Nelson City Council
te kaunihera o whakatū

AGENDA

Ordinary meeting of the

Nelson City Council

Thursday 26 February 2015
Commencing at the conclusion of the
Community Services Committee meeting
Council Chamber
Civic House
110 Trafalgar Street, Nelson.

Membership: Her Worship the Mayor Rachel Reese, Councillors Luke Acland, Ian Barker, Ruth Copeland, Eric Davy, Kate Fulton, Matt Lawrey, Brian McGurk, Paul Matheson (Deputy Mayor), Gaile Noonan, Pete Rainey, Tim Skinner, and Mike Ward

Page No.

Opening Prayer

Apologies

1. Confirmation of Order of Business

2. Interests

2.1 Updates to the Interests Register

2.2 Identify any conflicts of interest in the agenda

3. Public Forum

Temporary Road Closure Condition for Trolley Derby

Tim Bayley of the Nelson Trolley Derby Club will speak about the traffic management plan condition of reserved parking for the Trolley Derby.

4. Mayor's Report 5-6

Document number A1319045

Recommendation

THAT the Mayor's Report (A1319045) be received;

AND THAT the second clause of the resolution made by Council on 19 January 2015 in relation to the Trolley Derby to be held on 14 March 2015:

> *AND THAT as part of the traffic management plan, reserved parking is provided in Bronte St West and East to meet the need of Collingwood Street residents.*

be revoked.

5. One Hour Free Parking Extension 7-8

Document number A1318821

***THAT** the report One Hour Free Parking Extension (A1318821) be received;*

***AND THAT** approval is given for the extension of the One Hour Free Parking from 6 April to 31 July 2015 pending a decision on this matter by Council as part of the LTP;*

***AND THAT** this extension of One Hour Free Parking be notified accordingly.*

6. Trafalgar Centre – Evaluation of Options to Date and Approval of Early Contractor Involvement 9-115

Document number A1317937

Recommendation

***THAT** the report Trafalgar Centre – Evaluation of Options to Date and Approval of Early Contractor Involvement (A1317937) and its attachments (A1314722, A1319283, A1319301, A1319308, A1319163, and A345448) be received;*

***AND THAT** Council implement its health and safety obligations by focusing the structural strengthening on minimising collapse of the building structure and thereby essentially taking all reasonably practical steps to ensure that no harm should befall persons at, or in the vicinity of the Trafalgar Centre during the event of an earthquake;*

***AND THAT** Council progress with the detailed design and construction phases utilising an Early Contractor Involvement procurement option to engage a contractor to provide practical and innovative input;*

***AND THAT** Council receive a further update report and approve the selection of the preferred contractor at its meeting on 30 April 2015.*

7. Housing Accord 116-130

Document number A1303852

Recommendation

<u>THAT</u> the report Housing Accord (A1303852) and its attachments (A1314678 and A1314265) be received;

<u>AND THAT</u> the Nelson City Council agrees to enter into a Housing Accord with the Minister of Building and Housing;

<u>AND THAT</u> the Nelson City Council, through the Chief Executive and Mayor, enter into negotiations with the Minister of Building and Housing over the final form of the Housing Accord, in collaboration with Tasman District Council;

<u>AND THAT</u> the Group Manager Strategy and Environment will report back to Council on the Accord's proposed actions once it is signed with the Minister of Building and Housing.

Note:

- **This meeting is expected to continue beyond lunchtime.**
- **Lunch will be provided at 12.30pm.**

REPORT A1319045

Mayor's Report

1. Purpose of Report

1.1 To revoke part of a temporary road closure resolution made by Council on 19 January 2015.

2. Recommendation

THAT the Mayor's Report (A1319045) be received;

AND THAT the second clause of the resolution made by Council on 19 January 2015 in relation to the Trolley Derby to be held on 14 March 2015:

> *AND THAT as part of the traffic management plan, reserved parking is provided in Bronte St West and East to meet the need of Collingwood Street residents.*

be revoked.

3. Decision

4. Trolley Derby Temporary Road Closure

4.1 At the extraordinary Council meeting on 19 January 2015, Council considered a temporary road closure for the 14 March 2015 Trolley Derby and resolved:

> *AND THAT Council approve the application for the Mike Pero Trolley Derby temporary road closure of Collingwood Street, from Manuka Street to Brougham Street, on 14 March 2015;*
>
> *AND THAT as part of the traffic management plan, reserved parking is provided in Bronte St West and East to meet the need of Collingwood Street residents;*

4.2 The reserved parking was trialled for the Monster Slide event on 2 February 2015. There was a low number of uptakes for the reserved

parking, and it involved a considerable amount of staff time to organise and issue the permits.

4.3 There have been no parking issues at previous Trolley Derby events. The organiser has highlighted that the reserved parking areas on Bronte Street were already planned sites for ambulance, fire and crash crew.

4.4 It is therefore recommended that the second part of the above decision be revoked under Standing Order 3.9.18, and that reserved parking not be a condition of the traffic management plan for the Trolley Derby.

5. Conclusion

5.1 Council should revoke the second clause of the resolution made by Council on 19 January 2015 in relation to the Trolley Derby to be held on 14 March 2015.

Rachel Reese
Mayor of Nelson

Attachments

None

Nelson City Council
te kaunihera o whakatū

Council

26 February 2015

REPORT A1318821

One Hour Free Parking Extension

1. Purpose of Report

1.1 To consider an extension of the one hour free parking trial from 6 April to 31 July 2015.

2. Delegations

2.1 This matter falls within the delegations of the Planning & Regulatory Committee. However, at its meeting on 26 June 2014, the Committee requested Council consider the issue. This report comes direct to Council on the basis of a continuation of that matter.

3. Recommendation

THAT the report One Hour Free Parking Extension (A1318821) be received;

AND THAT approval is given for the extension of the One Hour Free Parking from 6 April to 31 July 2015 pending a decision on this matter by Council as part of the LTP;

AND THAT this extension of One Hour Free Parking be notified accordingly.

4. Background

4.1 On 9 October 2014 Council resolved:

> *AND THAT Council offer the first hour as free parking in all areas within the CBD, noting that motorists will need to display a ticket, whether paying for parking or enjoying free parking;*

4.2 This decision was to be trialled from 20 October 2014 to 6 April 2015, as part of determining the most appropriate/any permanent changes to CBD Parking.

5. Discussion

5.1 Council's one hour free parking trial expires on 6 April 2015. Council has signalled its intentions, through the Long Term Plan 2015-25 (LTP)

Consultation Document, to make this initiative permanent. As any decision by Council to proceed or not with this initiative will be dependent on the feedback from consultation and Council deliberations, it will be necessary to extend this free hour post 6 April until Council is able to make a decision.

5.2 Extending the one hour free parking until 31 July 2015 allows time for the LTP consultation to occur and for officers to give effect to any work required eg new signage, notification of change.

6. Options

6.1 Council should consider whether to extend the one hour free parking from 6 April to 31 July 2015.

7. Assessment of Significance against the Council's Significance Policy

7.1 This matter is not significant in terms of Council's Significance and Engagement Policy.

8. Alignment with relevant Council Policy

8.1 This matter is not in contradiction to any Council policy or strategic document.

9. Consultation

9.1 The public have not been consulted on this matter.

10. Inclusion of Māori in the decision making process

10.1 Maori have not been consulted on this matter.

11. Conclusion

11.1 Approval should be given for the extension of one hour free parking from 6 April to 31 July 2015 pending a decision on this matter by Council as part of the LTP.

Clare Hadley
Chief Executive

Attachments

None

Nelson City Council
te kaunihera o whakatū

Council

26 February 2015

REPORT A1317937

Trafalgar Centre – Evaluation of Options to Date and Approval of Early Contractor Involvement

1. Purpose of Report

1.1 The purpose of this report is to update Council on progress made to date on the assessment and development of concepts with the objective of re-opening the Trafalgar Centre in early 2016. It specifically seeks approval for early contractor involvement (ECI) in the project, which is an exceptional circumstance under Council's procurement policy.

2. Delegations

2.1 Council resolved in June 2014 for updates to be reported to full Council.

3. Recommendation

***THAT** the report Trafalgar Centre – Evaluation of Options to Date and Approval of Early Contractor Involvement (A1317937) and its attachments (A1314722, A1319283, A1319301, A1319308, A1319163, and A345448) be received;*

***AND THAT** Council implement its health and safety obligations by focusing the structural strengthening on minimising collapse of the building structure and thereby essentially taking all reasonably practical steps to ensure that no harm should befall persons at, or in the vicinity of the Trafalgar Centre during the event of an earthquake;*

***AND THAT** Council progress with the detailed design and construction phases utilising an Early Contractor Involvement procurement option to engage a contractor to provide practical and innovative input;*

***AND THAT** Council receive a further update report and approve the selection of the preferred contractor at its meeting on 30 April 2015.*

4. Background

4.1 In December 2013 Council resolved to close the Trafalgar Centre (TC) after it was declared an earthquake prone building under the Building Act 2004 (s124 notice issued). The seismic capacity of the building fell below 34% of NBS. It is important to note that Council received legal advice that just strengthening the building to 34% New Building Standard (NBS) (as required under the Building Act) would be insufficient to meet all statutory obligations. As a facility for up to 4000 people, Council had obligations under health and safety legislation that required it to take all reasonable and practicable steps to provide a safe facility.

4.2 In March 2014, Council resolved to establish a project team to consider and respond to it on any potential engineering solutions and costings which would ensure the Trafalgar Centre could be adequately strengthened to allow it to be reopened.

4.3 In August 2014 Council engaged Opus International Consultants (Opus) as project managers to drive an investigation phase and to manage the project to re-open the Centre. The Trafalgar Centre Evaluation of Options report by Opus can be found in attachment 1.

4.4 Council established an objective for the re-opening project of "producing a completed building that meets the necessary statutory criteria and is appropriately appointed for future use by the community".

4.5 In December 2014, Council considered a progress report on the development of the concept plans and resolved that to allow for full examination of choices, concept plans and cost estimates, a further report should be made in February 2015.

4.6 This report details the assessments and concept designs in the Trafalgar Centre Evaluation of Options report by Opus. It does not have final clarity around concepts as further investigation is recommended which may have a significant, positive impact on final costs.

4.7 The report does recommend a process towards finalising the detailed design and implementation. It seeks approval for early contractor involvement on the basis that if Council is to achieve its objective of re-opening in early 2016, within its budget envelope of $10 million, it will need to adopt a partnership approach throughout. This is a variation to standard procurement practices, allowed for in Council's procurement policy.

4.8 Officers have applied the guidance from the resolution of 6 March 2014 establishing the project team that Council seeks to adequately strengthen the TC to address Council's obligations in relation to public safety. Council did not stipulate a fixed percentage of NBS but rather sought a reasonable and practical solution to provide a safe facility.

4.9 Finally, in the interests of completeness, it is important to understand that strengthening to any level does not mean that the building will not need serious remedial works post a moderate earthquake.

5. Stage 1 – Investigation and Design Concepts

Overview of Investigations

5.1 The options for ground remediation and structural strengthening have been assessed and detailed. A high degree of uncertainty remains around the scale of lateral movement and the corresponding options to mitigate this movement, specifically in the direction of Saltwater Creek. Several ground remediation options have been considered. However the uncertainty to date around ground remediation has correspondingly compromised certainty around options for structural strengthening. Given the significant costs involved, Council may consider only undertaking work that is reasonable and practical.

Structural Assessments

5.2 Structural assessments have concluded that even if the Trafalgar Centre was built on solid ground (i.e. no chance of liquefaction or lateral movement), at this point in time it would still be earthquake prone. The structural assessment concludes it is below 34% NBS. If the ground supporting the foundations was solid then most of this strengthening work would comprise increased bracing in roof and walls and stronger roof/wall connections. In the southern extension the current bracing would need to be replaced as the current type of bracing did not perform satisfactorily in the Christchurch earthquakes.

5.3 As stated previously the current understanding is the ground conditions are not ideal (solid) so additional strengthening work to that outlined in clause 5.2 has been provided for. For all three buildings (main, northern and southern extension) the strengthening work would largely comprise;

- Stronger foundational tie beams across the main building;
- Increased bracing in the roofs and walls of the main building in both longitudinal and lateral directions;
- Replacing bracing in the southern extension with more reliable bracing;
- Strengthened roof/wall joints in both the northern building and southern extension;
- Strengthened and new foundation beams below walls in the northern building.

Ground Assessments to Date

5.4 Moderate earthquake shaking at the site of the Trafalgar Centre could result in a number of ground damage effects. Those effects which could most adversely affect the building comprise:

a) Reduced Ground Support to Piles

At moderate levels of earthquake shaking, liquefaction effects could reduce the strength of the soils in which the current building piles are founded. Consequently these piles would not reliably support the building.

b) Lateral Ground Displacement

At moderate levels of earthquake shaking lateral ground displacement toward Saltwater Creek could be initiated, potentially shearing the existing piles so they would not reliably support the building. The existing piles are lightly reinforced and can only tolerate limited lateral ground displacements. At higher levels of earthquake shaking the magnitude of lateral ground displacement toward Saltwater Creek could be expected to increase. Some lateral ground displacement toward the Maitai River could also occur. With these larger displacements there is a potential for the timber arches supporting the main hall to be stretched apart at their supports.

Design Concepts (Structural and Geotechnical)

5.5 The strengthening options around the structural and ground assessments for each of the three buildings are numerous. Essentially there are eight design concepts for the main building, four design concepts for the northern building and four design concepts for the southern extension. These design concepts are outlined in *Appendix B – Proposed Seismic Modifications* in the Trafalgar Centre Evaluation of Options report by Opus. The design concepts outlined would meet the Council requirement of addressing Council's obligations in relation to public safety.

6. Further work required to complete design concepts

6.1 The assessments to date have prompted more questions, and further peer reviews and advice from geotechnical engineers with experience from Christchurch has been sought. As a result, commissioning of specialist equipment, essentially ground response technology, to provide further advice on the ground remediation is necessary. This should occur in the next 2-3 weeks. If their desktop assessment is correct, that ground conditions require less remediation than assumed in previous assessments, it could reduce works considerably, and have a significant, positive impact on costs.

6.2 Given time constraints, this advice has not been able to be included in the Trafalgar Centre Evaluation of Options report by Opus.

7. Concept Designs, Functional Options and ROC costs

7.1 The cost estimates have been derived based around the concept designs set out in the Trafalgar Centre Evaluation of Options report by Opus. These are rough order costs (ROC) and are typical at this stage in any

project. They are based on achieving at least 67% NBS, which may be more than Council needs to achieve to address reasonable and practical steps to provide a safe facility. As they are based on concepts they have underlying assumptions as to what the detailed design may comprise for each of the options.

7.2 Attachment 3 is a table summarising the design concepts; attachment 4 is the rough order costs.

7.3 The most cost-effective option is Scenario 1 with a ROC of $12,143.000. This is based on an assumption of the need to invest for ground remediation works, and this scenario has all three buildings strengthened to 67% NBS. Subject to the further investigation, costs may reduce significantly. All three buildings remain functionally the same in Scenario 1.

7.4 The Annual Plan has a budget of $3 million, and draft LTP has a total of $10.0 million for 2015/16. This budget has come from compiling budgets initially intended for the northern end extension. This is not the assumed project budget; it is a placeholder provision only at this time.

7.5 The solutions offered by third parties promise innovation, which needs to be explored, as these may offer savings to those concept designs estimated above. Experience on other projects suggests costs could be reduced if an alternative procurement option (set out below) was used. A solution may be found within the range of $7-10M.

7.6 Further advice on costs will be available once the ground response work is undertaken.

Functional Options

Main Stadium

7.7 The concept designs as outlined do not affect the functionality of the Main Stadium. It is intended that the structure be strengthened without affecting its functionality.

Southern Extension

7.8 As with the Main Stadium, the concept designs as outlined do not affect the functionality of the Southern Extension. It is intended that the structure be strengthened without affecting its functionality.

Northern Building

7.9 The concept design phase has initially considered up to nine different options for the northern building. These comprise the full spectrum from minimal strengthening work through to a complete rebuild. Some of the options would attain 67%NBS whilst a complete rebuild would attain 100%NBS.

7.10 This report has outlined two of the nine options; the first (Option N3) is to strengthen the foundations utilising a grid of foundation beams. This would largely leave the format of the northern building as is.

7.11 The second option (Option N5) is to demolish and rebuild the structure.

7.12 A complete rebuild of the northern building would give Council the opportunity to consider functional improvements. A complete rebuild of the northern building would also be to 100%NBS.

7.13 There are several scenarios that could fall under the Option N5 category. These scenarios fall into four broad categories:

- Retaining the northern building layout as is with the main entrance to the west. Minimal structural upgrade, upgrade of toilet facilities and kitchen. Retain the Victory Room.
- Relocating the main entrance to the north, relocation of the Victory room, ticketing booth, kitchen and toilets to accommodate new entrance layout.
- Relocating the main entrance to the east facing out onto Rutherford Park. Retain the Victory room and relocate ticketing booth and reformat kitchen and toilet facilities.
- Complete rebuild of the northern building, with the entrance to the east and facing out onto Rutherford Park.

7.14 If the Council wanted to pursue with Option N5, it would need to scope out the functional requirements and determine the best way forward.

7.15 Demolishing and rebuilding the northern building would not be on the critical path for this project. There is time available for Council to consider the options and finalise the scope before moving into detailed design and construction.

8. Procurement and Moving Forward - Stage 2 – Detailed Design

8.1 The next stage is the detailed design phase. This will not occur before the results of ground response technology investigations are known, as this may reduce the work considerably.

8.2 Although various concept designs have been outlined by Opus, there is still room for some value engineering that could reduce the extent of work and still comply with Council's intention of re-opening a safe facility.

8.3 The Trafalgar Centre has been assessed as earthquake prone under the Building Act 2004. Under the Act the building would need strengthening to at least 34% to remove the earthquake prone status. However, given its use as a place of assembly, Council has higher obligations under the Health and Safety in Employment Act 1992. Council must take all

reasonably practicable steps to ensure that no harm should befall persons at, or in the vicinity of the Trafalgar Centre. The NBS percentage may vary, depending upon the section of the TC (and therefore its usage) that is being addressed.

8.4 It is possible for Council to meet its obligations under the Building Act 2004, that is strengthen to 34% NBS whilst still meeting its obligations under the HSE Act without specifically targeting 67% NBS. If Council was to essentially take all reasonably practical steps to ensure no harm should befall person it could do so by implementing structural measures to ensure the building did not collapse in an event. This option would mean that the structure may not be repairable after the event, but it would not have collapsed.

8.5 At this stage, the design concepts outlined in this report have focused on strengthening the structure to at least 67% NBS. The need for this/appropriate percentage will be refined as the detailed design is completed.

8.6 As previously advised, there are alternative solutions being promoted by third parties that warrant consideration. The design concepts outlined in this report could be modified and delivered more cost effectively. There could also be alternative options that have not been considered to date. The only way Council is going to be able to consider any alternatives is to undertake a procurement method to allow an opportunity for these third parties to be involved in comparing their options up against the design concepts outlined in this report.

8.7 At the outset of this project it was assumed a traditional design, tender and build procurement phase would be adopted. However given the potentially viable alternatives in the market and given the high Rough Order Costs it is recommended that the detailed design phase be subject to an Early Contractor Involvement (ECI) bid. This will ensure that Council has the practical expertise and an alternative option (or options) to compare. This is allowed for under Council's procurement policy (attachment 6).

8.8 The ECI process could be progressed as follows:

8.8.1 Advertise for Contractors experienced in construction and geotechnical solutions. The advertisement will include an outlined of the scope of work, the indicative value and what is required of the contractor in the ECI phase as well as the construction phase;

8.8.2 Assess the bids on the non-price attributes of relevant experience, track record, personnel experience and skills, resources and experience with ECI bids. The bids could also be evaluated on Preliminary and General (P&G) and margins;

8.8.3 Complete the detailed design phase including optioneering with the construction and geotechnical contractors involved. Council could engage its own professional expertise to also be involved to ensure the solutions meet the necessary statutory criteria.

8.8.4 Once the detailed design is completed, the contractor will price it to determine a target out-turn cost. Council will engage a Quantity Surveyor to help in this phase to ensure value for money is being obtained for Council. It is likely that this phase could result in a risk sharing arrangement as part of the target out-turn cost derivation.

8.8.5 The construction can then progress with monitoring of outcomes, target out-turn cost, risks and methodology.

8.9 The timing of the ECI phase would likely be as follows:

- Prepare ECI Documentation – February to mid March 2015;
- Tendering Phase – mid March to Mid April 2015;
- Evaluation and engagement – by end of April 2015;
- Detailed design and optioneering – May and June 2015
- Scheduling and confirming target out-turn cost for construction – June 2015
- Council to consider and adopt developed option and target out-turn cost - June/July 2015;
- Construction starts July 2015;
- Completion aimed for end of February 2016.

8.10 The construction programme will be completed as part of the detailed design and optioneering phase. The risks of completion by February 2016 will be known at that time.

9. Stage 3 – Construction and Commissioning

9.1 If the ECI procurement option is chosen the construction and commissioning phase will be a natural follow on from the detailed design phase.

9.2 This was originally intended to commence in July 2015 with completion and re-opening in February 2016.

10. Consent Requirements

10.1 Although the extent of the physical works has not been finalised, potentially a resource consent may be required. The trigger would be the amount of earth works as well as potentially any work within or adjacent to Salt Water Creek.

10.2 The strengthening work to the foundations and structure will require a building consent.

10.3 An initial fire assessment has been completed, however a detailed fire report complete with peer review will need to be completed as part of the building consent application. The initial fire assessment has identified several aspects that will need to be considered as part of the building consent application. These are detailed in attachment 5.

11. Additional works

11.1 A list of scheduled maintenance work, which could be included at the time of construction, is provided as Attachment 2.

12. Assessment of Significance against the Council's Significance Policy

12.1 The Trafalgar Centre is not listed in the Council's Significance Policy. The funding is significant and has been consulted on in the previous Long Term Plan and Annual Plans.

13. Alignment with relevant Council Policy

13.1 This report is in line with Council's position of re-opening the Trafalgar Centre.

14. Consultation

14.1 Council signalled its intention to re-open the Centre as part of its 2014/15 Annual Plan.

15. Inclusion of Māori in the decision making process

15.1 There has been no consultation with Maori.

16. Conclusion

16.1 The concept designs for the strengthening of the Trafalgar Centre have been outlined in the Trafalgar Centre Evaluation of Options report by Opus. A potential solution has been identified however Council is aware of other alternative solutions in the market. These alternatives warrant consideration as they may offer value.

16.2 It is not possible to identify a preferred concept design with certainty, without ground response technology investigation being undertaken. This is to be done in the next 2-3 weeks, and will contribute to the detailed design phase and the identification of the most cost effective option.

16.3 In the meantime, however, it is proposed that an Early Contractor Involvement procurement option be implemented for the detailed design and construction phases. This will give opportunity for any alternative options to be considered, evaluated and if cost-effective, implemented. More importantly, it keeps the project on track in terms of timing.

16.4 Investigations to date have focused on achieving more than 34% NBS. This will be reviewed and refined during detailed design to ensure Council meets its statutory obligations under both the Building Act 2004 and the Health and Safety in Employment Act 1992. By focusing any structural strengthening on minimising collapse of the building structure and thereby essentially taking all reasonably practicable steps to ensure that no harm befalls persons at, or in the vicinity of the Trafalgar Centre during any earthquake would comply with its health and safety obligations.

Richard Kirby
Acting Capital Projects Manager

Attachments

Attachment 1: Trafalgar Centre Evaluation of Options report by Opus A1314722

Attachment 2: Future maintenance requirements A1319283

Attachment 3: Table of Design Concepts A1319301

Attachment 4: Table of Rough Order Costs A1319308

Attachment 5: Consent Requirements A1319163

Attachment 6: Procurement PolicyA345448

Attachment 1

OPUS

Trafalgar Centre

Evaluation of Options

A1314722

Trafalgar Centre

Evaluation of Options

Prepared By	Gavin Calder Senior Facilities Management Consultant Hans-Peter Froeling Senior Project Manager	Opus International Consultants Ltd Nelson Office Level 1 Morrison Square, 77 Selwyn Place Private Bag 36, Nelson Mail Centre, Nelson 7042 New Zealand
Reviewed By	Mark Whiteside; Holmes Consulting Group Stuart Palmer; Tonkin & Taylor Andrew Irving; ISJ Architects	Telephone: +64 3 548 1099 Facsimile: +64 3 548 9528
Approved for Release By	Richard Kirby Acting Manager Capital Works	Date: 17 February 2015 Reference: 5-G2209.00 Status: Final

Contents

1 Executive Summary

Trafalgar Centre, Nelson is a multipurpose events stadium, the largest in the region that has been closed since December 2013 due to the health and safety risk of "*critical structural weaknesses in the building leading to catastrophic failure*".

Opus International Consultants (Opus) has been engaged by Nelson City Council (NCC) to manage the project to re-open this important community facility. The objective of this project is "*To deliver a completed building that meets the necessary statutory criteria and is suitable for continued use by the community into the future*". The main focus is to improve the safety to the occupants of the building and reduce the risk catastrophic failure of the structure.

Specialist engineering firms involved in earlier investigations have been engaged to continue their investigations and identify options to resolve the previously identified life-safety issues through structural improvement. While undertaking the seismic strengthening work there is an opportunity to resolve some ageing parts of the building and improve its functionality. Maintenance, compliance, fire safety and hygiene improvements will all be implemented as part of this project so the facility will be ready for the next decades of community use.

A number of options has been reviewed for strengthening the Main Hall and Southern Extension. A combination of structural strengthening and ground remediation is the preferred way forward. The northern building requires strengthening as well as functional improvements, which would be most economically achieved by rebuilding this part of the facility providing the benefit of a fresh new look of the main entrance to the facility.

Strengthening of the facility as a whole, will result in improved earthquake resilience. However the overall rating of the facility will be limited by the weakest link of the facility. Even if the complex is strengthened the buildings may suffer damage and be uneconomic to repair after an earthquake significantly less than the design earthquake. In other words even if strengthened to 100% the seismic performance of the complex will be less than a similar new building on the same site.

At this stage of the evaluation it is too early to obtain accurate cost estimates. The team has used rough order cost estimates only as a guidance to rate the various options and to recommend a way forward.

2 Introduction

Trafalgar Centre, Nelson is a multipurpose events stadium, the largest in the region that has been closed since December 2013 due to the risk of "critical structural weaknesses in the building leading to catastrophic failure".

In September 2014, Opus International Consultants was appointed as project manager for the re-opening project. The project objective is: *To deliver a completed building that meets the necessary statutory criteria and is suitable for continued use by the community into the future.*

The scope of works include:

- Managing all work necessary to re-open Trafalgar Centre in a timely manner, to do so economically and in a manner that renders the building safer for public occupancy.
- Focus on re-opening of the existing facility at the existing location.

The project also requires concept design work on the Northern End of the building to make better use of the current spaces and provide ideas to improve the functionality of these spaces in an economic way.

The existing stadium consists of a large timber floor playing area approx. 2,500m², with toilets, redundant kitchen, changing rooms, storage areas on the east and west facing sides of the main stadium, and fixed seating is also located on the eastern & western faces above the toilets/changing room/storage area. An extension was constructed in 2008 at the southern end of the stadium which includes storage, toilets and space for a stage. The storage/toilets are located at 3 levels on either side of the stage area. The northern end of the facility comprises of a single floor entry foyer/reception area, toilets, offices, function room – Victory Room (can be separated from the main stadium), commercial kitchen and storage spaces.

From the review of previous detailed seismic assessment report we understand the seismic capacity of the facility to be as follows:

Building element	%NBS
Main Hall	20-25%
Northern building	Less than 15%
Southern Extension	25-30%
Former Civil Defence building	Less than 15%

From the summary of the initial project team's workshop held on 7 May 2014 and the tender documentation for contract EC3645, we understand the seismic targets to be as follows:

	Above ground	Under ground
Main Hall	Minimum of 67%	Minimum of 34%
Northern building	Minimum of 67%	Minimum of 34%
Southern Extension	Minimum of 67%	Minimum of 34%
Former Civil Defence building	Minimum of 67%	Minimum of 34%

A project team workshop was held on 29th October 2014 and the following parties attended;

- Nelson City Council staff (client)
- Opus International Consultants (Project Manager)
- Holmes Group (Structural Engineers)
- Tonkin & Taylor (Geotech Engineers)
- Dunning Thornton Consultants Ltd (Structural Engineers Peer Review)
- Holmes Fire (Fire Engineer)
- Enlightened Solutions (Fire Peer Reviewer)
- Irving Smith Jack Architects (Architectural Design Concepts)

In November 2014 Kevin McManus of McManus Geotech Ltd has been appointed as the geotechnical peer reviewer.

All buildings (North Building, Stadium and South Extension) are classed as Importance Level 3 (IL3). A post-disaster civil defence functionality is no longer required for the facility.

The intention of this "options report" is to progress reopening of the Trafalgar Centre forward, not to review and validate previous reports. The focus of the project team is on life safety of the occupants rather than limiting damage to the building as a result of an earthquake. The brief by NCC is to achieve a minimum of 67% NBS for the facility, which means the weakest link will have to meet this requirement.

Photo 1 – Trafalgar Centre: North West view

3 Investigations

3.1 Previous reports

The following reports were considered and reviewed to provide and overall report on the building.

- Structural engineering reports by Holmes Consulting Group, peer reviewed by Dunning Thornton
- Geotechnical reports by Tonkin & Taylor, peer reviewed by R.O. Davis
- Heating Evaluation Report by Opus International Consultants in order to improve the functionality of the Main Hall for floor based events
- Community Consultation for the Northern Extension by Arthouse Architects

3.2 Consent requirements:

Depending upon the extent of the physical works, a resource consent might be required. This would mainly hinge around the amount of earth works as well as potential work inside the stream.

Given the type of work to be undertaken a building consent will be required. A full fire report complete with peer review will need to be done for the 1st stage of any building work requiring a consent. The fire report will have to be submitted to the NZ Fire Service DRU (Design Review Unit) and this may increase the time between submission of the building consent and consent approval

The building consent will trigger the Section 112 of the Building Act 2004 which states

Alterations to existing buildings

112 Alterations to existing buildings

(1) A building consent authority must not grant a building consent for the alteration of an existing building, or part of an existing building, unless the building consent authority is satisfied that, after the alteration,—

(a) the building will comply, as nearly as is reasonably practicable, with the provisions of the building code that relate to—

(i) means of escape from fire, and

(ii) access and facilities for persons with disabilities (if this is a requirement in terms of section 118), and

(b) the building will,—

(i) if it complied with the other provisions of the building code immediately before the building work began, continue to comply with those provisions; or

(ii) if it did not comply with the other provisions of the building code immediately before the building work began, continue to comply at least to the same extent as it did then comply

(2) Despite subsection (1), a territorial authority may, by written notice to the owner of a building, allow the alteration of an existing building, or part of an existing building, without the building complying with provisions of the building code specified by the territorial authority if the territorial authority is satisfied that,—

(a) if the building were required to comply with the relevant provisions of the building code, the alteration would not take place; and

(b) the alteration will result in improvements to attributes of the building that relate to—

(i) means of escape from fire; or

(ii) access and facilities for persons with disabilities; and

(c) the improvements referred to in paragraph (b) outweigh any detriment that is likely to arise as a result of the building not complying with the relevant provisions of the building code

Compare: 1991 No 150 s 35

Section 112(1): replaced, on 28 November 2013, by section 35 of the Building Amendment Act 2013 (2013 No 100)

The two areas of concern have to be addressed.

1. Means of escape from fire

This will have to be reviewed by a fire engineer. Given the occupancy load of the building and its use, this requires the Verification Method (C/VM2) to be followed. Acceptable Solutions of the NZ Building Act cannot be used as the building has more than 2000 people in tiered seating. Due to the C/VM2 being applicable, a fire engineer peer reviewer is required and close cooperation with the NZ Fire Service is needed to complete the fire safety design.

Fire rating issues have already been identified by the Nelson City Council's Building Consent team and these include the fire rating of the second floor in the Southern End. This fire rating needs to be included under this project in order for the floor to be used.

2. Access and Facilities for Persons with Disabilities

Review of the building accessible features such as toilet facilities and ramps has confirmed that the building does not comply on all of these aspects, accessible ramps are provided although not at the correct slope, the stairs to the upper levels of the main stadium are not compliant to the requirements of the current Acceptable Solutions of the NZ Building Act D1/AS1. Depending upon the extent of work in the northern buildings, these non-compliant areas may be required to be remodelled and rectified.

3.3 Compliance Requirements

This building has several compliance components or meet requirements of NZ Legislation, they include NZ Building Act (BWOF) and Food Hygiene Regulations (1974) for the kitchens.

The building has a Compliance Schedule CS950003 and according to the Compliance Schedule the following features are present in the building. See Appendix E for a copy of the Compliance Schedule.

SS1	Automatic sprinkler systems
SS2	Emergency warning system
SS3/3	Interfaced fire or smoke doors or windows
SS4	Emergency lighting system
SS7	Automatic back-flow preventer
SS9	Mechanical ventilation/air conditioning
SS13/1	Smoke control systems
SS14/2	Signs required for any of specified systems 1 -13
SS15/1	Systems for communicating spoken information intended to facilitate evacuation
SS15/2	Final exits
SS15/3	Fire separations
SS15/4	Signs for communicating information intended to facilitate evacuation
SS15/5	Smoke separations

The building contains two kitchens. If these are to be used for food preparation (rather than reheating and serving already prepared food), then they will have to comply with the hygiene regulations. Consideration should be given to the options of having only one kitchen serving both the Victory Room as well as an event in the Main Hall, which are usually not held simultaneously.

3.4 Fire protection

The existing fire protection system comprises of a sprinkler system (to NZS4541:2003) & fire alarms (type 4 to NZS4512:2003).

The known issues with the system include the following:

- Pressure of the water to the Trafalgar Centre and to the sprinkler system needs to be confirmed, issues with fluctuating pressures that could affect the performance of the system have been noted. The current water pressure is sufficient for the sprinkler system. A broken section of the water ring main has been disconnected, resulting in a single supply of the water into the building rather than a true ring main. Proposed drop of the water pressure later this year to extend the life of the current AC pipe, might compromise the existing sprinkler system.
- Smoke alarms around the Southern Extension (potential stage) & stadium are sometimes disconnected for stage shows so they do not cause nuisance alarms. This causes a potential risk to the rest of the fire system & occupants.

- Existing curtain, this must meet requirements of the NZ Building Code Acceptable Solutions – Suspended Flexible Fabrics (when tested to AS1530 Part 2 shall have a flammability index of no greater than 12). The material for the curtains was supplied and installed as part of the southern extension. The Black Wool Serge has Flame Retardant to comply with the building code AS 1530 pt2 which needs to be re-applied at least every 5 years and is due for a recoat.
- Northern Building – existing Victory Room curtains, these may not meet requirements of suspended flexible fabrics under NZ Building Code Acceptable Solutions – Suspended Flexible Fabrics (when tested to AS1530 Part 2 shall have a flammability index of no greater than 12) and will need to be replaced.
- The existing fire hose reels can be removed as they are not required and this will reduce some of the compliance maintenance costs in the future.

3.5 Operational aspects of the Main Hall

Primary users of the Main Hall are the Nelson Giants (basketball), school competition for basketball and volleyball. Additional community users include gymnastics, Home and Garden show, art exhibition, concerts or theatre productions and other events. Special events of the last 5 years have included the South Island Indoor Shooting Championship, Indoor Bowls Championship, Fight for Victory, and the Nelson Business Awards. Other previous events have included Rotary Boat Shows (approximately 6 over 12 years) and several Quilt Exhibitions. More of these events could occur once the building is reopened and depending upon what facilities are provided, especially small groups hiring the Victory Room or its replacement. A better standard of decoration and facilities may increase patronage.

Height requirements for sports are:

The critical height restriction identified is related to volleyball, being 12.5m above the court. The court size depends upon local competition or national competition with the latter requiring a court including side space of 34m x 19m. As long as the seismic strengthening does not enter into the current clearance above the main stadium floor the space can be used in exactly the same manner as it could be used before the strengthening. However, according to the available plans the clearance of 12.5m is not achieved for the full size of the national volleyball playing field requirements.

Photo 2 – Trafalgar Centre: Giants Basketball Game seen from North East corner

3.6 Investigation outcomes

The following outcomes have emerged from our investigations and summarized for the Trafalgar Centre:

- An open sewer runs in a service duct between male & female toilets in the Northern Building, collecting all the waste from WC's and wash hand basins before discharging into underground sewer drainage system. Blockages occur, smells permeate into the adjacent toilet spaces.
- The number of toilets would benefit from some adjustments since there are too many male urinals, but too few female toilet pans.
- Seismic restraints of the sprinkler system have to be confirmed.
- Seismic restraints of light fittings and other plant have to be confirmed.
- Stairs at the north end of the Main Hall leading to the first floor are steep and would not comply with current Building Code requirements if they were to be built now.
- First and second floor storage in the Southern Extension is hard to get to and impractical to use, even if they were allowed to be used. No lifting crane/hoist is available. Provision of a beam for a hoist was originally designed in the Southern Extension but not installed. Note that the floor of the second floor is currently not fire rated and this is one of the issues raised by the NCC Building Consent team.
- Existing Stadium lights are inadequate for TV broadcasting of sports events. The current light level is 400 lux, where a minimum of 900 to 1000 lux is required for broadcasting purposes; 1200 lux is recommended. Note when one bulb fails the current design light levels drop dramatically and the broken bulbs need to be replaced before the Giants play one of their games.

- Main stadium lights are High Pressure Mercury Vapour, which are slow to start up and present maintenance issues when needing to be replaced, which is generally required 3 to 5 fittings per annum. An access hoist and two electricians are required to change the bulbs, which are also classed as hazardous waste and require proper disposal.
- When running the Stage Challenge/Rock Quest events there is a requirement for many more changing room facilities.
- Storage space comes at a premium. Currently 40ft containers are used outside the facility to provide for sufficient storage space.
- The facility has no accessible lift, so access to the higher levels of main stadium & southern extension is difficult for non-ambulate people.
- Lack of storage for chairs/tables for the Victory room.
- Lack of cloak storage/bar & ticketing spaces for events.
- Permanent tenants (Giants etc) have poor storage facilities/capacity and office space.
- The facility does not have a fibre connection or a more up to date data/communication wiring systems or wifi system, especially in the Northern building.
- Northern building– the existing Victory Room curtains may not meet requirements of flexible fabrics under NZ Building Code and will need to be replaced.
- Existing hearing loop in the Victory Room is not compliant.
- Seismic stability of all buildings.
- Insufficient seismic gaps between buildings (Northern Building and Main Stadium, Main Stadium and Southern Building).

4 Building Upgrade Options

The options outlined below were developed by the Structural and Geotechnical Engineers from the ideas supplied at the October 2014 meeting between all parties. These options were modified as more information was supplied from various sources and evaluated.

4.1 Strengthening Options – Structural and Geotechnical:

Holmes Consulting Group has completed a detailed evaluation of the buildings that form the Trafalgar Centre, which is summarized below. The overall facility rating is as high (or low) as the weakest link.

Source: Holmes Consulting Group; Seismic Evaluation Report February 2014 (refer A527418, Holmes reference 108899.00)

At the northern end of the building is an early 1970's one storey structure which is mainly used for functions and as an entrance to the central building (Main Hall). The Northern Building is constructed of timber walls and reinforced concrete block walls which resist lateral loads. The roof is supported by long spanning steel trusses which are in turn supported by the reinforced concrete block walls. The Northern Building is considered to have an Ultimate Limit State strength of less than 15% NBS for an Importance Level 3 building. The Northern Building is considered to be an earthquake prone building.

The Main Hall was constructed in the early 1970's. The roof is supported by large glulam timber roof arch beams with the remaining structure primarily constructed of reinforced concrete frames/walls. The lateral load resisting system consists of reinforced concrete frames in the transverse direction. The lateral load resisting system in the longitudinal direction is reinforced blockwork on the western side of the building and reinforced concrete frame on the eastern side of the building. The Northern Building and Main Hall were originally designed in 1970 by Sanders and Lane consulting engineers. The Main Hall is considered to have an Ultimate Limit State strength of approximately 20-25% NBS for an Importance Level 3 building. The Main Hall is considered to be an earthquake prone building.

The Southern Addition is located at the southern end of the building and is a new addition that was built in 2008. This new addition is a mix of timber, structural steel, and reinforced concrete wall construction. The lateral load resisting system for the building is crossed braced frames supported on reinforced concrete precast panels. The new addition was designed in approximately 2005. The Southern Addition is considered to have a strength of approximately 25-30% NBS for an Importance Level 3 building. The Southern Addition is considered to be an earthquake prone building.

The Civil Defence Office is a lightweight, single storey structure built as an addition to the Nelson Trafalgar Centre. This building was constructed in 1980 and is attached to the north-eastern corner of the Northern Building The Civil Defence is mostly constructed from timber framing and GIB plaster board but also incorporates a reinforced concrete block wall at the northern end of the building. The Civil Defence Office and Northern Building are built integral to each other and share a common wall between them. The Civil Defence Office is considered to have an Ultimate Limit State strength of less than 15% NBS for an Importance Level 4 building. The Civil Defence Office is considered to be an earthquake prone building. *(Note: This assessment was done based on Level 4 which requirement was subsequently removed from the building, which is now classed as a Level 3 building the same as the rest of the facility.)*

The buildings' foundations are typically supported on a network of ground beams transferring loads to piles.

The detailed assessment shows that the Trafalgar Centre is an earthquake prone building defined as less than 33% of the current loading standard. As such strengthening is required in accordance with the statutory requirements.

Tonkin & Taylor, the geotechnical engineer, has indicated that the site is susceptible to liquefaction and lateral spreading issues. As part of any strengthening program for the buildings on this site, these issues will need to be addressed sufficiently that the buildings' foundations can perform in a satisfactory manner.

Source: Tonkin & Taylor; Trafalgar Centre Geotechnical Report June 2013 (T&T reference 871024)

The composition of the majority of the 'potentially liquefiable' soils underlying the Trafalgar Centre Site is different to those that liquefied in Christchurch. Primarily the soils at this Site have a much higher gravel content. They are not poorly graded clean sands, or large thicknesses of silty sands, which are soils that are most widely known and easily recognised as susceptible to liquefaction. Liquefaction consequences that are likely at this site include:

- Limited ejection of sand and water to the ground surface (sand boils).
- Buoyancy resulting in uplift of buried objects such as manholes.
- Bearing capacity failure due to loss of soil strength.
- Lateral spreading of soils toward a nearby free-face (such as a river bank) due to loss of soil strength. Refer to Section 7 for discussion of the lateral spreading risk at the site and potential mitigation options.
- Settlement of the ground and any structures on it that do not have foundations that are designed to mitigate settlement. Free field settlements likely for both Liquefaction Risk Zones

Lateral spreading is generally defined as the horizontal displacement of surficial blocks of soil towards an open slope face as a result of liquefaction of the underlying soils. The risk of lateral spreading at a site is dependent on:

- The thickness of liquefiable soil layers,
- The properties of the liquefied soil such as the grain size and fines content,
- The earthquake characteristics such as the peak ground acceleration, magnitude and distance from the earthquake source, and
- The height of the free face. In this case, the "free face" mechanism which drives the lateral ground displacement are the surrounding riverbanks. The free face height is the difference between the ground surface level adjacent to the riverbank and the riverbed level. The free faces present at this site are:
    - To the north and west, Saltwater Creek has a free face height of up to approximately 4.0 m, and varies in distance from the Trafalgar Centre from approximately 12 m to 60 m. The raised gardens around the Southern Extension to the structure could exacerbate the potential for lateral spreading at the southern end of the structure if liquefaction were to occur there.
    - To the east, the Maitai River has a free face height of up to approximately 4.5 m, and varies in distance from the Trafalgar Centre from approximately 120 m to 145 m.

Holmes Consulting Group has evaluated several options to strengthen the structure.

Focus of the design is to reduce life safety risk for the occupants rather than limitation of damage to the building. The various options are outlined in detail in Appendix B.

The codes used in this table has the format X / # / Y and is explained as follows:

X identifies the section of the building

M	Main Hall
N	Northern Building
S	Southern Extension

identifies the structural option number in increasing compliance with the New Building Standard. For detailed description please refer to the table in Appendix B, as the details differ slightly per section of the building.

Y identifies the Geotechnical option

A	Do nothing
B	Additional vertical support
C	Additional vertical support plus limited perimeter treatment
D	Additional vertical support plus perimeter treatment works
E	Additional vertical support plus dedicated engineered foundation
F	No site lateral restraint, dedicated engineered foundation

Tonkin & Taylor has evaluated ground remediating concepts, these are outlined in detail in Appendix C. The focus of the ground remediation is provide sufficient capacity for structures to maintain their integrity.

(a) Options that would meet the Council requirements of achieving at least 67%NBS include for the Main Hall:

- M/4/D seismic strengthening of the Main Hall, strengthening of the foundation (piles and tie beams) combined with exterior ground improvements.
- M/5/E steel arches over the existing building on the outside, combined with structural strengthening and ground remediation works.
- M/7/F steel trusses to replace the timber Glulam arches (new trusses constructed under the roof) combined with some structural improvements and dedicated engineered foundations.

(b) Option for the Southern Extension to achieve 67%NBS is to seismically strengthen the structure as well as foundation works, combined with exterior ground remediation works.

(c) Options for the Northern building to achieve 67%NBS include:

- Seismic strengthening of the structure as well as foundations
- Demolish and rebuild with a light timber frame single story structure on a raft slab

4.2 Building Functional Options

(a) Main Hall

No functional change is proposed.

(b) Southern Extension

No functional change is proposed.

(c) Northern Building

The options for the remodelling of Northern Building have been reviewed by Irving Smith Jack Architects Ltd (ISJ). The various options are outlined with full description sketch plans in Appendix D. The options for reconfiguring the Northern Building range from a cosmetic refurbishment to complete replacement and decisions will have to be made in conjunction with any seismic work to be carried out in this area.

Any reconfiguration of the existing layout will generate a review of the Means of Escape for Fire and Access & Facilities for Disabled Persons to meet requirements of Section 112 of the NZ Building Act Fire Protection Services.

4.3 Fire protection:

Holmes Fire has modelled the facility and run smoke simulations in order to determine an allowable occupancy load under various conditions and layouts. Various event layouts and challenging fires situation are being evaluated.

The current type 7; sprinklers (to NZS4541) and fire alarms (including smoke, fire detectors, manual call points plus sounders to NZS4512) will need to be modified to suit any building partition changes, any additional roof cavities that are formed either on the main stadium roof or within it. Depending upon the extent of the building alterations the existing sprinkler system may need to be checked (redesigned) to ascertain if the additional sprinklers will affect the flow rates of the main and branch pipework.

If the entrance for the Northern Building is relocated from the current location (facing west), then consideration maybe required to locate the fire alarm panel to the main entrance. The sprinkler valve room may be required to be relocated as well. All of this depends upon the NZ Fire Service and consultation with them will be required on this matter. Note the original design of the sprinkler system allowed for a larger main branch pipe at the northern facing wall of the main stadium so that the sprinkler room could be relocated to the eastern side without large capital cost

for new pipework. If the New Zealand Fire Service agrees to leave the fire alarm panel and sprinkler room in the current position, extra cost is avoided.

No estimate has been undertaken for the changes envisaged in the fire protection system as more detailed design work will be required on the structure before the fire protection system can be reviewed and determination of what changes will be required.

4.4 Smoke Extract System

This system may have to be reviewed in conjunction with the fire protection in order to meet the fire report outcomes. Further details will only become apparent once the fire modelling and fire report are completed.

4.5 Means of Escape

The modelling undertaken by Holmes Fire has identified potential issues with timely egress of occupants from the mezzanine levels (above the permanent seating) on both the east and west side of the Main Hall. Further analysis is currently been undertaken to address these issues.

5 Strengthening Options and Rough Order Cost

Rider Levett Bucknall Quantity Surveyors in Wellington have been engaged to do a Rough Order Cost estimate on the various options listed under section 4.1.

Tonkin & Taylor has provided Rough Order Cost estimates of various ground remediation options varying from gravel columns to palisade piles.

As these Rough Order Cost estimates are based on numerous assumptions which is common at this stage of concept design, they need to be treated within the context provided.

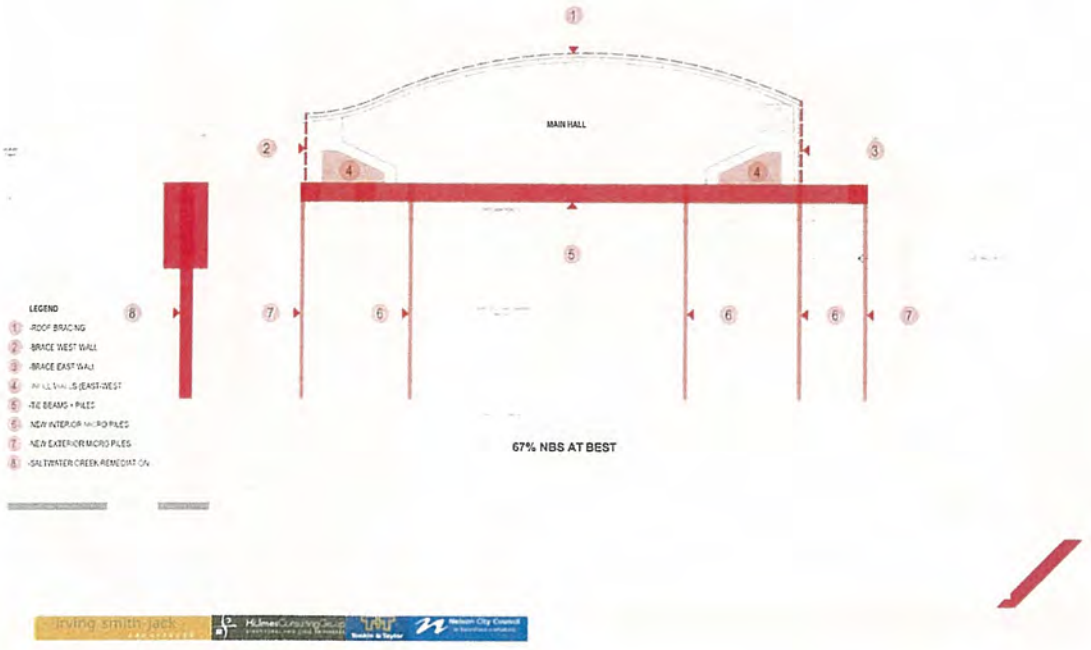
Further engineering will be required to quantify the effects of lateral spread. The options for strengthening the Main Hall deserve some further consideration and contractor input into the design team to develop the most economical way of achieving the desired outcome.

Items to be considered in the further design include, but are not limited to, a potential reduction of the free height under the current timber arches, numerical analysis of ground displacement, construction methodology and construction cost, availability of equipment.

Trafalgar Centre reopening - Compare options

Option ID	Building element	Description
M/4/D	Main Hall	Superstructure strengthening, tie beams, pile caps, micro piles for underpinning, strip perimeter treatment
M/5/E	Main Hall	Steel arches over building, tie beams, pile caps, bored large dia piles, palisade piles
M/7/F	Main Hall	Steel trusses inside building, bored large dia piles on eastern side, replace roof and services in roof space
S/4/C S/4/D	Southern Extension	Superstructure strengthening, micro piles for underpinning, strip perimeter treatment
N/3/C	Northern Building	Superstructure strengthening, foundation beams upgrade
N/5/F	Northern Building	Demolish and replace with light timber frame building and raft foundation

Diagrams for clarification purposes:

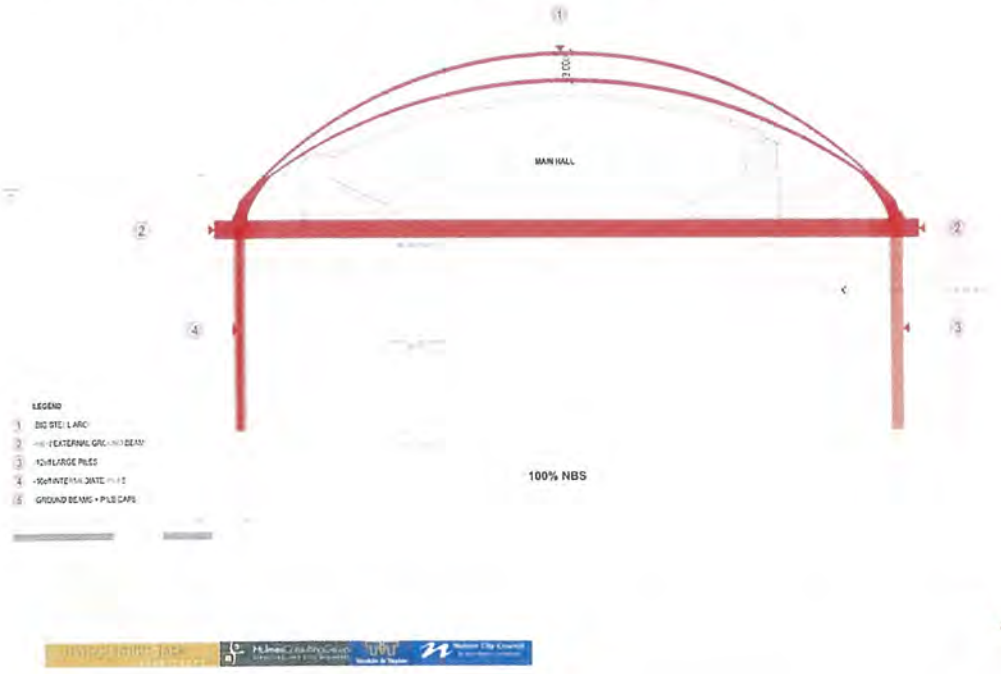


This option comprises of seismic strengthening to roof and wall structures, large tie beams across the building at every timber arch and additional piles to support the building (both inside and outside of the building).

Ground remediation is proposed as part of this option in order to reduce or mitigate the potential lateral spread. The ground remediation options will need to be evaluated during further detailed design.

As a consequence of this option the timber floor in the main hall as well as most of the toilet and changing room floors will have to be removed and reinstated once the seismic works are completed.

M/5/E: Option with coat hanger

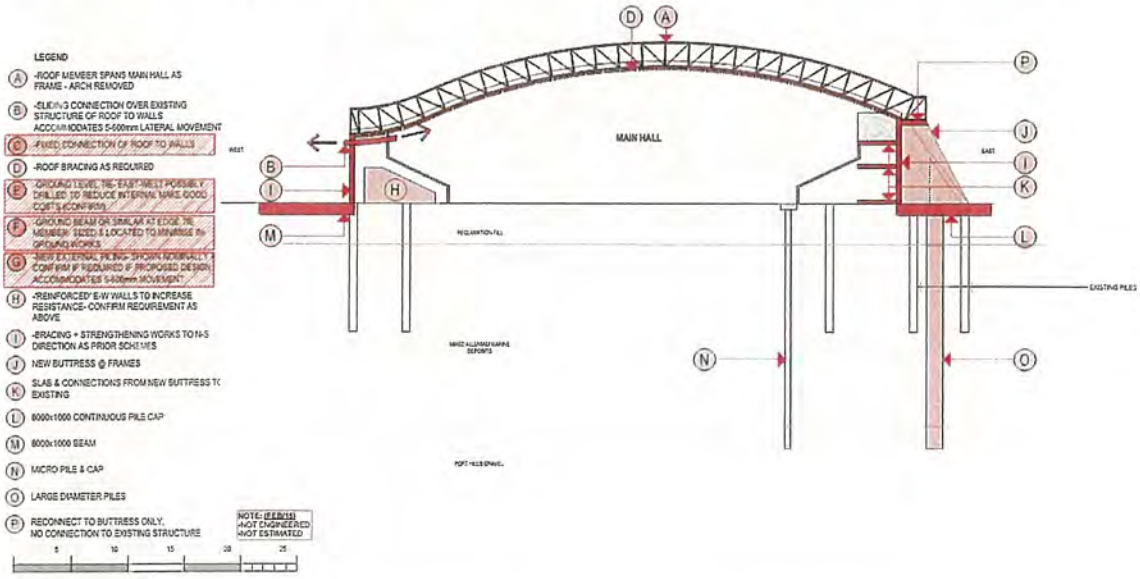


This option comprises of new steel trusses over the existing building with new large drilled foundation piles. The existing timber arches will be suspended from the new steel trusses, hence the nick name "coat hanger". A large tie beam across the building at each arch / truss will be part of the solution as well. This option has the potential to achieve 100%NBS.

Ground remediation may be necessary as part of the Southern extension works.

As a consequence of this option the timber floor in the main hall as well as most of the toilet and changing room floors will have to be removed and reinstated once the seismic works are completed.

Option M/7/F: Option with internal steel trusses

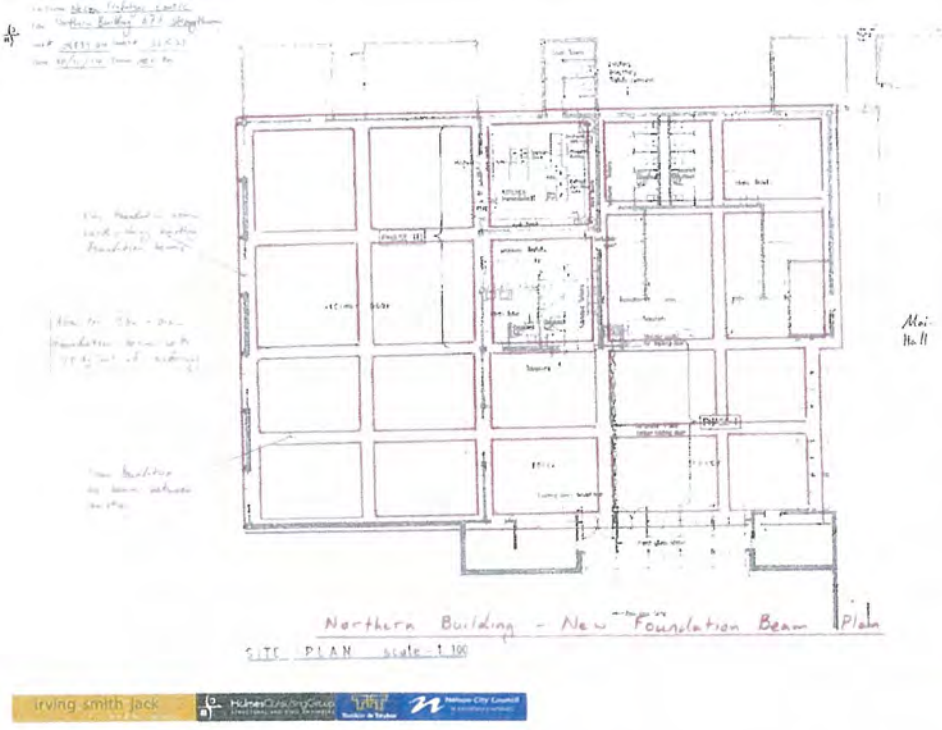


This option comprises of new steel trusses to replace the existing timber arches, replacement or reqwork of the main hall roof, additional structural support on the eastern side and a sliding connection of the trusses on the western side.

No ground remediation is expected for the main hall, some work might need to be required for the southern extension.

The aim would be to complete this work without removing the floors of the main hall, toilets and changing rooms. Construction methodology will have to be carefully reviewed to obtain the most economic solution.

Northern Building foundation upgrade



This option comprises of additional foundation beams as well as strengthening the existing foundation beams to withstand the potential lateral movements and support the building structure. The seismic strengthening required for this portion of the building includes improved connection of the roof trusses to the supporting walls.

As a consequence of this foundation upgrade, the floors will have to be removed and reinstated once the strengthening works are completed.

Further options for the northern building include refurbishments or complete replacement.

Summary table of Rough Order Cost for construction:

Building element	#1	#2	#3	#4	#5
Main Hall	M/4/D $7,005,000	M/5/E $11,437,000	M/4/D $7,005,000	M/5/E $11,437,000	M/7/F $11,834,000
Southern Extension	S/4/D $3,437,000	S/4/D $3,437,000	S/4/D $3,437,000	S/4/D $3,437,000	S/4/D $3,437,000
Northern Building	N/3/C $931,000	N/3/C $931,000	N/5/F $3,200,000	N/5/F $3,200,000	N/5/F $3,200,000
Professional Services	$770,000	$770,000	$820,000	$820,000	$820,000
Construction Rough Order Cost	$12,143,000	$16,575,000	$14,462,000	$18,894,000	$19,291,000

Notes to the Rough Order Cost table:

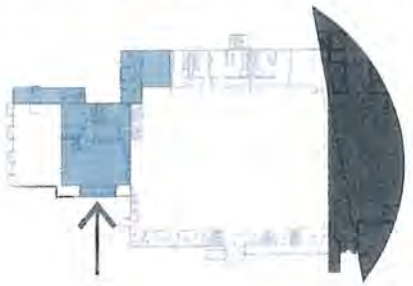
- Ground remediation works are included under the Main Hall for all options as applicable.
- Option #5 includes the replacement of the roof over the Main Hall, which may not be necessary if appropriate construction methodology can be applied from the inside. This will have to be explored during the next stages of developed design in concert with an appropriate contractor.

6 Options for functional improvement

From discussion with the Councillors and the asset managers for the facility, a number of requirements have been derived. Also the Community Consultation report completed as part of the Northern Extension development has been reviewed.

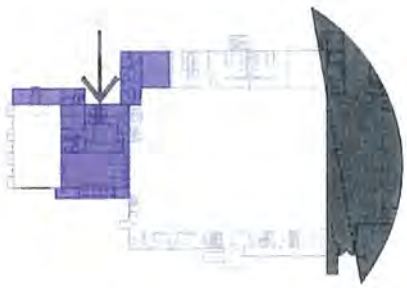
- Maintain a separate large room similar to the Victory Room that can be hired for functions and conferences.
- Upgrade of toilet facilities in the northern building
- Review the toilet facility requirements (quantities) per Building Code
- Review and upgrade of the kitchen facilities, may be having one kitchen only to serve both the Victory Room and the Main Hall
- Office space for facility manager
- Advice on redecoration of northern buildings
- Review main entrance location and alternative options
- Incorporate structural upgrades
- Design improvements for 50 year lifetime
- Improve accessibility for non-ambulant people

A number of options has been developed by ISJ Architects for the northern building for increasing improvements of functionality, extent of works and construction cost. Options vary in scope from a low cost repaint and minor alterations using the current West entry to relocation of the main entry to the North or to the East (facing Rutherford Park), upgrade the toilets and providing entrance to the first floor level of the Main Hall through new (compliant) stairs.

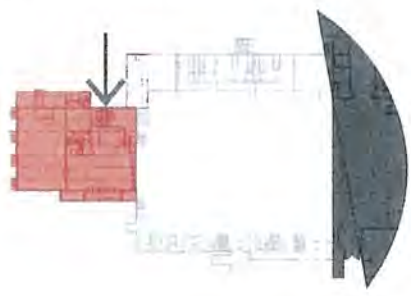


WEST ENTRY
DEVELOPMENT OPTIONS 1 2 & 3

NORTH ENTRY
DEVELOPMENT OPTIONS 4 & 5



EAST ENTRY
DEVELOPMENT 6 7 & 8



REPLACEMENT
DEVELOPMENT OPTION 9

Please refer to Appendix D for full details. The functional improvement options need to be reviewed in conjunction with the required strengthening works and the economics of repairs versus replacement need to be considered as well. Typically a new building scores the best attributes with regards construction, building services and functionality and will be designed to meet the current Building Code.

Other considerations for functional improvements include:

- Remove the emergency generator from the site. This generator unit may no longer be needed given the removal of the Civil Defence functionality from the facilities
- Remove or develop alternative use of the former Civil Defence building
- Removal of the former Civil Defence aerial and associated equipment

7 Maintenance

During our inspections a number of areas that are due for maintenance have been noted. Our brief is to re-open the building, so these items are not being addressed unless instructed to do so. However the current closure of the building and imminent construction period will be a prime opportunity to address these items, so the facility can be operated for years to come.

- Main Hall – roof paint system is nearing the end of its life and a repaint could be considered. This can be done at any time and does not impact on the activities to re-open the building. However we have an estimated cost to repaint the main roof and this could be done at same time as any seismic work is undertaken on the roof structure, since scaffolding & associated access equipment will be employed for the seismic work and could reduce cost for painting. Rough Order Cost is $85,000 plus GST.

- The timber floor in the Main Hall is due for a recoat. Consideration should be given to not putting all possible lines on the courts, but only mark those that are really required. This is a direct cost saving, reduces the confusion and makes it easier to set up the Hall for the Giants games. Should additional courts be required, they are easy enough put on afterwards. Rough Order Cost is $80,000 plus GST

- Lighting of the main stadium and southern extension, are high bay lights and require use of an access hoist, refer to section 3.6. Options reviewed are a direct replacement of existing fittings with the equivalent in LED fitting (generally same light output on the floor for 40% less power consumption) or upgrade the lighting levels to provide sufficient lighting levels to meet the requirements of TV broadcasting. The additional fittings in the main stadium was in the order of double the number fittings that the current layout has. The biggest advantage with LED lamp gear, is the bulb life increase from 2 to 3 years (of the existing light bulbs) to 10 years or longer (for LED lights) and the maintenance costs are dramatically reduced. A simple control system could be designed for the lights so they are switched on/off or dimmed and number of fittings used depends upon the activity, i.e.
    - Normal stadium cleaning function – low light levels (say 200 lux at floor level)
    - Club basketball/volleyball/badminton games (say 450 to 500 lux at floor level)
    - Giants basketball training sessions (450 to 500 lux at floor levels)
    - Giants basketball games – televised (min 900 lux & up to 1200 lux)
    - Shows -static type – 250 to 350 lux at floor level

  The advantages are that the stadium management team can set the lighting levels for the various groups and reduce the power consumption, potential to even isolate certain areas of the main stadium and switch the various fittings & even dime them to suit the requirement of the users. Rough Order Cost is $70,000 plus GST

- Stage curtains (between Main Hall and Southern end) be vacuumed once a year then retreated (fire retardant solution) every five years to maintain compliance. Estimated cost for vacuuming and recoating is $14,000 plus GST. This cleaning and recoat is overdue and would be well placed to be done in conjunction with the physical works for the Trafalgar Centre. Note approximate cost for replacement of the curtains is in the order of $40,000 plus GST according to the supplier.

- Southern Extension – zinc cladding panels are starting to dislocate. These panels are interlocked to the adjacent side and top panels. Fixing will require dismantling of the majority of the wall cladding to build it up again from underneath the dislocated panels. Extensive scaffolding would also be required for access to these panels. No guarantee can be given that this panel dislocation would not happen again in the future. Rough Order Cost estimate for this portion is $100,000 plus GST.

Photo 3 – North facing Zinc panels on Eastern side of the Southern Extension

Photo 4 – Several Zinc panel dislocating from their support structure

Due to the uncertainty of the success of this repair, we do not include this in the recommended scope of works.

8 Evaluation Staged Opening

Consideration has been given to the staged opening of the Trafalgar Centre. We have reviewed the options to open the Main Hall for the main basketball season while continuing work on the Southern End and northern parts of the complex. Typically only the Main Hall would be opened under this option, with the Southern End closed at the stage curtain and the northern lobby closed at the doors between the lobby and the Main Hall.

Considerations:

1. The Giants Basketball season runs from early April through to end of June, potentially July
2. Sufficient toilets need to be available for the public.
3. Access into the building for players and public.
4. Fire egress from the building to meet the Code requirements.
5. Safety for the public as well as construction staff.

Ad 1: To meet the April opening, there would only be about 3 months to complete the detailed seismic design and have it peer reviewed (approx. 2 months), process the building consent (up to 20 working days) including fire safety engineering per C/VM2, tender for the physical works (allow at least 6 weeks for proper pricing) and complete the physical works on the Main Hall (approx. 6 – 8 weeks). This is not realistic.

Other events and activities might still benefit from an early opening, albeit this opening will be towards the later part of the year.

Ad 2: Sufficient toilets are available within the main hall area underneath the Western and Eastern seating areas.

Ad 3: Various entries are available and could be setup to satisfy a players' entrance as well as ticket control for public.

Ad 4: Limited fire egress is available, especially from the mezzanine levels above the fixed seating.

Ad 5: Safety to the public could be achieved from the construction sites on both northern and southern ends by appropriate fencing / hoarding, although this would be an additional cost to the project.

The team has not pursued an early 2015 opening due to time constraints as outlined above as well as the higher health & safety risks which will be present on a site which is partially under construction. Uninterrupted construction works would achieve a better outcome to the facility as a whole.

9 Risks

The following risks to the project have been assessed and more may be identified as progress through the design and construction phases is undertaken. The risks can be identified in three areas (financial, design and programme), they will all interrelate with each other in several ways. The risk analysis has been reviewed across the site and each building, some of the same risks will be common across all the three buildings.

Trafalgar Centre Re-Opening Risk Analysis					
Description	**Risk**				
	Financial	**Program**	**Design**	**Probability**	**Mitigation**
Overall Project Scope Creep	Yes	Yes	Yes	30%	Manage expectations. Scope creep - additional buildings work or extensions to the existing structures will increase costs
Budget – unknown at present	Yes		Yes	35%	Estimate for re-opening the building in excess of NCC budget
Site Boundaries/Space Access					
Security of site & empty building during Christmas time	Yes	No	No	15%	Current NCC security contractor to make more frequent visits & they must be random
Changes in project team personnel	No	Yes	Yes	10%	Documentation of meetings, communication etc; team approach to solve problems & share knowledge
Availability of specialist personnel	No	Yes	Yes	15%	Early engagement of staff important. Monitoring of changes in personnel to be done during project meetings
Health & Safety on Site	No	No	No	10%	Site induction to visitors by Opus
Archaeological finds	Yes	Yes	Yes	5%	Unlikely, no pre-1900 occupation on site (reclaimed land) Trafalgar Centre built circa 1970
Trafalgar Centre built across two titles	Yes	No	No	100%	BC issued in the last 10 years with same situation. Recommend section 75 to be applied for

Trafalgar Centre Re-Opening Risk Analysis					
Description	**Risk**				
	Financial	**Program**	**Design**	**Probability**	**Mitigation**
Development Impact Levies (DIL)	No	No	No	0%	If gross floor area increases, the DIL's will be payable on the value of increased floor area less the $90,598 exemption.
	Yes	No	Yes	50%	Increase in water mains connection will incur DIL's. Not anticipated unless gross floor area increases
	Yes	No	Yes	50%	Increase in waste water contribution will incur DIL's. Not anticipated unless gross floor area increases & additional sanitary fixtures are added. More likely to reduce number of toilet fixtures
Resource Consent (extend or change operation) – takes longer than 20 working days	Yes	Yes	No	50%	Christmas time will hold up any application. Need to plan for Christmas time if RC is required
Resource Consent (Earthworks) – takes longer than 20 working days	Yes	Yes	Yes	50%	RC needed for ground remediation only, not for micro piles
Building Consent – takes longer than 20 working days	Yes	Yes	No	50%	Undertake preliminary discussions with BC staff. Pre-lodgement meeting to be held again after preliminary design has completed
Site					
Soil Contamination	Yes	Yes	Yes	25%	Undertake site inspection in areas where work is to be carried out
Underground services – fit for purpose (water, waste water & stormwater)	Yes	Yes	Yes	25%	If additional floor space is added to the North Extension, a review of sewer and water pipework maybe required
Underground services – fit for purpose (power)	Yes	Yes	Yes	15%	At present existing mains cable & transformer maybe at the maximum. A detailed review needs to be undertaken. Additional load will need to be reviewed and more efficient use of power fixtures & fittings, i.e. LED lights replace DHW using electricity

Trafalgar Centre Re-Opening Risk Analysis					
Description	**Risk**				
	Financial	**Program**	**Design**	**Probability**	**Mitigation**
Underground services – fit for purpose (Telecom/fibre)	Yes	No	Yes	5%	
Underground services – location could affect ground remedial work	Yes	Yes	Yes	90%	Undertake site inspection/location finding in areas where work is to be carried out. This to be done before preliminary design work is undertaken to reduce disruption
Soil type / condition not as expected	Yes	Yes	Yes	50%	Undertake more detailed site analysis including bore holes in areas of proposed work
Northern Building					
Asbestos cement sheet present	Yes	No	No		Asbestos found on soffits of Victory Room external Entrances (small areas – sheet form). Demolition of Northern building will remove this risk.
Main Stadium Building					
Installation of structural strengthening to Glulam beams, existing structure could undergo differential slumping whilst work is being undertaken	Yes	Yes	Yes	20%	
South Extension Building					
Fire rating of 1st & 2nd floor – difficulty for access and install fire rating	Yes	No	Yes	50%	Detailed inspection of floor structure of 1st & 2nd floor Detailed solutions of fire rating required cables, pipes and fixtures in contract documents
Hoist for storage areas, weight of loads & system too	Yes	No	Yes	30%	Assessment of equipment to be stored in these areas from conversation with Spotless and

Trafalgar Centre Re-Opening Risk Analysis					
Description	**Risk**				
	Financial	**Program**	**Design**	**Probability**	**Mitigation**
high for existing structure					other users groups. Determine if spaces will be used by user groups Limit weights to be lifted, design lifting beam (with SF of 5 or 6). Lifting beam to be retractable with a small electric hoist & suitable cage/pallet to carry equipment etc

Time. This will be critical all the way through the project. Early engagement of specialists and smart procurement have been considered to reduce this risk.

10 Future usage

10.1 Resource Consent:

Comments have been made by previous facility manager about the limitations of the current Resource Consent, which only allows 3 events per year with amplified sound after 22:00 hours. Following discussions with the facility managers at Nelson City Council, it has been suggested to address this separately for the wider Rutherford Park area.

10.2 Future users:

From discussions with the facility managers it is apparent that some of the previous users of the Trafalgar Centre have been transferred to the Saxton Stadium and have indicated reluctance to return after re-opening of the Trafalgar Centre.

Users that are likely to return include the Nelson Giants basketball, secondary school basketball, gymnastics, volleyball and a number of events.

For this options report we have not addressed any of these future needs. The focus is on getting the Trafalgar Centre open again as per the instructions from the Council.

11 Summary

The Trafalgar Centre requires seismic strengthening in order to be re-opened to the public. Building compliance matters will be addressed as part of this project to bring the building up to the current building code requirements with regards accessibility, fire safety and hygiene. While undertaking this seismic strengthening there is an opportunity to address some ageing issues of parts of the building and improve the functionality as outlined in the options for functional improvement.

A Rough Order Cost estimate has been completed as per the table below. This needs to be read together with the relevant scope of works.

Building element	#1 M/4/D S/4/D N/3/C	#2 M/5/E S/4/D N/3/C	#3 M/4/D S/4/D N/5/F	#4 M/5/E S/4/D N/5/F	#5 M/7/F S/4/D N/5/F
Construction Rough Order Cost	$12,143,000	$16,575,000	$14,462,000	$18,894,000	$19,291,000
Maintenance	$244,000	$324,000	$244,000	$324,000	$239,000
Rough Order Cost totals	$12,387,000	$16,899,000	$14,706,000	$19,218,000	$19,530,000

The preferred option of the design team is to:

- Seismic strengthening of the Main Hall and Southern Extension
- Improve understanding of ground behaviour to identify suitable foundation solutions to support the structures
- Replace the northern building by a light timber frame building on a concrete raft slab and implement functional improvements

The developed design stage will address the balance between the quantity of work to the structures and to the foundations. Part of the developed design could be to do an in-depth modelling of the ground to better quantify the lateral spread. Our recommendation is to engage an appropriate contractor to assist the project team to develop a solution that is economical to construct. Following the developed design a more accurate cost estimate can be compiled which would be the basis to select the preferred option for detailed design.

Based on the completed detailed design a tendering process for the main contractor can be run in parallel with the building consent application.

12 Appendices

Appendix A – Rough Order Cost

Trafalgar Centre reopening - Compare options

Option ID	Building element	Description	Risks	Benefit	Engineering	Cost estimate NZ$	Recom #1	Recom #2	Recom #3	Recom #4	Recom #5
M/4/D	Main Hall	Superstructure strengthening, tie beams, pile caps, micro piles for underpinning, strip perimeter treatment	Open sports floor and toilets/changing rooms; cost for Geotech perimeter treatment		Structural	$ 5,005,000.00	Y		Y		
					Geotech	$ 2,000,000.00	Y		Y		
M/5/E	Main Hall	Steel arches over building, tie beams, pile caps, bored large dia piles, palisade piles	Design time and cost; relocate power mains; relocate water mains; constructability of	100%NBS; no lifting of floor	Structural	$ 8,427,000.00		Y		Y	
					Geotech	$ 3,010,000.00		Y		Y	
M/7/F	Main Hall	Steel trusses inside building, bored large dia piles on eastern side, replace roof and services in roof space	Design time and cost	100%NBS; no lifting of floor; no ground remediation	Structural	$ 11,834,000.00					Y
					Geotech	$ -					Y
S/4/C S/4/D	Southern Extension	Superstructure strengthening, micro piles for underpinning, strip perimeter treatment	relocate power mains, relocate water mains		Structural	$ 3,437,000.00	y	Y	Y	Y	Y
					Geotech	$ -	y	Y	Y	Y	Y
N/3/C	Northern Building	Superstructure strengthening, foundation beams upgrade	Remove and reinstate floor; budget		Structural	$ 931,000.00	Y	Y			
					Geotech	$ -	Y	Y			
N/5/F	Northern Building	Demolish and replace with light timber frame building and raft foundation	Scope	100%NBS; relocate entrance; improved functionality; visibly something new	Architect	$ 3,200,000.00			Y	Y	Y
Maintenance	All	Summary			All		$ 244,000	$ 324,000	$ 244,000	$ 324,000	$ 239,000
Professional fees	All	Summary			All		$ 770,000	$ 770,000	$ 820,000	$ 820,000	$ 820,000
						Rough Order Cost (read in conjunction with scope)	12,387,000	16,899,000	14,706,000	19,218,000	19,530,000

Appendix B – Proposed Seismic Modifications

Trafalgar Centre

Strengthening Options – Revision 7 – 13th of February 2015 Populated by Holmes Consulting and Tonkin & Taylor

Table 1: Main Hall[1]

Option ID[4]	Description		Seismic Performance			Cost Rating[4]
	Structure[2]	Foundations[3]	% NBS	Foundations[2] - critical factor that will limit/control expected seismic performance of the building when % NBS is exceeded[5].	Structural[3] comment	
M/1/A	Do nothing	Do nothing	<33%	Lateral ground displacements toward Saltwater Creek could be initiated at <33% EQ[6], potentially shearing the existing piles, so they cannot reliably support the building	Unreliable foundation support. Potential for excessive extension of the glulam arches through lateral spread and settlement. The northern concrete arch, roof bracing and both the east and west seating gallery concrete frames have capacity less than 33% NBS.	
M/2/A	Implement the 34% super-structure strengthening scheme. Including tie beams between galleries.	Do nothing	<33%	Lateral ground displacements toward Saltwater Creek could be initiated at <33% EQ[6], potentially shearing the existing piles, so they cannot reliably support the building	Existing piles are not likely to be able to provide reliable support at less than 33% NBS	
M/3/B	Implement the 34% super-structure strengthening scheme. Including tie beams and pile caps/connections.	Provide more robust vertical support by underpinning structure with new micro piles	34%	At >34% EQ[6], potential lateral ground displacements could damage new micro piles close to Saltwater Creek, such that they can no longer reliably support the building	Capacity limited by the northern concrete arch, roof bracing and both the east and west seating gallery concrete frames strengthened to 34% NBS. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair.	
M/4/C	Implement the 67% super-structure strengthening scheme. Including tie beams and pile caps/connections.	Provide more robust vertical support by underpinning structure with new micro piles. Use short strip of perimeter treatment works at southwest corner of building adjoining Saltwater Creek to limit lateral ground displacements.	50%	At >50% EQ[6], potential lateral ground displacements beyond the perimeter treatment works could damage new micro piles close to Saltwater Creek, such that they can no longer reliably support the building	Capacity limited by the glulam arches subject to extension and seismic demand. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	
M/4/D	Implement the 67% super-structure strengthening scheme. Including tie beams or similar across main hall and pile caps/connections.	Provide more robust vertical support by underpinning structure with new micro piles. Use strip of perimeter treatment works along full length of building adjoining Saltwater Creek to limit lateral ground displacements.	67%	Refer structural comments	Capacity limited by the glulam arches, new tie beams and ground remediation s ability to resist the ground movement during an earthquake. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	
M/5/E	New steel arches over structure. 100% strengthening scheme inside the Main Hall. New foundations for the steel arches and tie beams and pile caps in the Main Hall.	Provide more robust vertical support by underpinning structure with new micro piles. Provide robust vertical and lateral support to the foundations on either end of the new truss with a large diameter bored pile. Extend these piles in a palisade along the	100%	Refer structural comments.	New Steel arches designed to 100% NBS, resisting the seismic roof loads. Strengthening to the existing Main Hall structure to 100% NBS, resisting the seismic loads from the galleries and other sub structures. Meets current building code requirements for Ultimate Limit State – people expected to be able to exit the building safely after a	

		Saltwater Creek side to limit lateral ground displacements.			design level earthquake, but building may be uneconomic to repair. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	
M/6/D	New raft slab over entire footprint of main hall Strengthening to main hall superstructure as per M/4/D. New raft slab to main hall, based on similar situations the depth of the slab has been estimated as 600mm deep if site lateral restraint provided (perimeter treatment works). This option was only explored at a high level due to initial indications that this approach is uneconomic.	Use strip of perimeter treatment works along full length of building adjoining Saltwater Creek to limit lateral ground displacements.	67%	Refer structural comments.	Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	
M/7/F	New steel trusses to replace existing timber arches. 100% strengthening scheme inside the Main Hall. New structure and 1500 dia piles to support trusses on eastern side. Western end of trusses designed to slide on support. Large ground beams around perimeter of building.	This option excludes site lateral restraint. In moderate to severe earthquake large lateral ground movements could occur across the Saltwater Creek (western) side of the site.	100%	Refer structural comments.	Design development could determine this option not to be technically feasible because of potential ground movements adjoining Saltwater Creek. New Steel arches designed to 100% NBS, resisting the seismic roof loads. Meets current building code requirements for Ultimate Limit State – people expected to be able to exit the building safely after a design level earthquake, but building may be uneconomic to repair. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Strengthening to the existing Main Hall structure to 100% NBS, resisting the seismic loads from the galleries and other sub structures. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	

[1] All options presented in this table are based on concept design only. The next stage of work will be to develop preliminary designs for the selected options and evaluate these options. During the preliminary design, opportunities to raise the assessed seismic performance (%NBS) will be explored. Similarly, there is the risk that during preliminary design technical issues could be identified for any option which could reduce the assessed seismic performance of that particular option, or determine the option to be technically or economically not viable.

[2] Information in this column provided by Holmes Consulting Group Ltd

[3] Information in this column provided by Tonkin & Taylor Ltd

[4] Information in this column provided by Opus International Consultants Ltd

[5] Refer to Appendix C

[6] % EQ refers to the percentage of the ground shaking of the Design Basis Earthquake, which is the Ultimate Limit State earthquake derived from NZS1170 for a new Importance Level 3 building

Table 2: Southern Extension[1]

Option ID[4]	Description		Seismic Performance			Cost Rating[4]
	Structure[2]	Foundations[3]	% NBS	Foundations[2] - critical factor that will limit/control expected seismic performance of the building when % NBS is exceeded[5].	Structural[3] comment	
S/1/A	Do nothing	Do nothing	<33%	The existing piles are founded in soils where liquefaction and/or related effects could be initiated at <33% EQ[6]. This could affect their bearing capacity, so they cannot reliably support the building	Capacity limited by the existing non-ductile crossed braced walls and the bearing capacity of the existing piles.	
S/2/A	Implement the 67%[5] super-structure strengthening scheme	Do nothing	<33%	The existing piles are founded in soils where liquefaction and/or related effects could be initiated at <33% EQ[6]. This could affect their bearing capacity, so they cannot reliably support the building	Super-structure elements are secured to 34%. Capacity limited by the existing piles.	
S/3/B	Implement the 67%[5] super-structure strengthening scheme using Buckling Restrained Braces (BRBs). Work includes new ties within the first floor and foundation.	Provide more robust vertical support by underpinning structure with new micro piles	34%	At >34% EQ[6], potential lateral ground displacements could damage new micro piles close to Saltwater Creek, such that they can no longer reliably support the building	Super-structure strengthen to 67%. Capacity limited by the new piles subject to lateral spread. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair.	
S/4/C-S/4/D	Implement the 67%[7] super-structure strengthening scheme using BRBs. Work includes new ties within the first floor and foundation.	Provide more robust vertical support by underpinning structure with new micro piles. Use strip of perimeter treatment works along full length of building adjoining Saltwater Creek to limit lateral ground displacements.	67%	Refer structural comments.	Capacity limited by the foundations, braces and diaphragms strengthened to 67%. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	

[1] All options presented in this table are based on concept design only. The next stage of work will be to develop preliminary designs for the selected options and evaluate these options. During the preliminary design, opportunities to raise the assessed seismic performance (%NBS) will be explored. Similarly, there is the risk that during preliminary design technical issues could be identified for any option which could reduce the assessed seismic performance of that particular option, or determine the option to be technically or economically not viable.
[2] Information in this column provided by Holmes Consulting Group Ltd
[3] Information in this column provided by Tonkin & Taylor Ltd
[4] Information in this column provided by Opus International Consultants Ltd
[5] Refer to Appendix C
[6] % EQ refers to the percentage of the ground shaking of the Design Basis Earthquake, which is the Ultimate Limit State earthquake derived from NZS1170 for a new Importance Level 3 building
[7] A 34% NBS structural strengthening option is not recommended and has not been included for the Southern Extension. The 67% strengthening scheme will provide significantly more robustness to the structure compared to the 34% scheme for minimal additional cost. The majority of the cost involved is related to access and installation which is very similar for both strengthening schemes.

Table 3: Northern Building[1]

Option ID[4]	Description		Seismic Performance			Cost Rating[4]
	Structure[2]	Foundations[3]	% NBS	Foundations[2] - critical factor that will limit/control expected seismic performance of the building when % NBS is exceeded[5].	Structural[3] Comment	
N/1/A	Do nothing	Do nothing	<33%	Lateral ground displacements toward Saltwater Creek could be initiated at <33% EQ[6], potentially shearing the existing piles, so they cannot reliably support the building. Once this occurs, the existing ground beams and slabs would need to provide support to the building.	Capacity limited by the connection of the steel roof trusses to the concrete block walls. Leading to possible instability of the trusses and some walls.	
N/2/A	Implement the 34% strengthening scheme and provide additional support posts to the roof trusses	Do nothing	34%	Lateral ground displacements toward Saltwater Creek could be initiated at <33% EQ[6], potentially shearing the existing piles, so they cannot reliably support the building. Once this occurs, the existing ground beams and slabs would need to provide support to the building.	Unreliable support/ reduced support from the existing piles. Foundations possibly remain supported through bearing and some pile support. Capacity limited by the foundation support and the stability of the concrete block walls and roof trusses. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair.	
N/3/C	Implement the 67% strengthening scheme and provide additional support posts to the roof trusses	Construct a grillage of new foundation beams within the existing foundations.	67%	Lateral ground displacements toward Saltwater Creek could be initiated at <33% EQ[6], potentially shearing the existing piles, so they cannot reliably support the building. Support provided by existing and new ground beams.	New ground beams act to distribute bearing pressure and improve the robustness of the structure to lateral spread. Capacity limited by the foundation movement and the stability of the concrete block walls and roof trusses. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	
N/5/F	Demolish and replace with light structure	Robust concrete raft foundation	100%	Refer structural comments.	Structure designed to meet current building code requirements. Damage to the structure can also be expected in an earthquake less than the targeted strengthening level which may render the building uneconomic to repair. Overall earthquake capacity of the facility will be limited by the lowest capacity of the Southern Extension, Northern Extension or Main Hall.	

[1] All options presented in this table are based on concept design only. The next stage of work will be to develop preliminary designs for the selected options and evaluate these options. During the preliminary design, opportunities to raise the assessed seismic performance (%NBS) will be explored. Similarly, there is the risk that during preliminary design technical issues could be identified for any option which could reduce the assessed seismic performance of that particular option, or determine the option to be technically or economically not viable.
[2] Information in this column provided by Holmes Consulting Group Ltd
[3] Information in this column provided by Tonkin & Taylor Ltd
[4] Information in this column provided by Opus International Consultants Ltd
[5] Refer to Appendix C
[6] % EQ refers to the percentage of the ground shaking of the Design Basis Earthquake, which is the Ultimate Limit State earthquake derived from NZS1170 for a new Importance Level 3 building

Appendix C – Geotechnical information

Geotech commentary dated 13 February 2015

Geotech Figures dated 13 February 2015

Site Lateral Restraint Options dated 13 February 2015

Appendix C: Geotechnical Considerations

1.0 Introduction

The 'Strengthening Options Table' in Section 4 of this report outlines the seismic strengthening options identified for the Trafalgar Centre buildings. This appendix provides background to the foundation improvement options. This appendix outlines:

- Background and objectives.
- The problem; the geotechnical issues which could most adversely affect the seismic performance of the building.
- The foundation and ground improvement options identified.
- Level of certainty of lateral ground movement and building resilience.
- Identified risks associated with the options.

2.0 Background and Objectives

The objective of the current work has been to explore options to improve the seismic performance of the Trafalgar Centre and identify which of those options deserve further consideration. This work builds on previous work, including Tonkin & Taylor Ltd 2013 investigations[1] and the workshop in May 2014. In particular the recent work builds on the previous work by:

a) Considering a variety of levels of improvement (target % NBS)
b) Considering further, in conjunction with Holmes Consulting Group, the tolerance of the building to lateral ground displacement. The more tolerant the building is (or can be made) to lateral ground movement the less work needs to be undertaken in the ground to reduce displacement.
c) Considering options of site lateral restraint to control lateral ground movement

3.0 The Problem

Moderate and severe earthquake shaking at this site could result in a number of ground damage effects. Those effects which could most adversely affect the building comprise:

a) <u>Reduced Ground Support to Piles</u>
At moderate to severe levels of earthquake shaking liquefaction effects could reduce the strength of the soils in which the buildings piles are founded, such that they cannot reliably support the building.
b) <u>Lateral Ground Displacement</u>
At moderate levels of earthquake shaking lateral ground displacement toward Saltwater Creek could be initiated, potentially shearing the existing piles so that they cannot reliably support the building. The existing piles are lightly reinforced and they cannot tolerate lateral ground displacements. At higher levels of earthquake shaking the magnitude of lateral ground displacement toward Saltwater Creek could be expected to increase. Some lateral ground displacement toward the Maitai River could also occur. With these larger displacements there is a potential for the timber arches supporting the main hall to be stretched at their supports.

[1]Trafalgar Centre Geotechnical Report, dated June 2013

4.0 Options Identified

This section describes works that could be specified to:

a) Provide more reliable support to the structure, and
b) Limit lateral ground displacements

4.1 Micro piling to provide more reliable support to the structure

An option available to improve the seismic performance of the building is to underpin the existing structure with new piles that are more robust than the existing piles. These new piles would extend deeper than the existing piles to found below the level of soils which could suffer reduced strength as a consequence of liquefaction effects, and would have steel casings to allow them to tolerate limited lateral ground movement.

Some of the new piles would need to underpin the foundations within the buildings. In order to facilitate installation of these piles, a construction method suitable for use in a confined space/low headroom environment is necessary. There are a number of pile types that could meet this criteria, which we collectively term 'micro pile'.

During the design process the following types of micro piles may be considered:

- A bored reinforced concrete pile with permanent steel casing embedded into competent bearing strata
- A bored steel tube grouted into competent bearing strata
- Screw piles with helices embedded into a competent bearing stratum

Each of these types of micro pile have some level of risk in design development and construction. The grouted bored steel tube piles are likely to have the lowest risk and have been assumed at this concept design stage.

The new micro piles will need to be tied into the existing structure. In some locations, due to difficult access or weakness of existing ground beams, additional ground beams may be required to tie the new micro piles to the existing structure.

Once a level of shaking is reached that may induce lateral ground displacements greater than the tolerance of the new micro piles (> 34% EQ), additional works would be required to limit the magnitude of lateral ground displacements. This could enable the new micro piles to support the buildings at higher levels of shaking (> 34% EQ). These additional works could be done by installing a form of perimeter treatment works outside of the building to limit potential lateral ground displacements.

4.2 Perimeter treatment works to limit lateral ground displacements

Perimeter Treatment Works (PTW) to limit the magnitude of potential lateral ground displacements are required to protect the micro piles and the building at ground shaking >34% EQ. The PTW could be done using either:

- A strip of ground improvement, or

- A palisade of large diameter piles (refer to Figures 1 & 2 attached), or
- A retaining structure (culvert) within Saltwater creek channel

These options are described in:

- Table C1: Site Lateral Restraint Options, attached
- Figures Da to De: Site Lateral Restraint Options, attached
- The commentary below

4.2.1 Ground improvement

Ground improvement (options Da to Dc) is the treatment of existing soil to improve its resistance to liquefaction and lateral displacement. A strip of ground could be treated parallel to an open channel (eg Saltwater Creek) in order to provide a block of stronger soil that resists lateral displacement.

Soil may be treated by:

- Changing the properties (eg density, cementation) of the existing soils, or
- Adding materials into the ground to change the make-up of the existing soils, or
- A combination of both of the above

Two methods of ground improvement that may be suitable for this site are:

- Gravel columns, whereby new gravel is vibrated into the ground in a vertical column. The vibrations densify the existing soils, and the new stone increases the volume of 'strong soil' within the ground. The columns are constructed in a closely spaced grid pattern from the ground surface by a specially outfitted crane. The grid can extend in a strip parallel to open channels to resist lateral spreading.
- Deep Soil Mixing (DSM), whereby a cement mix is introduced into some of the soils to bind them together. The cement is typically introduced to form in a box like shape that encloses non-treated soils. Once the cement mix has set, the 'box' has a much lower risk of liquefaction than soils outside of the box. A row of boxes could be constructed parallel to open channels to resist lateral spreading. This work could be done using a specially outfitted drilling rig.

4.2.2 Palisade of large diameter piles

Large diameter piles (option Dd) are reinforced concrete piles with a diameter larger than 1 m socketed into reliable bearing soils. The piles can be arranged in a row to form an in-ground retaining wall running parallel to open channels. The wall will mitigate lateral spreading.

These piles could be constructed with a specialised piling rig, similar to a large excavator.

4.2.3 Retaining structure within Saltwater Creek channel

A retaining structure within the Saltwater Creek channel could restrain and mitigate lateral ground displacements (option De).

These works could take the form of either:

- A large culvert structure with a rectangular cross section, or
- Steel sheet piles or concrete tilt panels along either bank and cross bracing

4.2.4 Risks and relative merits of perimeter treatment works options

Table C1 attached outlines the major risks and relative merits of each option.

5.0 Level of Certainty of Lateral Ground Movement and Building Resilience

Holmes Consulting Group Ltd have indicated that the tolerance of the existing timber arches to differential lateral movement (stretch) is limited to approximately 150mm. Beyond this tolerance collapse of the arches could occur.

In combination with Holmes Consulting Group Ltd a design (option M/4/D) has been developed to provide a level of confidence that differential lateral movement across the building does not exceed 150mm at 67% of the design basis earthquake.

This design comprises site lateral restraint (any of options Da to De) to control gross lateral ground movement, plus robust ties across the building to provide the level of confidence that the differential lateral movement across the building does not exceed 150mm.

The ties also mitigate possible risk of lateral movement toward the Maitai River.

6.0 In Ground Risk

Table C1 outlines risks associated with the perimeter treatment (site lateral restraint) options.

Other in ground risks include:

- Existing underground services
- Soil contamination
- Buried obstructions
- Weak founding layers

Additional risks may be identified as the project develops.

7.0 Applicability

Recommendations and opinions in this report are based on data from investigations described in the 'Trafalgar Centre Geotechnical Report,' dated June 2013. The nature and continuity of subsoil away from the investigation locations are inferred and it must be appreciated that actual conditions could vary from the assumed model.

This report has been prepared for the benefit of Nelson City Council with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Prepared by:

.....

Dan Andrews

Geotechnical Engineer

Authorised for Tonkin & Taylor Ltd by:

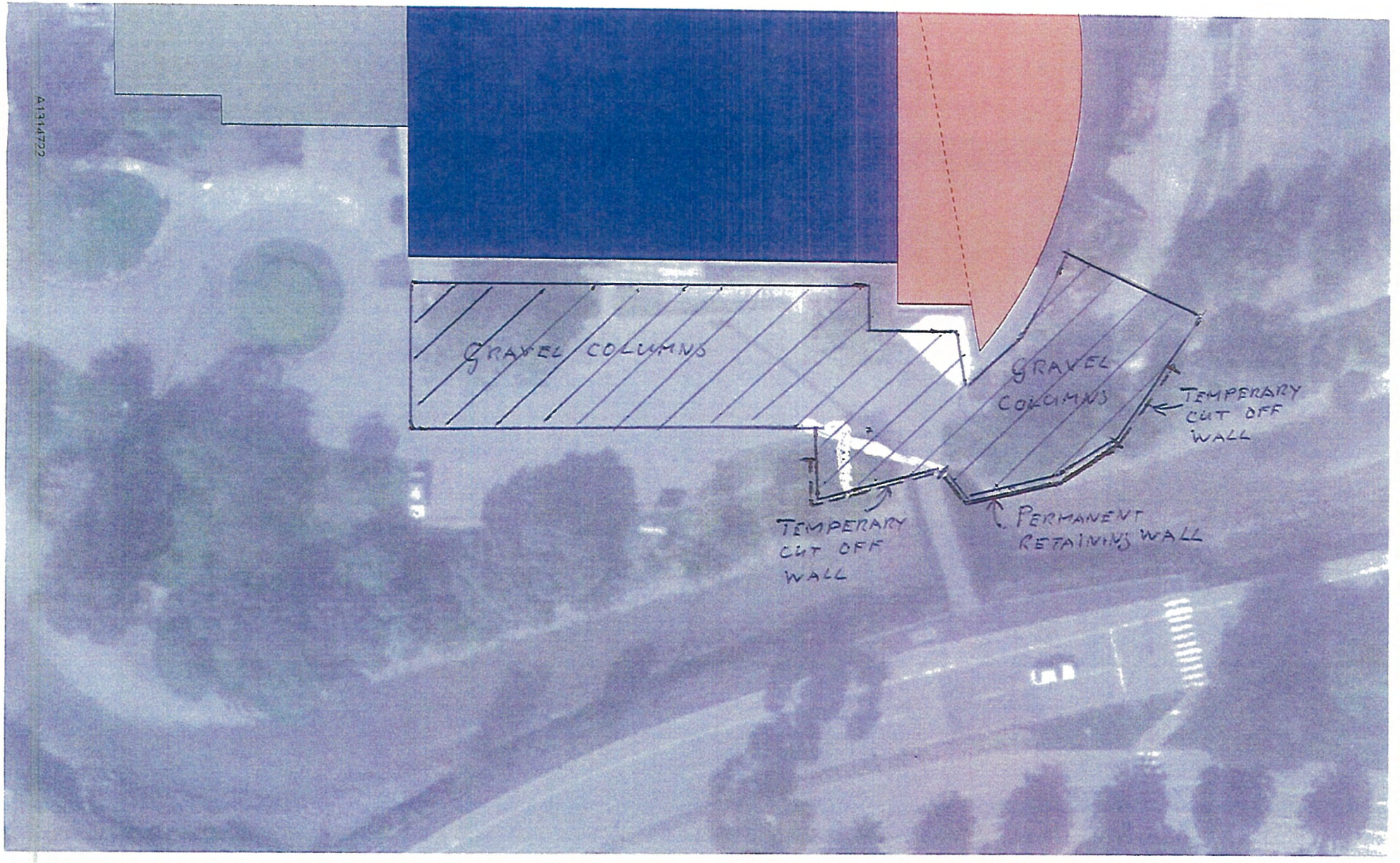
.....

Stuart Palmer

Project Director

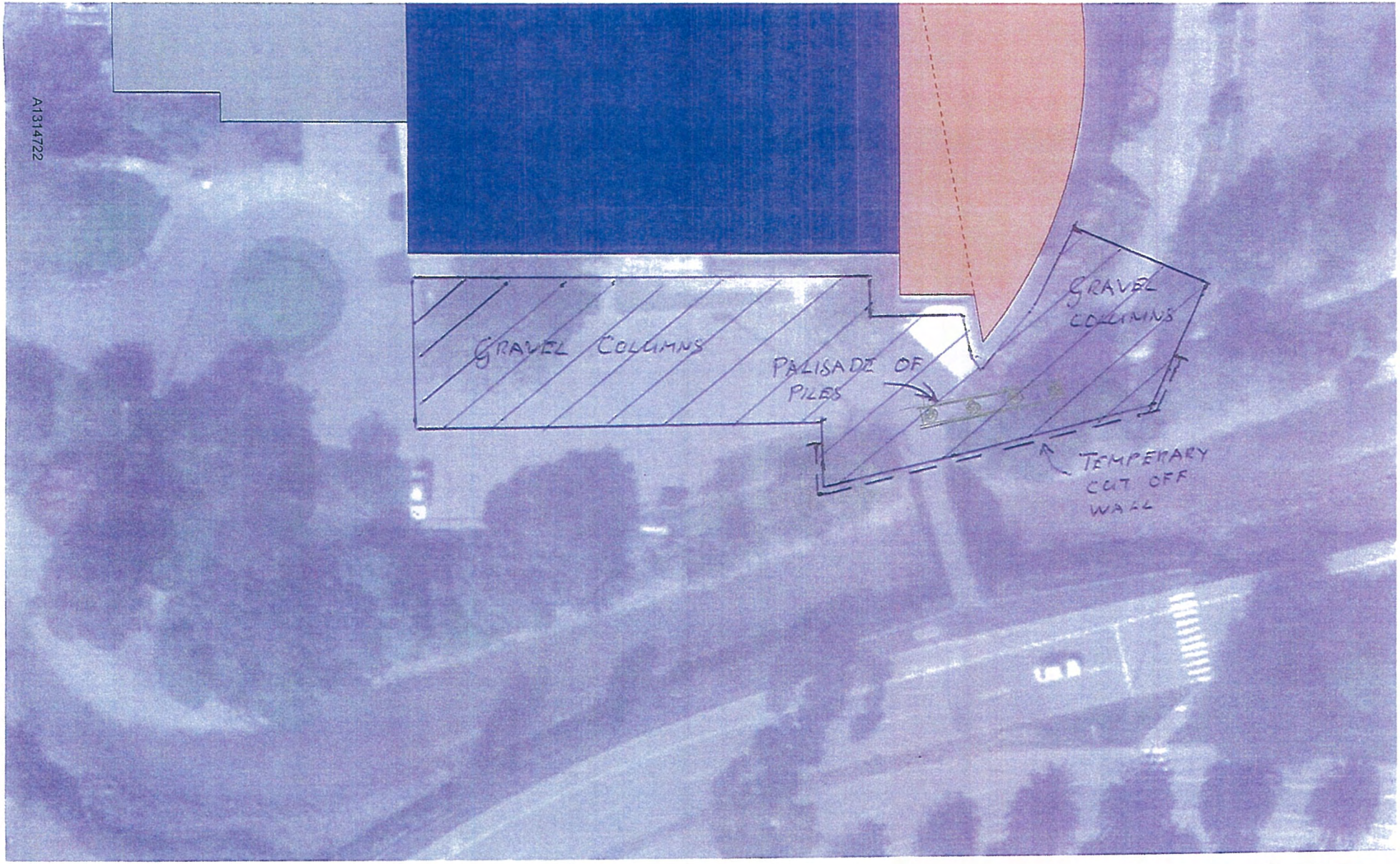
Attachments

- Table C1: Site Lateral Restraint Options
- Figures Da to De, E and F: Site Lateral Restraint Options

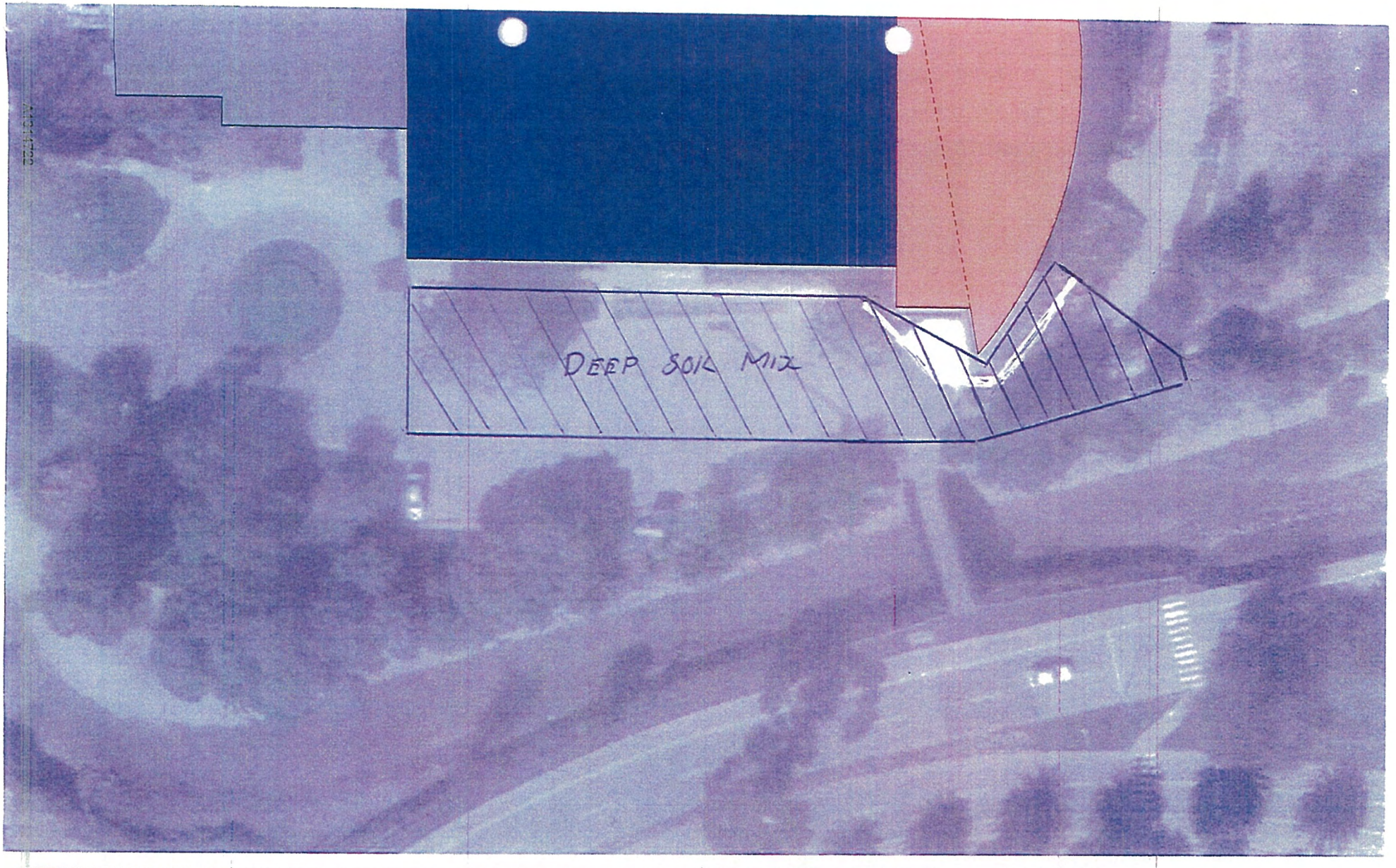


	TRAFALGAR CENTRE	DATE Jan '15	OPTION Da
	LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 9710274003	GRAVEL COLUMNS + RETAINING WALL

FIGURE Da
Rev 2 9/2/15

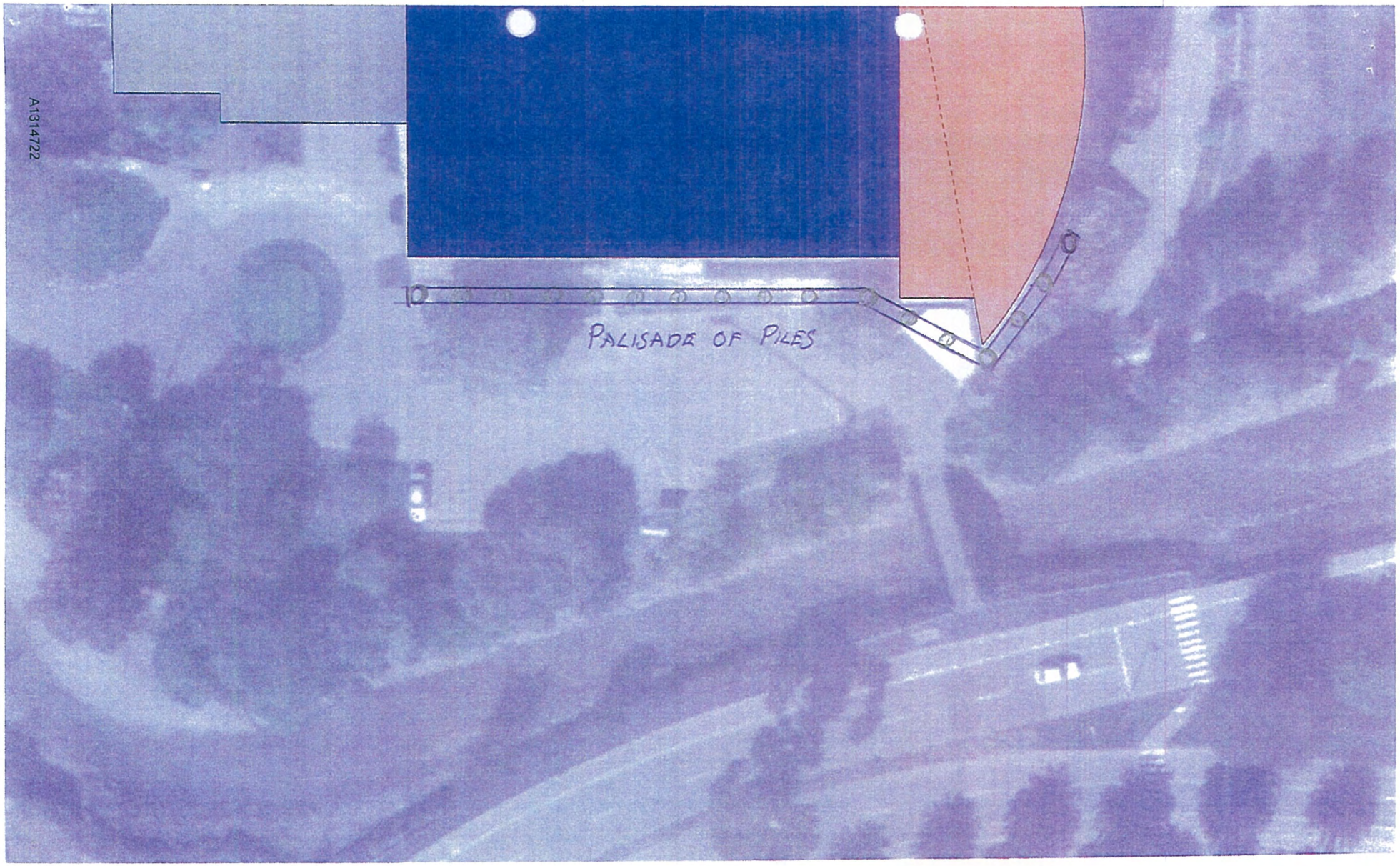


	TRAFALGAR CENTRE	DATE Jan '15	OPTION Db GRAVEL COLUMNS + PALISADE PILES	Figure Db Rev 2 9/2/15
	LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 7710241003		



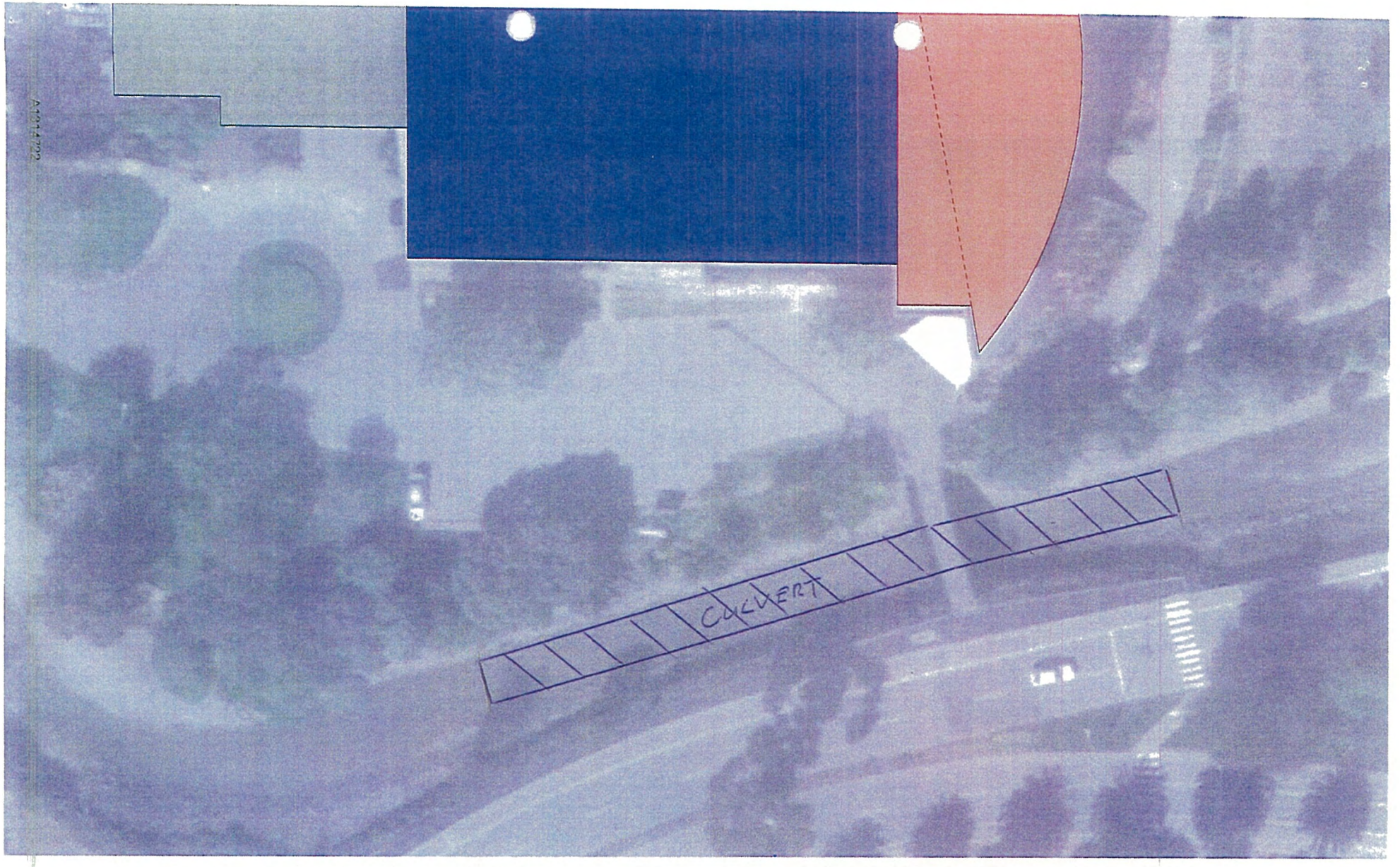
TRAFALGAR CENTRE	DATE Jan '15	OPTION Dc.	FIGURE: Dc
LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 8711240B3	DEEP SOIL MIX	REV1 29/1/15

DRAFT



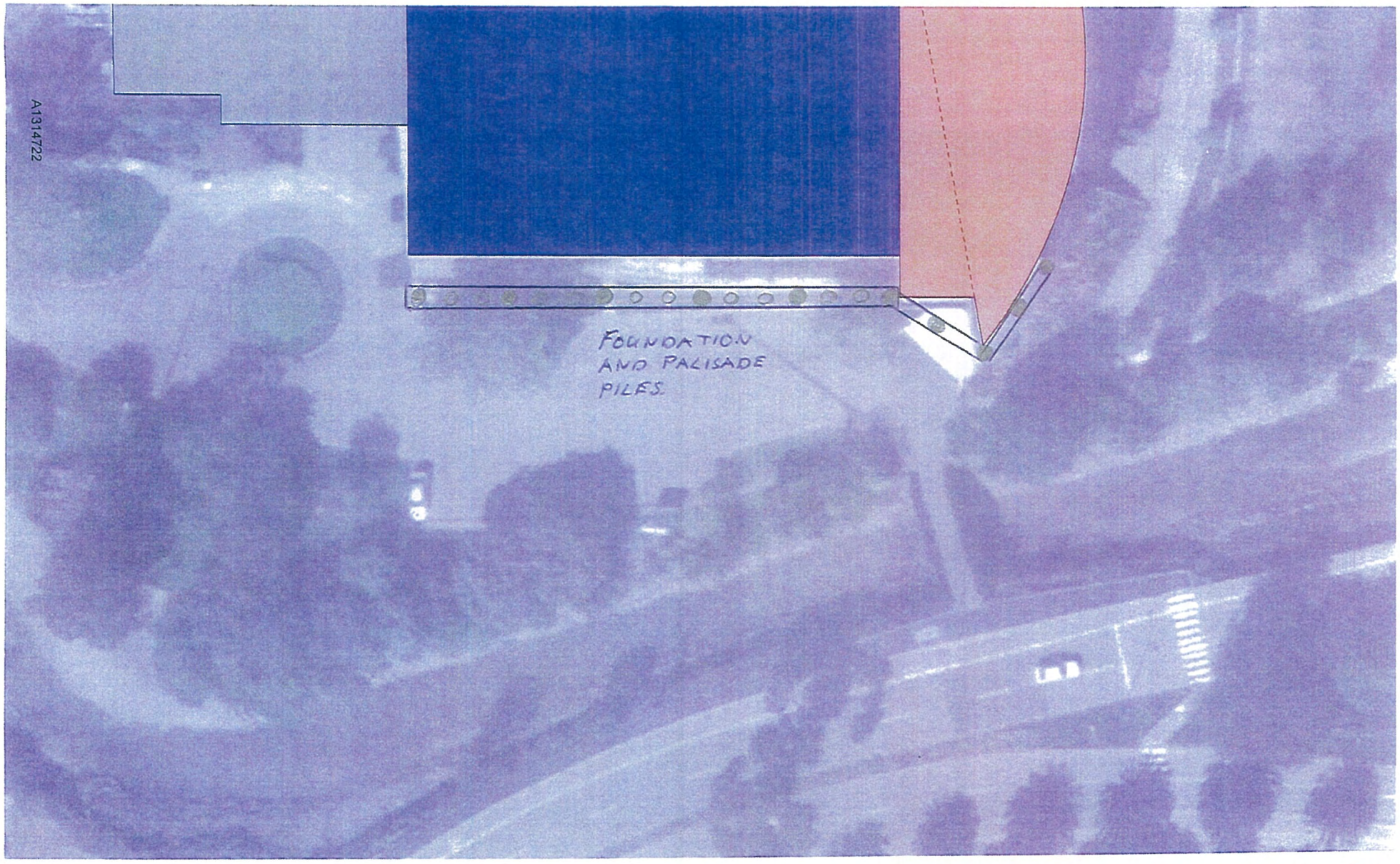
	TRAFALGAR CENTRE	DATE Jan '15	OPTION Dd Palisade of Piles.
	LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 87/624/083	FIGURE Dd REV1 29/1/15

DRAFT

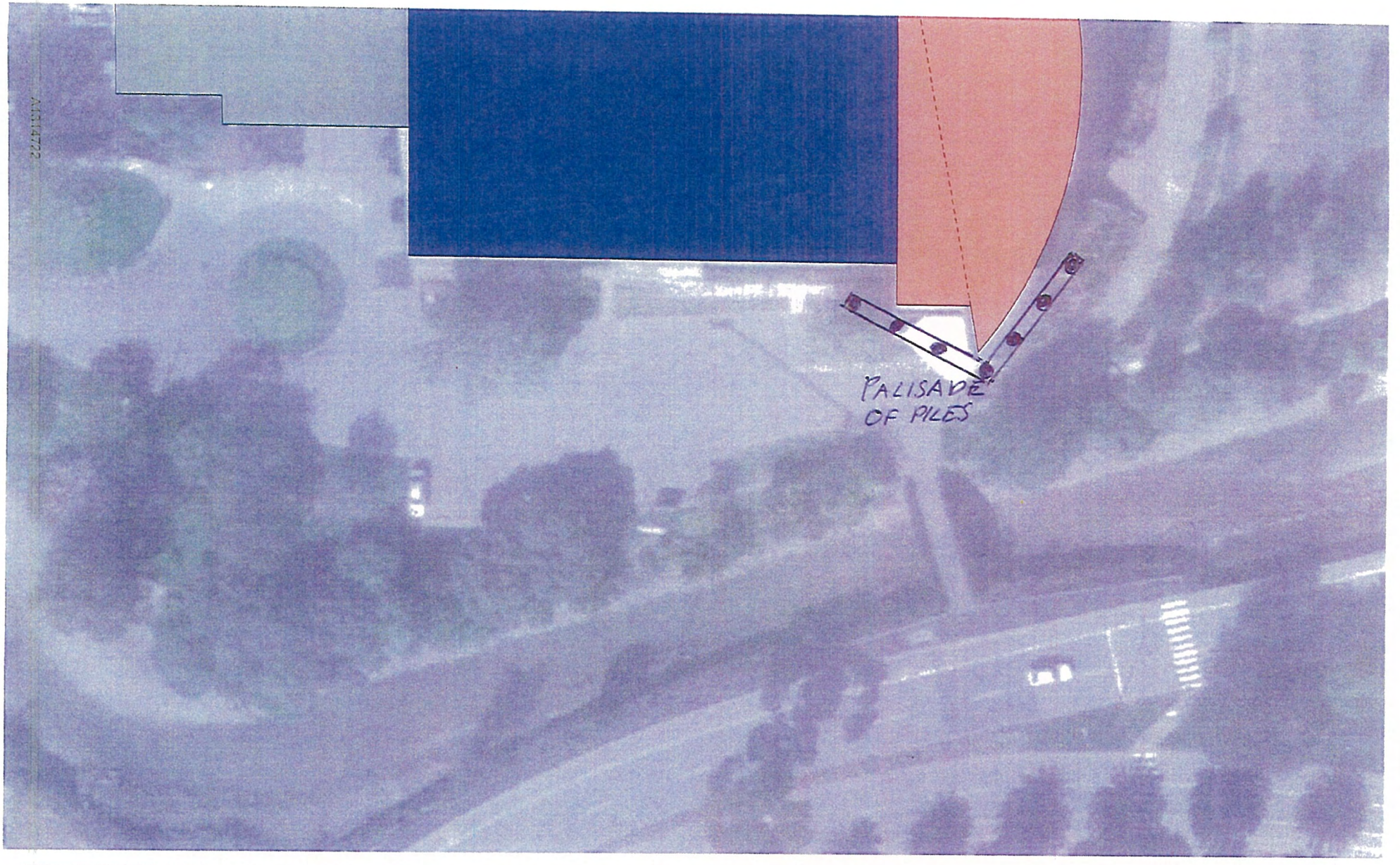


	TRAFALGAR CENTRE	DATE Jan '15	OPTION De CULVERT
	LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 8711240083	FIGURE De REV1 29/1/15

DRAFT



	TRAFALGAR CENTRE	DATE Jan '15	OPTION E 'PILE PALISADE
	LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 771024.003	FIGURE E-- Revi 5/2/15



	TRAFALGAR CENTRE	DATE Jan '15	OPTION F PILE PALISADE
	LATERAL RESTRAINT OPTIONS scale 1:500 @ A4	JOB NO. 971024.003	FIGURE F- Rev 1 13/2/15

Trafalgar Centre
Site Lateral Restraint Options

Table C1: Site Lateral Restraint Options

Options ID (1)	Option Description	Cost Ratings (2)	Seismic Performance		Design and Construction Risk	
			Comments	Rating (3)	Comments (4)	Rating (5)
Da	• 80m long strip of gravel columns • 20m long permanent retaining wall on east bank of Saltwater Creek at SW corner • 30m long temporary sheetpile wall	1	• Some uncertainties in degree of improvement achieved by gravel columns	2	• Quantity of gravel/energy required and degree of improvement achieved, particularly within the marine deposits. • Width and depth of strip • Consenting retaining wall	3
Db	• 80m long gravel columns strip • 20m long temporary sheetpile wall • 10m long palisade of piles at SW corner	1.3	• Some uncertainties in degree of improvement achieved by gravel columns	2	• Quantity of gravel/energy required and degree of improvement achieved, particularly within the marine deposits • Width and depth of strip • Pile design development (bending movement) • Pile construction	3
Dc	• 80m long strip of deep soil mix • Additional deep soil mix over 20m length at SW corner	2.0	• Some uncertainties in degree of improvement achieved by soil cement mix • Relatively brittle behaviour of soil cement	2-3	• Soil/cement response • Width and depth of strip • Cell dimensions • Relatively new technology for NZ	4-5
Dd	• 80m long palisade of piles	2.0		2	• Pile design development (bending movement) • Pile construction	3
De	• 80m long anchored culvert	1.6		2	• Consenting culvert • Culvert design development • Stability of fill beneath southern extension	3-4

Notes

(1) Figures Da to De attached indicate scope of options Da to De. Figures E and F attached indicate scope of options E and F. For options E and F lateral ground movement is considered in the foundation design and not included in this table.
(2) Cost Rating: Option Da likely to be lowest cost option. Order of cost of other options indicated as a proportion of option Da.
(3) Seismic performance rating: Refer Table A
Minimum Performance requirements: a) <150mm differential lateral and longitudinal displacement across/along the width/length of the building in a 67% DBE event.
b) <300mm differential lateral and longitudinal displacement across/along the width/length of the building in a 100% DBE event.
(4) Design and construction risk comments: Not a complete list. Highlights main issues.
(5) Design and construction risk rating: Refer Table B

Table A: Seismic Performance Rating

Rating	With site lateral restraint works plus transverse tie across building; likelihood of displacements exceeding minimum requirement
1	Unlikely to exceed 50% of minimum displacement
2	Unlikely to exceed minimum displacement
3	Exceeding minimum displacement possible
4	Exceeding minimum displacement not expected
5	Exceeding minimum displacement could be expected

Table B: Design and Construction Risk Rating

Rating	Description
1	Design developed. Construction risk low
2	Minor design and/or construction issues. Likely to be resolved during design process and/or by allowing appropriate construction contingency.
3	Some design and/or construction issues. Expected to be resolved during design process or by allowing appropriate construction contingency.
4	Some design and/or construction issues which could possibly be resolved by design development. Construction risk of significant cost overrun may remain.
5	Significant design and/or construction uncertainties. Development expected to determine options not feasible.

Appendix D – Northern Building Functional Options

ISJ options report

TRAFALGAR CENTRE RE-OPENING

PROJECT SYNOPSIS

Nelson City Council

Architectural Concept Design

Contract No EC3679

01 December 2014

irving:smith:jack
ARCHITECTS

A1314722

TRAFALGAR CENTRE RE-OPENING

PROJECT SYNOPSIS

Table of Contents

Appendices

TRAFALGAR CENTRE RE-OPENING ARCHITECTURAL CONCEPT DESIGN

PROJECT SYNOPSIS

1.0 Introduction

This report summarises a wider body of research investigating re-opening options for the Trafalgar Centre, which is currently closed to the public in consideration of its earthquake prone classification.

This report focuses on architectural solutions to the existing Northern Building and associated former Civil Defence Headquarters. The existing Main Hall and Southern extension are not included at this stage while further structural and geotechnical works to be completed.

As a baseline, this report establishes a solution where the Northern Building can be reopened with a minimum of works. This approach is described as 'strengthen, resurface and make compliant'. This is in line with the terms of reference for this project, to focus on a strategy for reopening in the first instance.

2.0 Site Research

To establish works required and inform outcomes research was completed under the following broad headings;

- Building Condition Assessment
- Prior Consultation and Functionality
- Structural and Geotechnical Works to the Northern Building
- WC Provision

In summary, the overall condition of the northern building is poor, with concerns over the state of the building fabric, services provision and accessibility. There are a series of base functional concerns in and around kitchen facilities, ticketing, cloaks and opportunities for merchandising. Concern over the location of the front entrance on the West façade is noted from prior consultation and Urban Design Panel assessment. There is a gross oversupply of male toilet facilities and a corresponding undersupply of female facilities, and concerns over the state of the existing drainage.

Of note, the extent of structural works to achieve 67% of the New Building Standard (NBS) is relatively minor; however Geotechnical requirements are unknown at this stage.

The state of the Main Stadium and Southern extension are explored in these works, but not mentioned in this summary, the overriding OPUS response will address these concerns.

Existing Site and Building drawings are included for reference as Appendix 1.

3.0 Development Options

Commencing with the baseline reopening solution (Option 1) and extending as far as a complete replacement (Option 9) ISJ have developed a series of building solutions, which progressively address more and more of the issues raised during site research. These options can be categorised into four broad types, described graphically in Appendix 2:

- West Entry Options 1, 2 & 3
- North Entry Options 4 & 5
- East Entry Options 6, 7, & 8
- Replacement Option 9

The nine options are described with simple sketch plans, included as Appendix 3 for reference.

4.0 Cost Comparison

To establish cost comparison, three of these design options, one from each of the types, were developed more fully and an outline specification prepared. This formed the basis of a preliminary estimate of development costs, completed by experienced Quantity Surveyors, Rider Levett Bucknall (RLB). The relative price of the un-costed options was established by ISJ by interpolation, or in the case of the new build (Option 9), from a square metre rate suggested by RLB.

All cost estimates include for seismic strengthening to a minimum of 67% of New Building Standard, and to establish a fully Building Code compliant solution. However, no works below existing floor, or geotechnical works are included in the estimates. A summary of development costs by option is as follows:

Option	Value ($)	Status
1.	570,000.00	ISJ interpolation only
2.	**1,102,000.00**	**RLB estimate**
3.	1,830,000.00	ISJ interpolation only
4.	1,975,000.00	ISJ interpolation only
5.	**2,122,000.00**	**RLB estimate**
6.	2,400,000.00	ISJ interpolation only
7.	**2,674,000.00**	**RLB estimate**
8.	2,750,000.00	ISJ interpolation only
9.	3,200,000.00	Square metre rate based on RLB advice.

Detailed plans of the three options costed by RLB are included as Appendix 4 for reference. Exclusions from these estimates are noted in Appendix 5.

5.0 Selection Criteria

ISJ have also compared each of the proposed options against a series of criteria, to establish which are the better approaches based on a non-priced assessment. The criteria are selected to show how well each option addresses the building condition and functionality issues identified during site research, and are grouped as follows:

Compliance Issues:

- Seismic Capacity at completion
- Accessibility to all members of the public
- Fire Protection achieved.

Functional Issues

- Suitable provision of toilets
- Level of external Building Condition at completion
- Building Services provision
- Suitability of catering facilities
- Service Accessibility
- General level internal functionality

Experiential Issues

- Appearance and user experience
- Level of internal Building Condition at completion

To facilitate comparison, we have prepared a matrix, included as an appendix to this document (Appendix 5). This matrix compares options against these criteria using a simple scoring method;

- 1 for a poor or non-compliant level of performance
- 3 for an average of compliant level of performance
- 5 for above average or performing equivalent to a new building.

In consideration that our terms of reference are to focus on a compliant reopening solution, we have adapted these scores, weighting them so that compliance issues score double and experiential issues score half in comparison.

There are four high scoring options, described in more detail below.

6.0 Conclusion

The 'baseline solution', described as Option 1, addresses issues of seismic strengthening and NZ Building Code compliance to a satisfactory degree. This option would enable the reopening of the Trafalgar Centre Northern Building at the lowest construction cost ($570,000.00 ex GST).

This addresses the terms of reference established for this project, however, few of the other building issues identified are rectified by this design approach. Effectively this design approach accepts, unaltered, the existing functional and building condition flaws of the Northern building.

Comparison of non-price attributes suggests three other design approaches are worthy of investigation.

Option 3

Suggests retaining the existing building entrance in the current location, but a significant internal rework to address more balanced provision of toilets by gender, a more rational location for kitchen facilities and provision of cloakroom, ticketing and associated functions. Near the median value for relative cost ($1,830,000.00 ex GST) this option does not significantly improve the external building fabric, particularly the existing roof. Retention of the entry in the west, while more cost effective, does not respond to Urban Design panel suggestions to relocate.

Option 5

Relocates the building entry to the Northern edge, and in so doing requires significant internal modification of toilets and kitchens, and to maintain a space equivalent the existing Victory Room. Above the median cost ($2,122,000.00 ex GST) on closer consideration, we would suggest the elongated foyer shape is not a suitable solution.

Option 7 (or Option 8 similar)

Takes a more extensive approach; entry is relocated to the east, beneath a significant canopy. Internally spaces are realigned and renewed to enable this shift, allowing a sensible kitchen facility location, addressing issues of ticketing, cloakroom and merchandising and rationalising toilet location and provision. Significant issues of building condition are also addressed, with this approach suggesting a complete replacement of roofing, and an improvement in main hall access, albeit without replacement of the existing stairs which are steeper than currently allowed. This option has the highest cost of the refurbishment options ($2,674,000.00 ex GST) although we note that electing not to reroof would reduce this value by approximately $260,000.00.

Clearly, the stated design options are not a finite list. A further, developed design or designs could be defined by carefully combining favoured aspects of these options and removing areas that don't work well, or are perceived as unnecessary.

To ensure informed comparison, we have established an outline cost for a new build solution of equivalent area, Option 9. Clearly a new build development scores best in considering non price attributes, new construction delivers excellent outcomes against the comparison criteria. This approach has an overall cost in the order of $3,200,000.00 ex GST. We note that the value of Option 3 or 7 should be compared against this value with all required geotechnical works included to ensure that a new build development doesn't offer better long-term value.

Appendices:

Appendix 1	Existing Site and Floor Plans
Appendix 2	Development Option Types
Appendix 3	9 Development Options
Appendix 4	Detailed Development (Options 2, 5 & 7)
Appendix 5	Option Analysis Matrix

Appendix 1 Existing Site and Floor Plans

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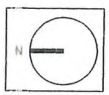

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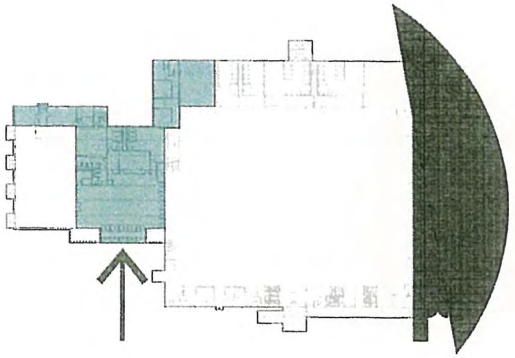
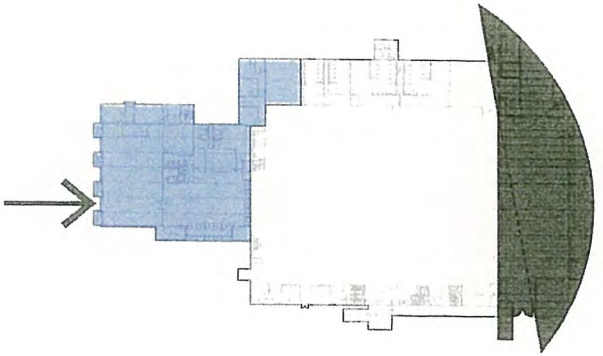
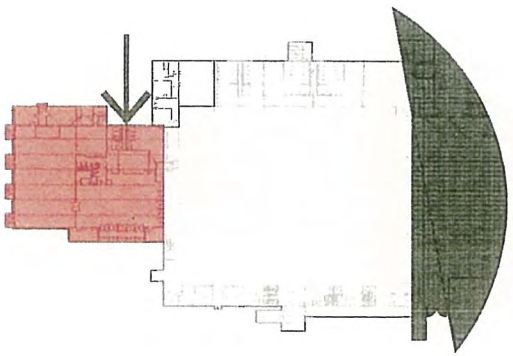
Appendix 2 Development Option Types



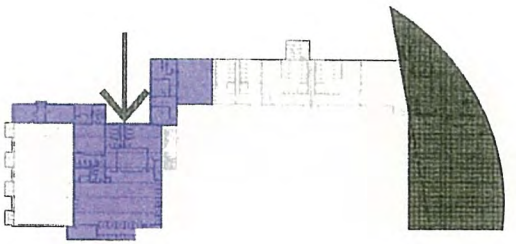
WEST ENTRY
DEVELOPMENT OPTIONS 1,2 & 3



NORTH ENTRY
DEVELOPMENT OPTIONS 4 & 5



REPLACEMENT
DEVELOPMENT OPTION 9



EAS
DEVE

KEY
- NORTH BUILDING
- MAIN HALL
- SOUTHERN EXTENSION

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TRAFALGAR CENTRE
BUILDING ANALYSIS
DEVELOPMENT TYPES

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Appendix 3 9 Development Options

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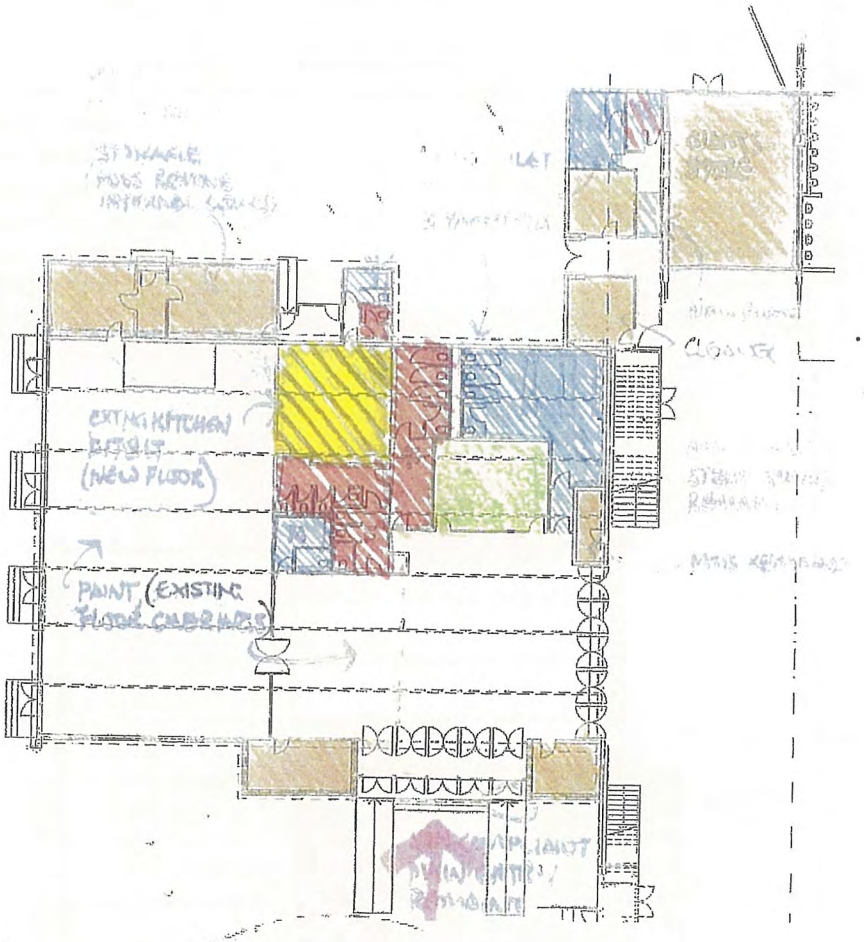

LEGEND:

- VICTORY ROOM
- ENTRY FOYER
- COMMERCIAL KITCHEN
- ADMIN / UTILITY
- MALE TOILET
- FEMALE TOILET

REFURBISH

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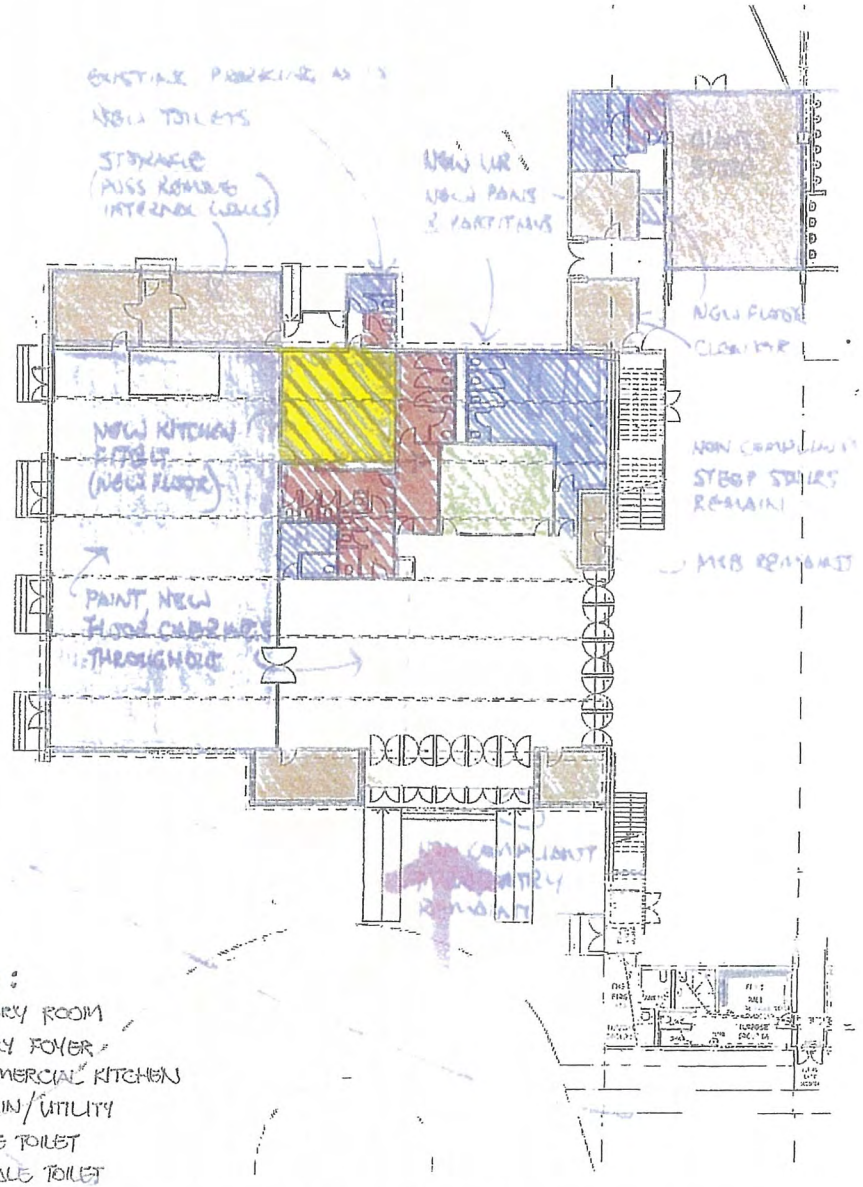

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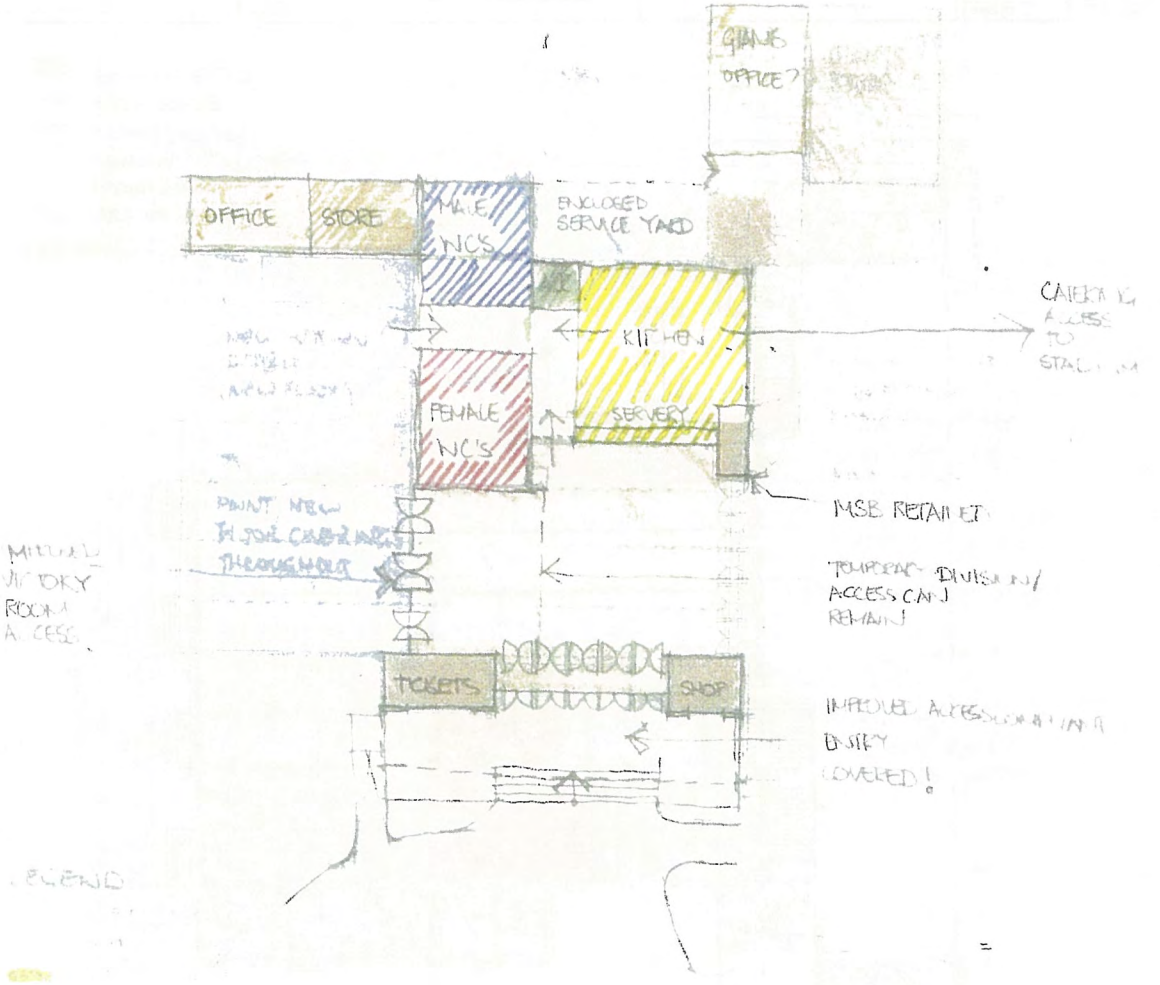
GUARD OFFICE?
OFFICE
STORE
MALE NC'S
ENCLOSED SERVICE YARD
KITCHEN
SERVERY
FEMALE NC'S
MSE RETAINED
TICKETS
SHOP

3

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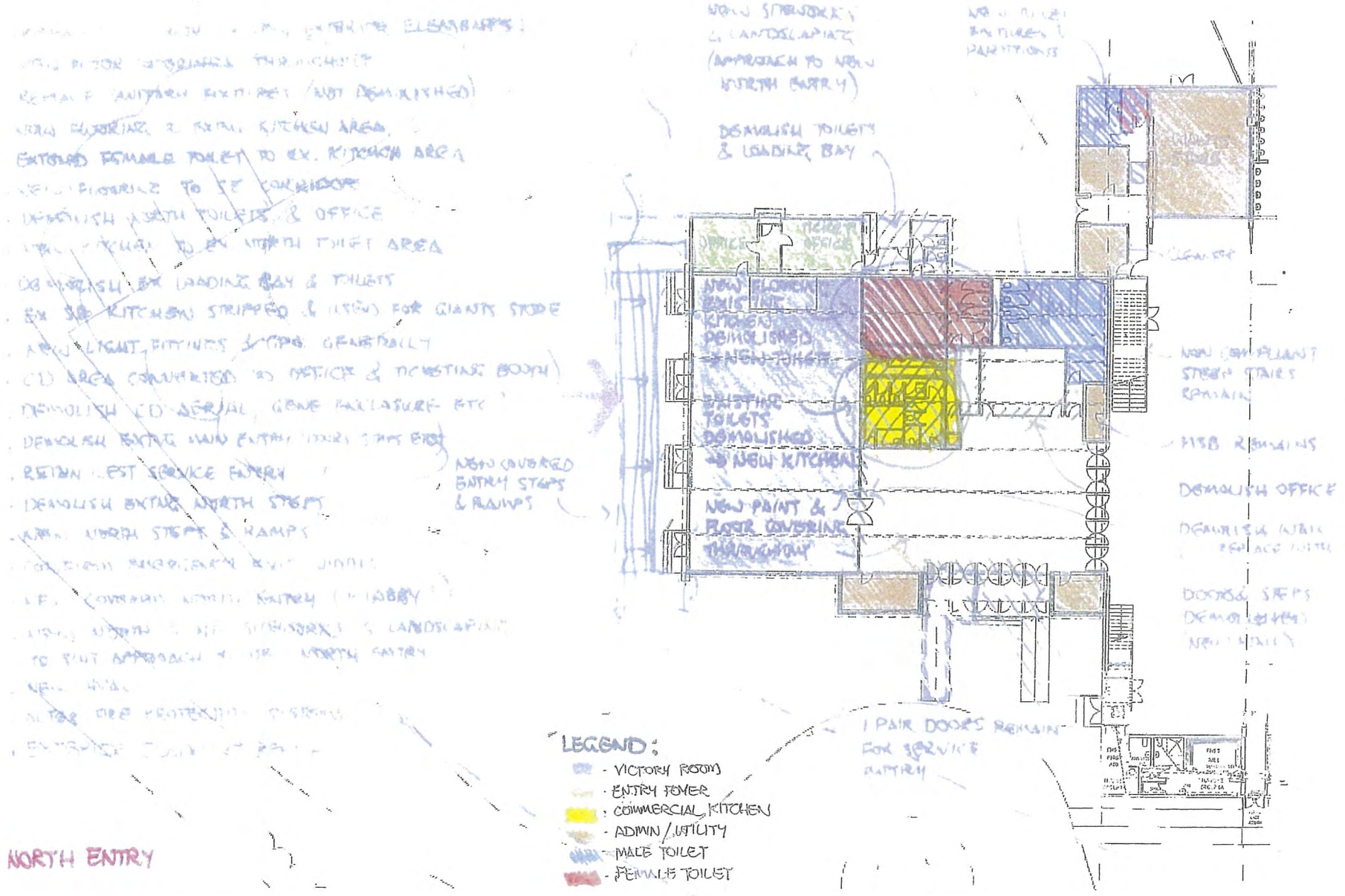

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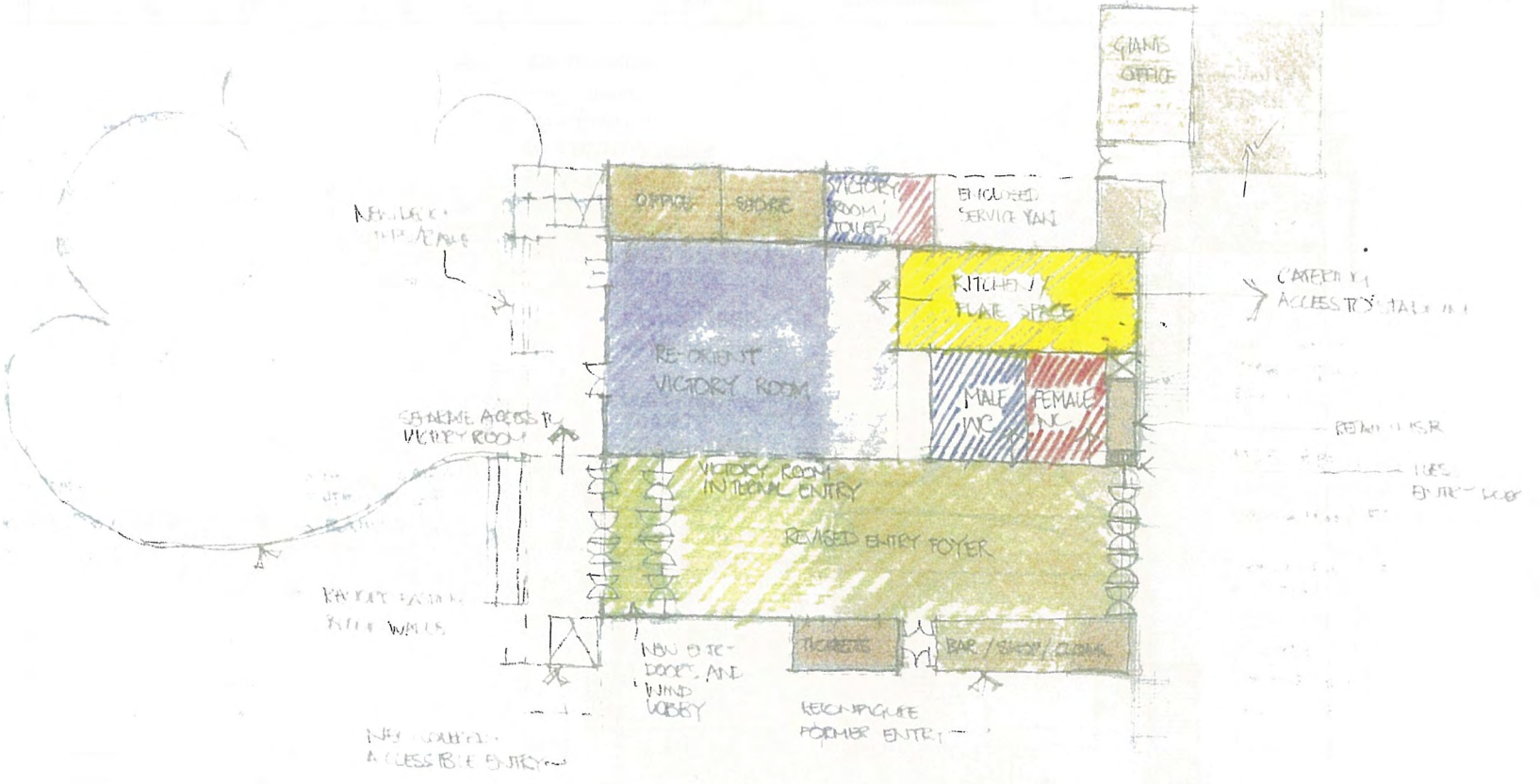
GIANTS OFFICE
OFFICE
STORE
VICTORY ROOM TOILETS
ENCLOSED SERVICE YARD
KITCHEN / PLATE SPACE
RE-ORIENTATED VICTORY ROOM
MALE WC
FEMALE WC
VICTORY ROOM INTERNAL ENTRY
REVISED ENTRY FOYER
TICKETS
BAR / SHOP / CLOAK
NEW BI-FOLD DOORS AND WIND LOBBY
REINSTATED FORMER ENTRY

5

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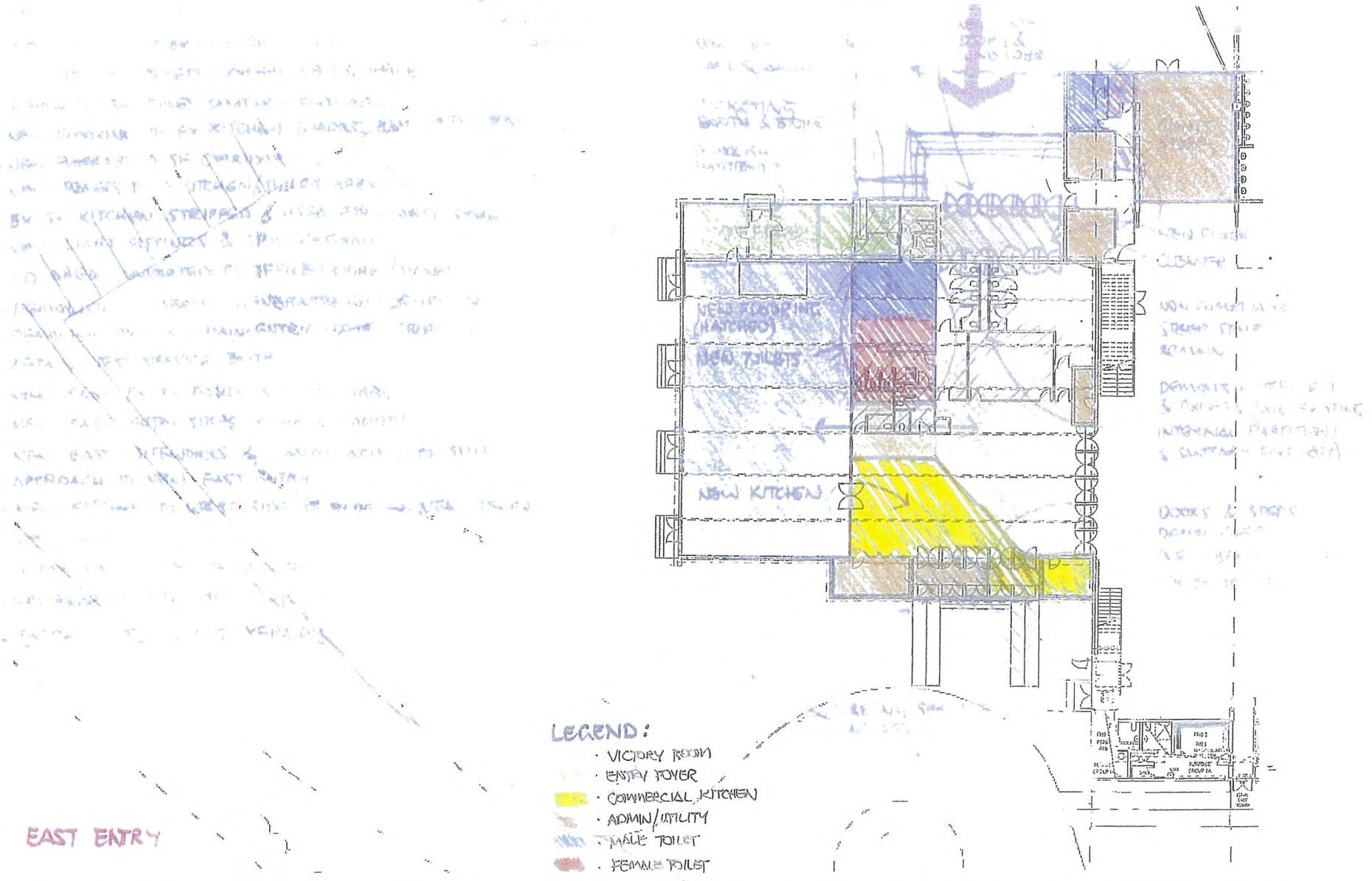

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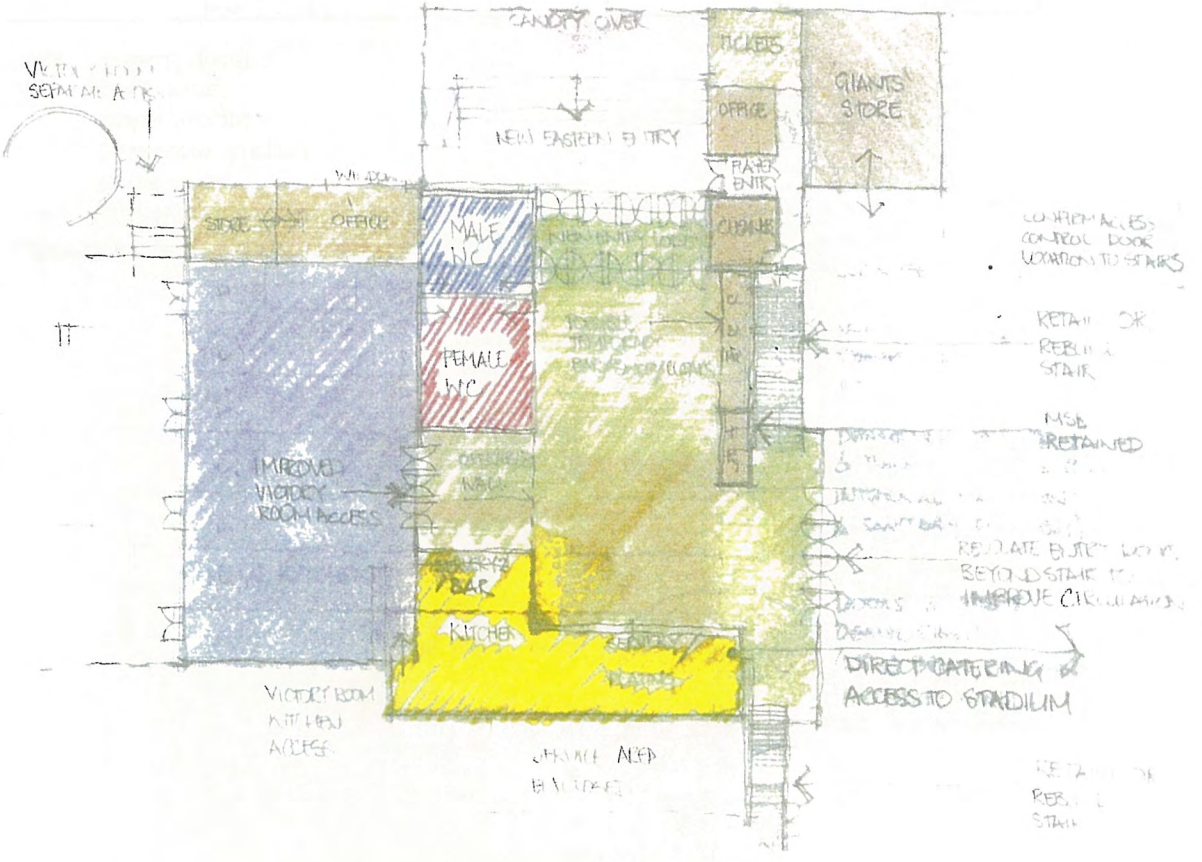
CANOPY OVER
TICKETS
GIANTS STORE
OFFICE
NEW EASTERN ENTRY
FLARED ENTR
STORE
OFFICE
MALE WC
FEMALE WC
CLOSURE
IMPROVED VICTORY ROOM ACCESS
BAR
KITCHEN
DIRECT CATERING ACCESS TO STADIUM
RETAIN OR REBUILD STAIR
RETAINED

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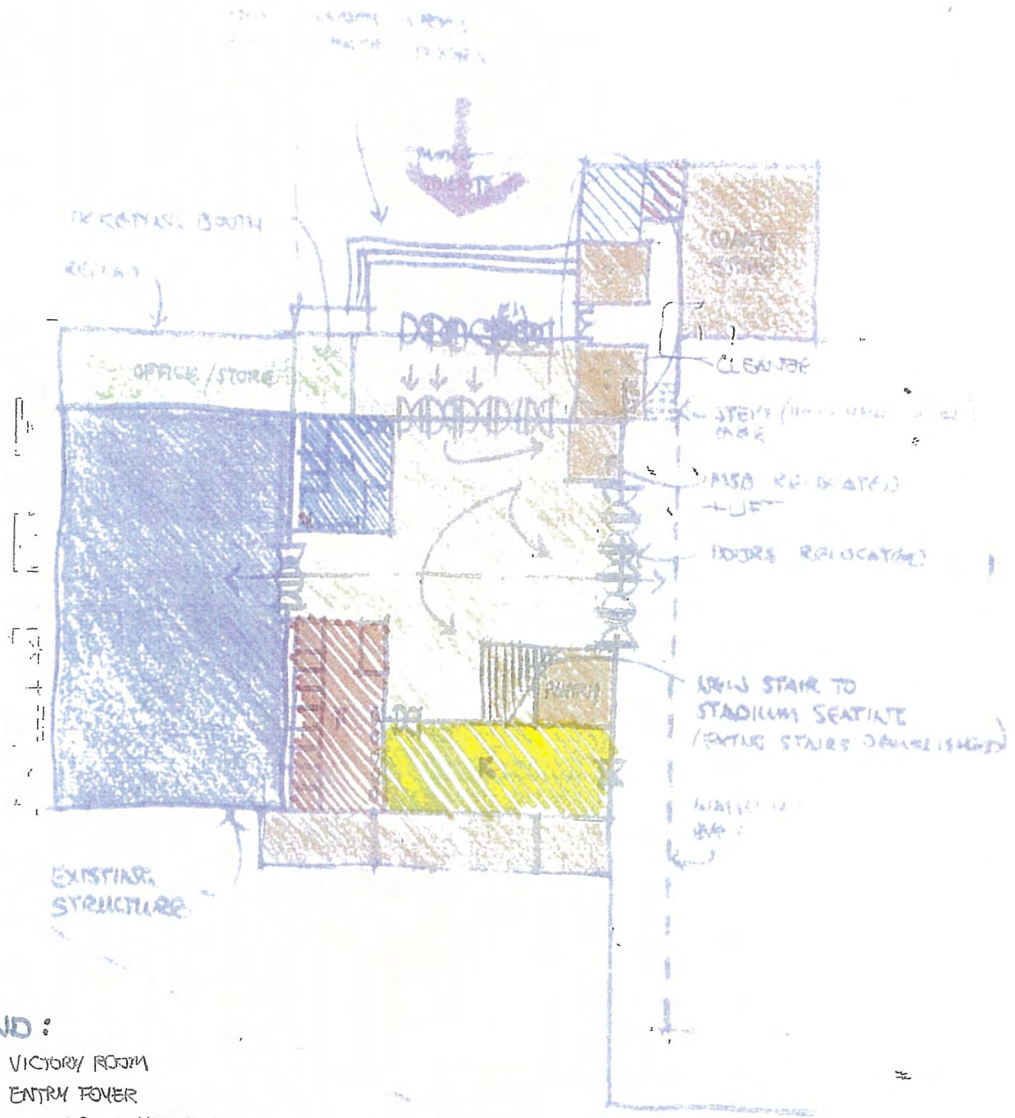

LEGEND :

- VICTORY ROOM
- ENTRY FOYER
- COMMERCIAL KITCHEN
- ADMIN / UTILITY
- MALE TOILET
- FEMALE TOILET

EAST ENTRY & NEW STADIUM ENTRY

REVISION	DATE	TRAFALGAR CENTRE	DRAWN A.I & J.R
		BUILDING ANALYSIS	DATE Nov '14
		EXISTING FIRST FLOOR PLAN scale 1:250 @ A3	JOB NO. 2009

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SHEET NO. 8

IN SET OF

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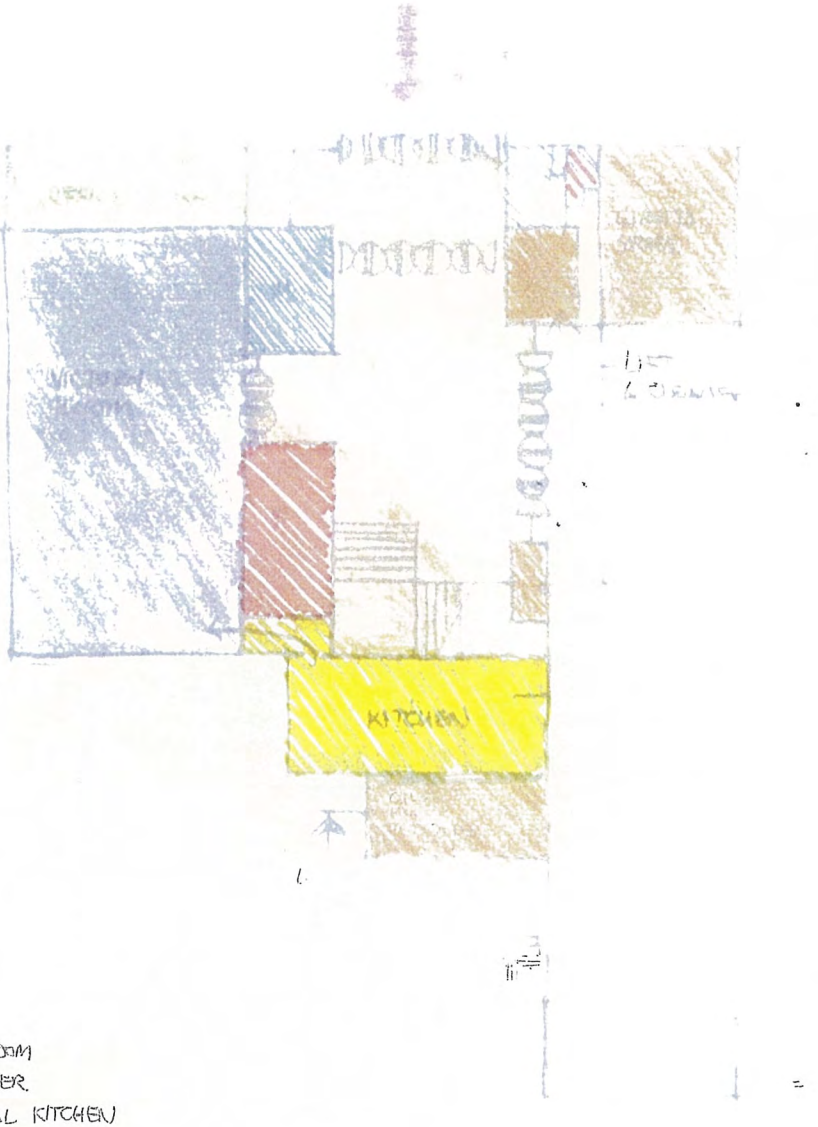

LEGEND:

- VICTORY ROOM
- ENTRY FOYER
- COMMERCIAL KITCHEN
- ADMIN/UTILITY
- MALE TOILET
- FEMALE TOILET

NEW NORTH BUILDING

REVISION	DATE			
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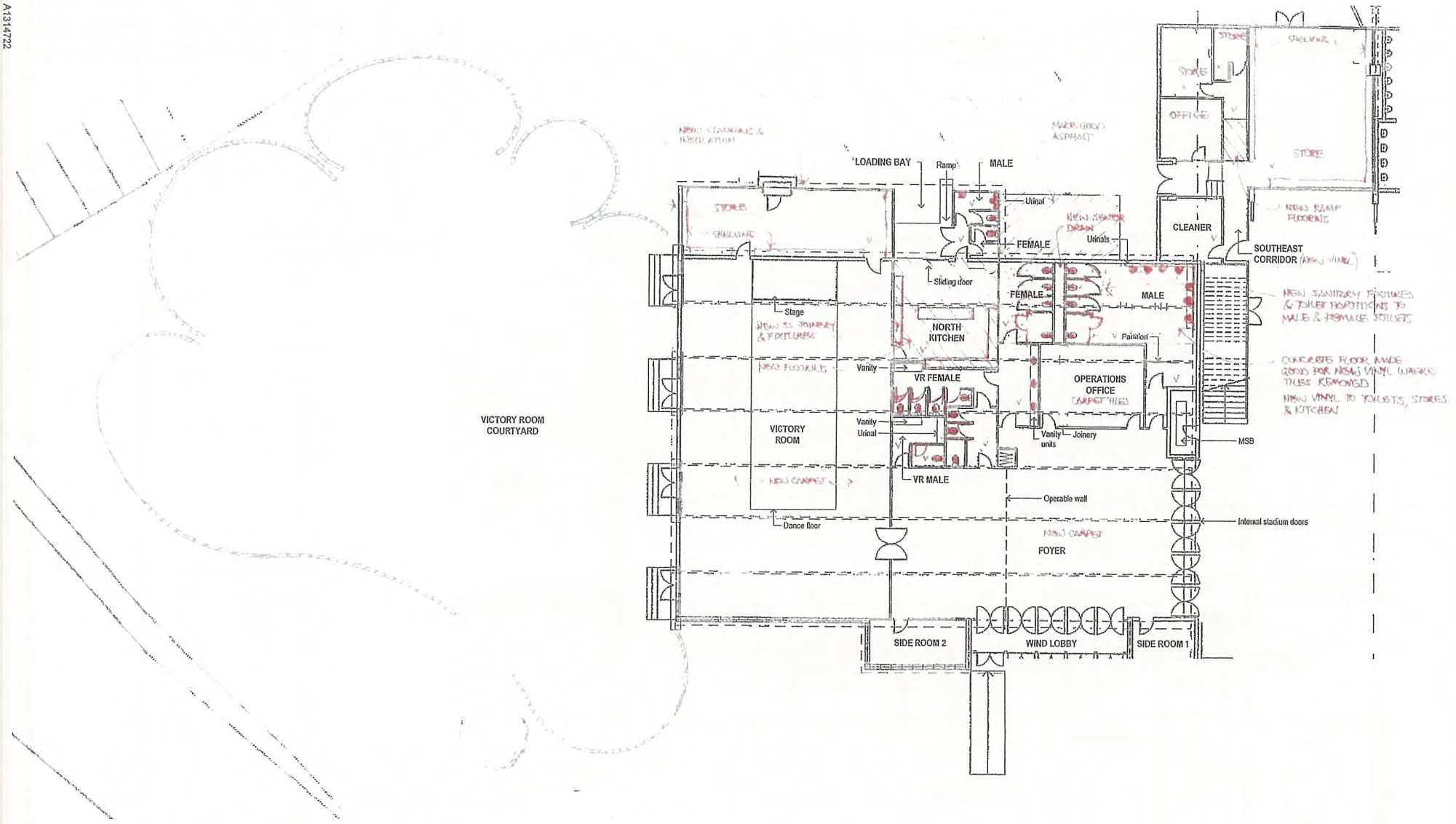
		BUILDING ANALYSIS	DATE Nov '14	irving smith jack
		EXISTING FIRST FLOOR PLAN scale 1:250 @ A3	JOB NO. 2009	SHEET NO. 9 IN SET OF REVISION

Appendix 4 Detailed Development (Options 2, 5 & 7)

A1314722



REVISION	DATE	TRAFALGAR CENTRE	DRAWN A.I & J.R
		BUILDING ANALYSIS - OPTION 2	DATE Nov '14
		GROUND FLOOR PLAN scale 1:200 @ A3	JOB NO. 2009

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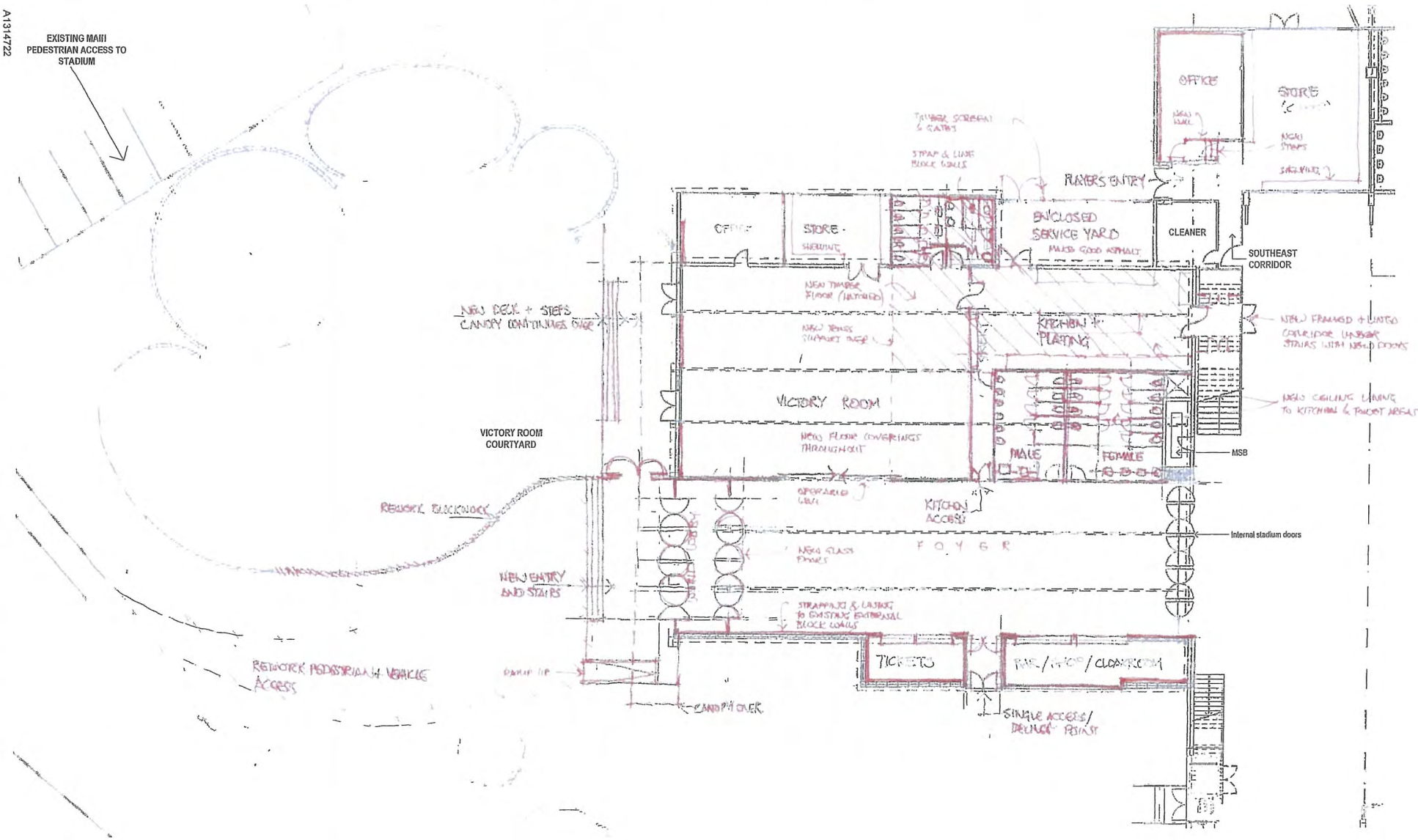

REVISION	DATE

TRAFALGAR CENTRE

BUILDING ANALYSIS – OPTION 5

PROPOSED GROUND FLOOR PLAN scale 1:200 @ A3

DRAWN A.I & J.R

DATE Nov '14

JOB NO. 2009

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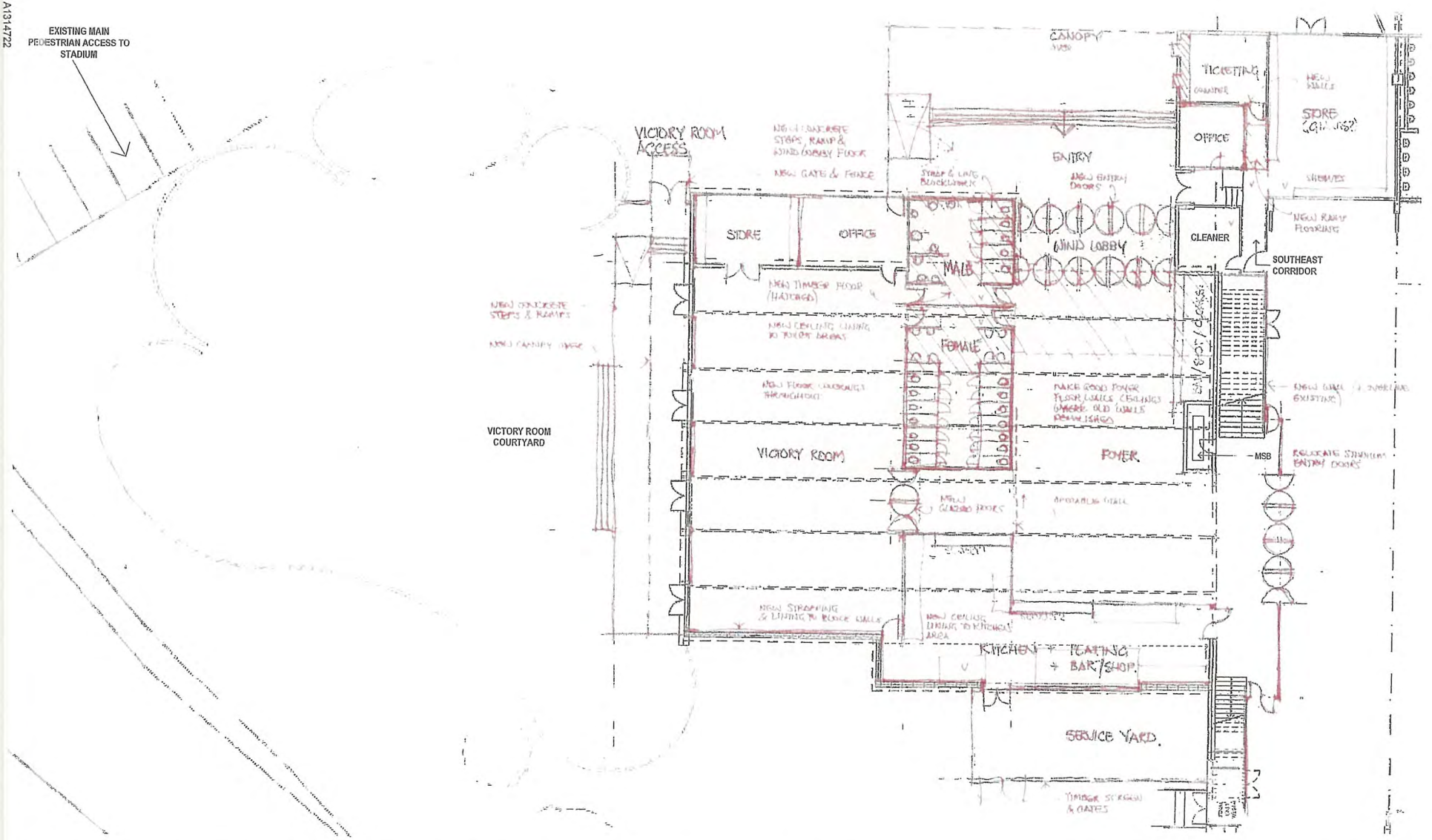

REVISION	DATE

TRAFALGAR CENTRE

BUILDING ANALYSIS OPTION 7

PROPOSED GROUND FLOOR PLAN scale 1:200 @ A3

DRAWN A.I & J.R

DATE Nov '14

JOB NO. 2009

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Appendix 5 Option Analysis Matrix

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TRAFALGAR CENTRE REOPENING
Option Assessment Matrix
ISJ Architects Ltd - November 2014

Option	Weighting	1	2	3	4	5	6	7	8	9
Compliance Issues										
Seismic Capacity	200%	3	3	3	3	3	3	3	3	5
Accessibility (Public, Exterior)	200%	1	1	5	5	5	5	5	5	5
Fire Protection	200%	3	3	3	3	3	3	3	3	5
Functionality Issues										
Provision of Toilets	100%	1	1	5	3	5	5	5	5	5
Building Condition - External	100%	1	1	3	1	3	1	3	3	5
Building Services	100%	1	3	3	3	3	3	3	3	5
Catering Suitability	100%	1	1	5	3	5	3	5	5	5
General Internal Functionality	100%	1	1	3	3	3	3	5	5	5
Service Access	100%	3	3	5	5	5	5	5	5	5
Experiential Issues										
Appearance and Experience	50%	1	3	3	3	5	3	5	5	5
Building Condition - Internal	50%	3	5	5	5	5	5	5	5	5
Total Unweighted		19	25	43	37	45	39	47	47	55
Percentage Score		**35%**	**45%**	**78%**	**67%**	**82%**	**71%**	**85%**	**85%**	**100%**
Weighting Adjustment		5	3	7	7	6	7	6	6	10
Total Weighted		24	28	50	44	51	46	53	53	65
Percentage Score		**37%**	**43%**	**77%**	**68%**	**78%**	**71%**	**82%**	**82%**	**100%**

Description
1 = Poor / Non Compliant
3 = Average / Compliant
5 = Good / New Condition

Cost Estimates include:
Allowances for nominal seismic strengthening internally and contingency in all cases
Cost Allowances exclude:
GST, Fees and TA Costs, Exterior in-ground seismic works, FFE and Window coverings, Kitchen equipment, soft landscaping, hazardous material removal, fluctuation in cost beyond November 2014
ISJ Estimate:
Interpolates likely cost based on RLB detailed estimation of options 2, 5 & 7
RLB New Build m2 Estimate
Is calculated using RLB advised $3,500/m2 rate against replacement area of existing building 910m2

Option	Median	1	2	3	4	5	6
Pricing							
Estimate Values ex RLB			$ 1,102,000.00			$ 2,122,000.00	
Median Value (RLB Values Only)	$ 1,966,000.00						
ISJ Relative Estimate		$ 570,000.00		$ 1,830,000.00	$ 1,975,000.00		$ 2,400,000.00
RLB New Build m^2 Estimate							
Relative Differential To Median		-1,396,000.00	-864,000.00	-136,000.00	9,000.00	156,000.00	434,000.00
Percentage of Median		29%	56%	93%	100%	108%	122%
Percentage of Low Price		100%	193%	321%	346%	372%	421%
Percentage of New Build Price		18%	34%	57%	62%	66%	75%

Appendix E – Compliance Schedule

NELSON CITY COUNCIL

Compliance schedule CS950003

1. The building

Street address of building: **25 Paru Paru Road**

Legal description of land where building is located: **Pt Sec 1178 SO7733**

Valuation number: **1979076400**

Building name: **Trafalgar Centre**

Location of building within site/block number:

Level/unit number:

Current, lawfully established, use: **Sports Stadium**

Building consent number: **070551**

Highest fire hazard category for building use: **2**

2. The owner

Name of owner: **Nelson City Council**

Contact person: **Stewart Lawson**

Mailing address: **Nelson City Council, PO Box 645, Nelson 7040**

Street address/registered office:

Phone number: Landline: **546 0200** Mobile:

Daytime: After hours:

Facsimile number: **546 0239**

Email address: stewart.lawson@ncc.govt.nz Website: www.ncc.govt.nz

3. SPECIFIED SYSTEMS

SS1 - Automatic sprinkler systems

SS2 - Emergency warning system

SS3/3 - Interfaced fire or smoke doors or windows

SS4 - Emergency lighting system

SS7 - Automatic back-flow preventer

SS9 - Mechanical ventilation/air conditioning

SS13/1 - Smoke control systems

SS14/2 – Signs required for any of specified systems 1-13

SS15/1 – Systems for communicating spoken information intended to facilitate evacuation

SS15/2 - Final exits

SS15/3 - Fire separations

SS15/4 - Signs for communicating information intended to facilitate evacuation

SS15/5 - Smoke separations

Signature:

Position: **BUILDING COMPLIANCE OFFICER**

On behalf of: **NELSON CITY COUNCIL** **Date: 5/01/1995**

A1314722

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7042
New Zealand

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+64 3 548 9528
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A1314722

Future Maintenance Requirements

During the inspections a number of areas requiring maintenance were noted. The brief for this project is to reopen the Trafalgar Centre, however it would be remiss not to consider these maintenance items as part of this project.

The Maintenance items are summarised as follows;

Main Stadium – The roof is due for a repaint. This can be done at any time and does not impact on the activities to reopen the building. However this could be done at same time as any seismic work is undertaken on the roof structure, since scaffolding & associated access equipment will be employed for the seismic work and could reduce cost for painting. Rough Order Cost is $85,000 plus GST.

Main Stadium, Timber Floor - The timber floor in the Main Stadium is due for a recoat. Rough Order Cost is $80,000 plus GST.

Lighting – The lux levels of the lighting in the main stadium and southern extension is now substandard. They are also high maintenance and more costly to run than new LED lighting. Rough Order Cost is $70,000 plus GST.

Stage Curtains – These are between Main Stadium and Southern end. They need to be vacuumed once a year then retreated (fire retardant solution) every five years to maintain compliance. Estimated cost for vacuuming and recoating is $14,000 plus GST. This cleaning and recoat is overdue and could be done as part of this project. Note approximate cost for replacement of the curtains is in the order of $40,000 plus GST according to the supplier.

Southern Extension, External Cladding – The zinc cladding panels are starting to dislocate. These panels are interlocked to the adjacent side and top panels. Fixing will require dismantling the majority of the wall cladding and then rebuild from the bottom. Extensive scaffolding would also be required for access to these panels. No guarantee can be given that this panel dislocation would not happen again in the future. Rough Order Cost estimate for this portion is $100,000 plus GST. Although this is an important component it has not been included in the estimates for this project.

Table of Design Concepts

The following table summarises the design concepts for the structural and geotechnical strengthening:

Table 6.12 - Summarising the Design Concepts

Option	Option ID (Opus Report)	Building Element	Description
M4	M/4/D	Main Stadium	Superstructure Strengthening, tie beams, pile caps, micro piles for underpinning, strip perimeter ground treatment
M5	M/5/E	Main Stadium	Steel arches over building, tie beams, pile caps, bored large diameter piles, palisade piles
M7	M/7/F	Main Stadium	Steel trusses inside building, bored large diameter piles on eastern side only, replace roof and services in roof space
S4	S/4/C S/4/D	Southern Extension	Superstructure Strengthening, micro piles for underpinning, strip perimeter ground treatment
N3	N/3/C	Northern Building	Superstructure Strengthening, foundation beams upgrade
N5	N/5/F	Northern Building	Demolish and replace with light timber framed single story building on raft foundation

Table 7.1 - Outlining Rough Order Costs

Building Element	Scenarios				
	1	2	3	4	5
Main Stadium Option M4	$7,005,000		$7,005,000		
Main Stadium Option M5		$11,437,000		$11,437,000	
Main Stadium Option M7					$11,834,000
Southern Extension Option S4	$3,437,000	$3,437,000	$3,437,000	$3,437,000	$3,437,000
Northern Building Option N3	$ 931,000	$ 931,000			
Northern Building Option N5			$3,200,000	$3,200,000	$3,200,000
Professional Fees	$ 770,000	$ 770,000	$ 820,000	$ 820,000	$ 820,000
Construction ROC	$12,143,000	$16,575,000	$14,462,000	$18,894,000	$19,291,000

Note 1 - The ground remediation works are included in all the Main Stadium Options. This scenario delivers a strengthened facility with the northern building largely reaming as is with new foundations.

Note 2 - Scenario 5 includes the replacement of the roof over the Main Stadium. This may not be necessary if appropriate construction methodology can be applied from the insides. This will have to be explored during the next stage of the detailed design.

Consent Requirements

Although the extent of the physical works has not been finalised, potentially a resource consent may be required. The trigger would be the amount of earth works as well as potentially any work within or adjacent to Salt Water Creek.

The strengthening work to the foundations and structure will require a building consent.

An initial fire assessment has been completed, however a detailed fire report complete with peer review will need to be completed as part of the building consent application. The initial fire assessment has identified several aspects that will need to be considered as part of the building consent application. These are detailed in attachment Z.

Means of escape from fire – with potentially more than 2,000 persons on tiered seating it appears that the current means of escape may not comply. This aspect will need further consideration during the detailed design phase.

Fire Rating 2nd Floor Southern Extension – this has been identified and will need to be included in the strengthening project.

Fire Protection Sprinkler Systems – currently appears to comply, however there have been reports of low water pressure at times and this needs to be investigated further. It is likely that the reticulation around the Trafalgar Centre may need to be assessed. The existing fire hose reels can be removed as they are not required. This will reduce some of the compliance maintenance costs in the future.

Access and Facilities for Persons with Disabilities – a review of the building accessible features such as toilet facilities and ramps confirm that the building does not comply. Accessible ramps are provided but not at the correct slope and the stairs to the upper levels of the main stadium tiered seating are not compliant. These non-compliant aspects may need to be modified and rectified as part of this strengthening project as far as practicable.

Stage Curtain Main Stadium and Southern Extension – in order to comply with the statutory requirements this curtain must have a flame retardant applied at least every 5 years and is currently due for a recoat.

Victory Room Curtains, Northern Building – these may not meet statutory requirements of suspended flexible fabrics and probably will need to be replaced.

Attachment 6

Nelson City Council
te kaunihera o whakatū

Procurement Policy

Effective 16 February 2015

Review Date 31 April 2016

Contact: Lynn Anderson

1. Scope

1.1. This policy covers activities associated with the purchasing of all goods and services by, or on behalf of the (Council). It applies equally to the Council, the Senior Leadership Team, all groups and staff – permanent, temporary or contract.

2. Policy Objectives

2.1. The objectives of Council's procurement policy are to provide clear direction to management and staff in relation to the purchasing function and to establish a decision framework that:

- allows Council to be financially prudent through providing the best value for money (taking into account transaction costs) over the whole life of fit-for-purpose goods, service or asset;
- minimises relationship costs, ongoing operational costs and consequential costs;
- appropriately manages risk, including fraud;
- ensures purchases are made with integrity and in an open and transparent manner with full and fair opportunity for all eligible suppliers;
- contributes to Council's sustainability objectives outlined in Nelson 2060 and requires sustainably produced goods or services whenever possible, having regard to economic, environmental, and social impacts over their life cycle;
- promotes efficient purchasing practices and their continuous improvement;
- addresses health and safety considerations before, during and after the purchase of plant, equipment and chemicals;
- ensures compliance with the requirements and guidelines of the NCC Procurement Manual; and
- ensures Council's purchasing activities are managed in accordance with its statutory and legal responsibilities.

3. Policy Statements

3.1. All purchasing activity within Council shall be undertaken in accordance with policy and principles and shall be in accordance with Council's Delegated Authorities:

- a Procurement Steering Committee, comprising of three Corporate Management Team members and two Leadership Team members, shall oversee procurement practice within the Council;
- the Council will undertake its purchasing activities in the most effective and efficient manner taking into account the amount involved, the complexity and the risk to Council;

- The cost-effectiveness of current contractual arrangements in delivering services (including provision of infrastructure, public services and regulatory functions) must be reviewed within 2 years of the expiry of any such arrangement or if levels of service have changed significantly, taking into account other options for governance, funding and delivery of the service (Local Government Act 2002 Part 2 s 17A)
- Council has a commitment to sustainability and environmental protection and this will be reflected through purchasing practices;
- Council also has a commitment to health and safety and this will be reflected through purchasing practices (See Health & Safety Policy);
- The transactional cost of the evaluation of any procurement should reflect the value or level of risk of the procurement -
- procurements of less than $10,000 where applicable, may be sourced from suppliers/service providers designated as 'preferred suppliers' where such preferred supply contracts have been established;
- for low risk procurements falling between $2,000 and $10,000, two to three written quotes with a specification are required. Where a supplier is of a specialist nature (ie either one or two who offer a service) then these can be approved individually without further quotes;
- A business case and at least three written competitive prices are required for purchases between $10,000 and $100,000, unless there are exceptional circumstances which should be approved by the Group Manager or CEO depending on the delegation level required;
- procurements for Capital Projects of low risk may also be sourced from an 'on-call' supplier where such arrangements have previously been established in the same way as for 'preferred suppliers'; if greater than $50,000 discuss with the Group Manager;
- a Business Case or other evaluation methodology shall be required for all procurements of $50,000 or more;
- all purchases over $100,000 must be publicly advertised tenders unless there are exceptional circumstances and approved by the Chief Executive or Group Manager. Exceptional circumstances may include Council resolution to take an alternative approach; approved major relational purchases;
- CAPEX contracts and changes to contracts that are more than $1million, and similarly any OPEX PO >$1.5m, shall be presented to the Council for approval;
- from time to time an internal audit process shall be undertaken to ensure that the terms and conditions of the Council's Policy are being followed;
- where works are NZTA funded, NZTA procurement policies and procedures shall be followed

4. Underlying Principles

4.1. The objective of the principles is to provide outcomes consistent with the Council's broader objectives to deliver best value for money through optimized whole-of-life costing and being fit for purpose, while being fair and reasonable, and legally robust.

- Council's broader objectives for procurement are that it should:
  - be value for money, taking into account the "whole of life" costs of goods or services;
  - meet our sustainability objectives;
  - meet a justifiable and approved business purpose;
  - be effective and efficient;
  - be made transparently, so the same information is available to all potential suppliers (subject to obligations of confidentiality);
  - be fair, so that all potential suppliers are treated the same and none is unfairly disadvantaged or advantaged;
  - consider local suppliers for physical construction contracts
  - be risk-based, and
  - be strategic.
- All procurement must be in accordance with Council's financial delegations. A financial delegation is defined as "being the total amount that will be paid to a particular supplier under any one contract and is EXCLUSIVE OF GST (if any).
- Valid purchase orders shall be raised and authorised prior to the procurement unless a declared Civil Defence emergency is in place providing the Controller with access to special powers (refer Civil Defence Emergency Management Act 2002 s. 85 and s. 94. See also Nelson Tasman Civil Defence Emergency Management Group Plan 2012)
- Multiple purchase orders shall not be raised for the same procurement from the same supplier, in an attempt to reduce the level of delegated authority required.
- Multiple purchase orders must not be raised for variation orders issued under an existing contract authorised by the Engineer-to-the-Contract.
- When considering syndication Council should carefully consider the effects that joint procurement activity could have on the market.
- Documentation for supply agreements should include a carefully defined negotiation strategy along with appropriate decision structures, objectives and "exit" strategies.
- Where NZTA subsidy forms part of a project, prior approval from NZTA is required.

- Buy local is preferred - support for local organisations will be achieved through the weighting attribute system where used.
- A particular procurement method or process required by an external funding agency may take precedence over the NCC procurement policy and procedures in agreed circumstances.
- Legislative compliance is mandatory for all procurement.
- Contracts coming up for renewal must be assessed for cost-effectiveness, suitability and fitness for purpose. Further, all existing contracts must be reviewed within six year cycles (note, this does not mean that tenders can only be let for six years). Where a significant contract is reviewed, an email must be submitted to SLT showing the outcome of the review;
- Council requires its staff to declare any personal conflicts of interest which may affect, or could be perceived to affect, their impartiality (see Conflicts of Interest Register for Councillors and Group Managers). All other staff need to be mindful of their responsibilities and the need to disclose conflicts under the code of conduct RAD n1519332
- Staff must be aware of, and comply with, the Gifts and Supplier Invitations Policy and the Fraud Policy.
- Particular care should be taken in the handling of commercially sensitive information and the risks associated with intellectual property during procurement.
- The staff member who signs the contract is responsible for all its terms and conditions and therefore should be aware of all risks and exclusions pertaining to it.
- A single point of contact in Council should be established for potential suppliers during a procurement process.
- If a consultant or agent is engaged the contract must require them to observe the same ethical standards, policies, principles, procedures and behaviour that apply to staff.
- A business case or other evaluation should be done for every purchase over $50,000
- NCC model contracts have precedence over supplier proffered contact documents, although for best practice, continuity and consistency we do employ NZTA procurement processes on non-NZTA funded projects
- Sufficient records must be kept to show that due process was followed.
- The procurement selection must meet health and safety policy objectives.
- These principles do not cover recruitment and engagement of employees, nor for the purchase of real estate.

Nelson City Council
te kaunihera o whakatū

Council

26 February 2015

REPORT A1303852

Housing Accord

1. Purpose of Report

1.1 This report proposes that:

(a) The Council enter into a Housing Accord with the Minister of Building and Housing – Hon Dr Nick Smith; and

(b) Negotiations with the Minister of Building and Housing regarding the Accord, be undertaken in collaboration with Tasman District Council. There may still be two separate Accords (for Nelson and Tasman) but they would be aligned as much as possible.

2. Delegations

2.1 The Housing Accord is provided for under the Housing Accord and Special Housing Areas Act 2013. No committee of Council has delegations for this piece of legislation and therefore the matter needs to be considered by the full Council.

3. Recommendation

***THAT** the report Housing Accord (A1303852) and its attachments (A1314678 and A1314265) be received;*

***AND THAT** the Nelson City Council agrees to enter into a Housing Accord with the Minister of Building and Housing;*

***AND THAT** the Nelson City Council, through the Chief Executive and Mayor, enter into negotiations with the Minister of Building and Housing over the final form of the Housing Accord, in collaboration with Tasman District Council;*

***AND THAT** the Group Manager Strategy and Environment will report back to Council on the Accord's proposed actions once it is signed with the Minister of Building and Housing.*

4. Background

4.1 The Hon Dr Nick Smith, Minister of Building and Housing, has asked both Nelson City Council and Tasman District Council to enter into a Housing Accord which is provided for in the Housing Accord and Special Housing Areas Act 2013 (HASHA). The purpose of the HASHA is to: *"Enhance housing affordability by facilitating an increase in land and housing supply in certain regions or districts identified as having housing supply and affordability issues"* (s.4).

4.2 Both Councils have been added to Schedule 1 of HASHA as areas experiencing housing supply and affordability issues. The inclusion of Nelson, within Schedule 1 of HASHA, was undertaken without prior engagement with Council and was effective from 8 January 2015.

4.3 The Act has repeal dates included within it: the provisions relating to Special Housing Areas are repealed effective 16 September 2016; the remainder of the Act is repealed effective 16 September 2018.

5. Discussion

Government Housing Affordability Programme

5.1 The Government seeks to facilitate land supply for housing and considers that increased land supply will result in greater housing choice and affordability.

5.2 HASHA seeks to increase land supply and improve housing affordability by providing more permissive powers to Councils including:

(a) The ability to accelerate the resource consent process.

(b) Accelerating plan change decisions.

(c) Limiting notification for 'qualifying' development. Council can prescribe the criteria for qualifying developments, such as maximum number of storeys (less than 6), minimum number of dwellings to be built and percentage of dwellings that must be affordable dwellings.

(d) Reducing the right to appeal on decisions made by the Council.

5.3 To access the powers under the Act, the Minister of Building and Housing must be satisfied that a district or region is experiencing housing supply and affordability issues. The Minister has already signalled we meet this test by including Nelson within Schedule 1 of HASHA. A Housing Accord between the Crown and the territorial authority, of that district or region, must also be agreed for the powers to be available. As a result of the repeal dates, a Housing Accord is a fixed-term agreement that sets out how the territorial authority and the Crown will work together to improve housing

supply. The Accord also sets out targets for development in the short to medium-term.

5.4 Once a Housing Accord has been signed, qualifying developments within any identified Special Housing Area (SHA) may be progressed using the powers under the Act. The Council can recommend a SHA to the Minister of Building and Housing. Declaration of a SHA provides for the powers identified in paragraph 5.2 to be applied. It is not necessary to include SHA's in the Accord at the point of signing, as they can be added at a future date once engagement with the community, including developers, is undertaken.

5.5 The signing of an Accord establishes a Joint Housing Steering Group for governance of the Accord, which includes the Mayor, Deputy Mayor, Minister and Associate Minister of Building and Housing. The Steering Group can amend the Accord, including the targets. The Steering Group establish an Officials Working Group who advance implementation of the Accord and report to the Steering Group on progress (monitoring is required). Most of the Accords last for 2 to 3 years; Auckland's has been in place since October 2013, and Tauranga's since August 2014. These accords both quote the repeal date as their end point.

5.6 The following Councils have already signed Housing Accords with the Government:

(a) Western Bay of Plenty

(b) Tauranga

(c) Christchurch

(d) Wellington

(e) Queenstown Lakes District

(f) Auckland

5.7 Not all Accords identify SHA's. Given the process of identifying SHA's is in its infancy it is not possible to say how successful they have been in achieving the outcome of more affordable housing.

5.8 Tasman District Council has agreed to enter into negotiations around a Housing Accord but will not be identifying any SHA's in the Accord.

Home Affordability in Nelson

5.9 The table included in Attachment 1 compares Nelson with other regions in regards regional home affordability as a percentage of the national average.

5.10 The Government works on an affordable median house price being five times the median income for the area. This is quoted as a ratio of income to housing cost. Hon Dr Nick Smith in his press release which accompanied Nelson being added to Schedule 1 of HASHA stated that: *"The median house price in Nelson is $369,000 and income is $54,300 making a ratio (or median multiple) of 6:8. The equivalent in Tasman is $412,000 for a home and income of $53,500 and a ratio of 7:7. These ratios are both in excess of 5, the standard for housing being affordable."*

5.11 Whilst the Massey University Report (refer Attachment 1) finds Nelson/Marlborough's affordability has declined less than most regions over a 12 month period in 2014, its placement on the home affordability index remains 5th equal on a listing of 12 regions. The Minister has confirmed Nelson is over the Government's standard which deems housing is not affordable.

Land Supply and Land Availability

5.12 Housing affordability is a complex issue and includes the ability to pay by demand segments of the market. Land supply (land zoned for residential use) and land availability (land ready for the construction of houses) influence housing affordability to the extent that there must be a supply of land that is available for use before price can then be attached to that commodity.

5.13 Nelson has 364 hectares of vacant residentially zoned land (i.e. no dwellings on the land). Some of this land is however constrained by topography, geotechnical, infrastructural and land ownership issues.

5.14 In terms of land availability it is useful to look at whether this land is being subdivided i.e. it is available for development. The following table summarises the current supply of residential sections based on consent approvals (it is not known whether these are currently being marketed). They are all ready for services overlays.

Type of supply of vacant residential land	**Sections/Lots**
With title but no building consent approved or applied for ("shovel ready" land)	259 (400m^2 – 1000m^2) 111 (1000m^2 – 2000m^2)
With subdivision consent and either s223 or s224 (should come on stream within the next 1 to 3 years)	100 approx
With subdivision consent but no s223 (unclear when the land will come on stream – could be a number of years)	597 + 32 apartments
Currently being processed for subdivision consent	112
TOTAL	**1179 + 32 apartments**

Housing Accord

5.15 Trademe had 80 vacant residential sections for sale in Nelson on 27 January. It is not known whether these sections are affordable or not (the band for affordability has not been defined).

5.16 240 household units of demand are given building consent per year. On the face of it there is a good supply of vacant residentially zoned land and there appears to be land and dwellings available for purchase.

Expected Population Growth

5.17 A factor that impacts on whether enough land is zoned and available is expected growth in population numbers and household numbers and projections.

5.18 For the year ended June 2014 the population was 49,300. Latest projections are for this to grow by about 5,000 residents to 54,780 by 2025 and 59,510 by 2045.

5.19 In terms of households it is estimated there are 20,490 households in 2015 and this will grow by 2,430 to 22,920 in 2025 and to 25,650 by 2045.

5.20 Based on this expected growth, if the existing number of consents were issued going forward and the existing amount of land supply was continued, then demand would not outstrip supply i.e. land supply would meet demand in the medium term (around 5 years). On current projections around 240 additional household units will be required per annum which is the same number of units that are currently consented per annum.

6. Options

6.1 The Council has no obligation to enter into a Housing Accord. However, if the Council does not, then the Minister of Building and Housing may, at his discretion, declare Special Housing Areas and the Chief Executive of the Ministry and Business, Innovation and Employment will be empowered to process resource consents. If the Council enters into an Accord, the Council can recommend Special Housing Areas to the Minister of Building and Housing for declaration through an Order in Council.

6.2 The Minister has signalled a preference for a joint Accord with Tasman District Council. Housing is a sub-regional issue. Housing market areas are inherently difficult to define and have specific characteristics. Alignment with Tasman is an advantage as there are commonalities with the development community and the development community has expressed a strong desire for process consistencies across both councils.

6.3 Tasman has already prepared a separate draft Accord which they will be negotiating with Government. Tasman noted there are sufficient differences around rating, development contributions, target actions,

and monitoring opportunities that suggest a separate Accord should be entered into. In addition, all the existing Accords are with separate authorities including Tauranga and Western Bay of Plenty which, like Tasman and Nelson, share part of a common housing market.

6.4 It is considered prudent however, that any negotiations with the Minister be undertaken in collaboration with Tasman to align the two Accords as much as possible.

Risks

6.5 Servicing areas of growth with infrastructure (roads, wastewater, water and stormwater) needs to be managed to ensure it is affordable to deliver without adversely impacting on rates. This will need to be carefully considered if any areas are identified as SHA's in the future to ensure the development contributions are adequate to meet the costs of developing infrastructure.

6.6 Access on to state highways is under the control of the New Zealand Transport Agency (NZTA). There is a risk that additional residential allotments will not be able to gain access on to state highways (eg Atawhai, Marybank) if there are capacity and safety issues raised by the NZTA. Early discussion and engagement with NZTA is critical.

6.7 The potential financial costs to Council associated with signing the Accord are:

(a) Direct costs associated with staff time in working with the development community, identifying potential SHA's and in the formation of an Officials Working Group.

(b) Potential loss of development contributions if these are forgone for certain developments that provide affordable housing.

6.8 These costs have not been quantified. The staff costs can be managed from existing budgets. The implications of potential loss of development contributions should be considered as that policy is developed in conjunction with the Long Term Plan process.

7. Draft Housing Accord

7.1 Attachment 2 includes the wording of a draft Housing Accord. The draft Accord has been prepared after reviewing the content of the draft Tasman District Council Accord to align the wording as closely as possible.

7.2 The draft Accord does not propose identifying any SHA's at this time. It is important that before areas are identified the following work is undertaken:

(a) Prioritisation of how infrastructural services will be constructed and extended, considering funding for these services and how that may impact on Councils funding decisions.

(b) Engaging with developers to understand who may be interested in a SHA. Developer commitment would be essential to ensuring the success of a SHA.

(c) Understanding in detail the housing market, how it functions and the type of development that may qualify as a SHA.

7.3 SHA's can be added later as additional work is undertaken.

8. Assessment of Significance against the Council's Significance Policy

8.1 The signing of a Housing Accord is not a significant decision for Council. Albeit the outcomes that have the potential to be delivered through the actions agreed to in the Accord and through any future identification of SHA's have the potential to deliver more affordable housing.

9. Alignment with relevant Council Policy

9.1 Signing an Accord will contribute to Nelson 2060 in relation to meeting people's essential needs.

10. Consultation

10.1 The key parties that are affected or interested include those persons looking to purchase an affordable home and the developer community. No structured consultation has occurred regarding Council signing an Accord. Signing an Accord only directly impacts on the operations of Council except to the extent that Council in following through on the agreed actions in the Accord, will be assisting those wishing to purchase an affordable home. It is not until areas are considered as Special Housing Areas (SHA's) that there is a direct impact. The process of identifying SHA's will require extensive consultation to be undertaken. This is a future stage of work.

10.2 Informal discussions have taken place with some developers in Nelson. Anecdotally, those parties are generally supportive of the concept but are a little wary of how it may impact on them. For example, they can see the benefits in terms of potentially easier consent processing however, they know they would then be locked in to delivering a quota of homes at a defined affordable price and within a defined period of time. One comment was that in achieving a quota of more affordable homes it may increase the section/home prices for the remaining homes in the development to offset the loss of income on the other sales. These are matters that would be worked through with individual developers in investigating areas as SHA's.

11. Inclusion of Māori in the decision making process

11.1 No specific consultation has taken place with Maori.

12. Conclusion

12.1 The Government has an expectation that Nelson City Council will enter into a Housing Accord to assist in improving housing affordability. There is merit in working towards an outcome of affordable housing in Nelson. It is recommended the Council enter into negotiations with the Government over signing an Accord on the basis detailed in this report.

Clare Barton
Group Manager Strategy and Environment

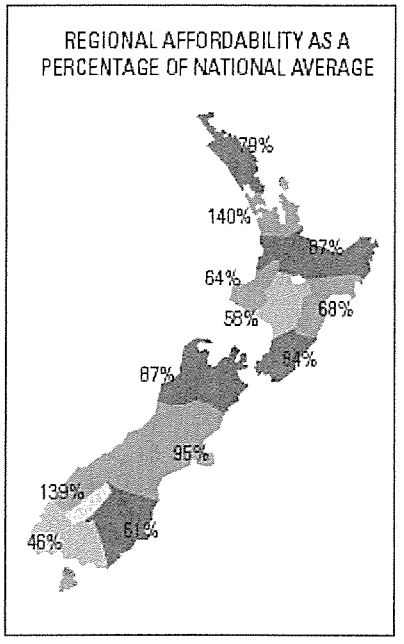
Attachments

Attachment 1: Regional Affordability as a Percentage of the National Average (A1314678)

Attachment 2: Draft Housing Accord (A1314265)

ATTACHMENT 1

REGIONAL AFFORDABILITY AS A PERCENTAGE OF THE NATIONAL AVERAGE



HOME AFFORDABILITY INDEX			PERCENTAGE CHANGE IN HOME AFFORDABILITY IN THE LAST 12 MONTHS	
Region	Aug 2014	Nov 2014	improvement	decline
Northland	18.0	19.7	-	10.5%
Auckland	31.4	34.8	-	16.4%
Waikato/Bay of Plenty	19.5	21.6	-	13.0%
Hawke's Bay	16.9	17.0	-	16.4%
Taranaki	13.9	15.9	-	7.1%
Manawatu/Wanganui	13.2	14.5	-	18.6%
Wellington	19.4	21.0	-	7.6%
Nelson/Marlborough	21.2	21.6	-	5.5%
Canterbury/Westland	22.4	23.7	-	12.0%
Otago	14.9	15.2	-	11.5%
Central Otago Lakes	27.0	34.7	-	15.4%
Southland	11.6	11.6	-	7.5%
New Zealand	22.6	24.9	-	14.1%

SOURCE: MASSEY UNIVERSITY HOME AFFORDABILITY REPORT DECEMBER 2014.

Nationally, housing was 14% less affordable last year, said researcher Paul Gallimore. Nelson did better than anyone else because house prices did not move a great deal during the year, and earnings stayed about the same, he said. Because Nelson prices were flat, and there was no reason to think they would change significantly, and with interest rates staying the same, it was likely to stay "more of the same" this year, he said. (The Nelson Mail, Friday, 30 January 2015.)

ATTACHMENT 2

Nelson Housing Accord (the Accord)

1. This Accord between Nelson City Council (the Council) and the Government is intended to result in increased land supply for housing and therefore improved affordability of homes in Nelson.

Background

2. An adequate supply of land for housing and housing affordability are key elements in maintaining a well-functioning, dynamic district with a strong economy and healthy communities. Nelson is experiencing issues around the affordability of housing. While supply of zoned land is being maintained subject to servicing, the availability of land parcels in locations and at a rate that might influence affordability is a matter for consideration.

3. The aggregate housing affordability index (integrating median dwelling prices, average weekly income and average mortgage rates, across all housing market segments) as prepared by Massey University in late 2014 for Nelson (as part of Nelson-Tasman-Marlborough regional cluster), shows that Nelson is less affordable than the national average.

4. The Council and Government agree that joint action is needed to improve housing supply and affordability in Nelson.

5. This Accord is part of the Government's housing affordability programme , which includes initiatives to address:

    - The supply of land available for residential purposes.
    - The efficiency and timeliness of the provision of infrastructure to new development.
    - The cost of construction materials.
    - Compliance costs.
    - Productivity in the construction sector.

Purpose

6. This Accord will provide the basis for collaboration between the Government and Council to support an increase in housing and improve housing affordability in Nelson.

7. This Accord recognises that by working collaboratively the Government and the Council can achieve better housing outcomes for the Nelson.

8. The parties acknowledge that improving housing affordability is

a complex issue and requires consideration of wider issues, not all of which will be able to be addressed under this Accord.

Priority Actions

9. This Accord is a tool to facilitate development aligned with the Council's policy and regulatory framework including the Nelson Resource Management Plan and the Long Term Plan. This framework includes initiatives to:

    - Enable a mix of housing types, including more affordable homes.
    - Encourage developers through a package of incentives to prepare their land and build houses more quickly than has been the case over the last three years. (Note: developers do not necessarily build houses but the generic term developers in this Accord is also intended to cover housing companies.)
    - Increase developer confidence in the Council to encourage a more collaborative approach between the Council and developers that results in a commitment to bring a continuous supply of land and houses to the market over the long term.
    - Better align public infrastructure investment and private sector housing development.

10. Under this Accord the Government and the Council agree to :

Aim	Actions	Commitments
Increase the supply of affordable housing in Nelson with a particular focus on existing residentially zoned land.	Encourage developers to subdivide and prepare their land and build houses following release of serviced residentially zoned land more quickly than has been the case over the last three years. Ensure housing developments provide for a mix of house types and include more affordable homes to be sold at different price points. Maintain an appropriate supply of undeveloped zoned and serviced land for residential development to ensure	The Council will progress actions to encourage faster development of serviced residential zoned land and the development of more affordable homes. The Council will consider mechanisms which may include differential rating and development control powers to speed up supply and improve affordability. The Council the review of the Nelson Resource Management Plan responds appropriately to development demand by

	a healthy degree of competitive pressures amongst developers. Encourage the infill or redevelopment of suitable residentially zoned land to yield greater density of new dwellings that may be more affordable. Review planning provision for residential living in Nelson to provide greater flexibility around housing choices.	delivering the framework to allow residential development. The Council will continue to collaborate with the residential development community to exploit opportunities to utilise already residential zoned land that is suitable for increased density of more affordable new dwellings.
Have a constructive relationship with developers, balanced by the need to retain financial prudence and process integrity .	Monitor resource and building consenting processes to ensure that they are efficient and do not create unnecessary delays to development. To engage early in pre-application discussions particularly to address servicing and design needs and implications through the Major Projects Team and other initiatives.	The Council will establish a Developer's Forum for the purpose of discussing issues of common interest. The Council will seek further opportunities to manage regulatory processes so that it can better anticipate and facilitate residential developments that contribute to the supply of affordable housing.

Special Housing Areas

11. Upon commencement of this Accord, the Council will have the ability to recommend the creation of Special Housing Areas to the Minister of Building and Housing under the Act. If the Government agrees, the recommended Special Housing Areas could be established by Order in Council, enabling the Council to access the powers available under the Act.

Targets

12. The Council and Government agree on the importance of targets to give effect to the purpose of this Accord. Both parties to the Accord accept that the targets are, necessarily, ambitious to meet Nelson's housing needs.

13. These targets will be achieved through a combination of private sector development, direct Council and Government action and through collaborative action with other agencies. The targets will need to be achieved mainly by private housing developers, notwithstanding Council has an active role in making serviced land available for housing. This Accord is about enabling private investment in housing and will require both Council and Government to work closely with the development and housing sector. Council and Government further agree within their respective areas of control to endeavour to achieve the agreed targets within the timeframe of this Housing Accord.

14. The agreed medium-term targets are:

Housing Supply	**Aspirational Targets**		
	Year1	Year2	Year3
Yield of serviced residential lots (titled) from residential zoned land	100	100	100
Total dwellings consented	240	240	240

Factors Outside Scope

15. This Accord does not limit the Council, or the Government, coming to differing positions in respect of Government programmes of reforms to the Resource Management Act or other legislation. The Government welcomes submissions from Council at the appropriate stages in the process.

Governance and Processes

16. Governance of this Accord will rest with a Joint Steering Group comprised of the Minister of Building and Housing and the Mayor and Deputy Mayor of Nelson. The Joint Steering Group has the ability to amend this Accord, including targets, upon agreement. The targets shall be reviewed annually, subject to reports on progress and the state of the building/construction sector.

17. To operate this Accord, the Council and Ministry of Business, innovation and Employment will establish an Officials Working Group, which will meet and form sub groups as it deems necessary to advance the implementation and meet the objectives of this Accord.

18. This Officials Working Group will report to the Joint Steering Group at least quarterly and will prepare any progress or monitoring reports requested by the Joint Steering Group.

19. The Joint Steering Group will meet biannually to review the progress in implementing and achieving the targets of the Accord. A full review of the effectiveness of the Accord and actions taken under it will be carried out after its first 12 months of operation.

Monitoring and Review

20. In order to ensure that the purposes and targets of this Accord are achieved, the Joint Steering Group will monitor and review the implementation and effectiveness of this Accord .In order to do this officials will meet as appropriate to:

    - Review progress in implementing the Accord.
    - Review progress towards the Accord targets.
    - Discuss and agree other areas of joint action or information sharing.

Commencement of the Accord

21. This Accord will take effect from the date of ratification by the Council.

Dispute Resolution

22. Prior to either party exercising the right to terminate this Accord under clause 26, the parties agree that they shall first comply with the dispute resolution process set out in clause 25.

23. The dispute resolution process is as follows:

    - The initiating party must immediately, and in writing, bring the dispute to the attention of the other party.
    - The Joint Steering Group must hold an initial meeting for the purposes of resolving the dispute within 10 business days of the dispute being brought, in writing, to the attention of the non-initiating party.
    - If, for any reason, the Steering Group is unable to resolve the dispute in the initial meeting, the Steering Group must reconvene for the purpose of resolving the dispute within 20 business days of the date of the initial meeting
    - If the Steering Group remains unable to resolve the dispute at the second meeting then either party may elect to terminate the Accord in accordance with clause 24.
    - Pending final resolution of the dispute the parties must continue to perform their obligations under this Accord as if a dispute had not arisen.

Termination of the Accord

24. Subject to first complying with the requirements of clauses 22 and 23, either party may terminate this Accord, on any of the grounds set out in clause 25, by giving not less than three (3) months notice to the other.

25. The grounds on which this Accord may be terminated are:

- Failure to reach the agreed targets as set out in the Accord, whether the failure results from inaction or ineffective action.
- Failure on the part of the Council to exercise the powers and functions of an Authorised Agency under the Housing Accords and Special Housing Areas Act.
- The parties agree that there is an irretrievable breakdown in the relationship. Notwithstanding any other provision of this Accord, the parties agree that clauses 24 and 25 shall not apply to a termination on this ground, or
- Nelson is removed from Schedule 1of the Housing Accords and Special Housing Areas Act, in accordance with that Act (e.g. if Nelson no longer meets the affordability and land supply criteria provided for under that Act).

Publicity

26. The Mayor and the Minister of Building and Housing agree that any communications or publicity relating to this Accord will be mutually agreed prior to release.

Ratification

27. This Accord is subject to ratification by the Council. If it is not ratified the parties agree that this Accord will be at an end.

Signed on this day of 2015

Hon Dr Nick Smith
Minister of Building and Housing

Rachel Reese
Mayor of Nelson