

Appendix 8.07 – Quantity Surveying

WELLINGTON INDOOR COMMUNITY SPORTS CENTRE

COST COMPARISON REVIEW

This report is a review, from a cost comparison perspective, of the proposed Cobham Drive Park Indoor Sports Centre and the proposed Westpac Stadium Concourse Indoor Sports Centre.

For ease of reference the two proposals in this report are simply referred to as “Cobham” and “Concourse”.

The Terms of Reference require an assessment of the following:

Capital Cost to construct both proposals, in a way that satisfies the original consultation statement; complies with the Brief and Specifications, and in particular (but not limited to):

- All professional fees
- All costs associated with obtaining consents
- The operational layout for both sports play and delivery of supporting equipment and supplies
- Functional layout and components
- Access for staff, service/maintenance
- Durability
- Whole of life cost on key components
- Identification and value of items specifically excluded/included from the Concourse proposal when compared to the Cobham proposal
- Construction methodology and timeframes
- Identification and valuation of any outstanding risk items

Operational Costs (excluding staff related costs as they do not relate to the physical asset) as they relate to both proposals, and in particular:

- Energy and other services costs
- Repairs and maintenance

Mitigation of Construction Risk due to the Concourse proposal’s location and an assessment of the likelihood and costs required to mitigate construction risk at Cobham.

Cost to Change to the Concourse being an assessment for the change and the cost of escalation caused by the time delay

This report concentrates on the “costs” only as others will comment on design, layout, functionality, durability, and construction methodology.

The report is split into five sections as follows:

1. An assessment of the total capital cost for Cobham
2. An assessment of the total capital cost for the Concourse
3. Whole of life study to compare “like for like”
4. An assessment of operational costs
5. A statement as to the cost to change from Cobham to the Concourse

COBHAM PROPOSAL

Quote: “The Cobham Proposal has reached a stage where the majority of its costs are known.”

CONSTRUCTION COST

The total construction cost for Cobham is \$49,500,000 excluding GST and land. This cost is derived from budgets provided by Council which we have tested to satisfy ourselves that the allowances made therein cover all the requirements of the Brief and that suitable allowances have been made for design and management fees, consents, construction costs, escalation and commissioning.

In summary the costs are split as follows:

➤ Building	\$42,620,000
➤ Design, management fees and sundries	\$5,537,000
➤ Resource and Building Consents	\$570,000
➤ Project contingency	\$773,000
Total estimated Construction Cost (excluding Land and GST)	\$49,500,000

Building

The Building cost estimate has been derived from a review of the Council project budget and a check of the recent tender provided by Mainzeal Construction. We have reviewed the Council’s budget, which itself is built up from estimates provided by the Council’s quantity surveyors, Davis Langdon. Such is the progress with Cobham that estimates are based on a full detailed design and a schedule of quantities, which can now be ratified against the tender offer. In addition we have reviewed the Mainzeal Construction tender, and in particular the tender tags, as a check against the Council’s budget. We conclude that sufficient allowances have been made to undertake the Building works.

The Building cost estimate noted above includes allowances for unknown risk elements such as in-ground conditions and various items excluded from Mainzeal’s tender such as increased costs for importing overseas materials. Two in-ground risks identified by the structural engineer are the likelihood of contaminated material and the suitability of reusing excavated material as backfill in raising the height under the building. We have reviewed the report on ground contamination and estimate that the potential costs to resolve are within the risk allowances contained in the budget. We have also looked at the costs should all excavated material be unsuitable and require backfill material to be brought to site; this cost could be absorbed by the budget risk allowance, however there would be little left for other uncertainties that may arise, as such careful monitoring and perhaps further testing should be undertaken. On the whole we are satisfied with the overall allowance made within the budget for the Building for these “risk” elements.

Programme:

Mainzeal Construction have offered to build Cobham within 19 months of being given the go-ahead to start. We believe this to be a realistic programme and similar in duration to that offered by Fletcher Construction for the Concourse. Mainzeal’s programme includes a 1 month start up phase in order to mobilise once the contract has been awarded. On site construction would start at the beginning of month two with enabling works and site set out following. This would be followed

by civil works such as the re-configuration of sewers, stormwater and watermains. Once the civil works are underway excavation would commence for the undercroft carpark and building foundations. From that point typical construction activities follow through construction of the ground floor, structural frame, external walls and roof to a point where the building is closed in by month 11. Internal finishes follow with the sports floor and commissioning being the last items to complete. On the assumption that Cobham is given the go-ahead in May 2009 then the centre will be complete at the end of 2010, well before the RWC scheduled for September 2011.

Design, Management Fees and Sundries

This budget component includes all fees for the full design team, quantity surveyor, Council in-house project management team and sundry project costs such as advertising. We have sighted contracts for each of the main consultants and reviewed allowances for secondary consultants and the Council's own project team; we believe these to be within the budget estimate for this component of the project.

Resource and Building Consents

The budget allowance for consents will cover the costs involved; most are already identified.

Project Contingency

The project contingency is there to capture yet to be identified risk elements outside the allowances made within the Building component. Whilst the project contingency represents only 1.5% of the total project cost we believe that, given the level of robustness within the Building component, that this allowance is sufficient provided adequate cost management controls are in place throughout the build phase. In our view such cost management is already in place and as such we are satisfied that the contingency is adequate.

Exclusions

As noted above GST and Land are excluded from the project budget. In addition to these exclusions we note that the budget also excludes seating, divider curtains, sports code equipment, electronic scoreboards, court marking, sports floor protection, office furniture, lockers, artworks and seating beyond that briefed (say for banquets). As we are comparing "like for like" with the Concourse Proposal we have made certain that these exclusions apply to both cost comparison studies. We note that some of the items excluded are to be funded through other agencies, either within Council, NZ Transport Authority or sport related entities..

General Comment

The Cobham Proposal has reached a stage where the majority of its costs are known. From a cost perspective we note that "now is the time to build" as interest rates are at their lowest for many years, building activity is depressed, margins are very competitive and tendering has sharpened considerably over the last six months.

CONCOURSE PROPOSAL

Quote: “There are significant risks that are difficult to quantify.”

CONSTRUCTION COST

The total construction cost for the Concourse is estimated to be \$68,205,000 excluding GST and the value of “air rights” or leased space. This cost is derived from our own assessment of the proposal “as presented” but with elements, where in excess of the Brief, removed to ensure a comparison can be made with Cobham. The total construction cost includes allowances made for design and management fees, consents, construction costs, escalation and commissioning.

In summary the costs are split as follows:

➤ Building	\$57,300,000
➤ Design, management fees and sundries	\$7,175,000
➤ Resource and Building Consents	\$730,000
➤ Project contingency	\$3,000,000
Total estimated Construction Cost (excluding “air rights” and GST)	\$68,205,000

Building

On the basis that Cobham meets the Brief then, from the information provided for the Concourse proposal, there are amenities indicated that are in excess of the Brief and therefore in excess of the facilities provided within Cobham. In order to compare the two proposals within this cost comparison estimate the following amenities, shown in the Concourse plans and specifications, will be excluded:

- First Aid and drug testing rooms
- Large kitchen spaces, Cafe
- Turnstiles
- Centre manager’s offices, Sports admin offices, media rooms, reception store
- Media and sports control rooms
- Umpires room or lockers
- Staff accommodation is limited to the reception area
- Storage “cages” or rooms

The following internal amenities are provided at Cobham so will be included in the cost comparison estimate for the Concourse:

- Small kitchenette in the social space
- Two admin offices adjacent reception
- Drugs testing and first aid small bench
- An area for combined function/meeting, social space
- Storage areas are generally in the open plan
- Change and toilet amenities

Taking the above into account, and looking at the two proposals from a cost comparison perspective, the Concourse therefore has the following major differences to that provided by Cobham:

- Strengthening of the existing carpark
- Columns to support the elevated structure as the building sits 4.5m above the Fran Wilde walkway
- A steel and timber framed sub-floor rather than a concrete floor
- The Concourse includes a 12.5m clear height area over the three northern courts.¹ Our cost comparison estimate will assume clear heights similar to that provided at Cobham.
- A different building shape albeit that 12 courts are provided
- A metal external wall cladding on steel framing system rather than precast panels/walls and windows
- A long span trough section roof with a medium term life rather than the long life more expensive metal roofing (Kalzip)
- Less windows therefore more reliance on artificial light
- A forced air mechanical ventilation system instead of a natural ventilation system
- No carpark i.e. it relies on the existing carpark being provided
- No landscaping or siteworks
- A larger floor area as described below (possibly as a result of the building shape and the requirement for mechanical plant room space not necessary at Cobham)

Level or space considered	Concourse Proposal	Cobham Proposal
Car park		4,100
Court level	14,040	12,800
Mezzanine level	1,150	1,150
Total gross floor area	15,190	18,050
Gross Floor Area comparison without considering carpark	15,190	13,950
Floor area difference	+1,240	

Fire Engineering:

Fire engineering deserves specific comment as there is considerable uncertainty with respect to how the new indoor sports centre will relate to the adjacent Westpac Stadium and how occupants of both will egress in event of an emergency in either or both venues. We have reviewed the information provided by the Concourse team and in particular the latest information from Beca dated 31 March 2009. We note that others will review this aspect of the proposal, however in order to make some allowance within the cost comparison estimate we have assumed the following as relates to the Beca report:

- “Total and complete fire separation” – we have assumed that the gap between the two buildings is sufficient for this separation; the glass roof/skylight that joins the buildings will therefore be excluded from the cost comparison estimate.
- “No emergency egress into Westpac Stadium” – we have assumed only one link bridge will be included, this remaining link bridge will have a two hour fire separation.
- “Maintain conditions on level 1 concourse” – we have allowed one hour fire rating of the underside of the Court floor PLUS sprinkler protection.

¹ We understand that this extra height was proposed to allow the centre to house concerts and international sporting fixtures. As this same facility is not provided at Cobham, albeit that one court at Cobham could allow for an international volleyball event to be staged (i.e. a clear height of 12.5m can be achieved) we have only made allowance for a small section (1 court) to provide this facility so as to maintain our “like for like” comparison

- “The new indoor sports facility will egress entirely independent” – we have allowed four additional 2500 wide egress stairs to compensate for the loss of the fire egress links to the Westpac Stadium stairs as provided for in the Beca 2002 report.
- “Sprinkler protect the sports facility and the concourse” – we have included full sprinkler protection to the new building and to the underside
- “Provide automatic detection in the carpark” – we have included auto detection in the carpark
- “Consider provision of “additional” egress from the Westpac Stadium” – excluded, see Project Risks
- “Fire separate the carpark from the walkway” – we have added two-hour fire rated enclosures with fire doors on top of the oval central stair and the western carpark pedestrian ramp

Overheads and Margins:

In calculating the P&G we have recognised that there are certain added penalties at the Concourse that wouldn't manifest themselves when working on a Greenfield site. The main issues that arise can be summarised as follows:

- Building site security and public safety – the Concourse site is elevated and over an operating public access/egress way. Careful attention to keeping construction activity secure from the public during construction will be required.
- Additional safety lighting will be required to light up the underside of the new floor as it is installed until permanent lighting is available.
- During construction up to the time the new building is weather tight, public access under the building will be subject to rain water conditions similar to those encountered when walking under a scaffold gantry over the footpath, only to a much wider area. This is likely to be uncomfortable, even though users will be walking through the rain to get to the concourse, however, special allowances should be made to reduce this situation
- The sequencing of works to accommodate close down during major events including pack up and re-start. We have assumed that the works will be interrupted by 20 events that will require a total shutdown of the site and allowed costs accordingly.
- Vehicle movements up and down the ramp and the add-on cost for movement within the carpark which is an operating facility have been included.
- The site access is generally restricted on its western and northern boundaries, in close proximity to the Westpac Stadium, and as such care will need to be taken when working over the boundary, especially an operating rail yard.
- Back propping will be required to support construction activity such as cranes and areas where loads are imposed pending completion of the structural strengthening.

A profit margin allowance at 5% of the net construction cost has been allowed. This is comparable with Cobham and other Wellington projects currently underway.

Programme:

The programme submitted for the Concourse indicates a fast track approach that would see an immediate start to the design phase, a contract awarded towards the end of 2009 and an earliest start on site in March 2010. The submitted programme then indicates a construction completion in August 2011 but also indicates an “ideal” inclement weather contingency of two further months. The submitted programme would see all work completed before the Rugby World Cup start in September 2011, albeit that the weather contingency, if used would see works span this event. In our opinion this would not be an issue as long as the new building is not needed for the RWC event.

There are two significant assumptions used in the submitted programme; one being that all necessary approvals, community consultation, agreements with neighbours, agreements with the Westpac Stadium and NZ Rail and resource consents can run concurrent with the progress of design, tendering and construction; two, that the Council, or the body set up to undertake the development, would “fast track” the procurement of designers and contractors without the normal public tender process.

It is our belief that the submitted programme is extremely optimistic at the front end and ignores some significant events that will need to be put in place before Council could award any contracts for design and construction. A more likely scenario is a similar process that was followed for Cobham where that project followed a linear progression whereby commitments are put in place before advancing to the next phase so as to control costs and the desired outcome. We suggest the following is more realistic:

- | | |
|---|----------------|
| ▪ Approval to proceed, say 1 month | May 2009 |
| ▪ Arrangements/agreements reached with stakeholders (including Westpac Stadium, GWRC, NZ Rail and Sport Codes), say 2 months – optimistic at best | July 2009 |
| ▪ Local Government Authority special consultative process, 3 months | October 2009 |
| ▪ Engagement of design and management team (based on expression of interest, RFP, design competition and contract agreements before work starts) , say 4 months | February 2010 |
| ▪ Preliminary design phases, community engagement and Resource Consent application, say 5 months including resolution of fire engineering | July 2010 |
| ▪ Notified Resource Consent process including environmental assessment, say 6 months | January 2011 |
| ▪ Completion of design following the RC process, say 5 months | June 2011 |
| ▪ Competitive tendering and evaluation, say 3 months | September 2011 |
| ▪ Earliest start date on site | October 2011 |
| ▪ Rugby World Cup | September 2011 |
| ▪ Realistic construction start | November 2011 |
| ▪ Construction completion (including allowance for inclement weather), 20 months | June 2013 |

Cost Escalation:

Cost escalation from today’s date to construction completion needs to be factored into the cost comparison estimate. From industry information (primarily from the NZIER) we have allowed escalation at a rate of 0% for 2009, 1.5% for 2010 and 2.5% thereafter. The cost comparison estimate therefore includes inflation over this period to increase the start price by 5.1%. We note that NZIER have indicated that post 2010 inflation risk may be higher than their calculation; we have taken a conservative approach within the above allowance.

Building Risk Allocation:

As with Cobham allowances have been made for risk elements associated with the construction of the Building. Unlike Cobham, where most of the Building risk has been reduced, given that detailed design has been completed and a tender offer made, the Concourse proposal is at best only at the “concept” stage.

We have assessed the value of building related risk to be \$5,000,000 or 10% of the net construction cost estimate plus overheads. This assessment will cover normal risk allowances associated with a project at “concept” stage and those risk factors that we are aware of in undertaking this revenue. The following is a summary of the type of items covered:

- Facilities not shown on the concept plans or within the specifications but nevertheless required to meet those facilities provided at Cobham
- Unknown ground conditions and therefore the effect on the proposed structural scheme
- Uncertainty with respect to the ability to rely on the existing carpark structure to support the new building and the structure’s ability to meet the latest Code requirements
- Support of the existing structure during construction given that some heavy loads will be applied to areas of the carpark e.g. crane bases and back propping, plus loss of revenue for carparks that will be unavailable during construction
- How the structure for the new building will cater for the existing seismic gap within the carpark
- How the steel and timber framed court floor will cater for the specified DIN rated sports floor
- What additional structure is required to support the cantilevered east change facility
- Entry and egress from the new facility and how these access ways interface with the use of the Westpac Stadium and the carpark
- Whether use of some of the Westpac Stadium facilities, such as the rubbish load out area, will in fact be suitable or whether additional facilities need to be provided
- Urban design comments such as reference to the large blank wall along the western boundary (albeit that a strip window and overhanging eave has been shown) that may need to be addressed and to the height of the space under the new building and how this will be perceived
- Construction complexities in building over an operating pedestrian walkway, building within the rail corridor and building adjacent to an operating rail yard
- How the construction activities will work in with the public’s use of the plaza walkway

Contract Arrangements:

We note that it is unlikely that Council will receive a lump sum fixed price contract for the Concourse proposal given that the parties will be unable to pre-determine when Westpac Stadium events will fall and therefore how long close down periods will be. Arrangements could be made to pre-determine costs associated with specific close down periods; however extensions of time will arise unless there is also a time allowance included in the contract arrangement.

Design, Management Fees and Sundries

This budget component includes all fees for the full design team (including Architect, structural and services engineers, traffic and acoustic engineers, façade consultant), quantity surveyor, project management and sundry project costs. We have assumed for this cost comparison estimate that the level of design and management fees is similar to that for Cobham as a percentage of the Building and Civil Works estimates, on the basis that a similar procurement process would be followed.

Resource and Building Consents

To compare “like for like” the Concourse proposal cost estimate will need to include an allowance for all potential costs associated with obtaining Principal Agreements with the Westpac Stadium Trust and NZ Rail, Council adopting the project in its planning and undertaking a consultative process then making application for a Resource Consent. Once consent has been granted, aside from possible appeals, a normal building procurement process will follow including making application for a Building Consent. The main costs for the design and management team are included separately; however there will be additional costs such as wind tunnel testing, legal fees (possibly in excess of those incurred at Cobham due to the stakeholder agreements required), urban design fees, and project management during this phase (also deemed to be in excess of Cobham due to the nature of the “start-up phase”), as well as the costs for the consents themselves. The estimate for resources and building consents takes these factors into account and has been adjusted to account for the time differential.

Project Contingency

A project contingency is there to capture risk elements outside those allowances specifically related to the cost of building as noted in that section. Our assessment of that risk is \$3,000,000. This equates to a 33% factor on those elements outside the building costs or 4.5% of the overall estimated project cost.

In estimating the level of project contingency, we have looked at the project’s timeline; where it sits in relation to that timeline (very much at the beginning) and assessed what possible risks are associated with each of the following:

- the level of allowances made for the designers
- other direct costs to the Council such as an extended time period
- legal and other fees over and above allowances made in order to gain agreements and the resource consent, or any other consent
- potential additional management time related costs
- advertising and other sundry costs
- the potential for additional civil works
- relocation of Westpac signage covered by the new building

Other significant “risk” elements that are flagged but cannot be quantified are:

- As noted above under fire engineering, four additional egress stairs have been included in the cost comparison estimate; however these may not be enough to cope with the potential 4,200 occupants. We cannot quantify this risk element without a specific Fire Report.
- Consideration of additional egress from the existing Westpac Stadium as raised by the Beca Report dated 31 March 2009
- Complete fire separation of the carpark from the concourse
- It has not been determined whether the effect of introducing columns into the Plaza walkway would have a detrimental effect on egress under emergency situations; further fire modelling may resolve this uncertainty

- Further consultation with NZ Fire Service to determine what other matters need to be considered with regards to emergency evacuation
- Westpac Stadium require use of the new building to interface with events, which is in contrast with the fire engineering requirement to separate the two buildings
- Car parking arrangements with Westpac Stadium including the reconfiguration of the Westpac Stadium carpark to accommodate WICSC users as well as commuter parking; noting that the two may not be able to be mixed as commuters pay a daily rate
- The condition imposed by Westpac Stadium in that it will not allow a drop off zone at the top of the ramp to the Plaza level, this will mean users will need a drop off zone on ground level, as is the case with taxis at present. This may require a further reconfiguration of the carpark to cater for the drop off zone so as not to conflict with the taxi rank.
- A similar situation to the above will manifest itself with bus turning and deliveries

Exclusions

As noted GST and “air rights” or lease costs are excluded as are the same items excluded from the Cobham proposal. In addition no allowances have been made for costs associated with payment, or otherwise, to Westpac Stadium for the use of the car parks or the car parks lost due to the introduction of new structures and plant rooms. The cost to purchase the air rights is included in another section of the overall report.

BROAD BRUSH BUILDING COST COMPARISON TO COBHAM

As can be seen from the summaries for the two proposals the Concourse “building” estimate is some \$15m more than that for Cobham. The following table sets out in broad brush terms were the differences are to be found:

Component	Cost difference
Additional floor area – 1,200m ²	\$2,000,000
No carpark or landscaping	(\$5,000,000)
Strengthening of existing carpark	\$4,500,000
Support structure for the elevated court level and access/egress stairs	\$2,100,000
Steel/timber floor v concrete floor	\$7,300,000
Roof	(\$1,500,000)
External walls and windows	\$1,500,000
Heating and ventilation	\$1,300,000
Escalation	\$2,800,000
Broad brush Building cost comparison between the two proposals	\$15,000,000

LIFE CYCLE COST ANALYSIS

Quote: “Simply stating Capital Cost does not paint the entire picture”

Whole of Life Cost

The use of different materials, different environmental controls, etc can effect the “real” cost of a building over its intended lifespan, in this case 70 years. Using life cycle cost analysis (LCC) we are able to compare one building with another to gauge its whole of life cost. For this report we have adopted the approach that the LCC need only account for those aspects within each proposal that are different. Put another way for example, if the same materials are used on the floors for each proposal then there is no need to test their whole of life cost as they will be identical.

The Cobham proposal includes the following major components that are different from the Concourse proposal:

- Roof coverings comprising a long life metal roof with some fabric roofing
- External walls that are predominantly precast concrete panels and windows
- Natural ventilation
- Greater use of daylight combined with artificial lighting

Conversely the Concourse proposal includes the following components that are different from the Cobham proposal:

- Medium life metal roof coverings with some fabric roofing
- Corrugated metal cladding and glazed external walls
- Soffit lining to the underside of the court level over the concourse
- Mechanical ventilation
- No roof lights to add natural light therefore more reliance on artificial lighting
- Additional and larger lifts

In assessing whole of life costs we have considered the following:

- Life of the material
- Down time associated with removal and replacement
- Inflation over time
- Maintenance and running costs
- The net present value of cash flows over a 70 year life span

The following table sets out to compare on a whole of life cost basis for the above items. Please note that as indicated above this is the life cycle cost for comparison purposes only not the true whole of life cost.

Element	Cobham	Concourse
Construction Cost Estimate	\$49,500,000	\$68,205,000
Roof coverings	\$457,000	\$736,000
External walls	\$867,000	\$1,400,000
Ventilation	\$157,000	\$627,000
Lighting	\$201,000	\$564,000
Lifts	\$24,000	\$58,000
Additional energy consumption based on \$20/m ² /yr		\$3,153,000
Whole of Life cost comparison	\$51,206,000	\$74,743,000

The conclusion reached here is that the Concourse proposal is \$23,500,000 more expensive than Cobham as an asset to create and run over the 70 year life cycle.

OPERATING COSTS

Rather than undertake a complete assessment of each proposal's operating costs a better analysis would be to state the differences. Using Cobham as the baseline therefore we list hereunder the differences (advantages and disadvantages) as relates to the Concourse:

Item	Annual cost assessment
Possible additional staffing costs given entry is removed from reception	Not assessed
Potential for integrated management with Westpac Stadium	Not assessed
Interest on larger capital expenditure	Not assessed
Depreciation costs on larger capex	Not assessed
Lease of 250 carparks plus approx. 10 other parks lost as plant rooms are located in the carpark say 260 x \$8 x 5days x 48 weeks less 45 event days	400,000
Maintenance costs higher on more expensive building estimated at 1% on the difference in total cost of construction, being \$15m	150,000
Higher running costs estimated at \$20 per m ² per annum x 13,000 m ²	260,000
Total "assessed" additional operating costs per annum at the Concourse	\$810,000

COBHAM PROPOSAL WRITE OFF COSTS

We have been provided with information on the costs incurred to date in bring Cobham to tender and estimates for the cost to complete the resource consent process as follows:

Expenditure to date	\$4,241,000
Outstanding commitments for the completion of tender and resource and building consents, including -	
Designers fees (balance of tender phase and unpaid fire sprinkler modelling)	85,000
QS fees – balance of tender phase	11,000
BCLS - \$57k (total fee of around \$170k, balance would have gone to BRANZ and Department of Building and Housing Levees)	57,000
Environment Court additional traffic modelling	30,000
Environment Court legal fees	85,000
WCC management costs	76,000
Total Cobham costs spent to date and conclusion costs	\$4,585,000