside the settlement zone ground improvement, piling and substructure construction can commence in April 2024. This provides site wide efficiencies, with this work commencing immediately following Library and Community Hub ground improvements.

It is noted that the Museum cannot operate independently of the Exhibition due to servicing requirements. It is anticipated the period from Museum completion to Exhibition completion would be used to complete internal fit out.

To align construction of Baycourt with the period of greatest disruption, the Baycourt refurbishment would be delayed aligning with Civic Whare construction.

There are opportunities to commence construction earlier or accelerate the overall construction period on the Museum and Exhibition / Civic Whare buildings under this alternative approach. The early nature of design and site investigations means there is significant uncertainty around the programme as tabled in this report. Further understanding of site wide requirements and building integration would be required to accelerate construction across the site. This will be a key focus of the Preliminary Design investigations. An acceleration of programme carries additional risk related to the sourcing of sub trades and suppliers to a project of this scale in Tauranga. Willis Bond is aware of a recent large scale project in the region having procurement issues.

PROGRAMME CRITICAL PATH ELEMENTS

Two critical path elements have been identified that have direct programme implications. Further investigation is required during Preliminary Design to assess if there is any flexibility in the timings presented.

High Voltage Cable relocation

A High Voltage (HV) electrical cable has been identified running through the centre of Site A. This must be relocated prior to construction works commencing.

Willis Bond is engaging with PowerCo with respect to the relocation of this cable. Beca civil engineers have assessed the option to bury the existing cable at a greater depth, however this is not feasible and relocation is required. The relocation of the HV line sits on the critical path to commencing the site wide earthworks. The enhanced costing estimate carries an allowance of $750k for contributions to PowerCo for this works.

Earthworks and Settlement Requirement

The earthworks across the site are anticipated to take approximately seven months based off information available at this early stage of the design process. At present, earthworks are scheduled to be undertaken in the earthworks season commencing October 2023. The feasibility to commence earthworks outside this season is being investigated, with the following risks identified:

- If HV line is not resolved may be unable to commence works across a large portion of the site.
- Works would be in winter season and require a winter works permit.
- Delays to the programme possible if poor weather.
- Weight of wet materials may increase costs.
- Increased responsibilities for sediment controls.

Following the works, a settlement period of a further 12 months is assumed until the ground is stabilised. This settlement is required to be achieved prior to commencement of the Exhibition / Civic Whare construction, resulting in a lag between procurement and construction commencement. This is a conservative assumption, with further analysis required to determine the settlement requirements.

The earthworks documentation is scheduled to be available for consent and pricing at the Developed Design stage of the Library and Community Hub building programme (early 2023), which is in advance of the Detailed Design for the Library, Exhibition / Civic Whare and Museum and associated final pricing.

PROCUREMENT

In order to meet Council's aspirations of commencing Library construction within 2023, Willis Bond has assumed a staged consent and approval process within the programme.

In order to commence works for the Library and Community Hub within 2023, an early works package would need to be agreed with the contractor prior to final contract pricing being available. This would be required for enabling works / structure and the site wide earthworks (critical path item). Early works approval allows the contractor to engage key trades and procure materials.

The programme further assumes that LT McGuinness will be engaged as the main contractor under a negotiated tender for the Library and Community Hub. There is no allowance within the current programme for an open tender process for alternative main contractors.

The Exhibition, Civic Whare, Museum, Waterfront and Masonic Park are expected to follow a more traditional procurement approach whereby a final contract price can be provided and agreed prior to works needing to commence.

To accelerate the programme a second main contractor may be required. The programme approach presented provides the flexibility to tender for a second contractor if required.

We note, the pricing for the Waterfront and Masonic Park assumes an open tender process to the market.

STRUCTURE ASSUMPTION

The programme and procurement assumptions assume the Library and Community Hub is a steel and concrete traditional structure. The programme would need to be reviewed if the Council wished to proceed with mass timber construction for the Library and Community Hub.

DESIGN - SITE A

Following approval of the enhanced costing design and pricing, it is proposed the design team commence the site wide Preliminary Design for Site A.

7. LANDSCAPING

Further design works and engineering investigations have been undertaken across the site, allowing landscaping design to progress. An overview of the design across each of these areas is provided in the following pages.

Note: the wharf render presented represents the 'enhanced' costing option. Waterfront playground and toilet area excluded from Enhanced Costing scope

This stage will involve an initial review of the value engineering opportunities identified within the enhanced costing stage, in parallel with further engagement with Tauranga City Council user groups with respect to functional briefing across all Site A buildings.

The project team will recommence engagement with mana whenua during the Preliminary Design phase to elaborate on the work done to date and further define the cultural framework and narrative for the project.

Further, within this stage, the consultant and contractor teams will facilitate both risk and safety in design workshops to clearly define and quantify risks and to establish mitigation measures for ongoing review and assessment. These will be regularly reported on to the Project Control Group.

The outputs of the Preliminary Design stage will be an updated cost estimate and Outline Plan documentation for submission to council following the appropriate Tauranga City Council and Manu Whenua approval processes.

OUTLINE PLAN OF WORKS

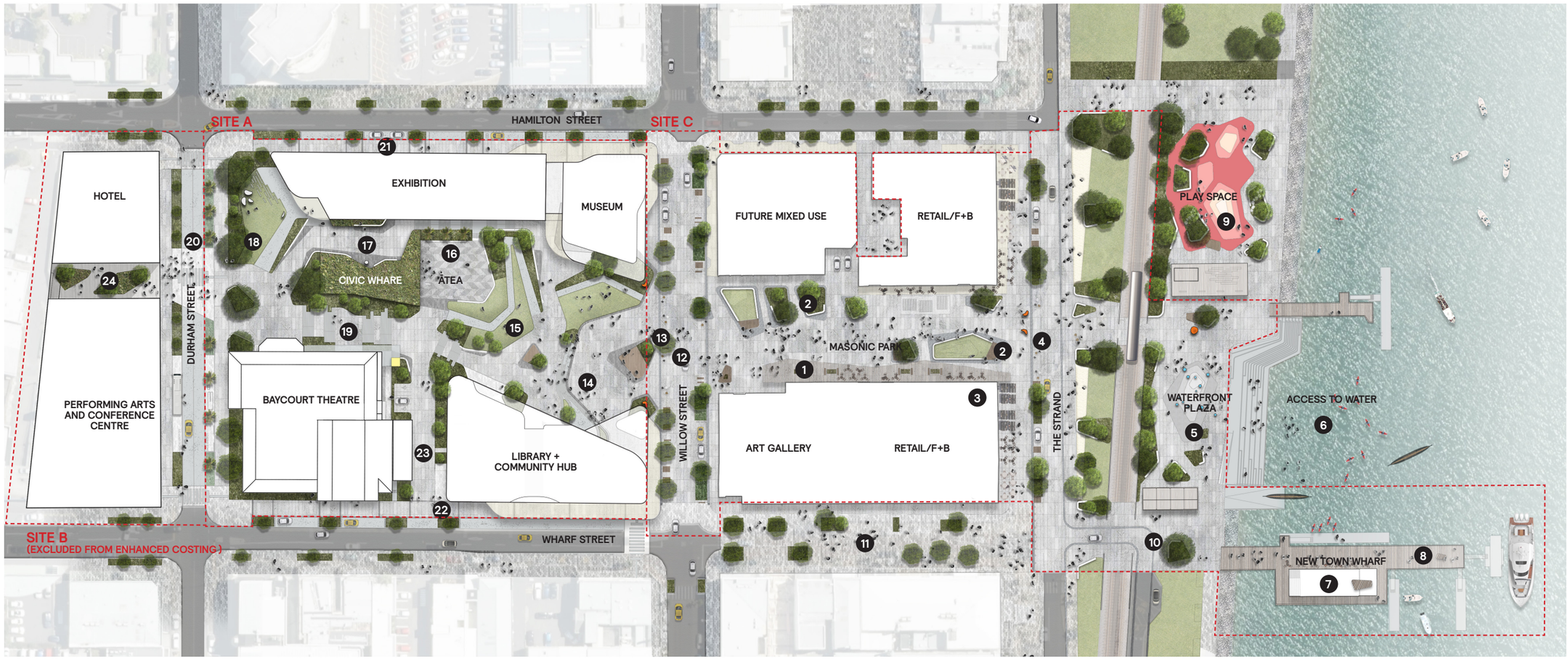
Boffa Miskell has been engaged to provide initial advice around the outline plan process for the development. Given the existing designation of the site for its current and ongoing use, an outline plan submission is required rather than a resource consent. This needs to address the following:

- Building heights
- Pedestrian environment
- Streetscape
- Sunlight admission to public places
- Accessibility
- Infrastructure upgrades (if required)
- Landscaping
- Finished contours – effects on adjacent ground levels
- Noise – acoustic comment on operational noise
- Contamination

The outline plan submission is expected during the Preliminary Design process in late 2022.

LANDSCAPING PLAN

SITE WIDE LANDSCAPING



Map key

1. CIVIC SQUARE ‘URBAN’ ZONE a flexible and adaptable urban surface supporting informal and programmed civic events.
2. CIVIC SQUARE ‘SOFT’ ZONE a lawn/ garden zone providing flexible seating and recreational opportunities.
3. CIVIC SQUARE EDGES open the edges of the civic square to provide activation, occupation and observation.
4. THE STRAND transform The Strand into a waterfront promenade with a flexible, shared surface street that supports events and celebrations. Remove clutter and provide new lighting to transform vertical identity
5. WATERFRONT PLAZA remove parking and improve connections between Masonic Park and Access to Water Phase 1 promenade and tidal stairs. New Whare Waka building and launch ramp. New flexible waterfront plaza/eventspace.
6. TIDAL STAIRS existing water’s edge ‘blue room’ which enables access to water and connectivity to the harbour.
7. WHARF PAVILION activate the Town Wharf with commercial and/or community activity accommodated within a high quality architectural form.
8. TOWN WHARF re-instate the town wharf at the end of Wharf Street as landmark and destination. Public accessand viewing to wharf end.
9. HAIRY MACLARY existing play elements relocated to the new play space.
10. WHARF STREET EXTENSION extend shared zone to meet Town Wharf and re-configure access road to improve pedestrian connectivity
11. WHARF STREET SHARED ZONE existing Wharf Street pedestrian zone and food and beverage destination
12. WILLOW STREET SHARED ZONE transform Willow Street into a shared zone which connects the Civic Campus and Masonic Park. Able to be closed for civic events/celebrations.
13. CIVIC PLAZA ENTRY entry to main plaza with landscape elements highlighting key desire lines and viewshafts,seamless surface finishes with Willow Street to extend pedestrian priority.
14. CIVIC AMPHITHEATRE integrated steps and bleachers which blend into the buildings help to blur the boundaries between building and landscape and frame key views to the stage and moana beyond.
15. SLOPED GREEN soft lawn and integrated planting providing a green platform to the Civic Whare and Ātea, accessible ramp weaves up the slope to provide access through the site.
16. ĀTEA flexible gathering area that can be used for pōwhiri or small events.
17. CIVIC WHARE TERRACE green roof and terrace providing passive dwelling space and lookout to the moana.
18. SCULPTURE GARDEN flexible green space as an outdoor extension of the exhibition.
19. CIVIC STAIR stairs and platforms weave through the site providing a key thoroughfare across the site which also allows for dwelling on the edges and interaction with surrounding landscape and buildings.
20. DURHAM STREET SLOW ZONE transform Durham Street into a slow zone that connects the Hotel and PAC with the wider site.
21. HAMILTON STREET upgrade Hamilton Street paving to tie into the civic precinct and provide access to the Exhibition and Museum buildings.
22. WHARF STREET upgrade Wharf Street paving to tie into the civic precinct and provide access to the Library and Laneway.
23. LANEWAY pedestrianised lane providing alternate accessible route to the CIvic Whare and maintenance access to adjacent buildings.
24. 24. ROOFTOP TERRACE / LOOKOUT elevated terrace beetween Hotel and PAC framing key views to the moana and wider landscape beyond.

LANDSCAPING PLAN

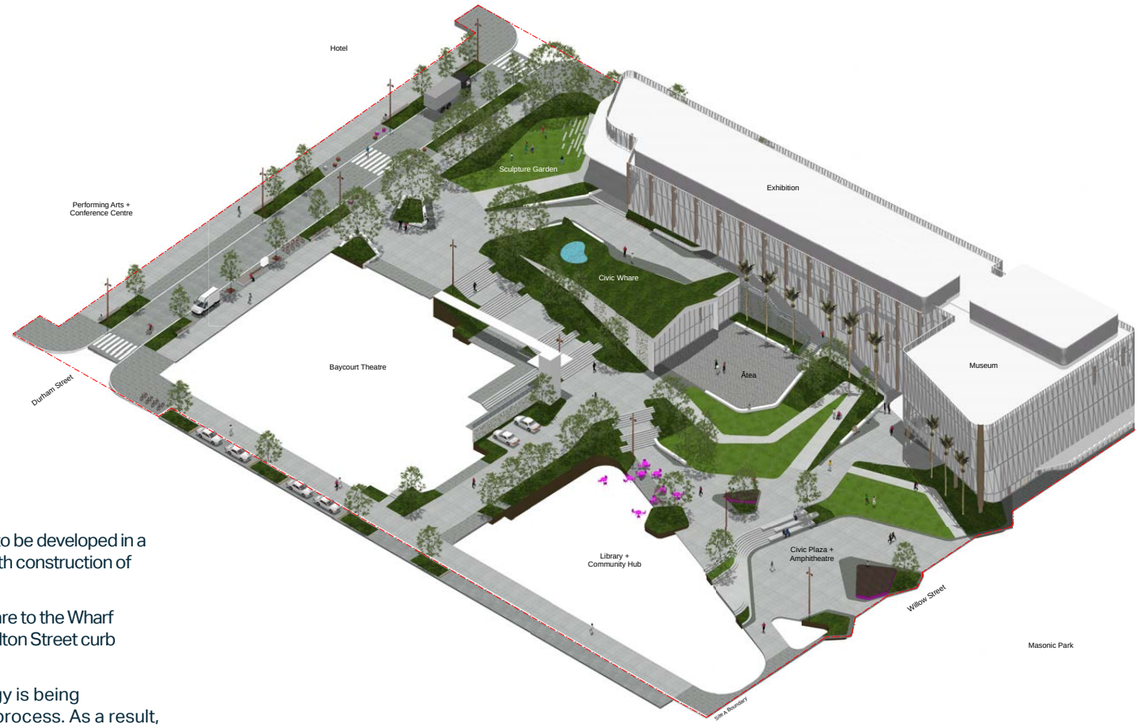
SITE A LANDSCAPING

The extensive slope of Site A from Durham Street to Willow Street presents challenges to the landscaping design. This gradient has been addressed through a series of terraces up the site. Large stairways are a feature to the south of the site with an accessible walkway integrated into the landscape.

Key updates from the December 2021 masterplan design include:

- Reduction in Sculpture Garden area to accommodate longer Exhibition building.
- Rationalisation of ramp access and routes
- Revision of Willow Street plaza central area to provide more open civic space.
- Increase in bleacher and step seating / amphitheatre opportunities including to lower Site A.
- General increase in civic function spaces within landscape design (less path orientated).
- Relocation of café seating in library.
- Transforming the 'through site link' pathway to provide small gathering spaces.
- Improved definition of Ātea-a-Tū outdoor space and repositioning of accessible pathways to enhance procession pathway to Civic Whare.
- Baycourt accessible lift located further North for improved visibility.
- Rationalisation and increase in accessible parks to service lane.
- Revised Durham Street design to be in keeping with the updated section of Durham Street

Site A Civic Plaza



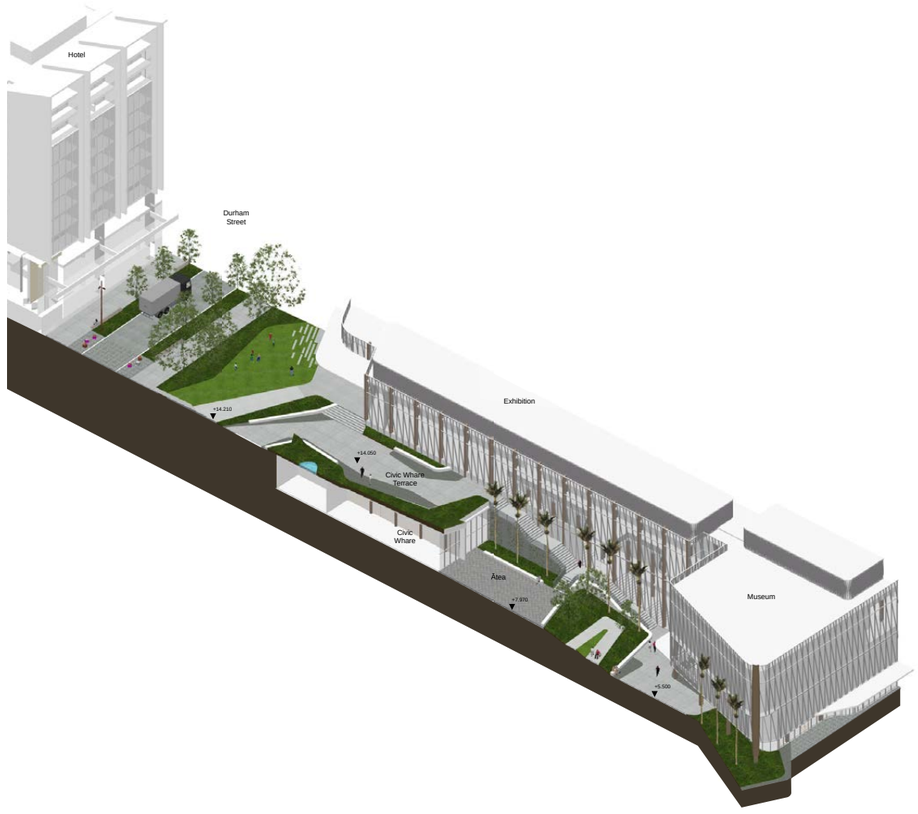
Site A landscaping is proposed to be developed in a staggered approach, aligning with construction of each building.

The boundaries for the costing are to the Wharf Street, Durham Street and Hamilton Street curb edges.

The Te Papa transport strategy is being undertaken in parallel to this process. As a result, we do not have clear guidance on the overall site transport strategy. Budget allowances have been made for bus stops, coaches, taxi and other drop off zones. These may move and adjust as the strategy is reviewed.

Cross Section - Library and Community Hub

Cross Section - Civic Whare, Exhibition and Museum



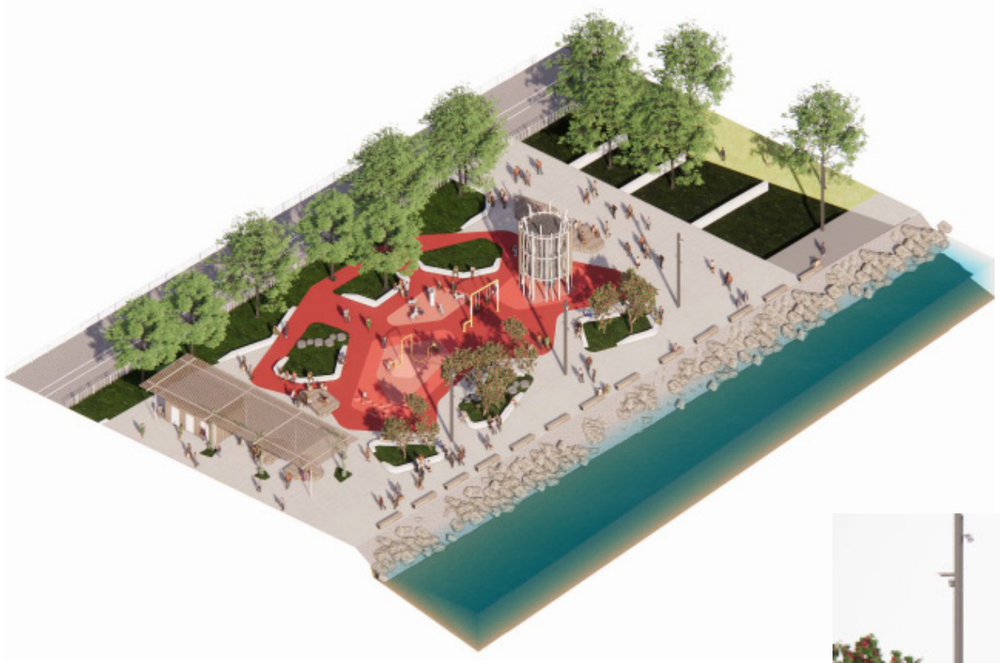
LANDSCAPING PLAN

WATERFRONT PLAZA

A new waters edge social and gathering space is a focal point at the heart of the waterfront. It has been designed as an active space combining play and recreational activities.

Key features include:

- Removal of existing play features and relocation of existing Hairy Maclary sculptures.
- New interactive waterplay feature that can be turned off for events.
- Completion of existing tidal stairs through to south side of Wharf Street extension.
- Green/planted buffer to railway.
- Park pavilion shade structure with integrated toilets.
- Removal of existing carpark.
- New pedestrian link and rail crossing aligned with Hamilton Street.
- Low impact design (biofiltration gardens) with nature play elements.



Indicative renders of the playground space and associated public toilets are shown below. Note this area has been excluded from the costings presented as it sits within the Council's distinct Waterfront Playground Budget.

LANDSCAPING PLAN

WHARF AND WAKA RAMP

A destination wharf for recreation and water based transport/mobility has been proposed. This supports a city centre ferry connection and a place for marine based economy and activities. Re-establishing a Wharf on Wharf Street re-connects the city with its maritime history.

Prior studies into a Wharf in this area have been limited and lacked engineering support. In this workstream civil, coastal and maritime, services and structural engineering investigations have been undertaken to assess wharf feasibility.

Work completed to date supports the viability of a wharf in this location. However further investigation is required to confirm the specifications and the exact location on the waterfront.

As an overview, the Wharf is anticipated to include a concrete wharf structure with timber decking and a single building constructed on the deck. The building will allow for ticketing and a café with a rooftop viewing area.

Vessels will moor onto floating pontoons, to allow vessel access at all tidal states. Pedestrian access to the pontoons will be provided by gangways to connect the wharf and pontoon structures.

A whare waka is provided to celebrate, house and launch waka. A timber, steel and glass structure provides for public viewing of the waka. The design and location of the whare waka will be developed in consulation with mana whenua.

The wharf will be designed in accordance with AS4997: Guidelines for the design of maritime structures. The design life of the wharf is expected to be between 25 and 50 years dependant on the materials selected for its construction.

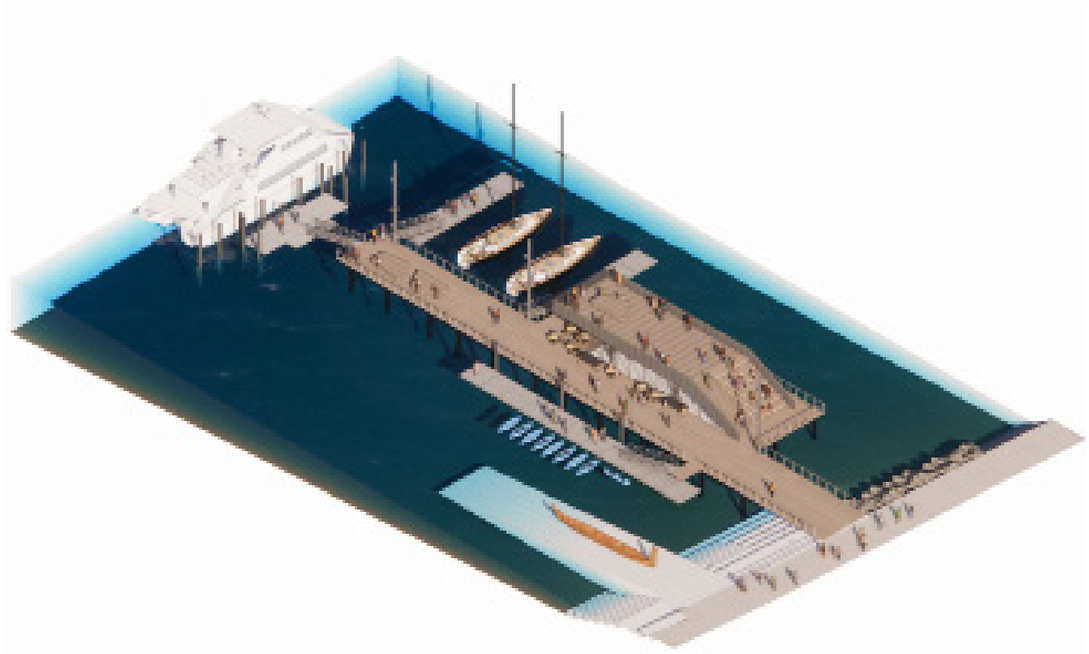
The deck level of the proposed wharf will need to consider future sea level rise and any likely wave action. Based on analysis undertaken, a minimum deck level of 3.55mCD is specified. However, this level may need to be reduced to reconcile with the existing waterfront which sits significantly lower. Further wave and tidal modelling by a coastal engineer is recommended during Preliminary Design to confirm impacts of wave loading and tide on the structure.

The investigations undertaken support a wharf in this location. The ultimate location of the wharf and scope is under consideration by Council and subject to a business case. As such a more simple wharf structure, as proposed in the Tauranga Civic Masterplan (Refreshed 2021) Report, has been costed with the increase in cost to reach this design shown as a separate cost item.

Note indicative renders presented of the wharf below represent the 'enhanced' wharf option, rather than the wharf included inthe base costings.

'Base cost' indicative wharf render

'Enanced' indicative wharf render



LANDSCAPING PLAN

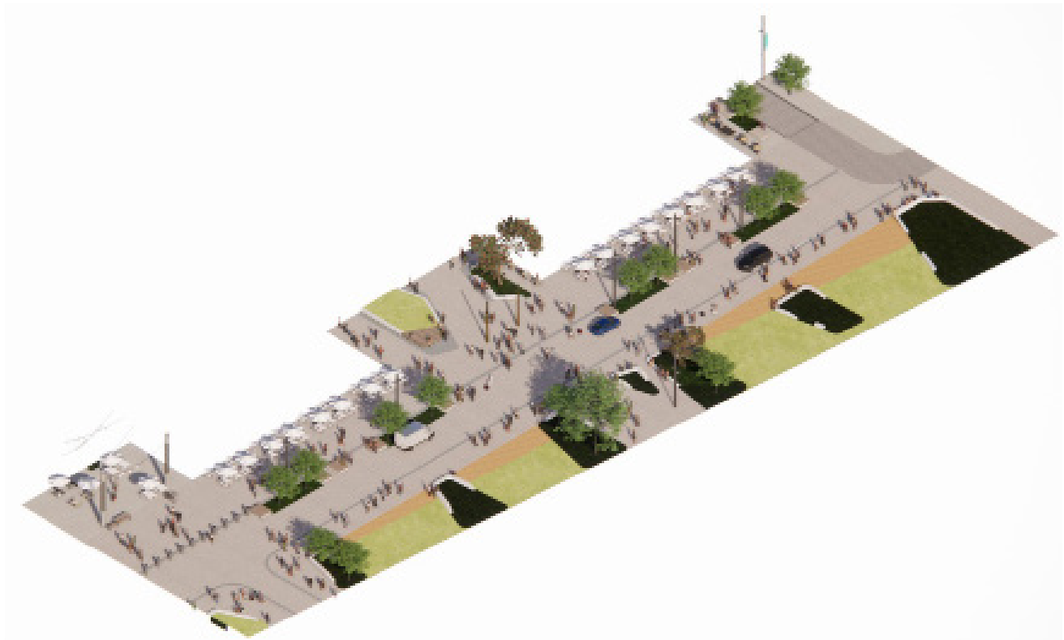
WILLOW STREET

Willow Street will become a pedestrian priority shared space. The slow speed street supports the east – west connection between the Civic Heart and Masonic Park and pedestrian flows. Features include:

- Wide frontage to Library and Community Hub and Museum buildings.
- Single surface, flush shared space environment.
- Low speed zone – 10km/ph.
- Intended removal of existing parking and bus infrastructure.
- Integration of service and drop-off.
- Supports retail and food and beverage function of the street.
- Stormwater treatment through raingarden devices (low impact design).
- High quality materiality, street furniture, planting and lighting.

LANDSCAPING PLAN

THE STRAND



The Strand will also become a slow speed pedestrian priority environment, improving the waterfront access and experience. Features include:

- Single surface, flush shared space environment.
- Low speed zone – 10km/ph.
- Removal of existing (exotic) street trees and replace with native.
- New urban elements; planting / street trees, lighting and wayfinding / signage.
- Reconfigure existing access to waterfront (from Strand/Wharf Street).
- Low impact design (rain gardens and bio-retention tree pits).

LANDSCAPING PLAN

MASONIC PARK

The Masonic Park design provides three zones; gardens, plaza and lawn, that each provide for different experiences and occupation opportunities. Features include:

- Flexible surface able to be appropriated for a range of civic events and celebrations.
- Active edges with an urban veranda supporting food and beverage activities.
- Removal of the historic site fencing and integration into new single surface treatment.
- Variation of open / flexible and private / sheltered spaces.
- Low impact design principles (bio-retention tree pits)

LANDSCAPING PLAN

INDICATIVE PLANTING PALATTE

The indicative planting palatte draws on local inland and coastal ecologies, celebrating local landscapes and identity. The final planting palette will be co-designed with mana whenua.

KEY TREE SPECIES

Pohutukawa - Metrosideros excelsa

Nikau - Rhopalostylis sapida

Kowhai - Sophora tetraptera

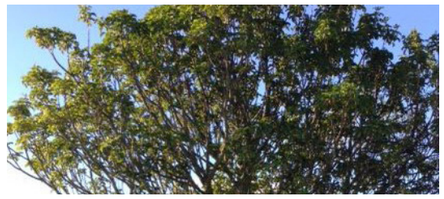
INLAND FOREST

Kauri - Agathis australis

Kawakawa - Macropiper excelsum

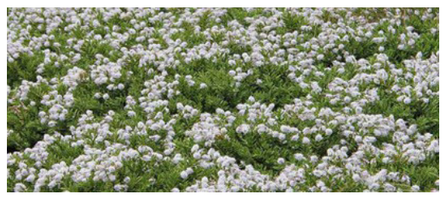
Rarauhe - Pteridium esculentum

COASTAL FOREST



Puriri - Vitex lucens

Haumata - Chionochloa flavicans

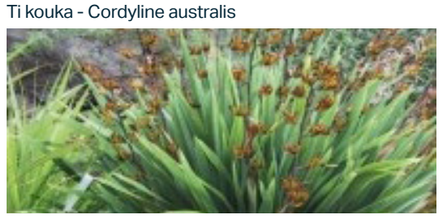


Koromiko - Hebe ‘Wiri Mist’

RAIN GARDEN

Carex testacea

Ti kouka - Cordyline australis



Whaririki - Phormium cookianum

LANDSCAPING PLAN

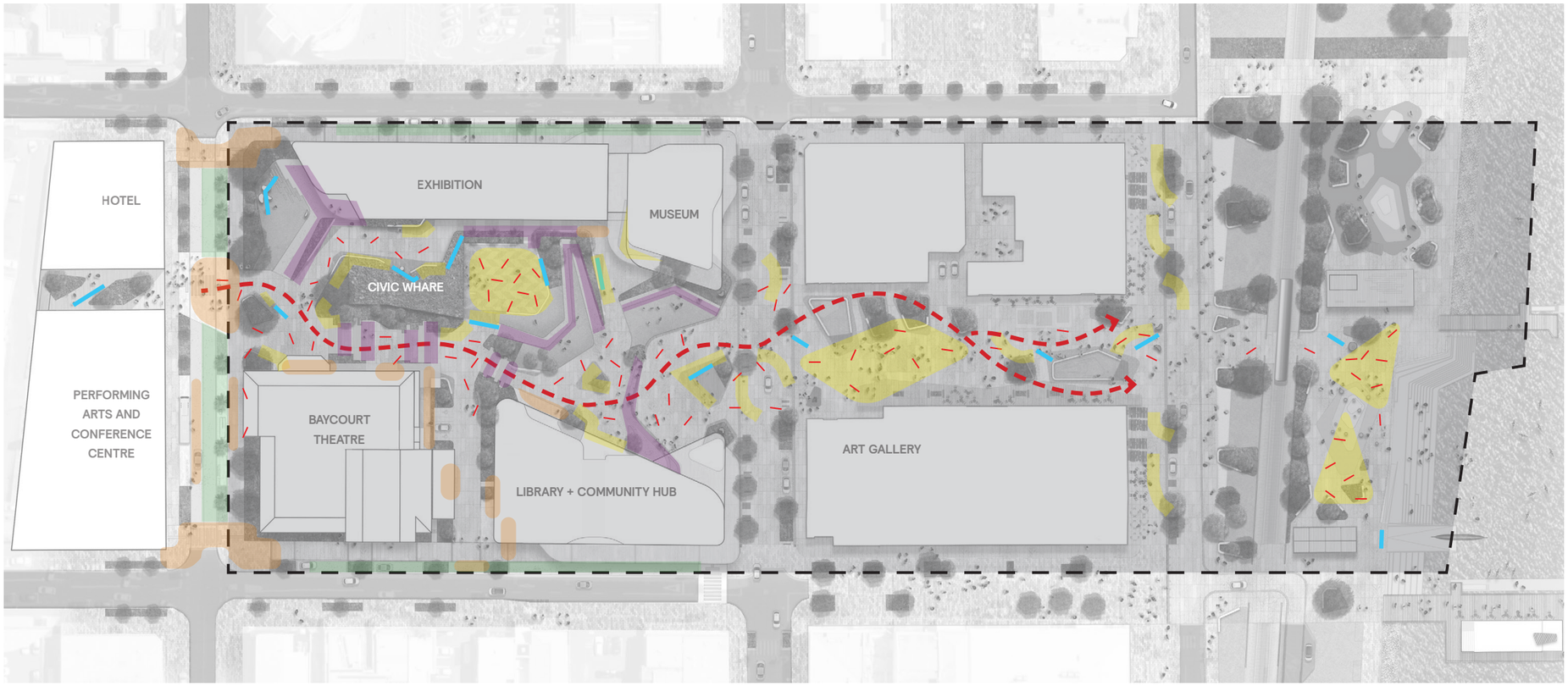
SITE PLAN - EVENT OVERLAY

LANDSCAPING PLAN

SITE PLAN - PAVING

Key_

- Baseline Concrete Saw Cut
- Land to sea stitch
- Feature Inlays (stone/steel/timber)
- Discovery trail (text inlays) to be developed with mana whenua
- Etched Concrete / Sand Blasted
- Concrete Unit Pavers
- Exposed aggregate concrete



LANDSCAPING PLAN

SITE PLAN - LANDSCAPE ELEMENTS

Key_

- Linear Seating Element
- City Bench
- Wharf Seat
- Perchables
- Refuse Bin
- Nature Play
- Cycle Stand
- Water Play

LANDSCAPING PLAN

SITE PLAN - PAVING

7. RISKS

There are numerous risk items to address during future design stages that should be considered when viewing the enhanced costings presented. A number of these are summarised below.

GEOTECH / STRUCTURE

- Foundation design is based upon preliminary geotechnical advice, with additional testing and boreholes to commence in Preliminary Design stage.
- Risk of cost increases should soil condition be worse than current anticipated – sizing of piles or changes to foundation strategy could be required.
- Decision of traditional structure vs mass timber – procurement strategy, façade integration and sustainability aspirations to be resolved following decision.

EARTHWORKS

- Scope of earthworks design is preliminary only and requires interrogation within the Preliminary Design stage.
- Risk of cost increases should additional cut / fill be required.
- Settlement period allowance of 12 months currently carried. There is a risk to construction commencement of Exhibition and Civic Whare if longer.

CIVIL

- HV power line relocation
  - Time impact beyond allowance carried in programme.
  - The extent of costs required to relocate are not yet known. A $750k Powerco contribution is allowed at present, however could vary greatly based on scope and contribution level required.
- Improvement of existing civil mains currently not anticipated as local network considered sufficient.

BUILDING SERVICES

- H1 thermal requirements changing and modelling of thermal comfort may drive changes to façade design.
- Size of plant may increase due to design development or changes in brief.
- Changes to building services design from ongoing briefings.
- Integration of any fitout design / base build modifications.

DESIGN DEVELOPMENT

- Pre concept level of design documentation currently. There is a risk of unknown design areas at this early stage in design.
- Integration of public transport not considered in detail – buses, trains, etc.
- Next stage of Council and mana whenua briefing may result in:
  - additional GFA being required.
  - additional functionality requirements (i.e. commercial kitchen, specialised rooms, equipment etc).
- Scope changes
  - Integration of any 'below the line' options and their impact on cost.
  - Cost exclusions:
    - Several items have been excluded from the cost estimates.
    - More discussion is required as to what is required, will be influenced by detailed briefing processes.
- Tenant Fitouts
  - Final fitout plans not yet known.
  - Risks are both to cost and programme – should these fitouts modify the base build services or have additional requirements to current provision.
- AV, IT, Security requirements not yet known – placeholder allowances included within budget.
- CPTED – this process has not yet commenced; risk of cost premium for any initiatives that are required by the project.

CONSULTANTS

- Consultant resource and capability to design in parallel across precinct in parallel.
- Quality of documentation.
- Consultant fees
  - Indicative only benchmarked against construction value.
  - Variations to consultant fees for any significant changes post Preliminary Design.
- Consultant proposals from key consultants received to Preliminary Design only – we will then seek formal proposals from PD milestone to complete project. This approach has less commercial tension that an open tender however has been beneficial in meeting delivery targets and allowing a site wide Preliminary Design milestone to be achieved by November 2022.

PROCUREMENT / PROGRAMME

- Tauranga local market – subcontractor availability, resource, and capability.
- Lead times for large plant.
- Structure – steel and mass timber cost escalation and availability.
- Early Procurement risk to TCC - TCC would need to approve costs and spend money ahead of final pricing being known for the Library and Community Hub and others to commence works in 2023. This is a risk that needs to be understood and agreed.
- Escalation - any changes in programme will have an impact on escalation. Seeing large price rises in market, potential for escalation to increase faster than forecast.
- Programme durations
  - Construction durations are benchmarked where possible however as design progresses, more is known with respect to site specific challenges and constraints. Given the very early stage of design the programme can be indicatively only with further refinement and assurance by PD milestone (end 2022).
- Client approval process
  - TCC and Manu Whenua approval process not yet fully defined in terms of steps and durations. Nominal allowances carried within.
  - This is most important on the Library and Community Hub where Developed Design is assumed to follow immediately after the PD milestone with no 'pens down' period for approvals.
- Consenting
  - Site A Outline plan
    - Assessment noted as being approx. 2 months.
    - Risk to programme should this period be longer than allowance
  - Waterfront Resource Consent
    - High level of public interest and consultation anticipated.
    - This may result in changes to scheme and subsequent cost/programme implications.
- Global environment
  - Covid-19 and ongoing unknown impacts in 2022 and beyond
  - Geo-political impacts on New Zealand, the construction industry and supply chain.