Construction Management Plan

Project Name: Royal Exhibition Building Protection and Promotion Project

Project Address: Carlton Gardens, 9 Nicholson Street, Carlton 3053

Revision: 4

Date: 14 September 2018

Contents

Revision Schedule

Rev	Date	Changes
A	17/01/2018	Preliminary draft issued for review
B	01/02/2018	Draft issued for review and comment
4	14/09/2018	Final Issue

Introduction

The purpose of this Construction Management Plan (CMP) is to provide key stakeholders including the City of Melbourne (CoM) and Heritage Victoria (HV) with detailed construction information relating to the protection and promotion works proposed for the Royal Exhibition Buildings.

The information provided is for the reference of key stakeholders to highlight all the documented strategies Museums Victoria (MV) have considered to ensure that the activities occurring on site do not adversely affect the wider community where health, safety and amenity is concerned.

This document has been developed on behalf of Museums Victoria.

Contractor Details

Principal Contractor: HBS Group Pty Ltd

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17 Abbott Street, Alphington Victoria 3078

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Fax (Head Office)

Onsite Contact for compliance with this CMP

Company Name: Museums Victoria
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Project Overview

Project Details

Museums Victoria propose to undertake significant conservation and upgrade works to the Royal Exhibition Building. The Royal Exhibition Building Protection and Promotion Project (the Project) requires repair and maintenance works to be undertaken to the roof, facades and all associated joinery to maintain the heritage fabric to ensure the building envelope is conserved and restored, as well as the reinstatement of the dome promenade experience to ensure the future of the historic landmark.

The scope of works will include:

The 'protection' works generally comprise of repairs and restoration works to the external façade including the dome cupola, dome roof, dome drum, nave and gallery roofs, flagpoles, pavilion roofs and facades, and east, south and west rendered facades but not limited to the following:

Cupola:

- Prepare and paint the flagpole.
- Repair and replacement of decayed sections of timber to cupola.
- Repair and replacement of existing lead sheet and flashings.
- Replacement of 22 karat gold leaf to lead roof.
- Prepare and paint timber work and metal flashing.

Dome Drum:

- Crack repair to moulded sections.
- Re-run of sections of mouldings to string courses, cornice and plinth where details are missing or beyond repair.
- Removal of areas of localised drummy render to the cornice, parapets, plinth and flat walls sections.
- General removal and replacement of render to the internal face of the dome parapets.
- Repair of pressed cement orbs/urns.
- Demolition and make good of redundant elements.
- Paint removal and new paint system.

Roof:

- Remove existing mesh to roof vents and install new plastic-coated flyscreen mesh.
- Localised lifting and re-fixing of roof sheets.
- Repainting of two colour scheme to pavilion roofs.
- Repair to pavilion cresting.
- Remove and replace access for maintenance to the roofs generally to system compliant with AS1657:2013.
- Replacing non-original aluminium flagpoles with timber, installing new flag raising systems to nine of the flagpoles and preparing and painting the existing timber poles.

Facades:

- Crack repair.
- Inject drummy render.
- Re-run sections of moulding.
- Pin existing mouldings.

- Remove and replace decorative urns and orbs.
- Cut out drummy or defective render and re-render.
- Reinforcement of slate ledge.
- Repair of bluestone, repointing of bluestone.
- Paint removal and new paint system.

External Joinery:

- filling of cracks with epoxy resin.
- filling decayed sections of windows.
- Injecting cracks in sills and cutting out glazing putty and re-putty prior to repainting.
- splice in new sections and replace staff beads, sills and weatherboards where required in preference to wholesale replacement of a window.
- entry door repair including epoxy filler or splice repair to timber elements, and cleaning of mechanisms
- All timber joinery to the exterior is to be prepared and painted.

Internal conservation works:

- Stair joinery repairs and modifications.
- Decorative paint scheme reinstatement and repair.

Promotion works

The 'promotion' works comprise of the reinstatement of the dome promenade experience including the following:

- Removal of the existing original stair and associated parts of original walls and ceilings/floors in the west pavilion to the main south entry portal, and introduction of a new lift and fire isolated stair to operate between basement and roof level.
- Internal basement works to support the new function of the basement as the entry level to the Promenade Experience, including removal of non-original museum store and laboratories from basement and introduction of amenities.
- Modifications and works to the south façade of the REB, associated with the Promenade Experience entry to the basement. These include modifications to the south drive to accommodate a sequence of ramps, low-level retaining walls and stairs down to the basement level opening; a fire egress door to be created in the west wall of the west pavilion to the south entry portal, involving modification of an existing window opening;
- Introduction of a glazed screen at internal gallery level and an exit at this level from the new lift core, via an opening proposed for the west internal wall of the west pavilion to the main south entry portal.
- On the roof of the south transept of the REB, construction of a new lower promenade deck, new deck/walkway to the upper promenade, and works to the dome drum to support the Promenade Experience. The latter will include a lift between the lower and upper promenades.

The contractor's scope of work will be undertaken in accordance with all drawings, preliminaries and general specifications, CMP, any referenced regulations or legislation and any other documentation referenced or provided under the terms of the contract.

Stakeholders

Stakeholder Identification

In no particular order or limitation, the stakeholders for this project have been identified as:

- Federal Government
- State Government of Victoria – including but not limited to:
    - Creative Victoria (CV)
    - Department of Economic Development, Jobs, Transport and Resources
    - Public Transport Victoria (PTV)
- City of Melbourne (CoM)
- Heritage Victoria (HV)
- National Trust (Lovell-Chen/ Museums Victoria, do they need to be included, or is it enough for Heritage Victoria to be key stakeholder?)
- Neighbouring Properties (Owners / Occupiers)
- Public, Pedestrians and Rail commuters
- Yarra Trams (YT)
- Service Providers o Power Authority o Gas Authority o Water & Sewer Authority o Communications Authority
- Museums Victoria (MV)

Stakeholder Management

Museums Victoria will take all care to ensure that the stakeholders listed above and any newly identified parties (on completion of this document) are made aware of all construction activities which may affect their normal daily operations.
A project steering committee has been established to ensure all parties are fully informed of the Project's works and potential interface with stakeholders.

Consultations

Museums Victoria understands the high-profile nature of this project and the increased awareness of potential impacts that any construction activity may have on the immediate community surrounding the Royal Exhibition Building precinct. Affected stakeholders will be notified prior to commencement and during the construction lifecycle through notices.

Authorities

Permits

- Heritage Victoria under Heritage Act 2017, refer to permit attached as Appendix 5.
- Commonwealth under the Environment Protection and Biodiversity Act
- Building Code of Australia and the Building Permit conditions for relevant construction work (from the Building Surveyor)

The following City of Melbourne permits will not be required for this project as the works are taking place within the confines of Museums Victoria site boundaries. Should work be required to take place

outside of the boundaries of MV, then the appropriate processes will be followed by the contractor to obtain the necessary permits from the City of Melbourne.

- Permit to erect overhead protective scaffold gantries over footpaths
- Permit for a vehicular crossing if required (permanent or temporary)
- Permit to occupy space on road or footpath
- Permit to erect a hoarding (where it occupies Council space outside of an allotment whilst construction work is undertaken)
- Civil works permit (as required)
- Permit for a construction zone
- Permit to use a mobile crane, travel tower or lift on or above a road (if required)
- Permit for a rubbish skip
- Permit for legal point(s) of discharge and approval for modifications to street lighting
- Asset protection permit
- Permit for tree protection and removal
- Any necessary rail, tram or other transport operational permits required for the works (Nicholson Street)

Legislation

- Building Act 1993
- Planning and Environment Act 1987
- Heritage Act 2017
- Melbourne Planning Scheme
- Occupational Health and Safety Act 2004
- City of Melbourne Council's Activities Local Law 2009
- Victorian WorkCover Authority

Heritage Requirements

The proposed scope has undertaken significant consultation with Heritage Victoria and the Commonwealth leading up to the permit that has been obtained, contained within Appendix 5. A copy of the Heritage Victoria inventory plan has been provided as per Appendix 5. A key heritage requirement to be met is the retention of the heritage elements and any other significant identified items. These items are to be stored by Museums Victoria.

Heritage requirements also place strong attention on the usage and type of scaffolding utilised on a project, as well as how the scaffolding and other materials are attached to the building and any damage this may cause. In the case of the Royal Exhibition Buildings the number of ties used to support the scaffolding has been minimised and the nature of ties will utilise compression and be place within existing doorways and windows, as to best minimise any damage to the heritage façade. For further information please refer to detailed scaffold drawings in appendix 3.

Prior to any sub-surface works taking place, a historical archaeological assessment report will be prepared and submitted to Heritage Victoria, identifying any impacts the work may have on archaeological remains. If the works do pose an effect on archaeological remains, then investigations and monitoring will be have to be undertaken to the satisfaction of HV.

Approved works or activities are to be planned and carried out in a manner which prevents damage to the registered place/object. However, if other previously hidden original or inaccessible details of the object or place are uncovered, any works that may affect such items shall immediately cease. The executive director shall be notified of the details immediately to enable Heritage Victoria representatives to inspect and record the items, and for discussion to take place on the possible retention of the items, or the issue of a modified approval.

Note, that permission has been given for inspections of the place or object to be undertaken during the carrying out of works, and within six (6) months of notification of their completion.

Amenities Location

Amenities will be located within the construction zone, refer to Appendix 1, Site Establishment Plan.

Materials Hoist

Vertical transport is required for labour and resources materials hoist will be situated on the south elevation, with secure access within the construction zone, refer to site establishment plan.

Site Accommodation

Contractors site accommodation will be located within the REB basement and any additional area required will be above ground located in the nominated driveway area, refer to Appendix 1 site establishment plan for detail.

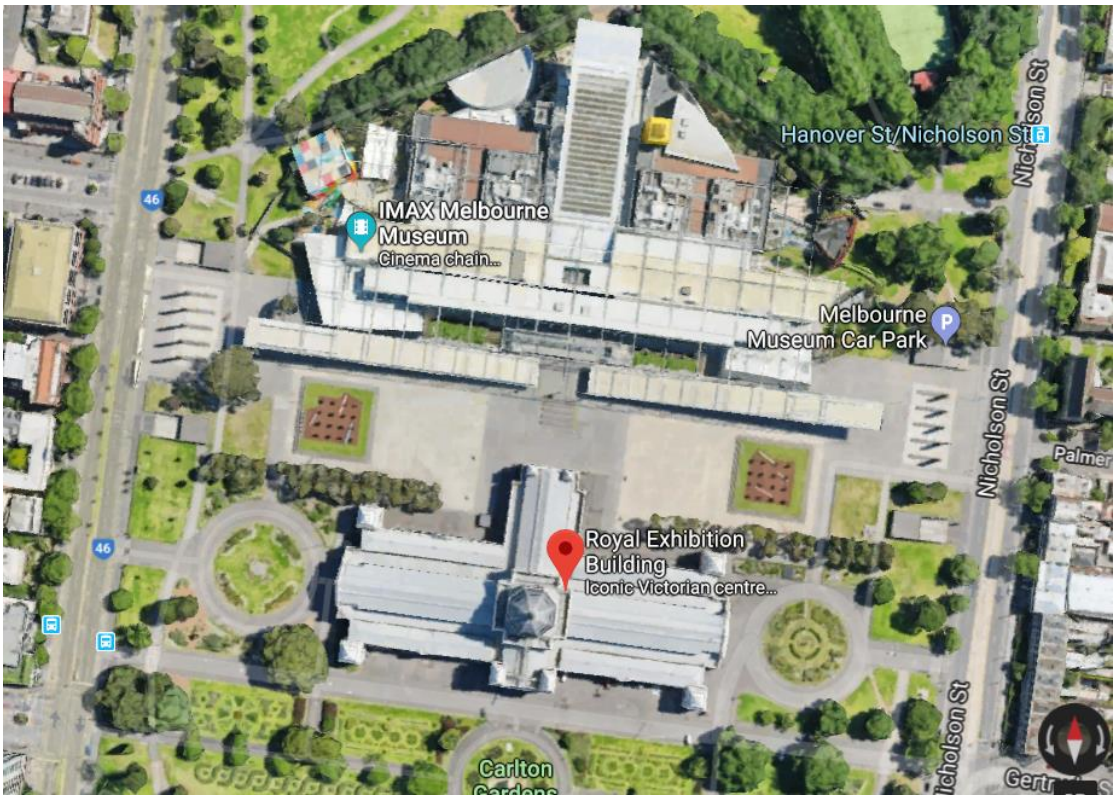
Duration of Works

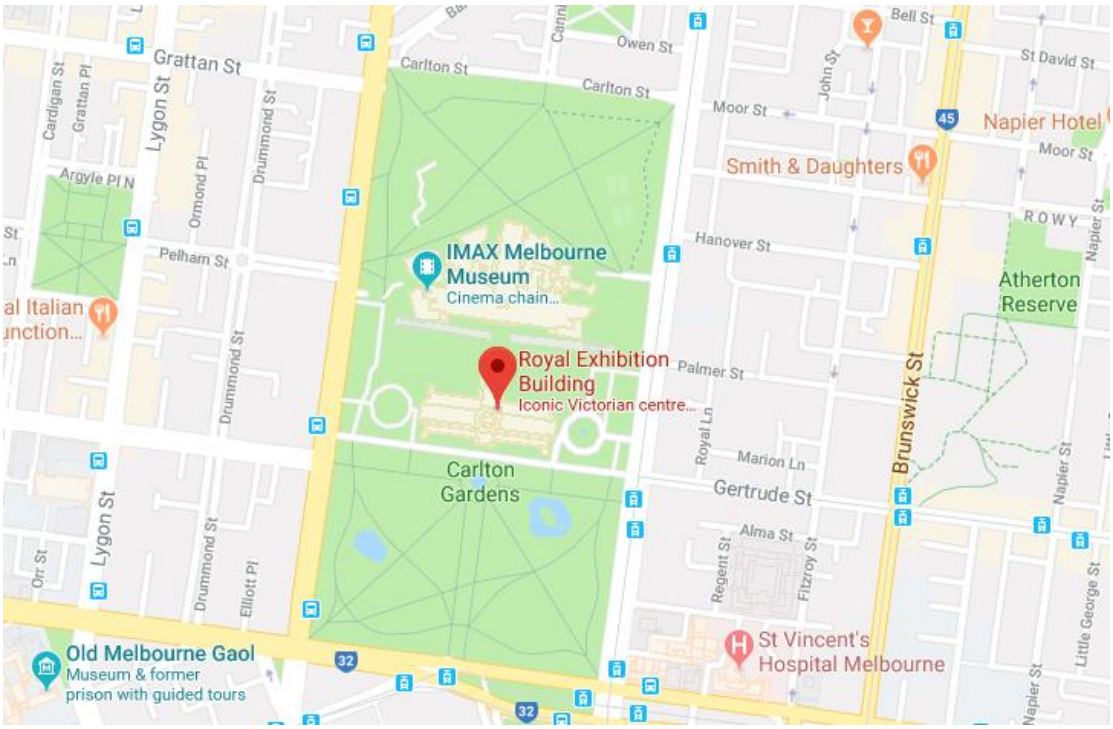
Site is expected to be handed over to the head contractor from April 2018 and is anticipated to be completed by October 2019.

Location

The site is bound by the Carlton Gardens to the south & north, Nicholson St to the east and Rathdowne St to the west.

The Project encompasses the entire external façade of the Royal Exhibition Building and does not include other buildings located in the Carlton Gardens.





Element 1: Heritage Considerations and Permits

Overview

The objective of this element is to detail all required measures implemented by the relevant heritage authorities and to inform any contractors/sub-contractors in the requirements of the approvals that have been granted by these authorities in order to adequately protect the heritage values during the construction works and minimise incidental works or damaged to significant fabric.

All contractors/sub-contractors are to be inducted into the works and to be made aware of their responsibilities in the management of the World Heritage values and National Heritage values outlined and identified in the specific site induction forms included in Appendix 7.

General Matters

The site, including the Carlton Gardens and Royal Exhibition Building are managed by the following heritage registrations and relevant authorities:

- World Heritage List — Department of Environment and Energy
- National Heritage List — Department of Environment and Energy
- Victorian Heritage Register — Heritage Victoria
- Heritage Overlay, Melbourne Planning Scheme — City of Melbourne

The following are conditions of permit have been applied to the works by granting of approval by the following relevant authorities:

Approval under section 130(1) and 1333 of the *Environmental Protection and Biodiversity Conservation Act 1999:*

1. To avoid unacceptable impacts to important sight lines relating to the World Heritage values and National Heritage values of the building and gardens, the approval holder must not undertake the café, entry box and dome promenade pavilion works.
2. To minimise visual impacts on the World Heritage values and National Heritage values of the building and gardens, the approval holder must ensure that any new plantings to the south of the building do not obstruct or substantially alter existing sight-lines to the south façade.
3. A. Prior to commencement, the approval holder must prepare and publish a Construction Management Plan (CMP) to minimise impacts of the action on the World Heritage values and National Heritage values of the building and gardens. The approval holder must not commence the action unless the Construction Management Plan has been published.
   B. The CMP must include:
   - Site induction for all staff on-site regarding their responsibilities regarding management of World Heritage values and National Heritage values and the CMP.
   - A sequencing program for the works.
   - Protection methods for existing building fabric, including but not limited to:
     - Details of protection methods to be implemented;
     - Details of monitoring for accidental damage to original fabric; and
     - Mitigation measures and corrective actions in the event that accidental damage occurs.

- Confirmation that the degree of reversibility of the works remains consistent with that detailed in 4.3.3 of *Scope for Assessment Documentation* by Lovell Chen for Museum Victoria (May 2017).
- A Dilapidation Report including photographs taken to technical preservation standards.
- A Materials Inventory identifying the proposed future use of any material to be removed as a result of the proposed action (including proposed disposal, use for repairs or storage for eventual reinstallation) and where the removed material is to be stored.

C. The Dilapidation Report and Materials Inventory must be deposited with an appropriate colleting institution.

D. The approval holder must make changes to the published CMP, if requested by the Department in writing, within the period specified within any such request.

4. A. Within six months of commencement the approved holder must prepare and publish a Signage and Interpretation Plan, to minimise impacts of the action on the World Heritage values and National Heritage values of the building and gardens.

   B. The Signage and Interpretation Plan must demonstrate that the new interpretation and signage (permanent and temporary) will not substantially modify, damage or destroy original fabric, and will not have a significant impact on the World Heritage values and National Heritage values of the building and gardens.

   C. The Signage and Interpretation Plan must be deposited with an appropriate collecting institution.
5. 5. Within 20 business days of commencement, the approval holder must advise the Department in writing of the actual date of commencement.
6. The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including any measures taken to implement the CMP required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with Section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits may be posted on the Department's website. The results of audits may also be publicised through the general media.
7. Within 3 months of every 12 months anniversary of the commencement of the works, the approval holder must publish a report on their website addressing compliance with each condition of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. Reports must continue to be published unless advised otherwise by the Minister in writing.
8. Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minster prior to commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minster.
9. If, at any time after 10 years from the date of this approval, the approval holder has not substantially commenced the works, then the person taking action must not commence the works without the written agreement of the Minister.
10. Unless otherwise agreed to in writing by the Minister, the approval holder must publish all plans and documents refer to in these conditions of approval on their website.

The works must be undertaken in accordance with the following information provided in the submission to the Department of Environment and Energy in approving the works endorsed by the permit EPBC 2016/7680. Section 4.3.3 Impacts during Decommissioning of the Assessment Documentation Report prepared by Lovell Chen and dated May 2017 required the following:

The works proposed to this place are seen as permanent, at least for the foreseeable future and accordingly the action of decommissioning is not considered directly relevant. Notwithstanding, with regard to decommissioning as related the reversibility of the works the approach to interventions into original fabric as a consequence of the promotion works is that wherever possible they will be reversible. The degree of reversibility is noted as follows:

a) Basement fitout	These works are entirely reversible and will result in minimal permanent loss of original fabric.
b) Lift and stair	The fabric (bricks, basalt and timber) to be removed in the process of undertaking these works will be permanently stored on site, rather than being used for repair works in other areas of the building. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed.
c) New rooms to base of dome drum	The fabric (bricks and timber) to be removed in the process of undertaking these works will be permanently stored on site. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed.
d) New screened viewing area at gallery level	The fabric (bricks) to be removed in the process of undertaking these works will be permanently stored on site. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed.
e) Glazed doors to internal south opening	These works are entirely reversible and will result in minimal permanent loss of original fabric.
f) South façade & south side of building	As related to the building the fabric to be removed in the process of undertaking these works will be permanently stored on site. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed. The existing non-original elements comprising paving, fill and ramps will be permanently discarded.
g) Dome Promenade	The existing dome promenade deck which is not original will be permanently disposed of. The new deck and structure will be able to be removed with minimal permanent loss of original fabric.
h) Dome Promenade Pavilion	This structure readily can be removed with no impact on the original fabric.

The following conditions of permit granted under section 270 of the Heritage *Act 2017* are relevant to the construction of the works:

8. Time Limit and Other

a) This permit shall expire if the permitted works have not commenced within (3) years of the date of issue of this permit, or are not completed within five (5) years of the date of issue of this permit unless otherwise agreed in writing by the Executive Director, Heritage Victoria.
b) The Executive Director is to be given five working days' notice of the intention to commence the approved works.
c) Approved works or activities are to be planned and carried out in a manner which prevents damage to the registered place / object. However, if other previous hidden original or inaccessible details of the object or place are uncovered, any works that may affect such items shall immediately cease. The executive Director shall be notified of the details immediately to enable Heritage Victoria representatives to inspect and record the items, and for discussion to take place on the possible retention of the items, or the issue of a modified approval.
d) The executive Director is to be informed when the approved works have been completed.
e) The development approved by this permit is to be carried out in accordance with the endorsed drawings, unless otherwise agreed in writing by the Executive Director, Heritage Victoria.

Element 2: Public Safety, Amenity and Site Security

Overview

The objective of this element is to detail all required measures taken by Museums Victoria and any contractors/sub-contractors to adequately protect and inform the public from all construction activities occurring within the construction site.

General Matters

The following are general matters that will be finalised by the successful Contractor once appointed:

- Building permit is required for these works, this is yet to be obtained. The Building Surveyor registration details are as follows,
  Contact name: Greg du Chateau
  Company Name: du Chateau Chun
  Telephone: +61 3 9081 1688
  Website:www.duchateauchun.com
  Address: Suite 428, 838 Collins Street, Docklands VIC 3008
  Registration: BS-U1075
- The works are to an existing building and includes minor excavation associated with forming new basement and stormwater works. These excavations are to be undertaken in accordance with all legislative requirements, including the Building Regulations 1994 and Melbourne City Councils Public Safety and Amenity – A Code of Good Practice at Construction Sites.
- Works have not commenced on site. It is envisaged that works will commence April 2018.
- A bank guarantee will be provided by the Contractor to the Principal following the execution of the contract.
- All works will be undertaken within the boundary of the Museums Victoria; therefore, it is not anticipated a Council Construction Zone Permit will be required.
- All contractors, subcontractors and any other personnel who may enter the site are required to undertake the Museums Victoria site induction sessions.
- Contractors are to prepare site induction processes which incorporate all relevant information to persons entering the site and include the Museums Victoria requirements to operate on their. They must also provide training in relation to its work processes as part of its normal site induction process to all persons entering the Site.
- Contractors OHS Management Systems must as a minimum demonstrate compliance with duties and responsibilities in the Victorian OHS Act 2004 and Victorian OHS Regulations. Throughout the project the contractor must provide upon request proof of ongoing use/performance of the OHS management plan. All OHS procedures must be implemented and carried out in accordance with specifications listed or referred to within section 1.5 of 0143 Preliminaries – AS 2124.
- Contactors must prepare a Health & Safety Coordination Plan is prepared for the construction works. The details provided within the plan must comply with recommendations listed within section 1.5 of 0143 Preliminaries – AS 2124.
- The Contractor shall prepare and submit to the Superintendent a Site Hazard Identification and Risk Assessment prior to commencing the works under the Contract. Refer to section 1.5 within 0143 Preliminaries – AS 2124 for further details.

Gantries, Hoardings, Footpaths and Roads

The scope requires works to be undertaken externally to the façade / cupola and roof at heights utilising elevated work platforms in the form of fixed and mobile scaffolding, as well as other EWPs. Consequently, overhead protection, barriers and hoardings will be installed on ground level where required in response to the identified scope. This will be limited to adjacent to the building's façade and on the roof.

Access to the building for pedestrians will be maintained through the eastern and northern entrances, and the south entrance for the Melbourne International Flower and Garden Show in 2019, as well as around the construction zone generally within the park lands. Access to the building for exhibitions set up and dismantling by exhibitors and hirers of the space will be maintained through the eastern and western entrances.

The University of Melbourne exams will be held at the REB in June & November of 2018 & 2019, during these time periods safe pedestrian access must be available, no noisy works and any general work disruptions that may affect the exams are to take place.

Council footpath occupation permit will not be required as works are within Museums Victoria boundaries Should this be necessary permits will be obtained from the CoM prior to commencement of works on site.

Limitations to site access to include; the REB is to be maintained for operations and maintenance staff at all times, as well as any staff or visitors who may be using the site facilities. The MFB and all other emergency services are to have unfettered access to the fire hydrants located within the site area in case of emergency. Contractors must comply and consider all site access limitations mentioned within section 1.7 of 0143 Preliminaries – AS 2124, when preparing their business continuity plan for approval.

Adequate barriers to be installed in the form of temporary mesh fencing covered in shade cloth to prevent the public from accessing the construction area. Any occupation or activity presenting hazard to the public must be provided with suitable barriers.

Please see Appendix 2, Traffic Management Plan

The elevated work platforms installed externally will be located adjacent to the building façade which will be inside the construction zone to provide separation and protection to public from falling objects / debris. In addition to overhead catch decks and scaffolding will be erected as described in detail within the appendices at the end of this document. The use of ties to the fabric of the building will be minimised through the scaffold design and the use of tension ties in the existing window openings and other void. T

Please refer to Appendix 3 Scaffold drawings details

Public protection will be erected to the eastern public entrance where building access will be provided to the building during construction activities.

For works internally, protection will be installed where any internal overhead works are required and where public will have access beneath. The establishment of construction zones internally will seek to separate the general public from these areas.

Refer to Appendix 3 for details of overhead protection.

The scope of works does not require any road excavation.

The building and surrounding area is used by the general public, the flow of pedestrians/ cyclists and vehicle traffic will be managed in accordance with Element 6 Traffic Management, refer to Appendix 2 for full details.

There is a requirement that contractor(s) have practices in place to ensure that the existing quality of all footpaths, roads, kerbs and channel and stormwater drains are protected and maintained throughout the project lifecycle.

Any damage to council and adjoining owner property (as listed above) as a result of construction works will be rectified to prevent any possible threats to public safety. The protection and reinstatement of any damage to property or persons must align to the recommendations and guidelines set out within section 1.6 of 0143 Preliminaries – AS 2124.

The construction zone will be identified through appropriate hoardings during construction and will be staged to address the works as shown in drawing under Appendix 1, Hoarding details and council permits will not be required due to works being undertaken within Museums Victoria boundaries.

Trucks leaving the site will be monitored for mud and debris when undertaking excavation works. The access route will be maintained clean and free of debris. For further information please refer to element 3 Air & Dust Management.

Cleaning of the footpaths and roads to be undertaken as necessary, including wetting down of surfaces to suppress dust.

Dilapidation Survey

A dilapidation survey has been completed (Lovell Chen are we going to get this before the submission??) to establish the existing conditions of neighbouring properties and council assets. In particular:

- Footpaths
- Roads & Lanes
- Services
- Flora and Fauna
- Public property

An additional copy will be submitted to CoM.

Upon completion of the project, a final inspection will be conducted and compared to the dilapidation report to ensure that the condition of surrounding areas (as identified above) are acceptable.

All damage as a result of the project will be agreed upon and rectified by the relevant parties.

All public furniture (seats, bins etc.) which is seen as having potential to be damaged during the construction process will be removed, securely stored and reinstated in its original position upon completion of the project.

Hoarding Signage

Typically, the general signage installed on the hoardings will include but not limited to:

- Site safety regulations & pedestrian warnings
- Emergency staff (Contractor's) contact name and number
- Site related advertisements
- Site security monitoring (to discourage bill posting and graffiti)
- Builders Signage
- Project Signage as a condition of the project funding

All hoarding designs and their materials will seek to reduce unauthorised bill posting and graffiti placement. Hoardings will be continually monitored for their presence of unauthorised materials and will be appropriately removed when identified.

Council consent for precautions with the street or public domain will not be required for this project as works are taking place within Museums Victoria boundaries. Should works encroach on public space than the appropriate approvals will be sought by the Contractor once appointed.

Traffic Control

Access to site will be primarily through Nicholson Street to the east end of the site as identified within the appendix 1. The primary location of the laydown areas will be on the southern side of the building.

Construction worker primary entry and egress in and out of the construction zone will be via the western side of the construction zone.

A permanent or temporary vehicle crossing permit is not required as works are being undertaken within the confines of Museums Victoria boundaries. If a permit does become a requirement due to work entering public space, then the contractor, once appointed, will be responsible for obtaining the permit.

No road openings are foreseen to be included in the project scope. No road opening permit is required as works are within the boundary of Museums Victoria. If road opening works do enter the scope, then the appropriate process will be followed by the contractor to gain the approvals.

No traffic conditions have currently been changed, if any traffic conditions are required to be changed and are outside of the Museums Victoria boundaries then, contractors will seek approval from CoM Engineering Branch prior to commencing work.

Cranes, Skips and Signage

Cranage is anticipated to be established utilising mobile cranes in the southern side of the building, within the construction zone. It is not expected that the cranes/lifting zone will encroach on public space. If work does encroach on public space, the contractor will gain approval for a permit from the Museums Victoria before crane works commence or are delivered on site.

No Permit for a skip is required due the works taking place within Museums Victoria boundaries.

There have been no changes to signage at this current stage, if any changes to signage need to take place outside of the Museums Victoria boundaries then, contractor's will seek CoM's approval beforehand and will carry out the signage changes to the Councils rules and regulations.

The Contractor shall be responsible for the removal of all graffiti and the like from all signs, structures and the building works within two (2) working days of occurrence and earlier as instructed by the Superintendent. The cost of the graffiti removal will be borne by the Contractor.

Fencing, Lighting and Site Security

Security is paramount in and around all construction sites. To ensure and maintain security both during and out of working hours, all gates and access points will be padlocked outside site operating hours. All covered walkways and scaffold catch decks along pedestrian routes will be adequately lit after hours.

If a change in traffic conditions is implemented, safety signage and traffic controls will be provided in accordance with codes of practice and the revised & approved Construction Traffic Management Plan.

The site will be secured, and all hoarding and other barriers will be lined in accordance to regulations. It is the responsibility of contractors to ensure all areas of work are properly secured to prevent danger to workers and the public when the site is left unattended. The Contractor shall take all measures for site security, including the employment of a Watchman or the services of a Security Patrol, as necessary for the purpose of site safety, all at no cost to the Principal.

The building will continue to be operational for events and day-today management, access by the public during the construction phase will be managed by the Museums Victoria, in coordination with the contractor on site.

Any dangerous chemical materials that will be stored on site will have the appropriate signage in accordance with AS 1940-1993 and AS 1216-1995.

Please refer to appendix 2, Traffic Management Plan

Element 3: Operating Hours, Noise and Vibration Controls

General Matters

It is not foreseen that there will be concerns from authorities however, all stakeholders will be informed and notified of the proposed works, operating hours and any noise pollution that may be produced. If these noise works impact a certain authority such as VicRoads, Worksafe, Unions etc, then the proper procedures will be followed with the authority to rectify any concerns and ensure all protocol is followed

All deliveries and laydown areas to and from site will occur through the eastern side of the construction zone as identified within the appendices. Deliveries to the site will occur during normal business hours and deliveries to the loading bay will be determined by the hours indicated in the traffic management plan.

Night deliveries may be required and will be managed to minimise the impact to the surrounding residents. Noise will be minimised with beepers and loading methodologies to suit.

Construction works do not fall under the Council's "sensitive" zones as work is within Museums Victoria boundaries and are not adjacent or in close proximity to residence. Any work to take place outside of the boundaries will follow the corresponding operating hours, restrictions and obtain any permits or approvals from CoM.

All temporary services that may be required throughout the duration of the project will fall within the responsibility of the contractor to organise. For further details regarding temporary services please refer to section 1.9 of 0143 Preliminaries – AS 2124.

Noise and Vibration Controls

The scaffolding will not be treated acoustically, the extent of noisy works to be undertaken will be minor and do not necessitate any treatment of this kind. Furthermore, the buildings heritage status precludes heavy fixings to the façade that would be necessary if acoustic treatment was applied to the scaffolding.

Cutting zones will be designated for materials which will be set away from pedestrians to reduce the impact of noise from this activity within the construction zone.

All construction and excavation noise levels will be maintained in accordance with the Designated Sound Level (DSL) guidelines.

Where there is a potential for exposure to noise in excess of 85 dB(A) continuously for eight hours or a daily noise dose of 1.0 or where there is a potential for exposure to 8 vibrations to arms/ hands from tools for greater than 4 hours in a 24 hour period, or where there is a potential for whole body vibration in excess of exposure levels nominated for machinery or plant by the manufacturer, documented procedures outlining the control must be provided.

Where required appropriate ear protection is to be worn by all site personnel. Where necessary, signage and restricted areas are to be utilised.

Where required contractor will ensure subcontractor SWMS are developed to address the control of noise during their activities.

Noise monitoring will be undertaken to establish the potential impact upon tenants and operational staff that occupy the building.

Contractor will ensure work practices to reduce noise complaints are implemented where required such as managing truck noise, encouraging the appropriate conduct of workers and using equipment sensibly.

Contractors are required to prepare and submit a Noise Management Plan to be approved by the project superintendent. This plan should list out all measures, precautions and responsibilities the contractor will take to minimise and control noise levels. The methods and measures to reduce noise that will be implemented by the contractors should adhere to all suggestions and requirements set out in section 1.7 of 0143 Preliminaries – AS2124.

Signage

Contractors are to display signage with emergency site contact details, in case of any issues or concerns. This signage is to be displayed on perimeter fencing, for further information refer to Element 1: gantries, hoardings, footpaths and roads.

Site Operating Hours

Monday to Friday	7:00am to 7:00pm
Saturday	8:00am to 3:00pm
Sunday	No work without approval of an Out of Hours Permit
Public Holidays	No work without approval of an Out of Hours Permit

It is aimed for all contractors to complete work within the aforementioned operating hours, however, due to unforeseen circumstances works may need to occur outside this period. If this is the case, approval will be sought from Museums Victoria. Works will also meet requirements of external authorities and be subject to strict noise and vibration guidelines and monitoring.

The contractor is to coordinate works that may be impacted by major Museums Victoria events.

Element 4: Air and Dust Management

Dust Management Prevention & Control

It is anticipated that the majority of dust and airborne particles will be present during the paint removal, excavation and demolition phases of the project. Dust suppression strategies to be used include, but are not limited to, chemical treatment for paint removal, water sprays, dosing the rubble with water pre and post chute and controlled speed of vehicles onsite. The effectiveness of implemented strategies will be constantly monitored and tailored to minimise potential impact on stakeholders.

Concrete pumping will be limited and is expected to be undertaken using temporary lines on the southern side of the building inside the works zone.

Dust control shall be managed such that minimal impact is caused to the public and adjoining owners by confinement to the construction site boundaries. The following strategies will be adopted where required:

a) Ensuring all areas expelling dust is confined to within the site.
b) Instruct all personnel that there will be no incineration or burning of waste materials on site and to take prompt action when extinguishing fires.
c) Subcontractors will be required to control the dust created during their tasks in SWMS.
d) Modify work activities/stop work during high wind velocity periods.
e) Minimise areas of site disturbed, and stage works where possible.
f) Vehicle corridors will be clearly identified and restricted to control vehicle access onsite - limit vehicle speed onsite to walking pace
g) Trade contractors are to be notified that trucks transporting materials such as soil and sand are required to be covered and tailgates secured.
h) On site drilling or coring operations will be undertaken by equipment fitted with air filtration equipment to suppress the chance of dust travelling out of site boundaries.
i) Any removal or paint scraping will be undertaken in a capsulated areas and removed/disposed of in accordance with OH&S and Worksafe regulations.
j) It is not expected that the amount of dust will require the use of water tankers to control it however, in the event that the amount of unexpected dust needs to be maintain with water tankers, the frequency and duration of use will be provided by the contractor. The water tanker will also have to be used in a way the complies to all Worksafe regulations and minimises noise and other safety concerns.
k) Installation of demolition standard shade cloth on public perimeter fencing and protection.

Storage

Types of materials that will be stored on site include general construction materials, demolition materials, paint, joinery, tools etc. Nominated areas on site will be allocated for storage of materials and machinery. These areas will be safe and secure. Storage areas may change throughout the course of the project as different stages of construction are completed. All dangerous chemicals will be stored in secure areas located away from emergency exits and stormwater pits. All signage for dangerous goods will be in accordance with AS1219 – 1995 Class Labels for Dangerous Goods.

Smoke & Pollution

It is expected that contractors will be committed to ensuring that the air quality in and around the construction site is maintained at acceptable levels throughout the construction period. This will be achieved by adopting the following where required:

a) If odorous materials uncovered, re-cover immediately.
b) By seeking advice from an Environmental Consultant regarding soil /materials management.
c) Ensuring purchased electrical products/whitegoods products comply with specification for CFCS & energy ratings.
d) Ensuring low solvent paints are used as a priority – low VOC.
e) Deliveries / transport from site are effectively planned to limit inefficient transport, assist back loading etc.
f) Ensuring all construction plant and equipment with access to the site is properly maintained. Smokey plant is to be stopped until repair works are completed. Vehicle engines are to be turned off whilst not in use (no long periods of idling). Extraction fans and adequate ventilation will be attained during operation.
g) Construction site is to remain smoke-free.

Element 5: Stormwater and Sediment Control

Stormwater Measures

A commitment to preventing the contamination of, or damage to, stormwater drains and waterways as a result of activities occurring within our construction sites. This element is to be further detailed within the Environmental management plan to be produced by the contractor for the site and includes actions including but not limited to:

- The existing drainage system will be utilised until the new drainage system is installed and commissioned
- The existing drainage system will be maintained by the Project whilst construction works are undertaken within the work zone
- Temporary drainage systems will be established to divert clean waters around the land development areas as appropriate.
- Install silt socks, bunds and construct swale drains.
- Street sweepers will be employed as required
- Limit vehicle entry and exit to one point, and lay geotextile and blue metal to stabilise it for all-weather access.
- Fill in all trenches immediately after services have been laid.

All works will be performed with strict adherence to the Environmental Management Plan submitted by contractors, especially with regard to stormwater pollution given the close proximity to waterways, potential for the classification of contaminated soil and the moderate size of the bulk excavation for this project.

Excavation Works

The location and extent of excavations has been provided in the Stormwater Plan of the site at Appendix 4.
The site will not need to be cleared, the site has existing pavements and stormwater system installed. Localised trenching will be undertaken to suit the scope.

Site Entry

The location of site entries has been specified on the Plan, refer to appendix 2, Traffic Management Plan.
The site entry and traffic routes will utilise the existing pavements. It is not anticipated that rumble grids or similar to be provided to collect mud from vehicles leaving the site, due to the existing hard pavements and that excavation is limited and localised. As such should a rumble grid need to be provided to address mud a cleaning plan that consists of regular monitoring and cleaning will be implemented. For further details regarding vehicle movements and any storm water management actions please refer to Appendix 2, Traffic Management Plan.

Drainage & Sediment Control

Will the site be properly drained to prevent site water retention that may cause structural damage to excavations or retaining walls? Irwin Consult to provide advice
What is current natural storm water flow? Irwin Consult to provide advice

Will provisions be made to pump out any water collected at bottom of excavation sites? Will water with greater than 50mg/L of total suspended solids be pumped to the sewer with the necessary approvals? Trenches and lift pitch excavation, Irwin Consult to provide advice

Have natural falls of the site and sediment controls been identified in the Stormwater Plan?
Is there a maintenance program to replace sediment barriers when sediment controls become ineffective? Irwin Consult to provide advice

Will drains on and near the site have sediment traps or filters around them? Will these be checked daily? Irwin Consult to provide advice

How will any loose materials such as soil, sand and gravel be managed to prevent displacement? Irwin Consult to provide advice

Washing & Clean up

Are vehicle wash down areas provided near site entries? Do they capture and treat water prior to discharge? Irwin Consult to provide advice

Do wash down areas use more than 3000 litres per day of recycled water? Irwin Consult to provide advice

Once contractors are engaged a designated area will be established on site to enable workers to wash out paint brushes, rollers and spray equipment, to eliminate any chemicals contaminating storm water systems.

All other site clean-up procedures should adhere to the requirements and references stated within section 1.13 of 0143 Preliminaries – AS2124.

Vegetation

A site assessment has been undertaken by an Arborist and their report is contained within Appendix 6. Vegetation is only side on the western elevation, adjacent to the building, this will be retained, the remaining site is hard paved with asphalt.

Outside of the construction zone, mature trees and garden beds are present, any flora identified that may be impacted by the works will be protected and retained in their original position until the completion of the project.

Tree protection zones (TPZ) will be established to ensure surrounding trees are protected and maintained. Obtaining any tree protection permits for any works outside of the Museums Victoria boundaries will be the responsibility of the contractor.

Pruning has been identified for a select number of trees that may be impacted by traffic or scaffolding. This will be done by Museums Victoria prior to works commencing. (LC/ MV please confirm)

Element 6: Waste and Material Re-use Management

General Matters

As part of the Heritage Victoria permit that has been received this requires an inventory of all existing heritage material to be demolished and re used and or stored. For further information refer to Appendix 5, Heritage Victoria inventory plan.

A person of contact responsible for waste/reuse/recycling queries will be appointed by the head contractor. Further details and their contact information will be provided once they have been appointed.

The type of waste is expected to be made up of various construction and demolition materials, general waste as well as hazardous waste which may include asbestos, paint, and guano. The quantity of waste is unknown.

All waste materials that are exported off site will be tracked through the following methods:

a. Records of total volumes and mass of waste sent offsite including truck weighing bridges and random visual truck inspections

b. The waste removal contractor shall provide monthly reports providing a breakup of waste recycled and waste going to landfill. These shall be reconciled against waste receipts by the Site Foreman.

A division 6 Audit will be required to take place during the initial stages of the early works process. Museums Victoria have previously engaged two separate independent bodies to undertake assessments of hazardous materials on site. The two reports produced in 2014 and 2015, both identified hazardous materials at the Royal Exhibition Building site including, lead paint and asbestos. Hazardous waste management plans were also created along with each individual assessment.

Waste management training will form part of the site induction programme. This will ensure that contractors and site visitors are aware of the materials on site (in particular any hazardous waste) and waste disposal requirements. This will be of particular importance for the removal of any asbestos containing material, lead or guano containing material and also any contaminated soil which may be encountered,

Nominated on site personnel will be in charge of the daily collection and disposal of workers rubbish. All waste collection will occur during the Site Operating Hours at the times requested by the Council.

All collected waste will be handled by accredited waste removal contractors only who shall transport the waste to their off-site sorting facilities. At the facilities, waste materials are separated from recyclables and disposed of accordingly. Recyclables will be sorted and distributed to various facilities depending on material.

Waste Minimisation

Waste shall be minimised by avoiding over ordering materials, minimising the use of packing materials and buying environmentally approved and recycled products where possible.

Waste management requirements will be stipulated in contracts with contractors and sub-contractors. This includes the use of recycled materials where possible and the need to recycle any trade waste. Where possible, construction waste such as concrete, steel, formwork, plasterboard, metals etc. will be reused or recycled.

Bins & Skips

Where possible, separation bins will be located around site for rubbish and recyclable materials including cardboard, glass, metal, batteries, plastic and green waste will be provided on site and processed of appropriately. Bins with self-closing lids will be available to eliminate airborne rubbish.

Any permits associated with skips or bins, are not required as works are taking place within Museums Victoria boundaries. There will also be general purpose waste and recycle bins available throughout the site for workers general rubbish, to minimise the occurrence of littering on site.

Fencing

Waste management is a priority across the entirety of the construction site this includes regular cleaning of any trapped debris or rubbish that may be against the site fencing.

Hazardous Waste

All waste deemed hazardous as specified in the Hygienist's report will be handled in accordance with State and Federal Legislation and will be disposed of as per WorkSafe requirements.

Element 7: Traffic Management

Overview

The objective of this element is to detail all measures taken by contractors to ensure that public and construction traffic flow is adequately managed in and around the construction site as a means of protecting the public and mitigating disruptions to normal traffic conditions.

The final traffic management plan has been developed upon the submission of this updated Construction Management Plan.

Construction Traffic Management Plan

The construction traffic management plan will ensure that disruptions to the normal flow of traffic around the construction site are kept to a minimum.

If a change in traffic conditions is implemented, safety signage and traffic controls will be provided in accordance with codes of practice and the revised & approved Traffic Management Plan.

In accordance to AS 1742.3 2009.

Current Traffic Configuration

The site is bound by Carlton St to the north, Nicholson St to the east, Rathdowne St to the west and the Victoria St to the south.

During Construction Traffic Configuration

The traffic flow will remain as per the current traffic configuration throughout the construction process.

This section is to include the following requirements

- Location of the works
- Duration of the works
- Volume of truck movements
- Route of trucks accessing and leaving the site
- Consideration of all other road users
- Frequency and duration of any proposed footpath closures
- Third party approvals, Vicroads, Yarra trams etc
- Method of communication/notification to surrounding properties and stakeholders
- The scheduled commencement date and the length of the project and a description of sub plans for each stage of works with timelines (scheduled dates)
- Indication of occupancy of kurbside space not in front of the construction site
- Provision of scaled functional traffic layout plans

Appendices:

Appendix 1 Site Establishment plan
Appendix 2 Traffic Management Plan
Appendix 3 Scaffolding Drawings Details
Appendix 4 Stormwater plan
Appendix 5 Heritage Victoria Permit and Inventory
Appendix 6 Arborist Report
Appendix 7 Site Specific World Heritage Induction

Appendix 1: Site Establishment Plan

SITE ESTABLISHMENT AND ACCESS NOTES:

1. ACCESS TO THE SITE SHALL BE VIA NICHOLSON STREET.
2. ACCESS TO THE SITE IS VIA SHARED/PEDESTRIANISED ROADWAY. CONTRACTOR IS TO ENSURE ALL ACCESS TO THE SITE IS MANAGED IN ACCORDANCE WITH THE TRAFFIC MANAGEMENT PLAN.
3. CONTRACTOR IS TO MAINTAIN ALL ACCESS TO THE OCCUPIED AREAS OF THE EXHIBITION BUILDING DURING THE WORKS. DO NOT OBSTRUCT ENTRIES AT ANY TIME WITHOUT PRIOR APPROVAL
4. CONTRACTOR SHALL MAINTAIN ALL ROADWAYS, PAVING AND ACCESS POINTS FREE OF DEBRIS AND SOIL CONTAMINATION AT ALL TIMES. ALLOW TO CLEAN PAVEMENTS, DRIVEWAYS ETC AS REQUIRED DURING WORKS
5. ENTRY TO THE OCCUPIED PORTIONS OF THE BUILDINGS IS PROHIBITED WITHOUT WRITTEN APPROVAL FROM THE SUPERINTENDENT. PROVIDE 48 HOURS NOTICE
6. ALL SKIPS, BINS, SITE SHEDS AND AMENITIES SHALL BE LOCATED WITHIN THE NOMINATED SITE AREAS
7. MAINTAIN THE EXISTING BUILDING IN A SECURE AND WATER TIGHT CONDITION AT ALL TIMES THROUGHOUT THE WORKS
8. PROTECT THE SITE AT ALL TIMES FROM UNAUTHORISED ACCESS
9. PROTECT ALL TREES LOCATED IN SITE COMPOUND

ENABLING WORKS NOTES:

1. REFER SERVICES ENGINEERS DOCUMENTATION FOR PROPOSED WORKS TO AND CONNECTION TO EXISTING SERVICES. BEFORE COMMENCING WORKS INSPECT THE SITE AND OBTAIN MEASUREMENTS AND OTHER NECESSARY INFORMATION AS REQUIRED
2. DO NOT AFFIX TEMPORARY SERVICES TO EXTERNAL WALLS OR ROOFS. SEEK APPROVAL FROM SUPERINTENDENT FOR ANY REMOVAL OF OR IMPACTS TO EXISTING FABRIC ASSOCIATED WITH ENABLING WORKS
3. MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT ANY AREAS OF HARD OR SOFT LANDSCAPING THAT ARE IMPACTED BY ENABLING AND SERVICES INFRASTRUCTURE WORKS

SITE PROTECTION NOTES:

1. FOR INTERNAL AND EXTERNAL PROTECTION WORKS REFER TO SPECIFICATION AND DRAWINGS A0.03-A0.04.
2. CONTRACTOR IS TO ENSURE ALL CONSTRUCTION HOARDING IS APPROVED BY THE BUILDING SURVEYOR.
3. PROTECTION TO EXISTING FABRIC IS TO OCCUR TO THE EXTERIOR AND INTERIOR OF THE BUILDING WHERE WORKS MAY AFFECT SURROUNDING AREAS.
4. PROTECTION IS TO BE PROVIDED TO EXISTING TREES TO BE RETAINED DURING THE WORKS. CONTRACTOR IS TO ALLOW FOR TEMPORARY STAYING AND SCREENING. REFER TO SPECIFICATION AND DRAWING A0.03.
5. ENSURE ALL EXISTING WINDOWS AND DOORS ARE PROTECTED FROM DAMAGE DURING CONSTRUCTION.
6. PROTECT ALL MATERIAL DELIVERED TO THE SITE FROM ELEMENTS.

DEMOLITION NOTES:

1. PRIOR TO COMMENCING DEMOLITION WORKS, HYDRAULIC, FIRE AND ELECTRICAL ENABLING WORKS ARE TO BE UNDERTAKEN
2. REMAINING SITE IS TO REMAIN OPERATIONAL AT ALL TIMES
3. ALL DEMOLITION WORK TO BE CARRIED OUT IN ACCORDANCE WITH AND TO COMPLY WITH AS2601.
4. PROTECT EXISTING FABRIC TO BE RETAINED FROM DAMAGE DURING DEMOLITION WORKS INCLUDING, BUT NOT LIMITED TO, DOORS, WINDOWS,WALLS, FLOORS CEILINGS, MASONRY, EXISTING RENDERED SURFACES, MOLDINGS, DECORATIVE ELEMENTS, CLADDING, SHEET ROOFING AND FRAMING OR STRUCTURAL ELEMENTS.
5. REFER TO SERVICES ENGINEERS DRAWINGS FOR LOCATIONS OF ALL EXISTING SERVICES.
6. REFER TO SERVICES ENGINEERS DRAWINGS FOR ALL REMOVAL OF EXISTING ELECTRICAL, HYDRAULIC, MECHANICAL AND FIRE SERVICES
7. PRIOR TO REMOVAL OF INFILLS TO OPENINGS ENSURE THERE IS A LINTEL IN PLACE. REFER STRUCTURAL ENGINEER'S DOCUMENTATION FOR DETAILS.
8. REFER TO SPECIFICATION FOR EXTENT OF SALVAGE METHODOLOGY.
9. CLEAN MASONRY WALLS TO BE RETAINED WHERE STRUCTURE ADJACENT TO THE WALLS HAS BEEN REMOVED
10. FOLLOWING DEMOLITION ALL RUBBLE, DEBRIS AND DUST ARE TO BE REMOVED AND DISPOSED OFF SITE IN ACCORDANCE WITH ALL RELEVANT AUTHORITIES REQUIREMENTS AND GUIDELINES
11. FOR ASBESTOS REMOVAL WORKS REFER TO HAZARDOUS MATERIALS DIVISION 6 ASBESTOS AND HAZARDOUS MATERIALS AUDIT
12. ANY CONTAMINATED SOIL DISPOSE OFF SITE TO BE IN ACCORDANCE WITH EPA GUIDELINES AND INDUSTRIAL WASTE RESOURCE GUIDELINES.
13. CONTRACTOR IS TO MAKE GOOD ANY DAMAGE CAUSED DUE TO DEMOLITION WORKS. LIAISE WITH SUPERINTENDENT FOR REMEDIATION WORKS

GENERAL NOTES:

1. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE MENU OF METHODOLOGY FOR REPAIRS AND WORKS SCHEDULES.
2. REFER TO ARCHITECTURAL SPECIFICATION FOR DETAILS OF ALL FINISHES.
3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL SPECIFICATION.
4. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL CONSULTANT DOCUMENTATION.
5. ALL STRUCTURAL MEMBERS ARE INDICATIVE ONLY, REFER TO STRUCTURAL ENGINEERS DRAWINGS AND SPECIFICATIONS FOR ALL STRUCTURAL DETAILS.
6. CONTRACTOR IS TO CHECK ALL DIMENSIONS AND OTHER NECESSARY INFORMATION ON SITE PRIOR TO COMMENCING WORKS OR PREPARING SHOP DRAWINGS. NOTIFY THE SUPERINTENDENT OF ANY OMISSIONS OR DISCREPANCIES AND SEEK WRITTEN ADVICE PRIOR TO PROCEEDING.
7. DO NOT SCALE OFF DRAWINGS, USE DIMENSIONS ONLY.
8. CONTRACTOR IS TO CHECK ALL FLOOR LEVELS, DOOR AND WINDOW DETAILS AND ENSURE ALL ALIGNMENTS ARE ACHIEVED. ENSURE FLOOR STRUCTURAL MEMBERS ARE FIRE RATED AS REQUIRED.
9. CONTRACTOR TO VERIFY PROPOSED LEVELS ON SITE PRIOR TO COMMENCING WORKS. NOTIFY THE SUPERINTENDENT OF ANY OMISSIONS OR DISCREPANCIES AND SEEK WRITTEN ADVICE PRIOR TO PROCEEDING.
10. PROVIDE DETAILED SHOP DRAWINGS INCLUDING BUT NOT LIMITED TO: STRUCTURAL STEEL, CONCRETE, WINDOWS, DOORS, STAIRS, BALUSTRADES, HAND RAILS, INTERPRETATION PANELS, LIFTS AND LIFT SHAFTS AS WELL AS ALL SERVICES FOR SUPERINTENDENT'S APPROVAL PRIOR TO MANUFACTURING.
11. FULLY COORDINATE STAIR SHOP DRAWINGS WITH STEEL SHOP DRAWINGS PRIOR TO SUBMISSION.
12. PROVIDE SHOP DRAWING FOR ACCESS LADDERS AND HATCHES.
13. ALL STEEL WELDED JOINTS TO BE CHAMFERED AND GRINDED TO FLAT SURFACES.
14. ALL TIMBER FRAMING SIZES THAT ARE TO BE REPLACED WITH NEW TO MATCH EXISTING SIZES.
15. INSTALL ACCESS HATCHES AND LADDERS TO SPECIFICATION.
16. INSTALL TERMITE PROTECTION TO ALL JUNCTIONS BETWEEN NEW AND EXISTING STRUCTURES AS PER MANUFACTURER'S SPECIFICATION, DETAILS AND INSTALLATION MANUAL. PROVIDE SHOP DRAWINGS FOR EACH LOCATION.
17. DRAWINGS AT A LARGER SCALE TAKE PRECEDENCE OVER DRAWINGS OF A SMALLER SCALE.
18. ALL WORK TO COMPLY WITH RELEVANT AUSTRALIAN STANDARDS AND RELEVANT SPECIFICATIONS.
19. SETOUT IS TO BE IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS
20. SETOUT OF FITTINGS TO BE CONFIRMED WITH SUPERINTENDENT PRIOR TO COMMENCING ROUGH IN.
21. SWITCH PLATES TO BE MOUNTED 1100MM ABOVE FFL TO CENTRE OF PLATE. WHERE POSSIBLE GROUP ADJACENT SWITCHES TO SINGLE PLATE
22. CONFIRM LOCATION OF ALL EXTERNAL WALL MOUNTED LIGHT FITTINGS WITH SUPERINTENDENT PRIOR TO WIRING. LIGHTS SHOWN INDICATIVE OF EXTENT ONLY.
23. REFER TO ELECTRICAL ENGINEERS DOCUMENTATION FOR EMERGENCY LIGHTING.
24. ACCESS LADDERS TO ROOF SPACES ARE TO COMPLY WITH BCA CLAUSE D2.13 OR IN ACCORDANCE WITH AS 1657.
25. ALL DESIGN AND INSTALLATION OF ROOFING TO COMPLY WITH AS1562.1.
26. ALL ROOF PLUMBING TO COMPLY WITH AS/NZS 3500.3.2.
27. ALL RAIN WATER GOODS MATERIAL TO COMPLY WITH AS/NZS 2179.1.
28. ALL FLASHING AND CAPPING TO COMPLY WITH AS/NZS 2904.
29. CONNECT NEW STORMWATER SERVICES TO EXISTING LEGAL POINT OF DISCHARGE TO THE SATISFACTION OF THE REGULATING AUTHORITY.
30. ALL HYDRAULIC SERVICE RISER PIPES TO BE WRAPPED WITH 4KG/M² ACOUSTIC PIPE LAGGING.
31. ALL MECHANICAL SERVICE RISERS TO BE SELF-SUPPORTING PROMADUCT L-500 AND LINED IN PAINTED 13MM PLASTERBOARD WHERE EXPOSED.
32. NO SERVICE PENETRATIONS ARE PERMITTED TO FIRE-ISOLATED EXITS UNLESS DIRECTLY SERVING THE STAIR ITSELF.
33. ACCESS AND EGRESS FROM ROOF SPACE, PLANT ROOMS, LIFT MACHINE ROOMS AND LIFT PITS TO BE IN ACCORDANCE WITH AS 1657.
34. ALL SERVICES, ELECTRICAL METERS OR DISTRIBUTION BOARDS LOCATED IN THE PATHS OF TRAVEL TO AN EXIT MUST BE ENCLOSED IN NON-COMBUSTIBLE WITH SMOKE SEALS TO ENCLOSURE DOORS
35. REFER SERVICES ENGINEERS DOCUMENTATION FOR PROPOSED WORKS TO AND CONNECTION TO EXISTING SERVICES. BEFORE COMMENCING WORKS INSPECT THE SITE AND OBTAIN MEASUREMENTS AND OTHER NECESSARY INFORMATION AS REQUIRED
36. FOR WALL MOUNTED LIGHTING FITTINGS, WIRING TO BE RETICULATED FROM INSIDE THE BUILDING.
37. ALL NEW SERVICES AND WIRING TO BE CONCEALED OR INSTALLED IN CUSTOM TIMBER DUCT ENCLOSURE PAINTED TO MATCH EXISTING SCHEME AS DOCUMENTED.

WINDOWS AND DOORS WORKS NOTES:

1. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF ALL WINDOWS AND DOORS FOR THE SUPERINTENDENTS APPROVAL PRIOR TO THE COMMENCEMENT OF WORKS.
2. THE CONTRACTOR SHALL PROVIDE PROTOTYPE OF WINDOW/DOOR INCLUDING INSTALLATION FOR APPROVAL.
3. ALL DIMENSIONS ARE NOMINAL ONLY, CONTRACTOR TO CONFIRM ALL BUILT DIMENSIONS ON SITE PRIOR TO MANUFACTURE.
4. ALL GLAZING TO COMPLY WITH AS 1288 AND AS 2047 AS PER THE SPECIFICATION.
5. REFER TO HARDWARE SCHEDULE FOR ALL HARDWARE DETAILS.
6. ALL SMOKE DOORS ARE TO BE PROVIDED WITH "SMOKE DOOR SEAL".
7. GLAZED DOORS AND WALLS TO HAVE VISIBILITY DECAL IN ACCORDANCE WITH AS1428.

WALL CONSTRUCTION

WALL TYPE 01
EXISTING LOADBEARING MASONRY WALL. FINISH AS SELECTED. EXTERNAL FACE RENDERED.
REQUIRED ADDITIONAL SOUND INSULATION RATING NIL
REQUIRED FIRE RESISTANCE LEVEL AS SPECIFIED

209 — WALL TYPE 02
180mm TICK CONCRETE PRECAST LIFT SHAFT WALL, 16mm FURRING CHANNEL ON ONE SIDE OF THE WALL + 13mm PLASTERBOARD. FINISH AS SPECIFIED
REQUIRED SOUND INSULATION RATING NIL
REQUIRED FIRE RESISTANCE LEVEL 120/120/120

176 — WALL TYPE 03
90x45mm TIMBER STUD AT 600mm CTS; HORIZONTAL NOGGING AS REQUIRED; 1x20mm THICK *PROMATECT 100* BOARD ON ONE SIDE OF STUD; ALL GAPS CAULK WITH *PROMASEAL-A* SEALANT. PAINT FINISH AS SPECIFIED; 20mm GAP + 52mm THICK SELF-SUPPORTING *PROMATECT-L500 DUCT SYSTEM* ON OTHER SIDE.
REQUIRED SOUND INSULATION NIL
REQUIRED FIRE RESISTANCE LEVEL 120/120/120

227 — WALL TYPE 03a
90x45mm TIMBER STUD WALLAT 600mm CTS; HORIZONTAL NOGGING AS REQUIRED; 1x20mm THICK *PROMATECT 100* BOARD ON ONE SIDE OF STUD; ALL GAPS CAULK WITH *PROMASEAL-A* SEALANT. PAINT FINISH AS SPECIFIED; 75mm GAP + 52mm THICK SELF-SUPPORTING PROMATEC-L500 DUCT SYSTEM ON OTHER SIDE.
REQUIRED SOUND INSULATION NIL
REQUIRED FIRE RESISTANCE LEVEL 120/120/120

116 — WALL TYPE 04
90mm TIMBER STUD WALL; 1X13mm THICK PLASTERBOARD TO BOTH SIDES OF THE STUD. PAINT FINISH AS SPECIFIED
INSULATION MIN 90mm THICK WITH 32kg/m³ DENSITY
REQUIRED FIRE RESISTANCE LEVEL -/-/-

103 — WALL TYPE 04a
90mm TIMBER STUD WALL; 1X13mm THICK PLASTERBOARD TO ONE SIDES OF THE STUD. PAINT FINISH AS SPECIFIED
INSULATION MIN 90mm THICK WITH 32kg/m³ DENSITY
REQUIRED FIRE RESISTANCE LEVEL -/-/-

130 — WALL TYPE 05
90X45mm TIMBER STUD WALL AT MAX. 600mm CTRS; 1X20mm THICK PROMATECT 100 BOARD ON BOTH SIDES OF THE STUD; ALL PERIMETER GAPS CAULK WITH *PROMASEAL_A* SEALANT. FINISH AS SPECIFIED
INSULATION MIN 90mm THICK WITH 32kg/m³ DENSITY
REQUIRED FIRE RESISTANCE LEVEL 120/120/120

148 — WALL TYPE 06
90mm TIMBER STUD WALL; 1X9mm THICK WET AREA FIBRE CEMENT LINING + 20mm THICK WALL TILES TO BOTH SIDES OF THE STUDO N PROPRIETOR FIXING SHELF/ BRACKETS.
INSULATION MIN 90mm THICK WITH 32kg/m³ DENSITY
REQUIRED FIRE RESISTANCE LEVEL -/-/-

132 — WALL TYPE 06A
90mm TIMBER STUD WALL; 1X9mm THICK WET AREA FIBRE CEMENT LINING + 20mm THICK WALL TILES TO ONE SIDE OF THE STUD ON PROPRIETOR FIXING SHELF/ BRACKETS; 13mm THICK PLASTERBOARD TO OTHER SIDE WHERE REQUIRED.
PAINT FINISH AS SPECIFIED
INSULATION MIN 90mm THICK WITH 32kg/m³ DENSITY
REQUIRED FIRE RESISTANCE LEVEL -/-/-

134 — WALL TYPE 07
90mm TIMBER STUD WALL;13mm THICK PLASTERBOARD + 18mm THICK PLYWOOD TO ONE SIDE OF STUD; 13mm PLASTERBOARD TO OTHER SIDE. PAINT FINISH AS SPECIFIED
INSULATION MIN 90mm THICK WITH 32kg/m³ DENSITY
REQUIRED FIRE RESISTANCE LEVEL -/-/-

146 — WALL TYPE 08
90x45mm TIMBER STUD FRAMING; 9mm THICK COMTEX FACADE PANEL TO 35mm TOP HATS, VAPOUR PERMEABLE MEMBRANE TO EXTERNAL SITE OF FRAMING; 9mm 9mm THICK FIBRE CEMENT SHEETING INTERNALLY. PAINT FINISH
INSULATION MIN 75mm THICK WITH 14kg/m³ DENSITY
JAMES HARDIE D3-COMTEX FACADE SYSTEM
ACRYLIC TEXTURED RENDER FINISH COATING SYSTEM
REQUIRED FIRE RESISTANCE -/-/-

150 — WALL TYPE 09
150mmTHICK PRECAST CONCRETE PANEL. FINISH AND COLOUR AS SPECIFIED.
REQUIRED FIRE RESISTANCE -/-/-

WALL FINISHES LEGEND:

BS	BLUESTONE WALL - EXISTING
PBS	PAINTED BLUESTONE WALL - EXISTING
BK	BRICK WALL - EXISTING
PBK	PAINTED BRICK WALL - EXISTING
CB	CONCRETE BLOCKS WALL - EXISTING
PCB	PAINTED CONCRETE BLOCKS - EXISTING
RE	RENDERED WALL - EXISTING
HP	HARD PLASTER - EXISTING
PT	PAINTED TIMBER LINING - EXISTING
TS	TIMBER SKIRTING - EXISTING
TB	TIMBER BALUSTRADE - EXISTING
SP	PAINTED STEEL PIPE HANDRAILS - EXISTING
NTL	NEW TIMBER LINING
NTS	NEW TIMBER SKIRTING- TO MATCH EXISTING
NRE	NEW RENDER- TO MATCH EXISTING
PB	NEW PAINTED PLASTERBOARD
PFB	NEW PAINTED FIRE RATED BOARD
PCP	NEW PRECAST CONCRETE PANEL
NCB	NEW PAINTED CONCRETE BLOCKS WALL
IP	INTERPRETATION PANEL

FLOOR FINISHES LEGEND:

XCO	CONCRETE FLOORING / THRESHOLD - EXISTING
XCP	PAINTED CONCRETE FLOORING - EXISTING
XTF	TIMBER FLOORING - EXISTING
XTG	TIMBER T&G FLOORING - EXISTING
XVF	VINYL FLOORING - EXISTING
XCF	CARPET FLOORING - EXISTING
XBS	BLUESTONE THRESHOLD - EXISTING
NTF	NEW TIMBER T&G FLOORING
TL1	NEW TILE FLOORING
TL2	NEW TILE FLOORING
NTD	NEW TIMBER DECK
BSP	NEW BLUESTONE PAVING / THRESHOLD
COR	NEW CORK FLOORING
STL	STEEL PLATE
TAC	TACTILE INDICATORS
ASP	ASPHALT

TAG LEGEND

XX	WALL TYPE / LININGS
W-XX	WINDOW TYPE
D-XX	DOOR TYPE
XXX	FINISH TYPE
XXXX	FITTING TYPE
SK-XX	ROOF LIGHT
TR-XX	THRESHOLD TYPE
AL	ACCESS LADDER
V	MECHANICAL VENT
OF	OVERFLOW
00	METHOD OF REPAIRS

GENERAL NOTES:

1. LIGHT WEIGHT WALLS DIMENSIONS TAKEN TO WALL FRAMING NOT LININGS
2. MASONRY WALLS: DIMENSIONS TAKEN TO MASONRY WALL NOT STEEL FRAMING

WINDOWS AND DOORS NUMBERING

XDG00
- EXISTING (X) / NEW (N)
- DOOR / WINDOW NUMBER
- GROUND FLOOR(G) / FIRST(F) / SECOND(S)
- DOOR (D) / WINDOW (W)

JOINERY NUMBERING

- GROUND FLOOR(G) / FIRST(F) / SECOND(S)
- JOINERY NUMBER

REFLECTED CEILING PLAN LEGEND:

CEILING LININGS:

-S	SUSPENDED CEILING
-D	DIRECT FIX
PB	PAINTED PLASTERBOARD
PBW	PAINTED WET AREA PLASTERBOARD
TMB	EXISTING TIMBER LINING
CH 0.000	CEILING HEIGHT ABOVE FINISHED FLOOR LEVEL

EMERGENCY LIGHT FITTINGS:

EM1	RECESSED EMERGENCY LIGHT
EM2	SURFACE MOUNTED EMERGENCY LIGHT CYLINDER
EM3	SURFACE MOUNTED EMERGENCY LIGHT BOX
C1E	SURFACE MOUNTED EMERGENCY DOWNLIGHT
EXIT	SURFACE MOUNTED LED EXIT SIGN

LUMINAIRES:

D1	RECESSED DOWNLIGHT
C1E	RECESSED DOWNLIGHT
C1E	CEILING MOUNTED DOWNLIGHT
L1	CEILING MOUNTED LED LIGHT FITTING & DIFFUSER
L2	CONCEALED LINEAR LED LIGHT FITTING & DIFFUSER
S1	TRACK MOUNTED SPOTLIGHT
S2	TRACK MOUNTED WALL WASHER
T1	TRACK - SUSPENDED

FIRE SERVICES:

S	FLUSH MOUNT SPEAKER
S	HORN SPEAKER WALL MOUNTED
SD-S	SMOKE DETECTOR - SURFACE MOUNTED
F	FLUSH SPRINKLER WITH COVERPLATE
F	SPRINKLER HEAD WITH METAL GUARD

SECURITY:

CFS	CCTV DOME CAMERA - CEILING MOUNTED
SM	SENSOR MOTION - CEILING MOUNTED

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NO.	DATE	REVISION
T1	19/02/2018	TENDER ISSUE

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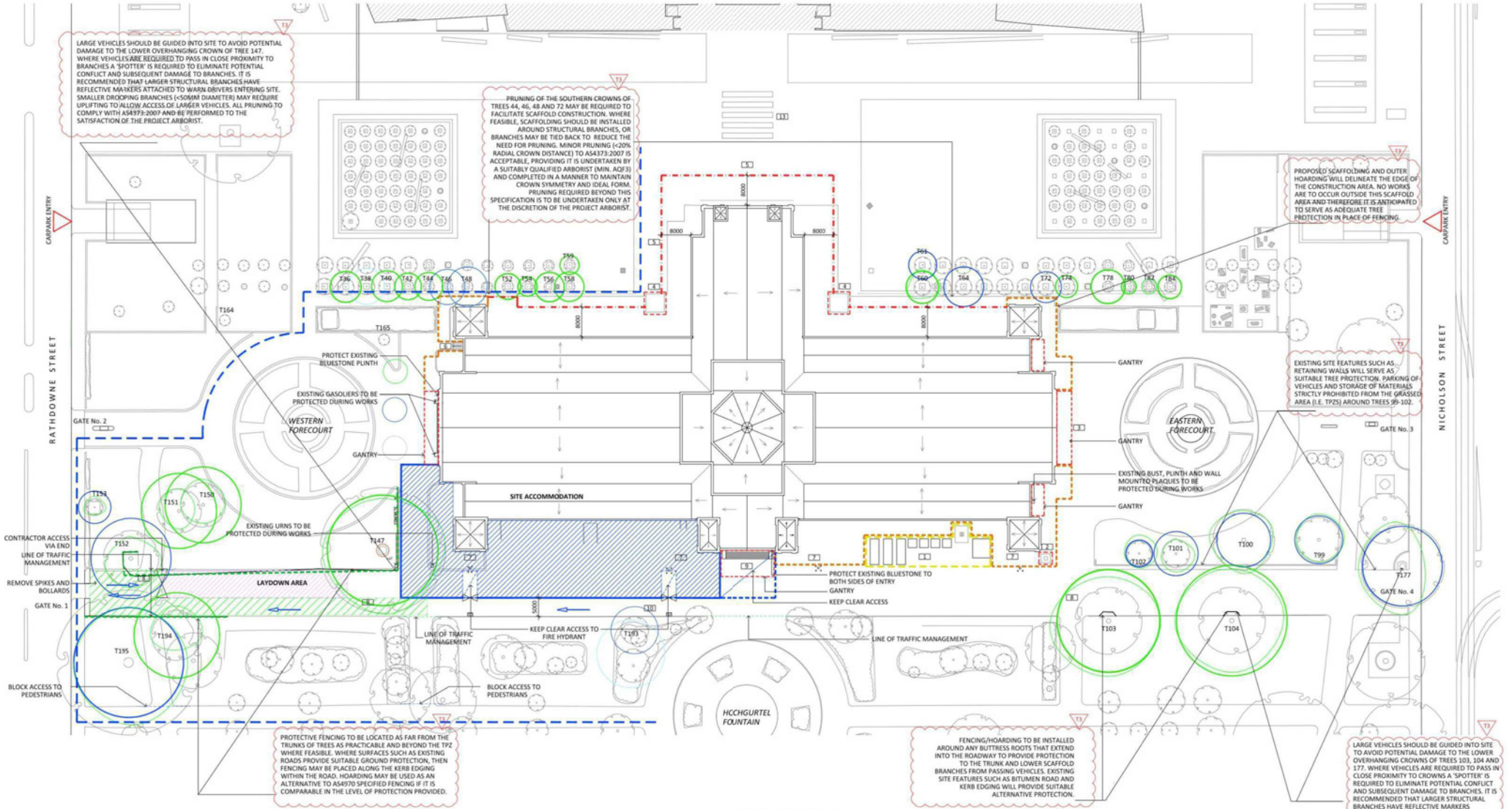
PROJECT
ROYAL EXHIBITION BUILDING
PROTECTION AND PROMOTION

DRAWING TITLE
GENERAL NOTES AND LEGEND

DRAWN	CHECKED	PROJECT NO.	DATE	ISSUE	SCALE	DRAWING NO.	REVISION
NV	AMT	7123	DEC 2017	TENDER	-	A0.02	T1



01 PROPOSED SITE ESTABLISHMENT PLAN
1:500

SITE PROTECTION LEGEND:

- PROTECTIVE COVER OVER EXISTING PAVING
- SITE COMPOUND - PERMANENT HOARDING
- CLOSED CONSTRUCTION AREA
- OPENED CONSTRUCTION AREA
- LAYDOWN AREA
- TRANSIT AREA
- TEMPORARY HOARDING
- MOBILE HOARDING
- GANTRY
- LINE OF TRAFFIC CONTROL
- WASTE BIN AREA
- T 000 TREE NUMBERING
- TRAFFIC MOVEMENT
- PEDESTRIAN TRAFFIC
- PROTECTIVE FENCING
- TPZ - CATEGORY A
- TPZ - CATEGORY B
- TPZ - CATEGORY C

FOR DETAILED TREE PROTECTION REFER TREE PROTECTION MANAGEMENT PLAN .

NOTES:

1. WASTE BIN AREA FOR REB OPERATIONS TO BE MAINTAINED AS SHOWN THROUGHOUT CONSTRUCTION PERIOD.
2. STONE OBELISK TO BE PROTECTED.
3. HOARDING TO WRAP INSIDE ARCHWAY AND ABOUT DOORWAY TO MAINTAIN PUBLIC ACCESS TO THE BUILDING.
4. HYDRANT AND AIR INTAKE TO BE PROTECTED AND ACCESS TO BE MAINTAINED.
5. MOBILE SCAFFOLD UNIT MINIMUM SPACE DIMENSION OF 8,000mm TO BE MAINTAINED.
6. ACCESS TO BE PROVIDED TO BUILDING (FOR BUILDING MAINTENANCE PERSONNEL).
7. HYDRANT ACCESS REQUIRED FOR MFB GATES IN HOARDING AND AREA SURROUNDING TO BE KEPT CLEAR. IN ACCORDANCE WITH STATUTORY REQUIREMENTS.
8. INSTALL AND MAINTAIN TRAFFIC MANAGEMENT IN ACCORDANCE WITH TRAFFIC MANAGEMENT PLAN.
9. 2019 FLOWER & GARDEN SHOW, PUBLIC ACCESS REQUIRED, THROUGH SOUTHERN ENTRANCE. HOARDING TO BE REVISED/ALTERED DURING THIS PERIOD.
10. DELIVERY ACCESS FROM NICHOLSON ST. EXIT RATHDOWNE ST.
11. ALL REB EMERGENCY EGRESS POINTS TO BE MAINTAINED. REFER EMERGENCY EGRESS PLANS INCLUDED IN SPECIFICATION.
12. REFER NORTH FORECOURT LOADING LIMITATIONS FOR CARPARK SLAB.
13. SITE ESTABLISHMENT TO BE IN ACCORDANCE WITH PRINCIPAL SUPPLIED CONSTRUCTION MANAGEMENT PLAN & ARCHITECTURAL SPECIFICATION. CONTRACTOR IS TO INSTALL ALL HOARDING, SCAFFOLDING & ACCESS IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS. REFER PRELIMINARIES, GENERAL REQUIREMENTS, ENVIRONMENTAL MANAGEMENT, SITE PREPARATION AND DEMOLITION SECTIONS.

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T1	19/02/2018	TENDER ISSUE
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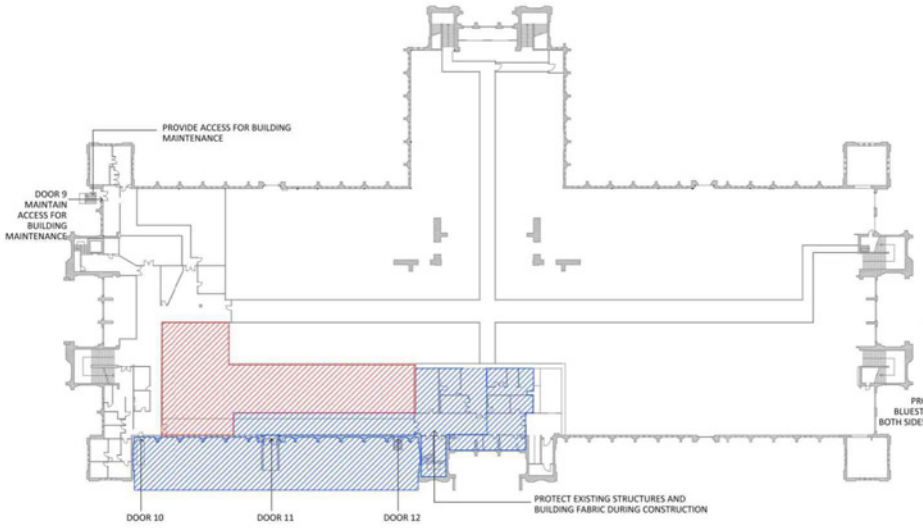
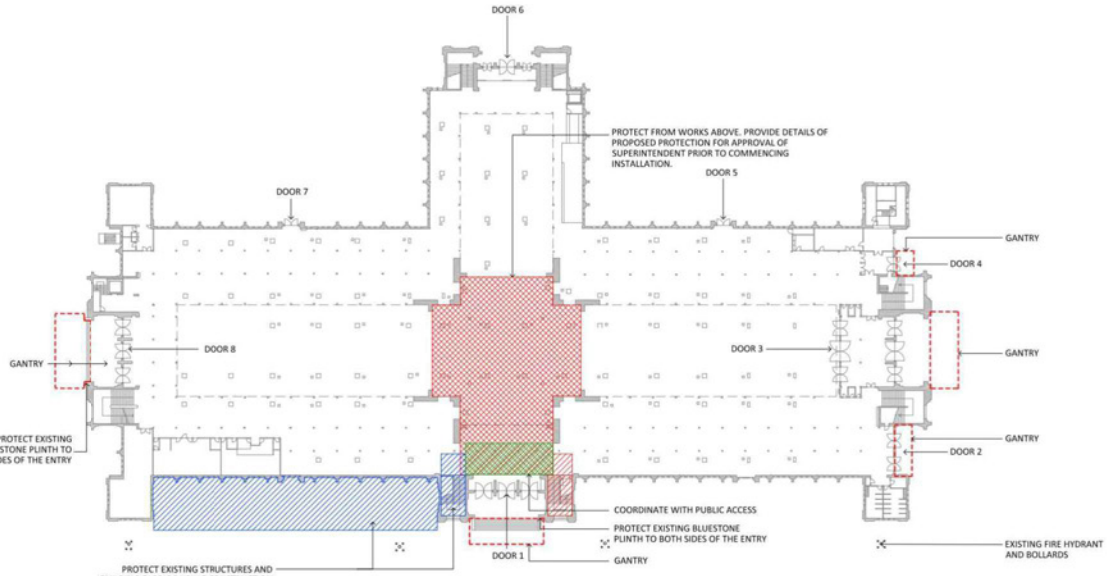
PROJECT
ROYAL EXHIBITION BUILDING
PROTECTION AND PROMOTION

DRAWING TITLE
PROPOSED SITE ESTABLISHMENT PLAN
& PROMOTION WORKS EXTENT

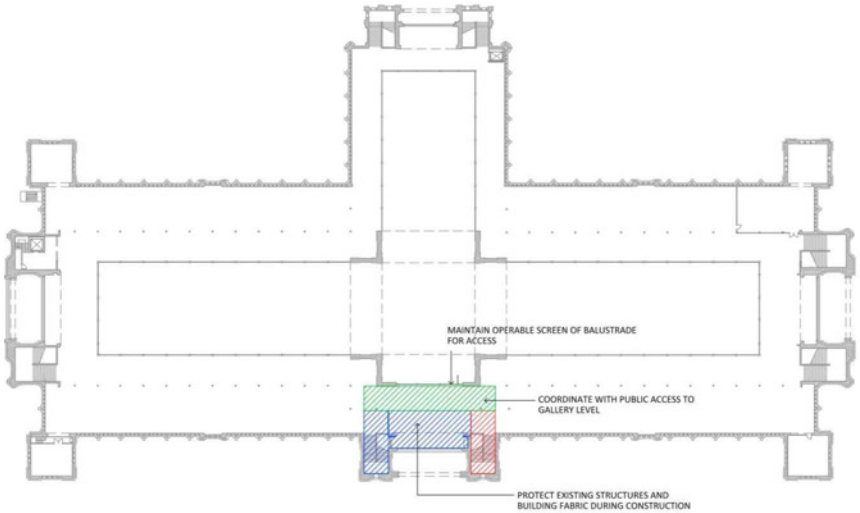
DRAWN	CHECKED	PROJECT NO.	DATE	ISSUE	SCALE	DRAWING NO.	REVISION
SH	AMT	7123	DEC 2017	TENDER	1:500@A1	A0.03	T3



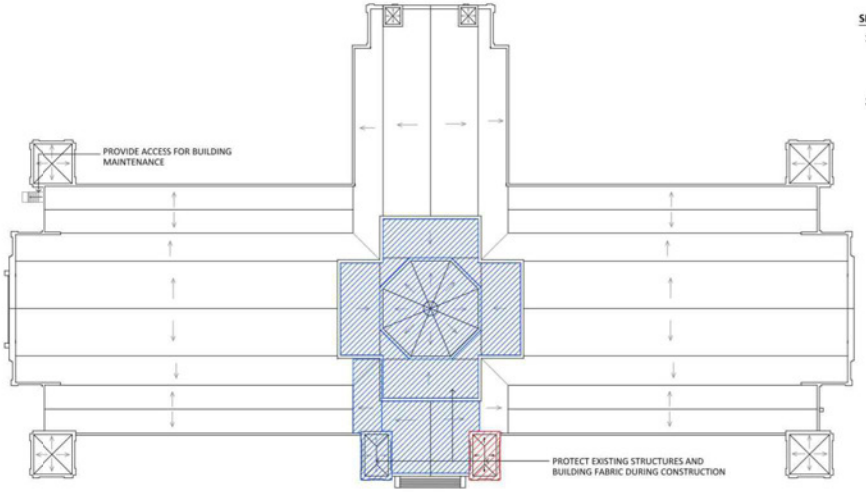
02 -- BASEMENT PLAN 1:500



03 -- GROUND FLOOR PLAN 1:500



04 -- FIRST FLOOR PLAN 1:500



05 -- ROOF PLAN 1:500

SITE ESTABLISHMENT & PROTECTION NOTES:

1. CONTRACTOR IS TO INSTALL ALL HOARDING, SCAFFOLDING & ACCESS IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS. REFER PRELIMINARIES, GENERAL REQUIREMENTS, ENVIRONMENTAL MANAGEMENT, SITE PREPARATION AND DEMOLITION SECTIONS.
2. REFER PRINCIPAL SUPPLIED CONSTRUCTION MANAGEMENT PLAN. CONTRACTOR IS TO ESTABLISH SITE AREA, TREE PROTECTION, TRAFFIC MANAGEMENT, STORMWATER PROTECTION & SCAFFOLDING IN ACCORDANCE WITH THE CONSTRUCTION MANAGEMENT PLAN UNLESS OTHERWISE AGREED WITH OR INSTRUCTED BY THE SUPERINTENDENT.

SITE PROTECTION LEGEND:

- LANDSCAPE & TREE PROTECTION ZONES
- PROTECTIVE COVER OVER EXISTING PAVING
- SITE COMPOUND - PERMANENT HOARDING
- CLOSED CONSTRUCTION AREA
- OPENED CONSTRUCTION AREA
- PROTECTED AREA FROM CONSTRUCTION ABOVE
- LAYDOWN AREA
- TRANSIT AREA
- TEMPORARY HOARDING
- MOBILE HOARDING
- GANTRY
- LINE OF TRAFFIC CONTROL
- WASTE BIN AREA
- T 000 TREE NUMBERING
- TRAFFIC MOVEMENT

GENERAL NOTE:

1. REFER FLOOR LOADING DIAGRAM FOR ALL INTERNAL FLOOR LOADING LIMITATIONS.

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NOTE: All dimensions are to be verified on site before commencing any work or preparing any shop drawings. Do not scale off drawings. Omissions or discrepancies are to be notified to the Architect.

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PROJECT
ROYAL EXHIBITION BUILDING
PROTECTION AND PROMOTION

DRAWING TITLE
SITE ESTABLISHMENT AND WORK EXTENT

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SH,NV	AMT	7123	DEC 2017	TENDER	1:500@A1	A0.04	T1

Appendix 2: Traffic Management Plan

TraffixGroup

Traffic Engineers and Transport Planners

Construction Traffic Management Plan (CTMP)

Building Restoration Works at Royal Exhibition Building

Prepared For

Museums Victoria

January, 2018

G24150-01B CTMP

Traffix Group Pty Ltd ABN 32 100 481 570
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Email: admin@traffixgroup.com.au

CONSTRUCTION TRAFFIC MANAGEMENT PLAN (CTMP)

Building Restoration Works
at
Royal Exhibition Building

Document Control

Issue No.	Type	Date	Prepared By	Approved By
A	Initial Issue	7/02/2018	A. Montgomerie	A. Coyle
B	Updated Issue	15/02/2018	J. Dunstone	A. Coyle

Our Reference: G24150-01B CTMP

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1 Introduction

Traffix Group has been engaged by Museums Victoria to prepare a construction traffic management plan (CTMP) report for the proposed building restoration works at the Royal Exhibition Building in Carlton.

This report provides a detailed traffic engineering assessment of the parking and traffic issues associated with construction activities for the proposed works.

2 Reference Documents

This Construction Traffic Management Plan (CTMP) has been prepared in accordance with:

- Road Management Act 2004 Code of Practice Worksite Safety - Traffic Management (2010),
- AS 1742.3 Manual of Uniform Traffic Control Devices Part 3: Traffic Control devices for Works on Roads (2009), and
- VicRoads Supplement to AS 1742.3 Manual of Uniform Traffic Control Devices Part 3: Traffic Control devices for Works on Roads (2015).
- City of Melbourne's Construction Management Guidelines (www.melbourne.vic.gov.au).

3 Site Information

3.1 Site Details

The subject site is located to the south of Melbourne Museum between Nicholson Street and Rathdowne Street, Carlton. A locality plan of the site is presented in Figure 1 and an aerial photograph in Figure 2.

The site is rectangular in shape, with frontages to Rathdowne Street and Nicholson Street.

Land-use in the immediate vicinity of the site is predominantly public use, with Melbourne Museum to the immediate north of the site and Carlton Gardens to the immediate south of the site.

The site is located within close proximity to the Melbourne CBD. The area includes a strong mixture of commercial, residential and community uses within close proximity to the site.

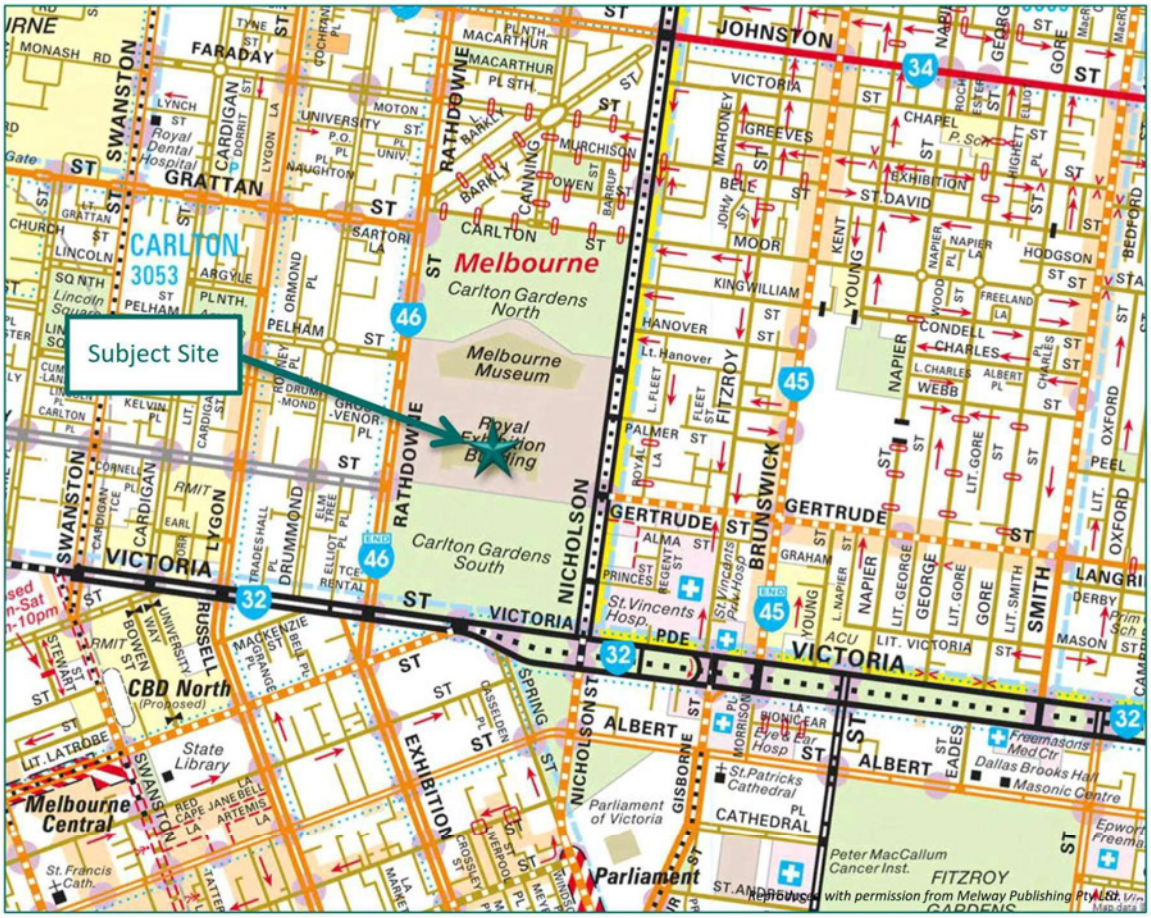
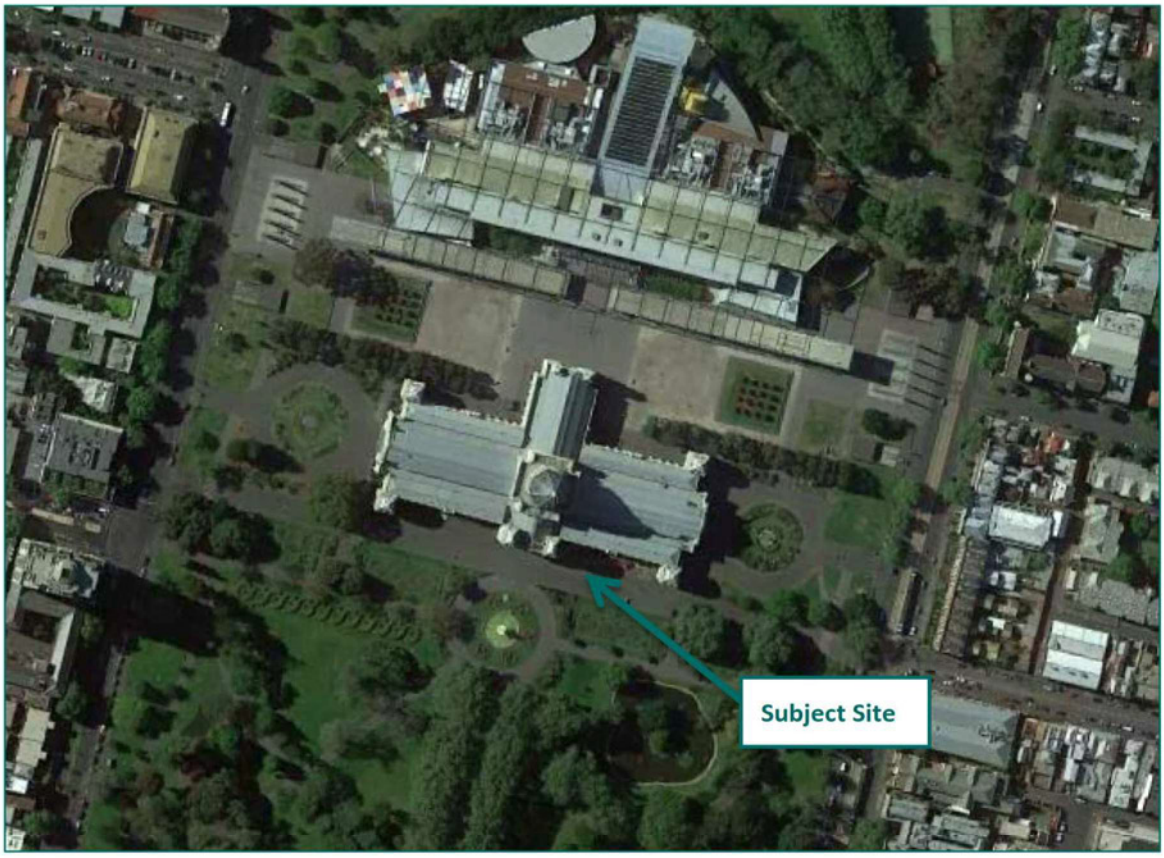


Figure 1: Locality Map



Source: Google Earth

Figure 2: Aerial Photograph

3.2 Road Network & Land Use

Nicholson Street is a VicRoads Declared Arterial Road and a Road Zone Category 1 under the Planning Scheme. Nicholson Street is generally aligned in a north-south direction between Albion Street in the north and Bourke Street in the south where it continues as Spring Street.

In the vicinity of the site, Nicholson Street accommodates two lanes of traffic in each direction. Nicholson Street also accommodates trams within the central median.

Parking along Nicholson Street is generally '2P Ticket 7:30am-6:30pm Mon-Fri 7:30am-12:30pm Sat'.

A speed limit of 60km/h applies to Nicholson Street in the vicinity of the site.

Rathdowne Street is a major council road aligned in a north-south direction between Park Street in the north and Victoria Street in the south where it continues as Exhibition Street.

In the vicinity of the site, Rathdowne Street accommodates two lanes of traffic in each direction.

Parking along Rathdowne Street is generally 'P Ticket 7:30am-6:30pm Mon-Fri 7:30am-12:30pm Sat'.

A speed limit of 40km/h applies to Rathdowne Street in the vicinity of the site.

South Drive is a wide, paved laneway which extends along the south boundary of the site, between Nicholson Street in the east and Rathdowne Street in the west.

South Drive has restricted access via gates on Nicholson Street with an exit only at Rathdowne Street.

Currently, the majority of vehicles access South Drive using the eastern forecourt (controlled by boom gates).

Victoria Street is a VicRoads Declared Arterial Road and a Road Zone Category 1 under the Planning Scheme. Victoria Street is generally aligned in an east-west direction between Burnley Street in the east, where it continues as Barkers Road and Anderson Street in the west.

In the vicinity of the site, Victoria Street accommodates three lanes of traffic in each direction. Victoria Street also accommodates trams within the central median east of La Trobe Street.

Parking along Victoria Street is generally '2P Ticket 9:30am-4pm, 6:30pm-8:30pm Mon-Fri 7:30am-8:30pm Sat' however a clearway is in place from 4pm-6:30pm Monday to Friday with no stopping between 7am and 9:30am Monday to Friday.

A speed limit of 60km/h applies to Victoria Street in the vicinity of the site.

Carlton Street is a Local Road aligned in an east-west direction between Nicholson Street in the east and Rathdowne Street in the west.

In the vicinity of the site, Carlton Street accommodates one lane of traffic in each direction.

Parking along Carlton Street is generally '2P 7:30am-6:30pm Mon-Sat, 1P 6:30pm-11pm Mon-Sat' or residential permit zones.

A speed limit of 50km/h applies to Carlton Street in the vicinity of the site.

Photos of the surrounding road network are shown in Figure 3 to Figure 6.

Figure 3: Rathdowne Street - View South to Victoria Street

Figure 4: Rathdowne Street - View North to Carlton Street

Figure 5: Nicholson Street - View North to Carlton Street

Figure 6: Nicholson Street - View South to Victoria Street

3.3 Responsible Road Authorities

VicRoads is the responsible road authority for Nicholson Street and Victoria Street.

Melbourne City Council is the responsible road authority for Rathdowne Street, Carlton Street and all other local streets in the vicinity of the subject site.

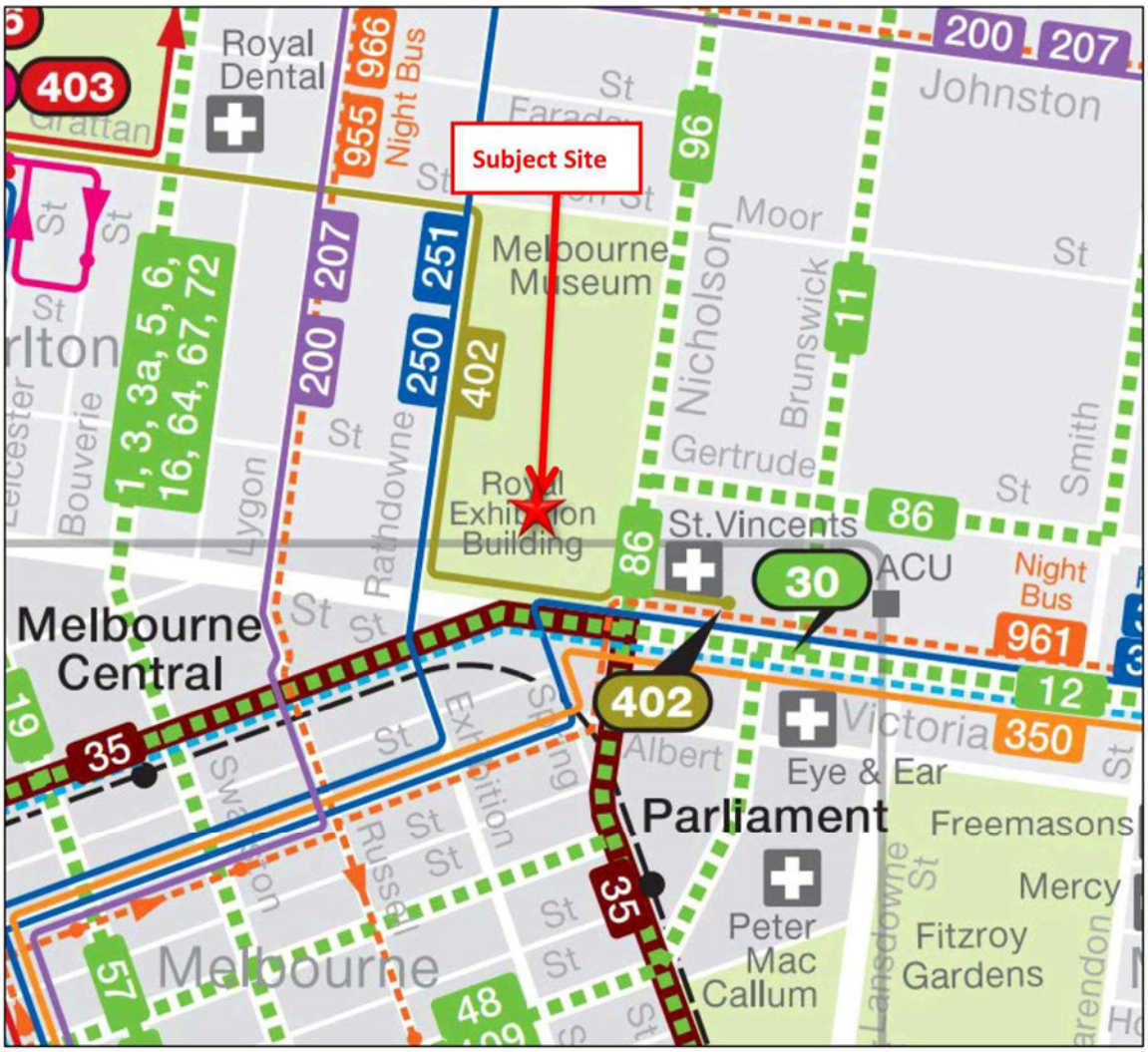
3.4 Public Transport

The site is located within close proximity to the Melbourne CBD and as such has excellent access to public transport services. The closest railway station is Parliament Railway Station, located 400m to the south-west of the site. Parliament Station is part of the City Loop and allows access to all metropolitan rail lines.

Three bus routes operate along the site's frontage to Rathdowne Street, with the closest bus stop located at the site's frontage.

Two tram routes operate along the site's frontage to Nicholson Street, with the closest tram stop located at the site's frontage.

Figure 7 below shows the public transport services in proximity to the subject site.



Source: PTV (http://ptv.vic.gov.au/)

Figure 7: Public Transport Map

4 Project Details

4.1 Construction Activities

This CTMP is for works that are proposed to be undertaken at the Royal Exhibition Building, for the restoration of the Heritage listed building. Details are included in Museums Victoria's Construction Management Plan (CMP).

4.2 Project Timing and Staging

The staging and estimated duration of works for the various stages of the project are outlined in the CMP and are expected to start in April 2018 and to conclude by October 2019.

Traffic management will be required throughout the project for the deliveries, loading, unloading and various construction activities at the site.

4.3 Work Hours

Museums Victoria will ensure working hours for general construction works, except where for practical reasons the activity is unavoidable (and thus communicated and approved by Council), are between:

- **Monday to Friday:** 7:00am to 7:00pm,
- **Saturday:** 7:00am to 7:00pm,
- **Good Friday, ANZAC day and Christmas day:** No construction activities, and
- **Sunday and all other public holidays:** Out of hours permits to be applied for as required.

4.4 Worker Parking

Museums Victoria advised that up to 100 workers will be working on-site at any one time during restoration works.

As such, workers will be encouraged to catch public transport with nearby bus, tram and railway stations. For those workers that drive, the Melbourne Museum offers a private underground carpark charging $17 for all day parking when entry is before 9:30am. As all other on street parking in the area is short term (e.g. 2P), it will be unsuitable for worker parking.

5 Restoration/Construction

Site layout and swept paths for the works are attached as Appendix A.

5.1 Site Opportunities and Constraints

Site opportunities:

- South Drive – 12.0 metre wide delivery access, no overhead power lines.
- Gertrude Street – allows through movement access to South Drive.
- Rathdowne Street – break in median for right turn movements to and from South Drive.

Site constraints:

- South Drive – overhead tree canopies.
- Nicholson Street – High volume, two lane carriageway.
- Rathdowne Street – Moderate volume, two lane carriageway.
- Melbourne Museum Forecourt – Load restrictions apply within this area (refer to Loading Plan Arup – November 2011 Project Number 220332.00 for details).

5.2 Site Layout

5.2.1 North Side

Key traffic management features of this area are:

- Install mobile hoarding (i.e. hoarding that can be moved as required) along the site with temporary scaffolding as required .
- Diversion of pedestrian movement around the west side of the building and along Rathdowne Street for access to Carlton Gardens.

5.2.2 West Side

Key traffic management features of this area are:

- Install permanent timber hoarding along the closed construction laydown area up to the western building entrance.
- Install a gantry and scaffolding over the western building entrance, maintaining access for pedestrians entering and exiting the building.
- Use of existing crossover to Rathdowne Street to exit the site.
- Install temporary hoarding on the north side of the western building entrance, to separate pedestrians from the scaffolding.

5.2.3 South Side

Key traffic management features of this area are:

- Install permanent timber hoarding along the closed construction area.

- Remove parking along north side of South Drive.
- Remove some parking along south side of South Drive.
- Maintain 5m wide laneway along South Drive for westbound traffic access.
- Use of existing crossovers to access (Nicholson Street) and egress (Rathdowne Street) the site.
- Maintain access to existing fire hydrants.
- Provision of site accommodation on the north side of South Drive between the western side of the building and Rathdowne Street.
- Maintain access to waste bin area.
- Install a gantry and scaffolding over the southern building entrance, maintaining access for pedestrians entering and exiting the building.
- Provide gateways for fire hydrant access.

5.2.4 East Side

Key traffic management features of this area are:

- Use of existing crossovers (Nicholson Street) to access the site.
- Install a gantry and scaffolding over the eastern building entrance, maintaining access for pedestrians entering and exiting the building.
- Install temporary hoarding on either side of the eastern building entrance, to separate pedestrians from the scaffolding.

5.3 Truck Movements

The project team has estimated the following truck movements during the project.

Table 1: Stage 1 Truck Movements

Item	Semi-Trailers / Truck & Trailers per day (up to 19m)	Rigid Truck per day (12.5m)	Rigid Truck per day (8.8m)	Other Vehicles per day (up to 8.8m)
Early Works & Construction	2	2	2	10

5.4 Truck Access Routes

Trucks will access the work site by travelling westbound on Gertrude Street and entering South Drive using the signalised intersection at Nicholson Street. To depart the site, trucks will exit South Drive at Rathdowne Street.

A map outlining the proposed truck access routes is presented in Figure 8. The general access route for trucks are shown with green lines and the exit routes are shown with red lines. Larger trucks may be required to enter via the through movement from Gertrude Street.

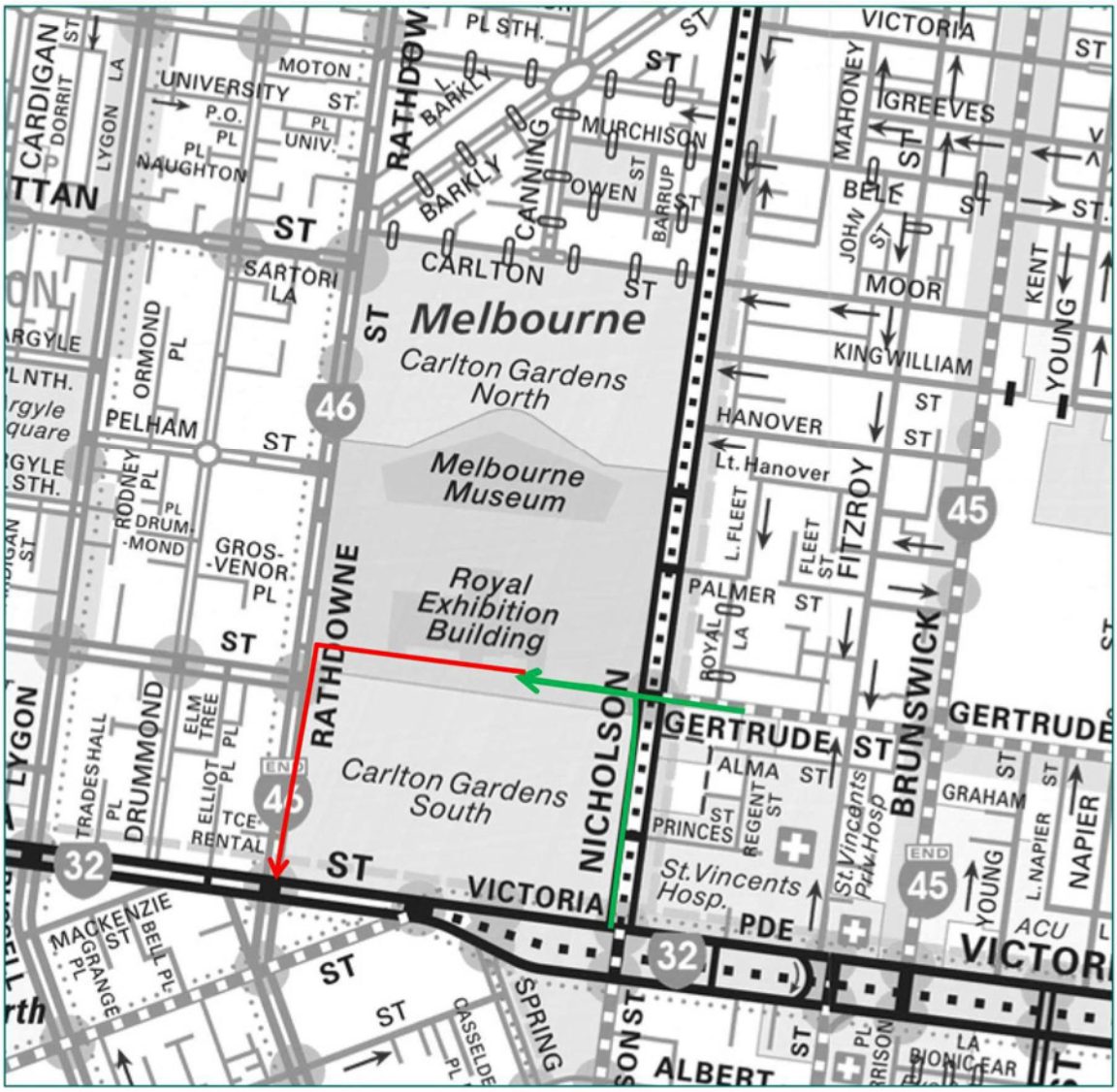


Figure 8: Truck Access & Egress Routes

Due to the nature of the work, truck volumes for this site will be low. In addition, there is approximately 70m of storage area for trucks within the closed construction area on site. Therefore, no trucks will be required to wait or hold on Nicholson Street.

5.5 Swept Paths

Swept paths have been prepared for the critical truck movements in Appendix A.

5.6 Traffic Management Plans

Traffic management plans for this stage are included in Appendix A.

5.7 Parking

The following changes to parking are proposed:

- Parking on the south side of South Drive to be replaced with No Stopping.
- The existing parking on the north side of South Drive to be removed to enable use as construction areas.

Parking on South Drive is generally only used by exhibitors to exhibitions. Museums Victoria will arrange alternative parking for exhibitors during the construction period.

5.8 Pedestrians / Cyclists

The multiple footpaths that connect the Melbourne Museum and Royal Exhibition to the Carlton Gardens will be affected by the works. Pedestrians will be detoured around the worksites.

It is understood that although not permitted in the Carlton Gardens, a large volume of cyclists use South Drive to cross the Carlton Gardens to move between Gertrude Street and Rathdowne Street. As a result, access along South Drive for cyclists will be maintained via a 5m wide westbound laneway that will be shared with vehicles. No other bicycle facilities will be affected by the works.

Signage will be used to provide warning of the changed traffic conditions.

5.9 Public Transport

During truck entry and exit movements there will be no delays to public transport services.

5.10 Traffic Impacts

The following roads will be impacted by the works:

- Nicholson Street – minor impacts during truck movements to the site.
- Rathdowne Street – minor impacts during truck movements from the site.

6 Key Stakeholders

6.1 VicRoads

As the posted speed limits will not be reduced, a Memorandum of Authorisation (MoA) is not required from VicRoads.

6.2 Yarra Trams

As the tram services operate in the central median of Nicholson Street, there will be no impacts on trams.

6.3 Bus Operator

Bus routes 250, 251 and 402 operate along Rathdowne Street. There will be no impacts on bus services as exiting trucks will give way to all southbound traffic on Rathdowne Street.

6.4 Bicycle Network

Bicycle movements along Rathdowne Street will not be affected.

Bicycle movements along South Drive will be facilitated by providing a 5m wide laneway.

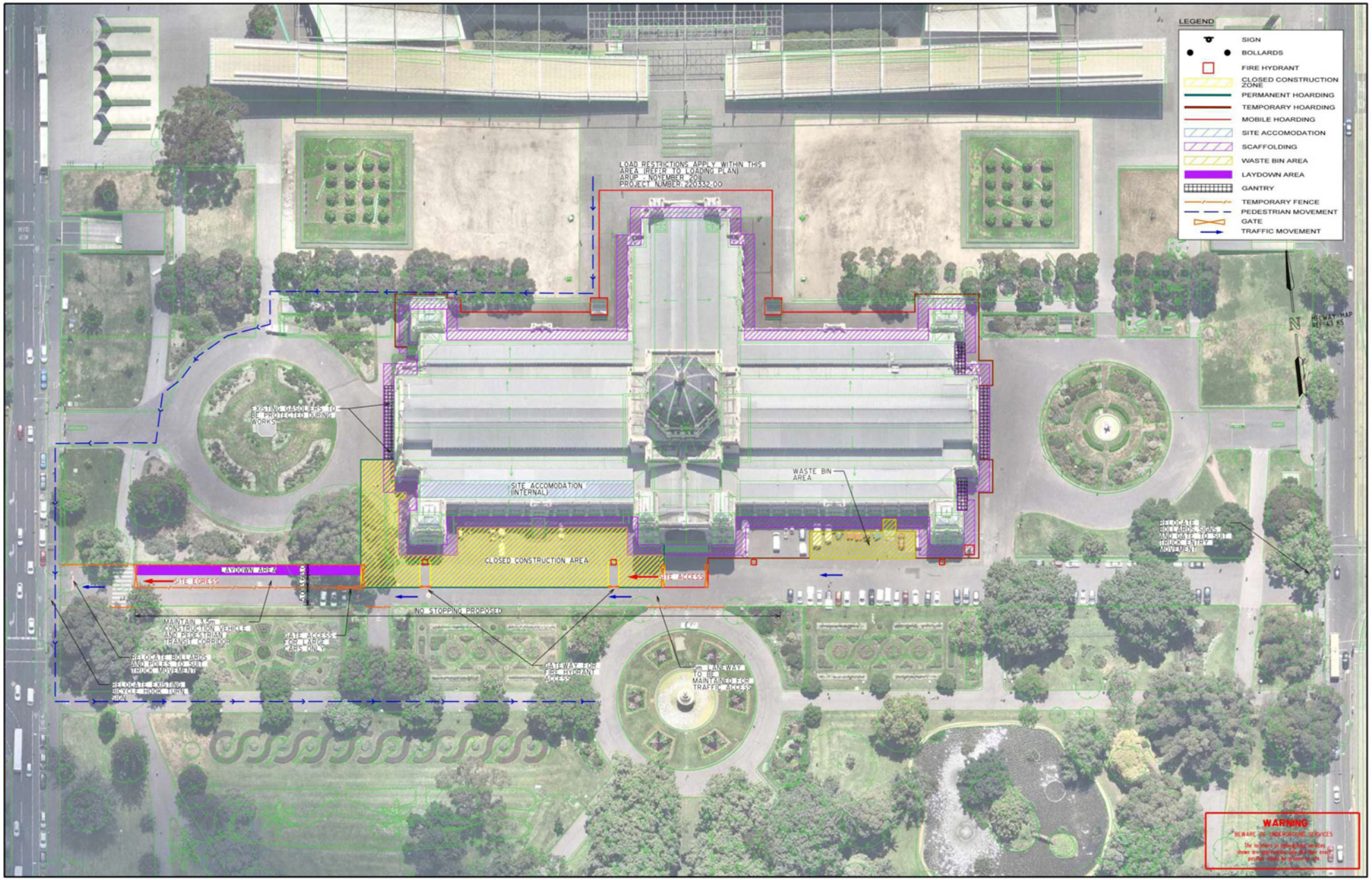
7 Further Information

Further information regarding this CTMP can be obtained by contacting the personnel in Table 2.

Table 2: Contact Details

Name	Company	Tel:	Email:
David Barker	Museums Victoria	8341 7239	dbarker@museum.vic.gov.au
Anthony Coyle	Traffix Group	9822 2888	anthony@traffixgroup.com.au

Appendix A:
Plans and Swept Paths



ISSUE	ISSUE DESCRIPTION	ISSUE DATE
B	CLIENT COMMENTS ADDED	07 FEB 2018
A	INITIAL ISSUE	25 JAN 2018

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP NOV 2017)
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DESIGNED
S LAW 07 FEB 2018

CHECKED/APPROVED
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FILE NAME
G24150-01.dgn

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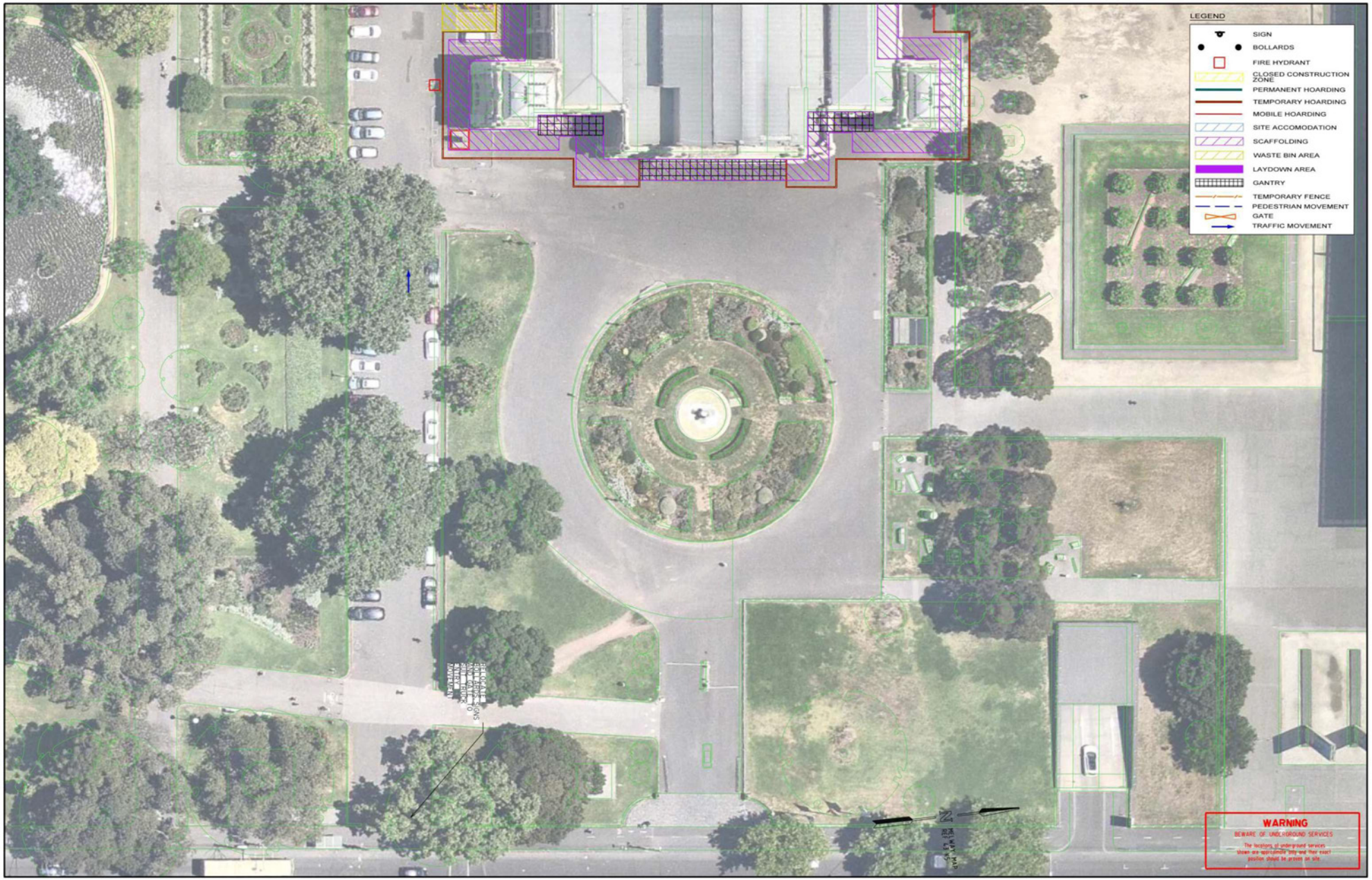
Traffic Engineers and Transport Planners
Suite 8/431 Burke Road TEL: (03) 9822-2888
GLEN IRIS VICTORIA 3146 FAX: (03) 9822-7444
www.traffixgroup.com.au

ROYAL EXHIBITION BUILDING - CARLTON
BETWEEN RATHDOWNE & NICHOLSON STREETS
MELBOURNE CITY COUNCIL
SITE LAYOUT

SCALE 0 5 10 15 20 | SHEET No. 1 of 2 | DWG No. G24150-01-01

FOR CONTINUATION REFER TO G24150-01-12



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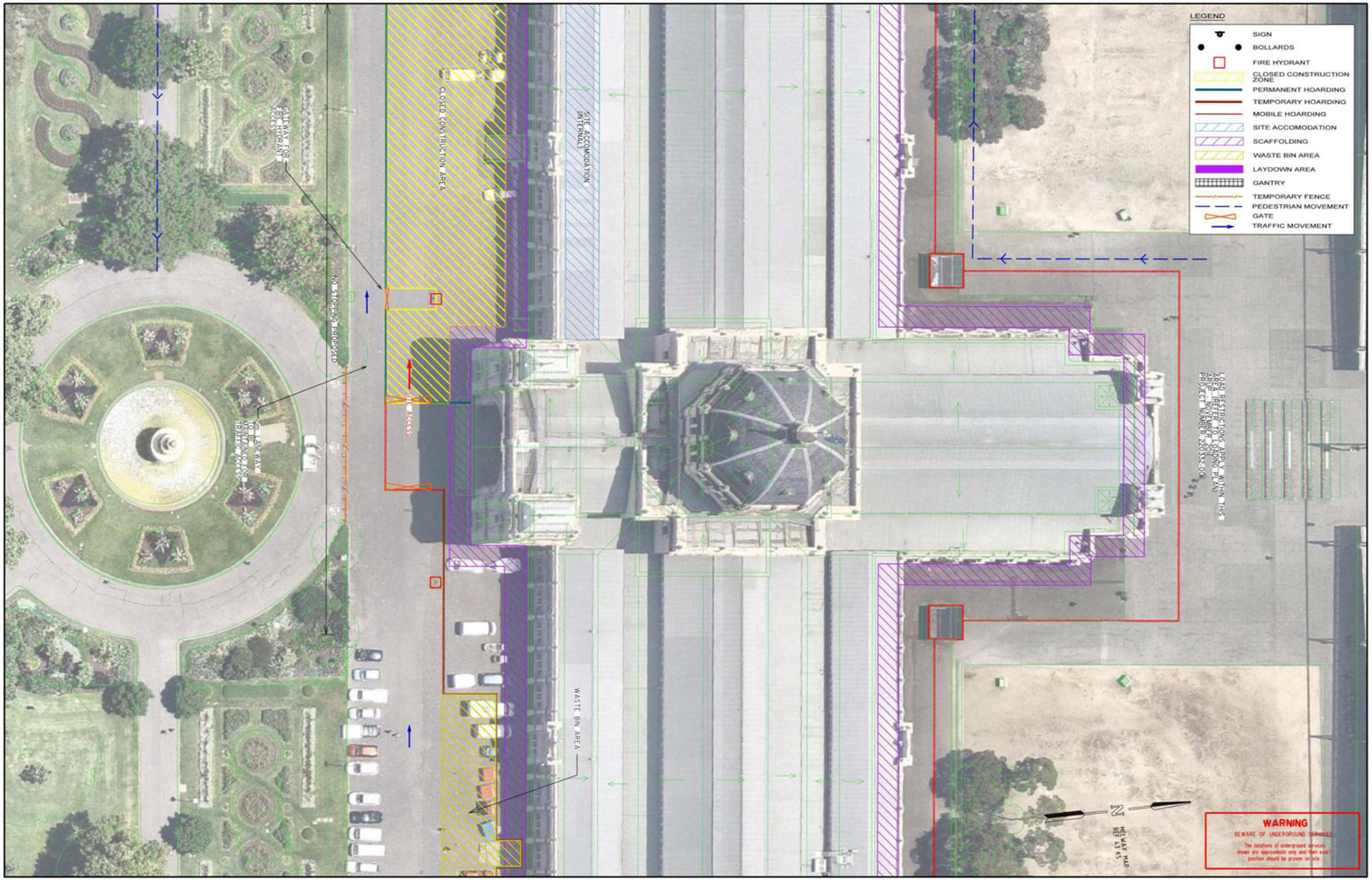
SCALE 0 2.5 5 7.5 10 | SHEET No. 1 of 6 | DWG No. G24150-01-11

FOR CONTINUATION REFER TO G24150-01-13



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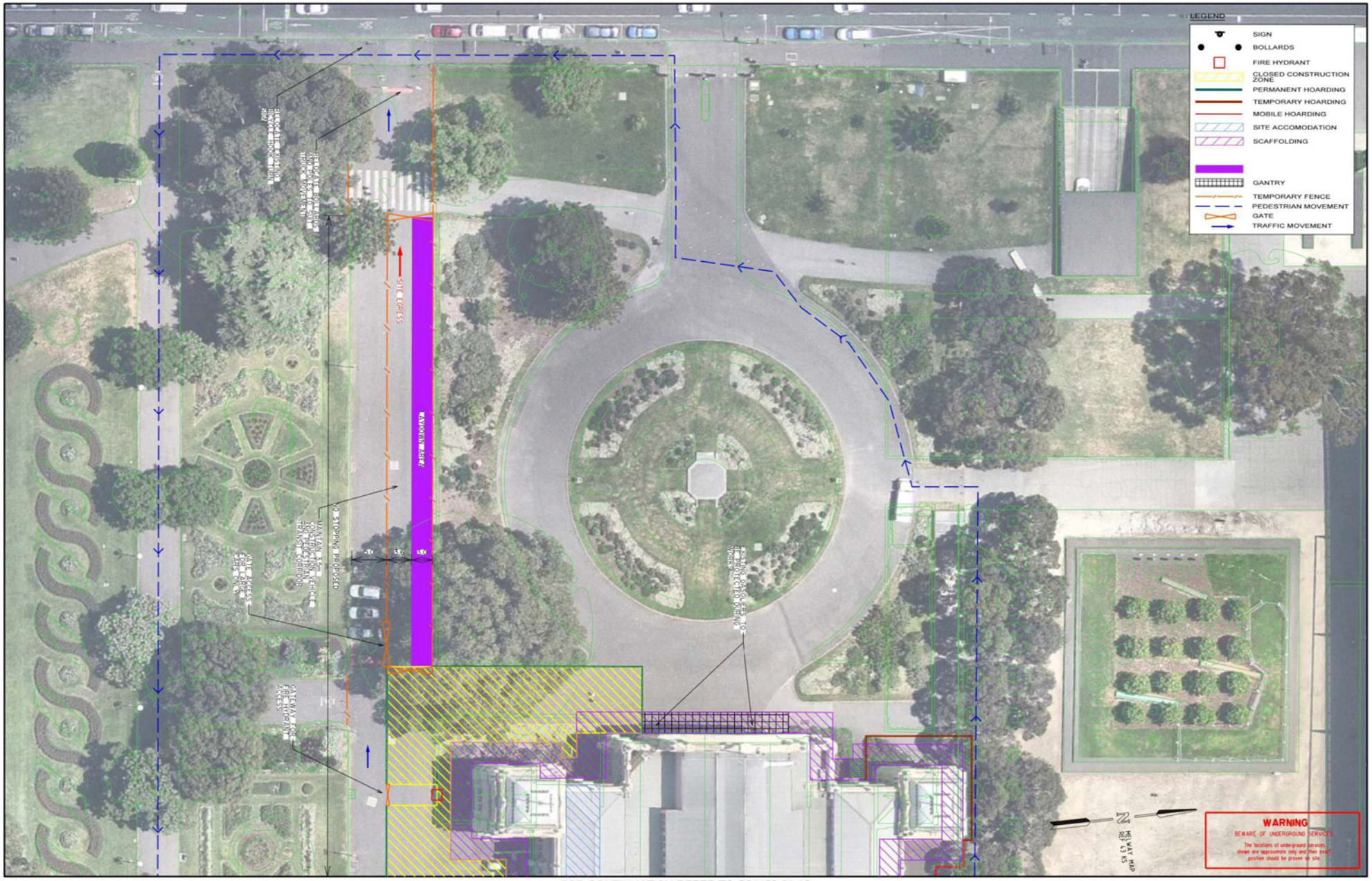

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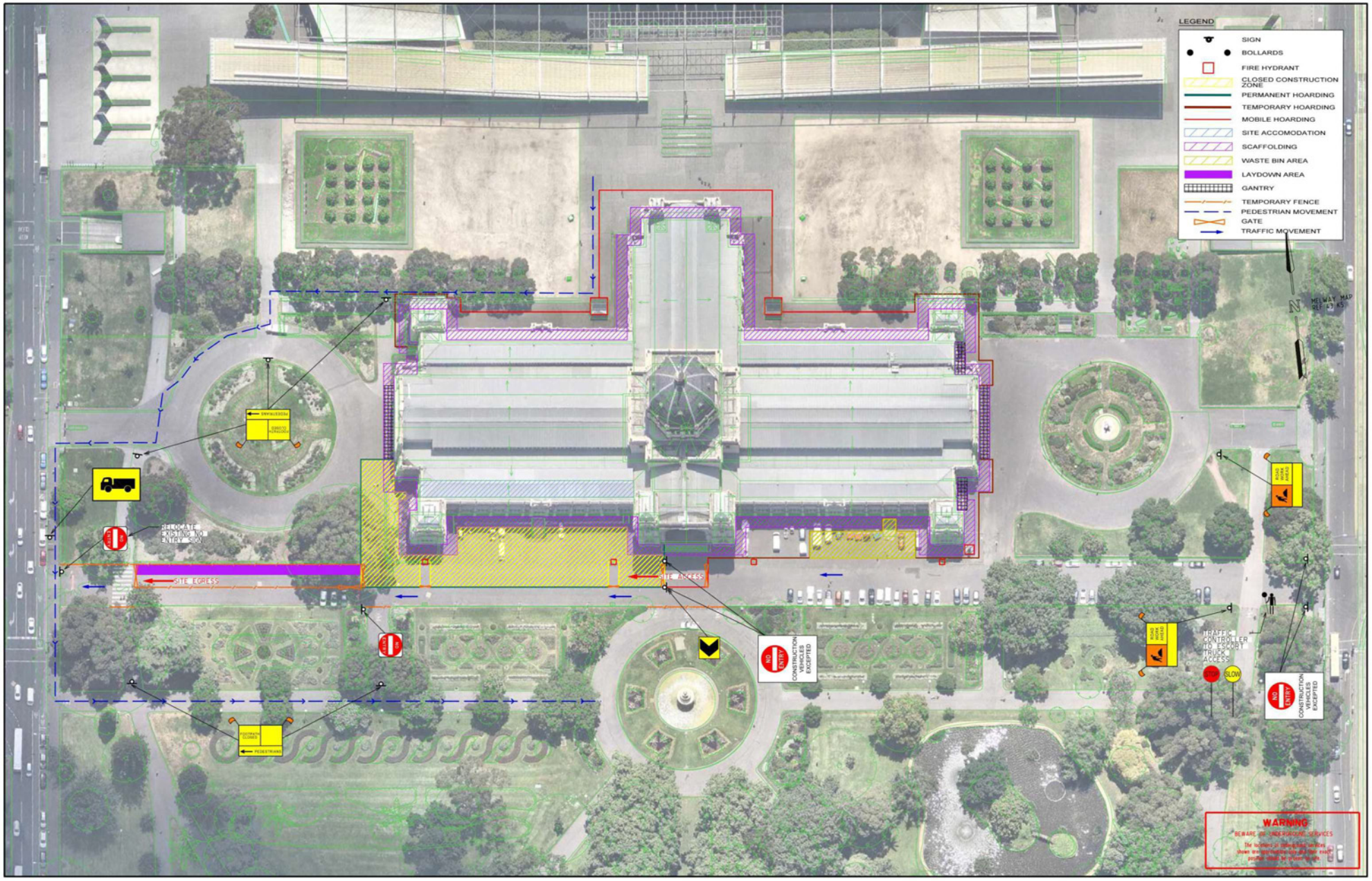

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TRAFFIC MANAGEMENT PLAN

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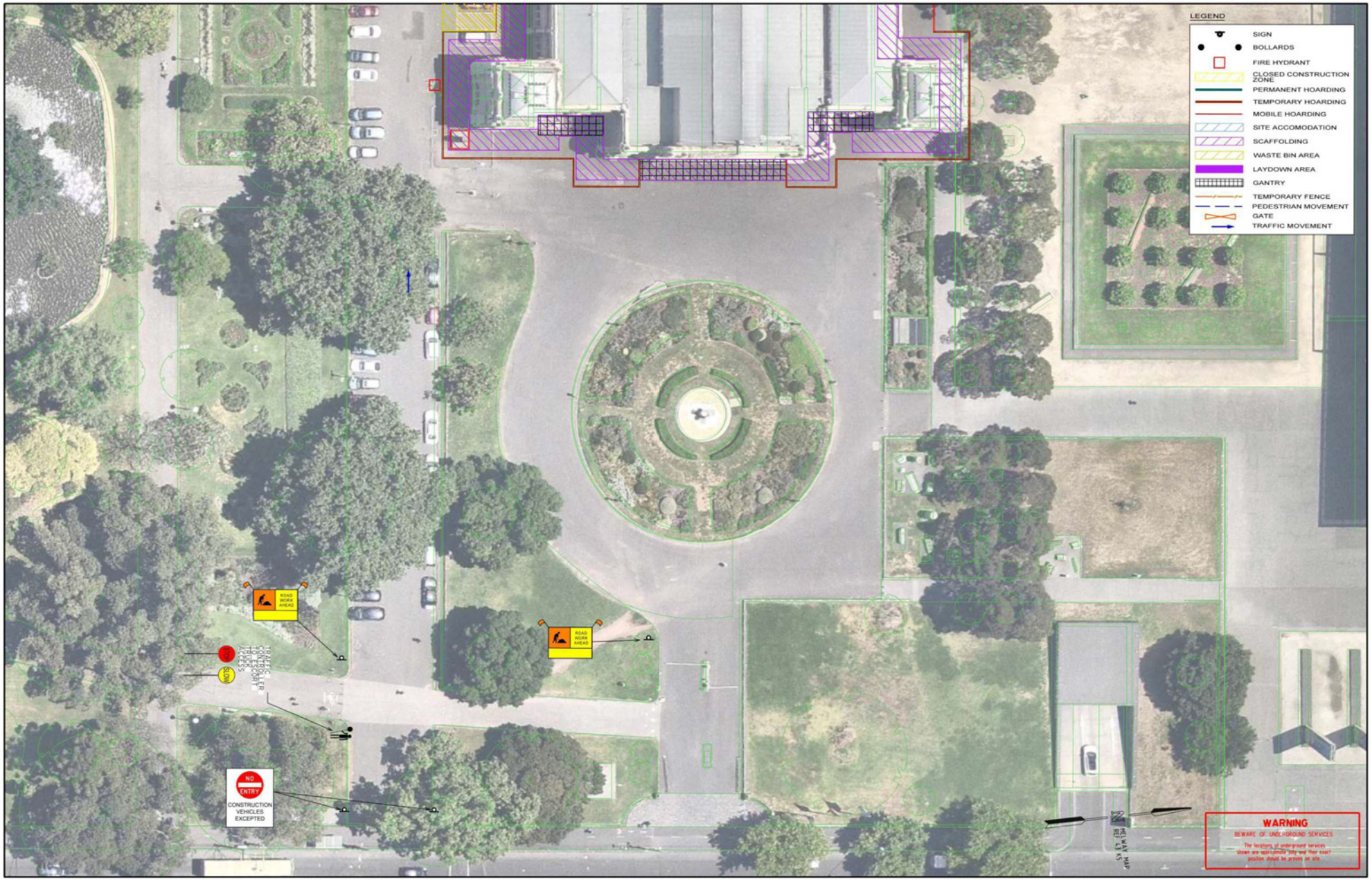

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SCALE 0 2.5 5 7.5 10 | SHEET No. 4 of 6 | DWG No. G24150-01-21

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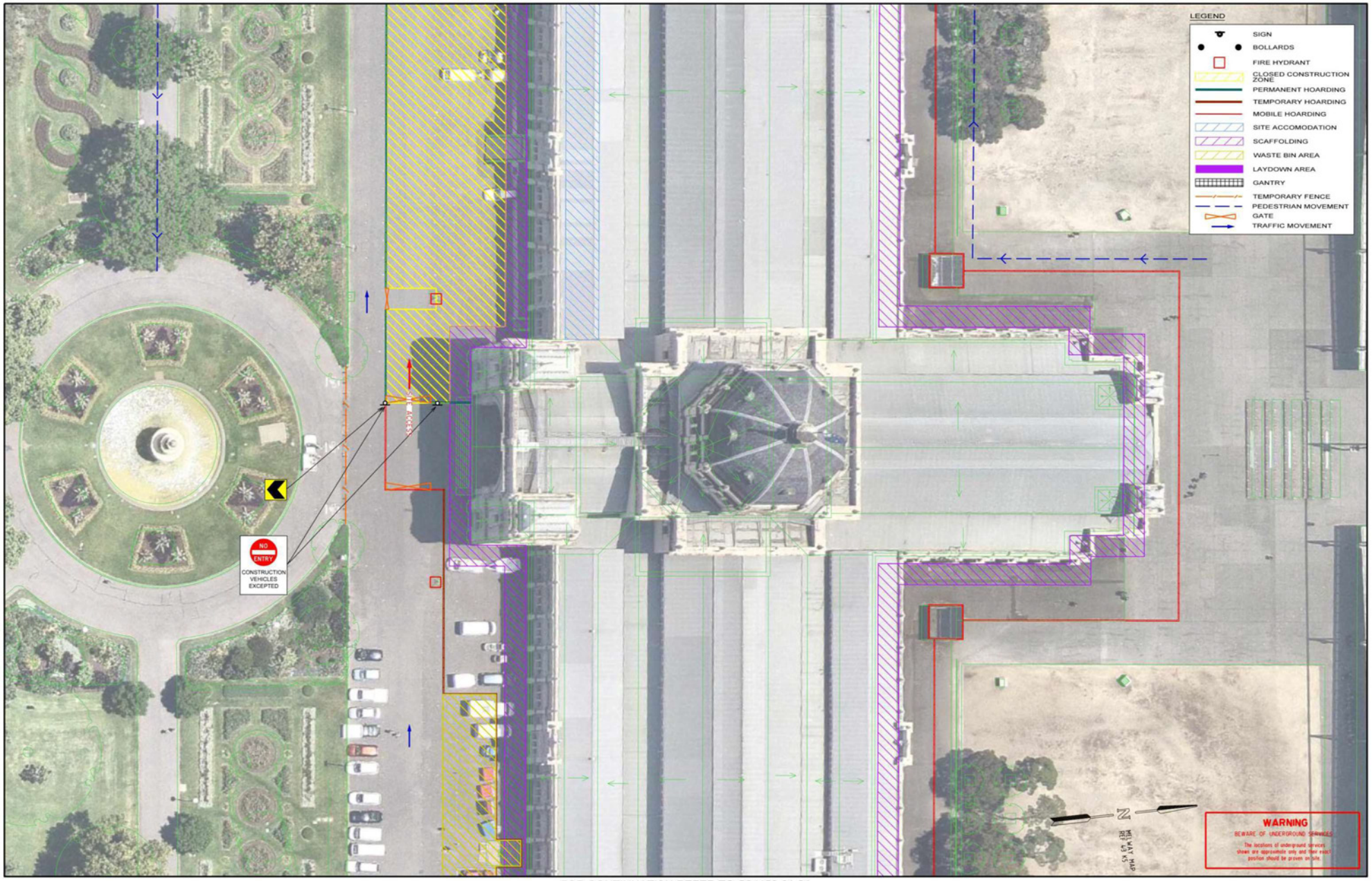

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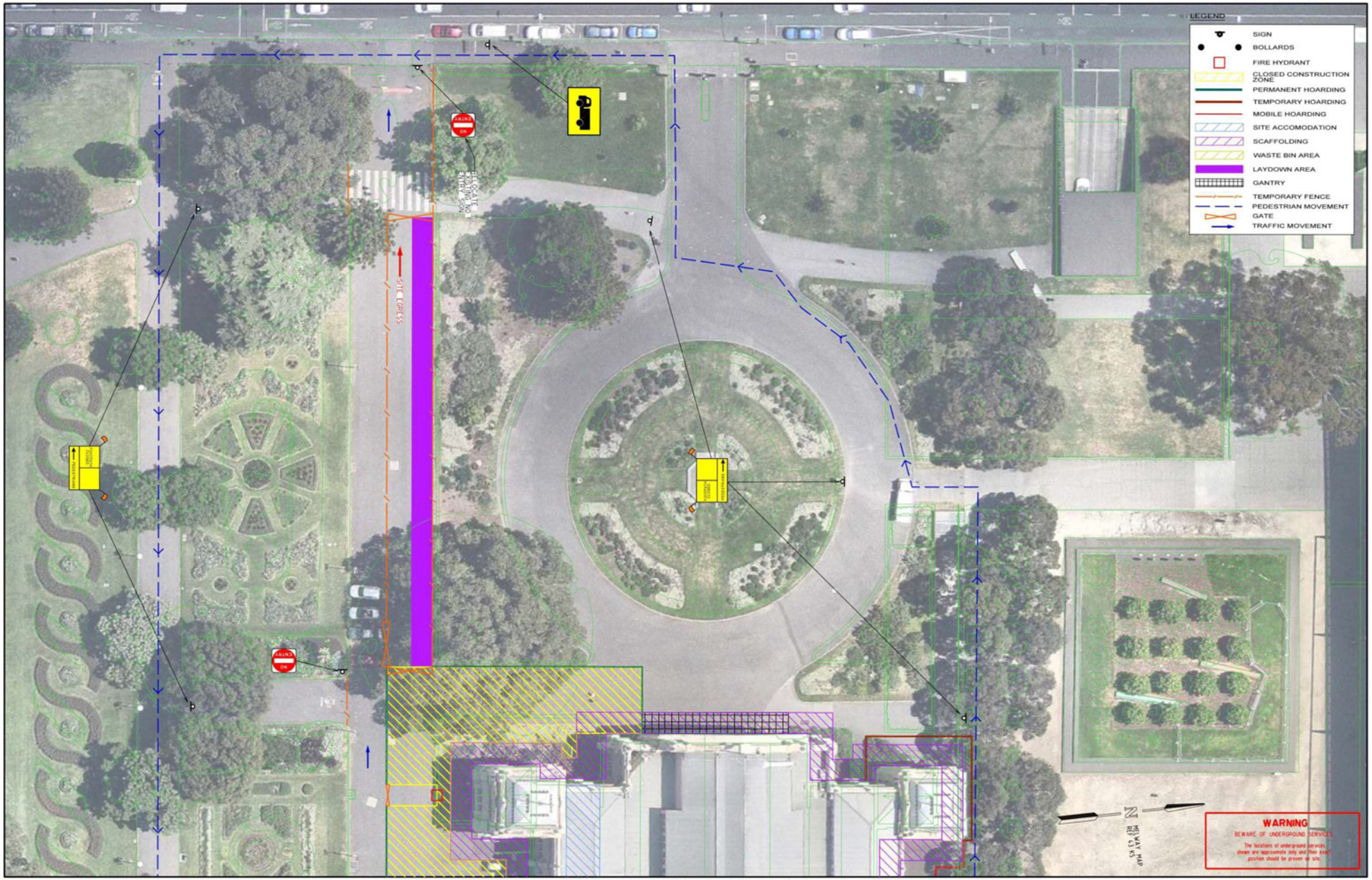

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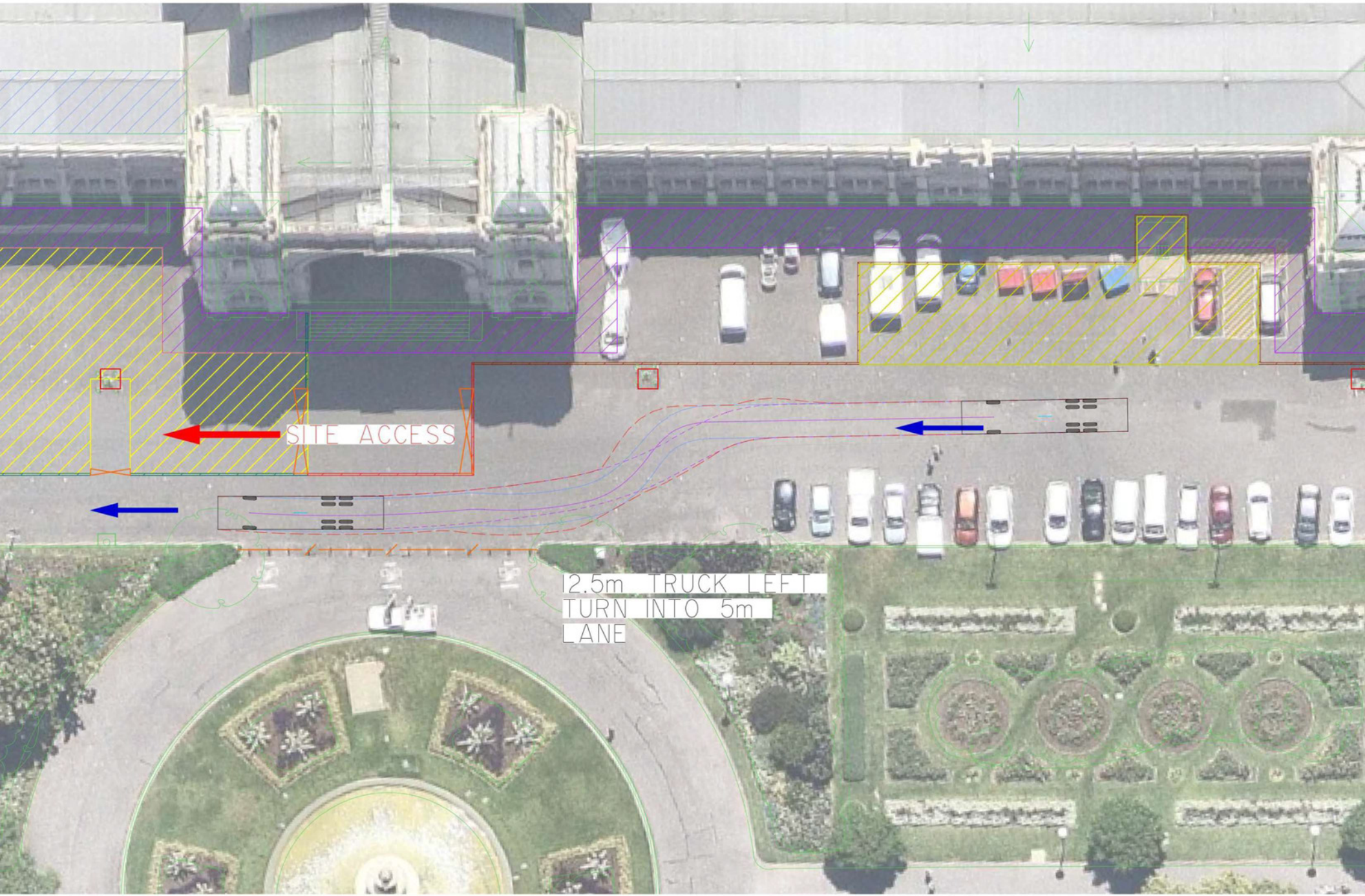
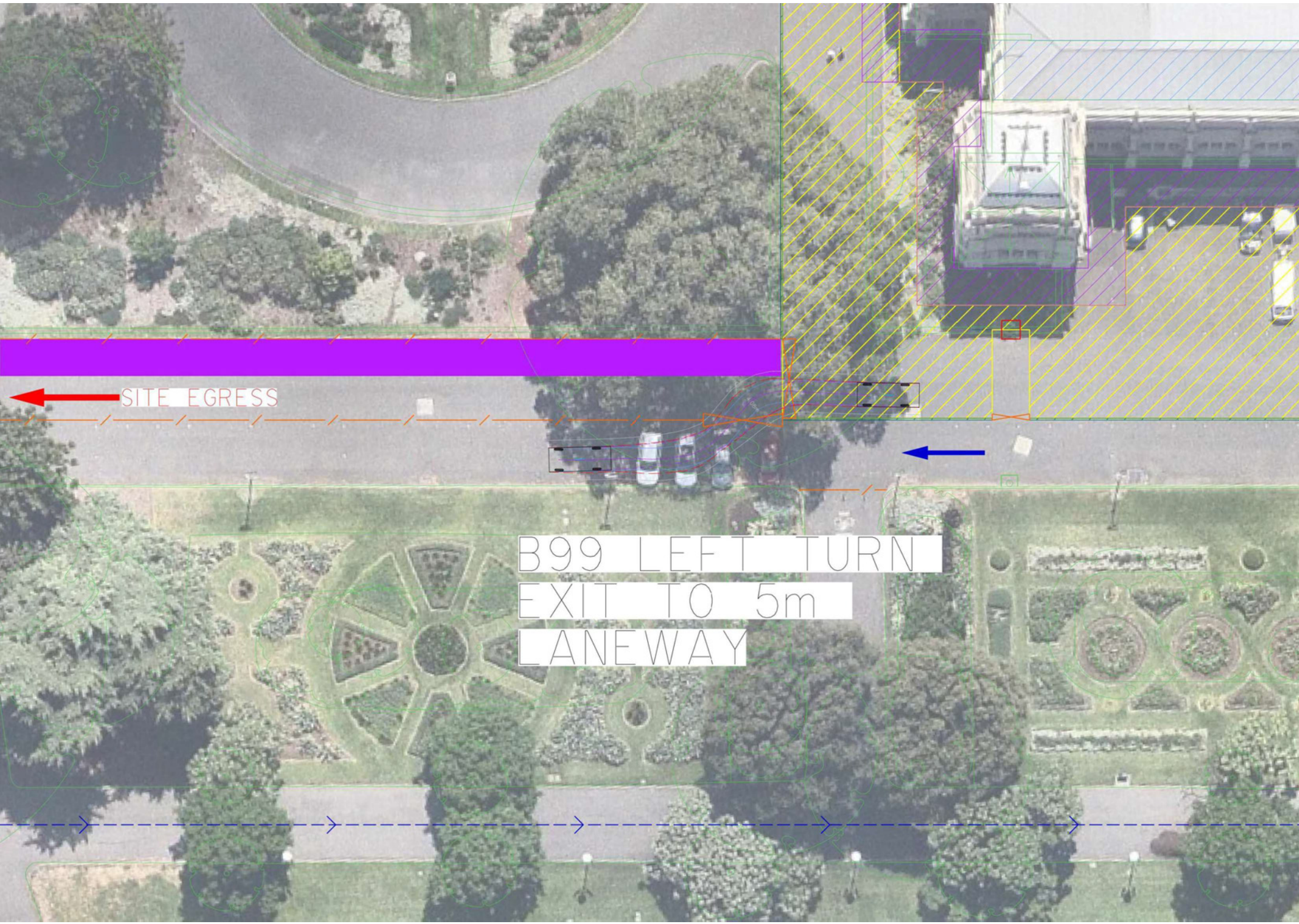
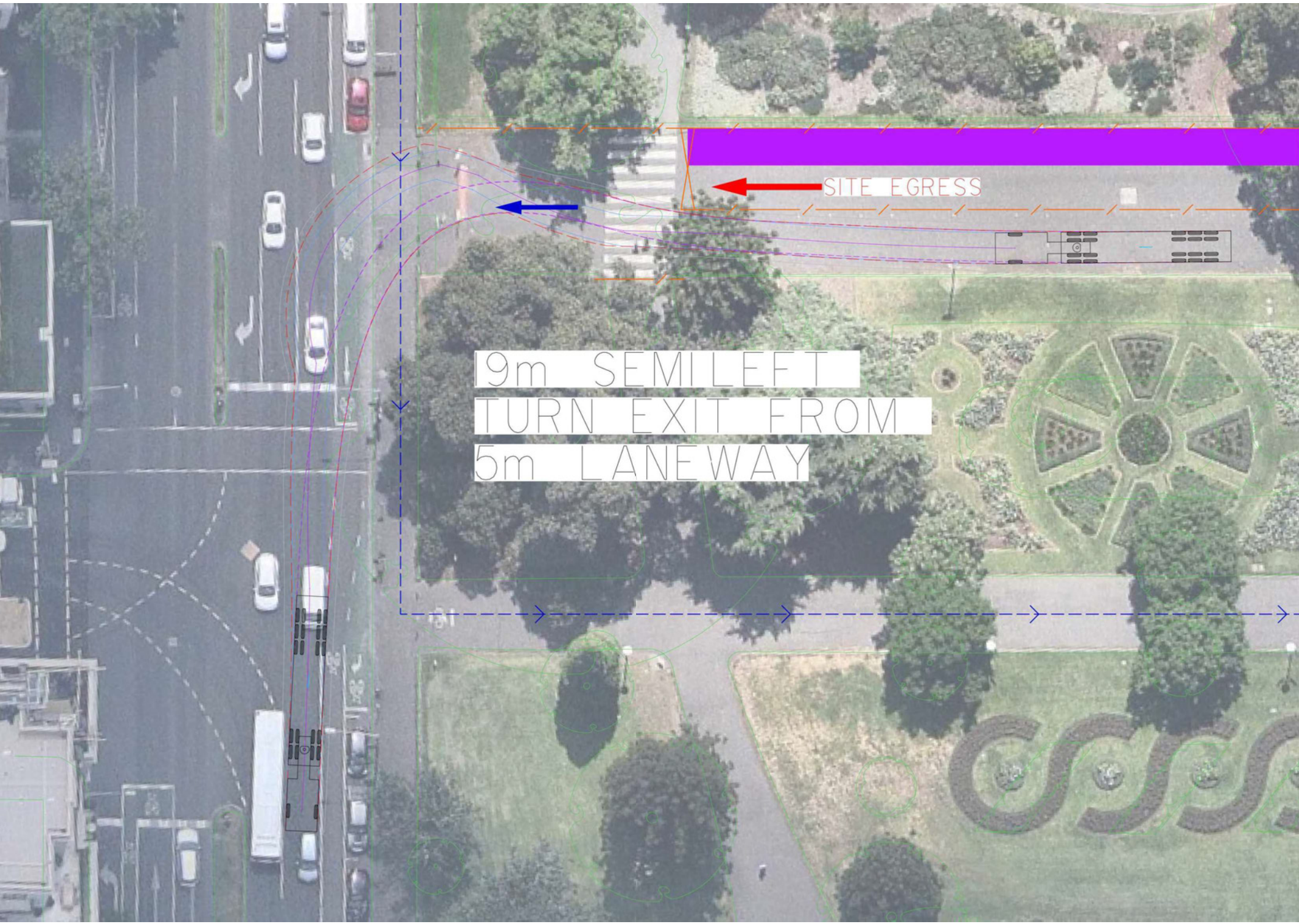
2.5m LEFT TURN
ENTRY FROM
NICHOLSON STREET


SITE ACCESS
12.5m TRUCK LEFT
TURN INTO 5m
LANE

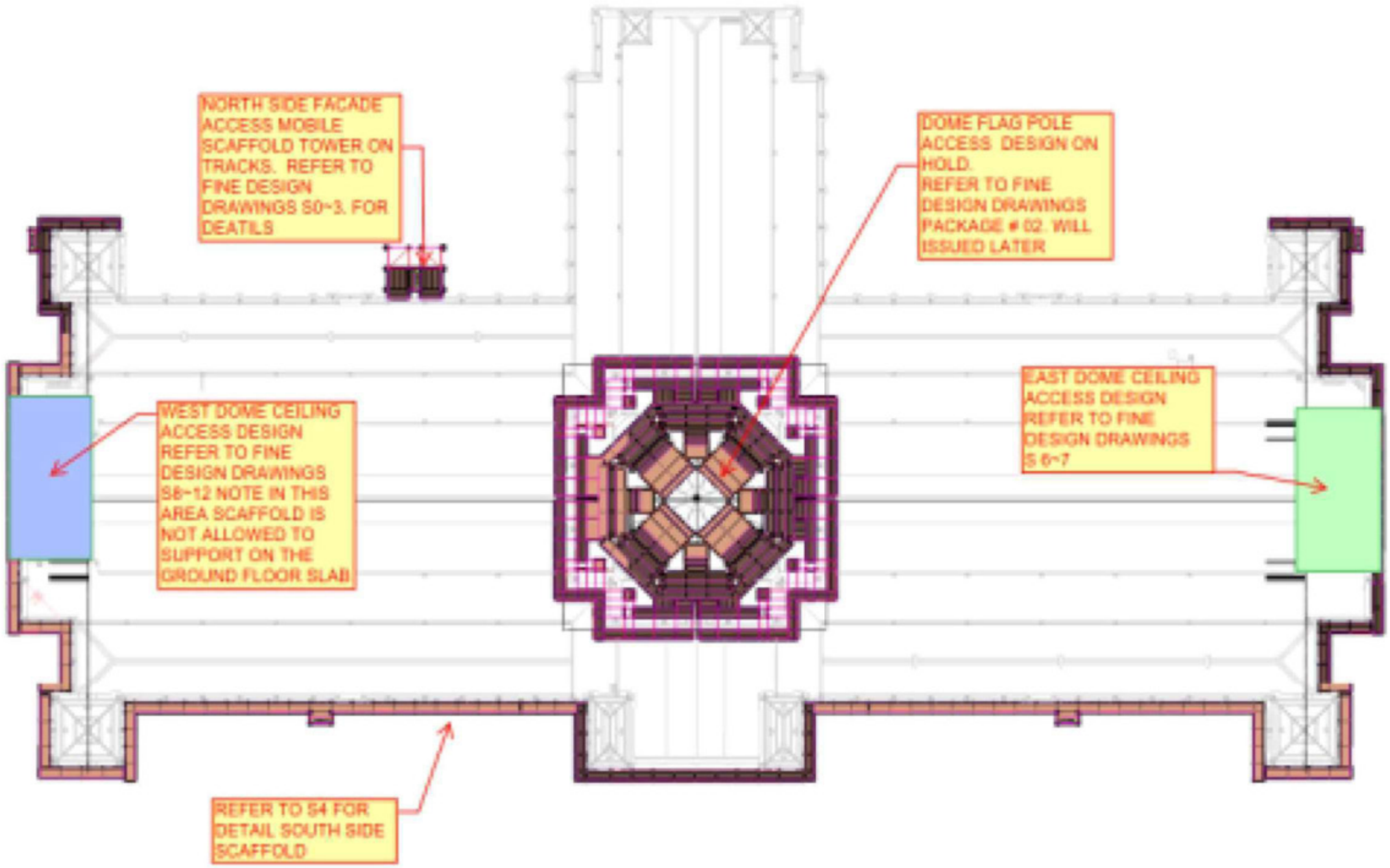

SITE EGRESS
B99 LEFT TURN
EXIT TO 5m
LANEWAY


SITE EGRESS
9m SEMI LEFT
TURN EXIT FROM
5m LANEWAY


SITE EGRESS
19m SEMI LEFT
TURN SITE EGRESS

Appendix 3: Scaffolding Drawings

NOT FOR CONSTRUCTION



PLAN VIEW SCALE 1:600

WARNING

CONCEPT
FOR DISCUSSION PURPOSES

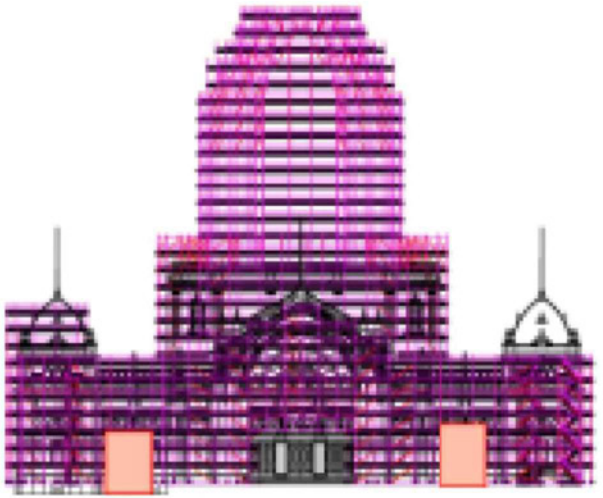
Layher.
More Possibilities. The Scaffolding System.

Scale: AS SHOWN
Paper Size: A3

Project:
ACCESS SCAFFOLD
ROYAL EXHIBITION BUILDING - VIC
LOVELL CHEN

Drawing No.: LAY-3539-01-0118-AU
Page No.: 1 of 3
Rev No.: 1

NOT FOR CONSTRUCTION



REFER TO FINE DESIGN DRAWING-55 FOR MODIFIED EAST ELEVATIONS WITH GANTRY OVER DOOR OPENINGS

EAST ELEVATION SCALE 1:600

DOME FLAG POLE ACCESS DESIGN ON HOLD. REFER TO FINE DESIGN DRAWINGS PACKAGE # 02. WILL ISSUED LATER

SOUTH ELEVATION SCALE 1:600

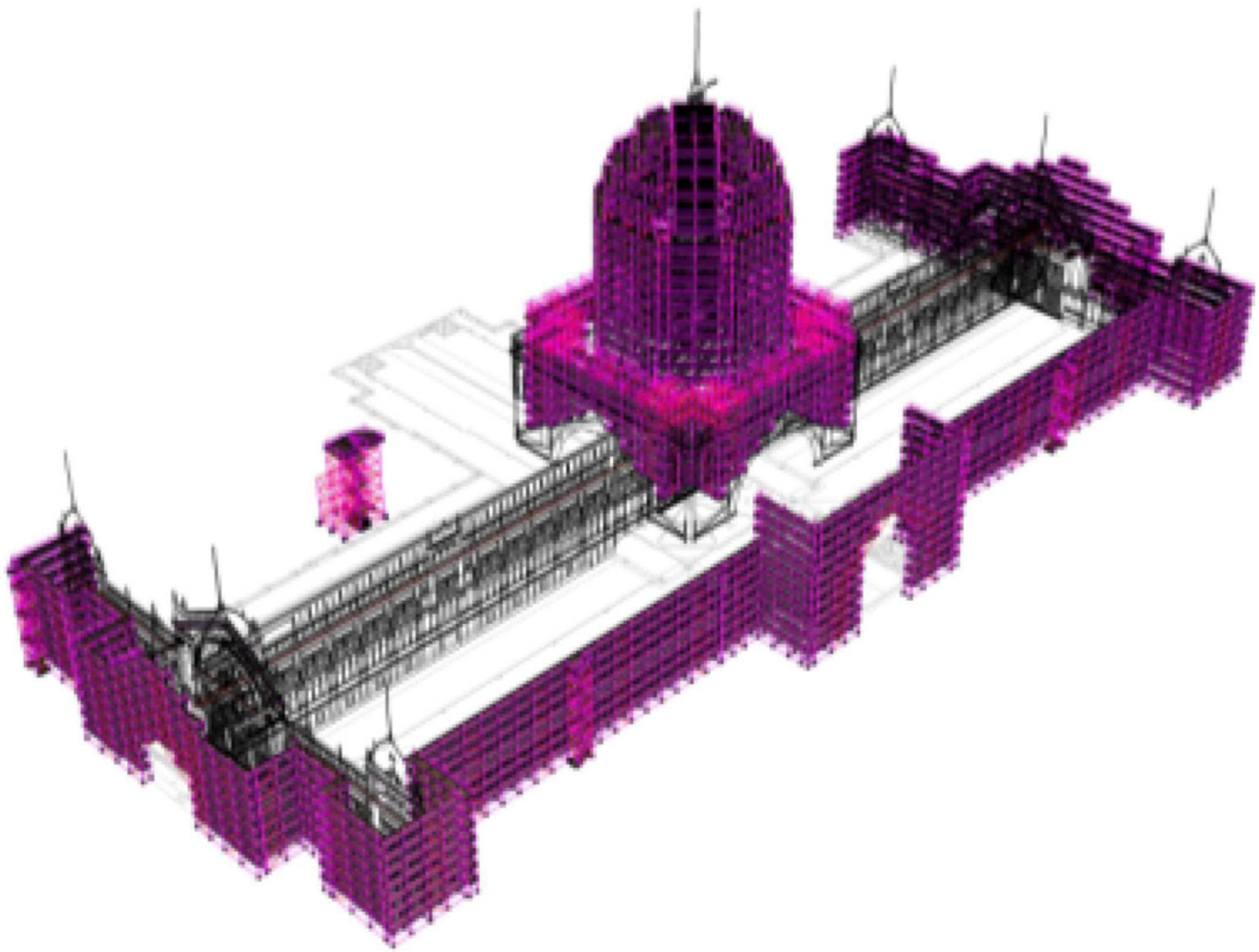
CONCEPT
FOR DISCUSSION PURPOSES

Layher.
More Possibilities. The Scaffolding System.

ACCESS SCAFFOLD
ROYAL EXHIBITION BUILDING - MC
LOVELL CHEN

LAY-2035-01-S11B-A0 | 2 of 3 | 1

NOT FOR CONSTRUCTION



ISOMETRIC VIEW N.T.S

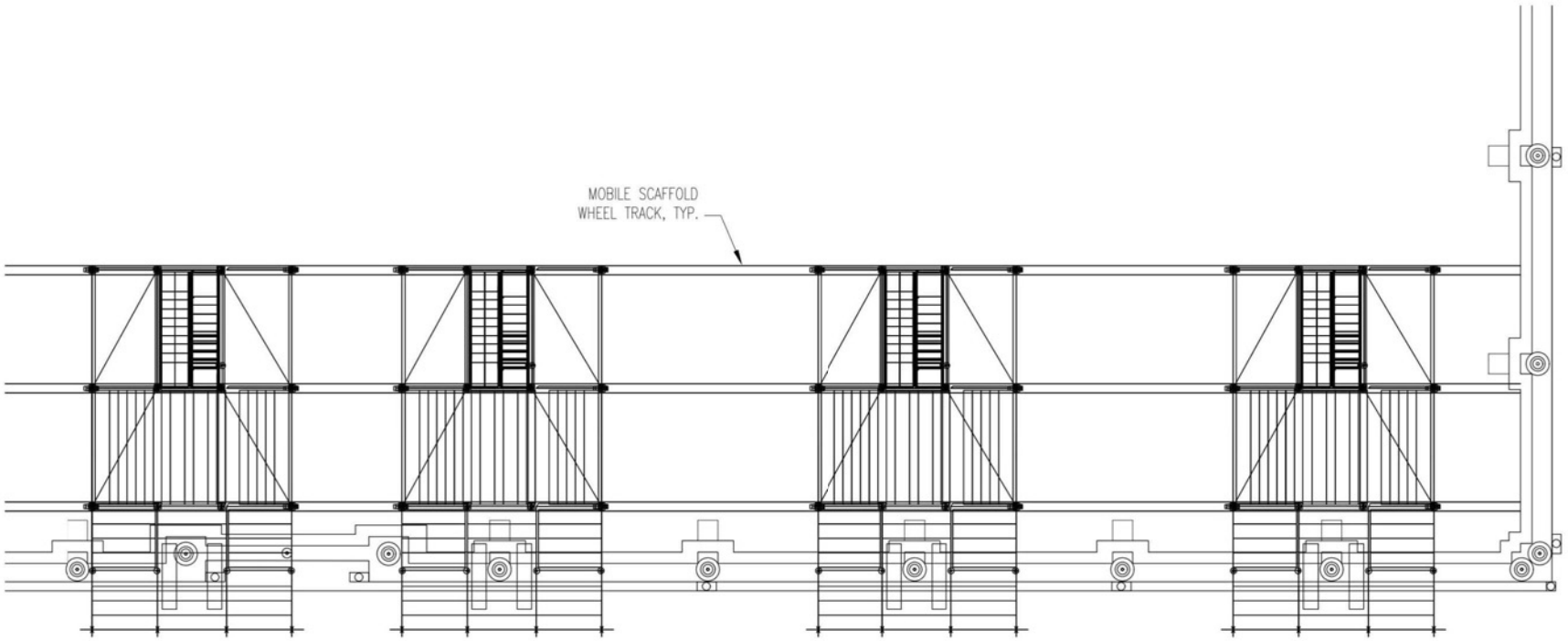
CONCEPT
FOR DISCUSSION PURPOSES

Layher.

Scale: AS SHOWN
Paper Size: A3

Project:
ACCESS SCAFFOLD
ROYAL EXHIBITION BUILDING - VIC
LOVELL CHEN

Rev No. 1



MOBILE GANTRY INDICATIVE LOCATIONS PLAN

(To North Face)

INDICATIVE SCALE: 1:100

ISSUED FOR TENDER

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
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REVISIONS

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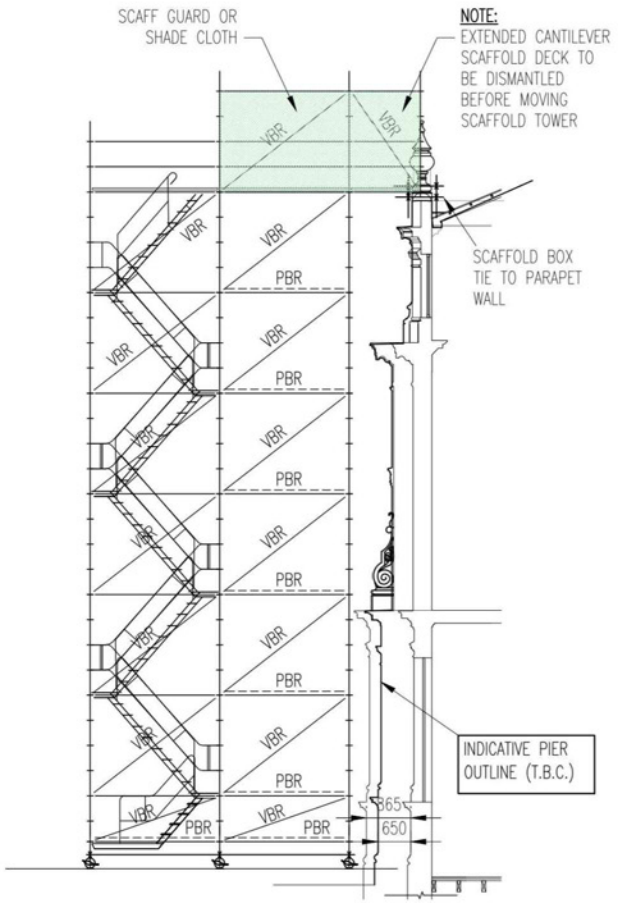
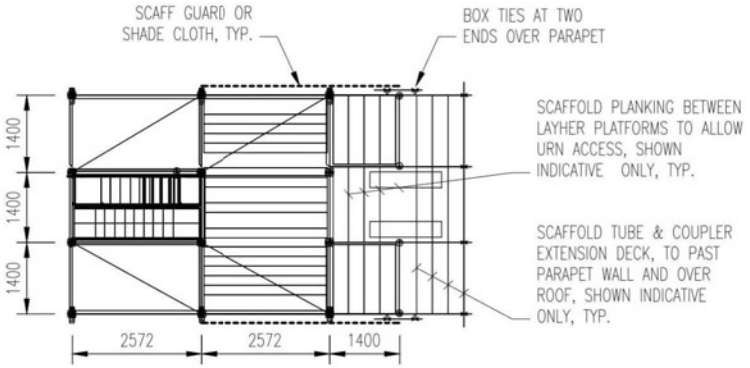
DRAWN BY	N.W.	DATE	FEB 18
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A3

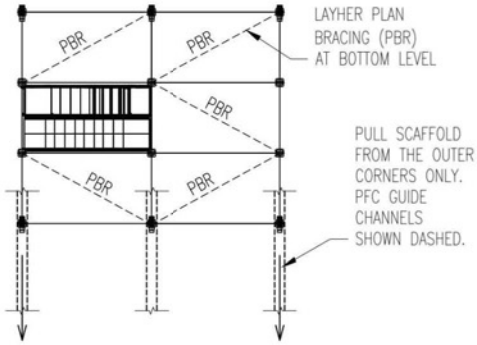
PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS			
CLIENT	MUSEUM VICTORIA			
DRAWING TITLE	MOBILE SCAFFOLD EXAMPLE LOCATIONS PLAN			
ACAD NAME:	18005-REV-B S1	PROJECT NO. 18/005	DWG S0	REV. B



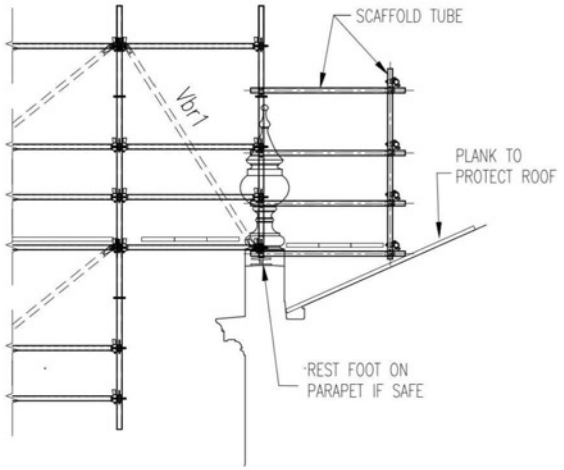
MOBILE GANTRY WEST ELEVATION
(To North Face)
INDICATIVE SCALE: 1:100



MOBILE GANTRY PLAN
(To North Face)
INDICATIVE SCALE: 1:100



MOBILE GANTRY BASE LEVEL PLAN
(To North Face)
INDICATIVE SCALE: 1:100



SCAFFOLD EXTENSION DECK WEST ELEVATION
(SCAFF GUARD NOT SHOWN FOR CLARITY)
SCALE: 1:50

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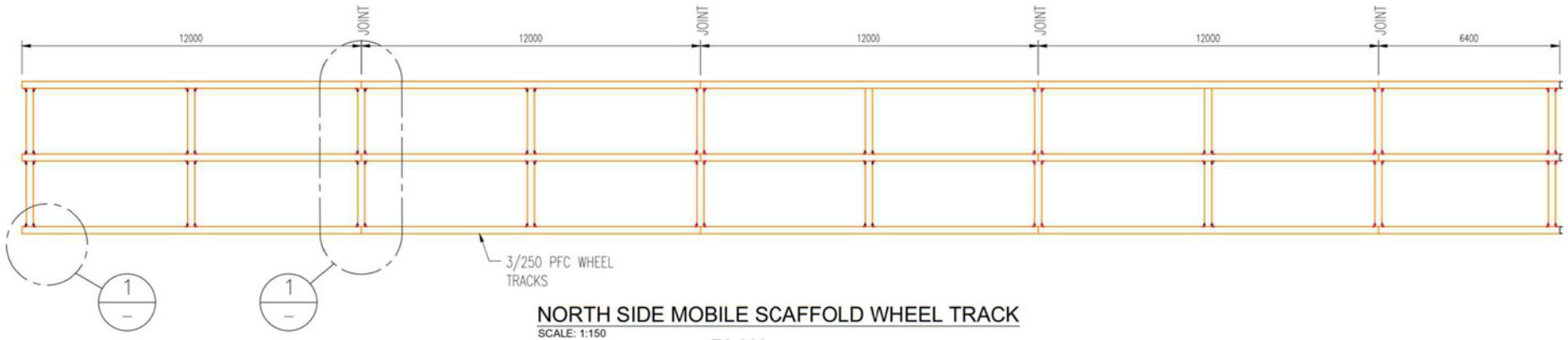
DRAWN BY	N.W.	DATE	FEB 18
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A3

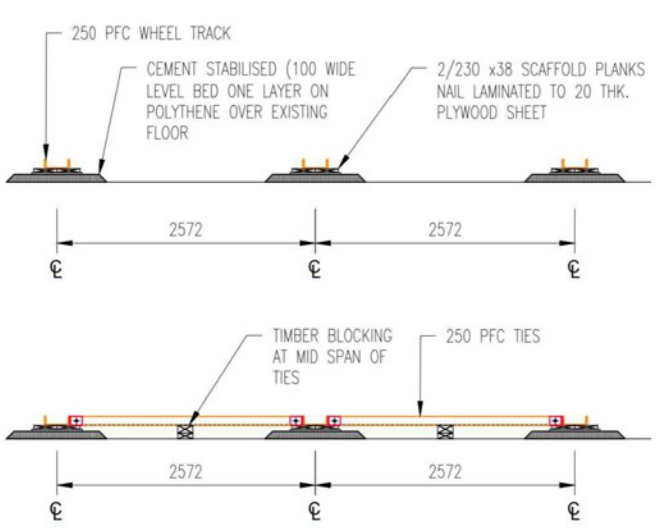
PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	MOBILE SCAFFOLD CONCEPT

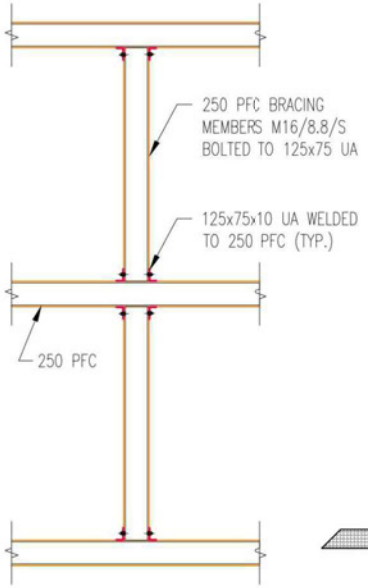
ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-B S1	18/005	S1	B



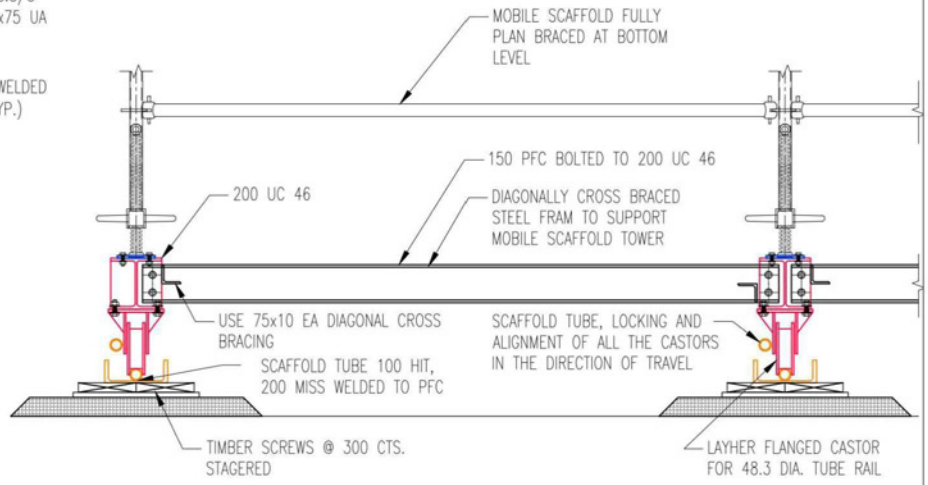
NORTH SIDE MOBILE SCAFFOLD WHEEL TRACK PLAN

SCALE: 1:150





DETAIL 1/1
SCALE: 1:50



MOBILE SCAFFOLD WHEEL BASE FRAME CASTOR WHEEL FIXING & DETAIL

SCALE: 1:150

TENDER ISSUE

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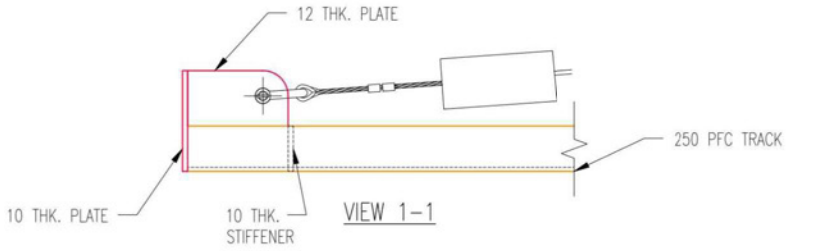
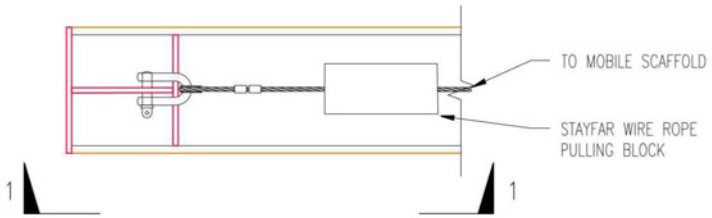
DRAWN BY R.M./N.W.	DATE FEB 18	PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
DESIGNED U.P.	DATE FEB 18	CLIENT	MUSEUM VICTORIA
CHECKED BY U.P.	DATE FEB 18	DRAWING TITLE	NORTH SIDE MOBILE SCAFFOLD WHEEL TRACK
SCALE AS NOTED	A3	Copyright ACAD NAME:	18005-REV-B

PROJECT NO.	DWG	REV.
18/005	S2	B





TENDER ISSUE

DETAIL 1/1
SCALE: 1:50

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
B	TENDER ISSUE	U.P.	27.02.2018
A	PRELIMINARY ISSUE	U.P.	22.02.2018

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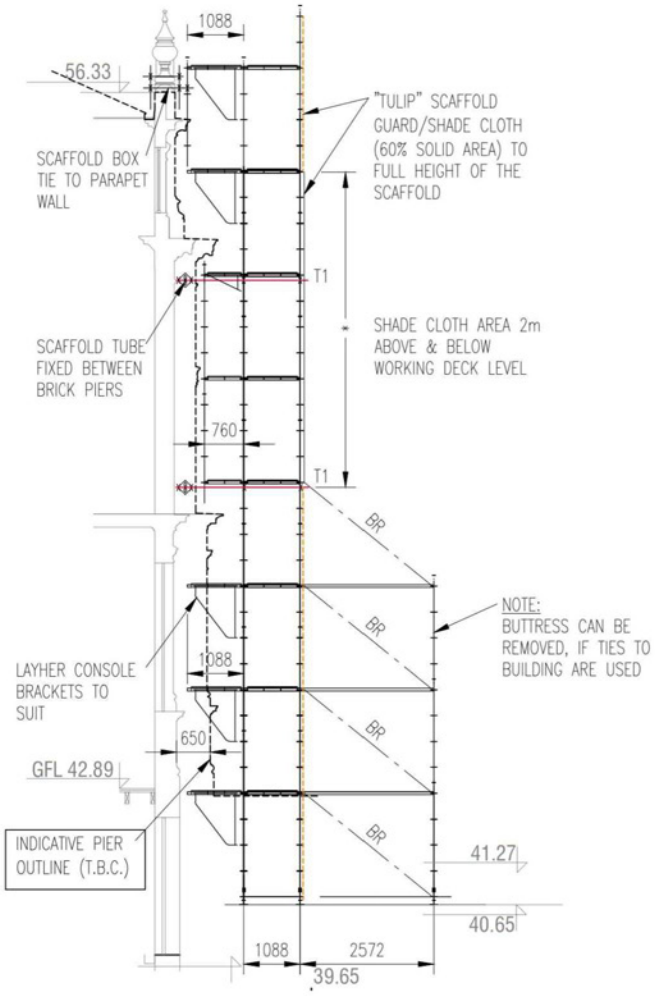
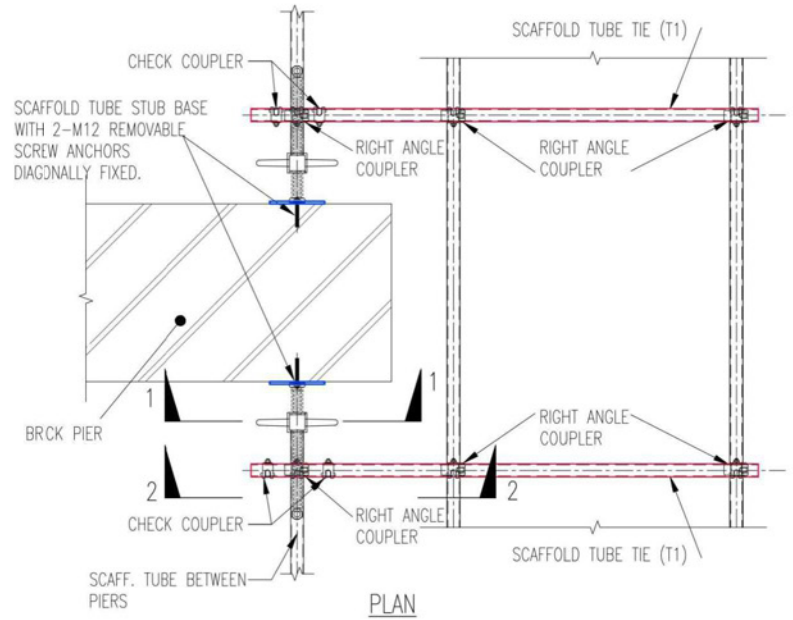
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL DETAIL

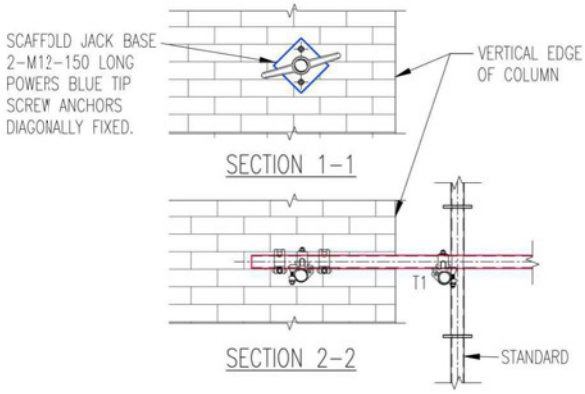
ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S3	B



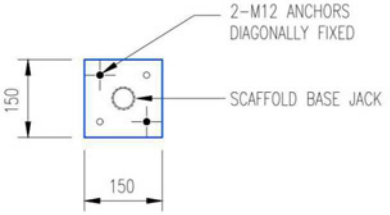
SOUTH SCAFFOLD SECTION
SCALE: 1:100



PLAN



TYPICAL SCAFFOLD TIE (T1) DETAIL
SCALE: 1:20



SCAFFOLD BASE JACK BASE FIXING DETAIL
SCALE: 1:10

TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
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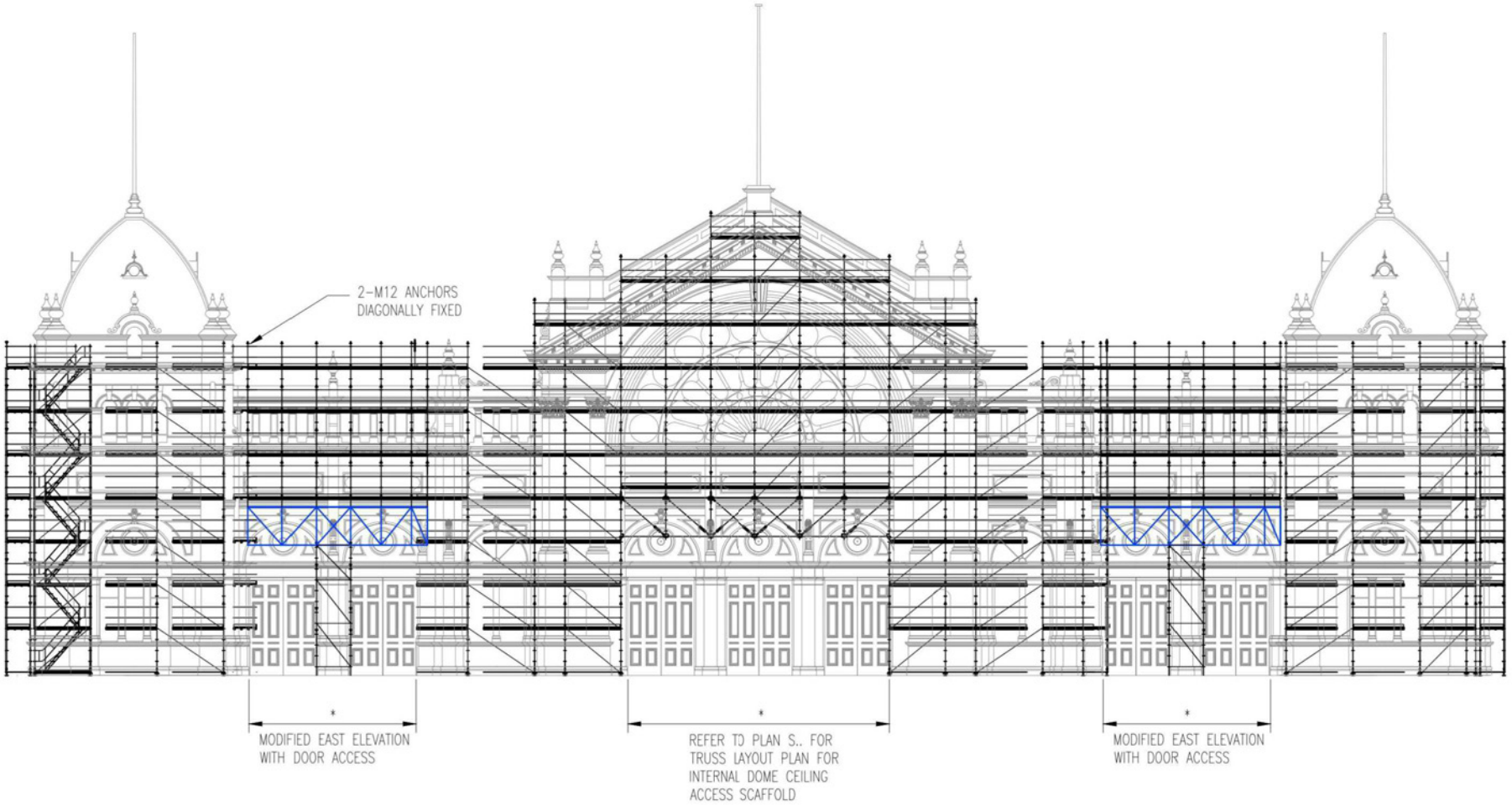
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYP. SOUTH SCAFFOLD SECTION

ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S4	B



EAST SCAFFOLD ELEVATION

SCALE: 1:200

TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
B	TENDER ISSUE	U.P.	27.02.2018
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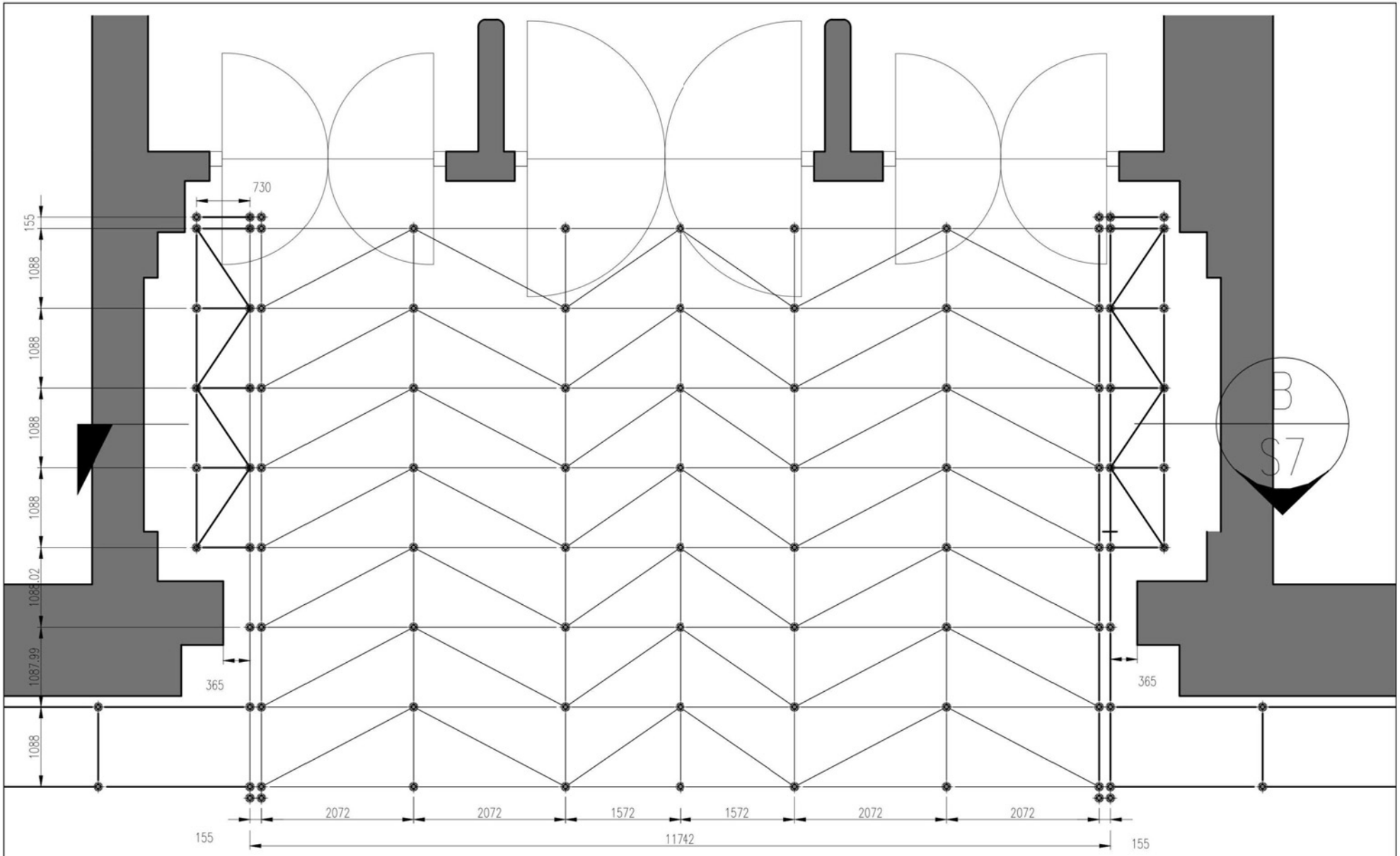
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYP. EAST SCAFFOLD ELEVATION WITH DOOR ACCESS

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S5	B



TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
B	TENDER ISSUE	U.P.	27.02.2018
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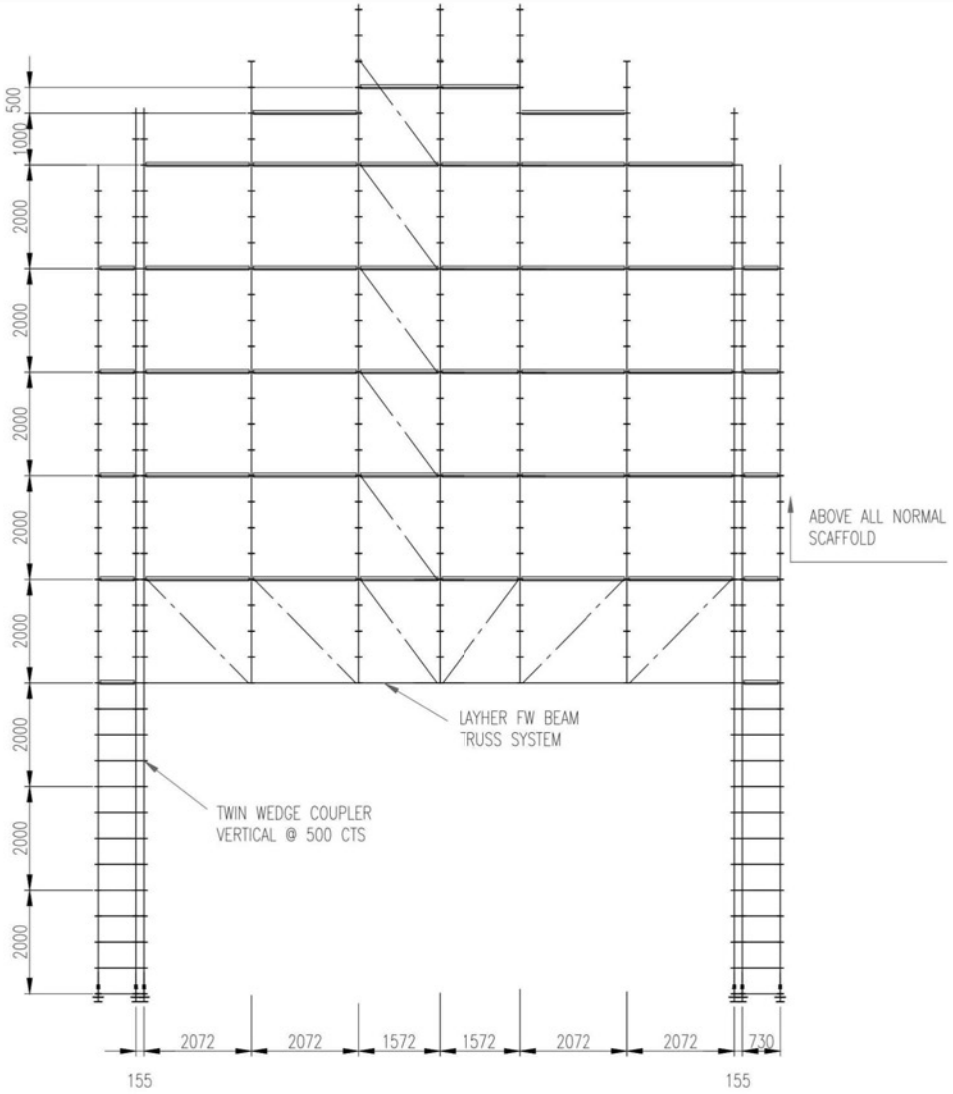
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	EAST DOME CEILING ACCESS SCAFFOLD PLAN

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S6	B



EAST DOME CEILING ACCESS SCAFFOLD CROSS SECTION

SCALE: 1:100

SECTION B / S6
SCALE 1:100

TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
B	TENDER ISSUE	U.P.	27.02.2018
A	PRELIMINARY ISSUE	U.P.	22.02.2018

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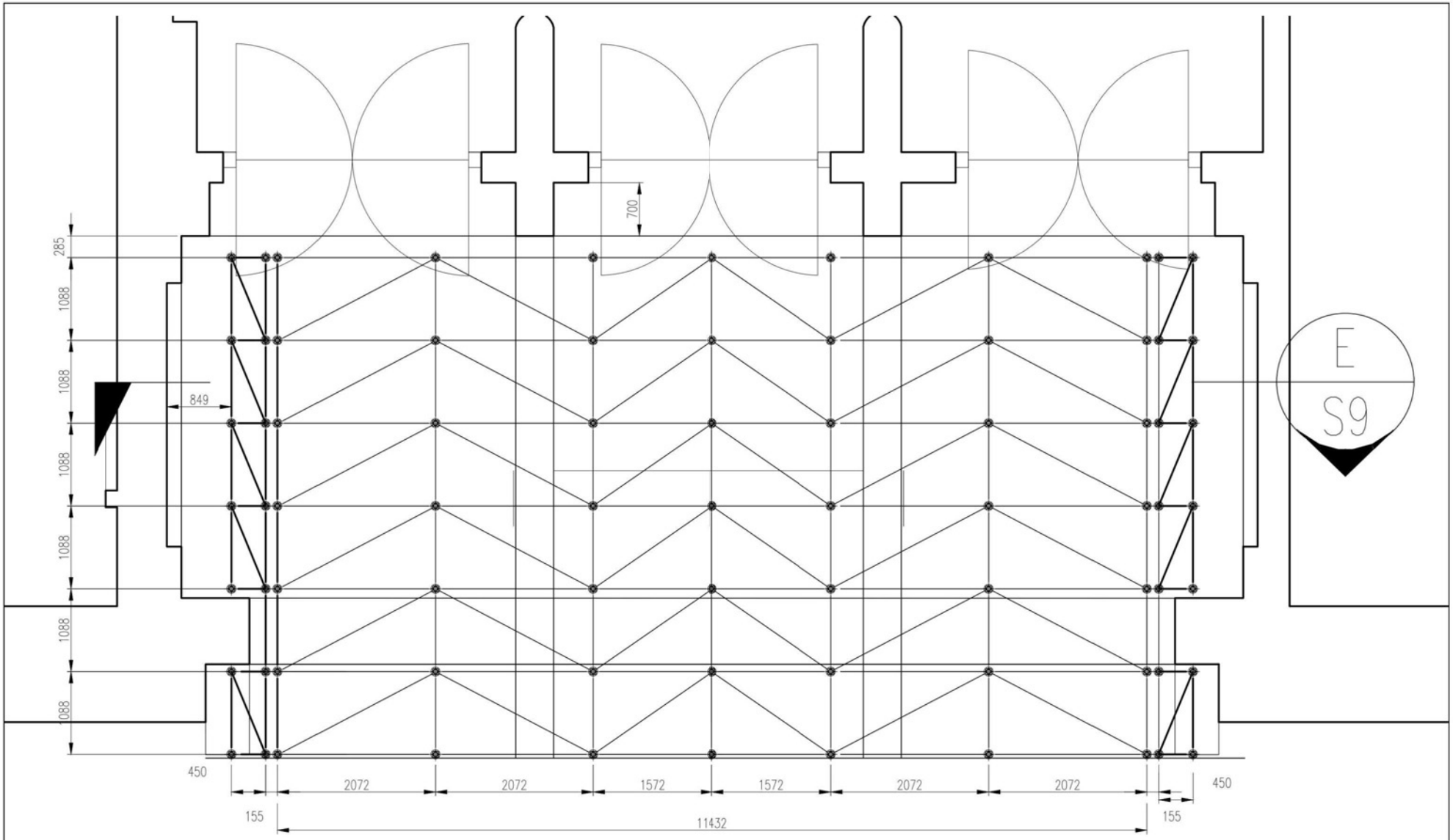
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	EAST DOME CEILING ACCESS SCAFFOLD SECTION

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S7	B



TENDER ISSUE

WEST DOME CEILING ACCESS SCAFFOLD PLAN

SCALE: 1:50

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
B	TENDER ISSUE	U.P.	27.02.2018
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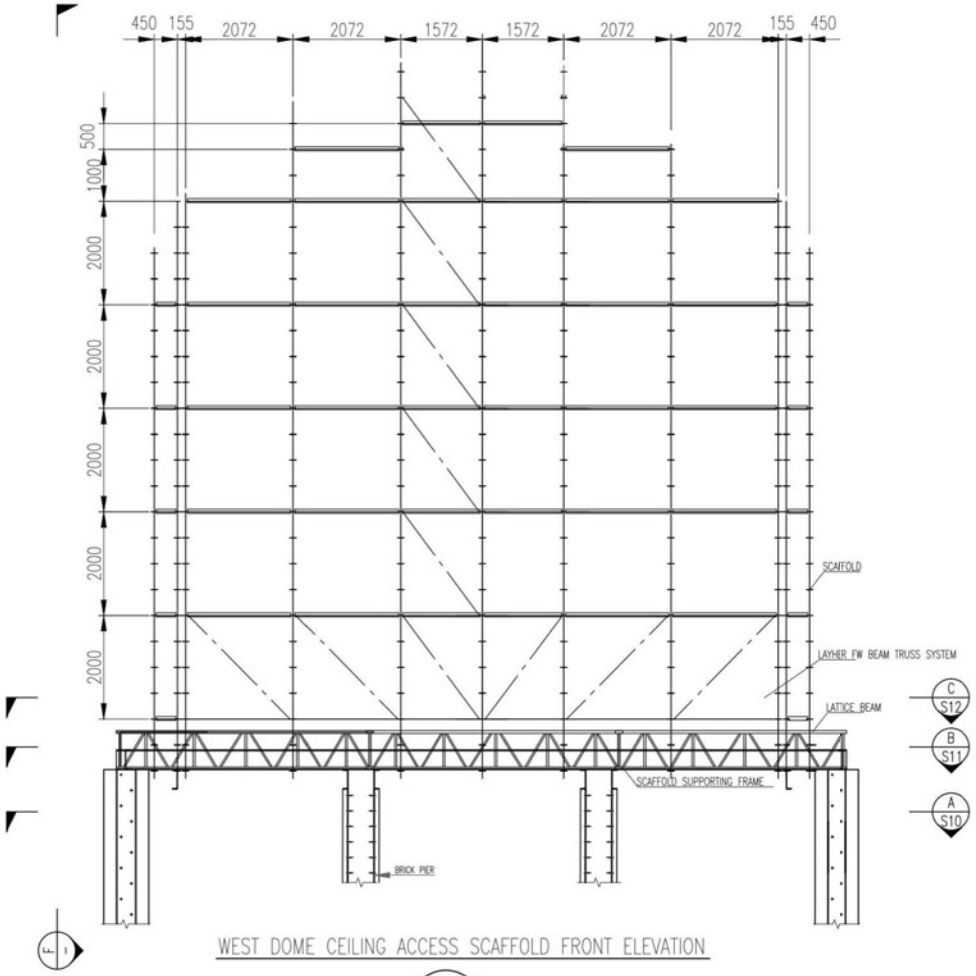
SCALE	AS NOTED		A3

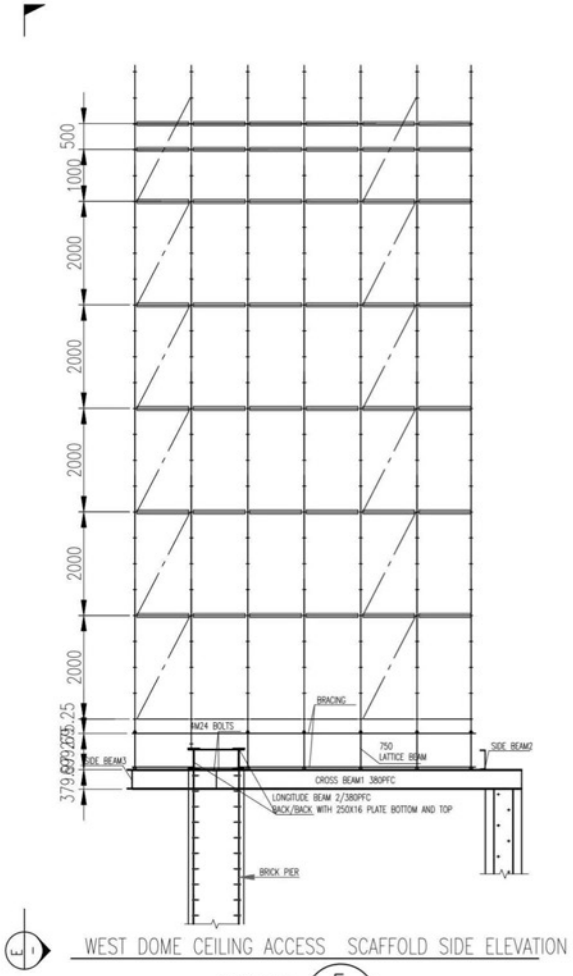
PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	WEST DOME CEILING ACCESS SCAFFOLD PLAN

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S8	B



WEST DOME CEILING ACCESS SCAFFOLD FRONT ELEVATION

SECTION E / S8
SCALE 1:100



WEST DOME CEILING ACCESS SCAFFOLD SIDE ELEVATION

SECTION F / –
SCALE 1:100

TENDER ISSUE

WEST DOME CEILING ACCESS SCAFFOLD CROSS SECTION

SCALE: 1:100

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
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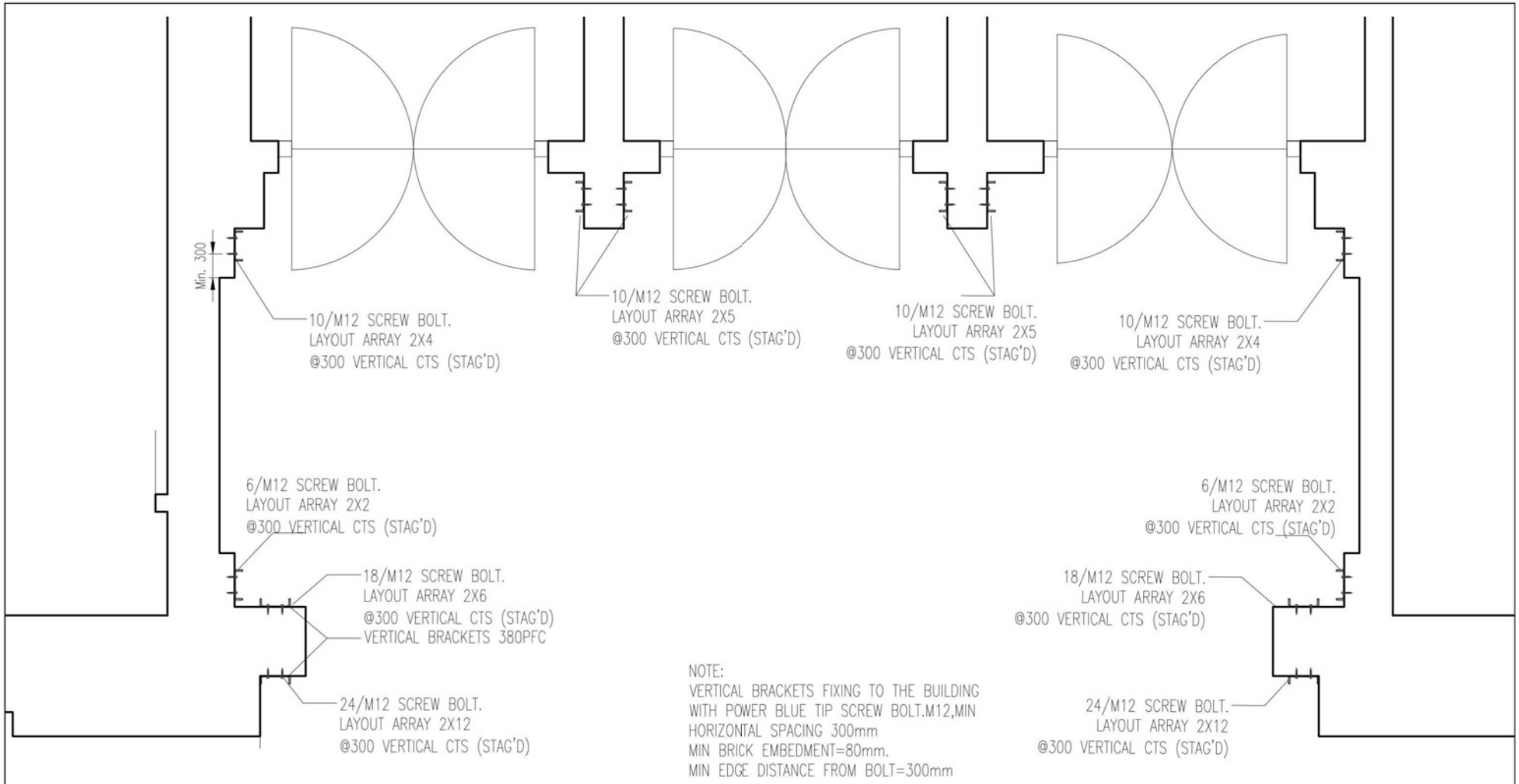
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	WEST DOME CEILING ACCESS SCAFFOLD SECTION

ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S9	B



NOTE:
VERTICAL BRACKETS FIXING TO THE BUILDING WITH POWER BLUE TIP SCREW BOLT.M12,MIN
HORIZONTAL SPACING 300mm
MIN BRICK EMBEDMENT=80mm.
MIN EDGE DISTANCE FROM BOLT=300mm

SCREW BOLT AND SUPPORT LAYOUT PLAN

SECTION A
SCALE 1:50 S9

TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
B	TENDER ISSUE	U.P.	27.02.2018
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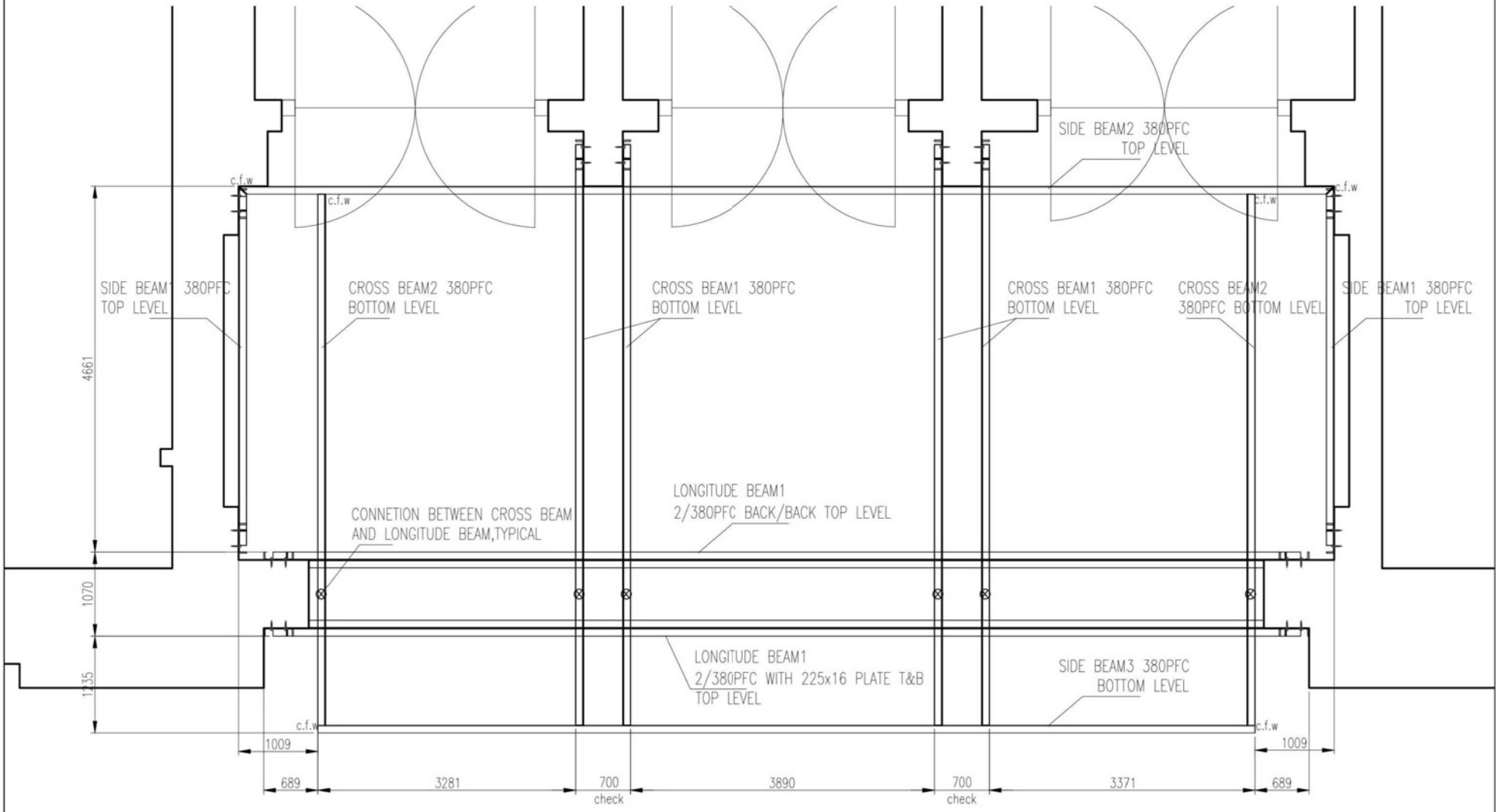
PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	WEST DOME CEILING ACCESS SCAFFOLD PLAN

ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S10	B



SCAFFOLD SUPPORTING FRAME PLAN

SECTION B / S9

SCALE 1:50

TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
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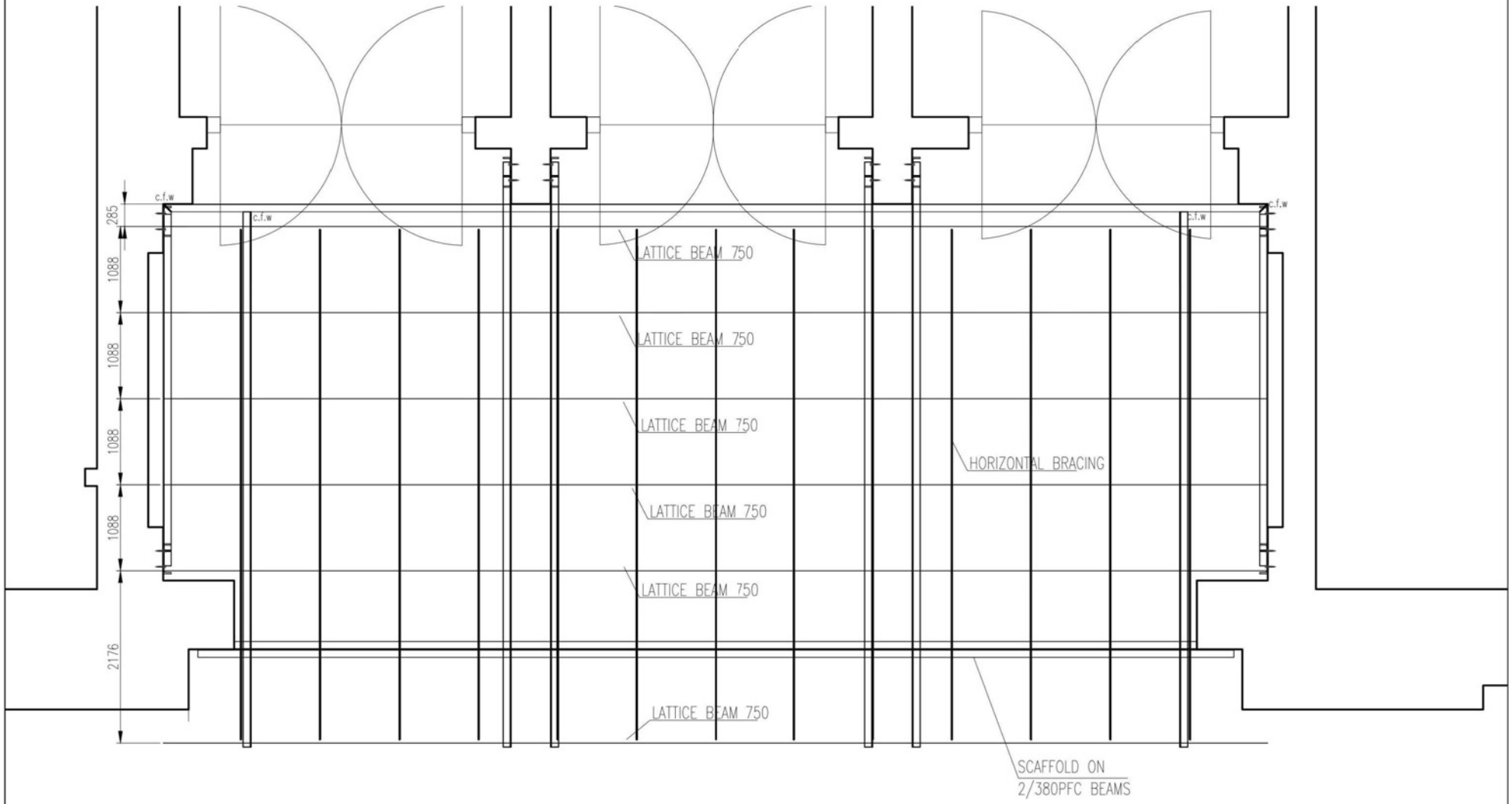
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	WEST DOME CEILING ACCESS SCAFFOLD PLAN

ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S11	B



LATTICE BEAM LAYOUT PLAN

SECTION C / S9

SCALE 1:50

NOTE: LATTICE BEAM 750 ABOVE THE STEEL FRAME,
UNDERNEATH LAYHER FW TRUSS SYSTEM
"V" CONFIGURATION, AT 1m HORIZONTAL BRACING

TENDER ISSUE

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
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A	PRELIMINARY ISSUE	U.P.	22.02.2018

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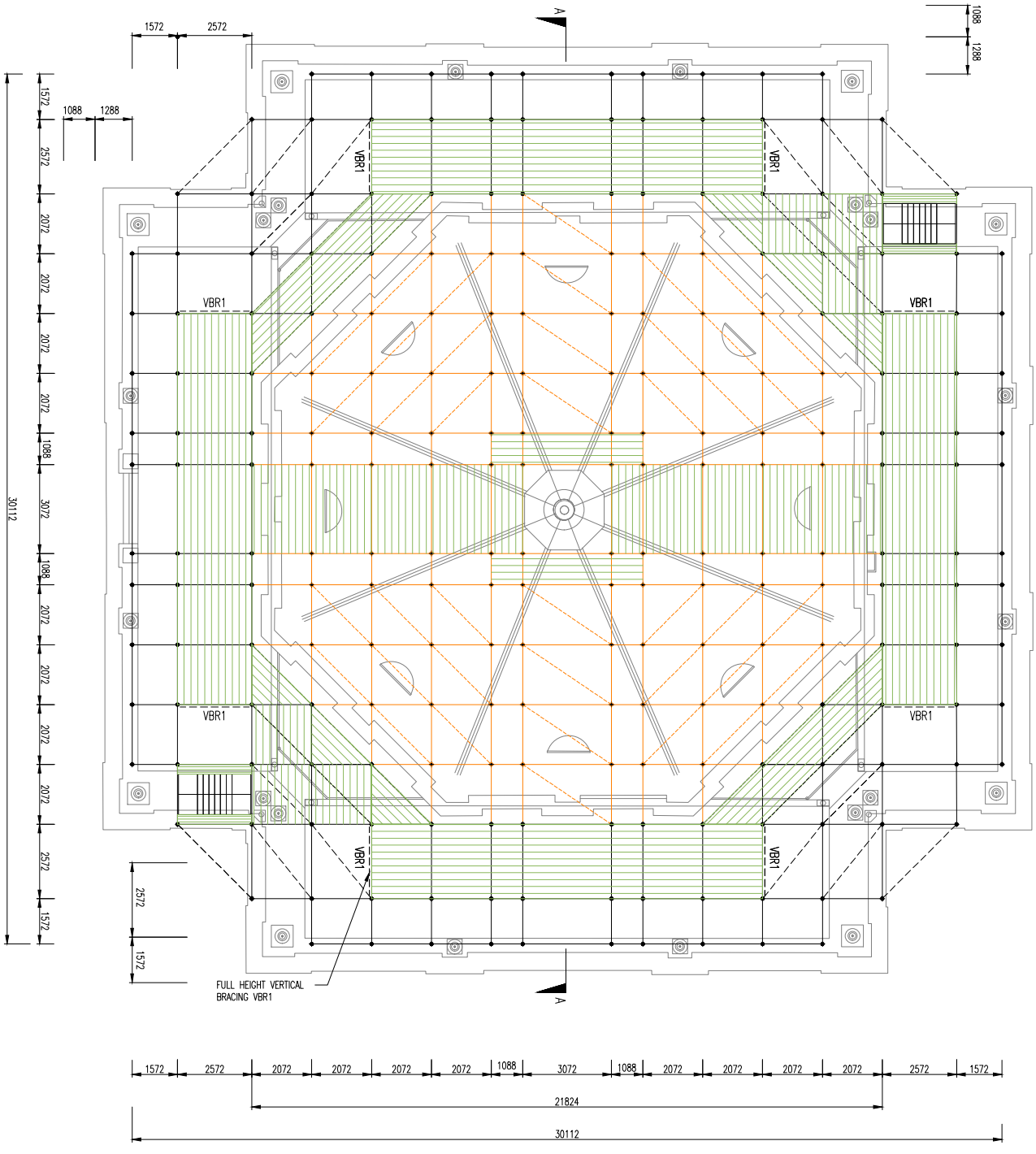
SCALE	AS NOTED		A3

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	WEST DOME CEILING ACCESS SCAFFOLD PLAN

ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-B	18/005	S12	B

GENERAL NOTES:

1. LIGHT DUTY LOADS ALLOWED ON DECKS SURROUNDING DOME AND EXTERNAL PERIMETER. MAXIMUM TWO MULTIPLE LEVEL DECK LOADING CAN BE USED. CONTRACTOR TO CHECK WITH FINE DESIGN, MAXIMUM NUMBER OF WORKING GANG SIZE BEFORE COMMENCING WORK.
2. FULL HEIGHT SHADE CLOTH IS NOT ALLOWED, HOWEVER LOCAL SHADE CLOTH COVER IS ALLOWED AND TO BE LIMITED 2-3 LIFTS AT ONE TIME.



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN & SECTION 1 - 1

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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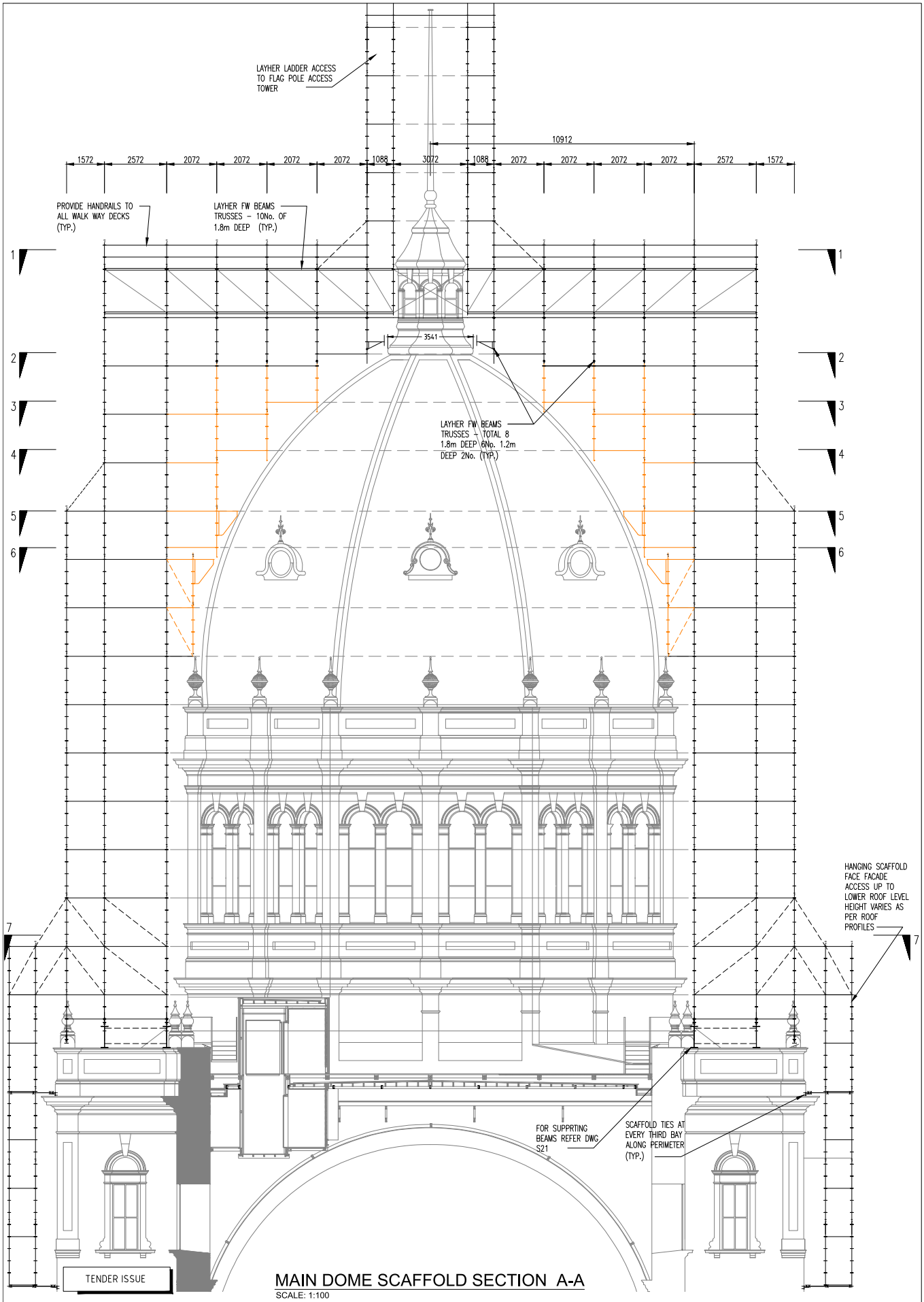
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL TOP VIEW – SECTION 1-1 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S13	A



TENDER ISSUE

MAIN DOME SCAFFOLD SECTION A-A

SCALE: 1:100

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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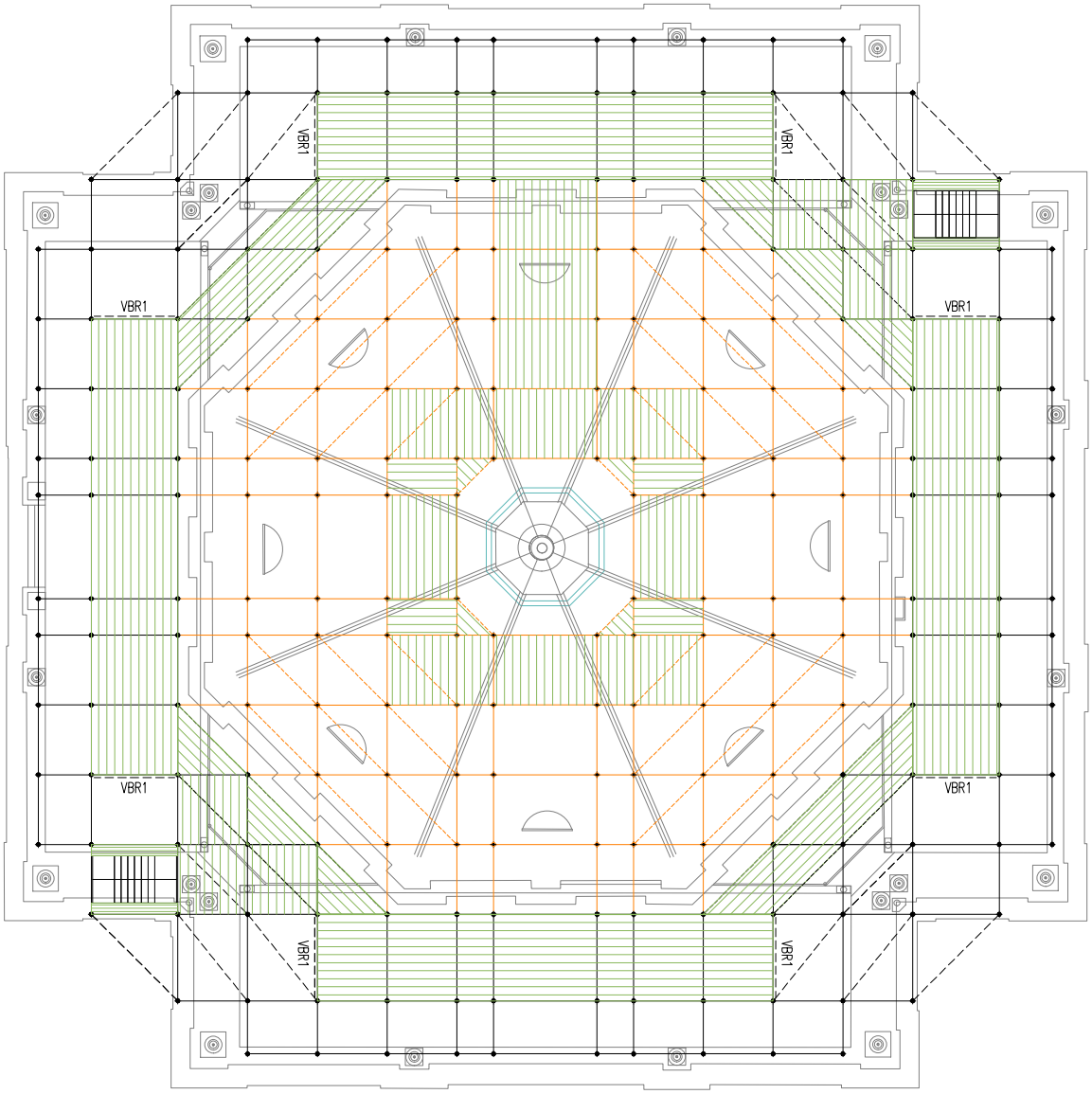
DATE	FEB 18
SCALE	AS NOTED
	A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	SECTION A-A / S1
ACAD NAME:	18005-REV-A
PROJECT NO.	18/005
DWG	S14
REV.	A



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN / SECTION 2 - 2

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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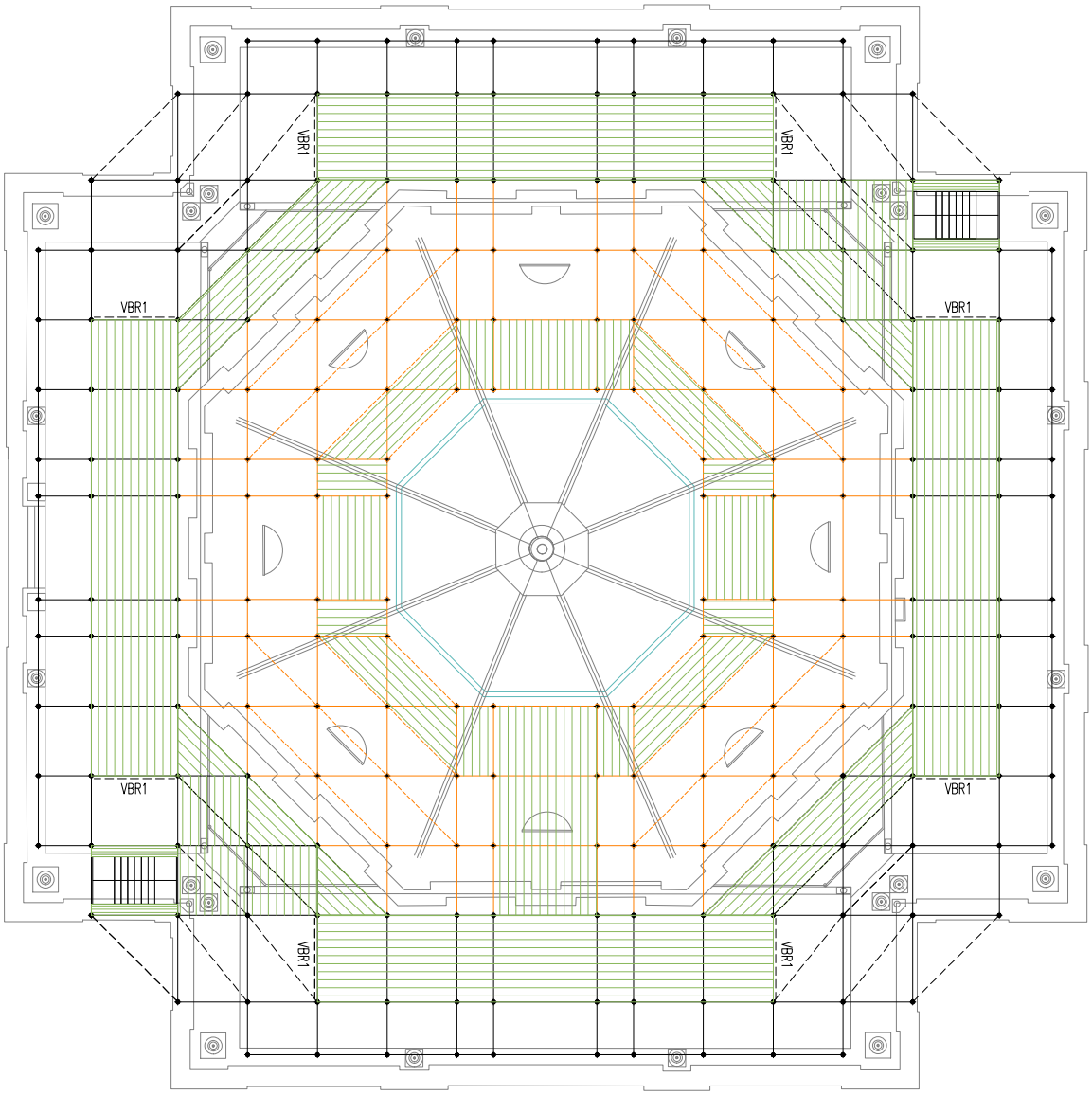
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL SECTION 2-2 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S15	A



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN / SECTION 3 - 3

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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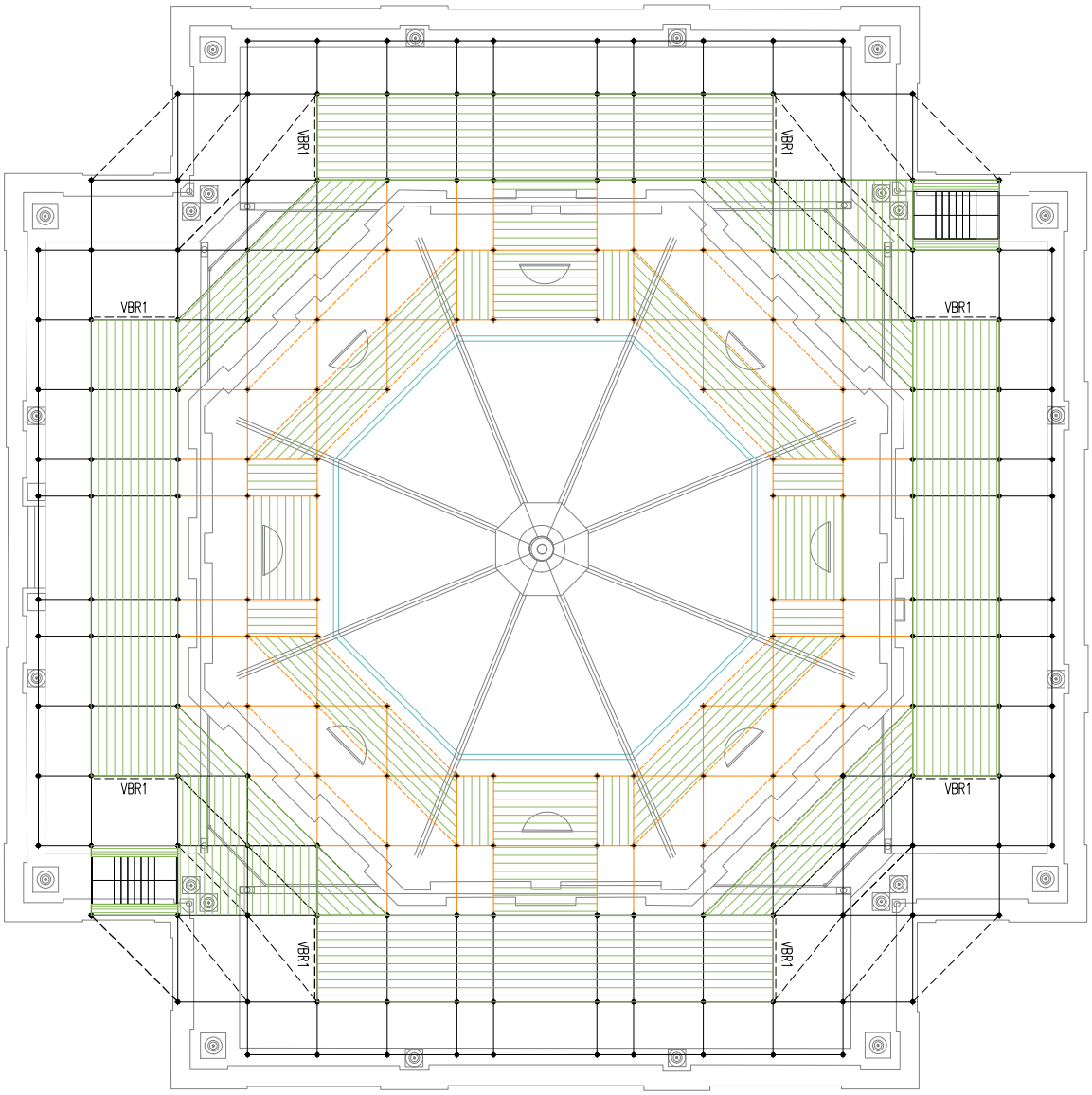
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL SECTION 3-3 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S16	A



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN / SECTION 4 - 4

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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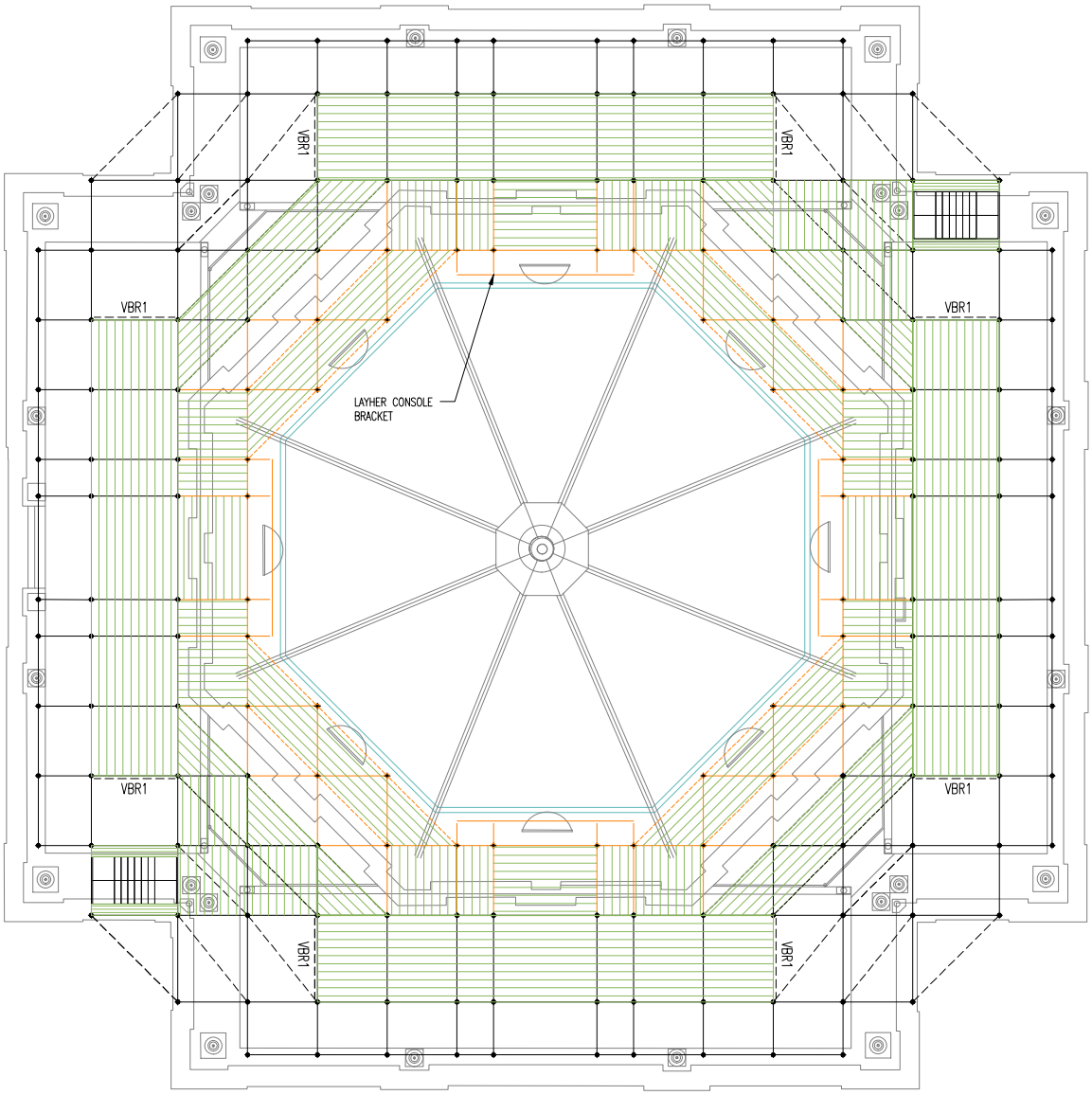
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL SECTION 4-4 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S17	A



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN / SECTION 5 - 5

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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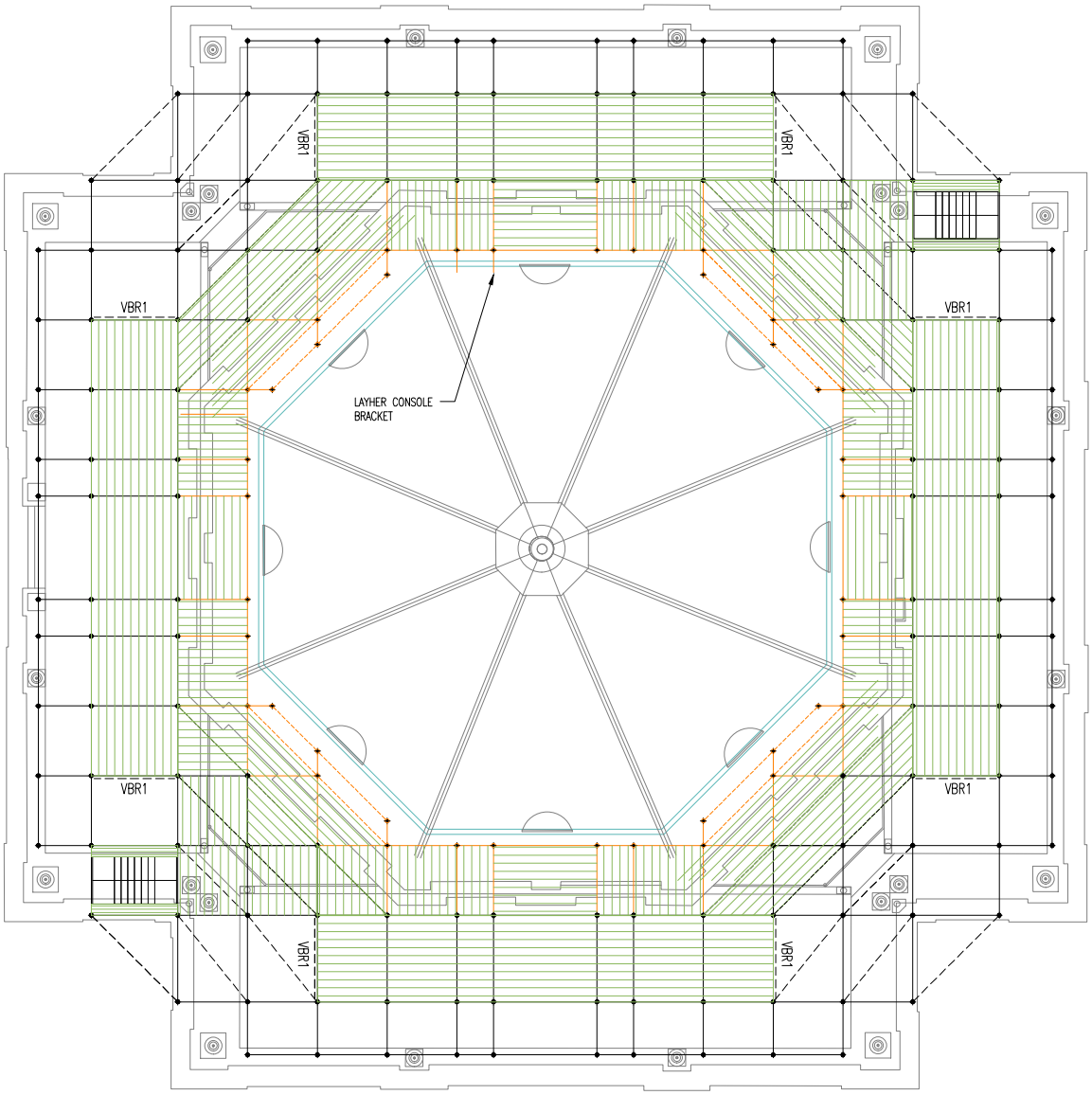
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL SECTION 5-5 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S18	A



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN / SECTION 6 - 6

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

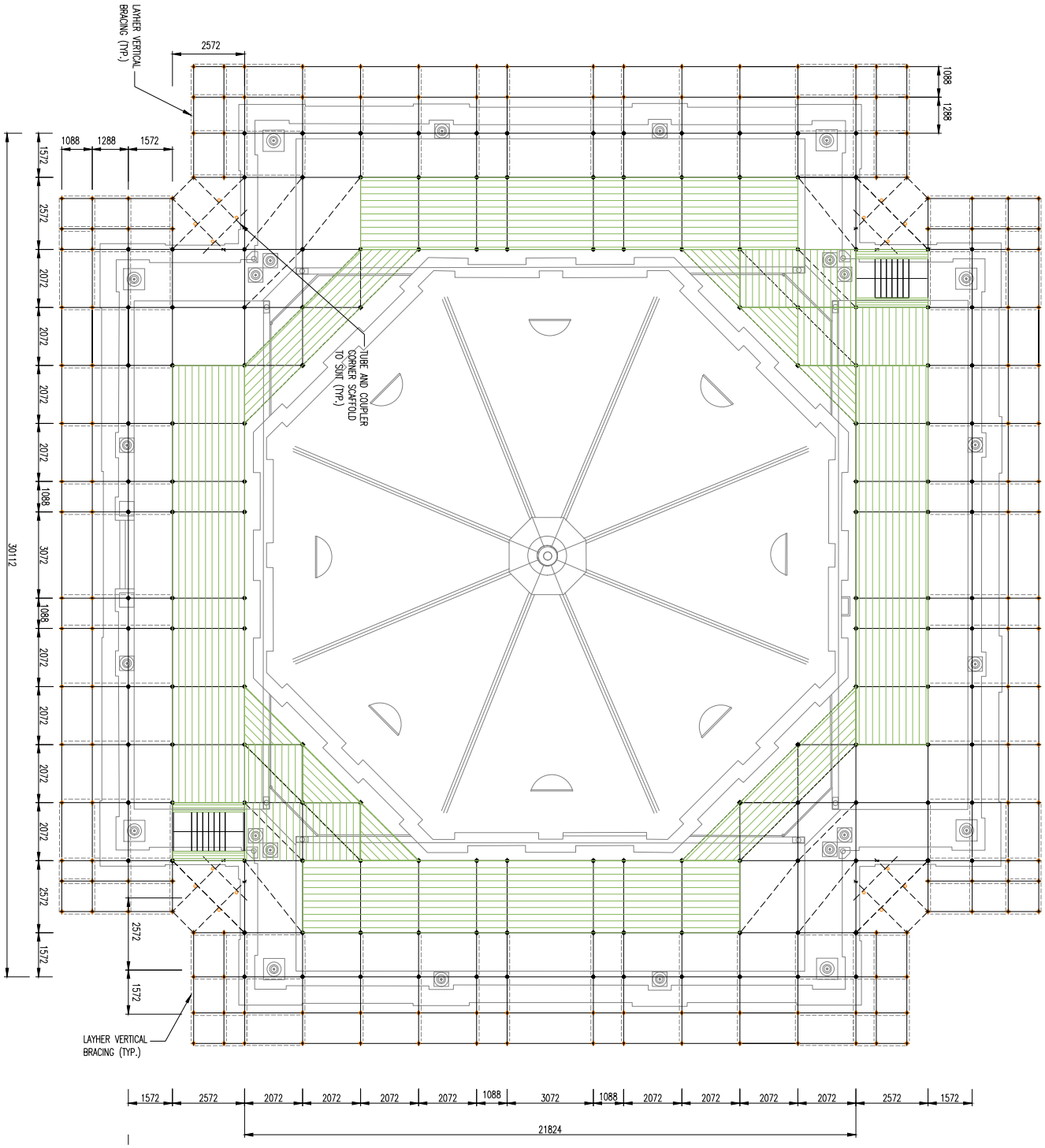
REVISIONS

FINEDESIGN
engineering • interior • building design
PH : (03) 9886 9544
262 HIGH STREET ASHBURTON VICTORIA 3147
WEB : www.finedesign.com.au EMAIL : finedesign@finedesign.com.au

DRAWN BY	R.M./N.W.	DATE	FEB 18
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL SECTION 6-6 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S19	A



TENDER ISSUE

MAIN DOME SCAFFOLD PLAN / SECTION 7 - 7

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

REVISIONS

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DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	TYPICAL SECTION 7-7 / S14

ACAD NAME:	PROJECT NO.	DWG	REV.
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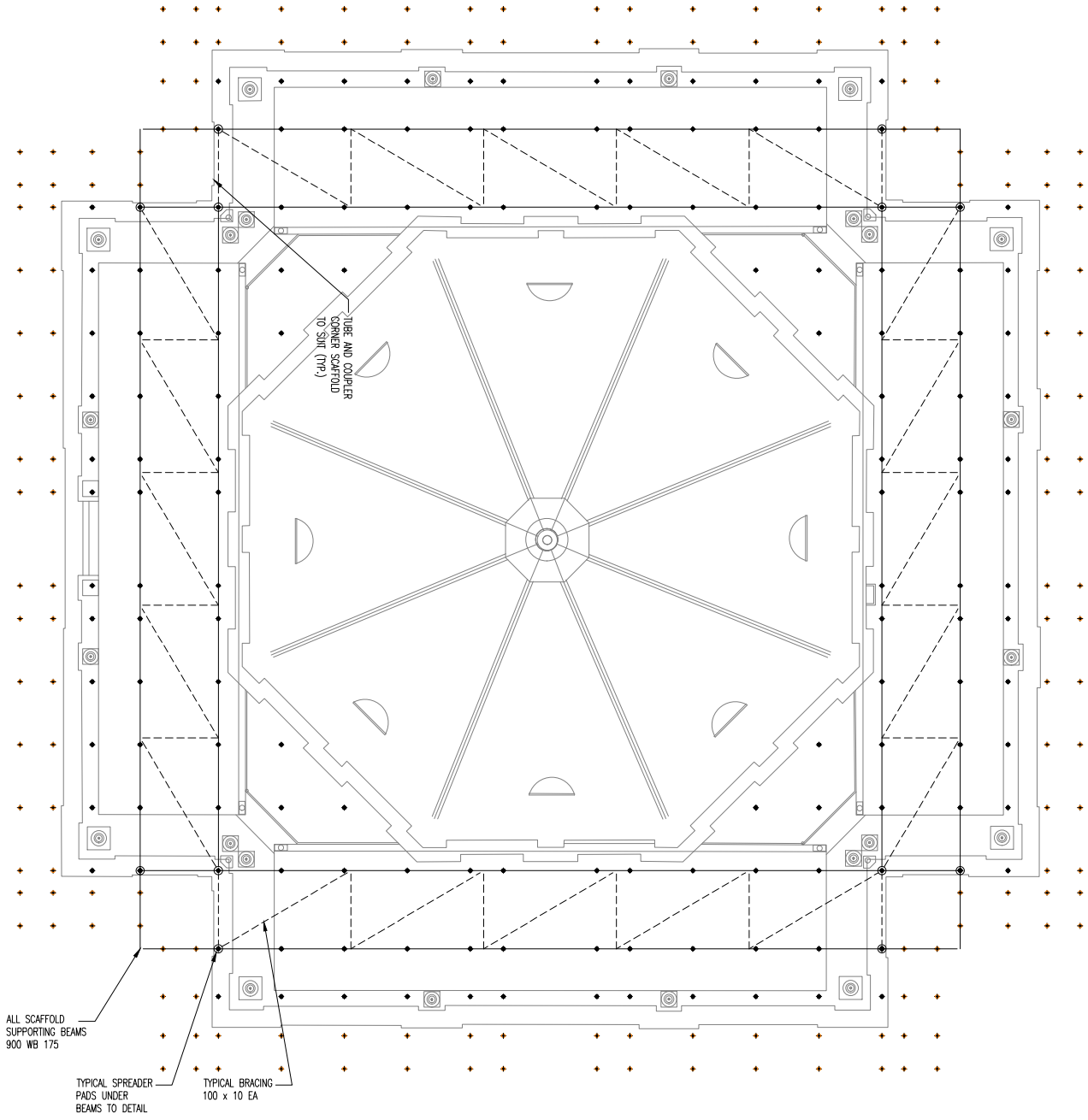

TENDER ISSUE

SCAFFOLD SUPPORT BEAMS ARRANGEMENT

SCALE: 1:150

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	07.03.2018

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CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	SCAFFOLD SUPPORT BEAMS ARRANGEMENT

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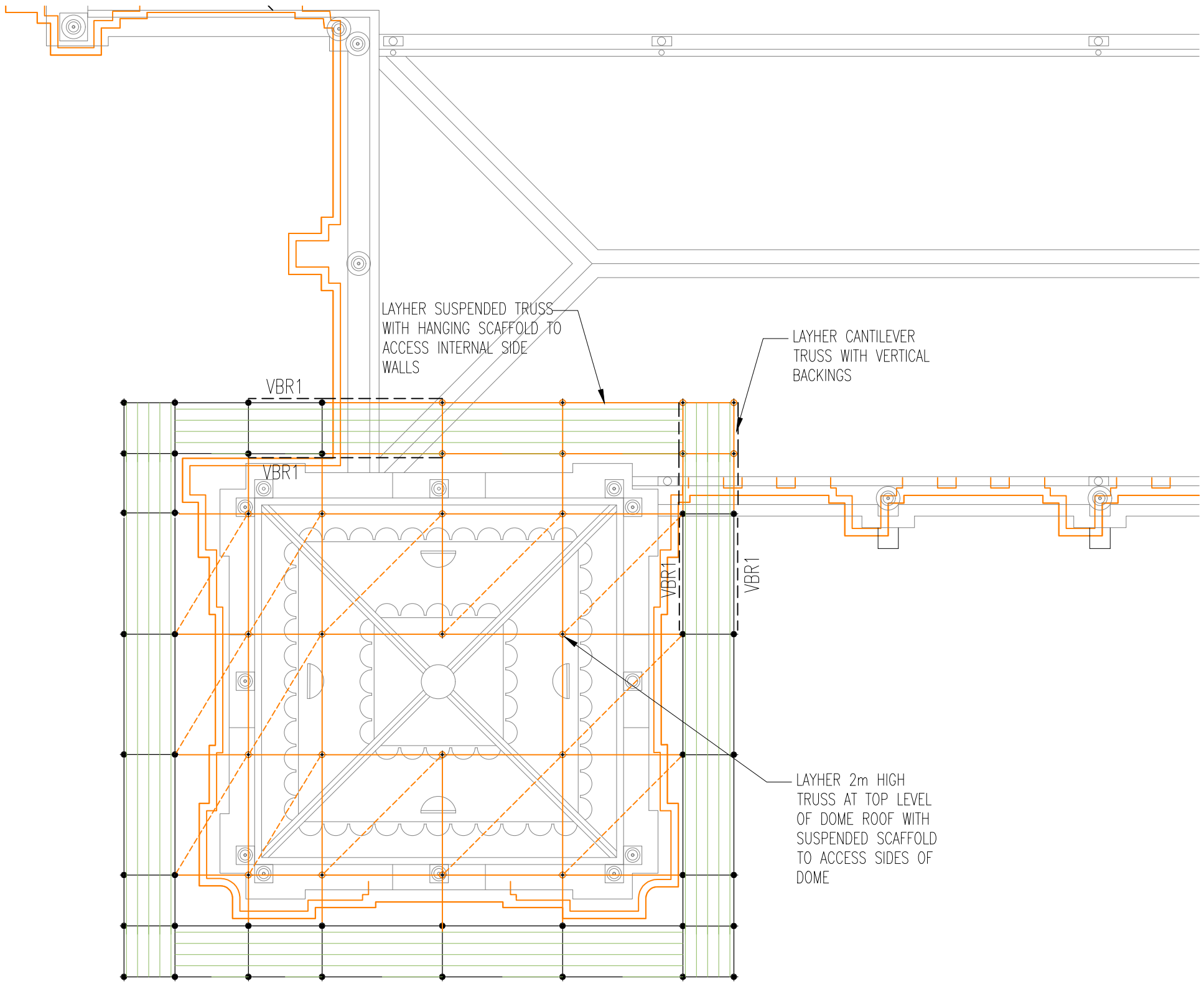

TENDER ISSUE

SOUTH WEST CONER PAVILION 01 SCAFFOLD PLAN

SCALE: 1:100 (NOTE : PAVILION 4,5 & 8 DESIGN SIMILAR)

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	08.03.2018

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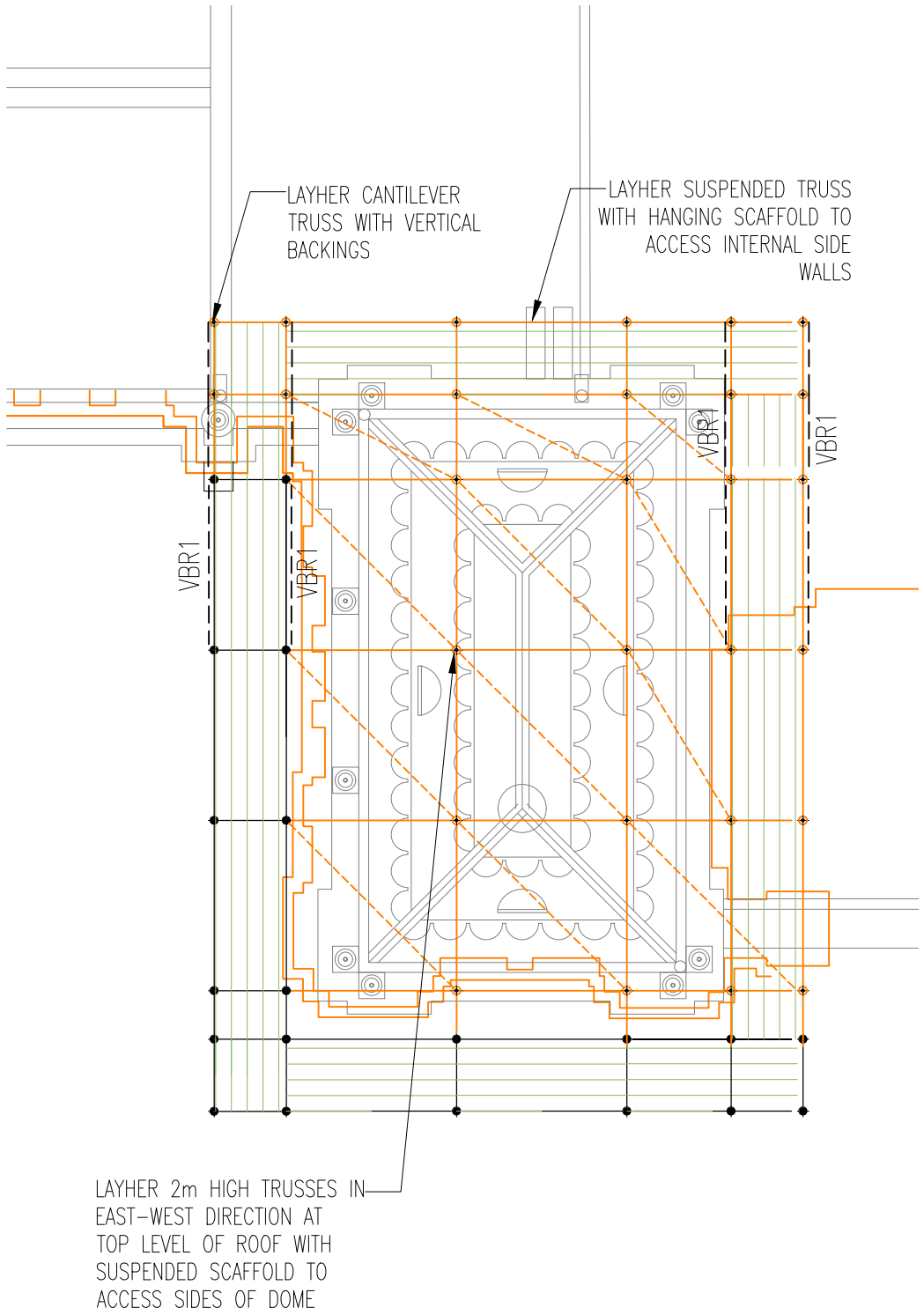
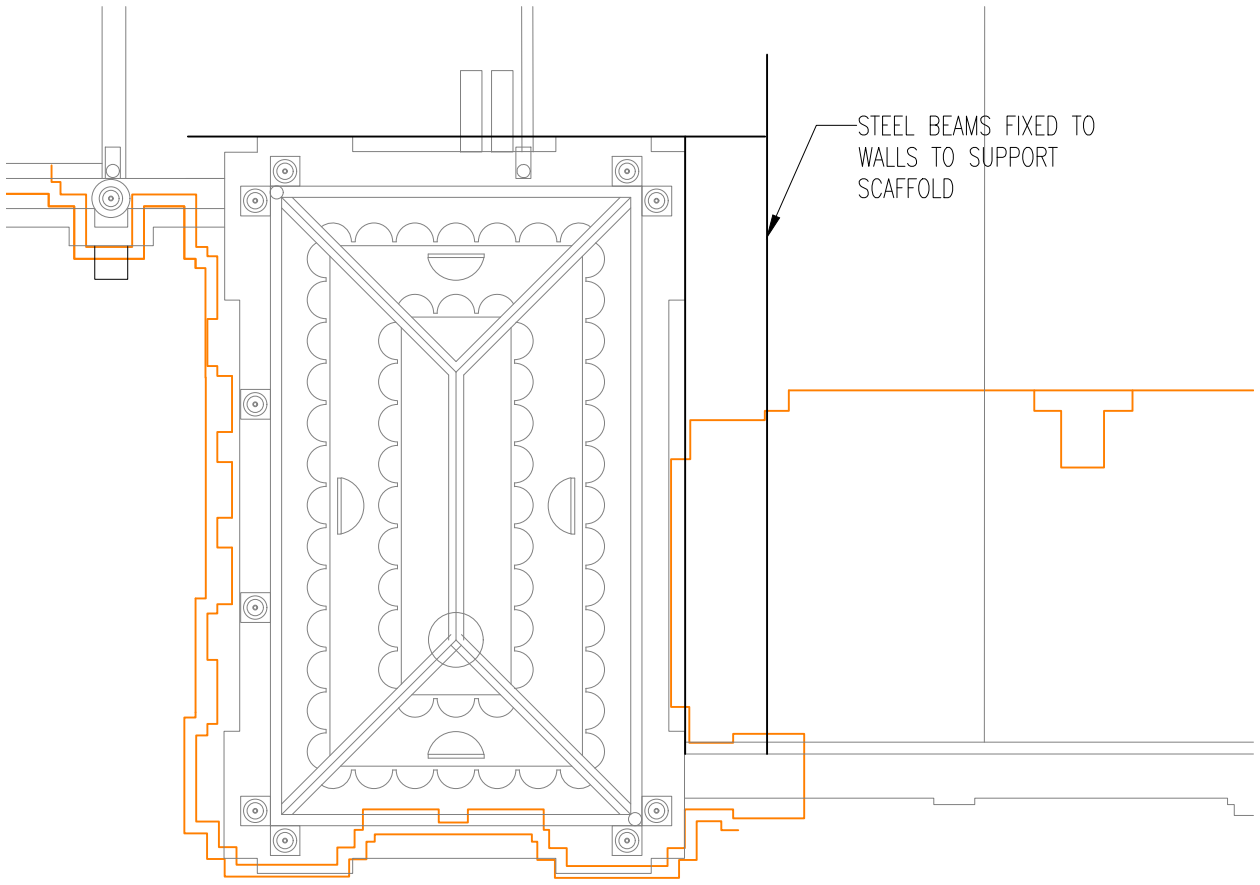
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED	A2	

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	SOUTH WEST CORNER PAVILION 01 SCAFFOLD PLAN

ACAD NAME	PROJECT NO.	DWG	REV.
18005-REV-A	18/005	S22	A





TENDER ISSUE

PAVILION 02 SCAFFOLD AND SUPPORTING BEAM PLAN

SCALE: 1:100

GENERAL NOTES

REV.	DESCRIPTION	BY	DATE
A	TENDER ISSUE	U.P.	08.03.2018

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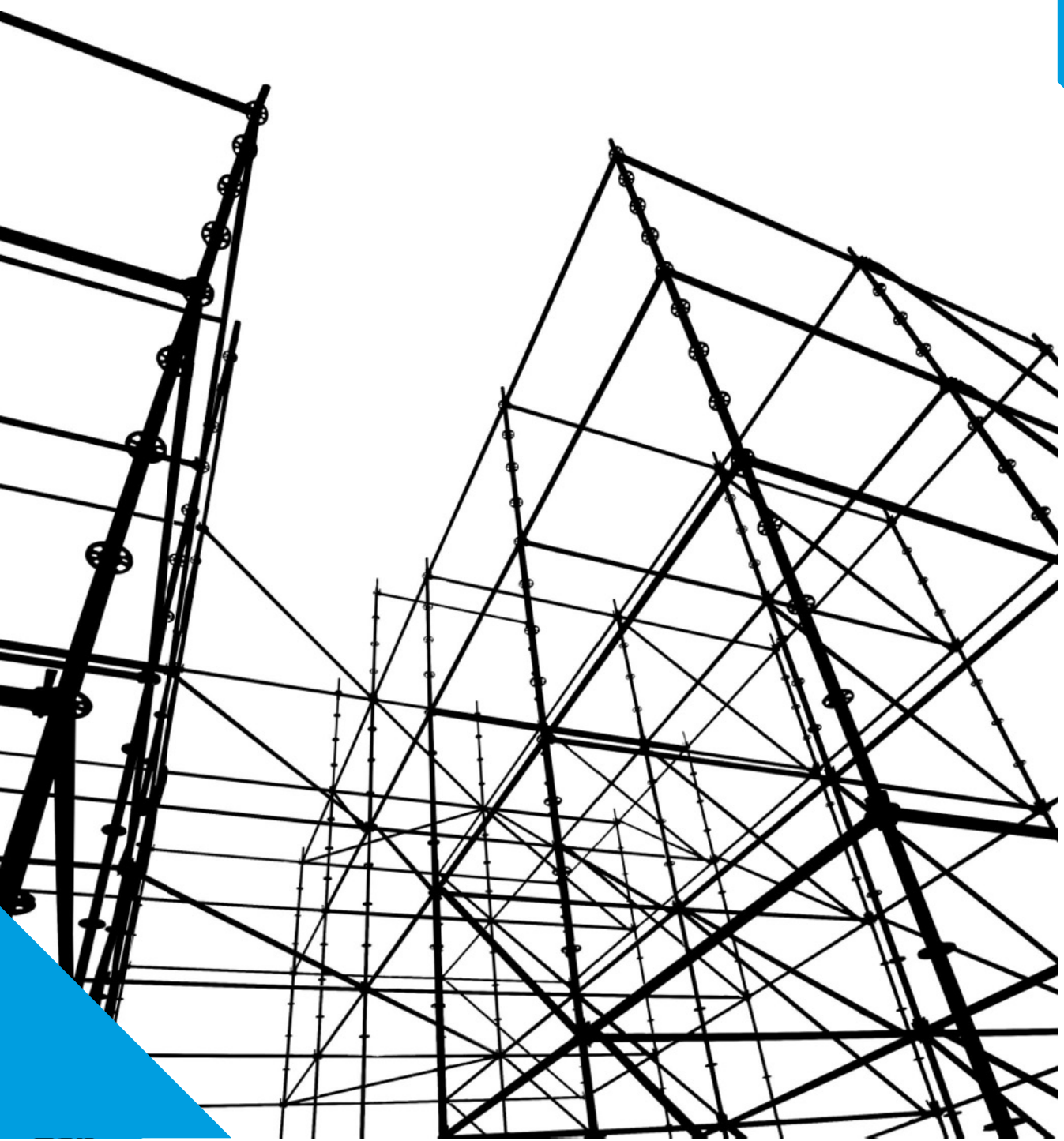
DESIGNED	U.P.	DATE	FEB 18
CHECKED BY	U.P.	DATE	FEB 18
SCALE	AS NOTED		A2

PROJECT	ROYAL EXHIBITION BUILDING FACADE & ROOF ACCESS
CLIENT	MUSEUM VICTORIA
DRAWING TITLE	PAVILION 02 SCAFFOLD PLAN

ACAD NAME	PROJECT NO.	DWG	REV.
18005–REV–A	18/005	S23	A



WELCOME
TO LAYHER.

Allround FW-Beam

Allround FW-System

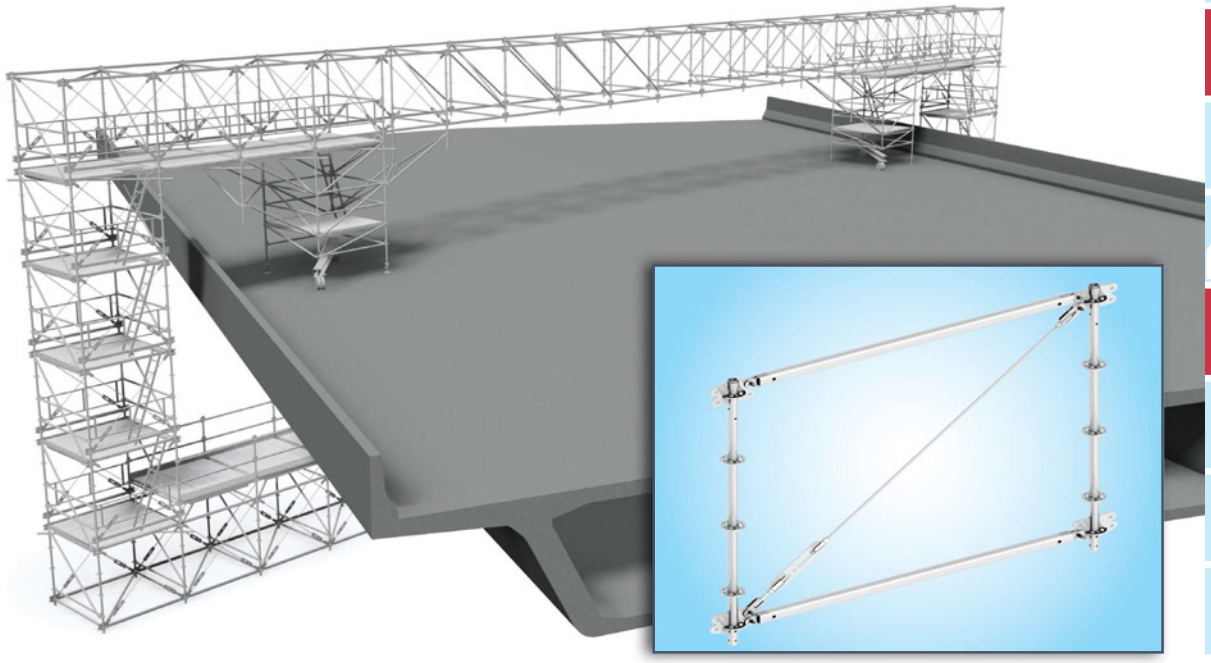
Layher.

More Possibilities. The Scaffolding System.

Layher Info
Information about products and technology for clients and partners.

Layher
More Possibilities. The Scaffolding System.

April 2016



STRONG – FAST – VERSATILE

ALLROUND FW SYSTEM

To provide economical solutions to wide-span bridging too, or to support heavier loads, the Layher range now includes the Allround FW System (FW). This additional Allround component is a modular-designed lattice beam of high load-bearing capacity that can be completely integrated into the Allround construction kit thanks to the standardised system dimensions. For lattice structures, only three essential supplementary components are needed, and they can be rapidly connected using pins: an Allround FW post, a sturdy Allround FW chord as the top and bottom chord, and a length-adjustable Allround FW diagonal rod from a tensioning rod. Lateral bracing is achieved using the standard parts of the proven Allround Scaffolding.

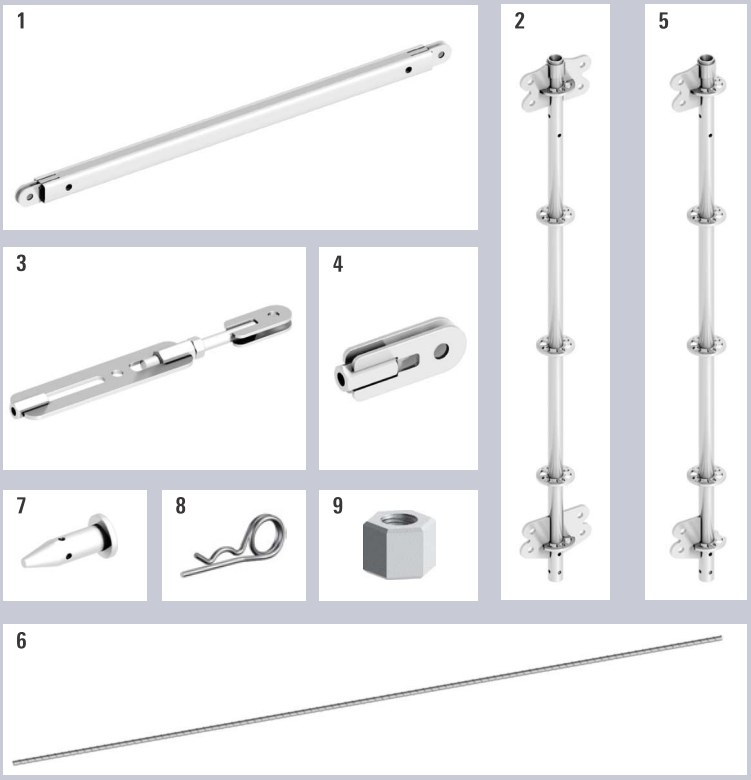
A contribution to the high load-bearing capacity of the new product is made on the one hand by the use of efficient steel grades and the design height of the Allround FW System, and on the other hand by its installation in the Allround system standard dimension. This ensures a structurally advantageous and central force transmission – an offset is prevented. A further special feature is the stepless adjustment of the diagonal rods using a turnbuckle – for example to build slightly higher structures. This compensates for unwelcome sagging. A crossed diagonal configuration is also possible for transmitting both positive and negative lateral forces.The modular design of the Allround FW System not only permits flexible heights, widths and lengths for optimum adjustment to load and geometry requirements, but also ensures economical transport and assembly. This is thanks to bolt-free connection technologies and the low weight of the handy individual components, which is 17.4 kilograms maximum. If no crane is available at the site, the Allround FW System can be assembled manually without any problem – also in cantilevered construction from a secured level.

The variety of applications covers wide-span work platforms, support beams, bridging structure and projections in facade and birdcage scaffolding, suspended structures or projecting arms for work on the undersides of bridges undergoing repair. Even wide-span roof trusses for temporary weather protection roofs can be constructed effortlessly.

PRODUCT DETAILS

YOUR BENEFITS AT A GLANCE

- High load-bearing capacity owing to the structural height and steel material.
- Limitless applications as platform, cantilevered beam and by extension with a few components for roof constructions.
- Easy handling by low weight of max. 17.4 kg.
- Seamless integration into Allround structures. The components are located on the system axes in all three directions.



Pos.	Description	Dimensions L/H x B [m]	Weight approx. [kg]	PU [Pcs.]	Ref. No.
1	**Allround FW chord**	1.57	10.50	20	**2646.157**
		2.07	13.90	20	**2646.207**
		2.57	17.40	20	**2646.257**
2	**Allround FW post**	1.00	8.80	28	**2646.100**
		1.50	11.60	28	**2646.150**
		2.00	16.20	28	**2646.200**
3	**Allround FW Endfitting with turnbuckle**		1.50	100	**2646.202**
4	**Allround FW Endfitting**		0.95	100	**2646.203**
5	**Allround FW post, single-side-connection**	1.00	6.40	28	**2646.105**
		1.50	9.20	28	**2646.155**
		2.00	13.80	28	**2646.205**
6	**Allround FW diagonal rod**				
	for 2.57 x 2.00 m Bay	2.37	2.37	20	**2646.210**
	for 2.07 x 2.00 m Bay and 2.57 x 1.00 m Bay	1.96	2.80	20	**2646.211**
	for 1.57 x 2.00 m Bay	1.63	2.34	20	**2646.212**
	for 2.57 x 1.50 m Bay	2.13	3.07	20	**2646.213**
	for 2.07 x 1.50 m Bay	1.69	2.43	20	**2646.214**
	for 1.57 x 1.50 m Bay	1.28	1.85	20	**2646.215**
	for 2.07 x 1.00 m Bay	1.47	2.12	20	**2646.216**
	for 1.57 x 1.00 m Bay	1.02	1.44	20	**2646.217**
7	**Allround FW bolt, D = 20 mm**		1.61	10	**2646.220**
8	**Securing pin D = 4 mm**		1.50	50	**5905.001**
9	**Allround FW nut, D = 20 mm**		1,50	10	**2646.230**

PU Packaging Unit available ex works only available in this packaging unit

Wilhelm Layher GmbH & Co KG · Gerüste Tribünen Leitern · Ochsenbacher Strasse 56 · 74363 Güglingen-Eibensbach · Germany
Postfach 40 · 74361 Güglingen-Eibensbach · Germany · Phone +49 (0)7135 70-0 · Fax +49 (0)7135 70-265 · E-mail info@layher.com
www.layher.com

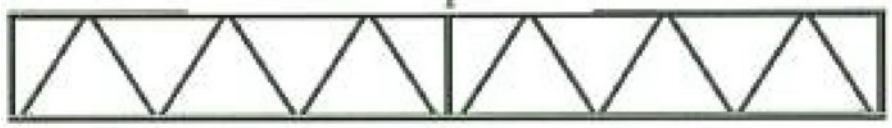
BAUMA HIGHLIGHT NO. 1: „ALLROUND FW-SYSTEM“

Why a new beam-system ?

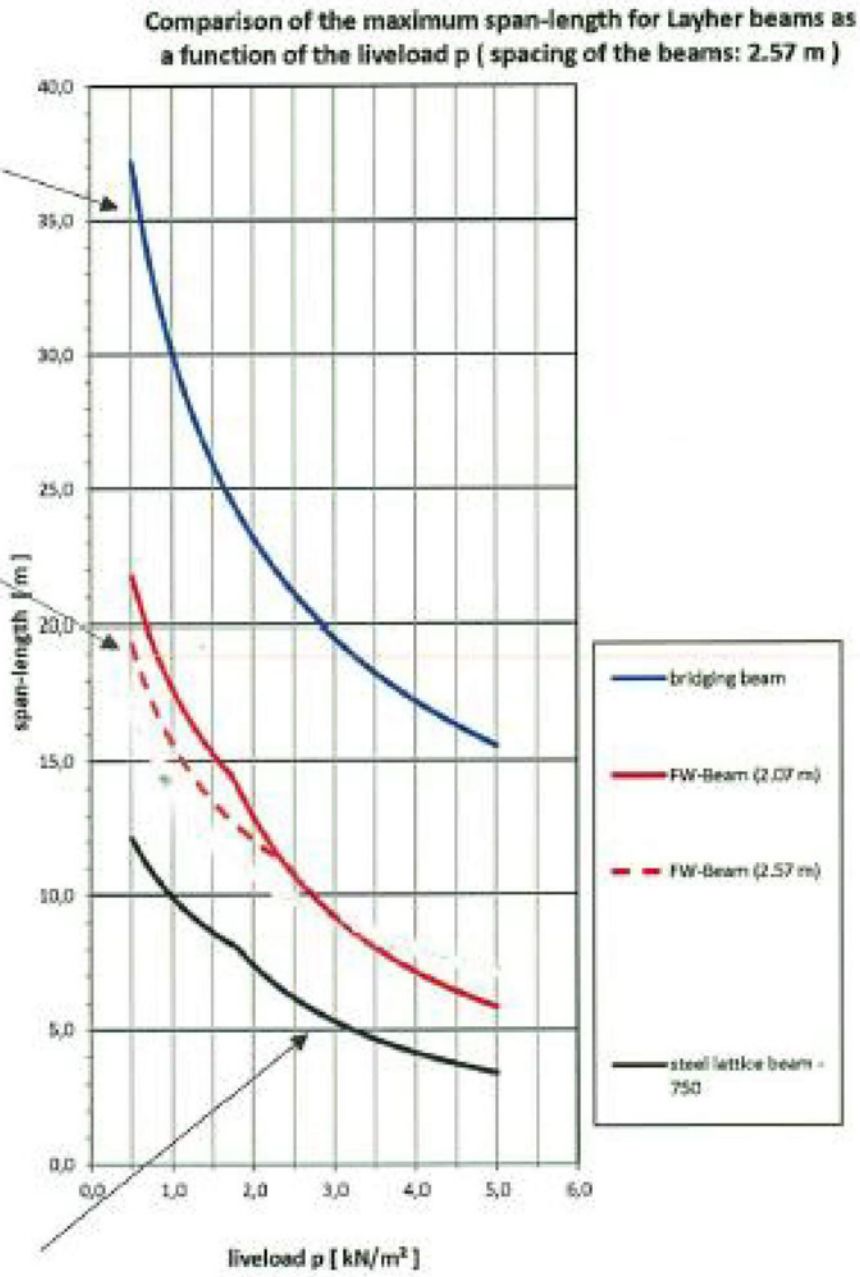
Allround bridging system

New – Exibition Highlight

Allround FW-Beam (FW-System)



Steel lattice beam 750

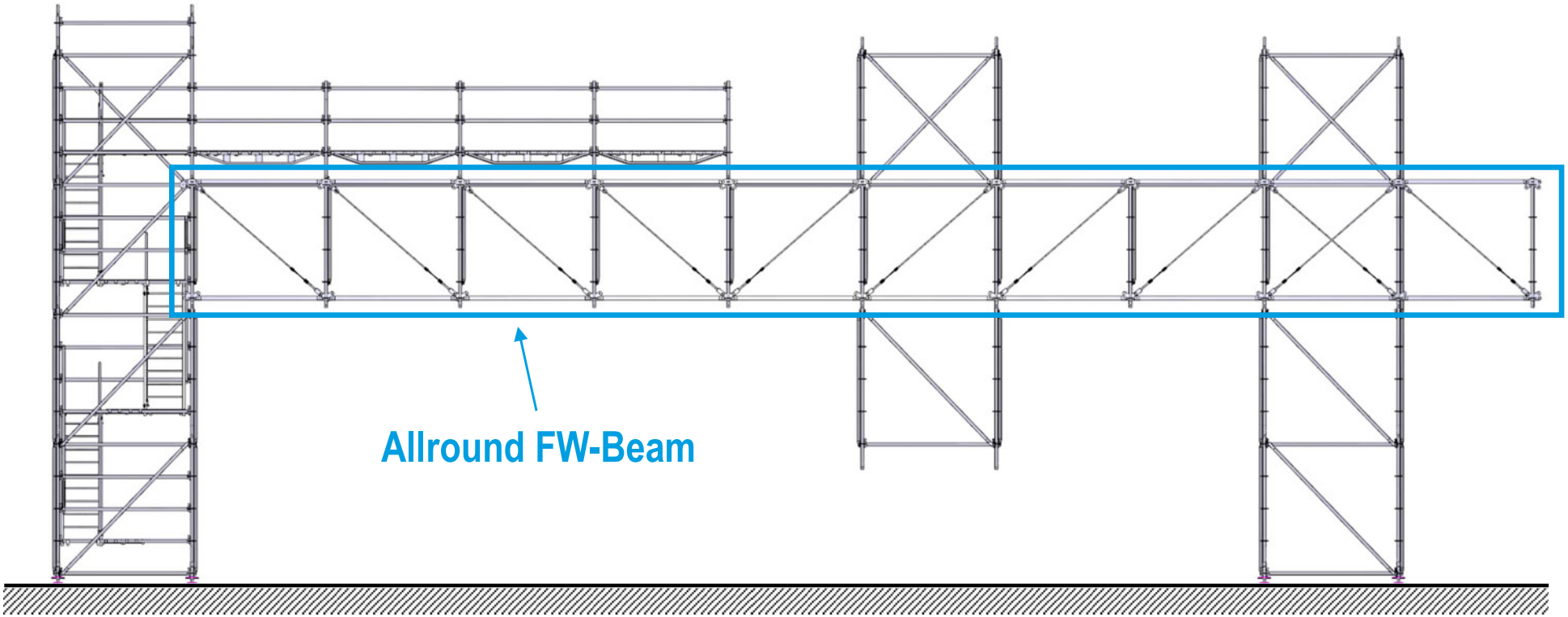


Layher

More Possibilities. The Scaffolding System.

Allround FW-Beam (Allround FW-System)

Allround FW-Beam 100% integrated into Allround



Basic components of the Allround FW-System

FW-Chord 2.57 / 2.07 / 1.57 m (squared pipe 60 x 60 mm)

FW-Post
2.0 / 1.5 / 1.0 m

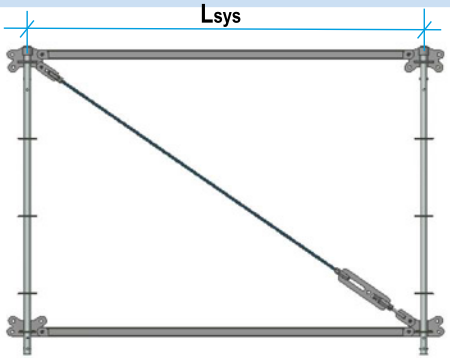
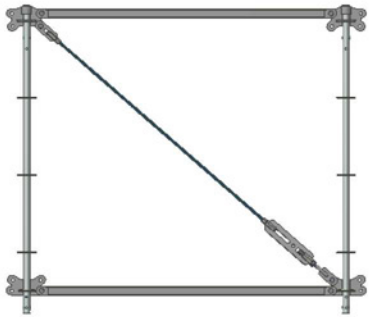
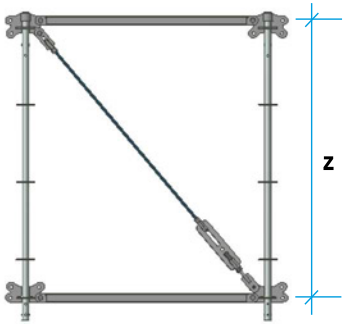
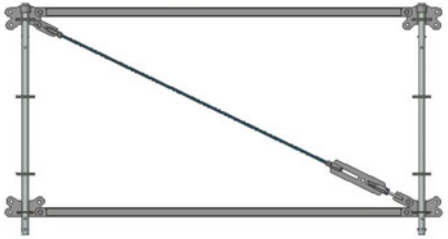
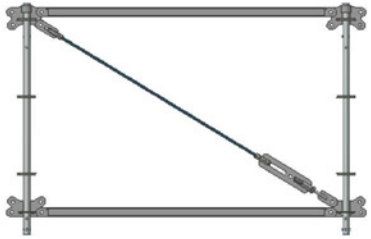
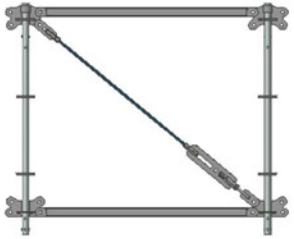
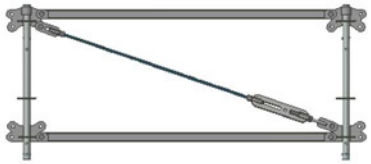
(AR-standard with joint plates)

FW-Diagonal brace
(threaded rod with clamping unit)

pin Ø 20 mm with Safety clip

Allround FW-Beam (Allround FW-System)

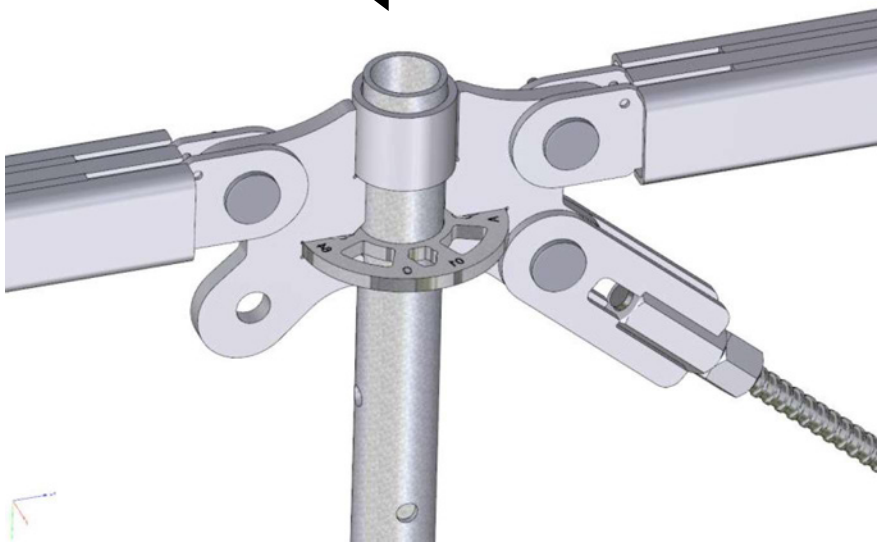
Post-Chord-combinations

Post \ Lsys	2.57 m	2.07 m	1.57 m	effective Height z
2.0 m				1.80 m
1.5 m				1.30 m
1.0 m	makes no sense in terms of design			0.80 m

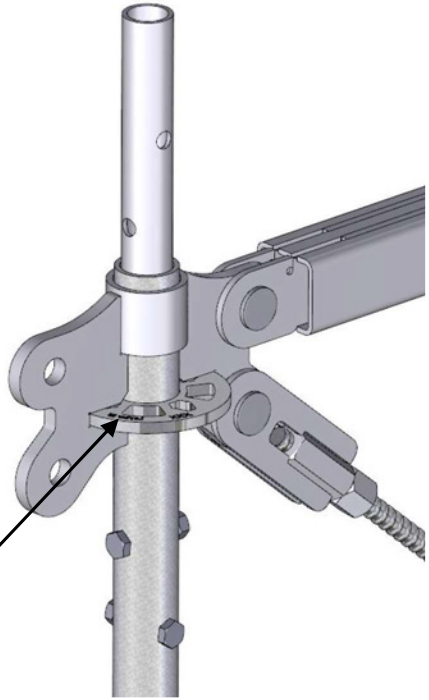
Allround FW-Beam (Allround FW-System)

Details: Connection detail top

FW-Post with an opening at the top end

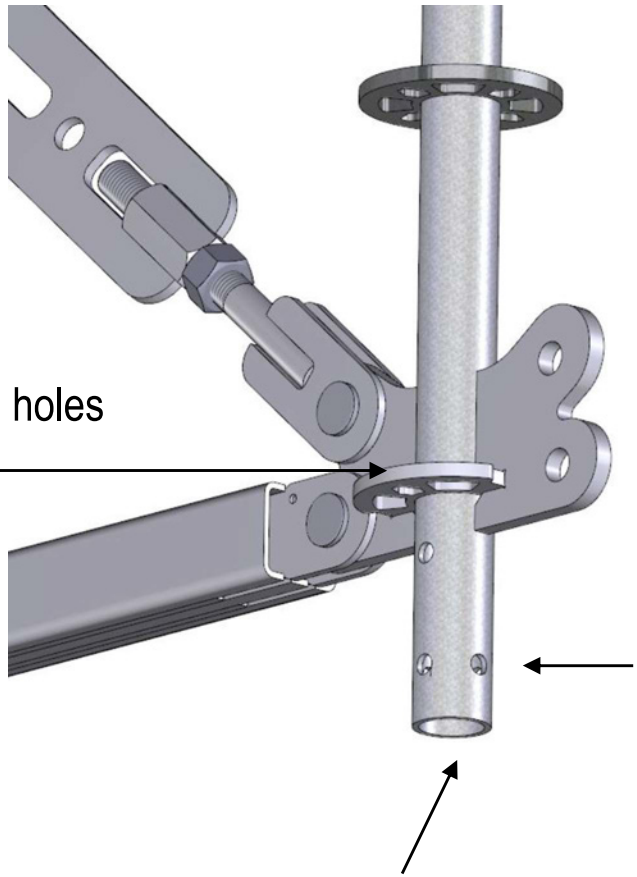


allows the connection of a spigot



rosette with 6 holes for wedgehead connections

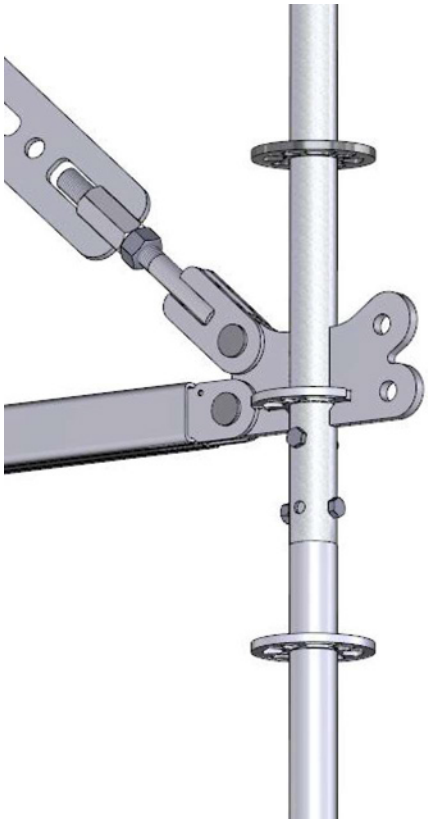
Details: Connection detail bottom



rosette with 6 holes

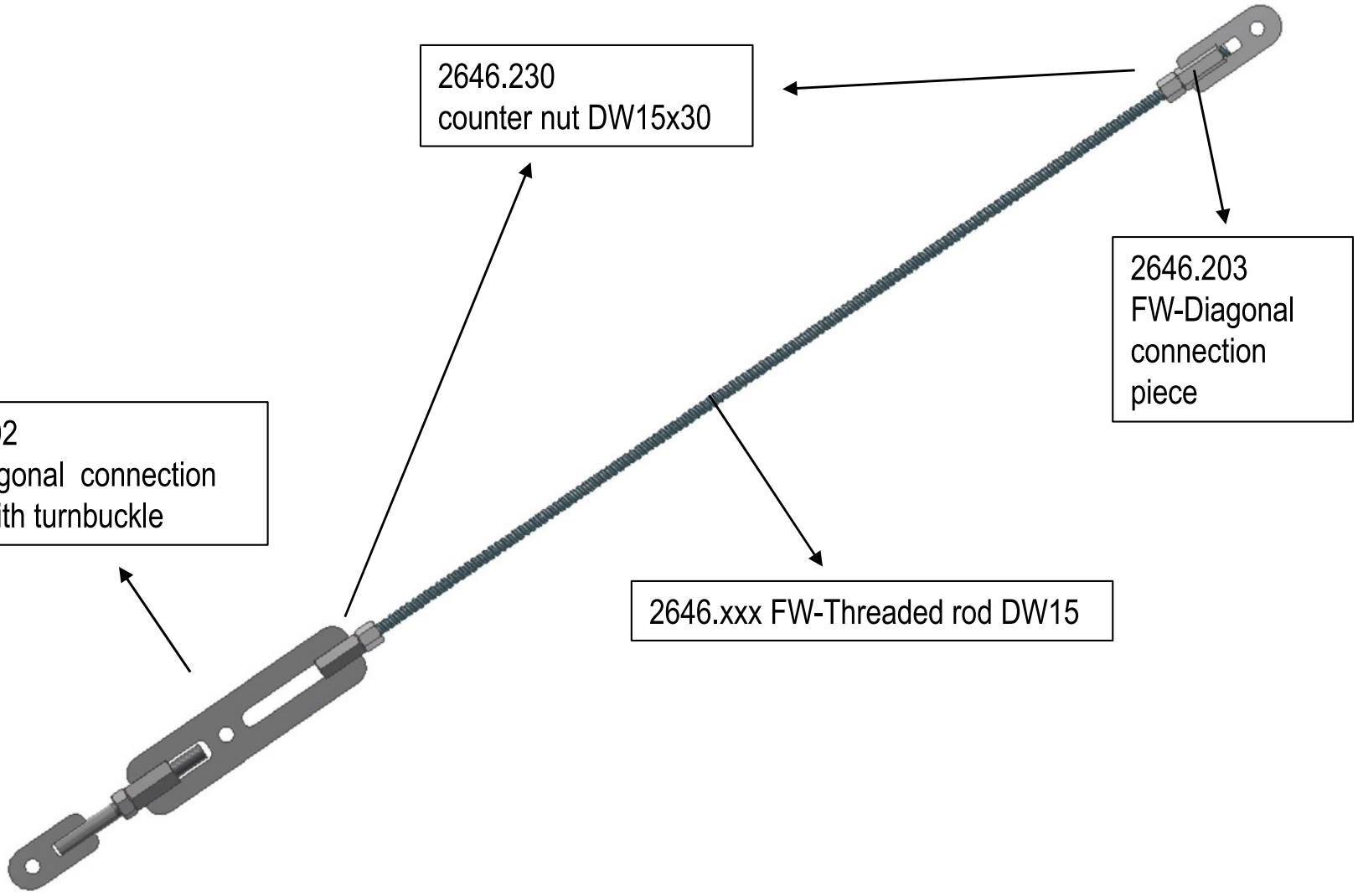
two crossed holes

full opening at the bottom end for further vertical assembly in system dimension



inserted LW-standard
(or a traditional connection with a spigot)

FW-Diagonal brace

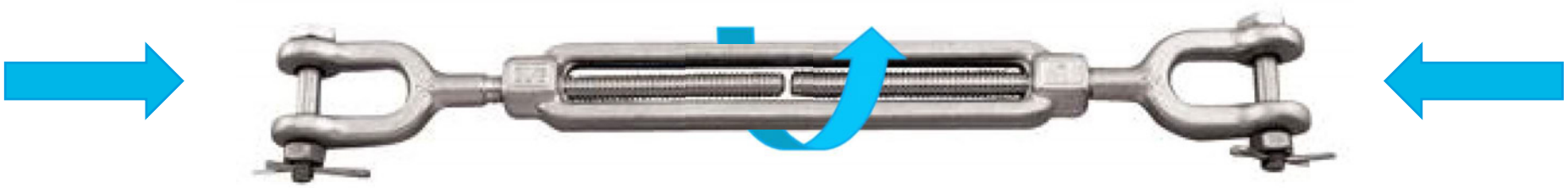


Allround FW-Beam (Allround FW-System)

Function of a turnbuckle

A turnbuckle is a device for adjusting the tension. Furthermore trusses can be pre-cambered and ties slightly pre-loaded.

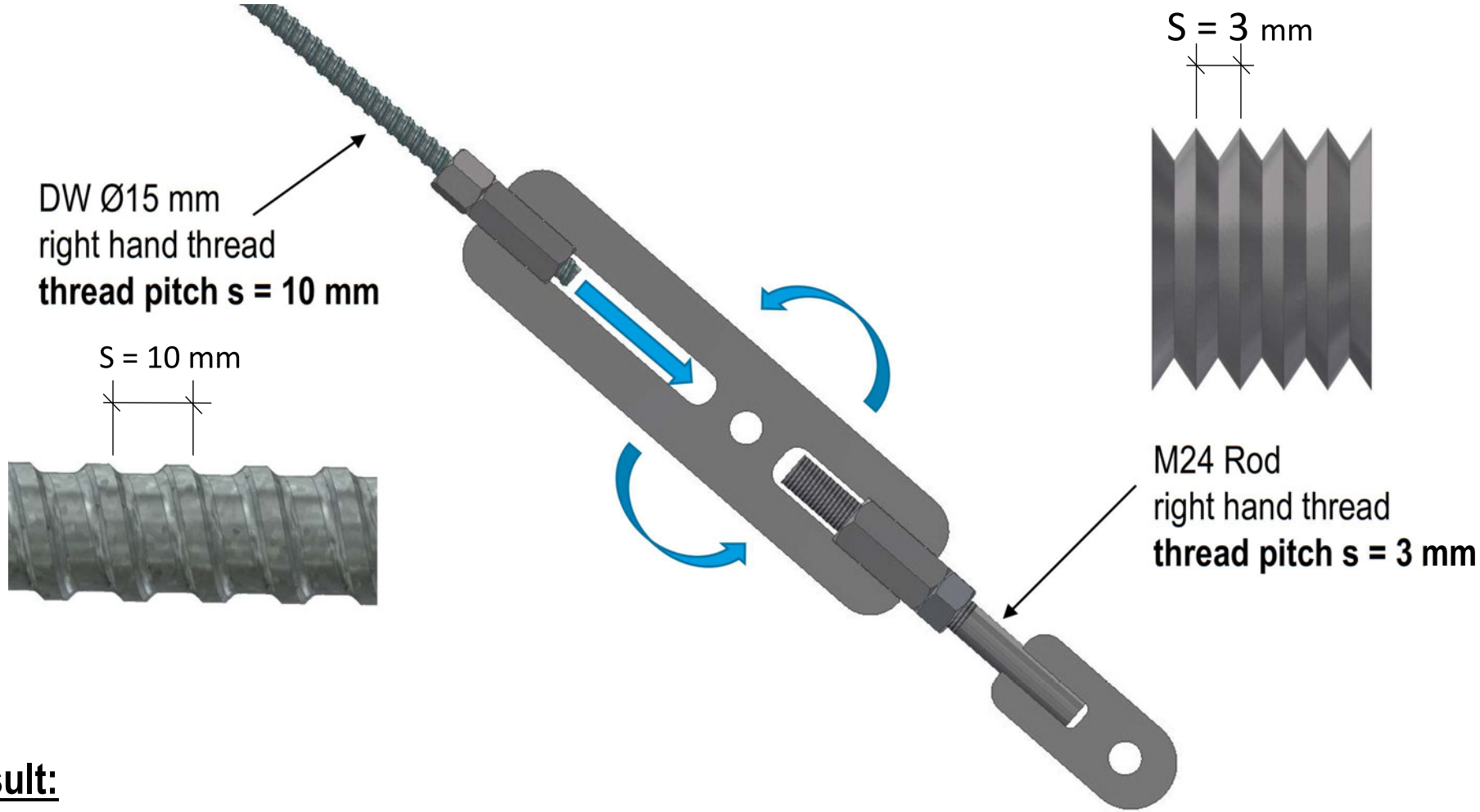
Functionality of a traditional turnbuckle



- It normally consists of two threaded eye bolts, one with a left-hand thread and the other with a right-hand thread
- 1 x 360° turn leads to a longitudinal adjustment of 2 times the thread pitch

Allround FW-Beam (Allround FW-System)

The Layher turnbuckle of the FW-system works with two right-hand threads!



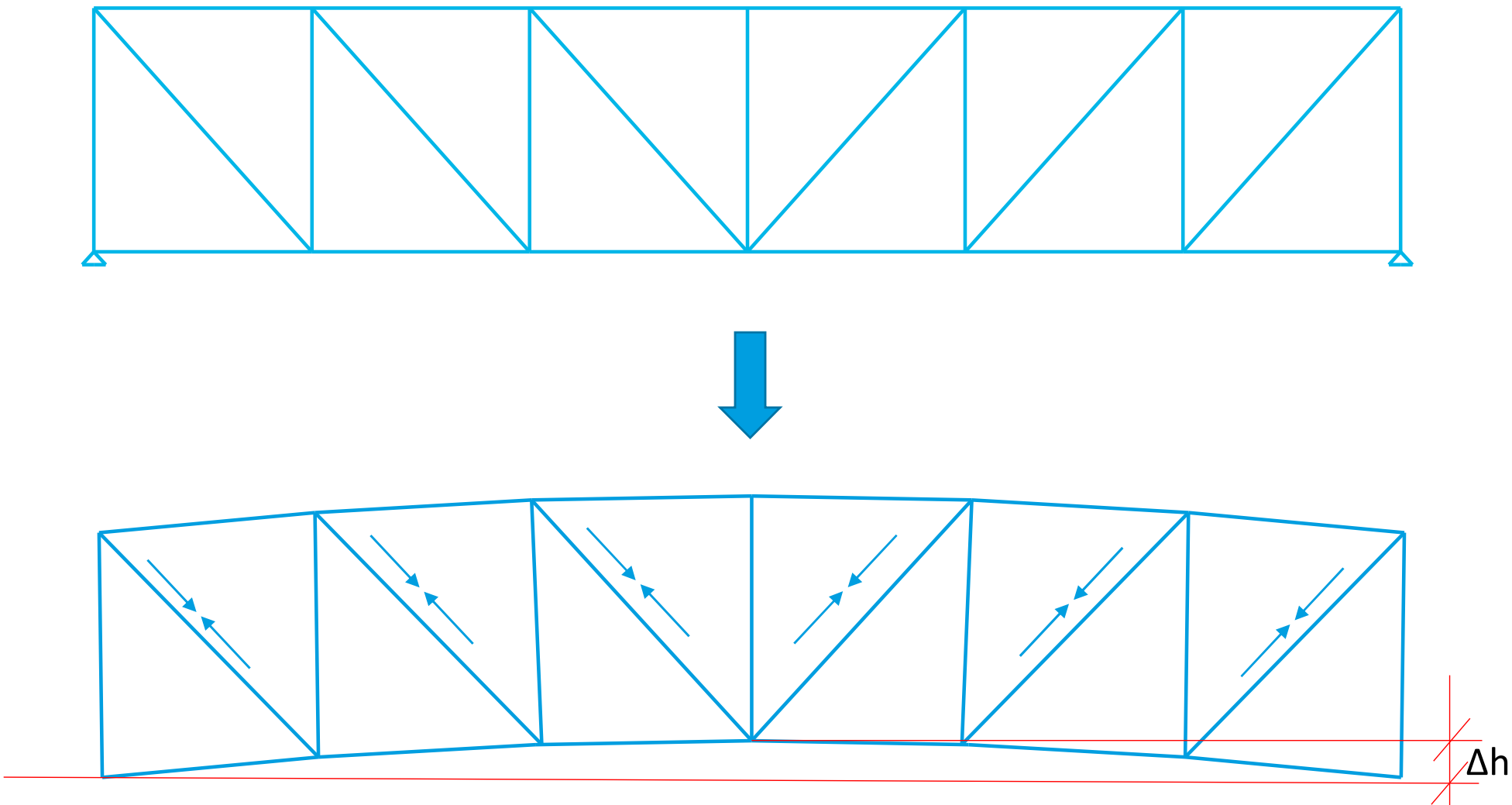
Result:

With each full right handed rotation the special turnbuckle contracts 7 mm.

Δs = 10 – 3 mm = **7 mm**

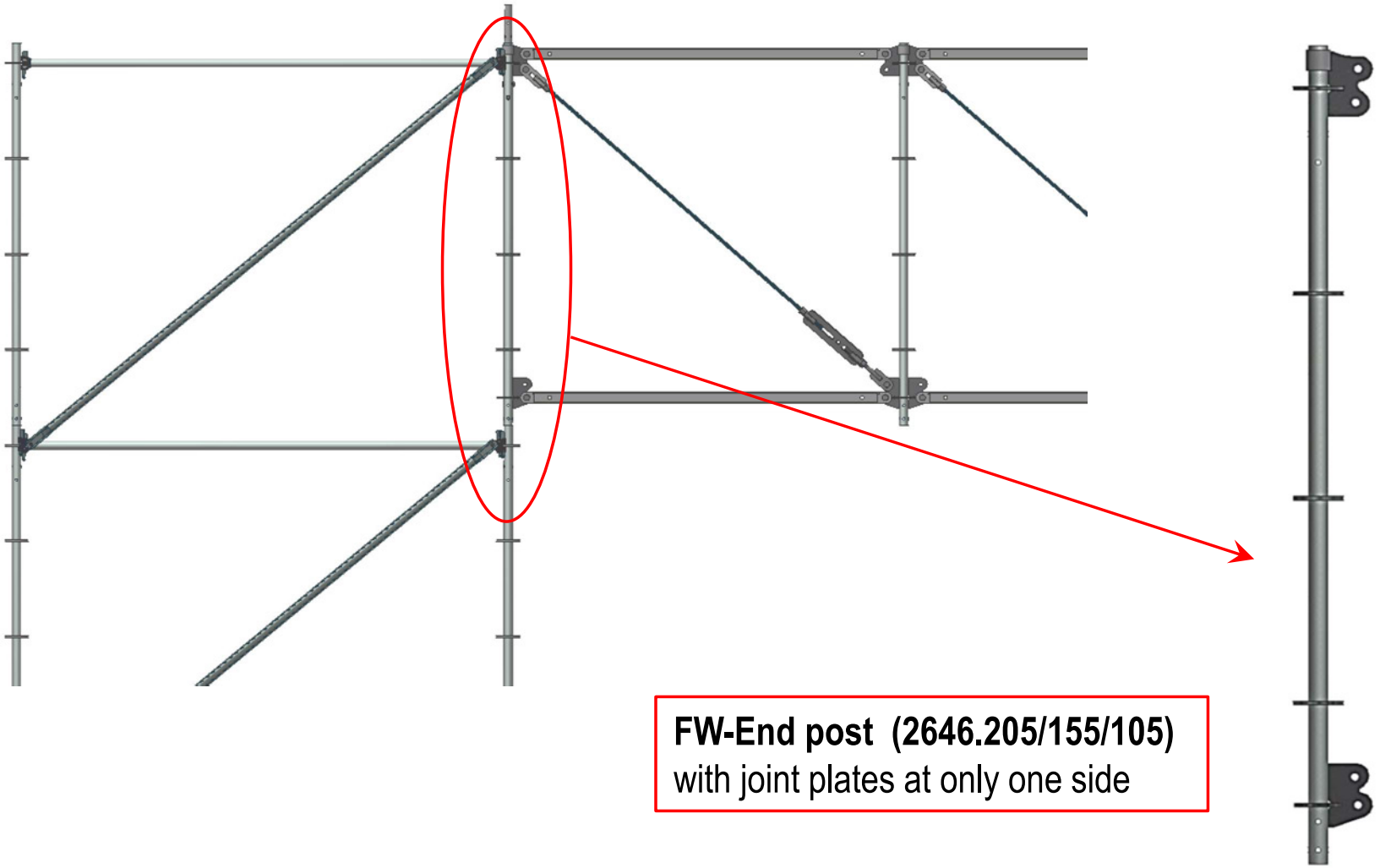
Allround FW-Beam (Allround FW-System)

Using a turnbuckle, pre cambering the structure is possible



Allround FW-Beam (Allround FW-System)

Changeover from the FW-System to Allround system in longitudinal direction

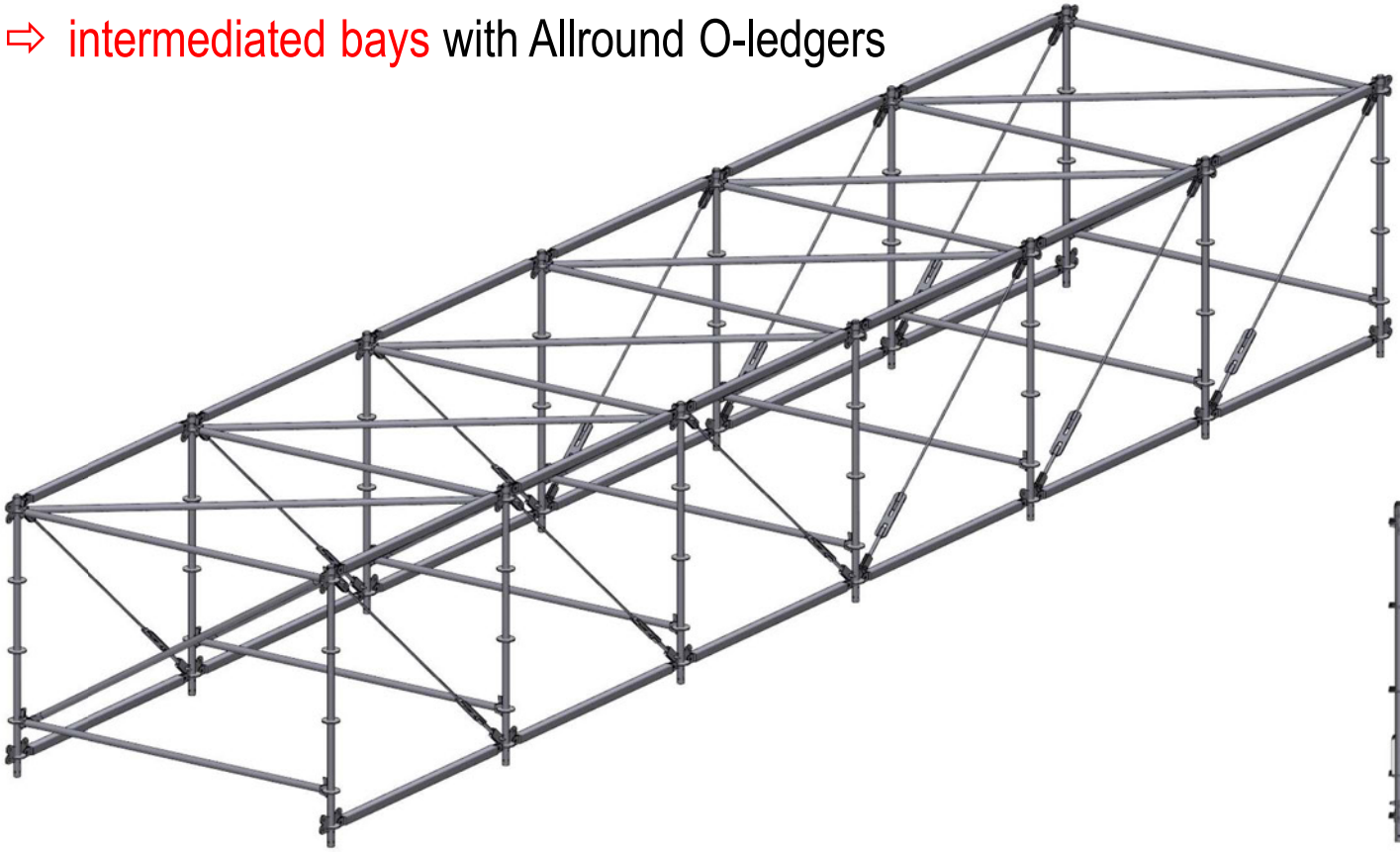


FW-End post (2646.205/155/105)
with joint plates at only one side

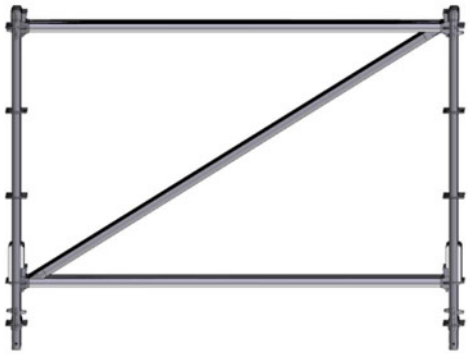
Bracing of the Allround FW-Beams

The bracing of the beams is done with Allround series components by our well known method:

- ⇨ braced bays with *vertical braces* in cross-direction and *horizontal braces* in top and/or bottom chord level
- ⇨ intermediated bays with Allround O-ledgers



vertical bracing with Allround components



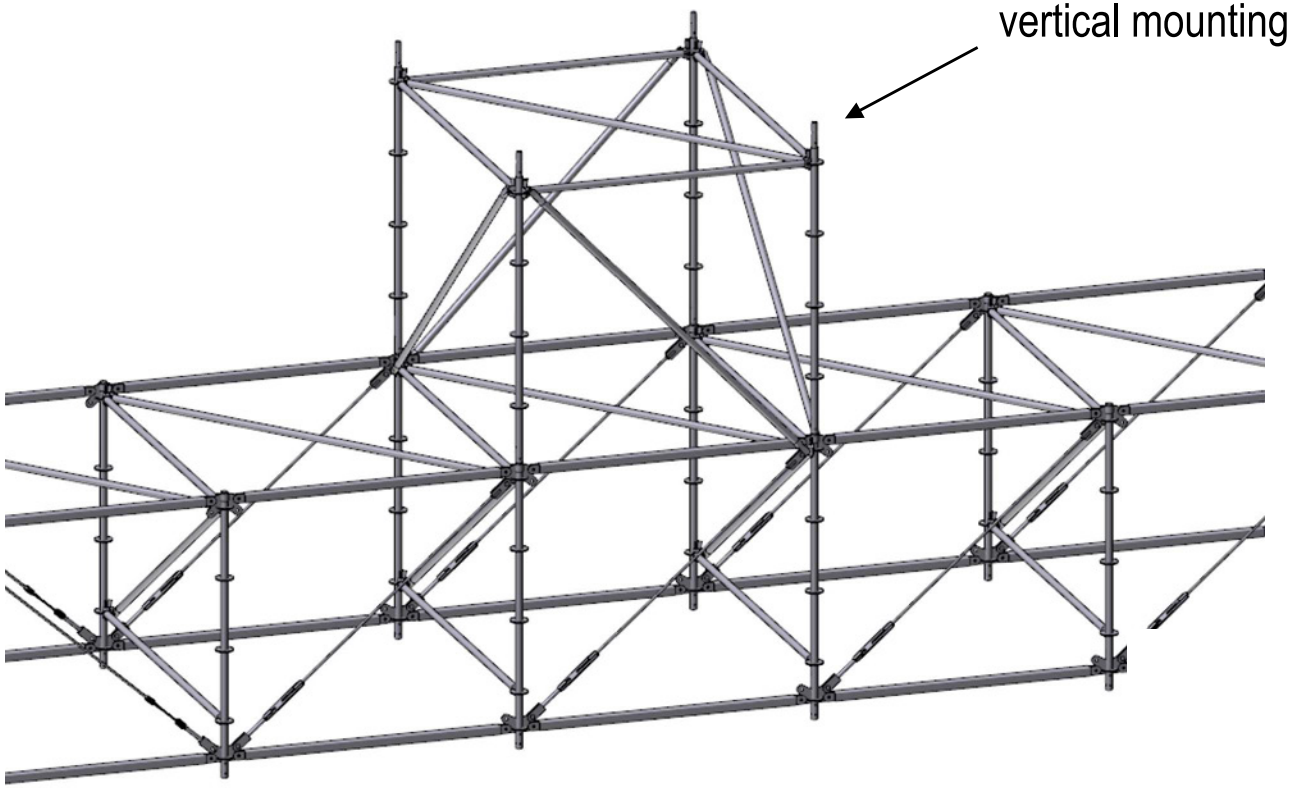
Layher
More Possibilities. The Scaffolding System.

Allround FW-Beam (Allround FW-System)

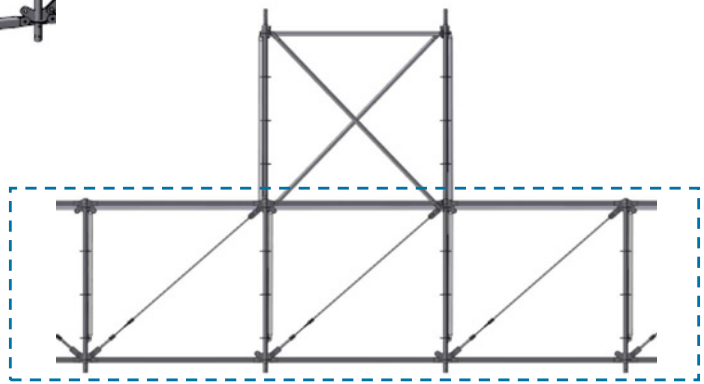
Application example:

supported structures

vertical mounting possible in Layher system



Side view

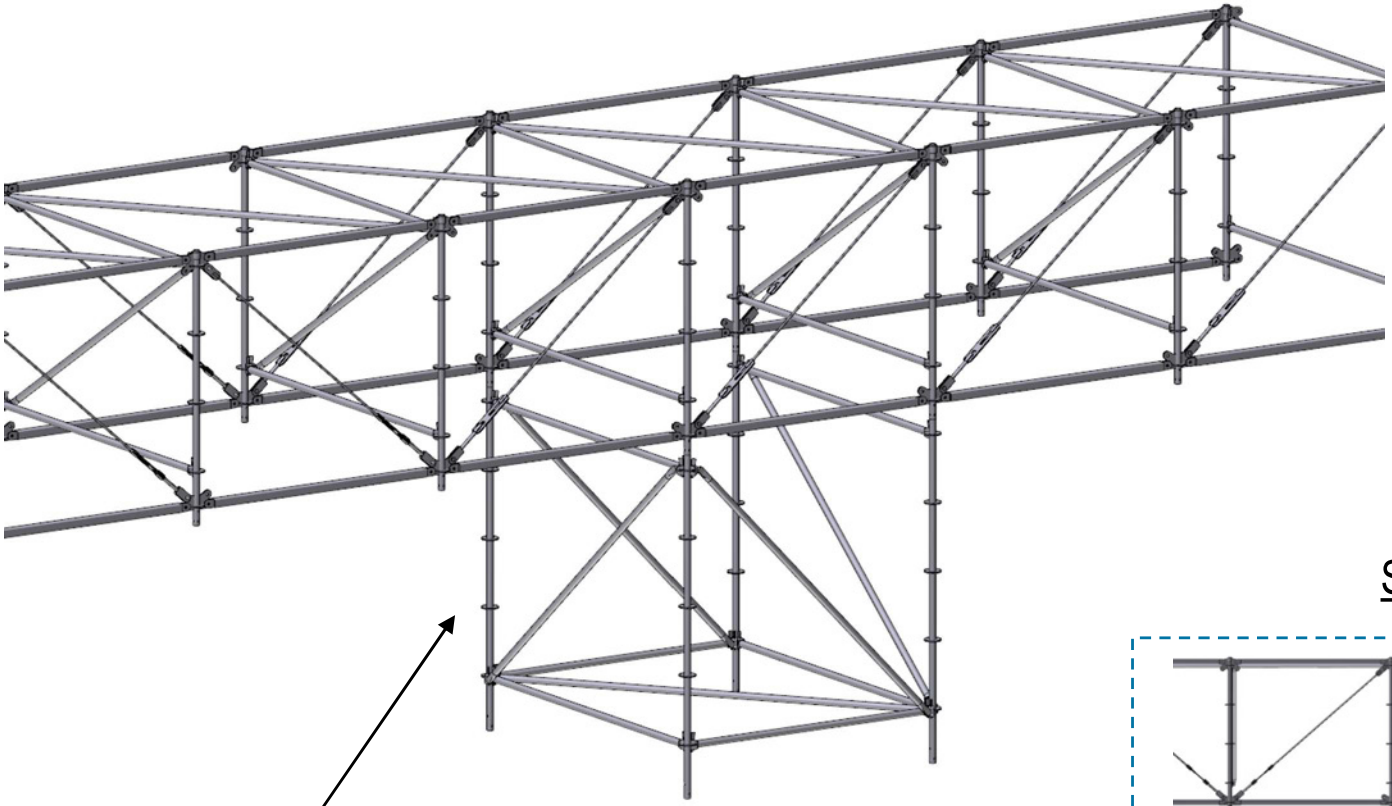


Allround scaffold mounted on top of the FW-Beam

Allround FW-Beam (Allround FW-System)

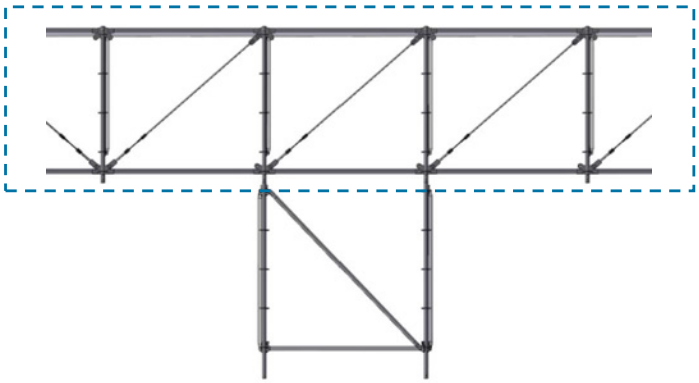
Application example:

suspended structures



vertical mounting possible in Layer system

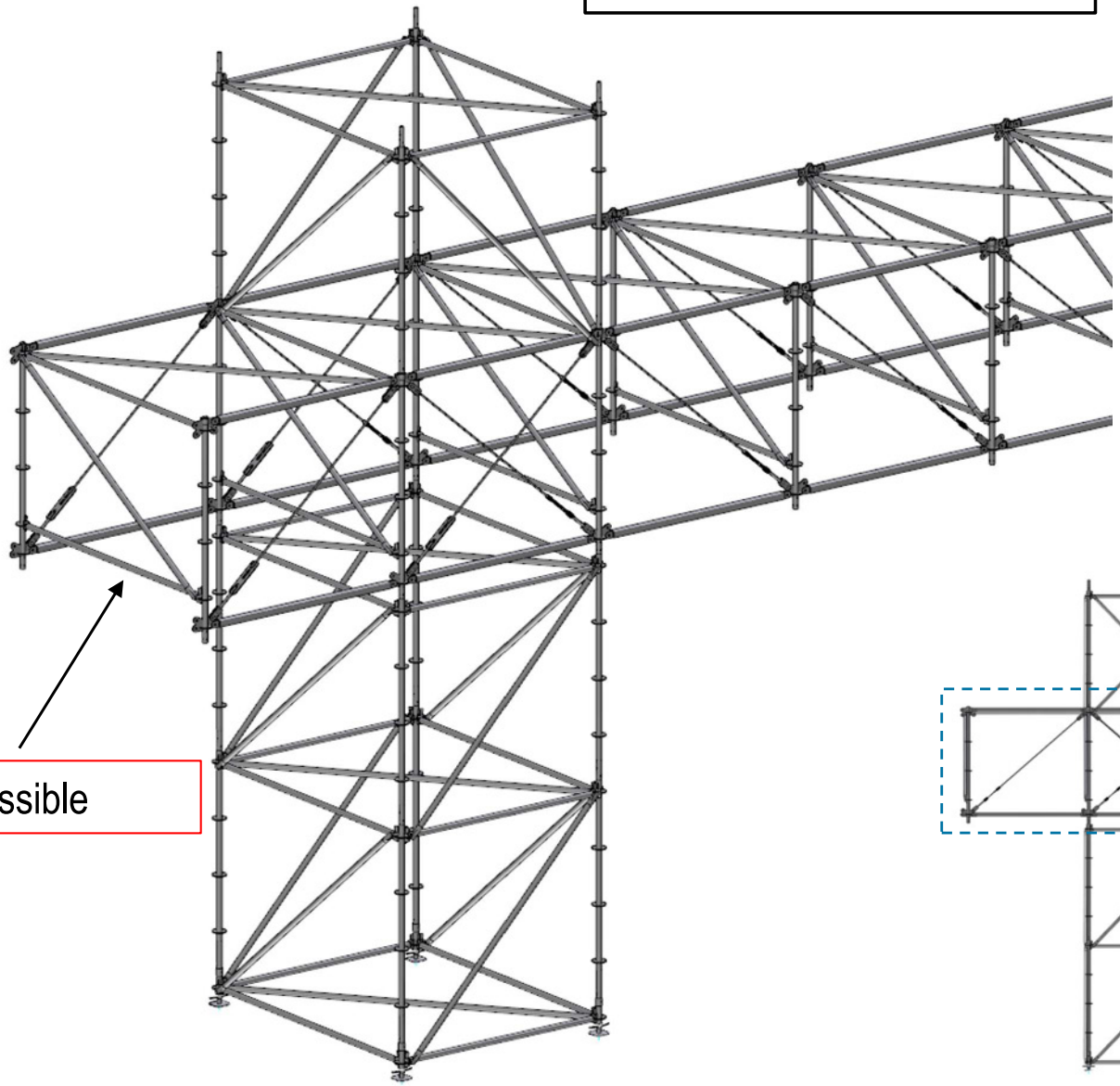
Side view



Allround FW-Beam (Allround FW-System)

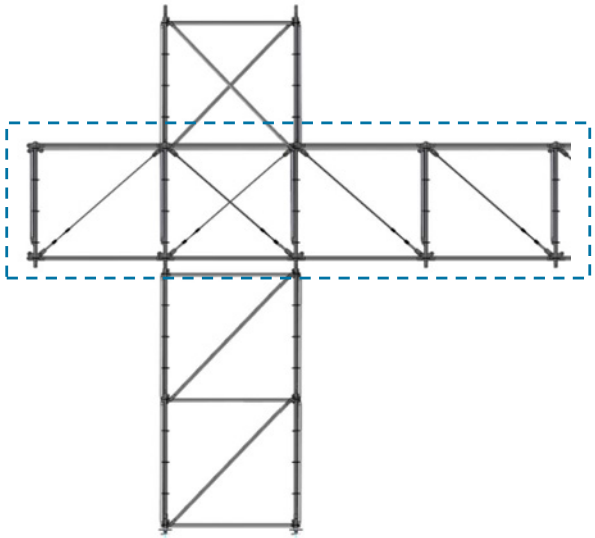
Application example:

cantilever structures



cantilevering possible

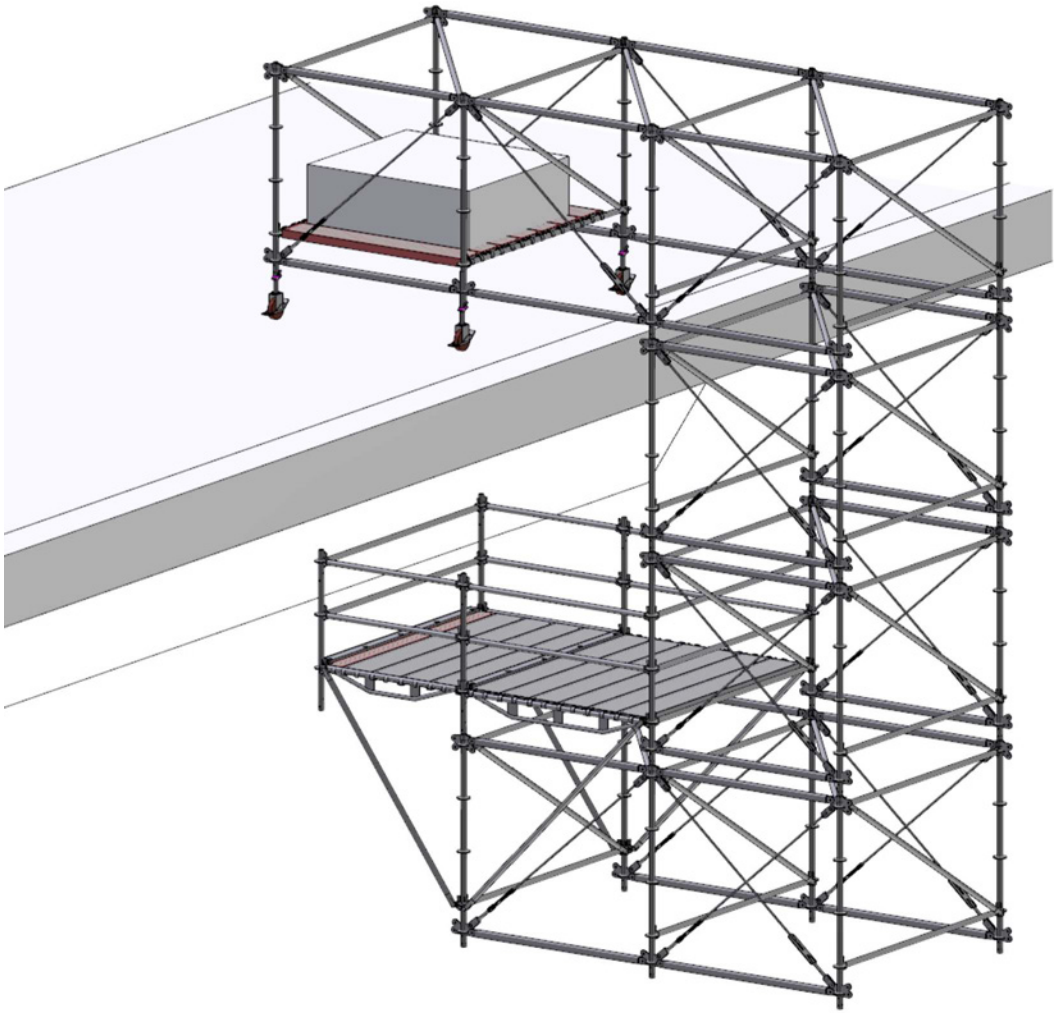
Side view



Allround FW-Beam (Allround FW-System)

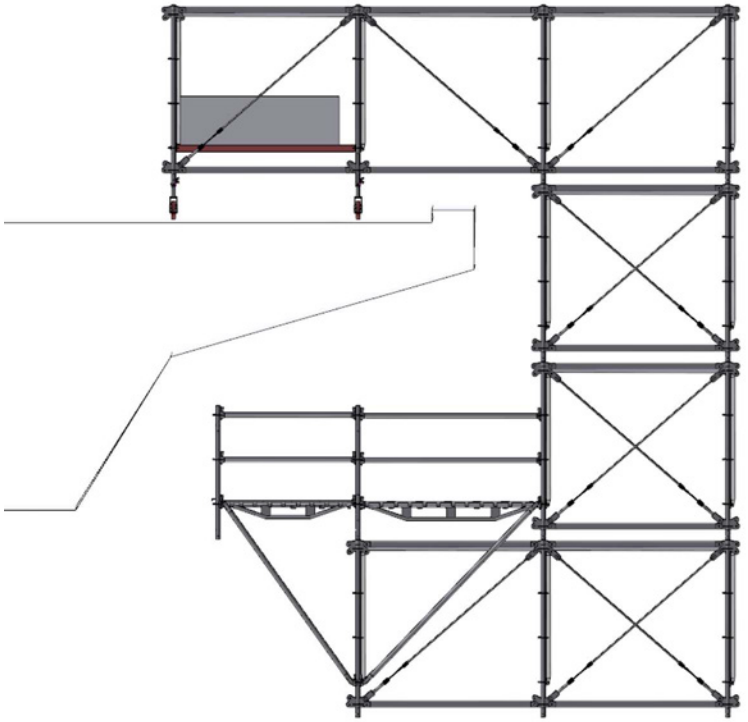
Application example:

rigid corner structures
(e.g. structures for refurbishment of bridge edge beam brackets)



mounting the FW-beam *´round the corner´*

Side view

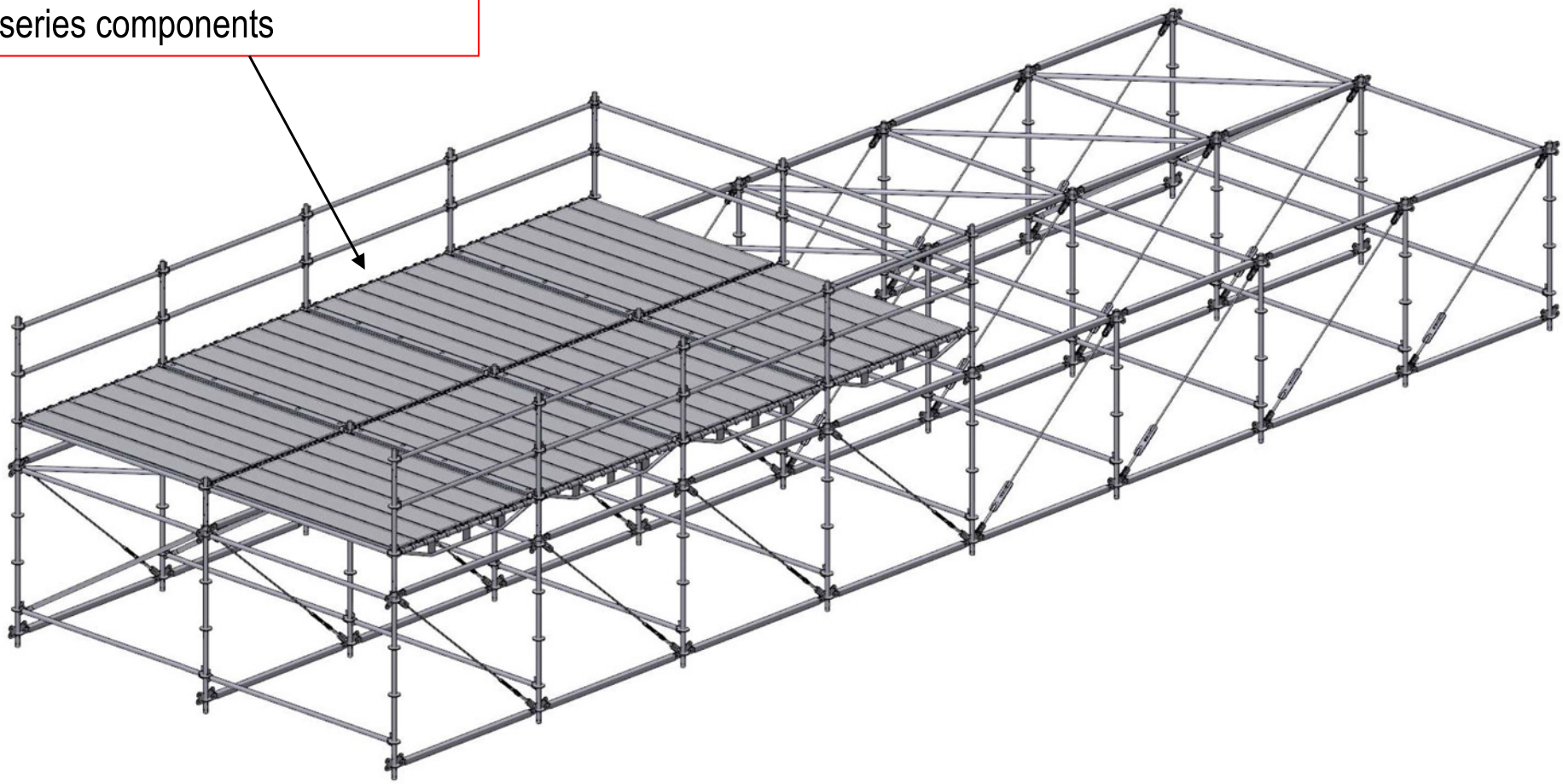


Allround FW-Beam (Allround FW-System)

Application example:

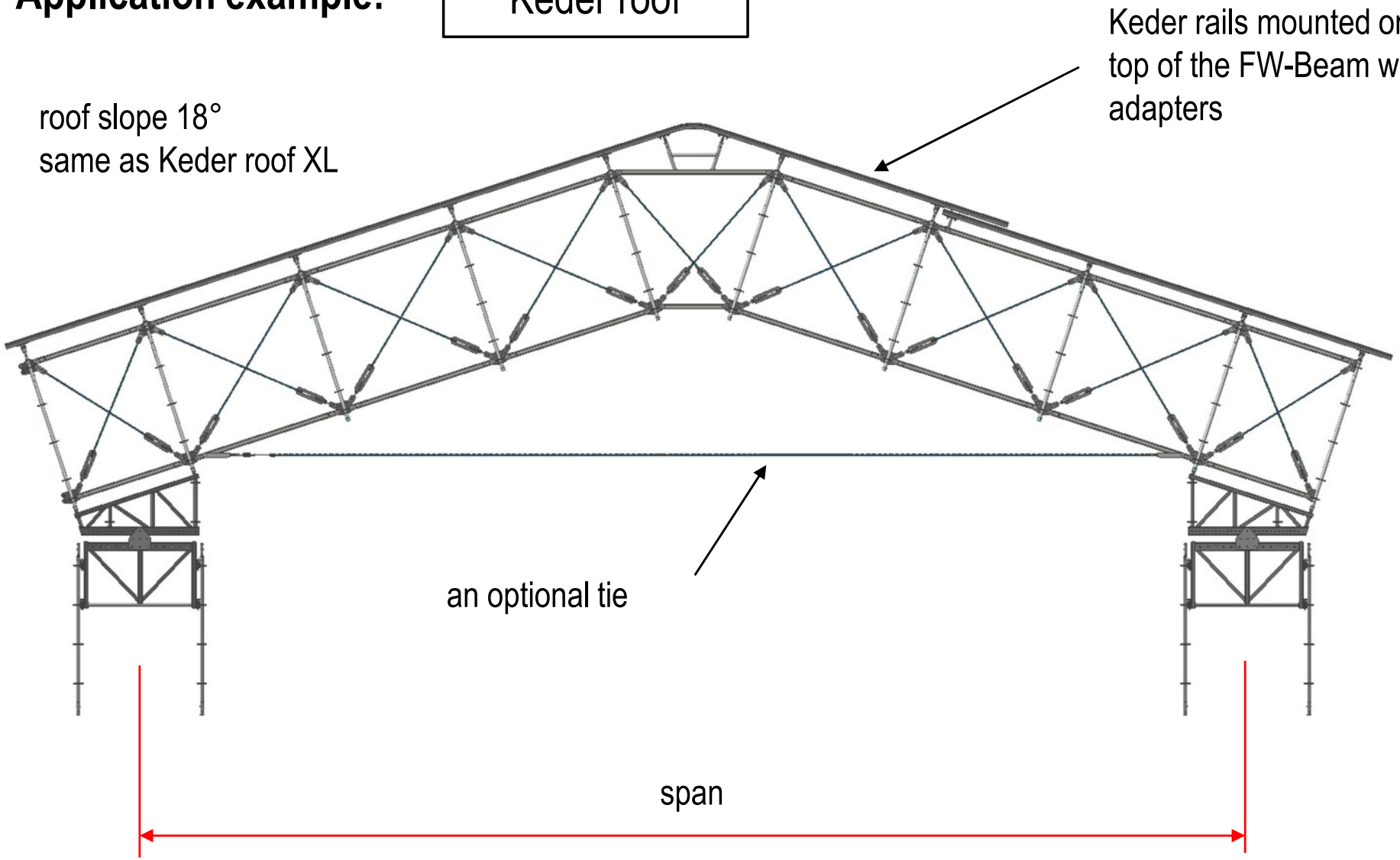
platform-bridges
(e.g. for works at the roof structure from underneath)

Allround platform built with series components



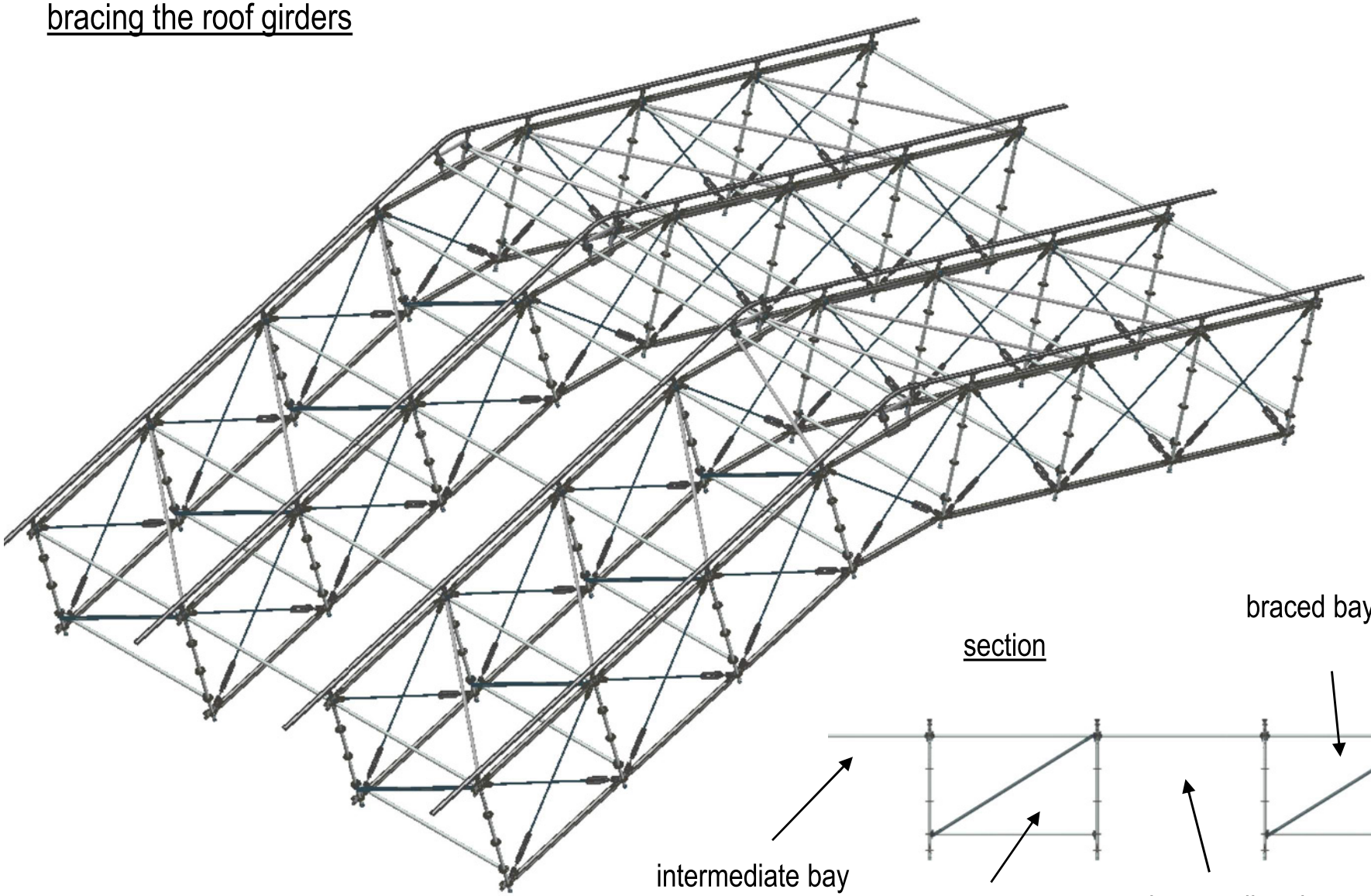
Allround FW-Beam (Allround FW-System)

Application example: Keder roof

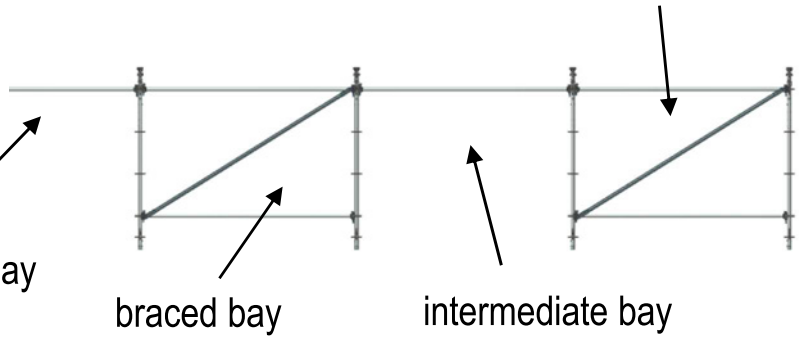


Allround FW-Beam (Allround FW-System)

bracing the roof girders



section



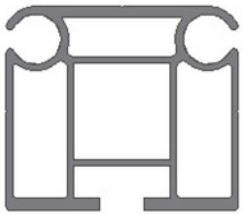
Allround FW-Beam (Allround FW-System)

Allround series components for mounting the Keder rail

Part No.	Description	Weight [kg]	Price [€]
4203.000	HA Height adjuster for weather cap	3.4	38.00
4206.001	HA 50pc. Capative bolt for keder rail M12x40 with nut	5.0	80.00
0043.499	Capative bolt for keder rail M12x25	0.06	1.39

proposed Keder rail:

Layher Aluminium Keder rail 3000



Allround FW-Beam (Allround FW-System)

Detail: holding the Keder rail:

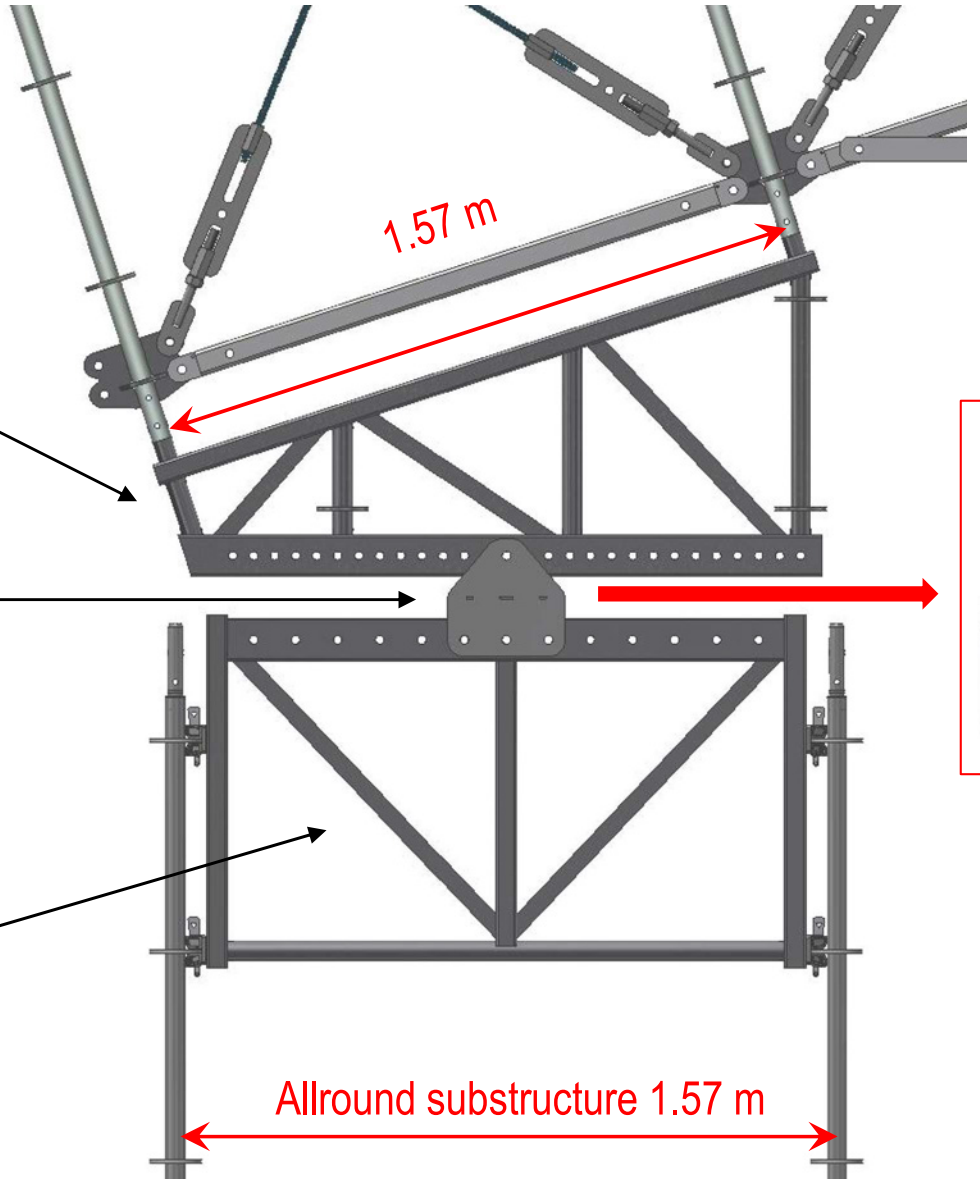
Allround FW-Beam (Allround FW-System)

Rigid roof support

FW-Roof support 1.57 m, rigid
(part no. 2652.157, 26.5 kg)

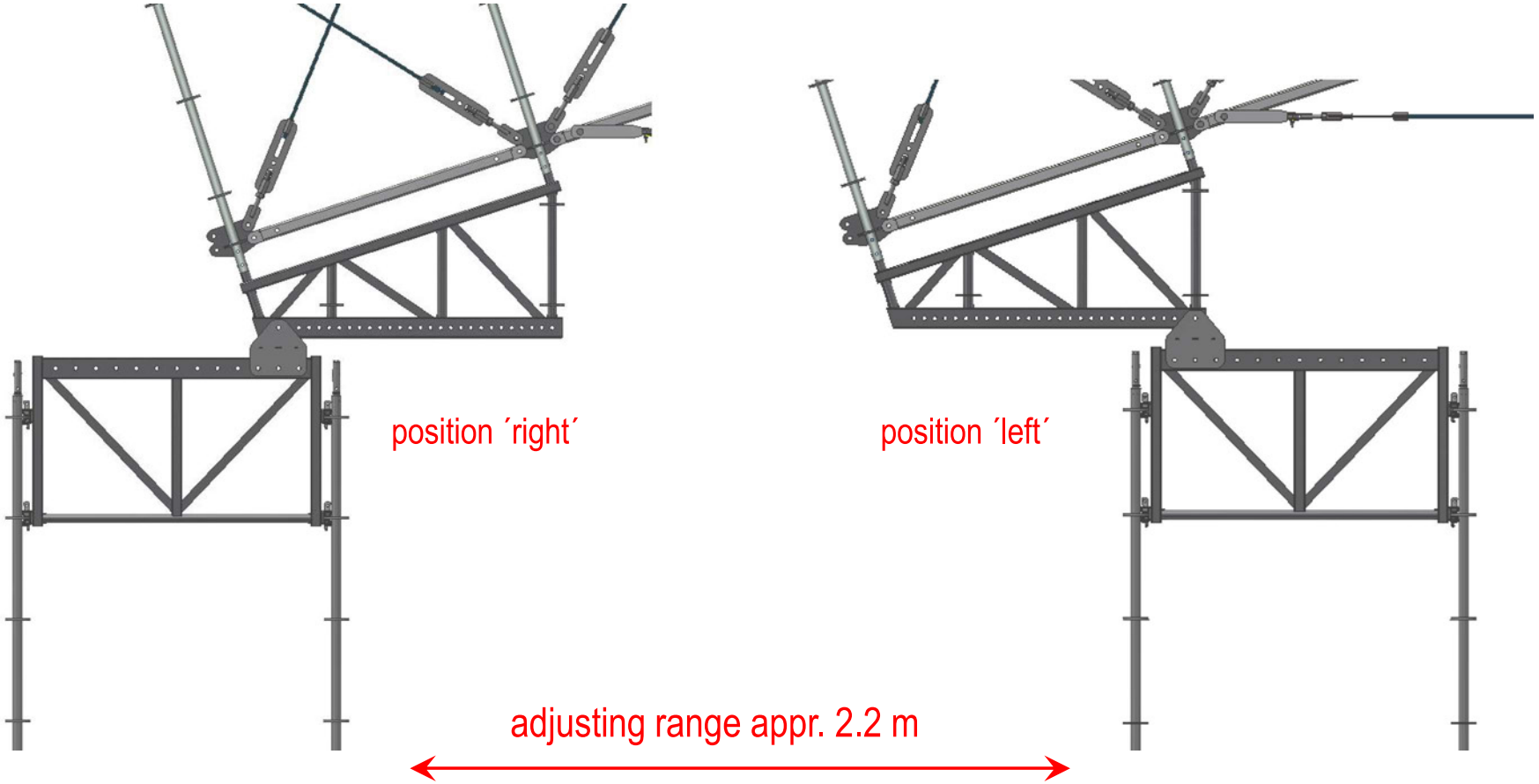
FW-Support adapter
(part no. 2646.265, 6.4 kg)

FW-Support beam 1.57 m
(part no. 2655.157, 33.3 kg)



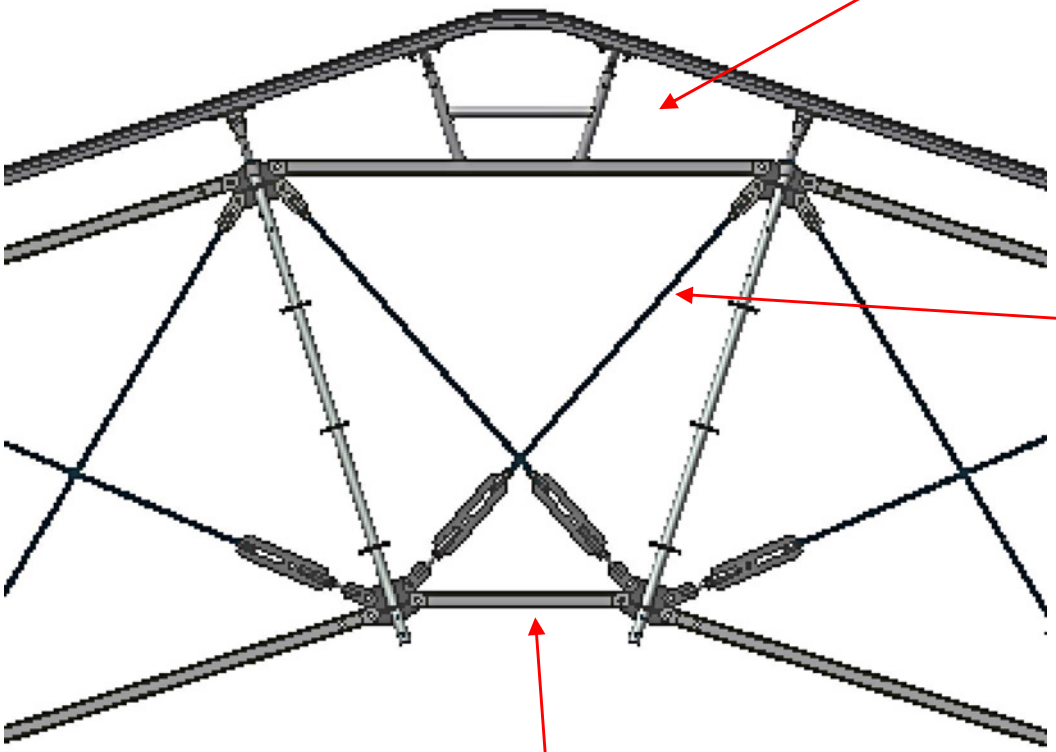
Allround FW-Beam (Allround FW-System)

Possibility for the adaptation of the roof to the support structure



Allround FW-Beam (Allround FW-System)

Detail: Keder Roof ridge section with 2x 18°



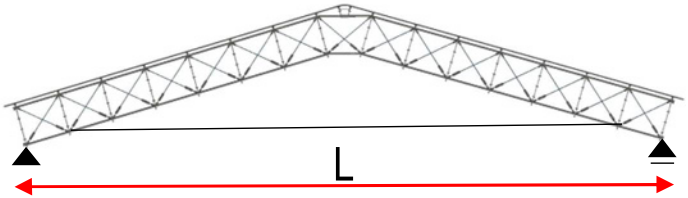
top chord of the ridge section
with a Keder rail adjustable for height

ridge diagonal brace
(part no. 2646.218)

bottom chord of the ridge section

Allround FW-Beam (Allround FW-System)

maximum Roof-spans – with tie (WZ2: q_w = 0.56 kN/m²):



Effective Height z = 1.80m, Cords = 2.07m

number of bays n	span L [m]	spacing of the FW-Beams														
		b = 1.09 m			b = 1.57 m			b = 2.07 m			b = 2.57 m			b = 3.07 m		
13	24.95															
15	28.93															
17	32.91															
19	36.89															
21	40.87															
23	44.85															
25	48.83															
27	52.81															
29	56.79															
31	60.77															
33	64.75															
35	68.73															
37	72.71															

SL 1:	s = 0,10 kN/m²
SL 2a:	s = 0,25 kN/m²
SL 2b:	s = 0,60 kN/m²

Allround FW-Beam (Allround FW-System)

Example comparison of max. span-length of a platform structure:

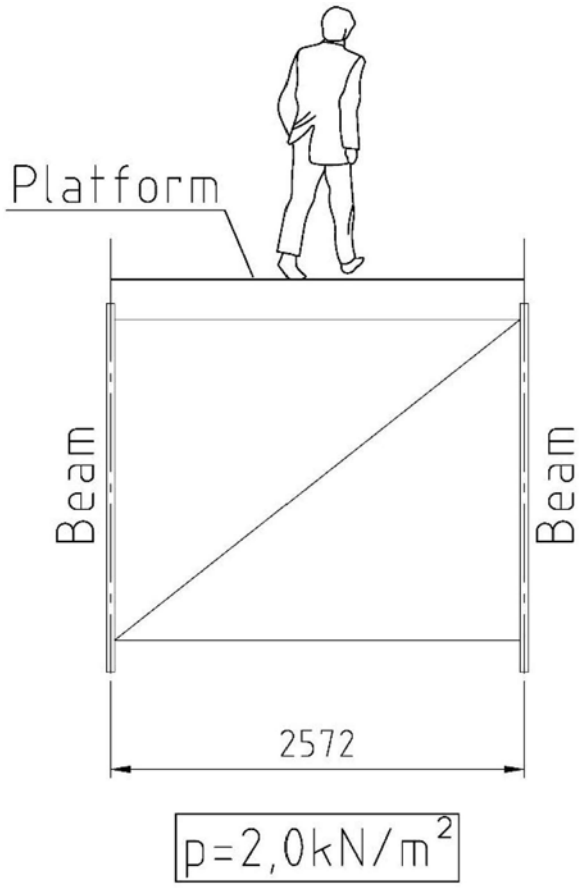
Traditional Allround vs. FW-System vs. Allround bridge-beam

<u>description of the structure</u>

platform between two beams
Distance between the beams: 2.57 m

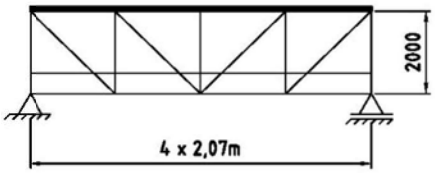
<u>loads</u>

- dead load of the structure
- live load of 2.0 kN/m², applied to the whole platform



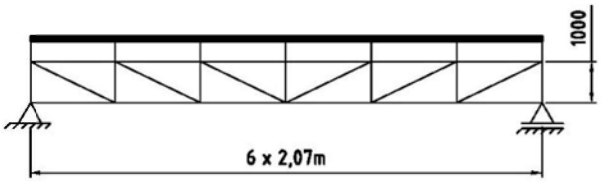
Allround FW-Beam (Allround FW-System)

Allround



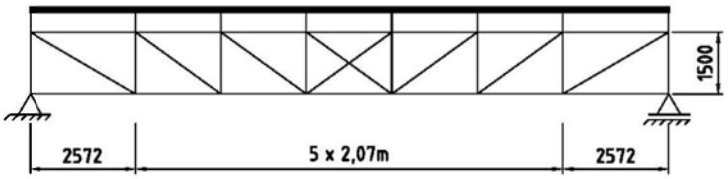
max. span length

8.28 m

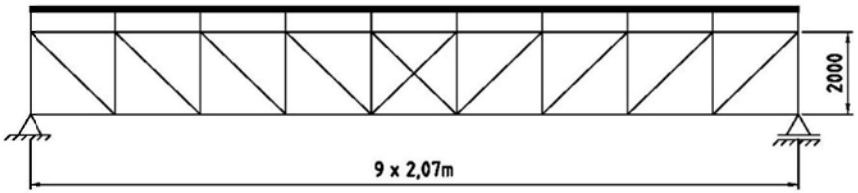


12.43 m

FW-System

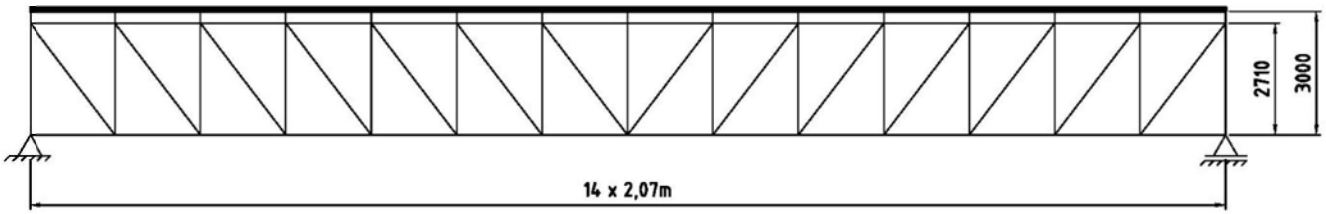


15.50 m



18.65 m

Allround Bridge beam



28.98 m

Properties of the Allround FW-System

completely integrated into the Allround scaffolding

- **basic components similar to Allround**
  FW-posts == Allround standard (system length and arrangement of rosettes)
  FW-chords == Allround O-ledgers (system lengths)
- **arrangement of the components in the system axes**
- **system dimensions in all three directions**
- **rosettes allow the connection of Allround components**
  (O-ledgers, horizontal-diagonal plan braces, vertical diagonal braces, …)
- **open tube ends of the FW-posts allow the vertical connection in system dimensions**
  (standards, spigot connection, LW-standard connection, …)
- **handy single components with a single component weight of maximum 17.4 kg**
  mounted FW-beam units can be disassembled into their components at any time, but do not have to be

Properties of the Allround FW-system (continued)

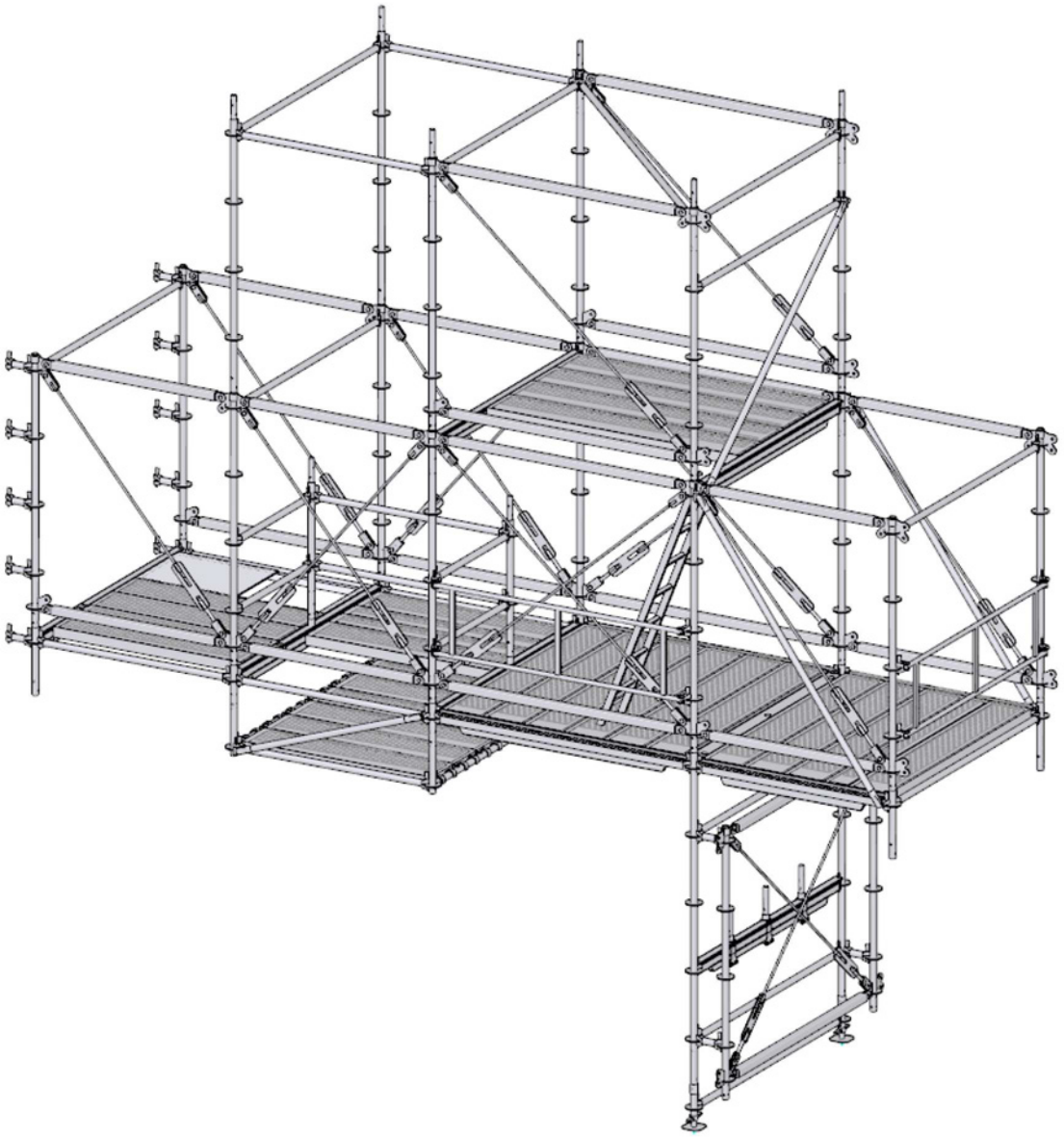
↳ high load bearing capacity

- **due to the large static height of z = 1.80 m** (for the 2.0 m FW-post) **and the material steel**
- **powerful chords, posts and vertical diagonal braces**
- **continued construction in statically favourable truss joints** (no transverse bending of the chords)
- **Allround components serve as bracing elements**
- **roof support matching the higher support loads due to the bigger roof spans**

↳ unlimited application possibilities

- **usable as efficient construction girder – a true *´Allrounder´*** (transfer beam, roof trusses, platform support, cantilever beams, floor beams, …)
- **beam can be continued around the corner** (rigid corners)
- **crossed diagonals are possible**
- **turnbuckle allows pre cambered beams**
- **gangways made of AR components can be installed to roof girders**

Presentation of the FW-system on our bauma stand



Appendix 4: Stormwater Plan

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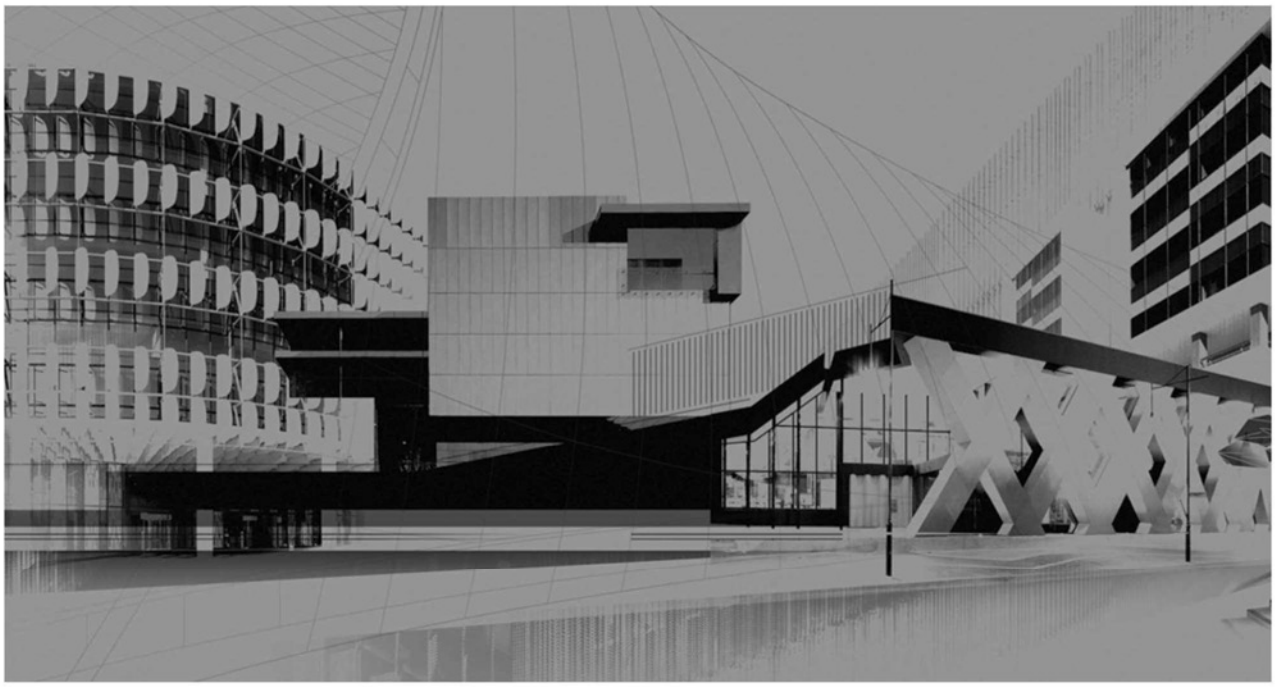

ROYAL EXHIBITION BUILDING
PROTECTION AND PROMOTION PROJECT
STORMWATER AND SEDIMENT CONTROL PLAN

02 FEBRUARY 2018
Revision P1
Job no: 15ME0070

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Document Control

Project Title: ROYAL EXHIBITION BUILDING PROTECTION AND PROMOTION PROJECT

Project No: 15ME0070

Revision	Date	File name 15ME0070-TJ1-Stormwater and Sediment Control Plan-P1			
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		Date	02/02/2018	02/02/2018	02/02/2018
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			Prepared	Checked	Approved
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		Date			

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Contents

1 Introduction

The objective of Element 4 of the Stormwater and Sediment Control Plan (SSCP) is to prevent the contamination of, or damage to, stormwater drains and waterways and to ensure sediment from the building site is retained on-site during construction work.

Specifically, this SSCP details the following:

- Site water retention will not cause structural damage to excavations or retaining walls
- Effective drainage of the site to the legal point of discharge throughout the construction phase
- Prevention of stormwater entering adjoining properties or into the sewerage system
- Capture and filtering of stormwater in sediment control points before entering the legal point of discharge

This SSCP shall be read in conjunction with the following drawings:

- C040 – Construction Management Plan

The aim of this document is to assist the contractor to develop an effective and flexible Stormwater and Sediment Control Plan that adequately addresses the required performance standards.

2 Integration of SSCP into Construction Site Planning

The contractor shall integrate erosion and sediment control issues into site and construction planning by following the below principles.

Site Planning:

- The site office, entrance and carpark shall have appropriate surfacing to minimise mud generation during wet weather
- Material stockpiles shall be located away from overland flow paths
- The vehicle wash-down area shall be located to ensure runoff is treated prior to discharge into the stormwater network

Construction Planning

- The contractor shall develop a construction schedule that minimises the extent and duration of soil disturbance
- Stormwater and Sediment Control (SSC) measures shall be inspected and maintained as per the approved SSCP
- The measures adopted from the approved SSCP shall be regularly reviewed and assessed against the required performance objectives
- Emergency SSC supplies shall be stockpiled onsite
- The contractor shall ensure early installation of the drainage system

3 Element 4: Stormwater and Sediment Control

3.1 Stormwater Requirements

How is stormwater to be prevented from entering adjoining properties?
Stormwater runoff from the site shall be directed to existing in-ground drainage at the natural low points around the site. All stormwater runoff from the works affected areas shall be appropriately treated and directed to existing drainage on Southern Drive prior to discharging into the rainwater harvesting tank in the Western Forecourt.

Temporary drainage controls will be provided where necessary to ensure all runoff from the site is diverted to treatment controlled existing drainage points. The contractor shall ensure no uncontrolled runoff shall be allowed to discharge from the site across the adjacent Carlton Gardens or external roads, or into site stormwater drainage that is not protected by adequate treatment controls.

Temporary drainage controls to prevent site stormwater from entering adjoining properties may include:

- bunds
- swale drains
- grated drains
- pumps

How is upslope water to be diverted to prevent it travelling through the site?
The contractor shall ensure that 'clean' water from upstream of the construction site is diverted around the construction site and into the existing stormwater drainage network. Drawing C040 illustrates the existing flow directions on Southern Drive, the Eastern Forecourt and the Western Forecourt. The suggested locations of temporary drainage diversion measures (such as a temporary bund) to control 'clean' water flows across the site is also shown on C040. The contractor shall ensure these temporary control measures are appropriately sized and installed for the expected flow rates. These temporary control measures shall be inspected daily and after rainfall events, and amended/repaired as necessary, to ensure no external runoff flows across the construction site.

Are down pipes to be connected as soon as any roof is installed onsite?
Any alterations to existing downpipes are to be immediately connected into existing drainage. All downpipes that may be affected by construction works are to be fitted with filter material to ensure no sediment or construction materials are washed into the drainage network. Non-woven geotextile filter fabric or hessian fabric may be used for this purpose. These filter materials are to be inspected daily and after rainfall events. Sediment and pollution deposits shall be removed and properly disposed of when control measure has reached 50% of its effective treatment capacity.

Specify how stormwater will be filtered before being pumped to a legal point of discharge?
The existing site falls of approximately 1000m^2 of the closed construction area slope towards the Royal Exhibition Building. There is no overland flow path away from the building for runoff from this area.

This low point has one existing pit that will be retained during the works. However, the outlet pipe of this pit will be replaced as part of the proposed works. When this low point is not functionally connected to the existing network the contractor shall ensure that stormwater flows are directed to a low point where adequately sized pumps will pump to the existing stormwater network.

The contractor shall ensure that stormwater is pumped through a suitable filter system prior to discharging into the existing stormwater network. Dewatering bags, dewatering socks, or geobags can be fixed to the end of the rising main and allows water to pass but captures suspended solids for collection and disposal. The contractor shall ensure that these filter systems are appropriately sized for the expected flow rates. Water that is pumped into the stormwater network must contain less than 50mg/L of total suspended solids.

Waste material, including liquid wastes such as paint, concrete slurries and chemicals, must not be discharged into the stormwater network. The contractor shall ensure that specific facilities are provided to clean construction equipment and materials without any waste material being discharged into the stormwater network.

Testing of water quality shall be undertaken by the contractor at their own expense. If the minimum quality standards are not met than the contractor shall pump water to the sewer system with relevant approvals.

3.2 Excavation Work

Has the location and extent of excavations been provided in the Stormwater Plan of the site?
The expected location and extent of excavations are shown on drawing C040.

Will the site area need to be cleared?
The existing site area where the expected excavations are to occur is predominantly asphalt pavement and also includes a small garden bed. The redevelopment of the Southern Drive entrance to the REB will require the stripping and excavation of an area shown on drawing C040.

Will excavation and topsoil stripping be avoided until the site is ready for construction?
The contractor shall develop a construction schedule to minimise the extent and duration that soils are exposed to the erosive effects of wind, rain and flowing water.

Has consent been obtained for excavations that occur within three metres of a road?
Southern Drive is a private road and no excavations are expected to occur within three metres of a public road, therefore no consent is expected to be required. If the scope requires an excavation within three metres of road the contractor shall obtain all necessary permissions and consents from relevant authorities.

Has consent been obtained for excavations that occur within a 45 degree angle of the road?
Southern Drive is a private road and no excavations are expected to occur within a 45 degree angle of a public road, therefore no consent is expected to be required. If the scope requires an excavation within a 45 degree angle of a road the contractor shall obtain all necessary permissions and consents from relevant authorities.

3.3 Material Stockpiles

The contractor shall ensure sufficient land area is provided for the short-term stockpiling of construction materials. Stockpiles shall ideally be located within areas that would eventually need to be disturbed. Stockpile locations are to be carefully considered by the contractor during the site planning stage. The following principles shall be followed by the contractor when establishing stockpile locations:

- Stockpiles of erodible materials (e.g. earth and sand) need to be located within site's sediment control zone
- Stockpiles shall not be located in the path of concentrated flows
- Erodible materials shall not be stored within a road reserve without permission of the relevant authority
- Soil stockpiles should be positioned away from drainage lines and existing natural gullies or watercourses
- Number of stockpiles to be minimised and positioned away from drainage lines
- Stockpiles are not to be located within 4 metres of the site boundary or within the drip line of any tree marked for retention.

Furthermore, the contractor shall ensure the following principles of stockpile management are followed:

- Waterproof covers shall be used over stockpiles
- Stockpiles shall be protected from wind and rain
- Overland runoff shall be diverted away from soil stockpiles and other exposed areas of soil or loose material
- Silt fences to be erected around stockpiles and maintained during construction periods
- Daily inspection and maintenance as necessary of the stockpile protection measures

3.4 Site Entries

Has the location of site entries been specified on the Plan?
The proposed site traffic movements have been specified on drawing C040. Refer to the Traffic management Plan for further information.

Are the site entry and traffic routes to be stabilised?
The site traffic route is the existing Southern Drive asphalt vehicular pavement and therefore no stabilisation for sediment and mud control is expected to be required.

Are rumble grids or similar to be provided to collect mud from vehicles leaving the site?
The site entrance/exit and traffic routes will utilise existing asphalt pavements. It is not anticipated that rumble grids or similar will be required to collect mud from vehicles leaving the site. As construction commences the contractor shall reassess the requirement for rumble grids.

Furthermore, the contractor shall provide a vehicle wash-down area to clean vehicles leaving the site. Refer to section 3.6 for more information.

Is a cleaning plan specified for rumble grids?
If rumble grids are deemed to be required than a cleaning plan specifying a program of daily monitoring and cleaning will be implemented.

Is a grated drain provided at the entrance of the site to prevent uncontrolled run-off?
The contractor shall ensure that all runoff from the site is diverted to the existing stormwater network that is appropriately protected with treatment/filter measures.

3.5 Drainage and Sediment Control

Describe how the site will be properly drained to prevent site water retention that may cause structural damage to excavations or retaining walls?

All stormwater runoff from the construction site that meets minimum quality standards will be discharged into the existing stormwater network along Southern Drive. Localised and temporary drainage strategies will be required to ensure water is not retained onsite that may cause structural damage. These may include, but are not limited to, the following measures:

- diversion bunds
- grated drains
- swales
- pumps
- ag drains
- temporary drains
- localised and temporary grading of construction surface

Describe provisions to be made to pump out any water collected at bottom of excavation sites? Will water with greater than 50mg/L of total suspended solids be pumped to the sewer with the necessary approvals?

The contractor shall ensure that stormwater is pumped through a suitable filter system prior to discharging into the existing stormwater network. Dewatering bags, dewatering socks, or geobags can be fixed to the end of the rising main and allows water to pass but captures suspended solids for collection and disposal. The contractor shall ensure that these filter systems are appropriately sized for the expected flow rates. Water that is pumped into the stormwater network must contain less than 50mg/L of total suspended solids.

Waste material, including liquid wastes such as paint, concrete slurries and chemicals, must not be discharged into the stormwater network. The contractor shall ensure that specific facilities are provided to clean construction equipment and materials without any waste material being discharged into the stormwater network.

Testing of water quality shall be undertaken by the contractor at their own expense. If the minimum quality standards are not met than the contractor shall pump water to the sewer system with all necessary approvals.

Have natural falls of the site and sediment controls been identified in the Stormwater Plan?

Refer to Drawing C040.

Is there a maintenance program to replace sediment barriers when sediment controls become ineffective?

The Contractor shall ensure that an effective inspection and maintenance program is followed onsite. The following principles should be included in the maintenance program:

- Sediment and erosion control measures shall be inspected daily and after rainfall events to ascertain the integrity of the measures
- Sediment and erosion control measures ae to be maintained in a functional condition during the works and until the works affected areas have been revegetated
- Sediment deposits to be removed and properly disposed of when control measure has reached 50% of its effective capacity

The contractor shall ensure that an appropriate maintenance procedure is adopted for the disposal of all sediment that is collected in sediment traps or on the roadway.

Will drains on and near the site have sediment traps or filters around them? Will these be checked daily?

Prior to the installation of silt control devices, contractor must liaise with council regarding specific requirements. Silt control measures must be installed prior to commencement of works to prevent any sediment laden runoff from entering he existing stormwater drainage network.

Stormwater that is allowed to freely flow into the existing network along Southern Drive and in the Eastern and Western Forecourts must be adequately filtered prior to discharging into the existing system. At a minimum all pits along Southern Drive, the Eastern and Western Forecourts, and any other areas deemed to be at risk of receiving contaminated stormwater, must be protected by filter socks and geotextile pit filter with hydrocarbon retention capabilities.

The Western Forecourt has two existing gross pollutant traps and an existing underground rainwater harvesting tank system. The contractor shall ensure that the gross pollutant traps and rainwater harvesting tanks are inspected weekly and cleared and cleaned as necessary.

How will any loose materials such as soil, sand and gravel be managed to prevent displacement?
The contractor shall ensure that loose materials such a soil, sand and gravel are managed to prevent displacement. Refer to Section 3.3: Material Stockpiles for further information.

3.6 Washing and Clean-Up

Are vehicle wash down areas provided near site entries? Do they capture and treat water prior to discharge?
The contractor shall provide a vehicle wash-down area to clean vehicles leaving the site. Water from the wash-down area is to be treated prior to discharging into the stormwater network or into the sanitary sewer system as required.

Water that is discharged into the stormwater network must contain less than 50mg/L of total suspended solids or waste material, including liquid wastes such as paint, concrete slurries and chemicals.

Do wash down areas use more than 3000 litres per day of recycled water?
The contractor shall coordinate with Museums Victoria to access the existing rainwater harvesting system in the Western forecourt for vehicle wash-down needs.

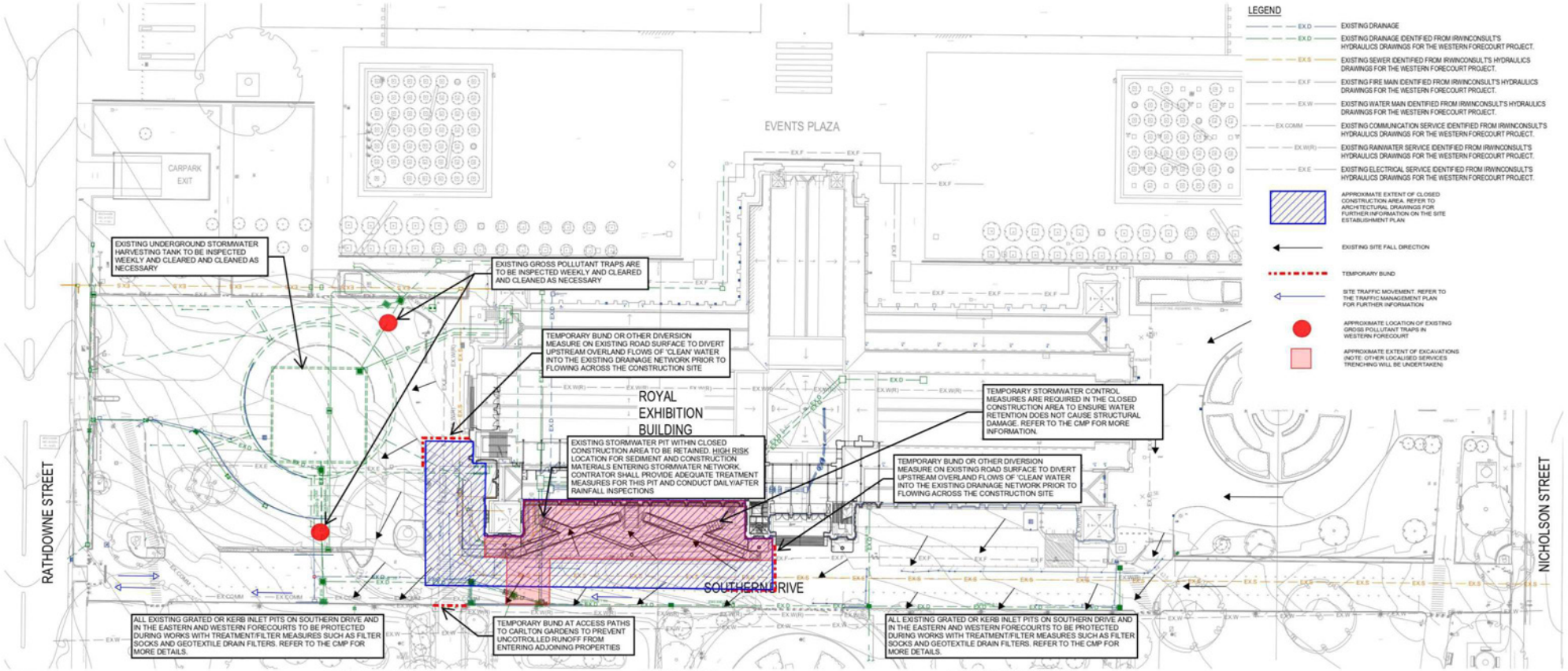
Are facilities in place to enable paint brushes, rollers and spray equipment to be cleaned without discharge of by-product into stormwater systems?
Waste material, including liquid wastes such as paint, concrete slurries and chemicals, must not be discharged into the stormwater network. The contractor shall ensure that specific facilities are provided to clean construction equipment and materials without any waste material being discharged into the stormwater network.

Testing of water quality shall be undertaken by the contractor at their own expense. If the minimum quality standards are not met than the contractor shall pump water to the sewer system with all necessary approvals.

3.7 Vegetation

Is vegetation retained where possible to absorb water flows and minimise dust?
The construction site is predominantly an existing asphalt pavement. There is a small garden bed in the western corner of the closed construction site that is to be retained. The contractor shall minimise disruption of these existing vegetated areas. Refer to the Arborist Report for further information on vegetation outside of the closed construction area.

Will vegetation be reinstated as soon as possible on completion of works?
If disruption occurs to a vegetated area then soil stabilisation and revegetation must be commenced by the contractor as soon as practicable.



GENERAL NOTES

DUST

MINIMISING DUST GENERATION:
-EARTHWORKS ARE TO BE RESTRICTED ON DRY AND WINDY DAYS.
-SITE TRAFFIC TO BE RESTRICTED TO SOUTHERN DRIVE, THE WESTERN FORECOURT AND THE EASTERN FORECOURT.

DUST SUPPRESION:
-NO WATER USED FOR DUST SUPPRESSION IS TO ENTER THE STORMWATER DRAINS EITHER DIRECTLY OR AS A RESULT OF OVERLAND RUNOFF.

CONTINGENCIES:
-STOCKPILES ARE NOT TO BE LOCATED WITHIN 4 METRES OF THE SITE BOUNDARY.
-ALL STOCKPILES ARE TO BE SURROUNDED BY A SILT FENCE/CURTAIN.
-ALL STOCKPILES TO BE COVERED AT THE END OF EACH DAY IF RAIN OR EXCESSIVE WINDS ARE EXPECTED.

OTHER:
-STOCKPILES KEPT ONSITE FOR MORE THAN TWO WEEKS WILL REQUIRE AN IMPERVIOUS COVER (EG. BUILDER'S PLASTIC OR GEOFABRIC).
-STOCKPILES TO BE LEVELLED AND SEEDED IF NOT IN USE FOR LONGER THAN 3 MONTHS.
-IF THERE IS LIMITED SPACE ON SITE FOR APPROPRIATE STOCKPILING OF MATERIAL THAN ERODIBLE MATERIALS ARE TO BE STORED IN COMMERCIAL-SIZED BINS OR MINI-SKIPS.
-WASTE MATERIAL, INCLUDING LIQUID WASTES SUCH AS PAINT, CONCRETE SLURRIES AND CHEMICALS, MUST NOT BE DISCHARGED INTO THE STORMWATER NETWORK. THE CONTRACTOR SHALL ENSURE THAT SPECIFIC FACILITIES ARE PROVIDED TO CLEAN CONSTRUCTION EQUIPMENT AND MATERIALS WITHOUT ANY WASTE MATERIAL BEING DISCHARGED INTO THE STORMWATER NETWORK.

EROSION AND SEDIMENT CONTROL

DRAINAGE MANAGEMENT:
-THE CONTRACTOR SHALL MINIMISE SITE GENERATED SOIL EROSION AND SEDIMENT POLLUTION BY MINIMISING THE EXTENT OF SOIL DISTURBANCE.
-THE EXTENT AND PERIOD OF EXPOSURE OF WORKS AFFECTED AREAS SHALL ALSO BE MINIMISED AND THE CONTRACTOR SHALL PROGRESSIVELY REVEGETATE WORKS AFFECTED AREAS AS SOON AS PACTICABLE FOLLOWING COMPLETION OF WORKS WITHIN A DISTURBED AREA.
-DURING THE CONSTRUCTION WORKS THE CONTRACTOR SHALL ENSURE SEDIMENT LADEN RUNOFF FROM DISTURBED AREAS IS SUITABLY TREATED PRIOR TO DISCHARGE INTO THE STORMWATER DRAINAGE SYSTEM.
-MINIMUM TREATMENT OF STORMWATER INVOLVES PASSING WATER THROUGH SILT CURTAINS, FILTER SOCKS AND GEOTEXTILE DRAIN FILTERS.
-THE CONTRACTOR SHALL ENSURE THAT EXTERNAL FLOWS FROM UPSTREAM OF THE WORKS AREA ARE DIVERTED INTO THE EXISTING STORMWATER DRAINAGE NETWORK PRIOR TO DISCHARGING ACROSS THE WORKS AREA.
-SOIL STOCKPILES SHOULD BE POSITIONED AWAY FROM DRAINAGE LINES AND EXISTING NATURAL GULLIES OR WATERCOURSES. OVERLAND RUNOFF SHALL BE DIVERTED AWAY FROM SOIL STOCKPILES AND OTHER EXPOSED AREAS OF SOIL OR LOOSE MATERIAL.
-SEDIMENT LADEN WATER IS NOT TO BE DIRECTED TO THE STORMWATER NETWORK WITHOUT FILTRATION THAT MEETS MINIMUM EPA STANDARDS
-SITE RUNOFF INTO EXISTING STORMWATER SYSTEM MUST COMPLY WITH THE WATER QUALITY STANDARDS PRESCRIBED BY THE STATE/EPA ENVIRONMENT PROTECTION POLICY (WATERS OF VICTORIA).
-TESTING OF RUNOFF SHALL BE UNDERTAKEN BY CONTRACTOR AT OWN EXPENSE.

SOIL STABILISATION:
-CONTRACTOR SHALL MINIMISE DISRUPTION TO EXISTING VEGETATED AREAS NOT DIRECTLY AFFECTED BY CONSTRUCTION. BATTERS SHALL BE SEEDED AS SOON AS PRACTICABLE.

STOCKPILE MANAGEMENT:
-NUMBER OF STOCKPILES TO BE MINMISED AND POSITIONED AWAY FROM DRAINAGE LINES.
-SILT FENCES TO BE ERECTED AROUND STOCKPILES AND MAINTAINED DURING CONSTRUCTION PERIODS.
-STOCKPILES ARE NOT TO BE LOCATED WITHIN 4 METRES OF THE SITE BOUNDARY OR WITHIN THE DRIP LINE OF ANY TREEMARKED FOR RETENTION.

SEDIMENT TRAPS:
-PRIOR TO THE INSTALLATION OF SILT CONTROL DEVICES, CONTRACTOR MUST LIAISE WITH COUNCIL REGARDING SPECIFIC REQUIREMENTS.
-SILT CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF WORKS TO PREVENT ANY SEDIMENT LADEN RUNOFF FROM ENTERING HE EXISTING STORMWATER DRAINAGE NETWORK.
-SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSPECTED DAILY AND AFTER RAINFALL EVENTS TO ASCERTAIN THE INTEGRITY OF THE MEASURES.
-SEDIMENT AND EROSION CONTROL MEASURES AE TO BE MAINTAINNED IN A FUNCTIONAL CONDITION DURING THE WORKS AND UNTIL THE WORKS AFFECTED AREAS HAVE BEEN REVEGETATED.
-SEDIMENT DEPOSITS TO BE REMOVED AND PROPERLY DISPOSED OF WHEN CONTROL MEASURE HAS REACHED 60% OF ITS EFFECTIVE CAPACITY.

VEHICLE AND ROAD MANAGEMENT

SITE ACCESS:
-SITE ACCESS IS THROUGH SOUTHERN DRIVE AS SHOWN ON THE SITE ESTABLISHMENT PLAN (REFER TO THE TRAFFIC MANAGEMENT PLAN FOR FURTHER INFORMATION).
-ALL SITE ACCESS ROUTES ARE TO BE PREPARED IN GENERAL ACCORDANCE WITH THIS PLAN.

CLEANING VEHICLES:
CONTRACTOR SHALL ENSURE:
-VEHICLES EXIT VIA INSPECTION AND WASHDOWN AREA.
-PRIOR TO LEAVING SITE ALL TRUCKS/VEHICLES MUST BE INSPECTED AND THOROUGHLY CLEANED OF SOIL, CONSTRUCTION MATERIALS, AND VEGETATIVE MATERIAL BFORE LEAVING THE INSPECTION SITE.
-WATER FROM THIS WASHDOWN AREA SHALL BE TREATED AND RECYCLED WHERE POSSIBLE.
-THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL (BY SWEEPING ONLY) OF ANY MATERIAL DEPOSITED ON TH ADJOINING ACCESS ROADS WHERE DEEMED TO ORIGINATE FROM THIS SITE. THE MATERIAL SHALL BE REMOVED BY SWEEPING (NO HOSING DOWN) ON THE SAME DAY AS INSTRUCTED TO DO SO.

DEWATERING:
-THE CONTRACTOR SHALL ENSURE THAT STORMWATER IS PUMPED THROUGH A SUITABLE FILTER SYSTEM PRIOR TO DISCHARGING INTO THE EXISTING STORMWATER NETWORK.
-DEWATERING BAGS, DEWATERING SOCKS, OR GEOBAGS CAN BE FIXED TO THE END OF THE RISING MAIN AND ALLOWS WATER TO PASS BUT CAPTURES SUSPENDED SOLIDS FOR COLLECTION AND DISPOSAL.
-THE CONTRACTOR SHALL ENSURE THAT THESE FILTER SYSTEMS ARE APPROPRIATELY SIZED FOR THE EXPECTED FLOW RATES.
-WATER MUST HAVE LESS THAN 50mg/L OF TOTAL SUSPENDED SOLIDS TO BE DISCHARGED INTO THE STORMWATER NETWORK.
-WATER THAT DOES NOT MEET THE ABOVE REQUIREMENT MUST BE PUMPED TO THE SEWER SYSTEM WITH APPROPRIATE APPROVALS.

OTHER:

-IN THE EVENT SEDIMENT (OR POLLUTED WATER) ENTERS THE EXISTING DRAINAGE SYSTEM, THE CONTRACTOR SHALL AT HIS COST BE RESPONSIBLE FOR RECTIFYING ANY DAMAGE INCURRED AS DIRECTED BY COUNCIL OR THE SUPERVISING ENGINEER WITHIN 24 HOURS OF DIRECTION TO DO SO TO ENSURE DAMAGE IS MINIMISED AND NOT DETRIMENTAL TO THE DRAINAGE SYSTEM IN THE LONG TERM.

DIAL BEFORE YOU DIG www.1100.com.au

WARNING
BEWARE OF UNDERGROUND SERVICES.
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE BY CIVIL CONTRACTOR PRIOR TO CONSTRUCTION OF ANY CIVIL WORKS. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

REV	DESCRIPTION	BY	DATE	REV	DESCRIPTION	BY	DATE
T1	TENDER ISSUE	AM	02/02/2016				

CAD FILE: 15ME0070-C040.DWG

DATE PLOTTED: 2/02/2016 5:55:00 PM BY : ARAVIND MADINEEDI

CLIENT:
LOVELL CHEN

PROJECT NAME:
ROYAL EXHIBITION BUILDING
PROTECTION AND PROMOTION
9 NICHOLSON STREET, CARLTON, VIC 3053

TITLE:
CONSTRUCTION MANAGEMENT PLAN

10 5 0 10 20 30m
1:500 @A1
SCALE INDICATED FOR REFERENCE ONLY - DO NOT SCALE DRAWING

SCALE AT A1	DATE	DRAWN	DESIGNED	CHECKED	APPROVED
N.T.S	1/02/2016	A.M	T.J	T.B	R.D

PROJECT NUMBER	DRAWING No.	REVISION
15ME0070	C040	T1

irwinconsult
SHEET SIZE: A1

Appendix 5: Heritage Victoria Permit & Inventory

Department of Environment,
Land, Water & Planning

Level 7, 8 Nicholson Street
East Melbourne Victoria 3002
Telephone: 03 9938 6894
www.delwp.vic.gov.au
DX210098

Permit Application No: P26807
File No: FOL/15/14629 - 06

Ms Lynley Marshall
Chief Executive Officer
Museum Victoria
11 Nicholson Street
CARLTON VIC 3053

Dear Ms Marshall

RE: PERMIT APPLICATION P26807 - ROYAL EXHIBITION BUILDING AND CARLTON GARDENS (WORLD HERITAGE PLACE), NICHOLSON STREET CARLTON and VICTORIA STREET and RATHDOWNE STREET and CARLTON STREET CARLTON (H1501)

Thank you for your permit application to undertake works or activities at the above place.

As this permit was made prior to the commencement of the *Heritage Act 2017*, it has been determined in accordance with the Heritage Act 1995, pursuant to the transitional provisions of s270 of the *Heritage Act 2017*. After assessing your application against the relevant criteria in the *Heritage Act 2017* I have determined to issue a permit with conditions (see enclosed).

If you feel any of the conditions are unsatisfactory, you may ask for a review of my decision from the Heritage Council of Victoria. An review against conditions of the permit must be lodged with the Heritage Council within 60 days of this letter. Review forms can be obtained online at: http://www.dtpli.vic.gov.au/heritage/apply-for-heritage-permits/permit-appeals or by phoning the Heritage Council Hearings Officer on (03) 9208 3666.

Please note that the works must be carried out in accordance with the permit and you must give the Executive Director five working days notice of the commencement of the approved works.

Please contact Heritage Victoria's Permits Co-ordinator on (03) 9938 6891 or by email at heritage.permits@delwp.vic.gov.au if you wish to discuss this permit further.

Yours sincerely

STEVEN AVERY
Executive Director
Heritage Victoria

cc Manager Statutory Planning, Melbourne City Council
cc Mr Peter Lovell, Lovell Chen

15/12/17

Privacy Statement

Any personal information about you or a third party in your correspondence will be protected under the provisions of the Privacy and Data Protection Act 2014. It will only be used or disclosed to appropriate Ministerial, Statutory Authority, or departmental staff in regard to the purpose for which it was provided, unless required or authorised by law. Enquiries about access to information about you held by the Department should be directed to the Privacy Coordinator, Department of Environment, Land, Water & Planning, PO Box 500, East Melbourne, VIC 8002. Notwithstanding the above, please note that information provided to enable the administration of the Heritage Act 1995 may be disclosed to persons with an interest in the heritage place or object particularly, and information provided as part of a permit application may be made available on-line where the application has been publicly advertised under section 68 of the Heritage Act 1995.

VICTORIA State Government

HERITAGE PERMIT GRANTED UNDER SECTION 102 OF THE HERITAGE ACT 2017

Permit No.: P26807

Owner/s: Chief Executive Officer
Museum Victoria
11 Nicholson Street
CARLTON VIC 3053

NAME OF PLACE/OBJECT: **ROYAL EXHIBITION BUILDING AND CARLTON GARDENS (WORLD HERITAGE PLACE)**

HERITAGE REGISTER NUMBER: **H1501**

LOCATION OF PLACE/OBJECT: NICHOLSON STREET CARLTON and VICTORIA STREET and RATHDOWNE STREET and CARLTON STREET CARLTON

THE PERMIT ALLOWS: ***Conservation works (identified as Protection works) to the building exterior in accordance with the following documents, as prepared by Lovell Chen and endorsed by the Executive Director and forming part of this permit:***

- ***A3.10 Conservation Works East Elevation HV-2***
- ***A3.11 Conservation Works Pavilion 4 – Elevations HV-2***
- ***A3.12 Conservation Works East Elevation Portico HV-2***
- ***A3.13 Conservation Works Pavilion Five – Elevations HV-2***
- ***A3.20 Conservation Works South Elevation – Transept HV-2***
- ***A3.21 Conservation Works South Elevation – West Section HV-2***
- ***A3.22 Conservation Works South Elevation – East Section HV-2***
- ***A3.23 Conservation Works South Elevation – Pavilions HV-2***
- ***A3.24 Conservation Works South Elevation – Portico HV-2***
- ***A3.25 Conservation Works South Elevation – Rear and Pavilions HV-2***
- ***A3.30 Conservation Works West Elevation HV-2***
- ***A3.31 Conservation Works Pavilion 1 – Elevations HV-2***
- ***A3.32 Conservation Works West Elevation Portico HV-2***
- ***A3.33 Conservation Works Pavilion 8 – Elevations HV-2***
- ***A3.40 Conservation Works North Elevation – Transept HV-2***
- ***A3.41 Conservation Works North Transept Elevations HV-2***
- ***A3.42 Conservation Works North Elevation – East Section HV-2***
- ***A3.43 Conservation Works North Elevation – West Section HV-2***
- ***A3.44 Conservation Works North Elevation Pavilions HV-2***
- ***A3.45 Conservation Works North Elevation Portico HV-2***
- ***A3.50 Conservation Works Upper Promenade Elevations HV-2***
- ***A3.51 Conservation Works Upper Promenade Rear Elevations HV-2***
- ***A3.52 Conservation Works Dome Elevations HV-3***
- ***A3.53 Conservation Works Dome Roof Elevations HV-2***
- ***A3.54 Conservation Works Cupola Elevations HV-2***
- ***A3.60 Conservation Works Roof Lantern East – Elevations HV-2***
- ***A3.61 Conservation Works Roof Lantern West – Elevations HV-2***
- ***A3.80 Conservation Works Roof Plan HV-2***

A3.81 Conservation Works Roof Access Plan HV-2
REB Protection and Promotion Works Menu of Method of Repairs (6 pages)
General Render Repair Works Schedule (3 pages)
Itemised Render Repair Works Schedule (31 pages)
Roof Repair Works Schedule (2 pages)
Joinery Repair Works Schedule (17 pages)
Door Repair Works Schedule (10 pages),
AND to undertake works (identified as Promotion works) including some demolition, alterations and additions to the dome promenade, stair and lift access; basement entry and landscaped forecourt on the southern side of the building; basement fitout; new screened viewing area at gallery level generally in accordance with the 'Promotion' works scope as described in the following drawings prepared by Lovell Chen - A0.01 to A0.03 (Rev HV-3 inclusive); A1.10 to A1.16 (Rev HV-2/3 inclusive); A1.20 to A1.25 (Rev HV-2/3 inclusive); A1.30 Rev HV-3; A2.10 to A2.13 (Rev HV-3 inclusive) ; A2.20 to A2.28 (Rev HV-3 inclusive).

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

1. **DETAILED DESIGN**
   Detailed design drawings of all new works (excluding the conservation works identified in the documentation as 'protection works') are to be submitted to the Executive Director, Heritage Victoria for written approval prior to undertaking any of the new works. The detailed design drawings are to be generally in accordance with the 'Promotion Works Drawings' (A0.01-A0.03, A1.10-A1.16, A1.20-1.25, A1.30, A2.10-A2.13 and A2.20-A2.28 Rev HV-3 inclusive dated May 2017) as prepared by Lovell Chen, with the following modifications-
   • Remove Promenade Pavilion.

2. **MATERIALS INVENTORY**
   Prior to the commencement on site of any 'Promotion Works' approved by this permit, a Conservation Architect is to prepare a detailed Inventory of existing building fabric that is to be removed because of the 'Promotional Works' scope. The inventory is to identify the materials to be removed and the proposed future of the material (eg. to be disposed of, to be reused and in which location or to be stored and in which location). The Inventory is to be submitted to the Executive Director, Heritage Victoria for written approval.

3. **INTERPRETATION**
   Within six months of the commencement on site of any 'Promotion Works' approved by this permit, a Heritage Interpretation Program (HIP) is to be approved in writing by the Executive Director, Heritage Victoria. The HIP is to be prepared by a suitably qualified interpretation specialist. The HIP is to be implemented within 18 months of the Executive Director, Heritage Victoria approving the HIP, unless otherwise agreed in writing by the Executive Director, Heritage Victoria.

4. **ARCHAEOLOGY**
   Prior to the commencement of any sub-surface works an historical archaeological assessment report which identifies whether the works may impact any potentially significant historical archaeological remains must be prepared and submitted for endorsement by the Executive Director Heritage Victoria. If the report identifies the potential for impact on significant historical archaeological remains, a program of archaeological investigations and/or monitoring will be required, to the satisfaction of the Executive Director.

5. **SIGNAGE**

Prior to the installation of any permanent signage associated with the works approved in this permit, a Signage Plan containing all proposed way-finding, commercial and building identification signage for the newly developed areas is to be submitted to the Executive Director, Heritage Victoria for approval.

6. **LANDSCAPE**

A Landscape Plan is to be submitted to the Executive Director for endorsement prior to commencing any landscape works on site. The Landscape Plan is to include any new hard landscape elements and any planting associated with the works to the southern side of the building where the ground levels are to be changed.

7. **CONSTRUCTION MANAGEMENT PLAN**

Prior to the commencement of the works to the heritage place, a Construction Management Plan must be submitted to the Executive Director for approval in writing. The Construction Management Plan must include a sequencing program for the works, protection methods for existing building fabric and a dilapidation report (including images).

8. **TIME LIMIT AND OTHER**

a) This permit shall expire if the permitted works have not commenced within three (3) years of the date of issue of this permit, or are not completed within five (5) years of the date of issue of this permit unless otherwise agreed in writing by the Executive Director, Heritage Victoria.

b) The Executive Director is to be given five working days' notice of the intention to commence the approved works.

c) Approved works or activities are to be planned and carried out in a manner which prevents damage to the registered place / object. However, if other previously hidden original or inaccessible details of the object or place are uncovered, any works that may affect such items shall immediately cease. The Executive Director shall be notified of the details immediately to enable Heritage Victoria representatives to inspect and record the items, and for discussion to take place on the possible retention of the items, or the issue of a modified approval.

d) The Executive Director is to be informed when the approved works have been completed.

e) The development approved by this permit is to be carried out in accordance with the endorsed drawings, unless otherwise agreed in writing by the Executive Director, Heritage Victoria.

NOTE THAT PERMISSION HAS BEEN GIVEN FOR INSPECTIONS OF THE PLACE OR OBJECT TO BE UNDERTAKEN DURING THE CARRYING OUT OF WORKS, AND WITHIN SIX (6) MONTHS OF NOTIFICATION OF THEIR COMPLETION.

TAKE NOTICE THAT ANY NATURAL PERSON WHO CARRIES OUT WORKS OR ACTIVITIES NOT IN ACCORDANCE WITH THE PERMIT OR CONDITIONS IS GUILTY OF AN OFFENCE AND LIABLE TO A PENALTY OF UP TO 2,400 PENALTY UNITS ($380,568) OR 5 YEARS IMPRISONMENT OR BOTH, OR IN THE CASE OF A BODY CORPORATE 4800 PENALTY UNITS ($761,136).

THE ATTENTION OF THE OWNER AND/OR APPLICANT IS DRAWN TO THE NEED TO OBTAIN ALL OTHER RELEVANT PERMITS PRIOR TO THE COMMENCEMENT OF WORKS.

Date Issued: 19 December 2017	**Signed by the Executive Director, Heritage Victoria:**	HERITAGE VICTORIA HERITAGE VICTORIA HERITAGE VICTORIA

(If the permit has been amended, include the following table indicating the date and nature of amendments included in the amended permit)

Date of amendment	Brief description of amendment

IMPORTANT INFORMATION ABOUT THIS PERMIT

WHAT HAS BEEN DECIDED?

The Executive Director has issued a permit under section 74 of the ***Heritage Act 1995***.

WHEN DOES THE PERMIT BEGIN?

The permit operates from a day specified in the permit.

WHEN DOES A PERMIT EXPIRE?

A permit expires if -

* the development or any stage of it does not start within the time specified in the permit; or
* the development or any stage is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit.

The expiry of a permit does not affect the validity of anything done under that permit before the expiry.

WHAT ABOUT APPEALS?

The applicant or the owner of a registered place or registered object may appeal to the Heritage Council against any condition of a permit imposed by the Executive Director on a permit issued under Section 74 of the Heritage Act.

An appeal must -

* be in writing; and.
* be lodged within 6o days after the permit is issued.

Appeal forms can be downloaded at:
http://heritagecouncil.vic.gov.au/hearings-appeals/permit-appeals/permit-appeals-explained/

Royal Exhibition Building Protection & Promotion

Pavilion Two Materials Dismantling Inventory

Carlton Gardens, Nicholson Street, Carlton 3053

July 2018

Prepared by

LOVELL CHEN

Prepared for

MUSEUMS VICTORIA

1.0 Introduction

The following materials inventory has been prepared on behalf of Museums Victoria in response to Condition 2 of the Heritage Victoria Permit P26807 and Condition 3b – vi of the Department of Environment and Energy Approval under sections 130(1) and 133 of the Environment Protection and Biodiversity Conservation Act 1999; and outlines the all materials to be dismantled and stored as a part of the Protection and Promotion works to the Royal Exhibition Building.

Condition 2 MATERIALS INVENTORY states the following:

> *Prior to commencement on site of any 'Promotion Works" approved by this permit, a Conservations Architect is to prepare a detailed inventory of existing building fabric that is to be removed because of the 'Promotion Works' scope. The inventory is to identify to materials to be removed and the proposed future of the materials (e.g. to be disposed of, to be reused and in which location or to be stored and in which location). The inventory is to be submitted to the Executive Director, Heritage Victoria for written approval.*

Condition 3b – vi states the following:

> *A Materials Inventory identifying the proposed future use of any materials to be removed as a result of the proposed action (including proposed disposal, use for repairs or storage for eventual reinstatement) and where the removed material is to be stored.*

1.1 Promotion Works

The Promotion works consist of the reinstatement of the promenade viewing deck to the roof level along with adaptation of the 1880s elevator that was installed in Pavilion Two as part of the 1888 centenary exhibition. As a consequence of the promotion works, the internal floors, ceilings, partitions, doors, architraves, jambs and stairs will need to be removed from Pavilion Two.

It is also proposed to remove the mansard roof, cresting, dormer vents, roof framing, roof sheeting, flagpole and associated formed zinc collar to facilitate the installation of the new lift shaft and stairs.

The promotion works will also consist of the construction of a deck at the roof, between Pavilions Two and Three and at the base of the dome drum, known as the upper promenade. These works will consist of the removal of the existing walk ways, supporting steel beams, handrails and fencing and the removal of lighting in the vicinity of these works.

A series of new openings in the external façade will also be created. Some of these will consist of extending existing openings to create new openings, whilst other will consist of the new openings in masonry walls.

In addition to this the promotion works will also include alterations to the basement spaces, formally converted into a storage facility for the Museum's geology collection. The removal of fabric from this space consists of the removal of partitions and linings installed post 1999.

The removal of Stair 2 and 3 and the contents of Pavilion 2 from level 1 – 4 involves the removal of early, but non-original stairs, party wall, floors and partitions. A detailed examination of these areas was undertaken as a part of our Assessment Report dated November 2016 lodged with the Federal Government as part of the application for approval to undertake the works under the EPBC Act 1999.

1.2 Future Use of Materials

The materials that are proposed to be removed as part of the promotion works have been categorised by the following classes, defining their future use and the responsible parties. Items identified in the table below as 'Recovered' are to be carefully dismantled to enable their reuse in the works or to be stored by the Principal (known as Museums Victoria). Items identified as 'Demolished' are items that will not be salvage and will be disposed of off site; and may be damaged or destroyed in the process of removal.

Class	**Requirement**	**Ownership**
Recovered items for re-use in the works	Recover without damage items identified in the **Recovered items for re-use in the works schedule**	Principal
Recovered items for delivery to the principal	Recover without damage items identified in the **Recovered items for delivery to the principal schedule**	Principal
Demolished material for recycling off site	Demolish and deliver for recycling material identified in the **Demolished material for recycling off-site schedule**	Contractor
Demolished for removal	Remove from the site demolished materials identified in the **Demolish for removal schedule**. Do not burn or bury on site Transit: Prevent spillage of demolished materials in transit	Contractor

1.2.1 Material Storage

Items nominated as 'Recovered items for delivery to the principal' are to be collected, labelled by tagging and compiled into a shipping container, which will remain the property of the Principal. The shipping container(s) will be stored at the Museums Victoria facilities at 1 Simcock Avenue Spotswood, Victoria 3015. The container(s) will be stored in the yard on blocks, so that they are raised off the ground and will remain locked.

2.0 Inventory

The following schedules consist of the inventory of building contents and material to be removed from the Royal Exhibition Buildings as part of the promotion works:

2.1 Recovered items for re-use in the works schedule

Item	**Current Location**
Brickwork	External walls where new openings are to be made.
Brickwork	Pavilion 2 – Stair 2 party walls.
Bluestone	External basement walls for new doorway opening.
Timber flagpole and back span	Pavilion 2 to be reinstated.
Cast metal collard to flagpoles	Pavilion 2 to be reinstated.
Dormer vents and finials	Pavilion 2 to be reinstated.
Cast iron cresting	Pavilion 2 to be reinstated.

Item	Current Location
Timber gates, hardware and locking mechanisms	South transept pavilion 2 to be reinstated.
Switch boards (x 2)	South transept to be relocated to south wall adjacent to pavilion 2.
Lighting	External walls and parapets to be reinstated.

2.2 Recovered items for delivery to the principal schedule

Item	Current Location
Timber stair case and balustrade	Pavilion 2 – Stair 3
Timber lining boards and framing to partitions	Pavilion 2
Timber flooring and framing	Pavilion 2
Timber lined ceiling and framing	Pavilion 2
Mansard roof framing	Pavilion 2
Timber panelled door and jamb	Pavilion 2
Timber skirtings, mouldings and architraves	Pavilion 2
Timber stair and landing – ground floor	Pavilion 2 – Stair 1
Timber window – ground floor	Pavilion 2
Iron window grill – ground floor	Pavilion 2
Iron girder – basement level	Pavilion 2
Stair wall capping – carved stone / pressed cement	Pavilion 2 – Stair 2
Section of timber picture rail	Pavilion 2
Painted metal handrails	Pavilion 2 – Stair 2
Timber framed stairs	Pavilion 2 – Stair 2
Various large timber members in short lengths.	Pavilion 2 – Basement and Level 1

2.3 Demolished material for removal schedule

Item	Current Location
Hard landscaping, drainage and other services.	South drive
Services pipes, lights, floor boxes, wiring, cables, GPOs, fire services, smoke detection and other associated fixings.	Pavilion 2, Basement and South drive
Asphalt / cement coating infill to stair treads.	Pavilion 2 – Stair 2

Item	Current Location
Leftover bricks and bluestone not reused in the works will be recycled.	Pavilion 2 – Stair 1 & 2 and External walls where new openings are to be made.
Modern partitions, joinery, linings and finishes c1999	Basement
Concrete blockwork wall	Basement / Pavilion 2 – Stair 1
Modern fire doors and associated hardware and jambs c1999	Basement / Pavilion 2 – Stair 1
Extraction flues (x 3)	Basement / Pavilion 2
Asphalt floor finish	Pavilion 2 – Basement
Redundant steel structure, walkways staircases, steps and balustrades and palisade fencing c1990	Roof and promenade level
Mechanical plant, ducting and associated plinths c1990	Basement
All roof sheeting and associated rainwater goods nominated for replacement c1990	Roof and promenade level
Steel security bars to eight windows	Basement (internal)

3.0 Images

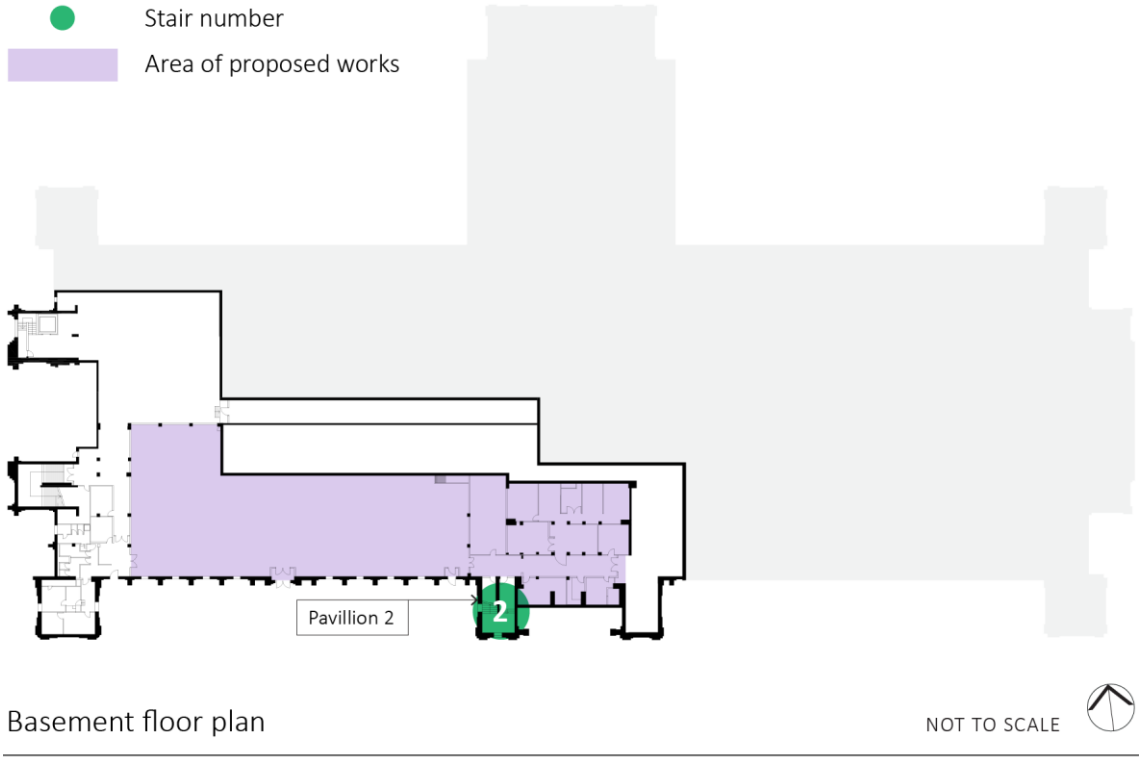


Figure 1 Basement Level Plan indicating the location of the works effected area.

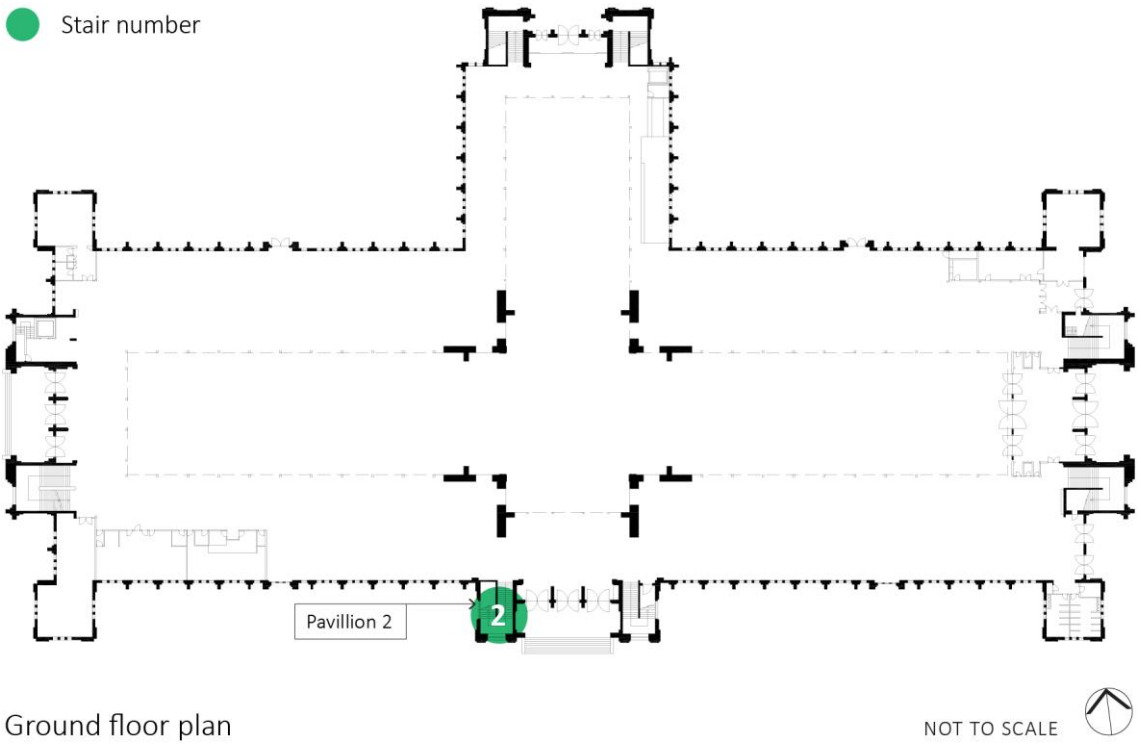


Figure 2 Ground Floor Level Plan indicating the location of the works effected area.

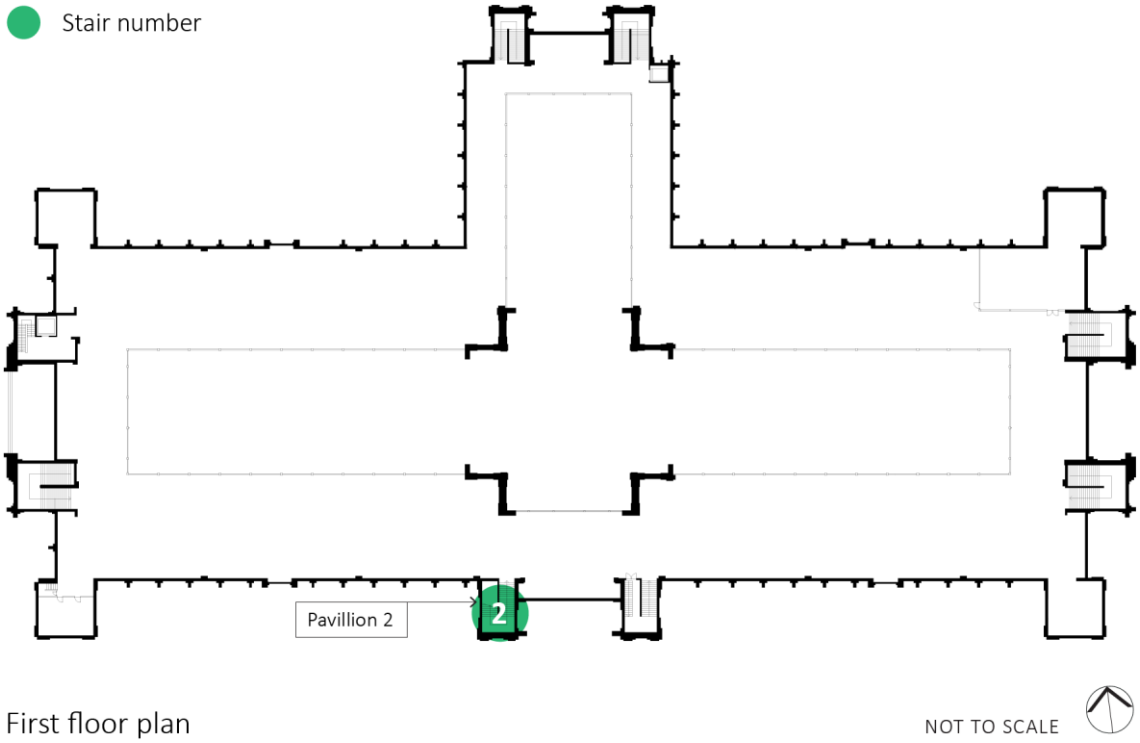


Figure 3 First Floor Level Plan indicating the location of the works effected area.

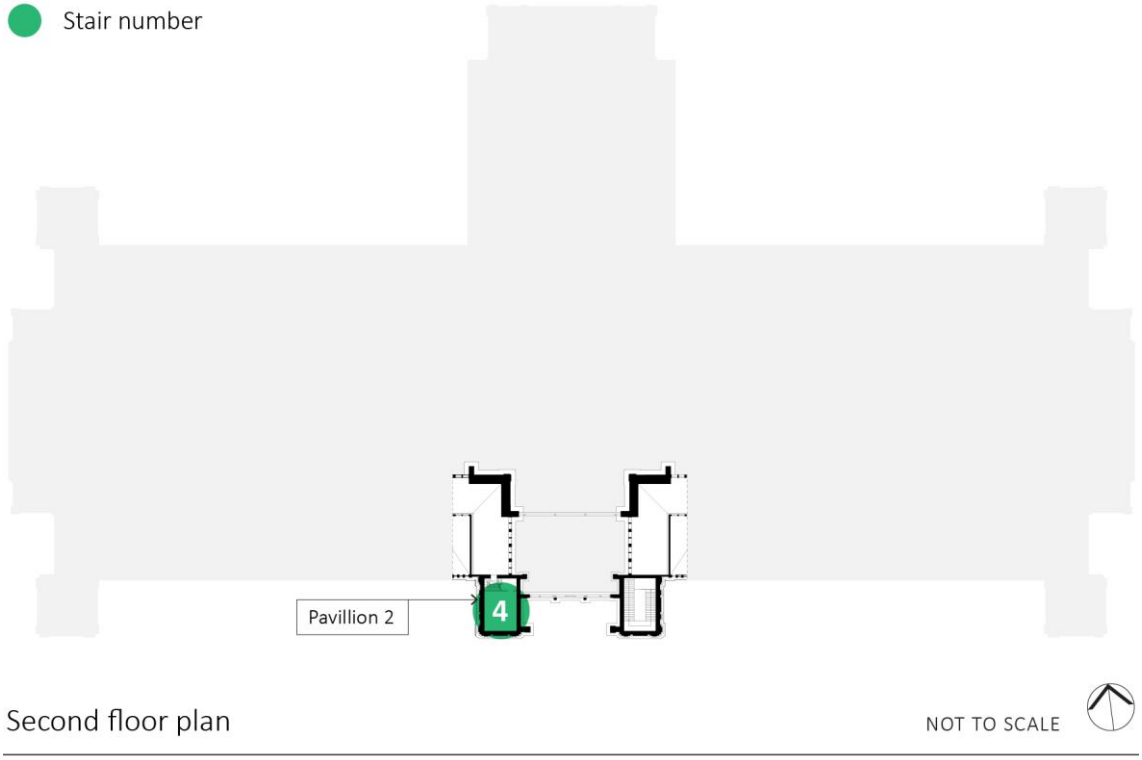


Figure 4 Second Floor Level Plan indicating the location of the works effected area.

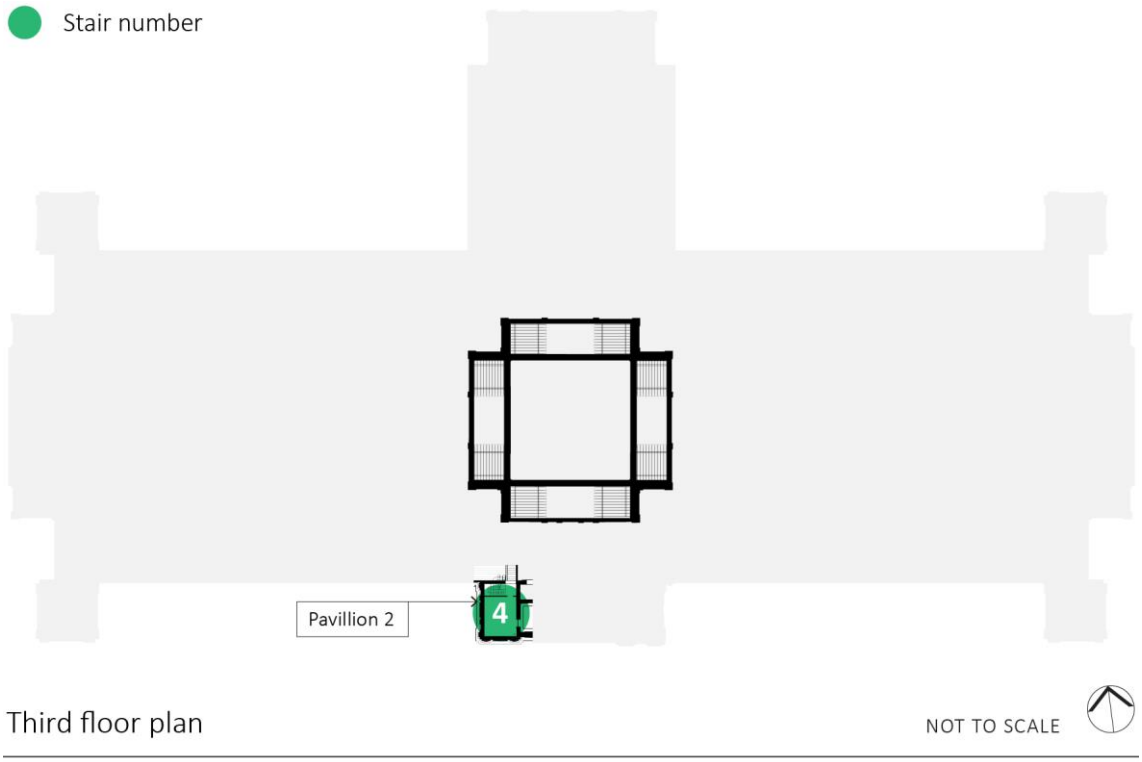


Figure 5 Third Floor Level Plan indicating the location of the works effected area.

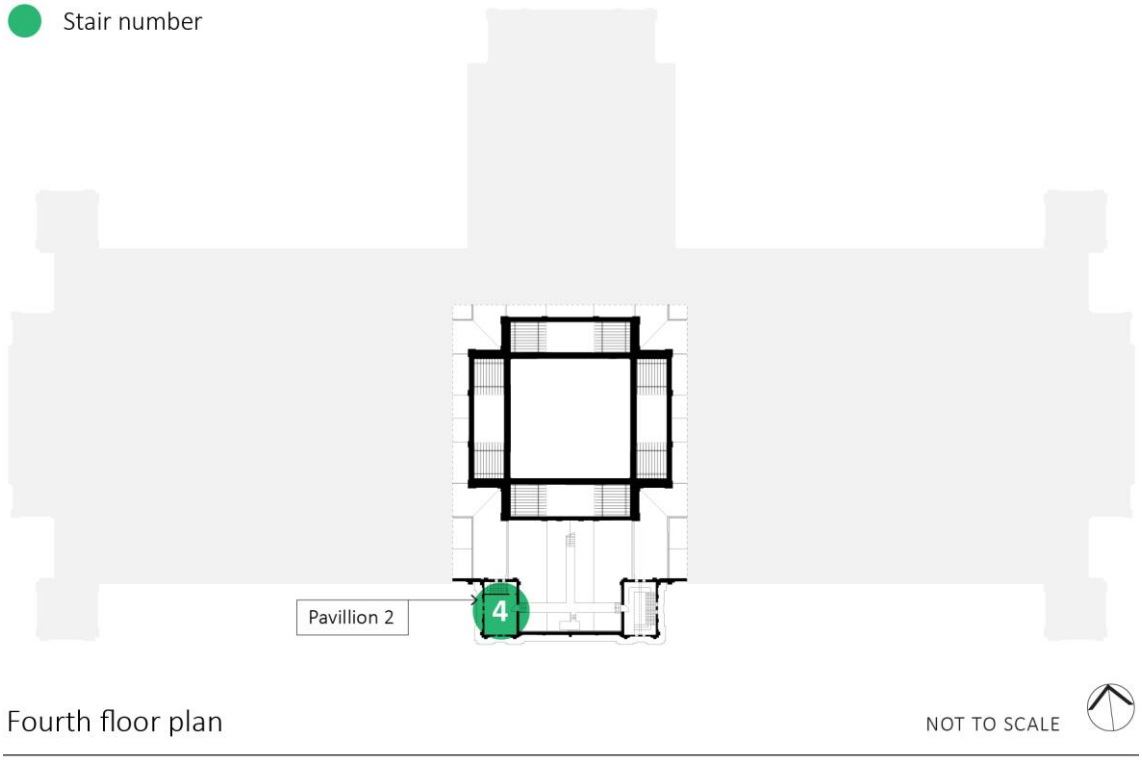
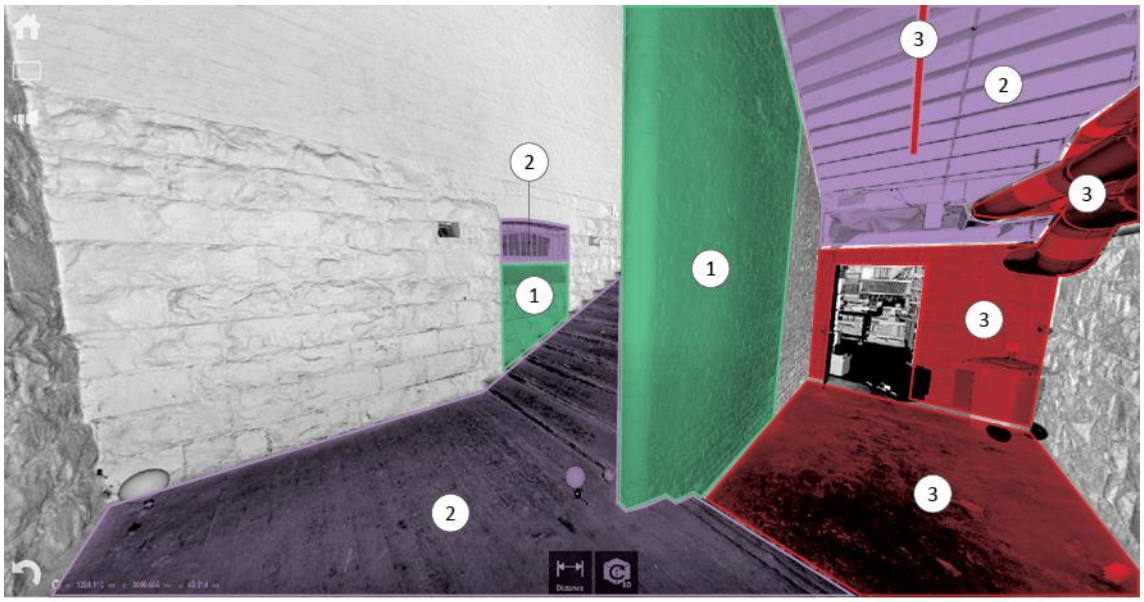


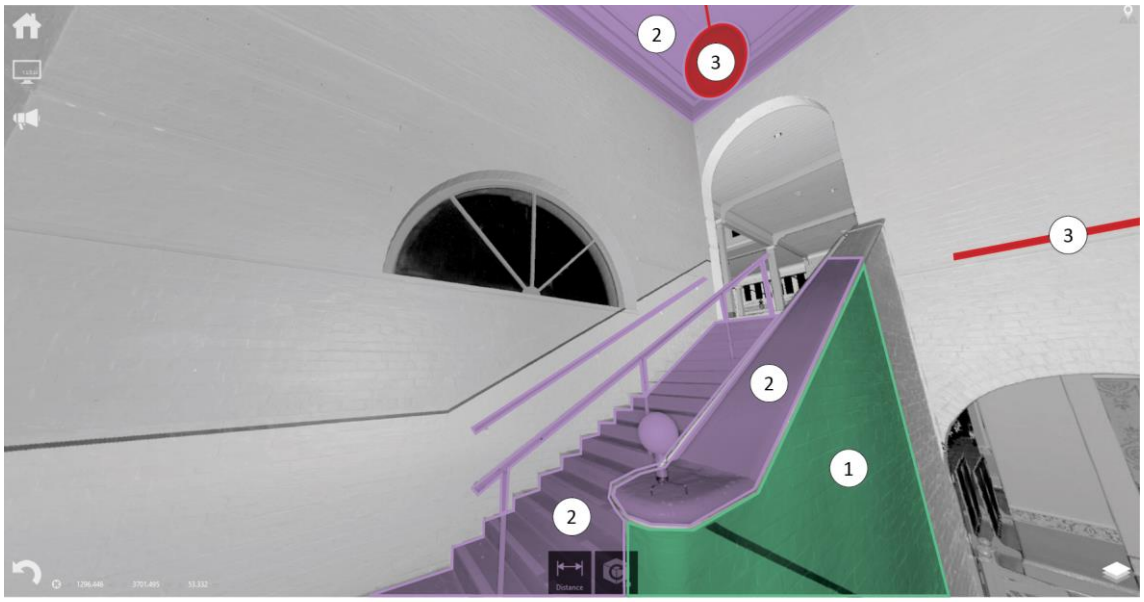
Figure 6 Fourth Floor Level Plan indicating the location of the works effected area.



1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, Basement

Figure 7 Interior view of Pavilion 2 at basement level indicating the items to be removed and their class.



1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, First floor

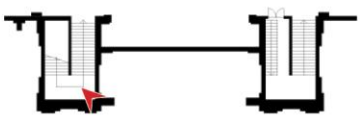
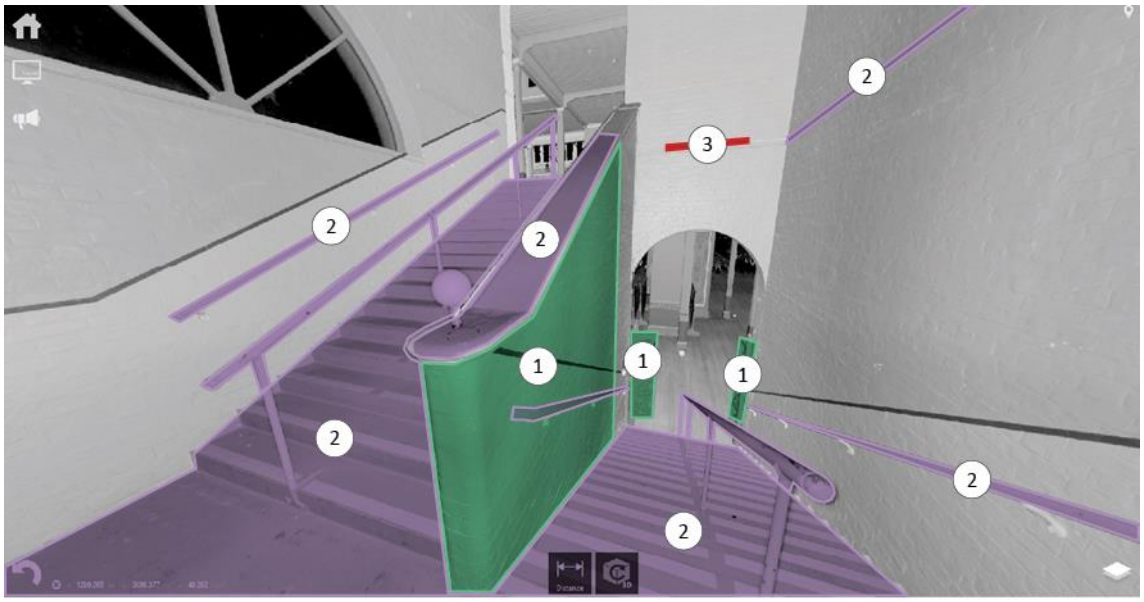


Figure 8 Interior view of Pavilion 2 at first floor level indicating the items to be removed and their class.



1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, First floor

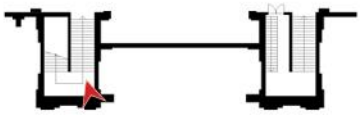
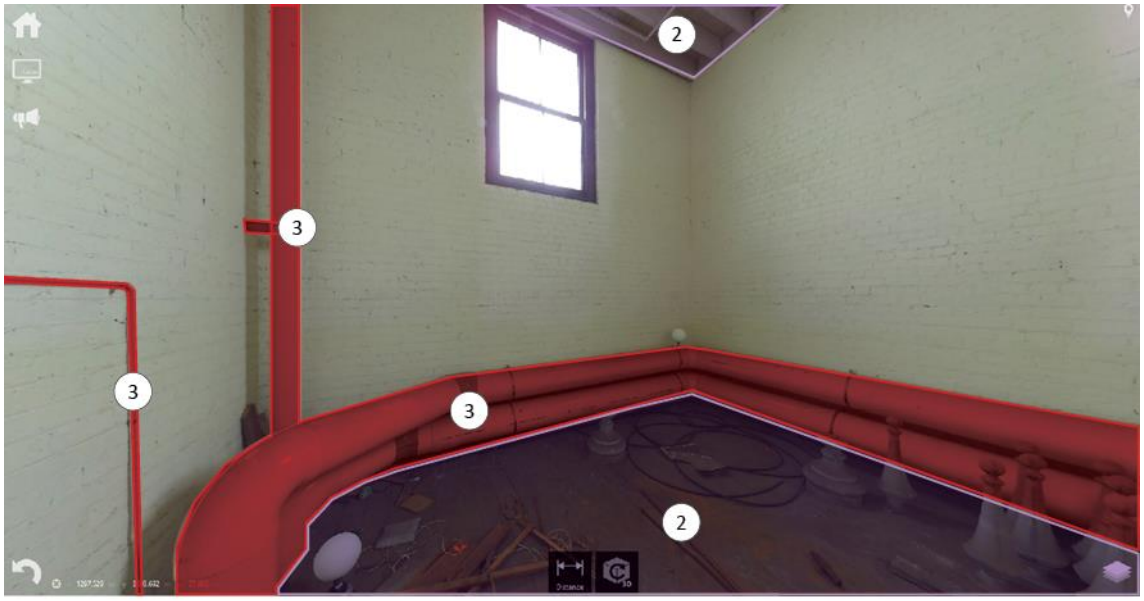


Figure 9 Interior view of Pavilion 2 at second floor level indicating the items to be removed and their class.



1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, Second floor

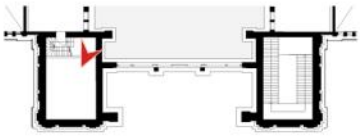


Figure 10 Interior view of Pavilion 2 at second floor level indicating the items to be removed and their class.

1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, Second floor

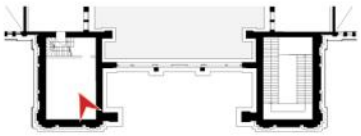
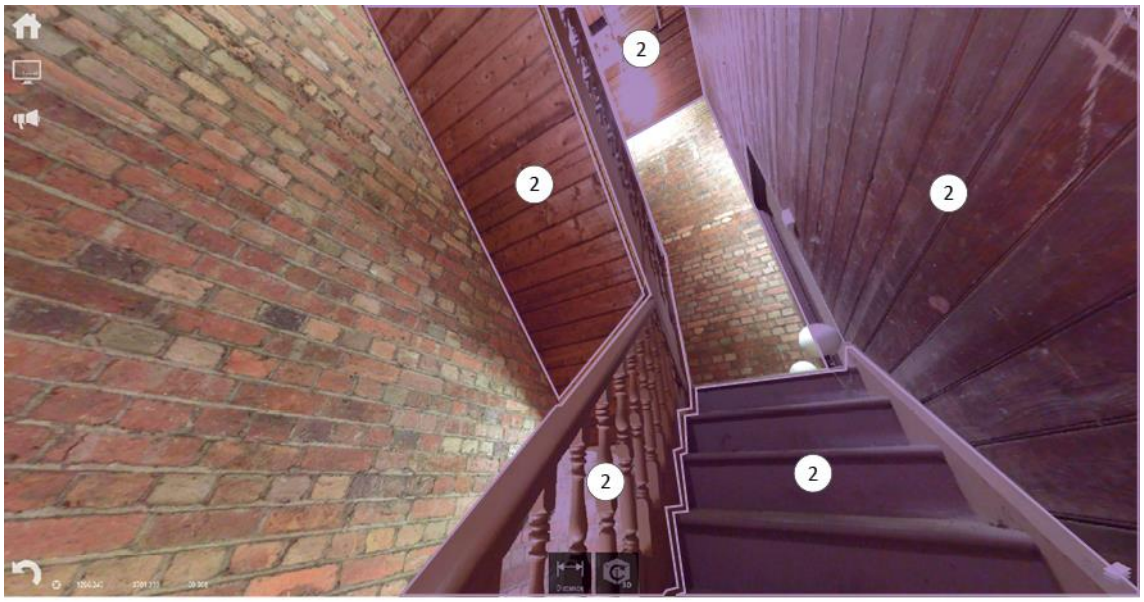


Figure 11 Interior view of Pavilion 2 at second floor level indicating the items to be removed and their class.



1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, Second floor

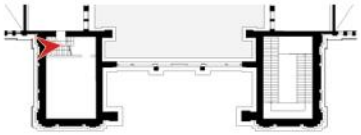
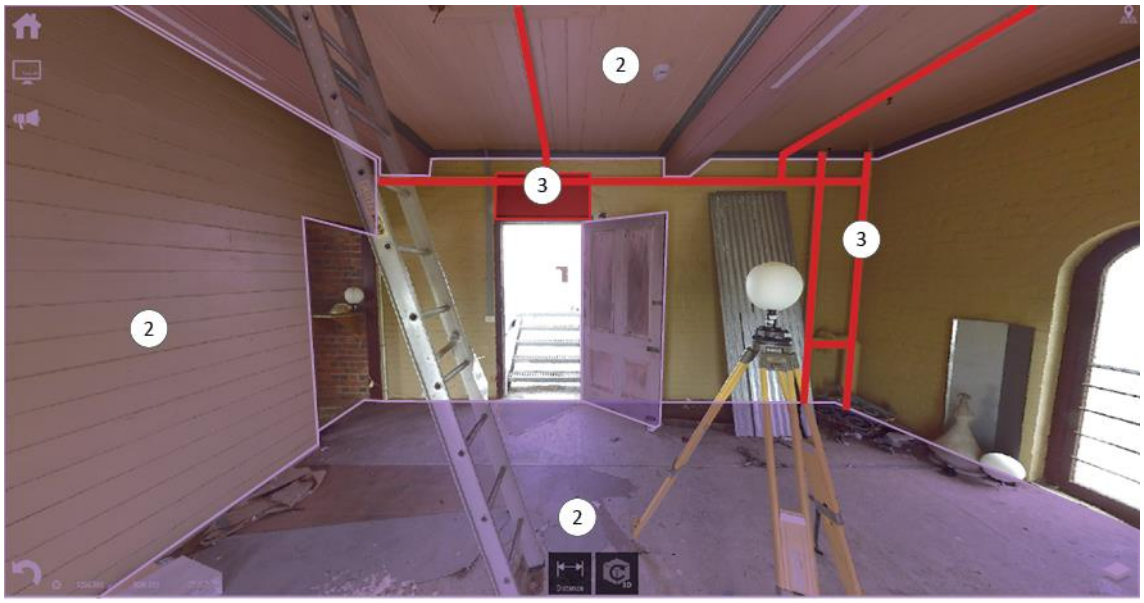


Figure 12 Interior view of Pavilion 2 at second floor level indicating the items to be removed and their class.

1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, Third floor

Figure 13 Interior view of Pavilion 2 at third floor level indicating the items to be removed and their class.



1 Reused in works
2 Salvaged and stored - client owned
3 Bin/ recycle

Pavillion 2, Fourth floor

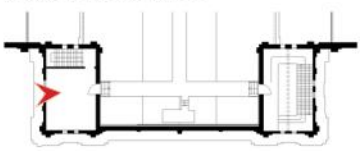


Figure 14 Interior view of Pavilion 2 at fourth floor level indicating the items to be removed and their class.

Appendix 6: Arborist Report

ArborSafe

TREE SYSTEMS • TREE CONSULTANCY • MAINTENANCE SYSTEMS

Arboricultural Impact Assessment & Tree Protection Management Plan

Royal Exhibition Building
9 Nicholson Street
Carlton

28th February 2018

REF# C91083

ASSESSMENT & REPORT COMMISSIONED BY:

Anne-Marie Treweeke
Lovell Chen Architects and Heritage Consultants
Level 5, 176 Wellington Parade
East Melbourne
Victoria 3002

ASSESSMENT & REPORT PREPARED BY:

Ido Monk
Dip. Hort (Arboriculture)
Consulting Arborist

Luke Dawson
Dip. Hort (Arboriculture)
Consulting Arborist

28th February 2018

Lovell Chen Architects and Heritage Consultants
Level 5, 176 Wellington Parade
East Melbourne
Victoria 3002

Ref: Royal Exhibition Building Protection and Promotion Project

RE: Arboricultural Report for trees located within the vicinity of proposed refurbishment works at the Royal Exhibition Building, Melbourne.

Dear Anne-Marie,

We are pleased to provide you with the following Arboricultural Impact Assessment and Tree Protection Management Plan for forty (40) trees within and adjacent to the grounds of the Royal Exhibition Building site.

Complete use of this report is authorised under the conditions limiting its use as stated in Appendix A Item 7 of *"Arboricultural Reporting Assumptions and Limiting Conditions"*.

Should you have any queries relating to this report, its recommendations, or the options considered please do not hesitate to contact us on 1300 272 671.

Yours sincerely,

Ido Monk
Consulting Arborist

Luke Dawson
Consulting Arborist

ArborSafe

Table of Contents

1 Executive Summary

1.1.1 The following Arboricultural Impact Assessment and Tree Protection Management Plan (Report) regards forty (40) trees located adjacent to the Royal Exhibition Building, Melbourne. The subject site was identified by the client as possessing trees that may be impacted by proposed refurbishment works.

1.1.2 In part, the project scope was to nominate subject trees that can be retained, or require removal to facilitate this development, as well as identify and reduce potential conflicts between subject trees and site works. Accurate information on the area required for tree retention and methods/techniques suitable for tree protection during construction have been provided.

1.1.3 An arborist inspection of the subject trees was undertaken on the 18th January 2018, where tree data was collected. A further site meeting to discuss tree protection requirements and options was carried out on the 20th February 2018.

1.1.4 Tree retention values have been determined based upon the assessment of the trees' health, structure, dimensions, age class, life expectancy, location and environmental amenity/ significance. The Tree Protection Zone (TPZ) method has been derived from the Australian Standard *4970–2009: Protection of Trees on Development Sites*. The TPZ is defined as a specified area above and below ground and at a given distance measured radially away from the centre of the tree's trunk, which is set aside for the protection of its roots and crown.

1.1.5 Twenty (20) trees were of Retention Value A. Typically trees in this category were of a significant size in the landscape, possess fair to good health and structure, a Useful Life Expectancy (ULE) of more than 25 years, made significant amenity contributions to the landscape and made high environmental contributions. Trees 36, 40, 42, 44, 52, 54, 56, 58, 59, 60, 74, 78, 80, 84, 103, 104, 147,150, 151 and 194 were assigned a Retention Value of A.

1.1.6 Seventeen (17) trees were of Retention Value B. Trees in this category were typically of a medium size, had good to fair health and good to fair structure, and a Useful Life Expectancy (ULE) of more than 15 years. These trees made moderate amenity contributions to the landscape and low to moderate environmental contributions. Trees 38, 46, 48, 61, 64, 72, 82, 99, 100, 101,102, 149, 152, 153, 177, 193 & 195 were assigned a Retention Value of B.

1.1.7 Three (3) trees were of Retention Value C. Trees in this category were typically of small-medium size, of low significance in the landscape, may have poor health and/or structure, are easily replaceable, of undesirable species and do not warrant design consideration. Trees 148, 164 & 165 were assigned a Retention Value of C.

1.1.8 Trees 103, 104, 193, 194 & 195 were located within the grounds of Carlton Gardens to the south of the subject site.

1.1.9 Information on each tree subject to this report can be found in Appendix C – Tree Assessment Data. A summary of tree protection requirements relative to the site can be found in Appendix D – Tree Protection Plan.

1.1.10 Trees 44, 46, 48, 52, 72, 177, 103, 104 & 147 may require pruning within their their crowns in close proximity to the Exhibition Building scaffold, or access roads to facilitate works.

2 Introduction

2.1.1 ArborSafe Australia Pty Ltd was engaged by Lovell Chen Architects on behalf of Museums Victoria to provide an Arboricultural Impact Assessment and Tree Protection Management Plan (report) regarding forty (40) trees located within or directly adjacent to the grounds of the Royal Exhibition Building. This report includes five (5) trees located within Carlton Gardens, that may be impacted upon by proposed refurbishment works and associated construction activities.

2.1.2 The subject trees were numbered 36, 38, 40, 42, 44, 46, 48, 52, 54, 56, 58, 59, 60, 61, 64, 72, 74, 78, 80, 82, 84, 99, 100, 101, 102, 103, 104, 147, 148, 149, 150, 151, 152, 153, 164, 165, 177, 193, 194 & 195 in line with the existing ArborSite tree inventory report for the site, which has historically been supplied and managed by ArborSafe Australia Pty Ltd.

2.1.3 During the compilation of this report the City of Melbourne's Tree Retention and Removal Policy document was reviewed as a reference.

3 Terms of Reference

3.1.1 Carry out a visual examination of the nominated trees as listed in Section 2.1.2.

3.1.2 Inspect the trees and their growing environment.

3.1.3 Provide an objective appraisal of the subject trees in relation to their species, estimated age, health, structural condition, form and viability within the landscape.

3.1.4 Based on the findings of this investigation, provide detailed TPZ distances and tree protection and/or construction measures (to form the TPMP) to minimise the potential impact(s) of the proposed refurbishment works upon the subject trees.

4 Procedure

4.1.1 Ido Monk of ArborSafe Australia Pty Ltd carried out a site inspection of the subject trees on 18th January 2018.

4.1.2 The subject trees were inspected from the ground. No soil samples were taken, and no aerial or internal investigations were undertaken.

4.1.3 Tree height was estimated. Canopy spread and trunk diameter at breast height (DBH) was measured with a measuring tape or diameter tape respectively.

4.1.4 Tree Protection Zones (TPZ) were calculated in accordance with the Australian Standard AS 4970–2009 Protection of Trees on Development Sites.

4.1.5 The location and number of the subject trees were detailed on the site plan (Fig. 1).

4.1.6 Data collected on site was analysed by Ido Monk and Luke Dawson, collated into report format, and relevant recommendations were formulated.

5 Observations

5.1 Site plan

Figure 1: Location and numbering of trees subject to this report at the Royal Exhibition Building site. Source: ArborSafe Australia Pty Ltd, January 2018

5.2 Site observations

5.2.1 The Royal Exhibition Building was located at 9 Nicholson Street, Carlton. The building was a prominent historical building within the greater landscape of inner city Melbourne. The Royal Exhibition Building was completed in 1880 and remains one of the oldest exhibition buildings of its era. It was the first building to be listed as a World Heritage Building within Australia. Individual trees included within this report date from the original landscape construction of this building.

5.2.2 Trees included within this report were located within the direct surrounds of the building footprint and included trees in close proximity to the vehicle access roads to the south, east and west of the building.

5.3 Proposed works

5.3.1 It was understood from communication and plans provided by Lovell Chen Architects (Site establishment plan and work promotional extent, December 2017) that the works to be undertaken were primarily refurbishment works to the upper roof structure of the building. To facilitate such works, it was proposed that scaffolding be erected to supply access to the upper portion of the buildings structure.

5.3.2 Further to this it was understood that to the southwest of the Exhibition buildings minor excavations would be required to install underground services.

5.3.3 To facilitate these works it was understood that the vehicular access road to the southeast of the Royal Exhibition Building would be used for large vehicle (i.e. delivery trucks and cranes) access to the site. The access road to the south west of the site would be used for smaller vehicles access (e.g. trades vehicles).

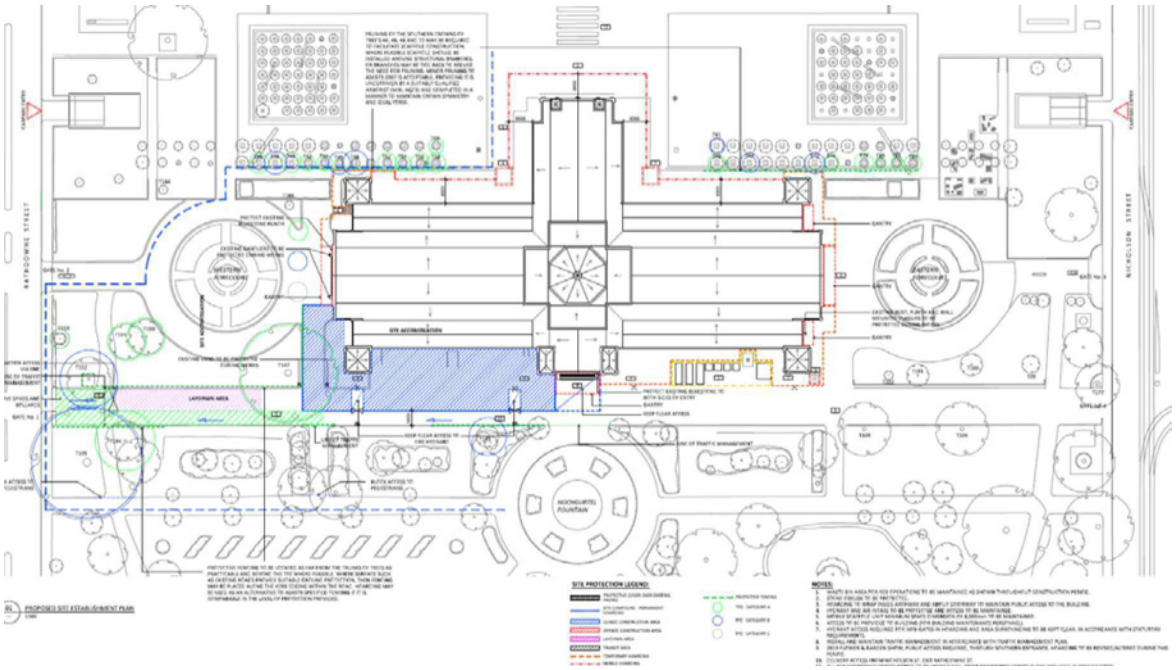


Figure 2: Exerpt from Proposed Site Establishment Plan & Promotion Works Extent. Source: Lovell Chen, 19.02.18

5.4 Tree significance

5.4.1 Many of the trees included within this report were of considerable physical dimensions and contributed highly to the surrounding landscape. Due to its estimated age, physical dimensions and contribution to the surrounding landscape Tree 147 (Morton Bay Fig) was listed on the National Trust's Register of Significant Trees (T11899) and officially designating as a tree of regional significance.

5.5 Observations - Trees 36-59

5.5.1 Trees 36 to 59 were identified as semi-mature examples of *Angophora costata* (Smooth-barked Apple Myrtle) that were situated on the northwest corner of the Royal Exhibition Building. The group of trees displayed moderate physical size and were part of a larger landscape planting being a dual avenue running east to west along the entire northern aspect of the building. As part of this larger planting, this group of trees contributed strongly to the local landscape.

5.5.2 The health of this group of trees was rated as good, with entire crowns of good density, colour and foliage size. Small to moderate sized deadwood was present, which was consistent with natural branch senescence due to internal shading. These trees were considered to be establishing well, with their canopies merging which further contributing to the landscape and combined aesthetic value of the trees.

5.5.3 The structural condition of this group of trees was rated as fair to good due to isolated instances of codominant stem formation. This had primarily been remediated by former pruning works, reducing subdominant stems where required.

5.5.4 Due to the current age, health and structural condition of this group of trees they were assigned retention values of A and B, however the landscape value of the trees as a wider planting was considered high. Figure 3 illustrates the avenue style of planting and the overall canopy cover provided by the trees. Trees within this group may have been elevated to retention value A as they formed part of an avenue planting.

Figure 3: View from the east of Trees 36 to 59 at the Royal Exhibition Building. Source: Ido Monk, 18th January 2018

5.6 Observations - Trees 60-84

5.6.1 Trees 60 to 84 were identified as semi-mature examples of *Angophora costata* (Smooth-barked Apple Myrtle) that were situated on the northeast corner of the Royal Exhibition Building. The group of trees displayed moderate physical size and were part of a larger landscape planting being a dual avenue running east to west along the entire northern aspect of the building. As part of this larger planting, this group of trees contributed strongly to the local landscape.

5.6.2 The health of this group of trees was rated as good, with entire crowns of good density, colour and foliage size. Small to moderate sized deadwood was present, that was consistent with natural branch senescence due to internal shading.

5.6.3 The structural condition of this group of trees ranged from poor to good due to instances of codominant stem formation. Tree 61 was the only tree rated as poor structure. Defects in most trees had been remediated by former pruning works, reducing subdominant stems where required. The structure of the entire group was expected to improve as the trees continued to mature.

5.6.4 Due to the current age, health and structural condition of this group of trees they were assigned retention values of A and B, however the landscape value of the trees as a wider planting was considered high. Figure 4 illustrates the avenue style of planting and the overall canopy cover provided by the trees. Trees within this group may have been elevated to retention value A, as they formed part of an avenue planting.

Figure 4: View from the east of trees 60 to 84 at the Royal Exhibitions Buildings. Source: Ido Monk, 18th January 2018

5.7 Observations - Trees 103, 104 & 177

5.7.1 Trees 103, 104 & 177 were identified as semi-mature to mature examples of *Platanus x acerifolia* (London Plane) that were situated on the eastern aspect of the Royal Exhibition Building grounds, towards the vehicle entrance off Nicholson Street. The trees displayed large to very large physical dimensions for this species and had a noticeable presence within the surrounding landscape. Trees 103 and 104 also contributed strongly to the surrounding tree canopy.

5.7.2 The health of trees 103, 104 & 177 was rated as good with full, dense crowns of healthy foliage. Foliage colour and size was consistent with trees of optimum health within this species. Internal deadwood was observed, that was considered consistent with the natural shading and senescence of internal branching.

5.7.3 The structural condition of the trees 103 and 104 was considered good, with well attached branch unions and no observed major structural defects. Tree 177 presented with minor structural defects and as such was assigned a structural rating of fair. These were considered to be easily remediated via common arboricultural pruning practices.

5.7.4 Due to the current age, health and structural condition of these trees in combination with known longevity under cultivation in Victoria they were allocated a relatively a long useful life expectancy (ULE) being greater than twenty-five years. Trees 103 & 104 were subsequently allocated retention values of A, whilst due to the reduced current structural rating of Tree 177 it was assigned a retention rating of B.

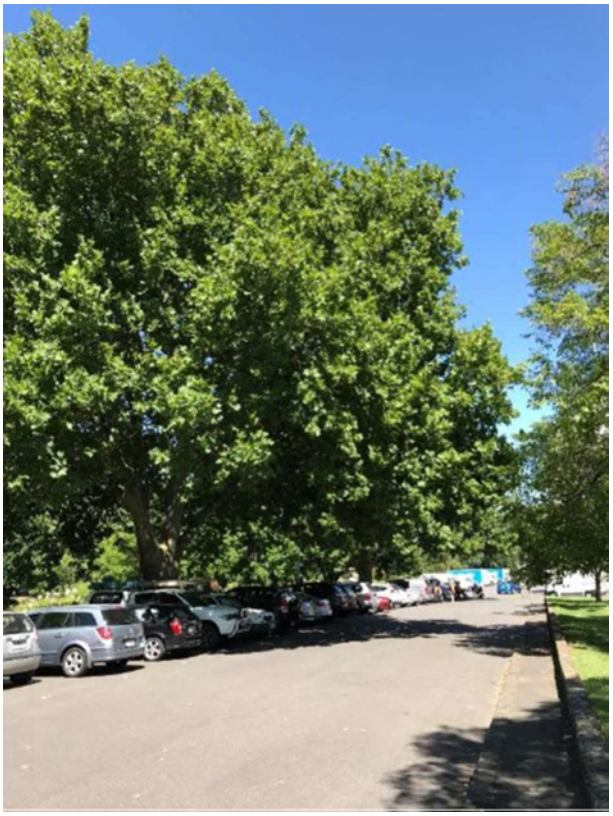


Figure 5: View from the east of Trees 103 & 104 at the Royal Exhibition Building. Source: Ido Monk, 18th January 2018

5.8 Observations - Tree 147

5.8.1 Tree 147 was identified as a large and mature example of *Ficus macrophylla* (Moreton Bay Fig) that was situated a short distance from the south-western corner of the Royal Exhibition Building. The tree displayed very large physical dimensions, typical of this species and had a noticeable presence within the surrounding landscape, which contributed strongly to the surrounding tree canopy. Tree 147 is estimated to be of considerable age and as such has been listed as regionally significant by Heritage Australia through inclusion within its significant tree register (Trust tree number T11899).

5.8.2 The health of Tree 147 was rated as good, evidenced by a full crown of dense foliage, consistent in size and colour with a healthy specimen of this species.

5.8.3 The structural condition of Tree 147 was rated as fair, which was primarily due to the multi-stemmed architecture of the primary scaffold branch framework. This characteristic is somewhat synonymous with the tree species.

5.8.4 Due to the current age, health and structural condition of the tree in combination with its known longevity under cultivation in Victoria, as well as its documented age and significance, it was allocated a long useful life expectancy (ULE) of greater than 50 years. During this time its physical size was expected to continue to expand at a slow to moderate rate. Despite its fair structure the tree was allocated a retention value of A.

Figure 6: View from the south of tree 147 at the Royal Exhibitions Buildings. Source: Ido Monk, 18th January 2018

5.9 Observations - Tree 195

5.9.1 Tree 195 was identified as a large and mature example of *Ficus macrophylla* (Moreton Bay Fig) that was situated on the western boundary of the Royal Exhibition Building site, located within the boundaries of Carlton Gardens. Tree 195 displayed large physical dimensions and was a significant feature of the local landscape. The tree was estimated to be of considerable age and contributed strongly to the overall aesthetic of the gardens.

5.9.2 The health of Tree 195 was rated as good, evidenced by a full, dense crown of foliage. Internal deadwood was observed, consistent with the natural senescence of internal branches due to shading.

5.9.3 The structural condition of the tree was rated as fair, due to the natural formation of multiple primary stems of a moderately acute angle of attachment and the evidence of previous branch failure.

5.9.4 Due to the current age, health and structural condition of the tree in combination with its known longevity under cultivation in Victoria, it was allocated a long useful life expectancy (ULE) of greater than 50 years, during which time its physical size was expected to increase at a moderate rate. Given these attributes Tree 195 was assigned a retention value of B, primarily due to the minor reduction in its structural rating.

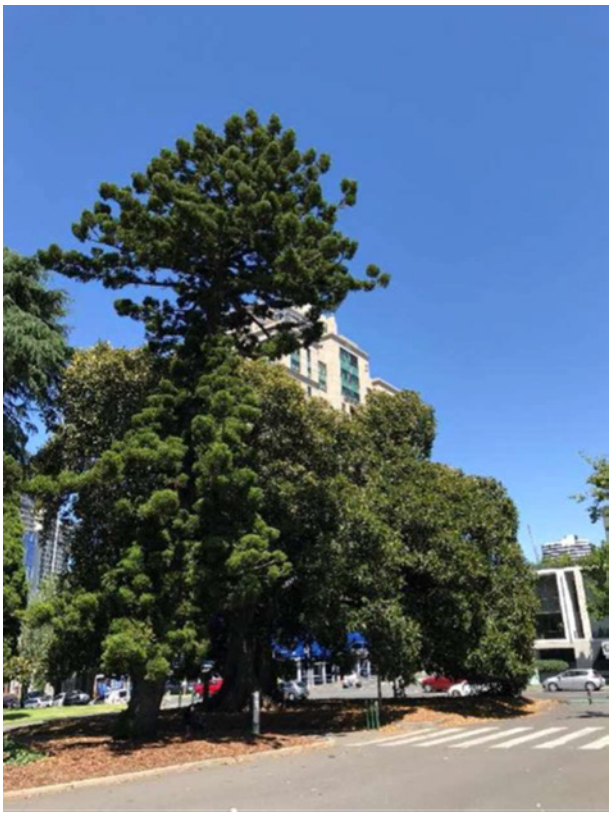


Figure 7: View from the northeast of Trees 194 & 195 (front ot back) at the Royal Exhibitions Buildings. Source: Ido Monk, 18th January 2018

5.9.5 Details regarding attributes of all remaining trees subject to this report can been identified within Appendix C – Tree Assessment Data. The location of all site trees is identified within the Appendix D - Tree Protection Plan.

6 Discussion

6.1 Planning, design and tree protection zones

6.1.1 Invariably during the early phases of construction projects, Tree Protection Zones (TPZs) are calculated by Arborists to guide the planning, design and construction stages in relation to the successful retention of trees. TPZs are designed to provide adequate space for the protection of the above and below ground components of a tree to ensure health and stability. The area allocated for a TPZ is determined by the tree's species, age, size, tolerance to changes in site conditions and site constraints.

6.1.2 The method for determining the TPZ in this report is based on the Australian Standard AS 4970–2009 Protection of Trees on Development Sites, which states that the TPZ is equal to twelve (12) times the measured trunk Diameter at Breast Height (DBH). The TPZ is measured radially away from the centre of the tree's trunk and is measured in metres (m). This standard also states that no tree shall have a TPZ greater than 15m nor less than 2m.

6.1.3 Within the TPZ and closer to the tree's base is an area known as the structural root zone (SRZ). Root damage/severance at, or within the SRZ can not only heavily deplete a tree's health, however can jeopardise its stability within the soil profile.

6.1.4 Limited encroachment/manipulation of the TPZ (<10%) may occur, however is dependent on the type of works proposed, the characteristics of the tree and the site constraints. If proposed encroachment into the TPZ is greater than 10% area, demonstration that the tree will remain viable must be shown (e.g. via non-destructive soil excavations). Work within or modifications to the designated TPZ should only be made under the guidance and supervision of a suitably qualified and experienced consulting Arborist. Refer to Appendix C - Tree Assessment Data for individual TPZ and SRZ distances.

6.1.5 Where a crown extends beyond the extent of the calculated TPZ, then protection should be afforded to this area also and the TPZ offset manipulated to encompass this portion of the trees crown.

6.2 Potential impacts upon the subject trees

6.2.1 Given the proposed works are primarily being undertaken within the upper structure of the building, the potential for damage to trees was considered limited to physical contact with the above ground tree's framework by vehicles and machinery. This damage was likely to be in the form of wounding or other mechanical tissue damage to above ground tree parts such as the trunks or large structural branches.

6.2.2 The potential for root damage due to vehicle and machinery compaction in areas of ground around the base of trees was considered possible. This was particularly the case in turfed areas or areas of garden bed that are more susceptible to compaction.

6.2.3 In summary, damage that may result from works are (but not limited to) the following activities:

- Compaction of the root zone via vehicles and/or machinery or the storage of materials.
- Mechanical damage to above ground tree parts by vehicles, scaffolding and/or machinery.
- The creation of open trenches for underground services.
- Changes in soil grade and hydrology.

7 Tree Protection Management Plan (TPMP)

7.1.1 This section forms the basis of the TPMP and is divided into recommendations to be undertaken before, during and after the proposed construction works. These include:

- Preconstruction Activities
- Activities During Construction
- Post Construction Activities

7.1.2 All recommendations made within the TPMP are congruent with the Australian Standard AS 4970–2009 Protection of Trees on Development Sites and as such it would be prudent that the contractors and all those involved with the in-situ and ex-situ management of this project obtain a copy of and are familiar with this document.

7.1.3 Tree protection guidelines relate specifically to the protection of trees before, during and after construction within the site that require specific tree protection measures. Tree protection, or exclusion zones are necessary to prevent detrimental effects resulting from a range of construction activities. To be effective exclusion zones should be installed to protect the designated tree protection zone (TPZ). TPZs should be secured by fixed fencing/hoarding and identified with signs. Where encroachment is required within the TPZ, this should be done only with the approval of a Project Arborist.

7.1.4 Activities to be excluded from the TPZ include:

1. Machine excavation (including trenching of underground services).
2. Excavation for silt fencing.
3. Soil cultivation.
4. Storage of all building materials.
5. Preparation of chemicals, including preparation of cement products.
6. Parking of vehicles and plant.
7. Refuelling of machinery.
8. Dumping of waste and/or building debris.
9. Wash down and cleaning of plant and equipment.
10. Placement of fill.
11. Soil level changes.

7.2 Tree retention

7.2.1 As a result of the assessments made as part of this report, all subject trees were deemed suitable for retention throughout this development and into the medium to long term.

8 Pre-construction activities

8.1 Pruning works

8.1.1 Trees 44, 46, 48, 52 & 72 may require pruning to facilitate the erection of scaffolding. The exact extent of this pruning will require clarification as scaffolding is being installed, however pruning should aim to remove the least live branch material possible to facilitate the installation. Pruning cuts where possible are to be kept away from the primary structural framework of any subject trees.

8.1.2 Tree 103, 104, 147 & 177 may require minor pruning works to reduce the potential for conflict between vehicles entering the site and overhanging tree branches. This pruning should focus on removing small diameter branching only (<50mm diameter). The removal of any large structural tree parts must not be undertaken.

8.2 Quality of arboricultural works

8.2.1 To ensure a high standard of works is achieved, all arboricultural works administered to the subject trees must be completed by a suitably qualified and experienced arborist(s) (minimum AQF Level 3) in accordance with the Australian Standard AS 4373–2007 Pruning of Amenity Trees.

8.2.2 After pruning has been completed, no further material is to be removed from any subject trees without the consent of the Project Arborist. At no time are non-arborist personnel working on the project to remove branches, foliage, bark or roots from any subject trees.

8.3 Preparation of TPZs - Tree protection fencing

8.3.1 Due to the nature of the proposed works and the current site usage standard TPZ fencing as per AS4970:2009 was not considered appropriate in all areas necessary for protection. Where areas of the site were delineated by proposed scaffolding or hoarding so as to prevent access by members of the public, then such scaffold/hoarding was deemed appropriate to also act as TPZ fencing. See 8.4 for Scaffold/hoarding details.

8.3.2 Where fencing is required it should be erected at the edge of pre-existing vehicular roadways, outside of any gutter or curbing as per Appendix D - Tree Protection Plan. Tree protection fencing must be made from sturdy materials such as chain and mesh panels or plywood hoarding and posts and should be permanent, locked/eliminate access by contractors and be incapable of being readily moved or adjusted once erected. Any holes that need to be dug to support the fencing where possible should be located outside of the TPZ, otherwise such holes should be hand dug under the supervision of the Project Arborist. Materials such as rope or orange para webbing are not considered appropriate as a means of protection. Fencing such as this should be erected for the protection of trees 147-152.

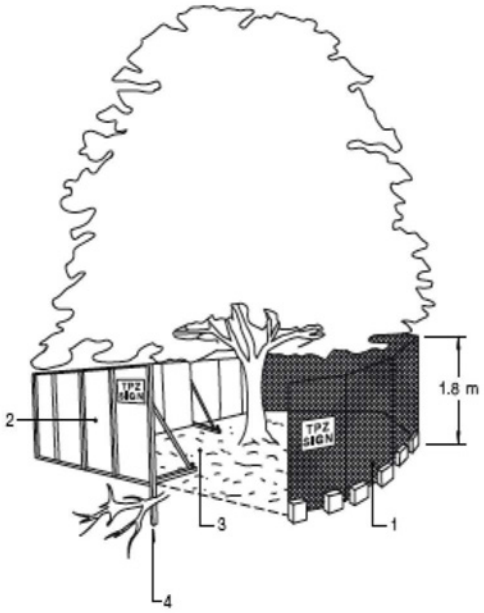
8.3.3 Trees 103 and 104 are located adjacent to the vehicular access road on the southern aspect of the Royal Exhibition Building, where protective fencing is to be installed outside of the extensive buttressing and exposed structural roots. Due to the buttressing nature and structural roots extended beyond the curb, fencing is to be erected to provide 500mm clearance beyond these tree parts.

8.3.4 Discussion with the client indicated that trees 164 and 165 would be located outside of construction activities. However, if construction activities are required within this area, suitable fencing at the nominated TPZ distance is to be erected prior to the commencement of any works.

8.3.5 Once erected, protective fencing must not be removed or altered without approval from the Project Arborist. The TPZ fencing should be secured to restrict access. Tree protection fencing must remain intact throughout all proposed construction works and must only be dismantled after their conclusion.

8.3.6 The temporary dismantling of tree protection fencing must only be done with the authorisation of the Project Arborist and/or the responsible authority.

8.3.7 The subject trees themselves must also not to be used as a billboard to support advertising material. Affixing nails or screws into the trunks of trees to display signs of any type is not a recommended practice in the successful retention of trees.



Legend:

1. Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2. Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3. Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4. Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 8: Depicts standard TPZ fencing as identified in AS 4970:2009. Source: AS 4970:2009

8.4 Preparation of TPZs - Scaffold design and hoarding

8.4.1 Trees 46, 48, 52, 64, 72 and 74 are to be excluded from construction activities utilising the exterior of the scaffolding, that is to form the TPZ fencing for this group of trees. This is to be achieved by the installation of hoarding that does not allow access to trees from within the scaffolding.

8.4.2 Where pruning and scaffolding design cannot eliminate the contact between tree parts and scaffolding, padding is to be installed onto the scaffolding frame. This should be installed to all parts of scaffolding within proximity of the tree parts to allow for dynamic tree movement under wind loading. See 8.6 for further details.

8.4.3 Protection measures regarding Trees 60, 61 and 64 are to combine physical fencing in the form of scaffolding and hoarding as described in section 8.4.2. It was understood to accommodate events that this was to be movable scaffolding. To compensate for this, temporary fencing should be installed if and when scaffolding does not form an adequate barrier between works and trees.

8.5 Preparation of TPZs - Signage

8.5.1 Signs must be placed on the tree protection fencing/hoarding on each aspect adjacent to each subject tree. Signs are to display at a minimum that the area is a 'tree protection zone' and should not be accessed. The contact phone numbers of the site manager and the Project Arborist should also be nominated where appropriate. The lettering on the sign should comply with AS 1319.

8.5.2 In summary, the sign should display the following information:

- No persons, vehicles or machinery are to enter the tree protection/exclusion zone without the consent of the site manager or Project Arborist.
- No fuels, chemicals, building material, equipment or temporary buildings shall be stored within the tree protection/exclusion zone.
- Servicing and refuelling of equipment and vehicles should be undertaken away from the tree protection/exclusion zone.
- Attaching temporary service wires, nails, screw or any other fixing device is strictly prohibited.
- Contact phone number of the Project Arborist.

Figure 9: Example TPZ signage. Source AS 4970:2009

8.6 Trunk and branch protection

8.6.1 Trunk and branch protection may be required on the structural framework of Trees 103, 104, 147 and 177, specifically on branching structure that overhangs the vehicle access road. This is to be installed in accordance with AS4970:2009. Trunk and branch protection should consist of padding and battens installed to protect the main trunk and primary structural framework of these trees.

8.6.2 Trunk and branch protection should be installed on all main scaffold branches that extend beyond the TPZ fencing towards the vehicle access road. Alternatively, if vehicle height is unlikely to contact tree parts, reflective material may be installed to increase the visibility of overhanging tree branches.

8.6.3 Trunk and branch protection should not to be fixed directly to the tree, or in any way in which the tree is likely to be damaged. Trunk and branch protection must be sufficient in strength to prohibit damage to bark in the event of machinery or vehicle contact with a subject tree.

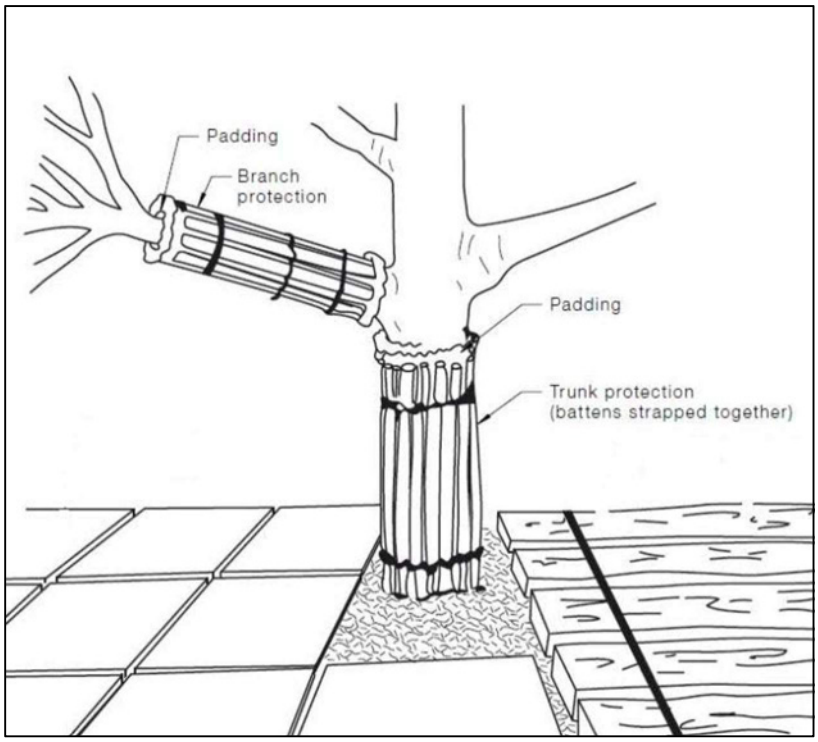


Fig. 10: Depicts trunk and branch protection techniques. Source AS 4970:2009

8.7 Vehicle access

8.7.1 All heavy vehicle access is to be restricted to the eastern entrance off Nicholson Street. Any vehicles exceeding 4.5m in height are to be guided into and out of the site using a spotter so as contact with any overhead tree parts are avoided. All other small vehicle traffic may enter site using the western entrance off Rathdowne Street.

8.8 Site sheds

8.8.1 All site sheds must be located outside of the TPZs of all trees. This will service to negate excessive soil compaction of their root zones and root damage/severance that may occur as a result of the installation of services for the sheds such as water and electricity.

8.9 Project Arborist Inspection

8.9.1 After all tasks listed in this section have been completed, the Project Arborist is to be engaged to approve the pruning works undertaken and the TPZ set-up, including their location and the materials from which they are made. Requirements for any alterations and/or additions to the TPZ's must be discussed with the site manager at this time.

9 Activities during construction

9.1 Pre-start induction

9.1.1 A pre-start induction outlining the specific TPZ requirements with site management is to be undertaken by the Project Arborist prior to commencement of any construction works. TPZ measures should then be made part of the standard site induction for all and any contractors working on any aspect of the refurbishment works at the Royal Exhibition Buildings.

9.2 Project Arborist Involvement

9.2.1 The Project Arborist must be contacted and/or called to the site at any time during the proposed works where issues and/or concerns arise regarding any of the subject trees. Involvement by the Project Arborist is intended to negate damage from occurring to the tree(s).

9.2.2 The Project Arborist should be afforded at least five (5) working days' notice of a requirement to attend the site.

9.2.3 The following is a schedule of site visits (as they are currently understood) for attendance to site by the Project Arborist.

Item	Purpose of Visit	Timing of Visit(s)	Prerequisites
1	Pre-start induction.	Following sign off from item 1. Contractor to provide a minimum of 5 days advance notice for this visit.	Prior to commencement of works. All parties involved in the project to attend.
2	Supervision of works in TPZ's.	Whenever there is work planned to be performed within the TPZ's. Contractor to provide a minimum of 5 days advance notice for such visits.	
3	Regular site inspections.	Minimum frequency monthly for the duration of the project.	The checklist must be completed by the Project Arborist at each site inspection and signed by both parties.
4	Final sign off.	Following completion of works.	Practical completion of works and prior to tree protection removal.

9.2.4 The Project Arborist may need to attend site at other times during the project at the request of the awarded construction company, Museums Victoria or Lovell Chen to provide further guidance related to the trees, if there are potential impacts upon the trees that need to be discussed, if there has been a breach of the TPMP, or for attendance at site meetings etc.

9.2.5 The respective tree owner must be notified within 24 hrs of any breach of the TPMP or where damage has occurred to any tree. Should such an event(s) occur the Project Arborist is to be immediately contacted and requested to attend site to document the event in the checklist and provide guidance on the course of action.

9.3 Site hygiene

9.3.1 It is understood that excavation required for this project is minimal. However, before any construction related vehicles involved in excavation works enter the site, they are to be washed down thoroughly to remove all soil from upon and under them. This is to ensure that no vehicle can transfer soil borne plant diseases onto the site (e.g. destructive soil borne fungus *Phytophthora cinnamomic* - Cinnamon Fungus).

9.4 Underground service installation

9.4.1 No significant underground service installation is to occur as part of this project. However, if and where required the installation of underground services (including drainage) must not encroach within the TPZ of any of the subject trees unless authorised by the Project Arborist. In these instances underground boring will invariably be recommended.

9.4.2 As per the City of Melbourne Tree Retention and Removal Policy, the boring of services is to occur at a minimum depth of 800mm (top of pipe) below the existing grade for trees with a trunk DBH of <100cm, 950mm for trees with a trunk DBH of 100–150cm and 1100mm for trees with a trunk DBH of >150cm. To minimise soil disturbance associated with service installation communal service lines must be used where appropriate. The entry and exit pits for boring must be positioned outside the designated TPZ for each tree.

10 Post construction activities

10.1 Tree protection fencing

10.1.1 After the completion of all proposed construction works, tree protection fencing or equivalent hoarding may be dismantled.

10.2 Arborist inspection

10.2.1 Prior to dismantling of the tree protection zones the Project Arborist is to be called to the site and make a final inspection of the trees. At this time any applicable arboricultural and/or plant health care works are to be discussed with the client. The Project Arborist must be contacted when these works are completed to assess trees subject to this report.

11 References

- Significant Tree Register, 2018, National Trust, 24th January 2018, https://www.nationaltrust.org.au/services/significant-tree-register/,
- Lovell Chen, 2018, Site establishment plan and promotional work extent, Level 5, 176 Wellington Parade, East Melbourne, 3002.
- Matheny, N.P. and Clark, J.R., 1998, *A Photographic Guide to the Evaluation of Trees in Urban Areas*, International Society of Arboriculture, PO Box 3129, Champaign, IL 61826–3129, USA.
- Standards Australia, 2009, *AS 4970–2009 Protection of Trees on Development Sites,* Standards Australia, GPO Box 476, Sydney, New South Wales, 2001.
- Standards Australia, 2007, *AS 4373–2007 Pruning of Amenity Trees,* Standards Australia, GPO Box 476, Sydney, New South Wales, 2001.

12 Appendices

12.1 Appendix A – Arboricultural Reporting Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership of any property are assumed to be good. No responsibility is assumed for matters legal in character.
2. It is assumed that any property/project is not in violation of any applicable codes, ordinances, statutes or other government regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified in so far as possible, however, the consultant can neither guarantee nor be responsible for the accuracy of the information provided by others.
4. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.
5. Loss or alteration of any part of this report invalidates the entire report.
6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone but the person to whom it is addressed, without the prior written consent of the consultant.
7. Neither all nor any part of the contents of this report, nor any copy thereof, shall be used for any purpose by anyone but the person to whom it is addressed, without the written consent of the consultant. Nor shall it be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the written consent of the consultant.
8. This report and any values expressed herein represent the opinion of the consultant and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise.
10. Information contained in this report covers only those items that were examined and reflect the condition of those items at the time of inspection.
11. Inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee expressed or implied that the problems or deficiencies of the plants or property in question may not arise in the future.

12.2 Appendix B – Explanation of Tree Assessment Terms

Tree name: Provides the botanic name, (Genus, species, sub-species, variety and cultivar where applicable) in accordance with the International Code of Botanical Nomenclature (ICBN), and an accepted common name.

Age: Refers to the life cycle of the tree.

Category	Description
Young	Newly planted tree not fully established may be capable of being transplanted or easily replaced.
Juvenile	Tree is small in terms of its potential physical size and has not reached its full reproductive ability.
Semi-mature	Tree in active growth phase of life cycle and has not yet attained an expected maximum physical size for its species and/or its location.
Mature	Tree has reached an expected maximum physical size for the species and/or location and is showing a reduction in the rate of seasonal extension growth.
Senescent	Tree is approaching the end of its life cycle and is exhibiting a reduction in vigour often evidenced by natural deterioration in health and structure.

Health: Summarises the health and vigour of the tree.

Category	Description
Excellent	Canopy full with dense foliage coverage throughout, leaves are entire and are of an excellent size and colour for the species with no visible pathogen damage. Excellent growth indicators, e.g. seasonal extension growth.
Good	Canopy full with minor variations in foliage density throughout, leaves are entire and are of good size and colour for the species with minimal or no visible pathogen damage. Good growth indicators.
Fair	Canopy with moderate variations in foliage density throughout, leaves not entire with reduced size and/or atypical in colour, moderate pathogen damage. Reduced growth indicators, visible amounts of deadwood/dieback, and epicormic growth.
Poor	Canopy density significantly reduced throughout, leaves are not entire, are significantly reduced in size and/or are discoloured, significant pathogen damage. Significant amounts of deadwood and/or epicormic growth, noticeable dieback of branch tips, possibly extensive.
Dead	No live plant material observed throughout the canopy, bark may be visibly delaminating from the trunk and/or branches.

Structure: Summarises the structure of the tree from roots to crown.

Category	Description
Good	Good form and branching habit. Minor structural defects that are insignificant and typical or common within the species. e.g. included bark, co-dominant stems. No fungal pathogens present. No visible wounds to the trunk and/or root plate.
Fair	Moderate structural defects present that impact longevity e.g. apical leaders sharing common union(s). Minor damage to structural roots. Small wounds present where decay could begin. No fungal pathogens present. A fair representation of the species.
Poor	Significant structural defects present that have a significant impact on longevity and result in a poor representation of the species e.g. Branch/stems with included bark with failure likely within 0–5 years. Wounding evident with cavities and/or decay present. Damage to structural roots.
Hazardous	Serious structural defects with failure determined to be imminent (<12 months). Defects may include active splits and/or partial branch or root plate failures. Tree requires immediate arboricultural works to alleviate the associated risk.

Useful Life Expectancy (ULE): Useful Life Expectancy refers to an expected period of time the tree can be retained within the landscape before its amenity value declines to a point where it may detract from the appearance of the landscape and/or becomes potentially hazardous to people and/or property. ULE values consider tree species, current age, health, structure and location. ULE values are based on the tree at the time of assessment and do not consider future changes to the tree's location and environment which may influence the ULE value.

Category:
0–5 Years
5–10 Years
10–20 Years
20–30 Years
30–50 Years
>50 Years

Tree Retention Value Description Table

Category and definition	**Criteria** (including sub categories where appropriate)		
Category U Trees in such a condition that they cannot realistically be retained as viable trees in the context of the current land use for longer than 5 years.	• Trees that have a severe structural defect that are not remediable such that their failure is expected within 12 months. • Trees that will become unviable after removal of other Category U trees (e.g. where for whatever reason the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate and irreversible overall decline. • Trees infected with pathogens of significance to the health and or safety of other trees nearby • Low quality trees suppressing adjacent trees of better quality. • Noxious weeds or species categorised as weeds within the local area. Note: Category U trees can have existing or potential conservation value* which might make it desirable to preserve.		
	1. Arboricultural Qualities	2. Landscape qualities	3. Cultural and environmental values
Category A Trees of High Quality with an estimated remaining life expectancy of at least 25 years and of dimensions and prominence that it cannot be readily replaced in <20 years.	Trees that are particularly good examples of their species, especially if rare or unusual (in the wild or under cultivation); or those that are important components of groups or avenues.	Trees or groups of significant visual importance as arboricultural and/or landscape features. (e.g. feature and landmark trees).	Trees, groups or plant communities of significant conservation, historical, commemorative or other value (e.g. remnant trees, aboriginal scar trees, critically endangered plant communities, trees listed specifically within a Heritage statement of significance)
Category B Trees of Moderate Quality with an estimated remaining life expectancy of 15 – 25 years and prominence of size dimensions that cannot be readily replaced within 10 years.	Trees that might be included within Category A but are downgraded because of diminished condition such that they are unlikely to be suitable for retention beyond 25 years.	Trees that are visible from surrounding properties and/or the street but make little visual contribution to the wider locality.	Trees with conservation or other cultural value (trees within conservation areas or landscapes described within a statement of significance, locally indigenous species).
Category C Trees of Low Quality with an estimated remaining life expectancy of 5 - 15 years, or young trees that are easily replaceable.	Trees of very limited value or such impaired condition that they do not qualify in higher categories.	Trees offering low or only temporary/transient landscape benefits.	Trees with no material conservation or other cultural value.

**Where trees would otherwise be categorised as U, but have identifiable conservation, heritage or landscape value even though only for the short term, they may be upgrade.*

Tree Quality

		Health**			
		Excellent/ Good	Fair	Poor	Dead
Structure	Good		B	C	U
	Fair	B	B	C	U
	Poor	C	C	U	U
	Hazard*	U	U	U	U

*Structural hazard that cannot be remediated through mitigation works to enable safe retention.
** Trees of short term reduced health that can be remediated via basic, low cost plant health care works (e.g. mulching, irrigation etc.) may be designated in a higher health rating to ensure correct retention value nomination.

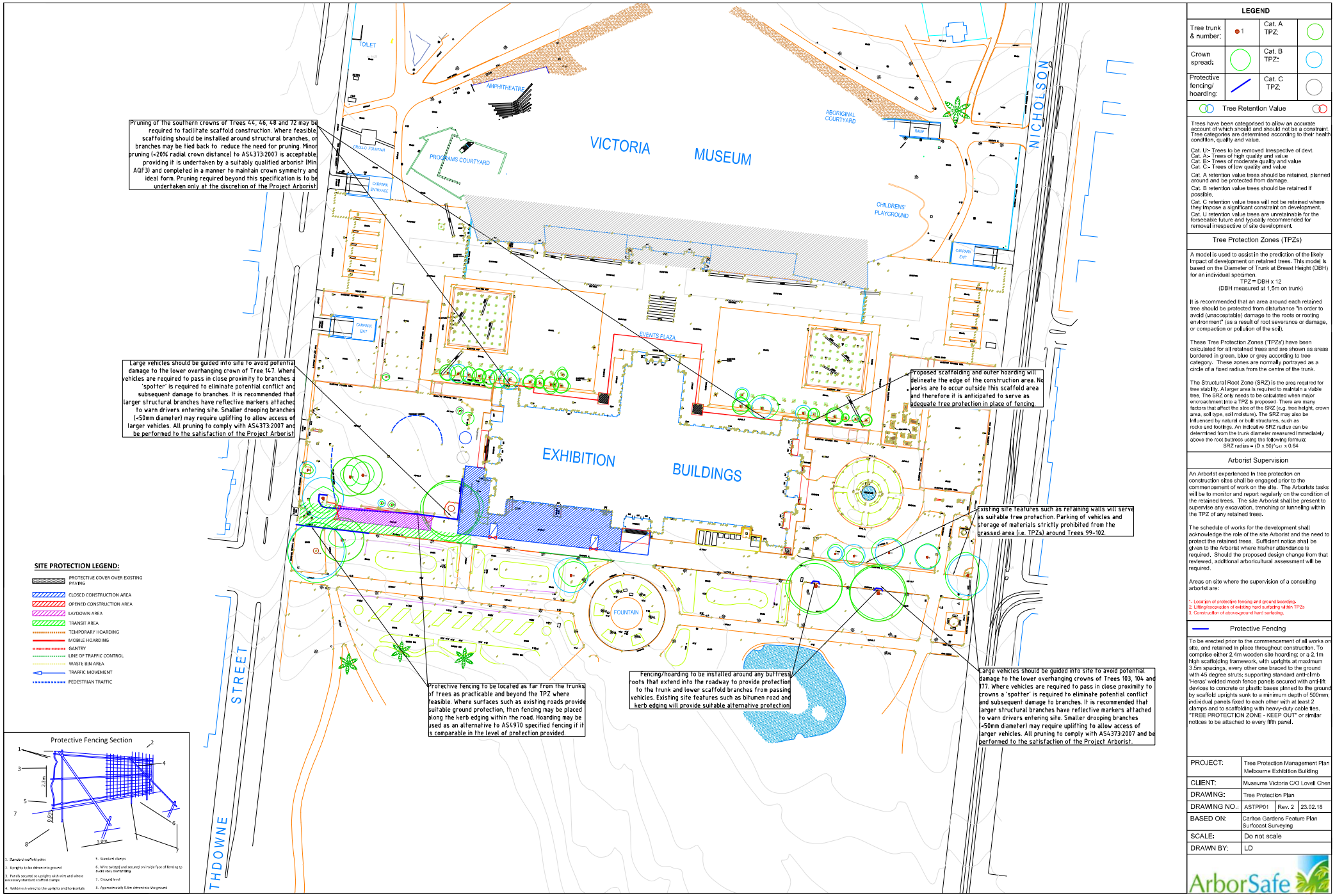
12.3 Appendix C – Tree Assessment Data

Tree no.	*Botanical Name*	Common Name	DBH Total (cm)	Radial TPZ (m)	TPZ area (m2)	Tree Height (m)	Canopy N (m)	Canopy E (m)	Canopy S (m)	Canopy W (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Defects	Significance	Arborist comments	Tree Retention Value (Quality Score)	Tree Retention value subcategory	Recommendation
36	*Angophora costata*	Smooth-barked Apple Myrtle	23	4.2	55.42	5-10	3	2	4	4	5-10	Good	Good	Semi-Mature	25-50	Deadwood/stubs > 30mm; Soil compaction; Suppressed;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirtements (i.e. protective fencing and restriction of activities within the TPZ).
38	*Angophora costata*	Smooth-barked Apple Myrtle	41	4.9	76.05	15-20	4	3	5	4	5-10	Good	Fair	Semi-Mature	15-25	Co-dominant stems; Deadwood/stubs > 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
40	*Angophora costata*	Smooth-barked Apple Myrtle	35	4.2	55.42	10-15	4	3	4	3	5-10	Good	Good	Semi-Mature	25-50	Deadwood/stubs > 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
42	*Angophora costata*	Smooth-barked Apple Myrtle	30	3.6	40.72	10-15	4	3	4	4	5-10	Good	Good	Semi-Mature	15-25	Deadwood/stubs > 30mm; Mechanical damage; Resin exudation/Kino; Soil compaction; Wound(s);	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
44	*Angophora costata*	Smooth-barked Apple Myrtle	32	3.8	44.89	10-15	4	2.5	6	4	5-10	Good	Good	Semi-Mature	25-50	Deadwood/stubs > 30mm; Dieback; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
46	*Angophora costata*	Smooth-barked Apple Myrtle	40	4.8	72.38	10-15	5	3	5	5	5-10	Good	Fair	Semi-Mature	25-50	Co-dominant stems; Deadwood/stubs > 30mm; Dieback; Soil compaction; Wound(s);	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	B	1	Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
48	*Angophora costata*	Smooth-barked Apple Myrtle	45	5.4	91.61	15-20	4	4	4	3	5-10	Good	Fair	Semi-Mature	15-25	Co-dominant stems; Included bark; Soil compaction; Wound(s);	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole. 4.4m from buttress to outer façade. Pruning considered a viable option to allow for scaffolding.	B	1	Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
52	*Angophora costata*	Smooth-barked Apple Myrtle	29	3.5	38.05	10-15	3	3	4	4	5-10	Good	Good	Semi-Mature	25-50	Deadwood/stubs > 30mm; Dieback; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
54	*Angophora costata*	Smooth-barked Apple Myrtle	22	2.6	20.91	5-10	4	2	3	3	5-10	Good	Good	Semi-Mature	25-50	Deadwood/stubs > 30mm; Dieback; Resin exudation/Kino; Soil compaction; Suppressed; Wound(s);	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
56	*Angophora costata*	Smooth-barked Apple Myrtle	33	4.0	49.27	5-10	4	4	5	4	5-10	Good	Good	Semi-Mature	25-50	Deadwood/stubs > 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
58	*Angophora costata*	Smooth-barked Apple Myrtle	33	4.0	49.27	10-15	4	5	4	3	5-10	Good	Good	Semi-Mature	25-50	Dieback; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
59	*Angophora costata*	Smooth-barked Apple Myrtle	22	2.6	21.90	5-10	4	3	3	4	5-10	Good	Good	Semi-Mature	25-50	Resin exudation/Kino; Soil compaction;	Attractive landscape feature; Amenity value/shade;	Part of a double avenue planting contributing highly to the local landscape as a whole.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
60	*Angophora costata*	Smooth-barked Apple Myrtle	37	4.4	61.93	5-10	5	5	3	4	5-10	Good	Good	Semi-Mature	25-50	Dieback; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
61	*Angophora costata*	Smooth-barked Apple Myrtle	32	3.8	46.32	10-15	3	3	3	3	5-10	Good	Poor	Semi-Mature	10-15	Co-dominant stems; Included bark; Soil compaction; Weak union(s);	Attractive landscape feature; Amenity value/shade;		B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
64	*Angophora costata*	Smooth-barked Apple Myrtle	45	5.4	91.61	15-20	7	9	6	6	5-10	Good	Fair	Semi-Mature	25-50	Included bark; Previous failure(s); Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).

Tree no.	*Botanical Name*	Common Name	DBH Total (cm)	Radial TPZ (m)	TPZ area (m2)	Tree Height (m)	Canopy N (m)	Canopy E (m)	Canopy S (m)	Canopy W (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Defects	Significance	Arborist comments	Tree Retention Value (Quality Score)	Tree Retention value subcategory	Recommendation
72	*Angophora costata*	Smooth-barked Apple Myrtle	35	4.2	55.42	5-10	3	3	4	3	5-10	Good	Fair	Semi-Mature	25-50	Co-dominant stems; Dieback; Soil compaction; Wound(s);	Attractive landscape feature; Amenity value/shade; Avenue tree;	4.8m from buttress to building façade.	B	1	Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
74	*Angophora costata*	Smooth-barked Apple Myrtle	25	3.0	28.27	5-10	3	2	3	3	5-10	Good	Fair	Semi-Mature	25-50	Co-dominant stems; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
78	*Angophora costata*	Smooth-barked Apple Myrtle	38	4.6	65.33	5-10	4	4	4	4	5-10	Good	Good	Semi-Mature	25-50	Co-dominant stems; Deadwood/stubs > 30mm; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
80	*Angophora costata*	Smooth-barked Apple Myrtle	14	2.0	12.57	5-10	2	2	2	2	<5	Good	Good	Young	25-50	Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
82	*Angophora costata*	Smooth-barked Apple Myrtle	13	2.0	12.57	5-10	2	2	2	2	<5	Good	Fair	Young	5-10	Dieback; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
84	*Angophora costata*	Smooth-barked Apple Myrtle	27	3.2	32.98	5-10	3	3	3	3	5-10	Good	Good	Semi-Mature	15-25	Deadwood/stubs > 30mm; Dieback; Soil compaction;	Attractive landscape feature; Amenity value/shade; Avenue tree;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
99	*Ulmus procera*	English Elm	54	6.5	131.92	10-15	7	7	6	6	10-15	Good	Poor	Semi-Mature	15-25	Co-dominant stems; Included bark; Mechanical damage to root(s); Previous failure(s); Soil compaction; Weak union(s);	Attractive landscape feature; Amenity value/shade;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
100	*Ulmus glabra*	Scotch Elm	61	7.3	168.33	10-15	8	8	9	9	15-20	Good	Poor	Semi-Mature	10-15	Co-dominant stems; Epicormic growth; Hanger(s); Included bark; Previous failure(s); Soil compaction; Weak union(s);	Attractive landscape feature; Amenity value/shade;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
101	*Magnolia grandiflora*	Bull Bay	50	6.0	113.10	5-10	4	5	5	4	5-10	Fair	Good	Semi-Mature	10-15	Decay; Dieback; Epicormic growth; Poor pruning; Wound(s);	Attractive landscape feature; Amenity value/shade;	Good example of species capable of improved health and therefore extended TLE.	B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
102	*Melia azedarach*	White Cedar	30	3.6	40.72	5-10	5	5	4	4	5-10	Good	Fair	Semi-Mature	10-15	Dieback; Included bark; Pests/Insects; Weak union(s); Wound(s);	Amenity value/shade;	Health reduced by Pest grazing, easily remediated.	B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
103	*Platanus x acerifolia*	London Plane	117	14.0	619.28	20-30	12	14	15	16	20-30	Good	Good	Mature	>50	Deadwood/stubs > 30mm; Disease pathogens; Mechanical damage to root(s); Soil compaction;	Attractive landscape feature; Significant due to age/size; Amenity value/shade; Outstanding example of species;		A	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
104	*Platanus x acerifolia*	London Plane	125	15.0	706.86	20-30	14	13	14	14	20-30	Good	Good	Mature	>50	Cavity(s); Damaging infrastructure; Deadwood/stubs > 30mm; Disease pathogens; Epicormic growth; Mechanical damage to root(s); Previous failure(s); Soil compaction; Wound(s);	Attractive landscape feature; Significant due to age/size; Amenity value/shade; Outstanding example of species;		A	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).

Tree no.	*Botanical Name*	Common Name	DBH Total (cm)	Radial TPZ (m)	TPZ area (m2)	Tree Height (m)	Canopy N (m)	Canopy E (m)	Canopy S (m)	Canopy W (m)	Canopy (m)	Health	Structure	Age	TLE (Yrs.)	Defects	Significance	Arborist comments	Tree Retention Value (Quality Score)	Tree Retention value subcategory	Recommendation
147	*Ficus macrophylla*	Moreton Bay Fig	340	15.0	706.86	20-30	14	17	17	15	20-30	Good	Fair	Mature	>50	Co-dominant stems; Decay; Dieback; Epicormic growth; Included bark; Mechanical damage to root(s); Previous failure(s); Resin exudation/Kino; Soil compaction; Wound(s);	Amenity value/shade; Attractive landscape feature; Significant due to age/size; Outstanding example of species; Dominant landscape feature; Suitable to site conditions;	Height to first branches, south side ~6m. Pruning of minor branches only. 3m buttress to curb east & south aspect.	A	3	Retain tree with specific protection requirements (i.e. Generic measures plus supervision of works within the TPZ and/or use of root sensitive construction techniques).
148	*Araucaria bidwillii*	Bunya	15	2.0	12.57	<5	1	1	1	1	<5	Good	Good	Young	>50		Amenity value/shade; Attractive landscape feature;	Estimates only due to harsh foliage. Tree has good prospects for great longevity.	C	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
149	*Ulmus glabra*	Scotch Elm	11	2.0	12.57	<5	1	1	1	1	<5	Fair	Fair	Young	15-25	Pests/Insects; Wound(s);	Amenity value/shade; Attractive landscape feature;	Elm Leaf Beetle damage reducing health, easily treated.	B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
150	*Araucaria cunninghamii*	Hoop Pine	86	10.3	334.59	15-20	7	6	5	6	10-15	Good	Good	Mature	25-50	Dieback; Epicormic growth; Mechanical damage to root(s); Previous failure(s); Soil compaction; Wound(s);	Amenity value/shade; Attractive landscape feature; Significant due to age/size;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
151	*Araucaria bidwillii*	Bunya	85	10.2	326.85	15-20	6	4	5	5	10-15	Good	Good	Mature	>50	Dieback; Epicormic growth; Soil compaction;	Amenity value/shade; Attractive landscape feature;		A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
152	*Ulmus procera*	English Elm	91	10.9	374.62	10-15	6	8	8	7	10-15	Fair	Fair	Mature	25-50	Dieback; Epicormic growth; Excessive thinning; Pests/Insects; Poor pruning; Soil compaction;	Amenity value/shade; Attractive landscape feature;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
153	*Ulmus glabra*	Scotch Elm	37	4.4	61.93	10-15	3	3	2	3	5-10	Fair	Fair	Semi-Mature	10-15	Dieback; Epicormic growth; Excessive thinning; Pests/Insects; Poor pruning;	Amenity value/shade; Attractive landscape feature;		B	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
164	*Arbutus unedo*	Irish Strawberry Tree	14	2.0	12.57	<5	1	2	2	2	<5	Good	Good	Young	>50		Attractive landscape feature;		C	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
165	*Jacaranda mimosifolia*	Jacaranda	12	2.0	12.57	<5	1	1	2	1	<5	Good	Good	Young	25-50	Epicormic growth;	Attractive landscape feature; Amenity value/shade;		C	3	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
177	*Platanus x acerifolia*	London Plane	90	10.8	366.44	15-20	12	6	13	12	10-15	Good	Fair	Semi-Mature	25-50	Dieback; Disease pathogens; Epicormic growth; Previous failure(s); Soil compaction; Wound(s);	Amenity value/shade; Attractive landscape feature;		B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
193	*Magnolia grandiflora*	Bull Bay	77	9.2	268.22	10-15	7	9	6	6	5-10	Fair	Good	Mature	25-50	Deadwood/stubs > 60mm; Dieback; Epicormic growth; Mechanical damage to root(s);	Amenity value/shade; Attractive landscape feature; Particularly old/venerable; Significant due to age/size;	Improved health would increase ULE.	B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
194	*Araucaria cunninghamii*	Hoop Pine	97	11.6	425.65	15-20	8	7	4	7	10-15	Good	Good	Mature	>50	Epicormic growth; Previous failure(s);	Amenity value/shade; Attractive landscape feature; Particularly old/venerable; Dominant landscape feature;	DRB estimated due to basal shoots.	A	2	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).
195	*Ficus macrophylla*	Moreton Bay Fig	285	15.0	706.86	15-20	15	16	17	15	20-30	Good	Fair	Mature	>50	Co-dominant stems; Deadwood/stubs > 30mm; Hanger(s); Previous failure(s);	Amenity value/shade; Attractive landscape feature; Dominant landscape feature; Significant due to age/size;	Dominant tree in local landscape, capable of great longevity. DRB estimate	B	1	Retain tree with generic protection requirements (i.e. protective fencing and restriction of activities within the TPZ).

12.4 Appendix D – Tree Protection Plan



LEGEND

Tree trunk & number:	1	Cat. A TPZ:	
Crown spread:		Cat. B TPZ:	
Protective fencing/ hoarding:		Cat. C TPZ:	

Tree Retention Value

Trees have been categorised to allow an accurate account of which should and should not be a constraint. Tree categories are determined according to their health condition, quality and value.

Cat. U:- Trees to be removed irrespective of devt.
Cat. A:- Trees of high quality and value
Cat. B:- Trees of moderate quality and value
Cat. C:- Trees of low quality and value

Cat. A retention value trees should be retained, planned around and be protected from damage.

Cat. B retention value trees should be retained if possible.

Cat. C retention value trees will not be retained where they impose a significant constraint on development.

Cat. U retention value trees are unretainable for the forseeable future and typically recommended for removal irrespective of site development.

Tree Protection Zones (TPZs)

A model is used to assist in the prediction of the likely impact of development on retained trees. This model is based on the Diameter of Trunk at Breast Height (DBH) for an individual specimen.

TPZ = DBH x 12
(DBH measured at 1.5m on trunk)

It is recommended that an area around each retained tree should be protected from disturbance "in order to avoid (unacceptable) damage to the roots or rooting environment" (as a result of root severance or damage, or compaction or pollution of the soil).

These Tree Protection Zones ('TPZs') have been calculated for all retained trees and are shown as areas bordered in green, blue or grey according to tree category. These zones are normally portrayed as a circle of a fixed radius from the centre of the trunk.

The Structural Root Zone (SRZ) is the area required for tree stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when major encroachment into a TPZ is proposed. There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula:

SRZ radius = (D x 50)^0.42 x 0.64

Arborist Supervision

An Arborist experienced in tree protection on construction sites shall be engaged prior to the commencement of work on the site. The Arborists tasks will be to monitor and report regularly on the condition of the retained trees. The site Arborist shall be present to supervise any excavation, trenching or tunneling within the TPZ of any retained trees.

The schedule of works for the development shall acknowledge the role of the site Arborist and the need to protect the retained trees. Sufficient notice shall be given to the Arborist where his/her attendance is required. Should the proposed design change from that reviewed, additional arboricultural assessment will be required.

Areas on site where the supervision of a consulting arborist are:

1. Location of protective fencing and ground boarding.
2. Lifting/excavation of existing hard surfacing within TPZs
3. Construction of above-ground hard surfacing.

Protective Fencing

To be erected prior to the commencement of all works on site, and retained in place throughout construction. To comprise either 2.4m wooden site hoarding; or a 2.1m high scaffolding framework, with uprights at maximum 3.5m spacings, every other one braced to the ground with 45 degree struts; supporting standard anti-climb 'Heras' welded mesh fence panels secured with anti-lift devices to concrete or plastic bases pinned to the ground by scaffold uprights sunk to a minimum depth of 500mm; individual panels fixed to each other with at least 2 clamps and to scaffolding with heavy-duty cable ties. "TREE PROTECTION ZONE - KEEP OUT" or similar notices to be attached to every fifth panel.

PROJECT:	Tree Protection Management Plan Melbourne Exhibition Building
CLIENT:	Museums Victoria C/O Lovell Chen
DRAWING:	Tree Protection Plan
DRAWING NO.:	ASTPP01 Rev. 2 23.02.18
BASED ON:	Carlton Gardens Feature Plan Surfcoast Surveying
SCALE:	Do not scale
DRAWN BY:	LD

ArborSafe

Appendix 7: Site Specific World Heritage Induction

Royal Exhibition Building Promotion and Protection

World Heritage Site Specific Induction

9 Nicholson Street, Carlton 3053

September 2018

Prepared by

LOVELL CHEN

Prepared for

MUSEUMS VICTORIA

WORLD HERITAGE SITE SPECIFIC INDUCTION FOR THE ROYAL EXHIBITION BUILDING

PROMOTION AND PROTECTION CONSTRUCTION WORKS

INFORMATION SHEET

1.0 Overview

This information sheet provides advice for persons conducting construction works on the World Heritage Listed Royal Exhibition Building and Carlton Gardens site and outlines the World Heritage and National Heritage values of the site to minimise impacts that the construction works may have on these values.

Prior to the commencement of any works all contractors must complete this induction and induct all staff, contractors and sub-contractors working on or within the site. The induction will inform workers of their responsibilities in protecting and maintaining the World Heritage and National Heritage values of the site.

A record of the completed inductions must be kept on site for the purpose of independent auditing.

2.0 World Heritage values

The Royal Exhibition Building and Carlton Gardens is inscribed in the World Heritage List, under Criterion (ii).

The World Heritage values for the Royal Exhibition Building and Carlton Gardens are described as:

Criterion (ii): The Royal Exhibition Building and the surrounding Carlton Gardens, as the main extant survivors of a Palace of Industry and its setting, together reflect the global influence of the international exhibition movement of the 19th and early 20th centuries. The movement showcased technological innovation and change, which helped promote a rapid increase in industrialisation and international trade through the exchange of knowledge and ideas.

3.0 National Heritage values

The Royal Exhibition Building National Historic Place is included in the National Heritage List, as per Place Id 105708, and Place File 2/11/033/0235.

The National Heritage values for the Royal Exhibition Building and Carlton Gardens are described as:

A the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history

B the place has outstanding heritage value to the nation because of the places' possession of uncommon, rare or endangered aspects of Australia's natural or cultural history

D the place has outstanding heritage value to the nation because of the place's importance in demonstrating the particular characteristics of:

i a class of Australia's natural or cultural places

ii a class of Australia's natural or cultural environments

E the place has outstanding value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group

F the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.

4.0 Heritage controls and registrations

The whole of the site is covered by a number of different heritage listings and registrations.

The following relevant heritage controls and their associated authority organisations apply to the site:

- World Heritage List - Department of Environment and Energy
- National Heritage List - Department of Environment and Energy
- Victorian Heritage Register - Heritage Victoria
- Heritage Overlay, Melbourne Planning Scheme - City of Melbourne

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The site is also included on the Register of the National Estate and listed by the National Trust of Australia (Victoria); however, there are no statutory controls as a result of these registrations.

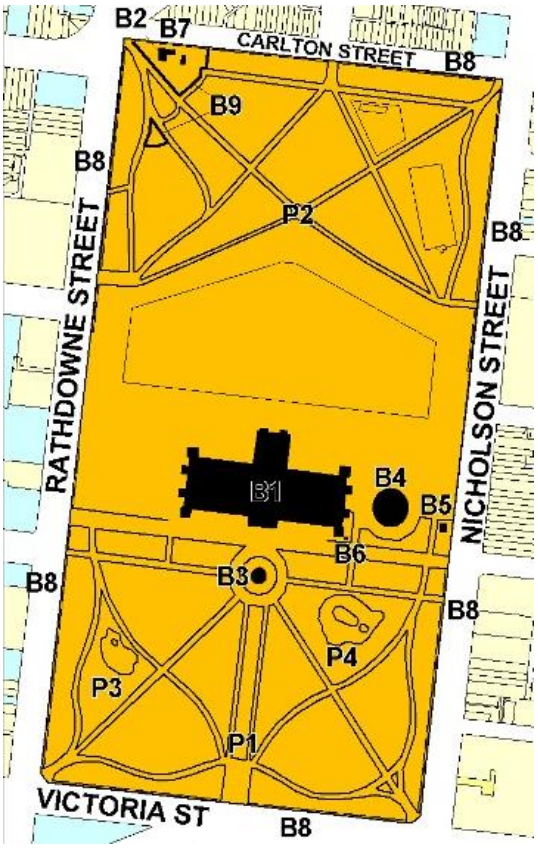

Figure 1 VHR extent of registration Diagram 1501

The Royal Exhibition Building and Carlton Gardens (World Heritage Place) is included in the Victorian Heritage Register, as H1501.

The Royal Exhibition Building and Carlton Gardens (World Heritage Place) is included in the Schedule to the Heritage Overlay of the Melbourne Planning Scheme, as HO69.

The Victorian Heritage Register (VHR) includes the following description of the extent of registration including archaeological potential.

1. All of the buildings and structures marked as follows on Diagram 1501 held by the Executive Director:

- B1 Royal Exhibition Building
- B2 Curator's Cottage
- B3 Hochgurtel Fountain
- B4 French Fountain
- B5 Westgarth Drinking Fountain
- B6 Stawell Sandstone Sample
- B7 Palisade Fence and Gate
- B8 Remnants of Bluestone Base to Palisade Fence
- B9 Iron Rod Fence

2. All of the landscape features marked as follows on Diagram 1501 held by the Executive Director:

- P1 Pathways (south garden)
- P2 Pathways (north garden)
- P3 Pond and Island
- P4 Pond and Islands

3. All the mature trees and palms, including avenues, rows and individuals growing in the Carlton Gardens including the following species:

- Acmena ingens
- Angophora floribunda
- Araucaria bidwillii
- Araucaria cunninghamii
- Araucaria heterophylla
- Cedrus deodara
- Chamaecyparis funebris
- Corymbia citriodora
- Cupressus macrocarpa
- Cupressus torulosa
- Eucalyptus cladocaylx
- Ficus macrophylla
- Ficus platypoda
- Harpephyllum caffrum
- Magnolia grandiflora
- Phoenix canariensis
- Pinus canariensis
- Pinus nigra var. corsicana
- Pinus pinea
- Pittosporum undulatum
- Platanus x acerifolia
- Populus alba
- Populus x canadensis 'Aurea'

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- Quercus acutissima
- Quercus bicolor
- Quercus canariensis
- Quercus cerris
- Quercus ilex
- Quercus robur
- Robinia pseudoacacia
- Salix babylonica
- Schinus molle
- Taxodium distichum
- Tilia x europaea
- Ulmus procera
- Ulmus x hollandica
- Washingtonia robusta
- Waterhousea floribunda

4. All of the Crown Land Reserve Rs 9990 (Carlton Gardens) and Rs 37130 (Royal Exhibition Building and Museum of Victoria), crown allotment 19A, shown on Diagram 1501 held by the Executive Director, being the land bounded by Rathdowne Street, Carlton Street, Nicholson Street and Victoria Parade.

5.0 Permits and permit conditions

Approval to undertake the Promotion and Protection works has been granted by issuing of a permit or consent by Heritage Victoria and the Commonwealth Department of Environment and Energy. The permits contain a number of specific conditions that relate directly to the undertaking of the works. The relevant conditions are outlined in full in *Architectural Specification 0143 Preliminaries – AS 2124 Section 1.4 Statutory Requirements*.

The specific conditions that govern works on site are outlined in the following. All contractors shall be made aware of the specific conditions that effect their works on site.

Heritage Victoria Permit P26807

Granted under section 102 of the *Heritage Act 2017* the conditions relevant to the construction of the works are as follows:

8. Time Limit and Other

a) This permit shall expire if the permitted works have not commenced within (3) years of the date of issue of this permit, or are not completed within five (5) years of the date of issue of this permit unless otherwise agreed in writing by the Executive Director, Heritage Victoria.
b) The Executive Director is to be given five working days' notice of the intention to commence the approved works.
c) Approved works or activities are to be planned and carried out in a manner which prevents damage to the registered place / object. However, if other previous hidden original or inaccessible details of the object or place are uncovered, any works that may affect such items shall immediately cease. The executive Director shall be notified of the details immediately to enable Heritage Victoria representatives to inspect and record the items, and for discussion to take place on the possible retention of the items, or the issue of a modified approval.
d) The executive Director is to be informed when the approved works have been completed.
e) The development approved by this permit is to be carried out in accordance with the endorsed drawings, unless otherwise agreed in writing by the Executive Director, Heritage Victoria.

All other conditions outlined in this permit are not directly related to the construction works and have or will be addressed by the Consultant and Management Team.

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Department of the Environment and Energy (EPBC 2016/7680)

Approval made under section 130(1) and 133 of the *Environmental Protection and Biodiversity Conservation Act 1999:*

3. a. Prior to **commencement**, the **approval holder** must prepare and publish a Construction Management Plan to minimise impacts of the action on the **World Heritage values** and National Heritage values of the **building and gardens**. The **approval holder** must not **commence** the action unless the Construction Management Plan has been published.
   b. The Construction Management Plan must include:
      i. Site induction for all staff on-site regarding their responsibilities regarding management of **World Heritage values** and **National Heritage values** and the Construction Management Plan.
      ii. A sequencing program for the works.
      iii. Protection methods for existing building fabric, including but not limited to:
         i) Details of protection methods to be implemented;
         ii) Details of monitoring for accidental damage to original fabric; and
         iii) Mitigation measures and corrective actions in the event that accidental damage occurs.
      iv. Confirmation that the degree of reversibility of the works remains consistent with that detailed in 4.3.3 of *Scope for Assessment Documentation* by Lovell Chen for Museum Victoria (May 2017).
      v. A Dilapidation Report including photographs taken to **technical preservation standards**.
      vi. A Materials Inventory identifying the proposed future use of any material to be removed as a result of the **proposed action** (including proposed disposal, use for repairs or storage for eventual reinstallation) and where the removed material is to be stored.
   c. The Dilapidation Report and Materials Inventory must be deposited with an **appropriate collecting institution**.
   d. The **approval holder** must make changes to the published Construction Management Plan, if requested by the **Department** in writing, within the period specified within any such request.
5. Within 20 business days of **commencement**, the **approval holder** must advise the **Department** in writing of the actual date of **commencement**.
6. The **approval holder** must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including any measures taken to implement the **Construction Management Plan** required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with Section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits may be posted on the **Department's** website. The results of audits may also be publicised through the general media.
7. Within 3 months of every 12 months anniversary of the **commencement** of the works, the **approval holder** must publish a report on their website addressing compliance with each condition of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be

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provided to the **Department** at the same time as the compliance report is published. Reports must continue to be published unless advised otherwise by the **Minister** in writing.

8. Upon the direction of the **Minister**, the **approval holder** must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.
9. If, at any time after ten years from the date of this approval, the **approval holder** has not substantially **commenced** the works, then the person taking the action must not **commence** the works without the written agreement of the **Minister**.
10. Unless otherwise agreed to in writing by the Minister, the approval holder must publish all plans and documents refer to in these conditions of approval on their website.

6.0 Archaeology and in-ground works

The Royal Exhibition Building and gardens is also subject to archaeological interest under the provisions of the Heritage Act 2017. All works associated with ground disturbance require that an archaeologist be present to oversee the excavation and digging works (refer Architectural Specification 0172b Environmental Management, section 2.3). The archaeologist will instruct the contractor in the removal of soil, fill, deposits and the like to enable the protection of any archaeological artefacts that may be present.

IMPORTANT NOTE:
If a contractor discovers an artefact in a wall, cavity or any other location when the archaeologist is not present. The contractor should cease works immediately. Give notice to the Site Foreman. The Site Forman will close off the affected area with barrier tapes and warning signs to prevent access. The Site Foreman must contact the Consultant and Management Team who will advise the contractor on how to proceed. It is important that the contractor does not move or disturb the artefact.

7.0 Landscaping and Tree Protection

The gardens are an important part of the World Heritage and National Heritage values and a tree protection plan has been produced to protect important or significant trees in the vicinity of the works zone. Contractors must not undertake works to the trees or garden without written approval from the Consultant and Management Team. Day-to-day activities should be planned in a way that minimises damage to any landscaping including hard landscaping and soft landscaping.

Under no circumstances should tree protection be removed from trees or landscaping without prior written approval from the Consultant and Management Team.

IMPORTANT NOTE:
In the event of incidental damage to the landscaping including trees, the contractor is to cease works immediately and give notice to the Site Foreman. The Site Foreman is to contact the Consultant and Management Team and seek written advice on how to proceed. The Consultant and Management Team will notify the relevant authorities under the respective conditions of permit.

8.0 Site Features

A series of features exist throughout the site including monuments, fountains, plaques, busts, lamps and other sculptural items. These form part of the protection works outlined in the Construction Management Plan (CMP) and are required to be maintained in good condition throughout the scope and duration of works.

IMPORTANT NOTE:
In the event of incidental damage to the site features, the contractor is to cease works

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immediately and give notice to the Site Foreman. The Site Foreman is to contact the Consultant and Management Team and seek written advice on how to proceed. The Consultant and Management Team will notify the relevant authorities under the respective conditions of permit.

9.0 Dismantling and Recording

An inventory of the contents of the building that have been nominated for removal from the building has been prepared and endorsed. This inventory provides guidance on what items can be removed, disposed of, salvaged or reused. All contractors should be made familiar with this document in this induction process and the procedures outlined in th inventory document for the tagging and recording of these items.

9.1 Demolition Works

All demolition in and around the building and gardens must be planned and undertaken in a manner that prevents unnecessary or consequential damage to the building, landscape or gardens. All safe works method statements should identify the potential for damage during demolition and provide mitigation plans to prevent damage from occurring to the World Heritage and National Heritage values of the place.

IMPORTANT NOTE:
In the event of incidental damage to the site, contractor is to cease works immediately and give notice to the Site Foreman. The Site Foreman is to contact the Consultant and Management Team and seek written advice on how to proceed. The Consultant and Management Team will notify the relevant authorities under the respective conditions of permit.

9.2 Damage Rectification

In the event of an incident where damage is required to be repaired, the Consultant and Management Team will provide written advice on the repair and remediation, including any required structural advice to temporarily make safe or support the works.

The repair measures will include the accurate recording and reinstatement of original details using traditional and best practice conservation methods in accordance with the principles of the Burra Charter.

IMPORTANT NOTE:
In the event of an incident where damage has occurred the Consultant and Management Team will provide written direction on temporary stabilisation works and reinstatement.

10.0 Works Reversibility

A number of the proposed Promotional Works have been designed and approved using methods that enables them to be easily reversed. The following is a summary of the approved statement of reversibility relating to the works.

The works must be undertaken in accordance with the following information provided in the submission to the Department of Environment and Energy in approving the works endorsed by the permit EPBC 2016/7680. Section 4.3.3 Impacts during Decommissioning of the *Assessment Documentation Report* prepared by Lovell Chen and dated May 2017 required the following:

> The works proposed to this place are seen as permanent, at least for the foreseeable future and accordingly the action of decommissioning is not considered directly relevant. Notwithstanding, with regard to decommissioning as related the reversibility of the works the approach to interventions into original fabric as a consequence of the promotion works is that wherever possible they will be reversible. The degree of reversibility is noted as follows:
>
> > a) Basement fitout: These works are entirely reversible and will result in minimal permanent loss of original fabric.

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b) Lift and stair: The fabric (bricks, basalt and timber) to be removed in the process of undertaking these works will be permanently stored on site, rather than being used for repair works in other areas of the building. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed.

c) New rooms to base of dome drum: The fabric (bricks and timber) to be removed in the process of undertaking these works will be permanently stored on site. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed.

d) New screened viewing area at gallery level: The fabric (bricks) to be removed in the process of undertaking these works will be permanently stored on site. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed.

e) Glazed doors to internal south opening: These works are entirely reversible and will result in minimal permanent loss of original fabric.[Works not part of this contract]

f) South façade & south side of building: As related to the building the fabric to be removed in the process of undertaking these works will be permanently stored on site. It is conceivable that this fabric could be reconstructed within the pavilion if the lift and stair were later removed. The existing non-original elements comprising paving, fill and ramps will be permanently discarded.

g) Dome Promenade: The existing dome promenade deck which is not original will be permanently disposed of. The new deck and structure will be able to be removed with minimal permanent loss of original fabric.

IMPORTANT NOTE:
The design and installation of the works described above must not be varied or changed.

11.0 Management by contractor

All contractors and their personnel must complete the forms included in this induction to confirm that they understand their responsibilities around maintenance and care of the World Heritage values and National Heritage values of the site.

The forms include the following:

Appendix A: **Induction Checklist**

Appendix B: **Record of Toolbox Talk**

A copy of the completed and signed forms must be retained on site for the purpose of independent auditing.

11.1 Responsibilities

All contractors working on site, consultants and management are responsible for maintenance and care of the World Heritage values and National Heritage values of the site.

11.2 Contact Details

The following are the contact details for the Consultant and Management Team for this project:

Principal: MUSEUMS VICTORIA

Luke Flanagan PH: 03 9385 4252

Superintendent: AECOM

Laura Davidson PH: 03 9653 1234

Anna Perera-Cameron PH: 03 9653 1234

Architect & Heritage Consultant: LOVELL CHEN

Dan Blake PH: 03 9667 0800

Harry Jess PH: 03 9667 0800

APPENDIX A – INDUCTION CHECKLIST

This checklist provides a summary of the items outlined in the Information Sheet and covered in the World Heritage site specific induction for the Royal Exhibition Building Promotion and Protection construction works.

By completing this form you confirm you have read and understood your responsibilities in maintaining and caring for the World Heritage and National Heritage Values of the Royal Exhibition Building and Carlton Gadens Site in undertaking the Promotion and Protection Works.

No#	Items Covered	Yes	No	N/A
1	Familiarise yourself with the World Heritage and National Heritage values.			
2	Familiarise yourself with the permit conditions and approvals provided by the relevant authorities and identify how this might impact your works.			
3	Familiarise yourself with the processes outlined in the information sheet for incidental and accidental damage.			
4	Familiarise yourself with the processes outlined in the information sheet for archaeological discovery.			
5	Familiarise yourself with the tree protection plan and identify what vegetation has been protected. Identify vegetation and landscaping that maybe in your works area or could be affected by your works.			
6	Familiarise yourself with all significant building fabric, monuments, features and other relevant build structures and identify what protection has been put in place. Identify all significant building fabric, monuments, features and other relevant build structures that maybe in your works area or could be affected by your works.			
7	Prepare a works plan that identifies all significant elements that could be affected by your works tasks and identify protection mythologies and works methodologies to minimise impacts. Induct the team into this works plan and undertake a Tool Box talk for the works plan.			

Name:……Sign:……Date: / /

APPENDIX B – RECORD OF TOOL BOX TALK

Record of Tool Box Talk			
Workplace:			Date:
Name of Supervisor or Presenter:			Time:
People Present			
Name	Signature	Name	Signature
Topics discussed and feedback			
Comments / Feedback			