

6.0 Operational Ancillary Facilities

6.6 Motorway Operations Complex Organisation Strategy

The motorway operations complex site contains the following facilities:

- The motorway control centre;
- Southern ventilation facility;
- Workshop grouping; and
- Miscellaneous parking and surface facilities.

The site itself has a valley form parallel to Pennant Hills Road and the facilities have been organised to take advantage of this in both functional and aesthetic terms.

At the north end high point the motorway operations complex serve as a marker for the motorway operator and provides a street presence for the public. As it is the generator of most of the everyday traffic for the site, it has been located with good public road access avoiding the need for most vehicular traffic to travel the length of the site along adjacent residential properties.

The motorway operations complex site has been organised to provide for efficient operations, an appropriate relationship with its surroundings and a further expression of project branding and narrative.

The site is organised along a north south spine that provides access to all facilities. This spine is located along the western side of the site and, with its robust landscaping, acts as a buffer from the adjacent neighbourhood to motorway facilities. The southern portion of the site is raised to a bench level of RL118.5 to provide a better relationship to the tunnel portal and a level area for major facilities.

The taller facilities of the southern ventilation building and motorway operations complex have been located at the ends of the site further away from residential properties and can serve as markers for the project in the landscape due to their increased visibility. They have a common palette of materials and share a lantern feature, described in further detail in ongoing sections, to emphasise their role as part of the urban gateway assembly of features. At the northern end of the site a pylon provides for both building identification and project branding. The site benching has been developed to minimise the need for retaining walls against adjacent properties.



M1-M2-5000-DR-UD-0501
MOTORWAY OPERATIONS COMPLEX - SITE ORGANISATION STRATEGY

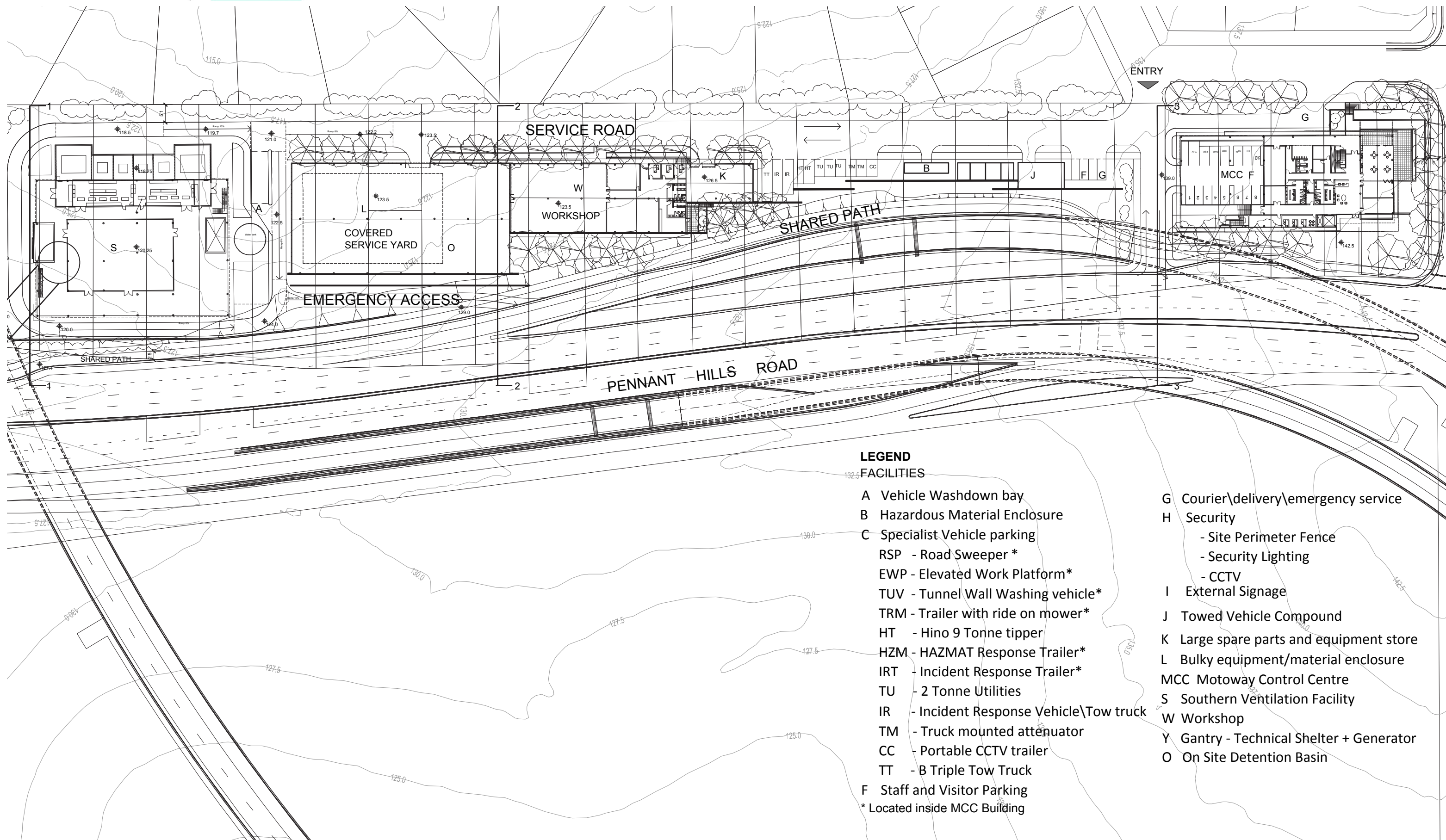
Lower buildings, such as the storage facility, workshop and covered service yard are located between the taller structures and have feature walls facing Pennant Hills Road.

The relationship between the road and these lower facilities means that these facilities would not be as visible as the Motorway Control Centre (MCC) or southern ventilation building. Together with noise walls, these act as a series of landform 'blade wall elements' allowing the landscape planting itself to dominate the view from Pennant Hills Road.

The visible portion of these structures, like that of the motorway control centre (MCC) and some of the southern ventilation building, would be patterned with a subtle pattern reflecting the project signature concept of abstract light and shadow across their surface.

Changes in height and plane of these walls would add further interest and variety to the experience of these forms in the landscape.

An emergency access point has been provided from the southern portion of the site directly into the northern portal. This is located adjacent to the fire truck bay and is generally recessed below road view level.



LEGEND
FACILITIES

- | | |
|--|--|
| A Vehicle Washdown bay | G Courier\delivery\emergency service |
| B Hazardous Material Enclosure | H Security |
| C Specialist Vehicle parking | - Site Perimeter Fence |
| RSP - Road Sweeper * | - Security Lighting |
| EWP - Elevated Work Platform* | - CCTV |
| TUV - Tunnel Wall Washing vehicle* | I External Signage |
| TRM - Trailer with ride on mower* | J Towed Vehicle Compound |
| HT - Hino 9 Tonne tipper | K Large spare parts and equipment store |
| HZM - HAZMAT Response Trailer* | L Bulky equipment/material enclosure |
| IRT - Incident Response Trailer* | MCC Motoway Control Centre |
| TU - 2 Tonne Utilities | S Southern Ventilation Facility |
| IR - Incident Response Vehicle\Tow truck | W Workshop |
| TM - Truck mounted attenuator | Y Gantry - Technical Shelter + Generator |
| CC - Portable CCTV trailer | O On Site Detention Basin |
| TT - B Triple Tow Truck | |
| F Staff and Visitor Parking | |
| * Located inside MCC Building | |

0 10 20 30 40 50m
SCALE 1:1000@A3

M1-M2-5000-DR-UD-0516
MOTORWAY OPERATIONS COMPLEX - SITE PLAN

6.0 Operational Ancillary Facilities

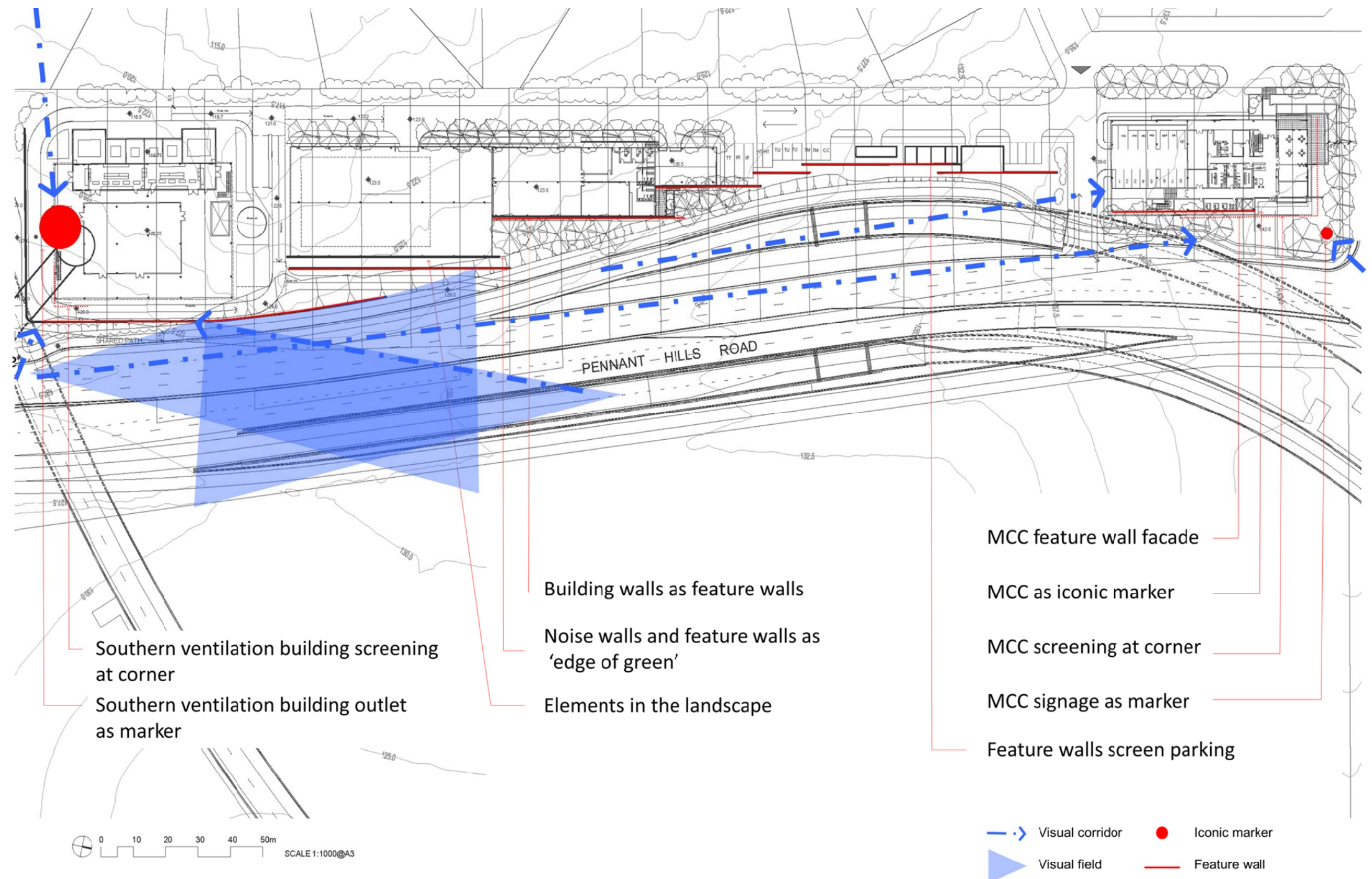
6.6.1 Development of the Motorway Operations Complex as a Series of Gateway Elements.

The motorway operations complex site has been organised to support the concept of a gateway experience at the southern end of the project where the M1 Pacific Motorway meets the Hills M2 Motorway. This gateway is composed of a number of elements in the landscape viewed sequentially as one moves through the decision process of changing from the east-west experience of the Hills M2 Motorway, to the north-south experience of the M1 Pacific Motorway or vice-versa.

The experience of the gateway is built around the arrangement of the facilities themselves, the borrowed landscape of the Golf Club. The ventilation outlet of the southern ventilation building provides a marker and references the pylon at the Motorway Control Centre (MCC) itself. The facilities between these two main structures, along with any required noise walls, form a series of feature walls along the landform and provide a background to the major landscape gesture along Pennant Hills Road, at this location.

Key principles include:

- Building on the borrowed landscape of the site;
- Locating site elements to create a collective gateway experience;
- Providing visible markers at key points; and
- Providing an experience that can be understood at highway and driver scale and speed.



M1-M2-5000-DR-UD-0502
MOTORWAY OPERATIONS COMPLEX- GATEWAY ELEMENTS

6.0 Operational Ancillary Facilities

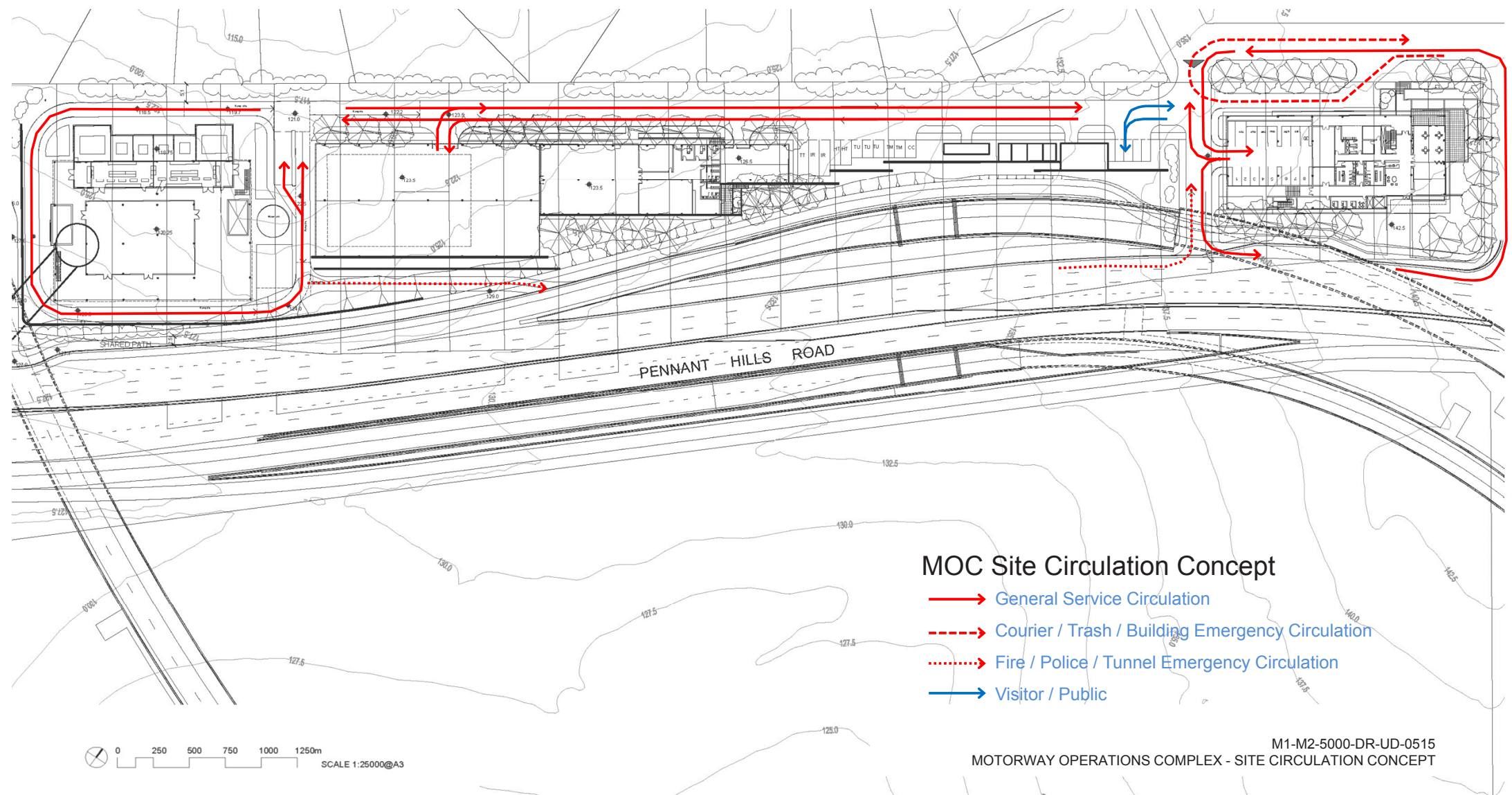
6.6.2 Circulation

Site circulation has been organised to present a legible and easy to navigate system that allows vehicular movements for a number of purposes to share the tight site safely. A spine and loop system allows for continuous movement and opportunity for recirculation within the site. Clear and direct access is provided from the site to the tunnel for emergencies.

Most vehicular movements would take place from the motorway operations complex and its associated service vehicle bays which can be made without traversing neighbourhood streets. This would also keep general traffic limited to the northern side of the site and limit the traffic using the site service road to the south, as the southern ventilation building would not require constant occupation or maintenance.

Key features:

- Two way circulation spine along the western side of the site;
- Direct emergency access to the northbound tunnel portal;
- Covered storage bays for critical equipment;
- A dedicated easy-in/easy-out courier and service bay;
- A wash bay located at the site low point to prevent overspill from running across the site;
- Public/visitor circulation limited to the northern end of the site; and
- A circulation system that limits use of adjacent residential streets.



6.0 Operational Ancillary Facilities

6.7 Motorway Control Centre

The Motorway Control Centre (MCC) is located in the northern portion of the site between Pennant Hills Road, Eaton Road. It provides a street presence and serves as a marker for the project. A pylon identifies the building from the north and serves as a marker for the Link travelling along Pennant Hills Road.

The architectural expression of the Motorway Control Centre (MCC) is intended to provide a contemporary statement, with a welcoming street presence and highlights the sustainability approach of the roadway operators.

The architecture of the building presents an open image. A solar screen surrounds the building on the east, west and north sides further adding to its lightness and texture. The screen would be illuminated, possibly by the solar array, to provide an evening glow at this visible location.

- Social functions are grouped on the ground level and face north allowing for good street presence and activation. The lunch room has a north facing outdoor area that would allow interaction with the public on occasion;
- Open office areas also face the north and would provide some liveliness and a 'normal' office atmosphere to be visible to the public, to humanise this functional facility;
- Most parking has been located beneath the building in a naturally ventilated garage to minimise its appearance and to provide a good neighbour outcome;
- Some major service vehicles are also located below the building to take advantage of the increased head heights provided by the sloping land forms;
- Mechanical spaces are located above the building in recessed floor bays to reduce visual and noise impacts;
- The roof has been configured to act as a platform for the installation of a solar panel array should that be desired by the motorway operators. This array could be used to power feature lighting for the building;
- Office outdoor amenity is provided for staff in the form of a balcony above the main entrance; and
- Finishes include GRC panels in various colours and sizes, glass walls, galvanised and aluminium screens to provide a pattern that reduces the visual bulk of the building, and can provide an artistic expression at a scale appropriate to passing drivers and the motorway itself.



NorthConnex Tunnel pylon.

Artist's Impression Only



M1-M2-5000-DR-UD-0931
MOTORWAY OPERATIONS COMPLEX - MOTORWAY CONTROL CENTRE - VIEW LOOKING SOUTH WEST FROM PENNANT HILLS ROAD

Artist's Impression Only



M1-M2-5000-DR-UD-0932
MOTORWAY OPERATIONS COMPLEX - MOTORWAY CONTROL CENTRE - VIEW LOOKING NORTHEAST FROM EATON ROAD

6.0 Operational Ancillary Facilities

MCC ARCHITECTURAL DESIGN BRIEF

| No | Room | Area | Area - Ex | Requirements |
|--|-----------------------------------|-------|-----------|--|
| OPERATIONS AND INTERNAL ZONE SECURITY GROUPING | | | | |
| 1.0 | Motorway Control Centre (MCC) | ----- | | Also refer SWTC Appendix 8 |
| 1.1 | Operations Rm | 233 | | Minimum 3 Operator workstations with space to expand to 6. Room lighting to be adjustable to 4 separate settings (manually operated lighting controller). Provide windows and\or glass doors to permit external light, with black out curtains. |
| 1.2 | Kitchenette | 10 | | Kitchenette comprising sink, 90 litre fridge, coffee machine, cupboards, microwave, dish washer, hot-cold-chilled water. |
| 1.3 | MCC Toilet | 7 | | Access direct from R1.2 |
| 2.0 | Incident Rm | ----- | | Also refer SWTC Appendix 8 |
| 2.1 | | 127 | ----- | 2.4 w x 1.8h (or similar) window to view TCR with curtains\blinds controlled from TCR and intercom communication between TCR and Incident Room. Room to have whiteboards, computer connections for 10 computers, roof mounted projector, video conferencing and screen, 4 TV monitors and DVR's with selector control for TV outlets and facilities to hang wall maps. Room will also be used for training and conference room facilities. Provide 10 x 2 person modular desk units that are moveable with lockable casters and can be arranged in horshoe, boardroom or classroom layouts. |
| 2.2 | Kitchenette | 11 | ----- | Provide kitchenette facilities including sink, fridge, coffee machine, cupboards, dish washer, hot-cold-chilled water. |
| 3.0 | Secure Incident Break Out Space | 38 | ----- | Direct access to Operations Rm |
| 4.0 | Emergency Teams Break Out Rms | ----- | | During nomal operations these rooms to be used as meeting rooms Each room to have whiteboard walls, facilities to hang wall maps,computer connections for 2 computers, roof mounted projectors and screens |
| 4.1 | Traffic Management | 14 | ----- | 6 Seats |
| 4.2 | BCP | 14 | ----- | 6 Seats + Video Conference facilities |
| 4.3 | Asset Emergency Management Team | 13 | ----- | 8 Seats + Video Conference facilities |
| 4.4 | Media | 12 | ----- | 4 Seats + facilities to record RRB messages |
| 5.0 | Offices | ----- | | |
| 5.1 | Business Mgmt | 11 | ----- | |
| 5.2 | Operations Mgr | 11 | ----- | |
| 5.3 | Asset Management Mgr | 11 | ----- | |
| 5.4 | Traffic Operations Mgr | 12 | ----- | Full Width Window to MCC |
| 5.5 | WHSE&Q | 12 | ----- | |
| 5.6 | Spare | 12 | ----- | |
| 5.7 | Traffic Operations Mgr Transurban | 18 | ----- | |
| 7.0 | Work Permit Office | 31 | ----- | Primary access NOT through Motorway Control Centre but single door connection to MCC |
| 8.0 | Computer Eqpt | ----- | | As per 'Technology' architecture with primary access NOT through Motorway Control Centre. Consider space required for 'end of life' swap out of computer systems. |
| 8.1 | MCC Computer Room | 70 | ----- | |
| 8.2 | RRB Room | 31 | ----- | |
| 8.3 | Mobile Phone Room | 67 | ----- | |
| 8.4 | UPS Room | 74 | ----- | |
| 9.0 | Office Space | ----- | | |
| 9.1 | Open Plan Work Stations | 270 | ----- | Workstations for Management team, Asset Management team, Technology, Contractors and 'hot desks'. 24 Work Stations |
| 9.2 | Break Out Area | 62 | | Open to Open Office Area |
| 9.3 | RMS Visitor Rm | 10 | | |
| 10.0 | Utilities | 32 | ----- | Photocopiers, stationary, binding, secure disposal bins, recycled paper bins, storage and bench space |
| 22.0 | Incident Response + Muster Rm | 41 | ----- | |
| 11.0 | Building security | 33 | ----- | Tronsec' swipe card and reader Building Perimeter and Internal Zoned Security System (ie MCC, Spare Parts Stores, Computer Rooms, General Office, etc) appropriate for 24/7 operations |
| Operations and Internal Security Area | | 1287 | | |