Figure 5-1

5.0 Option 2b Demolition of the South Stand and Partial Demolition of the East Stand, Construction of a New South Stand

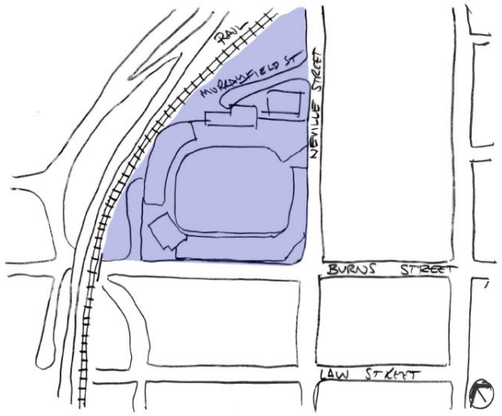


Figure 5-2. Site Plan

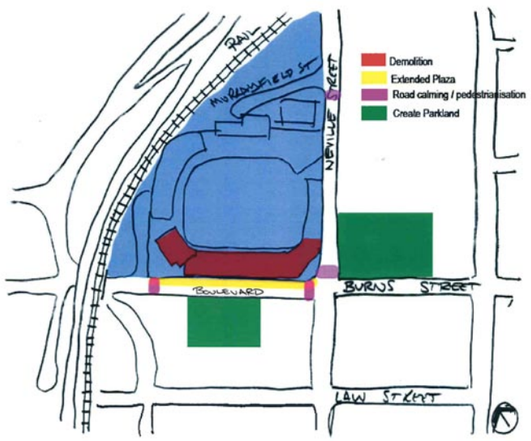


Figure 5-3. Site Plan – Demolition and Pedestrianisation

5.1 Facility Design (Figure 5-2; 5-3)

5.1.1 Masterplan

As a result of the masterplan analysis for the new stadium development, it is proposed to permanently close the segment of Burns Street adjacent to the stadium creating a 'boulevard'. The analysis diagrams indicate a proposal for Burns Street to become the primary boulevard linking and incorporating adjacent parklands. This serves as the main external focus for the stadium precinct, providing a space for community events and celebrations. A secondary pedestrian corridor along Neville Street would support the primary boulevard on Burns Street (see Figure 5-3).

It is important the new stand acknowledges the surrounding residential, industrial and railway boundary. It is recommended that opportunities to link the boulevards, Burns Street Parkland and stadium visually and symbolically are created. The boulevards become the front and defining zones of the adjacent neighbourhood and stadium precinct. The increased green spaces connect the public with the open nature of the Stadium precinct.

It is recommended that a management strategy for traffic, car parking and pedestrian circulation be progressed. Pedestrian circulation and access can be controlled via public 'plazas', which act as holding areas.

The central boulevard along Burns Street could create a community focal point by means of an 'avenue'. This can potentially become a themed walk, focusing on local history, leadership, sport and/or community achievements. The 'avenue' assumes the role of a unifying 'spine': a focus of community spirit and civic pride, reinforcing educational opportunities. Tree avenues and appropriate paving will enforce pedestrian corridors. The paving should be visually exciting, using the combination of different materials and plants to create formal versus informal spaces, maintaining transparent landscaping to ensure safety.

The masterplan allow for entry plazas which will provide safe and visually exciting spaces for people to meet and greet. These plazas will improve the movement of large crowds and will provide collection points in case of an evacuation (see Figure 5-5).

A review of the existing facilities at Carisbrook Stadium with regards to public amenity found that all areas were inadequate in terms of modern stadia standards and require substantial upgrading and renovations. The masterplan envisages that new facilities for general admission ticket holders will only be provided where new work is to occur. The number of new toilets will be based on a 70:30 male to female ratio and the FSADC recommendations for football grounds. This is an international standard that HOK sport architecture uses to determine fixture numbers for the entire stadium that they design. Food and Beverage counter lengths will be based on 5 linear metres per 1,000 spectators and bar/ alcohol counter lengths will be based on 2.5 linear metres per 2,000 spectators.

Current facilities located on the ground and terrace level of the South Stand have been highlighted as being inadequate. It is proposed that the new South Stand will provide new and improved change rooms, medical and physio areas, hydrotherapy pools, auxillary change rooms, players lounge, relatives' room and indoor warm up facilities.

An opportunity exists to establish a unique precinct within the city of Dunedin, making the Carisbrook Stadium Precinct a destination in its own right. The stadium precinct needs to be defined and consolidated to improve the long- term viability of the masterplan. Air rights and realignment of Burns Street would allow the available footprint for the new South Stand to be increased. The clearing of the ORFU properties opposite the stadium on Burns Street and the incorporation of further adjacent blocks of land could allow for the establishment of a park zone in front of the stadium to mitigate the impacts of the stadium on the surrounding neighbourhood and improve its address. Incorporation of the land parcels adjacent to Murrayfield Street would allow for improved access into the East Stand and the incorporation of corporate car parking adjacent to the East Stand.

5.1.2 Layout and Orientation

The new South Stand is proposed to be orientated as the existing South Stand.

5.1.3 Stadium Uses

The South Stand will be used to accommodate staff all year round, players in the on and off season as required, GA spectators, members and VIP patrons on game days. The lounges can also be used for conference and other functions as they are serviced by their own kitchens and will have their own secure entrance, using the VIP entrance.

To allow the construction of the new South stand the pitch will be moved northwards. This will affect the dimensions of the ground resulting in the loss of cricket from this venue.

5.1.4 Facility Services

Facilities services will be to NZRU and ORFU recommendations and align with modern stadium standards (refer to Section 2.3.2).

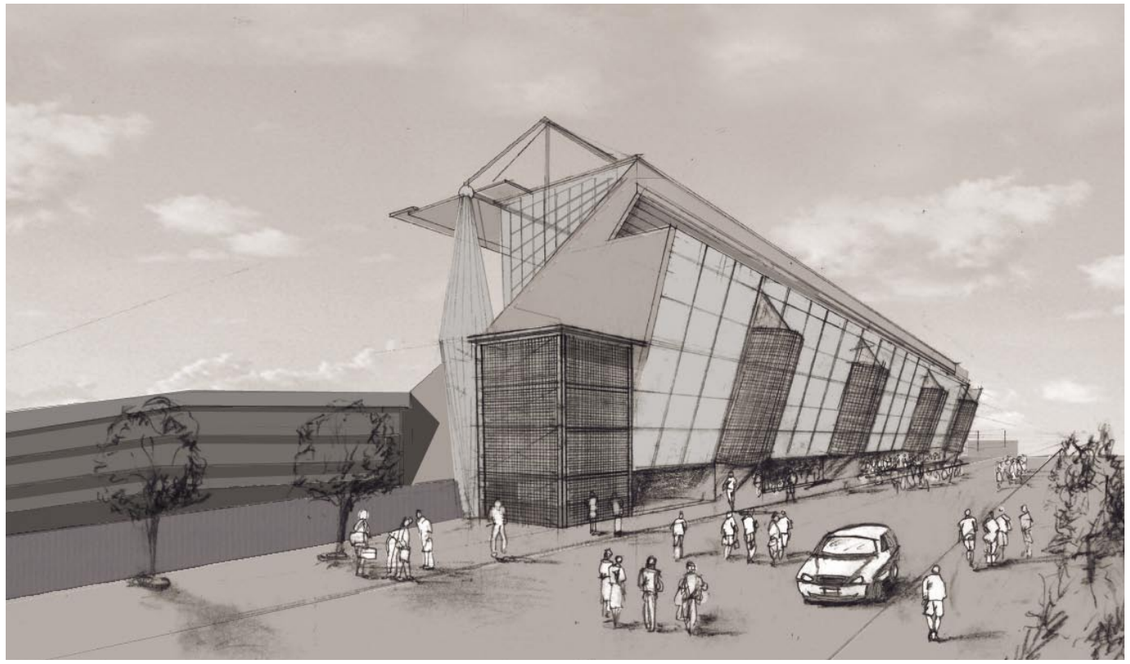
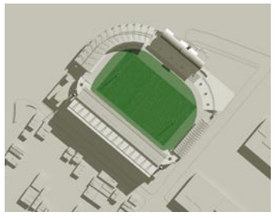
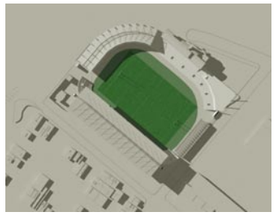


Figure 5-6. South Stand Perspective



Shadow Diagram – March 9am

Shadow Diagram – March 12noon



Shadow Diagram – March 3pm

Shadow Diagram – June 9am

Shadow Diagram – June 12noon

Shadow Diagram – June 3pm

Figure 5-8. Sun Path Study

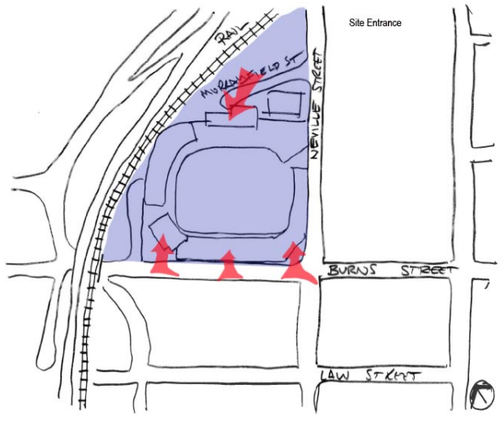


Figure 5-5. Site Plan – Entrances

5.1.5 Design

The new South Stand is designed to increase spectator enjoyment by bringing them closer to the action, elevating them and providing better facilities in line with modern stadium standards. The bottom tier is designed to curve round the edges of the pitch. The southern façade is angled to create an overhang over the pedestrian walkway and increase the sense of anticipation. It is important that the new stand enhances and nurtures the 'House of Pain' mythology, and it is with this in mind that the building of an angled, sharp and uncompromising shape has been proposed.

Level 01 - Provides team, groundsman, staff and catering facilities, and also the team, VIP and media entrance. Plant and storage is also located on this level.

Level 02 - Incorporporates the concourse, accommodates general admission patrons and is serviced by concessions and washrooms.

Level 03 - Accomodates the members lounges (2 x 500 capacity) and is proposed to have a view onto the pitch. These lounges are served by their own washrooms, kitchens, stairs and lifts. This level is serviced

Level 04 - Incorporates a general admission concourse to access the upper covered tier. This level is serviced

The height of the stadium is an important consideration particulary as previous schemes for a new South Stand identified shading issues for local residents on the opposite side of Burns Street. To overcome this issue the back edge of the roof has been cut back to reduce the height and shadow impact. The Southern envelope has been foreshortened vertically to reduce the mass of the building compared to the adjacent private dwellings. The South stand is approximately 24m high to the roof line (refer Figure 5-4). Preliminary sun path studies have been undertaken (see Figure 5-8), but further analysis will b required in the next stage of the project.

Although one type of roof profile is being shown a number of different styles have been considered, all of which would merit further investigation during detailed design (refer Figure 5-7).

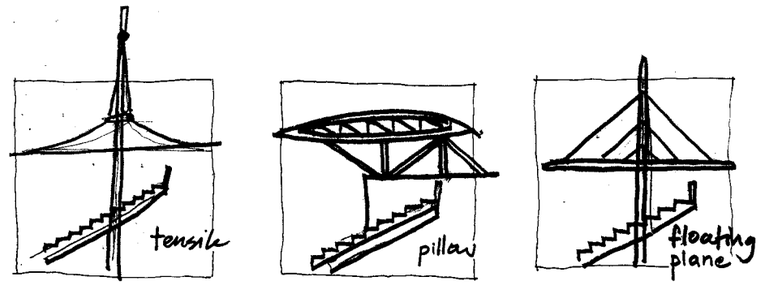


Figure 5-7. Roof Type alternatives

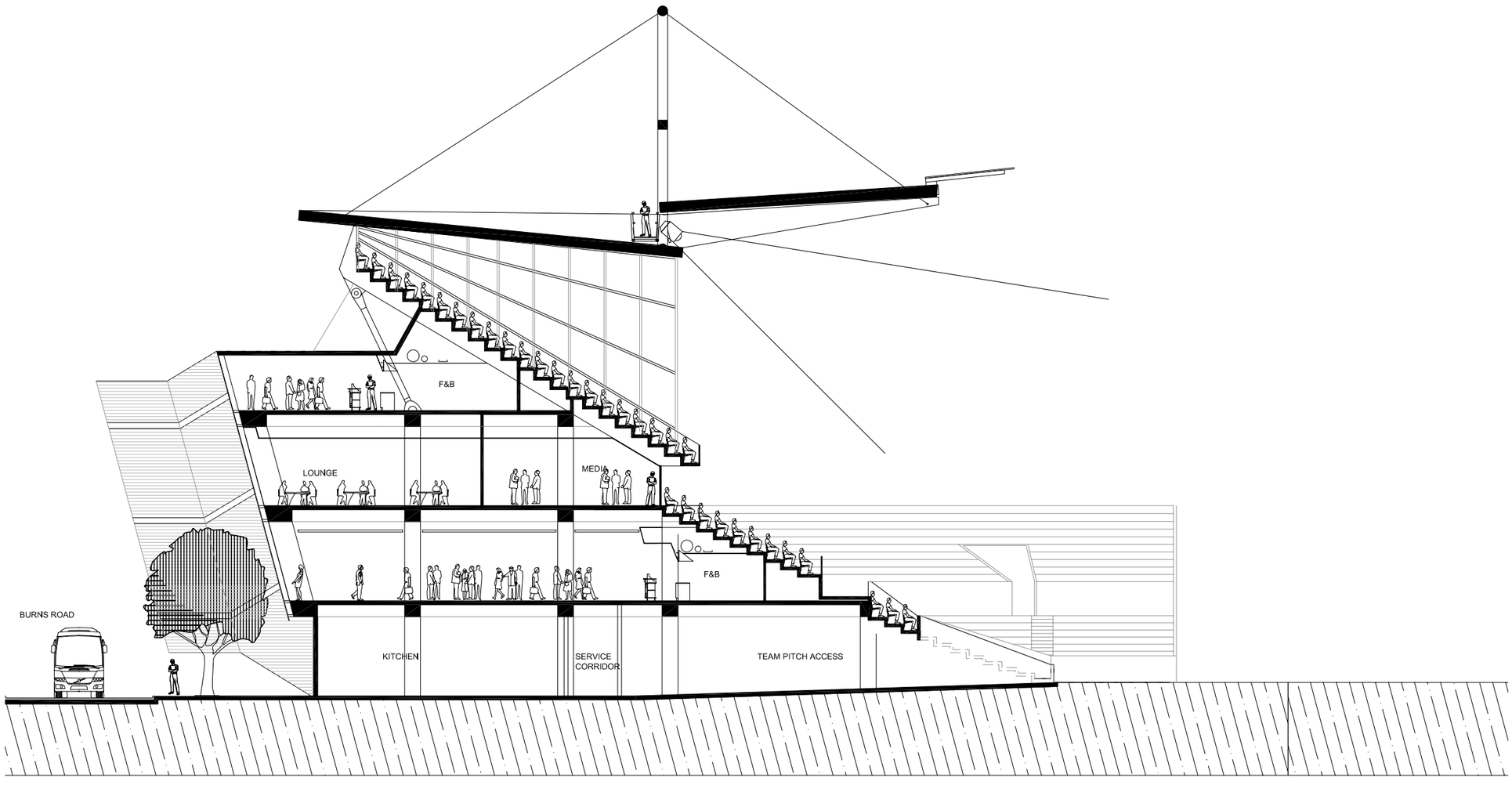


Figure 5-4. Section

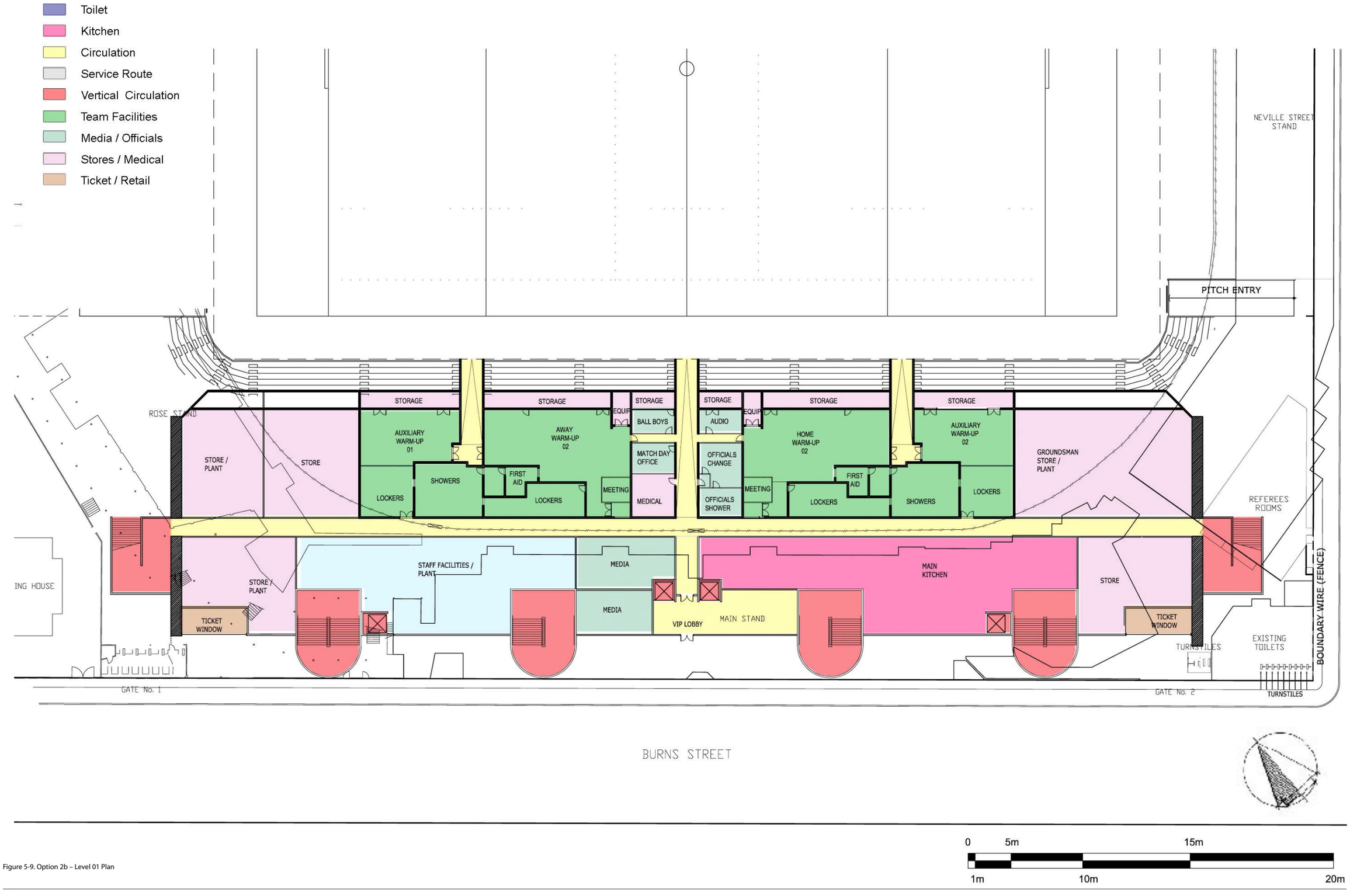


Figure 5-9. Option 2b – Level 01 Plan

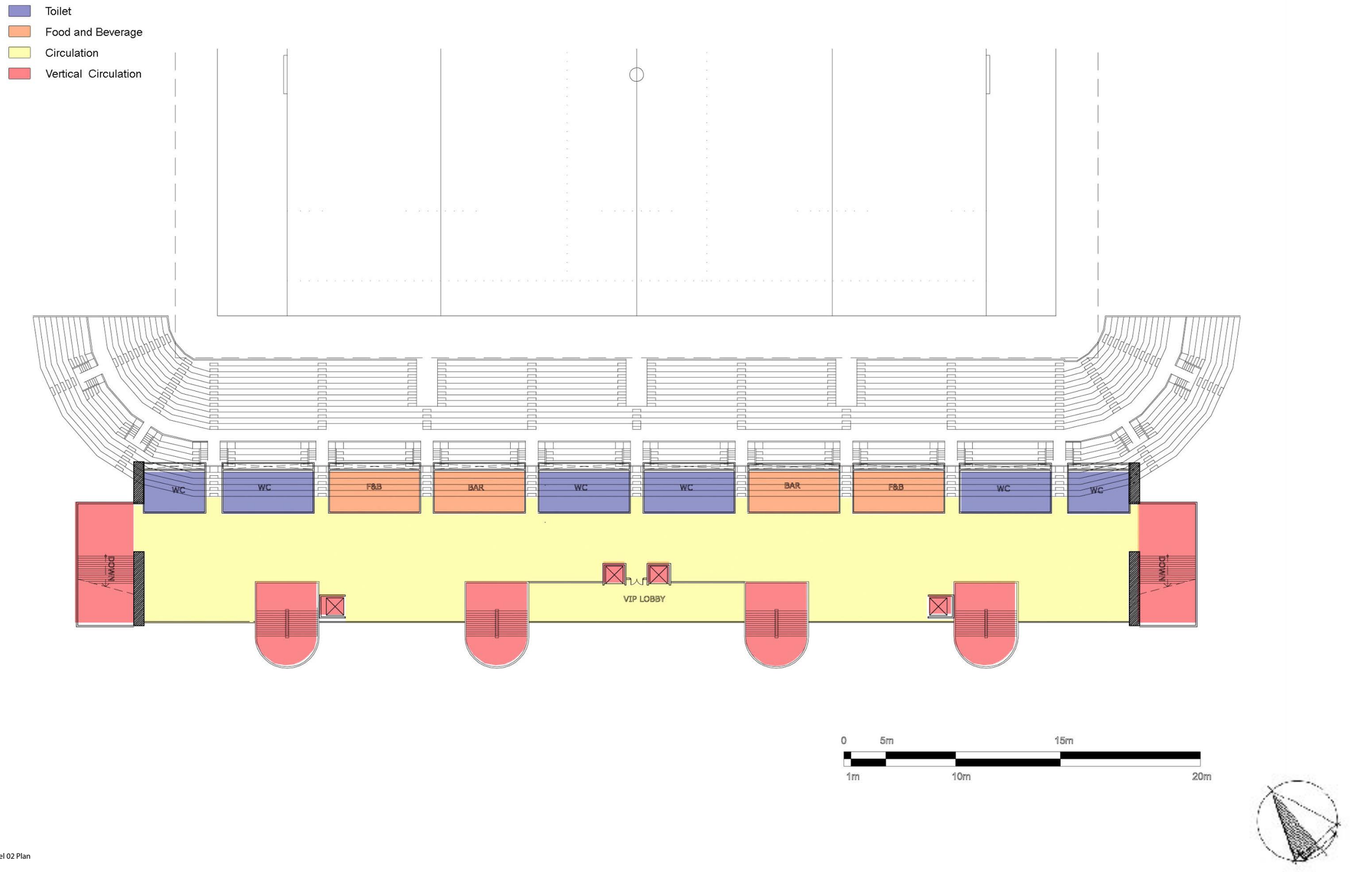


Figure 5-10. Option 2b – Level 02 Plan

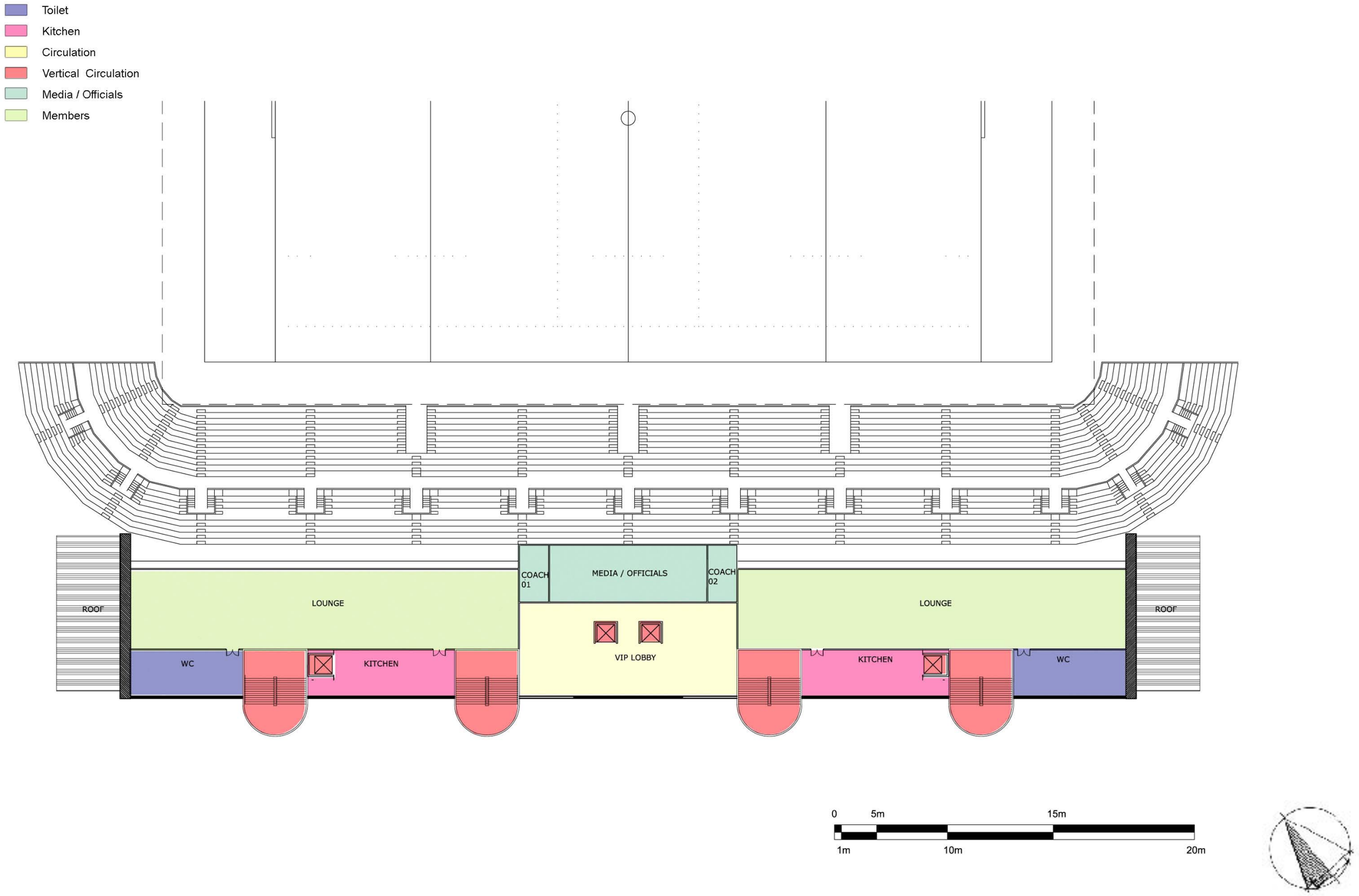


Figure 5-11. Option 2b – Level 03 Plan

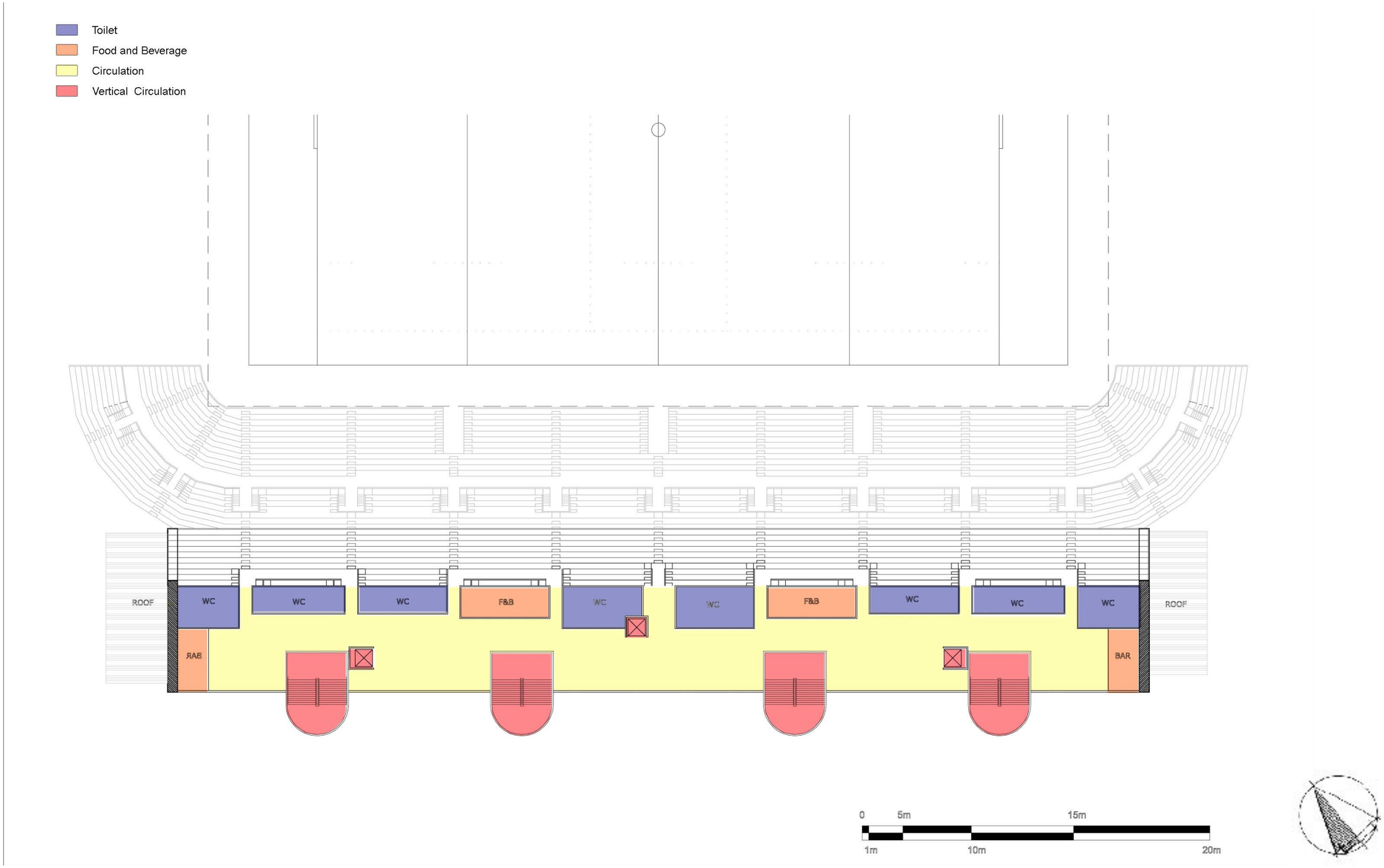


Figure 5-12. Option 2b – Level 04 Plan

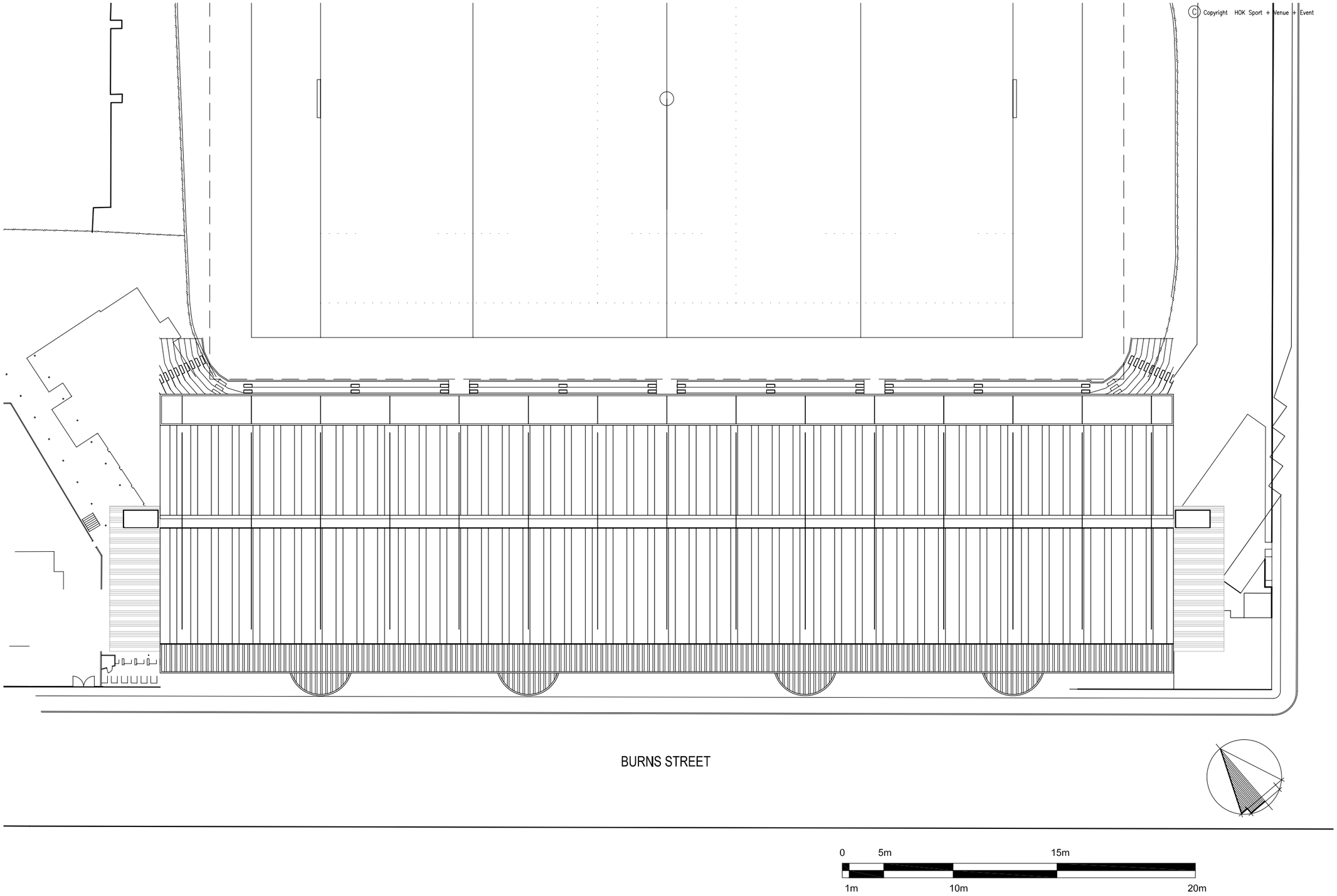


Figure 5-13. Option 2b – Roof Plan

5.1.6 Structure

This is a four storey, three tier structure generally constructed of concrete but with possible use of steel for the upper tier raker.

The frame could be insitu-poured or precast concrete, or most likely a mixture of the two (for example insitu columns and precast beams). Floors would be either double T's or hollow-core precast units spanning between the 10m grids. The tiered seating bleacherswill be precast units designed for satisfactory vibrational stiffness.

Seismically the frame is dominated by the raking seating beams and thus has been assessed for a low level ductile response in the cross sectional direction. Longitudinally seismic resistance is by frame action to leave maximum planning freedom by avoidance of shear walls. However, the introduction of shear walls could provide some economy to the construction.

The roof structure is dominated by a massive 150m span, 12m high parallel chord planar spine truss positioned along the roof central axis. Transverse to the spine truss are rib trusses (or beams), one per 10m grid, supported at the rear end by the upper end of the stand's topmost raker beams and at their mid-span by the spine truss, cantilevering out for the rest of their length. For gravity load the rib trusses are assisted by tension cables extending from the top chord of the spine truss. However for wind uplift the rib trusses beyond the spine truss support act as pure cantilevers. The suspension cables, together with corresponding back-span cables also provide buckling restraint to the spine truss top chord when in compression. These cables will be sufficiently pre-tensioned that they do not go slack under wind uplift.

Roof seismic loads will be taken direct back to the stand structure via cross bracing in the roof plane. Support to the ends of the spine truss is by tall but slender towers, either in tubular steel (especially fabricated) or (more likely) in prestressed concrete. These towers provide vertical propping only to the truss ends, all horizontal loads (seismic and wind) being taken into the stand via the roof bracing.

Little geotechnical information was available for the site and piles have been based on competent soils (3 MPa bearing) that are easy to drill (i.e. free of boulders). These assumptions need to be verified.

As the spine truss and rib trusses are mutually dependant for support, erection methodology and sequence will require careful consideration. At this stage it is envisaged that the rib trusses will be adequate as cantilevers without cables for their own self weight and will be erected onto temporary props positioned under the spine truss location. These will then create a working platform for erection of the primary truss in sections, fixing but not tensioning the cables progressively to stablise the erected truss sections. When the whole of the spine truss is erected the cables will be progressively tensioned. Finally flat jacks will be used to slightly lift the spine truss on its end supports thus releasing all temporary props simultaneously.

Suncorp Stadium, Brisbane

Telstra Dome, Melbourne

Westpac Stadium, Wellington

Landsdowne Road, Dublin

Skilled Park, Gold Coast

5.1.7 Benchmarking - Benchmark Schedule to be updated

Benchmark Comparisons

Space Type	Suncorp Stadium Brisbane	Telstra Dome Melbourne	Skilled Park Gold Coast	Lansdowne Road Stadium Dublin	Galpharm Stadium Huddersfield	Waikato Hamilton Park	Westpac Stadium Wellington	Option 2b - New Main Stand along Burns Street Dunedin
Sports / Events	Rugby Union, Rugby League, Soccer	AFL, Cricket (ODI), Rugby Union, Rugby League, Soccer, Concerts, Motor Cross	Rugby Union, Rugby League, Soccer, Concerts	Soccer, Rugby, Concerts	Soccer/ rugby	Rugby	Rugby Union, Cricket	Rugby Union
Construction Cost	$224,000,000	NZ $327,750,000	NZ $138,000,000	265,000,000 euro	28,000,000 GBP	TBC	NZ $ 121,000,000	TBC
Capacity	52,854	49,709 Rugby 52,209 AFL	25,465	50,746	26,000	27,500 including 20,000 seats (10,000 under cover)	34,500	30926 (approximate overall capacity with new main stand)
Number of Tiers	3	3	1 with small corp suite tier on West side.	3	2 and 1	2 and 1	1	2 and 1
Building Area (sqm)	92,072	107,154	25,750	TBC	24,200		26,970	TBC TBC
Building Footprint (sqm)	42,450	48,350	15,500	TBC				
Site Area (hectares)	7.42	7.21	4.8					
Field Format	Rectangular	Variable (oval / rectangular)	Rectangular	Rectangular	Rectangular	Rectangular	Oval	Rectangular
Field Size	144m x 90m	170m x 140m	138 x 83m					
Retractable Roof	No	Yes	No	No	No	No	No	No
Roof Coverage	88%	92 - 100%	80%	TBC	100%	40%	65%	approx. 65%
Spectator Group								
General Admission:	39,274	38,204	22,643	39,200			31,900	29,206
Club Seating:	4,948	4,554	980				2,600	approx. 8,744 prime seats under cover (incl. in GA capacity and lounge capacity for simplicity but these could all be premier members seating)
Code Seating:	4,964	8,249	n/a	10,000				
Corporate Seating:	2,800	991	1,360	850				720 capacity suites and 2 x 500 capacity dining lounges
Wheelchair Positions	260	244	178	230			172	as existing
Companion Seats	260	232	178				172	as existing
EAS	260	244	0	230				
Press	52	97	36	236				
Players / Officials / Team	36	99	44					
Total	52,854	52,914	25,465	50,746	26,000		34,500	30,926
Seating Standards								
General Admission	*500mm chair x 800mm tread (lower tier)* *500mm chair x 825mm tread (upper tier)*	*480mm chair x 800mm tread*	*500mm chair x 850mm tread*	*500mm chair x 800mm tread*			*480mm chair*	*as existing*
Club Seating	*560mm chair x 850mm tread*	*500mm chair x 800mm tread*	*550mm x 900mm tread*	*550mm chair x 850 tread*				*as existing*
Code Seating	*500mm chair x 800mm tread*							
Corporate	*560mm chair x 950mm tread*	*500mm chair x 900mm tread*	*550mm x 900mm tread*	*550mm chair x 850mm tread*			*550mm chair*	*as existing*
Written Press			*550mm x 900mm tread*				*500m chair*	*as existing*
Broadcast Commentators								
Roof Coverage	Roof Coverage: 82%	Roof Coverage: 98-100%	79%					
Corporate Facilities								
Suites	26 x 12-seat suites 18 x 14-seat suites 28 x 20-seat suites 1 x 80-sear hirers suite	34 x 12-seat suites 29 x 16-seat suites 4 x 20-seat suites	*18 x 12 seat suites* *6 x 18 seat suites* *3 x 18 or 1 x 54 seat seat hirers suite*	12 - 50 person suites	26 x suites 16 x executive suites			10 x 30 person suites 14 x 30 person suites
Total	73	67	67	35	42			24
Open Carrel Boxes	41 x 10-seat boxes 60 x 10-seat boxes	no boxes	*62 x 10 seat boxes* 18 x 8 seat boxes *20 x 12 seat boxes* *100*					
Total	101	0						
Hospitality / Dining	1 x 1,000 seat banquet hall 2 x 500 seat restaurants 2 x 250 seat restaurants 2 x 144 seat terraces 2 x 80 seat end goal clubs	6 x 500 seat facilities 2 x 1,000 seat facilities 1 x 1,500 seat facility	*1 x 500 seat Function Room*	1 x 400 seat restaurant 1 x 650 seat restaurant				
Total Dining Spaces	2,948	6,500	*500*	1,050	650	628	1,400	1,140 (incl 2x 500 capacity lounges in the new Main stand and 1x 140 capacity lounge in existing corporate stand)
Bars / Lounges			*North West Member Bar - 400 standing* *Function Room 2(no fit-out) 750 standing*					
Toilets								
Standards Used	FSADC	FSADC	FSADC/BCA	FSADC	FSADC		FSADC	FSADC in new Main stand only. As existing elsewhere
Club/ Corp.	60:40 male-to-female ratios	60:40 male-to-female ratios	60:40 male-to-female ratios		60:40 male to female ratio 70:30 male to female ratio		50:50 male-to-female ratios	Corporate/Members - 50:60 ratio of women to men
Male							1:25 ratio	Public - 40:70 ratio of women to men
Urinals							0-400 1 per 100p, 400+ 1 per 250p	
WC's							1 per wc, 1 per 5 urinals	
WHB's								
Female							0-200 1 per 50p, 200+ 1 per 100p	
WC's							1 per 2 wc	
WHB's								
PWD								
General Public	70:30 male-to-female ratios	70:30 male-to-female ratios	70:30 male-to-female ratios				70:30 male-to-female ratios	
Male								
Female								
PWD							1 per 10 wheelchair spaces	
Guest Services								
First Aid	First Aid - *1 at 50 sqm + 2 at 20*	First Aid - *4 at 10 sqm*	First Aid - *2 at 15sqm*					
Customer Service Counter	Customer Service - *4 at 20 sqm*	Customer Service - *8 at 15 sqm*	0				one counter 'serving' space per 10,000 spectators	as existing
Creche / Kids	Creche/Kids Play - *1 at 50 sqm*	Creche/Kids Play - *no*	Creche/Kids Play - *1 at 50 sqm*					
Mothering Stations	Mothering Stations - *2 at 6.25 sqm*	Mothering Stations - *no*	Mothering Stations - *3 at 6.25 sqm*					
TAB / Betting	Gaming Facilities - *2 at 30 sqm*	Gaming Facilities - *2 at 30 sqm*	0				1 TAB	
Merchandising	ATM machines - *2 at 5 sqm*	ATM machines - *4 at 5 sqm*	ATM machines - *2*			1 x 70 sqm		as existing
	Sports Store - *1 at 185 sqm*	Main Store	Sports Store - *2 at 20 sqm*					
	5 sales counters		2 sales counters					
Food Stands							5 permanent merchandising	
	Sales Counters - *12 at 15 sqm*	Sales Counters						
Food Concessions	7.5 m / 1,000 spectators	5.0 m / 1,000 spectators	Sales Counters - *16*	8.0m / 1,000 spectators			12.5m/ 2500 spectators	as existing
Bars	7.5 m / 2,000 spectators	5.0 m / 2,000 spectators	5.0 m / 1,000 spectators	4.5m / 1,000 spectators (GA)			6.0m per 2500 spectators	as existing
			5.0 m / 1,000 spectators	9m / 1,000 spectators (Members)				
Kitchen	Kitchen/Commissary: *2,040 sqm*	Kitchen/Commissary: *2,352 sqm*						
Main Kitchen / Commissary	2,040sqm	2,352sqm	Kitchen/Commissary: *2,040 sqm*					900 sqm
Finishing Kitchens			550sqm					350 sqm
Suite Kitchens						250 sqm		as existing
In-suite servery								
Team Facilities								
Home Lockers	1 at 400 sqm	1 at 477 sqm	1 at 350 sqm(incl. warm-up, wet areas)					
Visitor Locker	1 at 400 sqm	1 at 385 sqm	1 at 350 sqm(incl. warm-up, wet areas)					
Aux. Lockers	2 at 170 sqm	2 at 195 sqm	2 at 175 sqm					
Miscellaneous	Referee - *2 at 55 sqm*	Referee - *2 at 65 sqm*	Referee - 1 at 60 sqm					
Lockers	Star Dressing - *1 at 55 sqm*	Star Dressing - *1 at 60 sqm*	Star Dressing - 1 at 18 sqm					
	Ballboys - *1 at 55 sqm*	Ballboys - *1 at 28 sqm*	Ballboys - 1 at 20 sqm					
	Cheerleader - *1 at 55 sqm*	Band - *1 at 60 sqm*	Cheerleader - 1 at 150 sqm					
	Doping Control - *1 at 100 sqm*	Doping Control - *1 at 60 sqm*	Band Room - 1 at 32sqm					
Ticket Office	Ticket Windows - 20	Ticket Windows - 50	Doping Control - 1 at 25 sqm					
	Administrative Offices - *150 sqm*	Administrative Offices -	Ticket Windows - 20					
			Administrative Offices - 180 sqm			Ticket Windows - 10 Administrative Offices - 354 sqm		Ticket Windows - approx.11 Administrative Offices - approx. 180 sqm

5.2 Planning and Consultation

The planning and consultation considerations for option 2b are exactly the same as for option 2a. That is, the recommended mechanism for CST to utilise is the Resource Consent Process. Refer to section 4.2 for further details.

5.3 Programme

Programme Overview

The demolition of the existing South Stand and construction of a new South Stand can be achieved by the Rugby World Cup in 2011.

The pre-construction activities for this option remain similar to option 2a, the minimal upgrade option. The main differnce of option 2b to that of option 2a is the construction period has been estimated to take 18 months.

A redevelopment of the existing Carisbrook Site will require careful consideration during the initial planning and staging of events at the stadium.

This option may require the stadium to be closed during one operational season to allow this upgrade. This may require all Air New Zealand Cup, Super 14 and test match rugby to be relocated to an alternative venue during the upgrade period. To cause minimal disruption to scheduled events, the staging of this option will be considered in further detail during the next stage of the project.

Master Programme

Included in the appendices is the detailed master programme for the proposed demolition of the existing South Stand and construction of a new South Stand. For ease of reference the following Milestone dates have been extracted from this programme:

Submit Masterplan Feasibility to Project Stakeholders	February 2007
ORC and DCC begin consultation process	February 2007
CST Decision to Proceed with Multiple Options	March 2007
Concept Design	March 2007- June 2007
Submit Resource Consents	June 2007
DCC Commitment to Project	July 2007
Continue Developed and Detailed Design	June 2007- Nov 2007
Resource Consent Resolution	November 2007
Construction Procurement	December 2007
ORC Commitment to Project	July 2008
Commence Construction on site	August 2008
Construction Practical Completion	April 2010
Stadium Trials Complete and Stadium Ready for Test Matches	May 2010

Understanding the Programme Risks and Assumptions

As with option 2a the programme assumptions remain similar for this option. These assumptions are summarised below:

Funding Commitments

This option assumes that funding will be made available for the proposed upgrade. Further discussion with ORC and DCC will be required to determine the level of funding that will be made available for this option.

DCC commitment to the project

CST will need to progress the concept design to enable the Resource Consent to be submitted prior to DCC providing their commitment to the project in July 2007. Non-recourse working capital will need to be provided to enable the design to progress during the period between March and July 2007.

ORC commitment to the project

It is assumed ORC's commitment to this project will not be known until July 2008. This is a major risk to the project as this milestone falls on the programme critical path. Any movement on this date will affect the completion date for this project. ORC's commitment impacts on funding certainty for the project. Without this ORC commitment, CST is unable to commit working capital for placement of building works contracts. This places great risk on CST during the period of March 2007 through to July 2008 to obtain working capital to progress the developed design and procurement.

The Programme assumes CST will continue the design process through this March to July 2007 period, enabling the Resource Consent to proceed. Effectively this means the funding provided during this period will be non-recourse until such time as ORC commits to the project. Confirmation of the building contract(s) will therefore need to take place on confirmation of ORC's commitment.

Resource Consents

A Resource Consent will be required for this option. The demolition of the existing South Stand and reconstruction of a new South Stand will alter the scale, intensity and character of the existing stadium. It has been assumed that a Resource Consent for this option will be obtained within the statutory periods indicated in the programme.

Design Period

The design period indicated in the programme has significant float due to the delay between the completion of the construction procurement and the placement of the building contract(s). This float is caused due to the timing of ORC's commitment to the project, assumed as being no earlier than 1 July 2008.

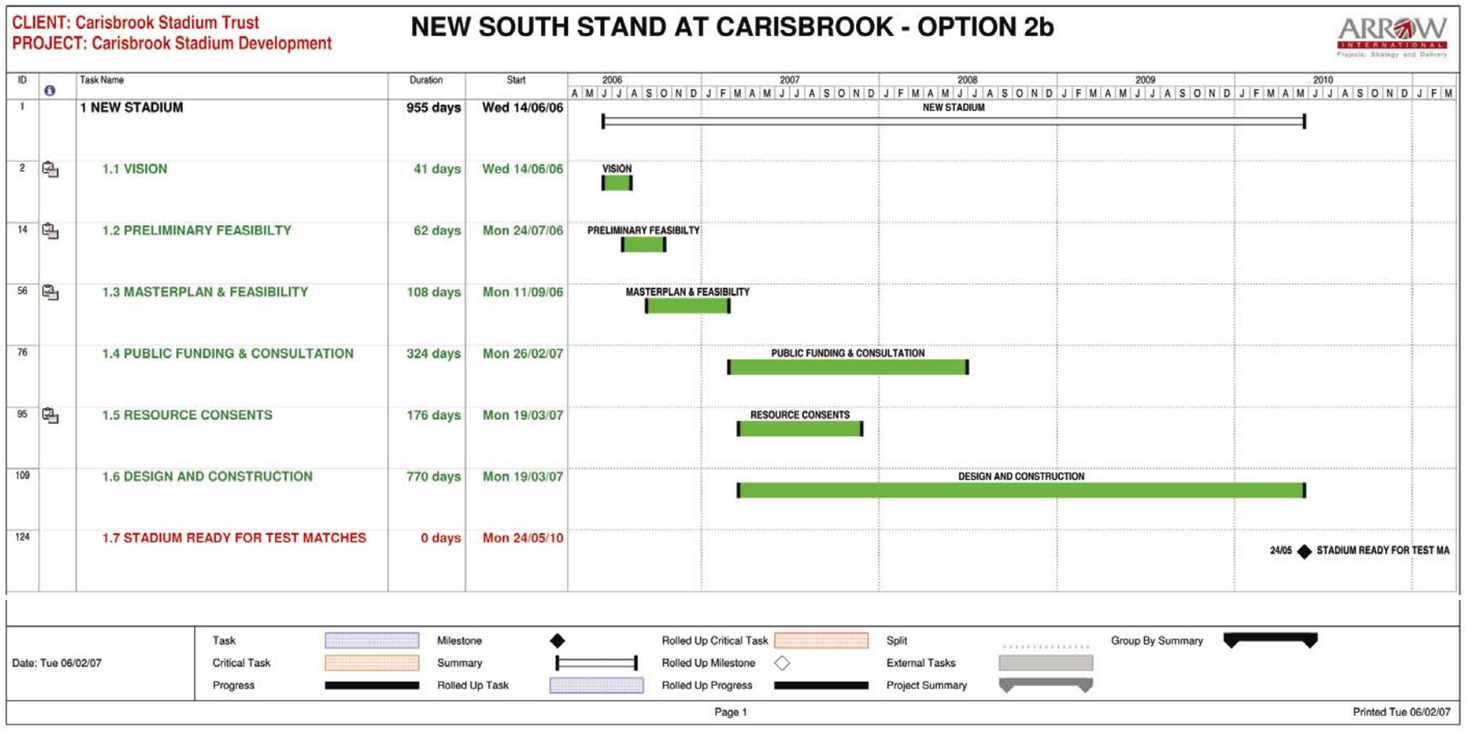
Construction Period

Based on the information available, the construction period for option 2b has been estimated to be 18 months. This period assumes CST place an enabling works package to complete necessary demolitions and site works to provide adequate access into and around the site. An off site pre-fabrication contract will also be placed to accelerate construction on site.

The assumed construction periods will be tested with local contractors when further detailed information is available.

Stadium Trials

Following Practical Completion a period of 6 weeks has been identified to perform stadium trials and identify any aspects that may require minor modification to ensure a successful running of a full capacity event.



5.4 What are the Key Challenges?

The following table summarises the key challenges for this option.

Key Challenge	Issues	Comments/Mitigation	Risk Level (H, M, L)
1.Development Costs			
a. Land			NA
b. Ground Conditions	The ground conditions are adversely different to what was anticipated.	Although a desktop study on the ground conditions has not been prepared for this option, it is assumed, as there are existing substantial structures on this site, the existing ground conditions will not impose and constraints likely to affect the proposed South stand redevelopment. Further work during the next stage of the project will be required to test this assumption and ground bearing capacities	L
c. Construction	Construction costs escalate due to unforeseen circumstances.	As with options 1a and 1b, the benchmark information available indicates that the construction costs are achievable within the allowance indicated in this report. Robust Project and Cost Management systems are to be adopted to manage the cost development on the project.	L
d. Roof			NA

Key Challenge	Issues	Comments/Mitigation	Risk Level (H, M, L)
2. Time			
a. Working Capital	CST cannot secure the working capital to progress the design in line with the proposed programme.	CST are to continue discussions and negotiations with the project funding partners to secure this working capital to avoid delays to the project	H
b. Planning	Not obtaining the required planning notification to progress the development.	This option assumes a Resource Consent will be required for the redevelopment of the South stand. The current programme assumes a Resource Consent will be obtained within the statutory periods for this option.	L
c. ORC Consultation	The period which ORC require for their consultation process provides great uncertainty and risk of the viability of the project and financial risk to other funding partners.	CST to continue discussion with ORC to try and obtain earlier commitment to the project	H
d. Construction Period	Delays to the construction programme resulting in missing the RWC 2011 deadline.	The construction period for this option has been estimated as 18 months. It is unlikely that delays to this project would affect the completion of this option before the RWC 2011.	L
e. Plan Change			NA
f. Land			NA
3. Funding			
a. DCC	The level of funding required from DCC for this option is $36.8M.	If this funding is reduced then CST will be required to source the shortfall from alternative sources. CST to continue discussion and negotiations with DCC	M
b. ORC	The level of funding required from ORC for this option is $17.3M.	If this funding is reduced then CST will be required to source the shortfall from alternative sources. CST to continue discussion and negotiations with ORC	M
c. Other	The level of funding required by other sources is $14.9M.	Horwath HTL have assessed this level of funding in the financial feasibility report. This is considered by HHTL to be an optimistic funding scenario. Evidence from the Westapac stadium in Wellington has indicated that funding sources trend upwards once developments of this nature have commitment and support.	M

Key Challenge	Issues	Comments/Mitigation	Risk Level (H, M, L)
4. Partners			
a. University			NA
b. NZRU	Obtaining commitment from NZRU to provide test match rugby for the stadium.	NZRU have expressed support for the CST options and consderation is presently being given as to how test matches might be rescheduled. This is subject to a commitment for the project proceeding which the funding and development partners must assist CST with. Although this option will satisfy NZRU's criteria for test match and Super 14 rugby, this should be considered a s medium term solution.	M
c. ORFU	Inability to agree terms and conditions for the agreement between CST and ORFU	Initial discussions are very positive. ORFU recognise that some form of agreement must be entered into and this will be progressed as soon as possible	L
d. Government	Inability to secure any funding commitment from central government	Nothing has been allowed within the funding scenarios for central government funding, based on the governments stance on improvements to stadia for the RWC 2011. Local government representatives and CST are to lobby local MP's and parliament	L
5. Operational			
a. Multi-use and Events	The number and type of events that are projected within the operational feasibility are not realised	The assumptions made within the operational feasibilities can be considered of a relatively conservative nature	M
b. Community Support	Lack of support from the community for an upgrade of the existing Carisbrook stadium	Keep the community informed and updated on the issues associated with the project.	M

Construction Risks

ID	Risk	Cost Impact	Action
1	Site contamination - ground	Low	Investigations during next phase.
2	Site contamination – existing buildings	Moderate	Test for asbestos, PCBs etc.
3	Soil conditions – insufficient load bearing capacity	Moderate	Bore log investigations
4	Site flooding	Low	Investigations during next phase.
5	Dunedin construction market conditions	Moderate	Discussions with local main contractors to identify capacity. Possible early contractor involvement.
6	Availability of materials	Moderate	Mixed materials where appropriate to mitigate potential demand pressures. Investigate pre-ordering possibilities.
7	ETFE material availability, cost and performance criteria.	N/A	N/A.
8	Availability of labour. Skilled labour for specialist structure, roof & cladding	Moderate	Discussions with local contractors re design specifics.
9	Programme – compressed construction period	Moderate	Construction programme reviewed with local main contractors when appropriate.
10	Programme – inflationary pressures	Moderate	Avoid delay to project timescale. Allow sufficient Escalation Contingency
11	Escalation in costs	High	Allow sufficient Escalation Contingency. Monitor escalation during design period.
12	Programme delays (consent issues etc.)	Moderate	Manage consent process. Monitor programme.
13	Resource Consent / re-designation issues	Low	Manage consent process.
14	Pitch roof – services design issues	N/A	N/A
15	Pitch roof – option selection	N/A	N/A
16	Pitch roof – Contractor experience	N/A	N/A
17	Surrounding infrastructure upgrade requirements	Moderate	Review traffic management reports.
18	Realignment of State Highway 88. Costing, timing and effects on site planning.	N/A	N/A
19	Land costs	N/A	N/A
20	Existing land occupiers lease exit / relocation costs	N/A	N/A
21	Design development / scope creep	Moderate	Allow sufficient design development Contingency in budgets. Provide further design information ASAP.
22	Funding allocation and confirmation	Moderate	Identify sources. Obtain commitments.
23	Structural upgrade of existing stands	High	Investigate existing structural capacity. Design to avoid requirement to upgrade.
24	Services upgrade of existing stands.	Moderate	Investigate requirements ASAP. Undertake fire study.
25	Site accessibility – for construction	Moderate	Review sequencing of construction works. Review traffic management. Avoid requirement for out of hours work.
26	Requirement for staged construction	Moderate	Review any possible requirements ASAP (cost plan does not allow)
27	Under-grounding of power cables	N/A	N/A
28	Disruption to existing users & reduction in revenue	Moderate	Manage.

5.5 Development Costs

Introduction

As for Option 2a, the design of this option is at a preliminary concept stage. The nature of the work has allowed three methods of estimating the cost.

An initial estimate has been provided by professional quantity surveyor, Davis Langdon. This has been compared with the pro-rated estimate differential from Rawlinsons estimate of Option 1a and a benchmark analysis.

The Davis Langdon estimate is included in the appendices. The benchmark data is as shown in Section 2.9.

Estimate

a) Estimate

Element		Value
South Stand	Stand and Ancillary	$60,095,000
	Siteworks	$1,420,000
	Escalation Contingency	$6,760,000
	Construction Contingency	$10,034,000
	Consultant Fees	$8,845,000
	Sub Total	$87,154,000
Other Works	Deferred Maintenance	$4,500,000
	East Stand	$970,000
	West Stand Roof	$1,410,000
	Escalation Contingency	$260,000
	Construction Contingency	$386,000
	Consultants Fees	$340,000
	Sub Total	$7,866,000
Trust Costs		$910,000
TOTAL excl. GST		$95,930,000

b) Pro-rata of check estimate (Option 1a) – Rawlinsons

Element	Value
Stands	$68,090,000
Trust Costs	$910,000
TOTAL excl. GST	$69,000,000

c) Benchmark Analyses

Element		Value
South Stand	8,000 seats at $4,000/seat	$32,000,000
Other Works		$7,800,000
Trust Costs		$910,000
TOTAL excl. GST		$40,710,000

Analysis

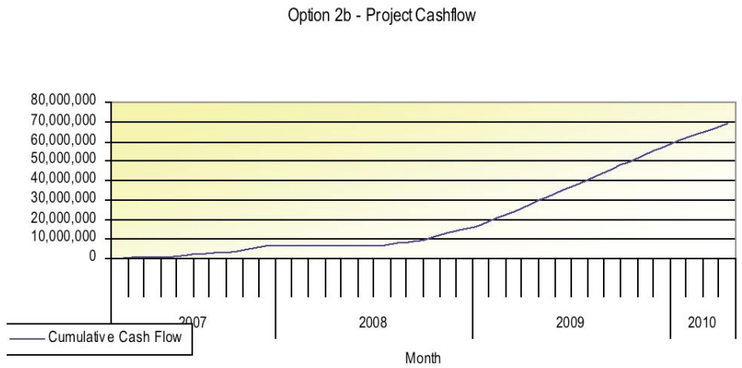
There is significant precedent in the building of a single stand in New Zealand. Examples include Jade Stadium, North Harbour, Ericcson Stadium (Mt Smart) and Waikato Stadium. All these stands had greater capacity than Option 2b and all were delivered below $60M.

Summary

In view of the strength of the benchmark data, an estimate of $69,000,000 is considered appropriate for Option 2b.

5.6 Development Cashflow

The graph below indicates a cumulative cash flow for Option 2b. The graph assumes that DCC makes a positive commitment to put this option forward to public consultation.



Working Capital

A monthly project cashflow is included in the appendices. The cashflow has been developed using a normal construction industry S curve.

The period July 2007 to December 2007 allows for Resource Consent, concept design and developed design. This cashflow indicates expenditure from March 2007 through to July 2007 however, the design through this period could be put on hold until the DCC commitment to the project is known. This will have little overall effect on the project completion date

The working capital required between the period March 2007 to July 2008 will be approximately $6.4M.

The jump in expenditure in October 2008 demonstrates the start of construction onsite.

Funding of this working capital needs to be discussed between DCC, ORC and the Community Trust of Otago. There are various precedents with other stadia for how similar parties have split this risk capital.

5.7 Previous Studies and Investigations

There have been a number of options proposed for Carisbrook over recent years. Previous schemes considered by ORFU and the Working Party include:

- May 2005 Beca Report - Cover the existing terraces and provide seating, relocate the terraces to the Neville Street end of the stadium and construction of a new hospitality stand.
- January 2005 Beca Report - Move the playing field closer to the existing terraces, construction of a new main stand on Burns Street and cover existing terraces and provide additional seating
- May 2003 HOK McCoy and Wixon Report - Demoliion of the existing Burns Street stan and construction of a new main stand.

Each of these options were onsidered at the outset of the feasibility study. The difficulties identified with the proposed options

1. Loss of corporate suites during the construction period thereby severely reducing the revenue generated

2. Potential Resource Consent issues with the proposed new South stand due to height issues and orientation of the structure, creating shading to neighbouring properties.

These issues have been overcome by the proposals for options 2a and 2b by retaining the corporate suites on the North side and in the case of option 2b, by moving the field of play allowing the proposed South stand to be located further northward. .