Construction
Management Plan

Project Name: RAAFA Stirling (Stage 6)	
Client: Air Force Association (WA Division) Inc.	**Issue Date:** 30/04/2024
Project Number: 5178	**Document ID Code:** 5178-GeorGrou-CM-PLN-0001

Version Details

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1	30/04/2024	Updated to address further comments	[redacted]		
2	15/08/2024	Updated to address CoM comments	[redacted]		
			Name	Name	Name

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1. Introduction and Purpose

The purpose of this document is to outline the strategies and processes that will be implemented to enable the successful construction of the RAAFA Stirling project.

The Project Manager (PM) is the owner of this plan and any other plans developed for this project and will apply change control to ensure the most recent plans are approved and executed.

The Management Plans are developed primarily as communication tools to the team and stakeholders. These plans become the 'Project Procedure' for the RAAFA Stirling project, and the contents should be understood and implemented by the project team leaders and members.

1.1. Amendments and Authorisation

This Plan shall be approved by the Project Manager and their Line Manager. See Appendix 1 for Authorisation.

For the due management of this project, all project personnel concerned with management shall be fully familiar with Georgiou Management System (GMS) requirements and all activities. All activities shall be performed in accordance with the requirements of the GMS and the Project Execution Plan.

This Management Plan and other related documents will be reviewed annually or as a result of:

- Changes to Company procedures or processes;
- Changes to key personnel or resources;
- Changes in legal and other obligations;
- Findings from an audit or inspection;
- Findings from a significant incident or near miss;
- Significant changes to site conditions and/or work methods

Reviews shall be undertaken in consultation with key stakeholders to ensure all work locations and impacts are considered. A record of the date and comments relating to any revisions of this document shall be included in the revision table.

The only Georgiou authorisation required to amend this document after initial approval is the Project Manager's.

1.2. Communication of Plan

The Project Manager is accountable for ensuring:

- Location and access to the management plans will be communicated at induction.
- Site communication forums will also be used to communicated specific requirements of the plans.
- Any changes made to the Plans are communicated to all affected persons on the site.

1.3. Distribution of Plan

Electronic Copies of the plan(s) shall be saved in the Project SharePoint Workspace under 02 Management > 05 Planning & Programming > Management Plans.

The following plans will be developed to support this management plan:

- Commissioning Management Plan
- Stakeholder & Communications Management Plan

- Health, Safety & Environmental Management Plan
- Emergency Response Management Plan
- Quality Management Plan
- Risk Management Plan

1.4. Terminology & Definitions

Terms and definitions used within this document are further explained in Georgiou's ***Terminology & Definitions Guideline***.

2. Project Information

2.1. Scope of Works

Construction of a 7-storey building consisting of 1 level of carparking, 6 levels of apartments. The building structure is predominately reinforced concrete with post tensioned slabs founded on raft and pad footings without piling. The building façade consists of prefinished CFC cladding, aluminium windows and curtain walling, glass balustrading, texture coated concrete and block work and powder coated aluminium screens.

2.2. Contract Information

Client (Principal): Air Force Association (Western Australian Division) Inc. - (RAAFA)

Superintendent: Total Project Management (WA) Pty Ltd – (TPM)

Site Address: 2 Bull Creek Drive, Bull Creek

Figure 1: Project location

3. Structure & Responsibilities

3.1. Organisational Structure

The Project has established a specific construction management organisation for delivery of the works. This organisation comprises the Project Manager and the Construction Management Team.

The RAAFA Stirling project organisational structure has been documented in the ***Project Organisational Chart***, refer Appendix 2.

3.2. Responsibility Structure

The Client has allocated, including but not limited to, the following tasks to Georgiou:

- Satisfying and delivering the construction requirements of the Contract
- Day to day management of construction
- Developing and overseeing the implementation and performance of all construction plans and processes
- Maintaining the quality management standards throughout the entire construction period
- Selecting, controlling, and supervising the subcontractors
- Monitoring and reporting construction progress against requirements, cost and schedule and taking appropriate action
- Managing risk

3.3. Key Roles and Responsibilities

The Georgiou Project Manager is accountable to Georgiou's Construction Manager and General Manager for the performance and implementation of the management plans. Key personnel will acknowledge their understanding and acceptance of their site responsibilities. See Appendix 1 for Acceptance.

Project Manager (PM)

The Project Manager is accountable to the Georgiou Management Team for the performance of the project and the implementation of the CMP and all supporting management plans.

The PM is responsible for the provision of advice on project practices such as:

- Ensuring that construction of the project proceeds in accordance with the Contract requirements
- Management of industrial relations
- Ensuring that Contract OHS&R, Quality and Environmental requirements are met
- Community relations during construction and commissioning of the project

The PM is the primary point of contact with the Client for design and construction matters, as well as for industrial and community relations.

Site Manager (SM)

The Site Manager is responsible for the coordination of all site construction activities and ensuring:

- Construction proceeds in accordance with the Construction Management Plan and Contract requirements

- Work performed to construction program time frames
- Review of design documentation for buildability
- Suppliers and subcontractors meet Contract safety and environmental requirements
- Construction interfaces with the Client's operations are effectively coordinated
- Ensuring the timely submission of licensing documentation
- Ensuring that operations training satisfies the Contract requirements.

Project Quality Representative (PQR)

The Project Quality Representative (PQR) is responsible to the PM for:

- Implementing the construction quality management program in accordance with the Quality Management Plan and Contract requirements
- Ensuring that the requirements for construction quality management in the Contract are transposed to construction, inspection and testing of the components
- Development and monitoring of internal procedures
- Reporting non-conformities and initiating corrective action
- Coordinating construction quality audits, reviews and inspections in accordance with the Contract
- Ensuring that the QA requirements in the Contract are transposed to all subcontractors

Contracts Administrator (CA)

The Contract Administrator is responsible to the PM for:

- The management of contractual issues
- The management of cost planning to ensure that the design is within budget
- Project administration
- Procurement of subcontractors, equipment, and materials

Senior HSE Advisor

The HSE Advisor is directly responsible to the PM for the application and management of all Georgiou HSE systems, process and procedure and is also responsible for implementation of all requirements for compliance with AS/NZS ISO 45001 and the Australian Building and Construction Occupational Health and Safety Accreditation Scheme (Federal Safety Commission).

Planner

The Planner is accountable to the PM and is responsible for managing the timely delivery of all-time planning outputs in accordance with the functional and technical requirements of the project brief.

4. Design Management

Not Applicable

5. Construction Management

Georgiou will ensure that all permits and approvals are in place prior to the commencement of works.

Permit/Approval Type	Authority	Date of Expiry
Development Application (by Client)	Metro Inner South JDAP City of Melville	27/06/2026
Demolition Permit (Not required)		
Building Permit #1	City of Melville	TBC

5.1. Contractor's Site Establishment

Georgiou has developed a site establishment plan to ensure adequate office space, cribbing, and amenities will be available throughout works. The site facilities are located away from critical in-ground services to avoid disruptions.

The following facilities (or equivalent) will be required to service the site:

- 3No. 12m X 2.4m complex project offices
- 1No. 12m X 2.4m meeting/ training/ first aid room
- 3No. 12m X 2.4m crib huts
- 2No. 6m X 2.4m ablution blocks
- 1No. 6m x 2.4m sea container
- 1No. Chemical Toilet (for Level 4)

The site facilities will be setup at the eastern end of the site, clear of the new building and access driveway. There are services connections available close to or within this location

It is assumed that these services will provide adequate performance to sustain site facilities. Georgiou will ensure any impacted areas will be reinstated upon demobilisation from site.

Additional subcontractor offices and sea containers may be placed within the site boundaries at various times to facilitate major works such as concrete and formwork, services installation and ceiling and wall installation.

Figure 2. Site Establishment Layout

The Client's Project manager has advised that all construction traffic shall enter and exit the site via the same route utilising the southern entry off Bull Creek Drive

For safety, and to prevent unauthorised access, fencing will be erected around construction zones, laydown areas, and the site compound. This fencing has been designed to facilitate entry and exit to the site via the same route.

A variety of fencing types will be used to secure the site. The existing limestone noise wall along the north side of the site will be utilised. On the west side, adjacent to the pedestrian entry, fixed hoardings will be utilised and will incorporate a set of heavy-duty lockable gates. On the south side, temporary fence panels mounted to water filled barriers will be utilised and on the east side standard temporary fence panels will be used.

Georgiou will install shade cloth on sections of temporary fencing to minimise dust and debris contaminating adjacent roadways and pathways.

A temporary lighting system will be deployed to site to ensure appropriate illumination during works. Key zones for lighting include office area, tower crane and laydown areas.

See *Appendix 3 – Establishment Plan* for more information.

5.2. Operational Hours

Normal working days are Monday to Friday inclusive from 7:00am to 5:00pm, excluding public holidays and any non-working periods such as between Christmas and New Year, as nominated within the Contractor's programme.

Georgiou may be permitted to work on a Saturday from 8am-4pm undertaking non-noisy works, following a 48hr notification to the Clients project manager.

5.3. Parking

Georgiou have allowed for adequate parking for Georgiou staff and visitors within the site boundaries. Contractors will be encouraged to utilise public transport where possible given the site's proximity to the Bull Creek Train and Bus stations. For those unable to utilise public transport, offsite parking areas have been identified that are a short walk from the RAAFA estate. Bicycle and scooter parking areas will be provided on site adjacent to the toilets and lunchrooms.

Figure 3. Parking and Public Transport

5.4. Public Safety & Site Security

In addition to the security provided by the proposed fencing and lighting, security cameras will be deployed to cover key areas such as entrances, perimeters, storage areas, and high-value equipment locations. Placement will be based on a security assessment. The security cameras can be viewed through a central monitoring system. This enables real-time observation of the site. Footage will be recorded for later review.

5.5. Dilapidation Survey

A detailed dilapidation survey of the site and surrounding areas is to be performed prior to mobilisation. Survey boundaries will be established through consultation with the Superintendent. Once works have been completed, another survey is to be performed to document the state of the areas surveyed for comparison.

5.6. Temporary Services Required for Contractors Area

Existing sewer, water and power are all available within close proximity to the site and proposed site amenities. Georgiou will arrange temporary connections for these services as required throughout construction. Power for the site amenities will be taken from the existing site main switchboard. It is unlikely that there is sufficient capacity to provide power to the tower crane and hoist as well. In this instance a portable genset or battery will be installed on site to supplement the existing supply.

If a portable battery is deployed, this will be trickle charged from the existing Site Main Switch Board adjacent to the site.

5.7. Unloading & Storage of Materials & Equipment on Site

Unloading and storage of general materials and equipment on site will be limited to designated areas only, as per the Site Establishment Plan detailed in Section 5.1. Once the propping has been removed from the new ground floor carpark, this area will also be utilised for the storage of materials.

Allocation of material laydown areas and delivery coordination will be managed by the Site Manager, who will implement a delivery protocol. Deliveries will be unloaded by hand, the tower crane or truck mounted hiabs depending on the size, weight, and priority of the delivery. Deliveries will be scheduled using the onsite booking system and can be scheduled during the nominated site operational hours.

5.8. Storage & Disposal of Waste

Waste material is to be disposed of in site bins provided by Georgiou on site. These bins will be regularly serviced as required. Daily site clean-up and routine inspections by the Site Manager will ensure that a clean, well-kept site is maintained. Covered bins will be provided for all materials that are subject to being windblown to prevent foreign object damage. All waste resulting from general works will be disposed of in accordance with Georgiou's Waste Management Plan.

5.9. Control of Sand & Dust

Sand and dust will be controlled in accordance with the guidelines “Land Development Sites and Impacts on Air Quality” (DEP, 1996). This will be achieved through a combination of the following procedures and mitigations:

- Shade cloth / solid hoarding to boundary fencing as required
- Water carts
- Regular inspections along boundary fence lines for “drift sand” and rectification
- Trucks exiting site with spoil material will have covers
- Provision of street sweepers to clean street on an as required basis

5.10. Hoardings

Hoardings will be utilised on the west side of the site only and will be lined with formply or raw plywood similar to the image shown below.

5.11. Cranage / Hoisting Strategy

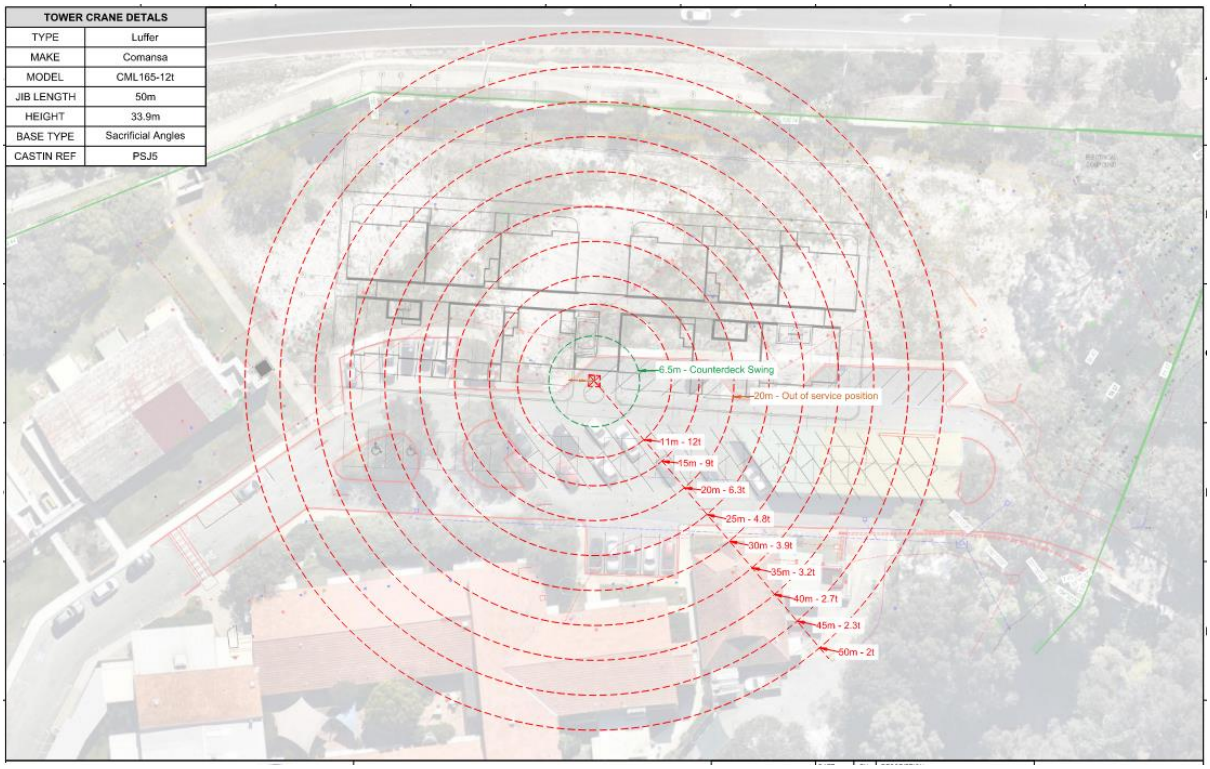
5.11.1. Cranage

Cranage for the project will be provided by a fixed tower crane located on the south side of the building adjacent to the main entry. A footing will be designed, engineered and installed to support the tower crane and may be independent of the lift core raft or connected to it depending on the design solution. The footing will be located at sufficient depth to allow future service to pass over and for hard and soft landscaping treatments to be installed. The tower crane footing will remain in the ground upon demobilisation of the crane.

The crane height and boom length will be selected to ensure coverage over the entire site including material delivery and laydown areas and will be suitably sized to handle the loads required to construct this project. See below.

Loading bays will be incorporated into the perimeter scaffolding on each level (1 to 6) to allow the tower crane to feed materials into each level of the building.

The tower crane may be supplemented by a mobile crane should the need arise or if cranage is required after the tower crane is demobilised.



5.11.2. Materials Hoist

Materials will also be hoisted to Levels 1-7 via a personnel and material hoist. The hoist will be connected either directly to the building or to the perimeter scaffold at each level. The hoist will be sufficiently sized to be able to handle 3.6m plasterboard sheets and a weight of at least 1.5tonne.

Due to the height of the building (7 levels), the hoist will be licenced to carry personnel as well as materials to improve labour efficiency and reduce travel time between amenities and other levels. The hoist will be operated by a licenced hoist operator.

5.12. Construction Traffic Management

The Client's Project manager has advised that all construction traffic shall enter and exit the site via the same route utilising the southern entry off Bull Creek Drive. This route is preferable as it is more suitable for larger vehicles, has better visibility and keeps away from the smaller roads which wind through the accommodation sector of the estate.

Delivery vehicles and construction plant will enter the estate off Bull Creek Drive, in most cases from the north. They will traverse through the estate observing speed limits and enter the construction site via the site gates located on the west end of the site. Delivery vehicles will turn around within the construction site and return to Bull Creek Drive via the same route. In most cases vehicles will turn left onto Bull Creek Drive and head towards Leach Highway.

Delivery vehicles and plant will not be permitted to traverse the bridge to the east side of the construction site.

Figure 3. Construction Traffic Route to and from Project Site

Georgiou has made allowances for two personnel to assist with the management of traffic through the estate. During delivery periods (typically 7am to 12pm) one person will be stationed near the entry of the estate and another at the entrance/exit of the construction site. These traffic personnel will be responsible for communicating with drivers prior to traversing the estate and upon arrival and departure at the construction site gate. Drivers will be informed of the site protocols such as speed limits, route, noise restrictions as well as potential hazards such as pedestrians, other vehicles etc. In some cases, depending on the site of the vehicle, delivery vehicles or construction plant may be escorted through the estate to the construction site.

A small portable hut (gate house) will be located adjacent to the estate entry and construction site gate to provide shelter for the traffic personnel. The location of these would be agreed with the client prior to installation. In addition to this, a speed flagger will also be installed to monitor the incoming site traffic.

Figure 4. Example of gate house

5.13. Safety Management

For information on Georgiou's safety management procedures, please see the Health, Safety and Environment Management Plan (HSEMP)

5.14. Environmental Management

For information on Georgiou's environmental management procedures, see the Health, Safety and Environment Management Plan (HSEMP)

5.15. Quality Management

Management of quality shall be in strict compliance with Contract and Specification requirements. For information on Georgiou's environmental management procedures, see the Quality Management Plan (QMP)

5.16. Community & Stakeholder Management

The approach, strategy, and processes for proactively and reactively managing all interactions with internal and external stakeholders for the successful construction of the RAAFA project is addressed in the Stakeholder and Communications Management Plan (SCMP) and supported by the Georgiou's Community and Stakeholder Management – Guideline (GC-HSEQ-GL-031) and Community Relationship Management – Guideline (GC-MGT-GL001-1).

Complaints Procedure

- Complaints relating to the project shall be directed to the project team admin.5178@georgiou.com.au
- Georgiou will log each community complaint into its online "Beakon" system where it can be tracked and closed out
- A member of the project team will respond to the complaint within 72hrs.

- If the community member is not satisfied with the response received the complaint can be escalated to the georgiou head office via email reception@georgiou.com.au or via phone on 08 92002500
- In the event of an emergency, community members can contact the project Site Manager on 0477805037

5.17.Risk Management

Risks will be actively managed throughout the course of the works. An initial risk identification and assessment workshop will be undertaken as part of the project launch phase. The risk matrix will record and log details of any item or event, which is considered by the project team to put the objectives of the project at risk. All risks identified will be analysed with respect to their impact on the project. Mitigation plans will be developed for all risks and as the levels of impact, probability and severity are mitigated to a residual level, the value associated with the individual risk will be relatively adjusted.

Strategic risk workshops will be conducted throughout the course of the project to assist with overall risk management. As a minimum the following risk workshops shall be performed:

- Construction Commencement (incorporating all key trades and project staff)
- Services Trades (i.e., Refrigeration, Electrical, Fire, Hydraulics, and Mechanical etc.)
- Pre-Commissioning and Handover (involving key trades and consultant)
- CRAW – Critical Risk Activity Workshop (at required intervals during construction)

The risk matrix will be considered a live document and will be reviewed on a monthly basis via formal risk review meetings. Monthly risk reports can be included in the contractor's monthly report issued to the Superintendent.

5.18.Programme Management

Various tiers of programmes will be developed to effectively plan, manage, and report on the progress of works.

Procurement Programmes will be further developed to include subcontractor and supplier engagement timeframes and subcontractor design tasks such as shop drawings. The programme will account for long lead-time and specialist supply items.

A master Construction Programme has been developed for the works. The programme shall be monitored and updated throughout the course of the project. Fortnightly internal program review reports will be prepared, and a monthly status will be issued to the superintendent.

Short-Range Programmes (SRAs) will be developed to assist works in increments, generally covering 1-3 weeks of works. The programme will detail daily activities for the subsequent three weeks including any pre-conditions to the works. The programme will be monitored daily and reviewed bi-weekly via a dedicated programming and co-ordination meeting. Key subcontractors will be included in the coordination meetings to ensure co-ordination between trades.

Daily Prestart Meetings (DPM's) will be held prior to work commencing to ensure all parties are aware of the day's activities. The forum will also extend to cover Health and Safety, Environment, Security, and any other issue that may require addressing.

In line with the master Construction Programme, Commissioning and Testing plans will be developed. The programme will detail all requirements to achieve handover, including commissioning

requirements, testing dates and durations, authority approvals, training, operations and manuals, warranties, and as-constructed information.

5.19. Project Reporting Regime

Proposed reporting requirements for the project will be as follows:

The monthly report shall contain the following:

- Contractor's Approved Program detailing the percentage complete for each activity
- Delay and EOT Register (including implemented corrective actions to minimise delay impacts)
- Variation Register
- Request for Information (RFI) Register
- Shop drawings approvals register with status
- Authority approvals matrix and progress
- Other information as the Contract or the Superintendent may require
- A written statement on the progress of the Works since the last report
- Actual start and finish dates for each main activity
- Forecast time to complete each main activity
- Status of major plant and materials and equipment, ordering, delivery, and fabrication (including off-site fabrication)
- Details of any lost time and the reasons for it
- Industrial Relations status detailing performance to time of reporting
- WH&S Status Reports and incident logs detailing safety performance to time of reporting
- On site Labour Table and confirmation of OHS Inductions for all new individuals
- Activities for the upcoming month (Current Month Schedule)
- Updated monthly cash flow forecast and invoices
- Community Consultation Register
- Environmental Management status
- Non-Compliance Register
- Complaints / Authority Fines Register
- Selected Progress Photographs
- Other information as the Contract or the Superintendent may require

6. Construction Methodology

6.1. Early Services Works

Georgiou plans to initiate early installation of the new sewer line to ensure these works are completed well before they can potentially impact the new construction works. Site investigations and discussions with specialist contractors resulted in Georgiou opting to install the new sewer service using a trenching method.

Figure 5: New sewer services

The trenching will be completed using shoring boxes to install the new pipework. Upon completion, the new sewer line will be cut over, manhole benching where the new sewer line runs through the existing manhole. Progressively backfilling, compacting and removing the trenching boxes. The cut over works will be undertaken out of hours as directed by the Superintendent.

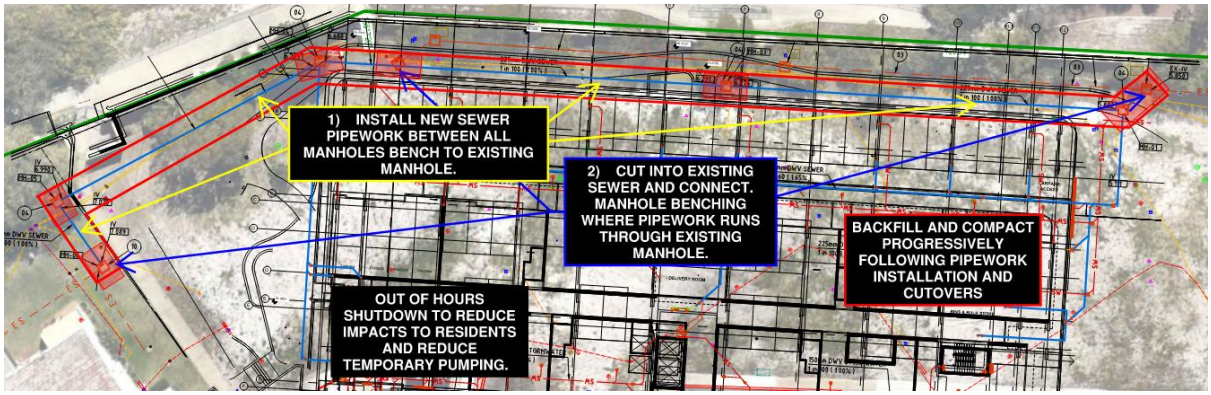


Figure 6: New sewer services continued

Prior to any excavation or trenching, existing utilities will be identified and marked to ensure no impact. It is of utmost importance to identify all retained and redundant services.

6.2. Headworks and Infrastructure Connections

The project does not require any new headworks. Electrical, water, fire, gas, communications and sewer services all connect to existing infrastructure within the estate. All new hydraulic and power connections will require some form of shutdown or interruption to existing services to complete the connection. These connections will be coordinated with the Client to ensure no unplanned outages occur and that the works occur at a time suitable to all parties.

Connections for some existing services require works to be conducted outside of the main construction site boundary. These include the following:

- Fire Water – Connection outside of site, new piping to be installed below ground and over the existing bridge.
- Potable Water – Multiple new connections both within and outside of the construction site. Pipe replacement outside of the site, requires trenching and reinstatement of surfaces.
- Sewer – The majority of the new sewer work occurs within the site however the upstream connection and a short section of new sewer is located just outside the west end of the site adjacent to an accommodation building

- Gas – 2 new connections to existing gas infrastructure occur within the construction site and one outside
- Electrical – The new building electrical infrastructure will connect to the existing SMSB directly south of the construction site. This will require new conduits to be trenched across the road and footpath to the existing SMSB. New cables will be pulled through the conduit and connected to the SMSB. This will require a power shutdown. The existing SMSB is being upgraded by the client prior to this work package.
- Communications – New fibre optic cables are required to be pulled through existing communications conduits from the new Stirling building to the existing ARK and Orion buildings. These will be terminated within existing communications rooms in these buildings. The design team have assumed there is sufficient spare capacity in the conduit system for these new cables.

Where works are required to be conducted outside of the construction site, the client will be notified in advance and fencing or barricading installed prior to the works taking place. Disturbed surfaces will be reinstated upon completion of the new works and connections.

6.3. Site Preparation

Site Preparation will be conducted by Georgiou's selected earthworks contractor and consist of the following activities

- Undertake a review of existing services drawings to identify any live services
- Conduct services scanning and potholing to identify and mark all existing services.
- Remove trees and shrubs as shown on the architectural drawings. Check for nesting birds
- Strip back any kerbs, paving, pavements, paths etc shown as being removed on drawings
- Undertake bulk excavation of the building footprint leaving soil levels at RL of underside of slab on ground.
- Compact soil beneath slab to required density
- Coordinate with hydraulics contractor for the installation of the potable cold water main beneath the site compound area
- Install temporary hardstand to areas shown on Site Establishment plan
- Undertake regular wetting down during earthworks activities
- Return to site to remove any excess spoil following detailed excavation and backfill

6.4. Substructure

6.4.1. Dewatering

Dewatering has not been allowed for. All footings and foundations are expected to be above the water table level during the time period these works will take place.

6.4.2. Foundation Construction

Foundations will be constructed in a sequence which prioritises construction of the deeper foundations first and allows the efficient removal, storage and backfill of excavated material. It is envisaged that the three raft slabs will be excavated and poured first. The typical stages of this process are as follows:

- Excavate to bottom of foundation level minus 50mm
- Excavation to be benched or battered to ensure safe angle of repose on adjacent soil
- Safe access ramp or stairs provided into excavation and bunting or barricading installed around excavation
- Blinding layer poured at base of excavation
- Reinforcing steel installed onto blinding
- Edge formwork installed
- Cast in items positioned and secured
- Concrete poured with boom pump
- Formwork stripped
- Raft slab backfilled

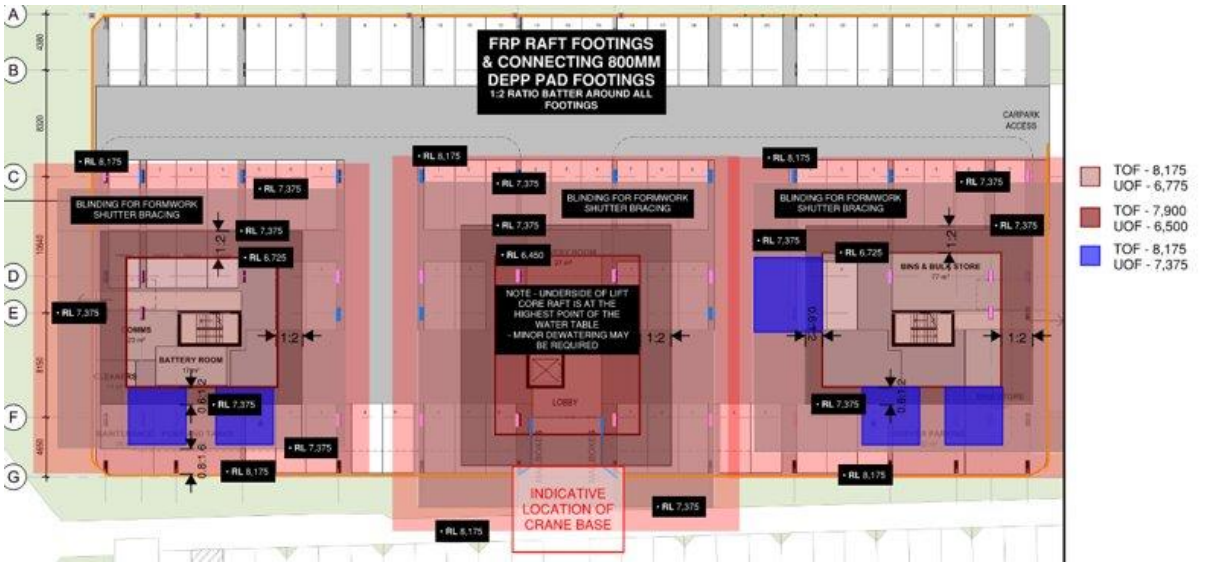


Figure 7: Raft Footing Detailed Excavation

Following the raft construction, stair core and lift overrun pits will be formed and poured to ground level to allow waterproofing and backfill of soil to the underside of slab on ground.

Other pad footings supporting columns will be constructed in the following manner:

- Excavate to bottom of foundation level
- Excavation typically will not require benching as the depth will be less than 1.0m
- Reinforcing steel will be prefabricated and lifted into position at the base of the excavation
- In most cases formwork will not be required as the size and depth of the footing is suitable for pouring directly into the ground
- In some cases, “Pecaform” or similar may be used to support the edges of the excavation before and during concrete pour
- Cast in items positioned and secured
- Concrete poured with boom pump
- Footings backfilled

Figure 8: Main Pad Footing Detailed Excavation

Figure 9: Small Pad Footing Detailed Excavation

Following the pad footing construction, columns supported by these footings will be formed and poured to the underside of Level 1 to allow the backfill of soil to the underside of slab on ground.

6.4.3. Slab on Ground Construction

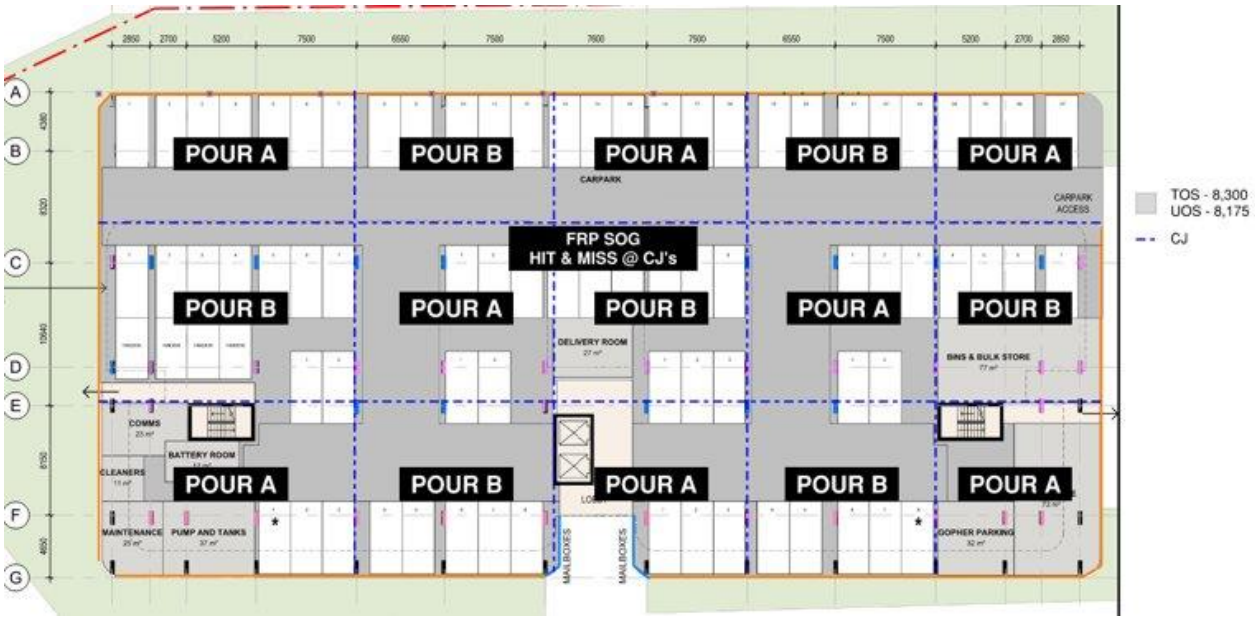
In ground services such as electrical and communications conduits, stormwater, sewer and water/gas supplies will all be installed prior to preparing for the slab on ground pours. The perimeter strip footing and concrete block wall will also be completed before pouring the slab on ground. The typical slab on ground process is as follows:

Pour A

- Ensure all services installed
- Ensure perimeter strip footing and block work wall completed
- Trim and compact soil to underside of slab on ground
- Install termite treatment
- Install WPM
- Install edge forms
- Install “ableflex” to columns, blockwork walls, concrete walls etc
- Install “diamond dowel” joints
- Install reinforcing steel
- Pour slab with boom pump
- Finish slab
- Apply dust inhibitor/sealer
- Strip forms

Pour B

- To be completed after Pour A
- Process similar to above



6.5. Superstructure

6.5.1. Concrete Frame

The method used to construct the building frame is described below. Work will commence on level 1 and will progressively move up the building until level 7 is completed. On each level, the slab will be poured in two stages aligning with a predetermined construction joint. The vertical elements (columns and walls) will be poured in three stages each centered around a stair or lift core. The process for constructing each level is summarised as follows:

Step 1a - Concrete Columns

- Install prefabricated reinforcing cages for columns
- Install column formwork & bracing
- Pour columns
- Strip formwork and apply curing method

Step 1b - Concrete Walls

- Install internal formwork shutter and bracing
- Site install reinforcing steel
- Install external formwork shutter and bracing
- Tie formwork together
- Strip formwork and apply curing method

Figure 10: Vertical Element Pour Sequence

Step 2 - Suspended Slabs

- Install proprietary formwork pans/tables set to soffit height
- Install perimeter scaffolding to slab height
- Fill in “gaps” around columns and walls using timber and ply
- Install edge forms
- Install “SureLok” movement joints
- Install fire collars and blockouts for services
- Install bottom reinforcing layer
- Install post tensioning anchors, ducts and wire
- Install top reinforcing layer
- Install cast in conduits, drains, puddle flanges etc
- Install forms for set downs
- Cleanout forms
- Pour concrete
- Once at required strength conduct initial post tensioning
- Once at required strength conduct final post tensioning
- Trim PT wire and patch anchors/pans
- Strip pans from soffit
- Install scaffold hop-ups
- Propping to remain in place until concrete three (3) levels above has been poured and reached strength (See figure below)

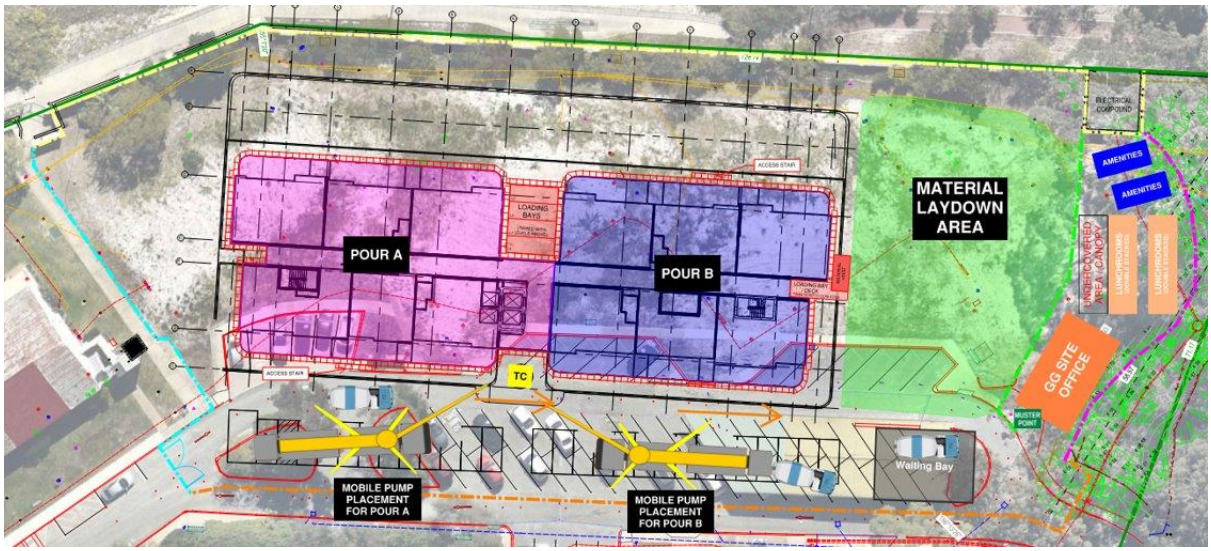


Figure 11: Concrete Slab Pour Sequence

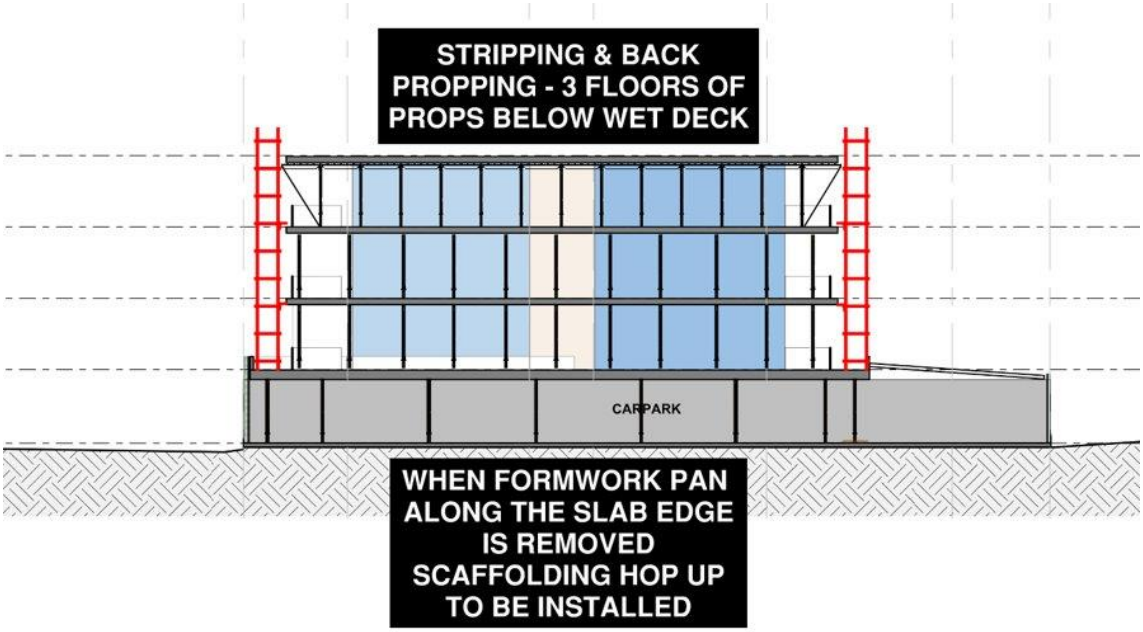


Figure 12: Example of Back Propping

The Structural Engineer has specified that a concrete element on Level 6 is to be poured following the completion of the stair core and level 7 slab. This will require a portion of custom design formwork to be installed which supports the concrete from level 5 to level 7. Once the level 7 slab is poured the formwork will be stripped down and built up to form and pour the delayed pour beam on level 6. See details below.

Figure 13: Delayed Pour Beam

6.5.2. Structural Steel

The majority of the structural steel on the project is located on the north side of the building (at level 1) over the northern portion of the ground floor car parking. Other minor elements exist throughout the building.

The structural steel connects to the slab edge on level 1 and spans across to new steel columns on Grid A. Purlins and trimmers span east west over the new steel beams. This steel is likely to be installed following the removal of the northern façade scaffolding, however there is an opportunity to conduct some of the installation prior to the scaffold removal if the scaffold installation is coordinated with the steel shop detailing. Steel will be installed using the tower crane (or mobile crane) together with riggers working from EWPs.

6.5.3. Roofing

The roofing will commence once the entire steel structure is complete. Safety mesh and perimeter handrail will be installed from below using EWPs before roofers will be permitted to access the roof to install sheeting.

The roofing material will be lifted to roof level by the tower crane (or mobile crane) in tied and packaged bundles. Roofers will roller out insulation and install sheeting using harnesses and a static line system.

6.6. Facade

6.6.1. Perimeter Scaffold

Perimeter scaffolding will be installed progressively as the concrete superstructure is constructed. Initially the scaffold will be used to construct the concrete frame then will be adjusted to suit the installation of the building façade, glass balustrading, screens, louvres, windows, and parapet walls.

The Site Manager will ensure the scaffold is set out in the correct location to suit all applications and will ensure that adjustments are suitable for all trades.

Some elements of the scaffolding will require engineering. These may include the following items:

- Ladder beams
- Tie back structures
- Shade cloth wind loading

- Cantilever sections
- Back propping of concrete slabs where supporting scaffolding
- Loading bays and hoist ramps
- Hoist loads

Scaffold will be progressively dismantled from the top down once works are completed on each level. The installation of any missing glazing or CFC panels left out to allow scaffold ties to be installed will be installed as the scaffold progressively drops and the ties are no longer required. The same methodology will be applied to any concrete that requires patching and or painting where ties have been directly connected to concrete elements.

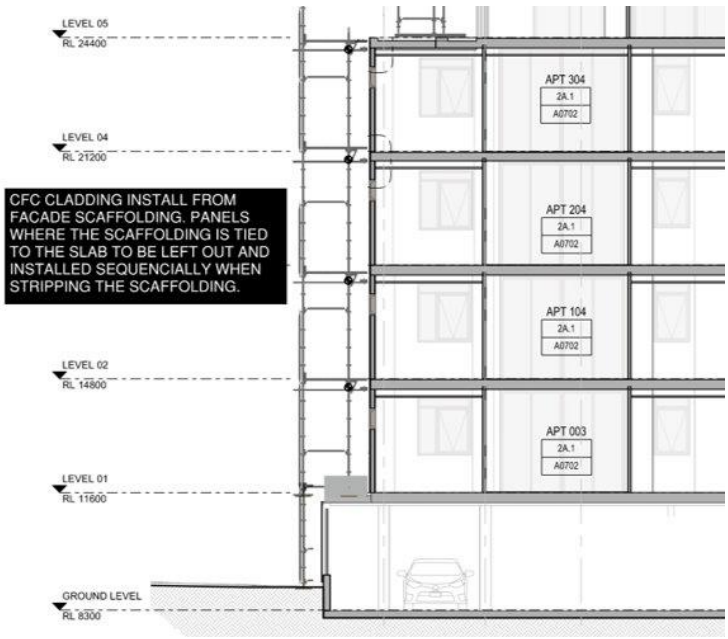
6.6.2. Parapet Walls and Slab Edge Treatments

Blockwork parapet walls will be constructed either directly from the slab (Level 7) or from the perimeter scaffold. Blocks and other materials will be transported to the working area via the materials hoist (vertically) then horizontally via the scaffold, ramps and floors. Follow on activities such as plastering, texture coating and painting will be conducted from the scaffolding and coordinated with the removal of the scaffolding.

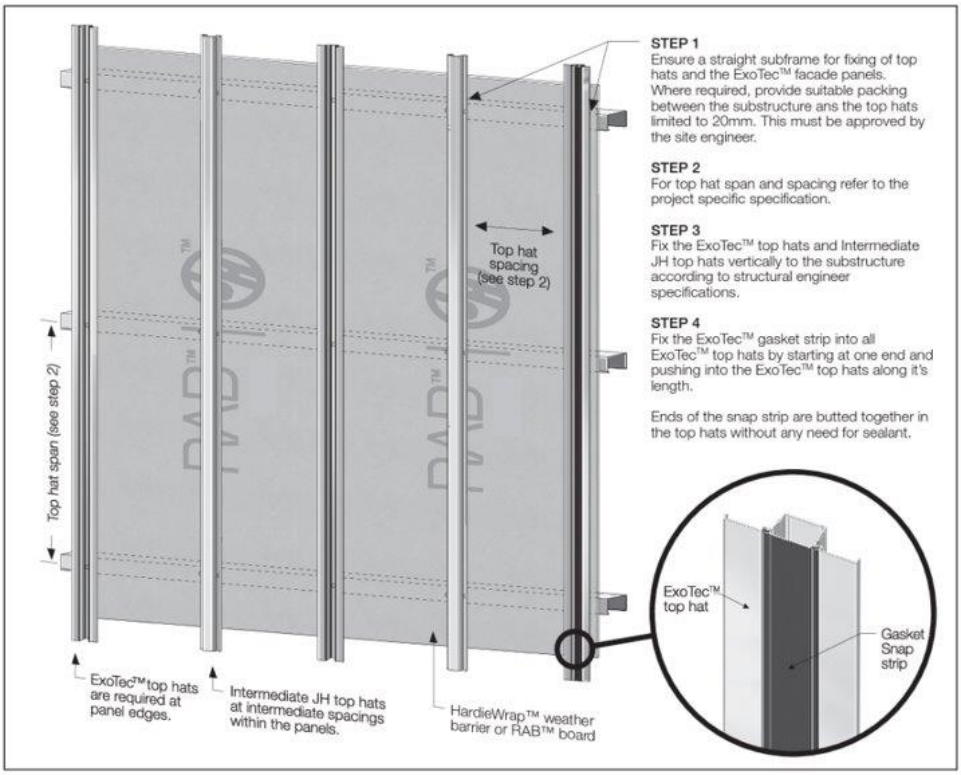
6.6.3. External Walls and CFC Cladding

External walls are designed as lightweight construction consisting of steel track and stud framing spanning from top of slab to underside of soffit. The wall framing is insulated and wrapped externally with a vapour barrier. The vapour barrier is then covered by an “Exotec (Vitrapanel)” rainshield system consisting of horizontal and vertical furring channels with gaskets, prefinished CFC sheeting and face fixed (colour matched) fixings.

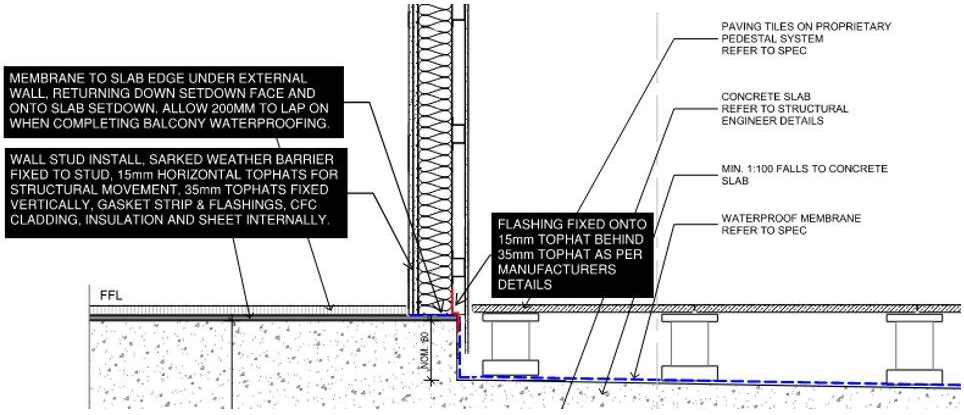
The steel wall framing will commence on Level 1 and will be progressively undertaken level by level to the top of the building. Steel wall framing will commence upon the removal of back propping on each level to ensure slab defection has been accounted for. Wall framing will typically be installed form the slab and vapour barrier, furring channels and CFC panels from the scaffold or balconies.



The steel wall framing will be installed in accordance with the Rondo (or Studco) design and will incorporate noggings, reinforced head and jambs and other items as detailed. Openings in the external wall will be formed to the sizes indicated by the relevant shop drawings for items such as windows, doors, louvres, etc.



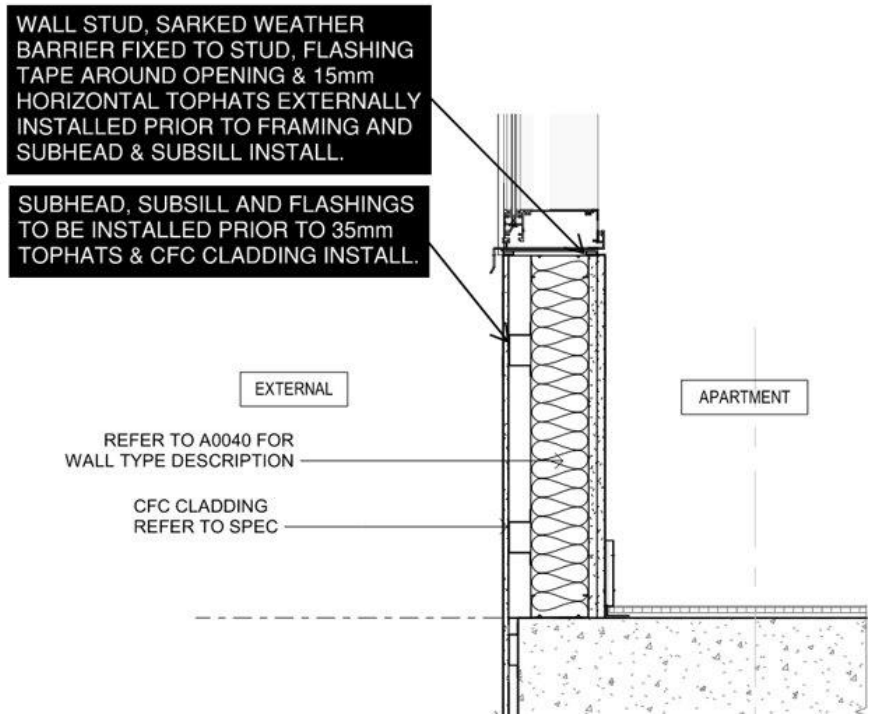
Special attention will be paid to ensure that vapour barriers, waterproofing and flashings are detailed and installed correctly especially around window, door and louvre openings.



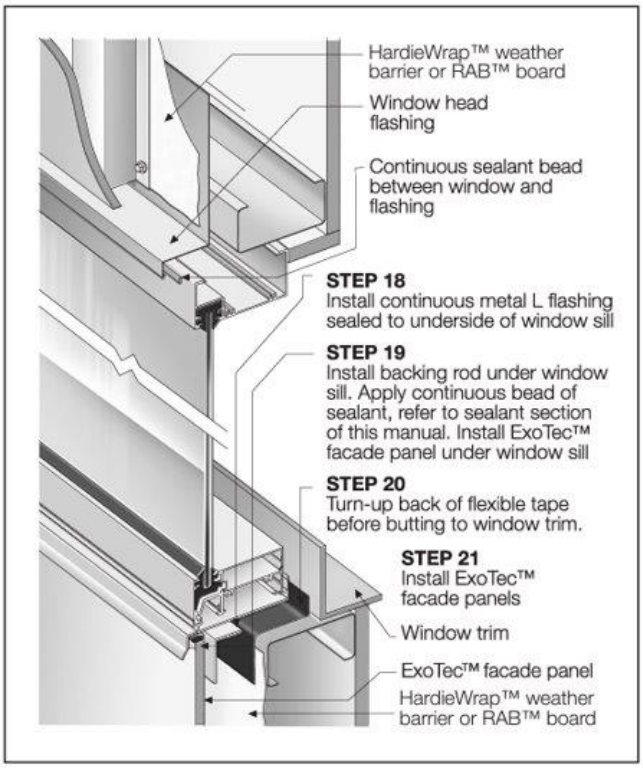
6.6.4. Aluminium Windows, Doors and Curtain Wall

The installation of aluminium windows and curtain walling will be closely coordinated with the installation of the external CFC cladding and any supporting structural steel.

To avoid delays, windows will manufactured to opening sizes and will incorporate suitable installation tolerances. Special attention will be paid to ensure that vapour barrier is correctly wrapped into openings, appropriately taped and interfaced with window flashings to ensure the CFC rain shield can shed water at window interfaces.

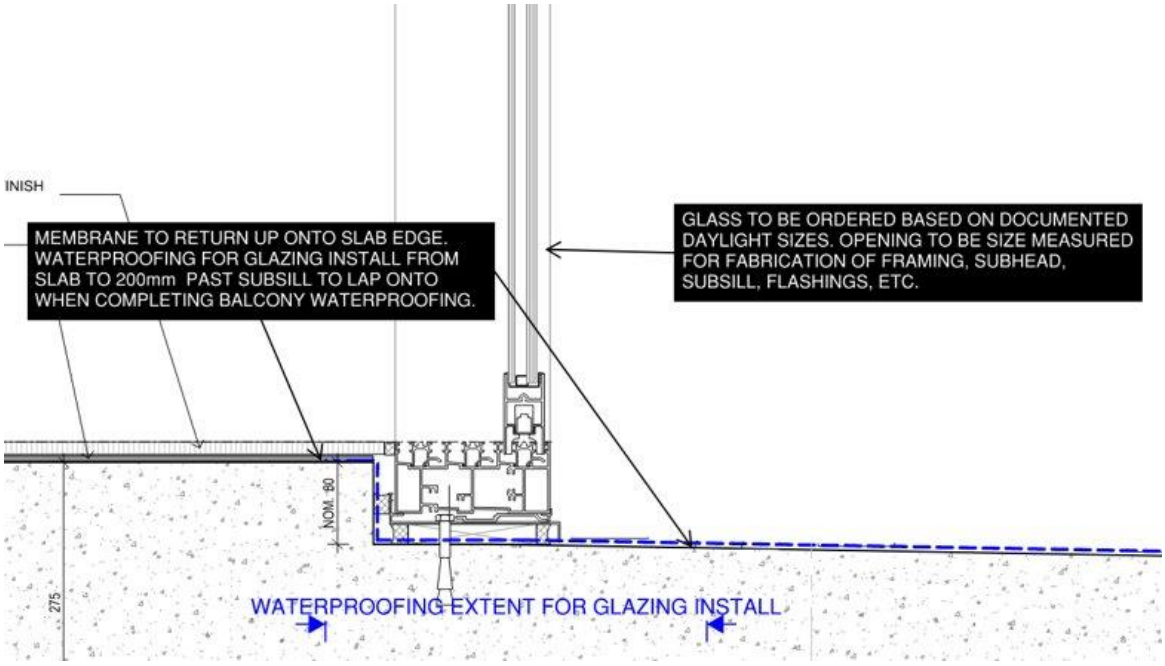


The alignment of subhead and subsills will be determined by the alignment of the CFC cladding and top hats.



Glass sliding doors will be site measured and fabricated to suit. This is preferable as the doors span directly between the top of slab and the soffit of the slab above. Site measuring and fabricating to suit will allow for any differences caused by slab deflections.

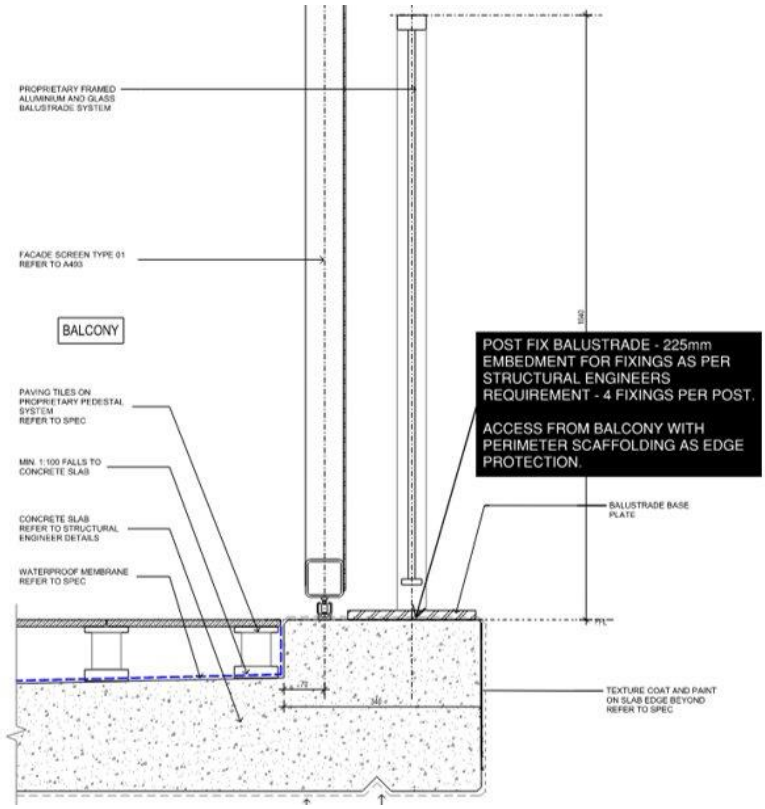
Special attention will be paid to the sliding door sill to ensure it is set at the right height to suit the internal and external floor finishes and to be installed correctly to maintain the integrity of the balcony waterproofing.



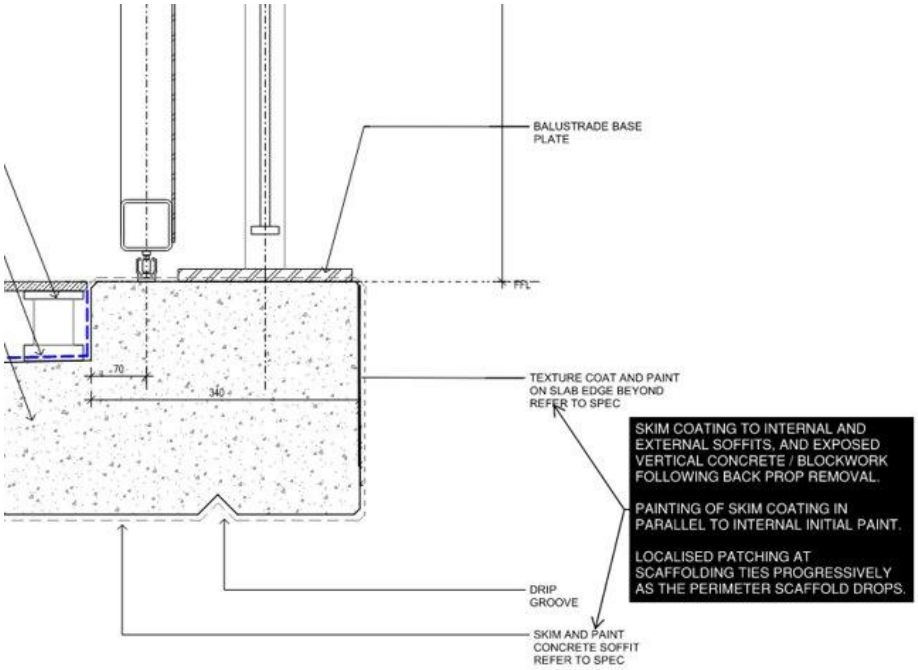
The sliding door head will also need to be carefully installed to ensure minimal packing to interface neatly with exposed soffits and to allow sufficient movement within the subhead for slab deflections and building movement.

6.6.5. Glass Balustrade & Aluminium Screens

Proprietary glass balustrade and aluminium screen systems will be installed in accordance with the manufacturer's recommendations. These elements will typically be installed from the balconies with the perimeter scaffolding acting as edge protection. Perimeter scaffolding will not be removed until balcony balustrades and screens have been installed.



Balustrade and screen installation will be closely coordinated with the skimming and painting of soffits, the skimming and texture coating of slab edges and hobs, waterproofing and the completion of adjacent CFC cladding. Balustrading will typically be installed before screening.



6.7. Building Services

6.7.1. Service Coordination and Sequencing

The coordination of building services starts with the design team where services are typically coordinated using 3D design software such as Revit. During the shop detailing process, the services trades take this 3D design and ensure that it is compatible with their detailing and make minor adjustments as required. The respective models are then federated to check for clashes with structure, other services and architectural elements. Clashes are typically resolved by holding workshops where adjustments are agreed and implemented. The agreed model is reviewed by the design team before being implemented onsite.

This federated model is used to produce final shop drawing and to set out the installation of services, penetrations, and block outs on site.

Typically, high level (in ceiling) services will be installed before the installation of internal stud walls.

Once internal stud walls are installed services will then be run from the ceiling down to the appropriate location on the wall. Walls will be sheeted and finished before these services are terminated or fixtures installed.

6.7.2. Wet Fire Services

The sprinkler system covers all levels of the building except for roof level. Sprinklers are a combination of concealed and exposed. The main runs of sprinkler piping will typically be installed before any other services as they are fixed directly to the soffit of the slab. Hydrants and hose reels are also installed on each level and will be progressively commissioned to ensure temporary firefighting services are available during the construction phase.

6.7.3. Dry Fire Services

The fire detection system will consist of smoke and detectors and sounders. These will be part of the fire system and will be tied in directly to the FDCIE fire detection and indicating equipment main panel located in the lobby. There are fire loops which service each apartment, common areas and lift shafts. The fire system interfaces with the access control system, auto doors, fire pumps, sprinklers, mechanical services and has a Direct Brigade connection (DBA).

Dry fire services loops are typically installed before partition walls commence and are fitted off and tested after ceilings are completed,

6.7.4. Electrical Services

Electrical Services consist of the following:

- Power
- Lighting
- Communications
- CCTV
- Access Control
- MATV

Power is reticulated to the new building from the existing SMSB which is being upgraded by the client. A new BMSB is supplied and installed on the ground floor. Power is then distributed to each of the floors where a new DB is installed. From the floor DB, power is then distributed to each of the apartments and common areas.

Typically, cable trays, main cable runs, and lighting circuits will be installed prior to the installation of partition walls. Minor cables will be installed once partition walls are erected, and the cables can be run to their termination points. Services will be terminated and fitted off once ceiling and wall finishes are complete and fixtures have been installed.

6.7.5. Hydraulics

The hydraulic services consist of sewer and stormwater drainage, cold and hot potable water and natural gas. All the above services already exist on the estate. These services will need to be extended to the new site and reticulated throughout the new building.

Typically, sewer stacks and main water services will be installed prior to the installation of partition walls. Minor pipework will be installed once partition walls are erected, and the pipes can be run to their termination points. Services will be terminated and fitted off once wall finishes are complete, and fixtures have been installed.

Particular attention will be paid to the interface between the hydraulic services and the waterproofing membrane in the wet areas and balconies.

6.7.6. Mechanical

Mechanical services for cooling and heating apartments typically consist of in ceiling fan coil units (FCUs) connected to roof mounted condenser units. Each apartment has small sections of localised ductwork and localised exhaust fans to supply fresh air and remove stale air from the occupied spaces.

Commons spaces are cooled via air supplied from a roof mounted Air Handling Unit supplied with chilled water from a new air-cooled chiller.

Typically, ductwork. FCUs and fans will be installed prior to the installation of partition walls. Minor items such as control cabling will be installed once partition walls are erected, and the cables can be run to their termination points. Services will be terminated and fitted off once wall finishes are complete.

6.7.7. Vertical Transport

The building has two new passenger lifts servicing levels ground to six. Lift installation will commence once the lift shaft is complete, weatherproof and once power is available and temporary lift gates are installed.

The lift contractor will install the lift rails and assemble the lift car without the need for scaffolding using their proprietary working deck system which is operated by electric hoist. Crates of materials for the lift assembly will be stored adjacent to the lift shaft on ground floor and fed up the shaft to the levels above.

6.8. Fit Out and Finishes

Fitout and finishes will commence once back propping is removed and high-level services have advanced. Initially only stud walls and door frames will be erected until such a time that the building façade is waterproof (sarking on, windows in).

Plasterboard sheets will typically be installed on one side of each wall to allow the installation of in-wall services and support noggings. Once in-wall services are installed, a QA checklist will be completed to ensure services and noggings have been correctly installed. Upon signoff, the second side of the wall will be sheeted, flushed and sanded.

Once all stud walls within an area have been erected, sheeted and sanded the installation of ceilings will commence. Typically, once all walls and ceilings in a zone are installed and sanded they will be painted with a sealer and first coat. If the zone contains wet areas this will initiate the process of waterproofing, screeding and installing ceramic tiles.

The painting of walls and ceilings triggers the commencement of fit off which can include electrical and communications outlets, lights, mechanical grills and sensors, joinery, doors and other fixtures. The installation of joinery and tiles will allow further electrical, comms and hydraulic services to be fitted off.

Floor finishes (other than tiling) and skirtings are typically completed at the end of the construction process to ensure they are not damaged.

6.9. External Works

The entry road modification and driveway to the carpark will be constructed at the end of the construction programme to mitigate the risk of damage to the bitumen surface. All hard and soft landscaping elements and irrigation will be commissioned at the very end of the programme.

7. Completion, Commissioning, and Handover

7.1. Certification

The Project Certifier will issue a schedule of items required to achieve the Certificate of Classification (Occupancy). It will be Georgiou's responsibility to manage this schedule and obtain all items to allow the Project Certifier to issue the Certificate prior to the Practical Completion date.

7.2. Operation & Maintenance Manuals

Operation & Maintenance Manuals including As-Constructed documentation will be compiled and submitted in accordance with contractual requirements. Refer to the Contract Programme for timing of the submissions of O&Ms.

7.3. Commissioning Services

Refer to the Testing & Commissioning Management Plan

8. Appendices

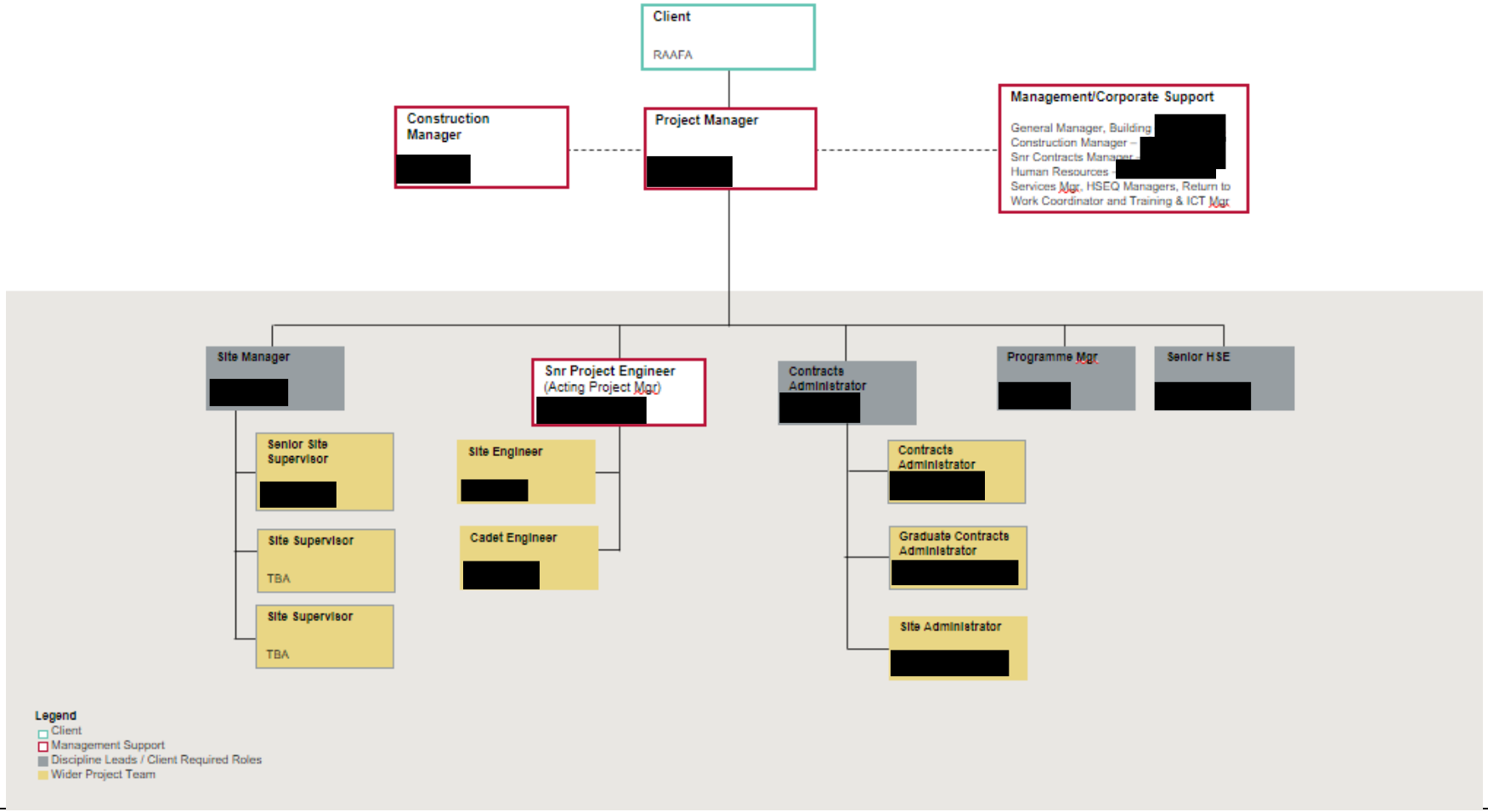
8.1. Approvals and Acceptance of Accountabilities & Responsibilities

Position	Name	Signature	Date
Approvals			
Construction Manager			
Senior Project Manager			
Acceptance of Accountabilities & Responsibilities			
Site Manager			
Senior Project Engineer			
Site Engineer			
Cadet Engineer			
Contracts Administrator			
Graduate Contracts Administrator			
Senior HSE Advisor			
Senior HSE Advisor			
Senior Site Administrator			

8.2. Project Organisational Chart

Project Organisational Chart

RAAFA Stirling – Stage 6



8.3. Establishment Plan


ESTATE ENTRY FROM THE TRAIN STATION
MATERIAL LAYDOWN AREA
UNDERGROUND MEP COMPANY
GC SITE OFFICE
DELIVERY LOADING / UNLOADING BAY
PEDESTRIAN ACCESS
SYMBOL LEGEND
DETECTED UNDERGROUND SERVICES BY SUBTERA
SITE ESTABLISHMENT LEGEND
TOTAL PROJECT MANAGEMENT
RAAFA - STIRLING STAGE 2
SITE SURVEY & ARCHITECTURAL OVERLAY