**CORE ENGINEERING**

CONSULTANT ADVICE

# Fire Engineering Strategy

## Bowral Bricks Plant | Site 2 | 416 Berrima Road, New Berrima

Preliminary | 16 April 2020

Core Engineering Group

Safety • Integrity • Trust

Fire • Risk • Emergency Management

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# The Development

**Site Plan**

- The new Bowral Bricks Plant site No. 2 is proposed to be located in Chesley Park, New Berrima
- Site No. 2 is part of a new development area adjacent to Site 1 where a masonry plant is proposed under a separate Development Application
- Vehicular access to the site is via an estate access road off Berrima Road
- The two nearest fire stations with retained staff are Moss Vale and Bowral, located 5.8km and 13.5km from the site respectively

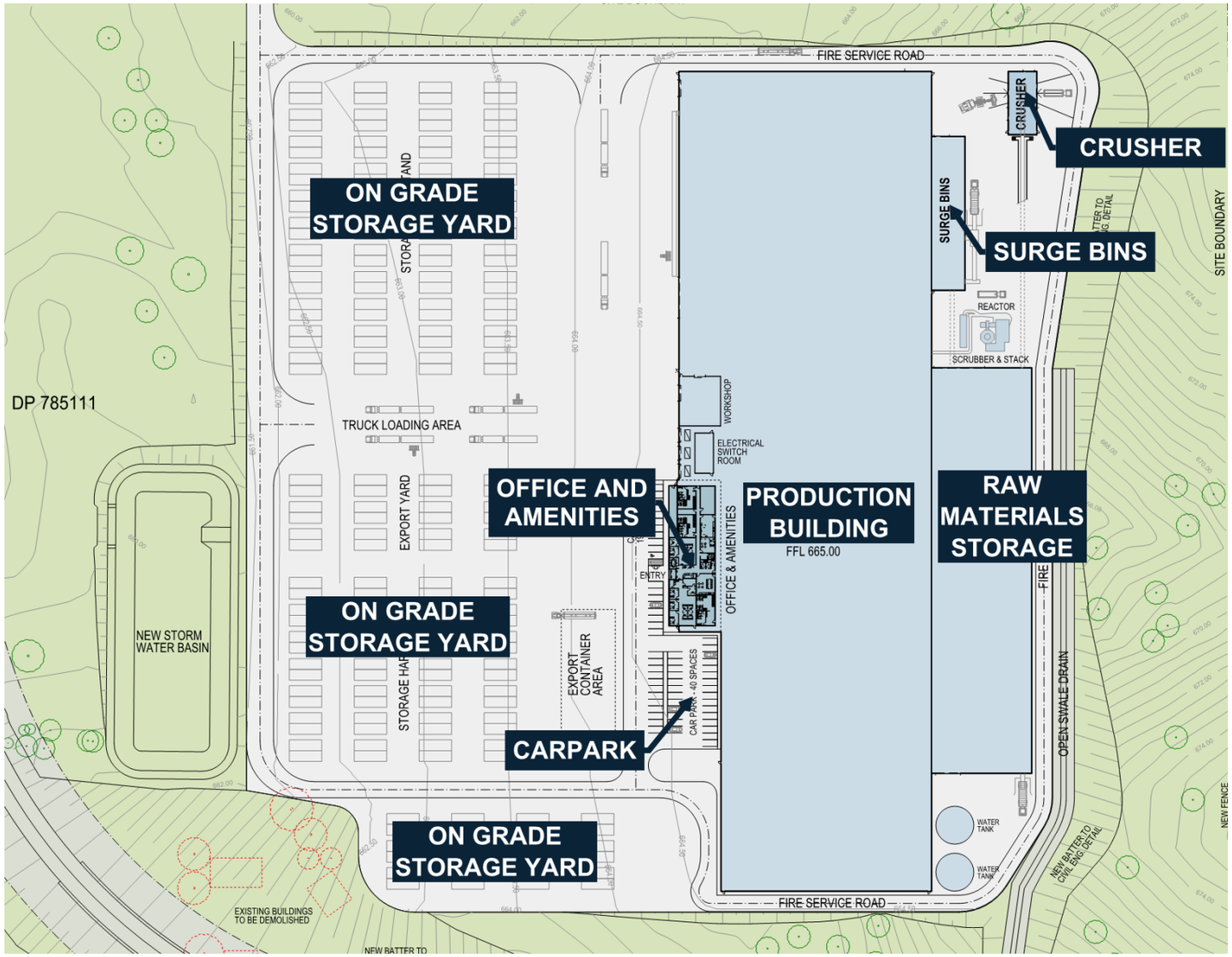
# The Development

**Summary of Use**

- Bowral Bricks Plant for the dry press production of bricks
- The plant will operate with a reduction kiln

**Site Inclusions**

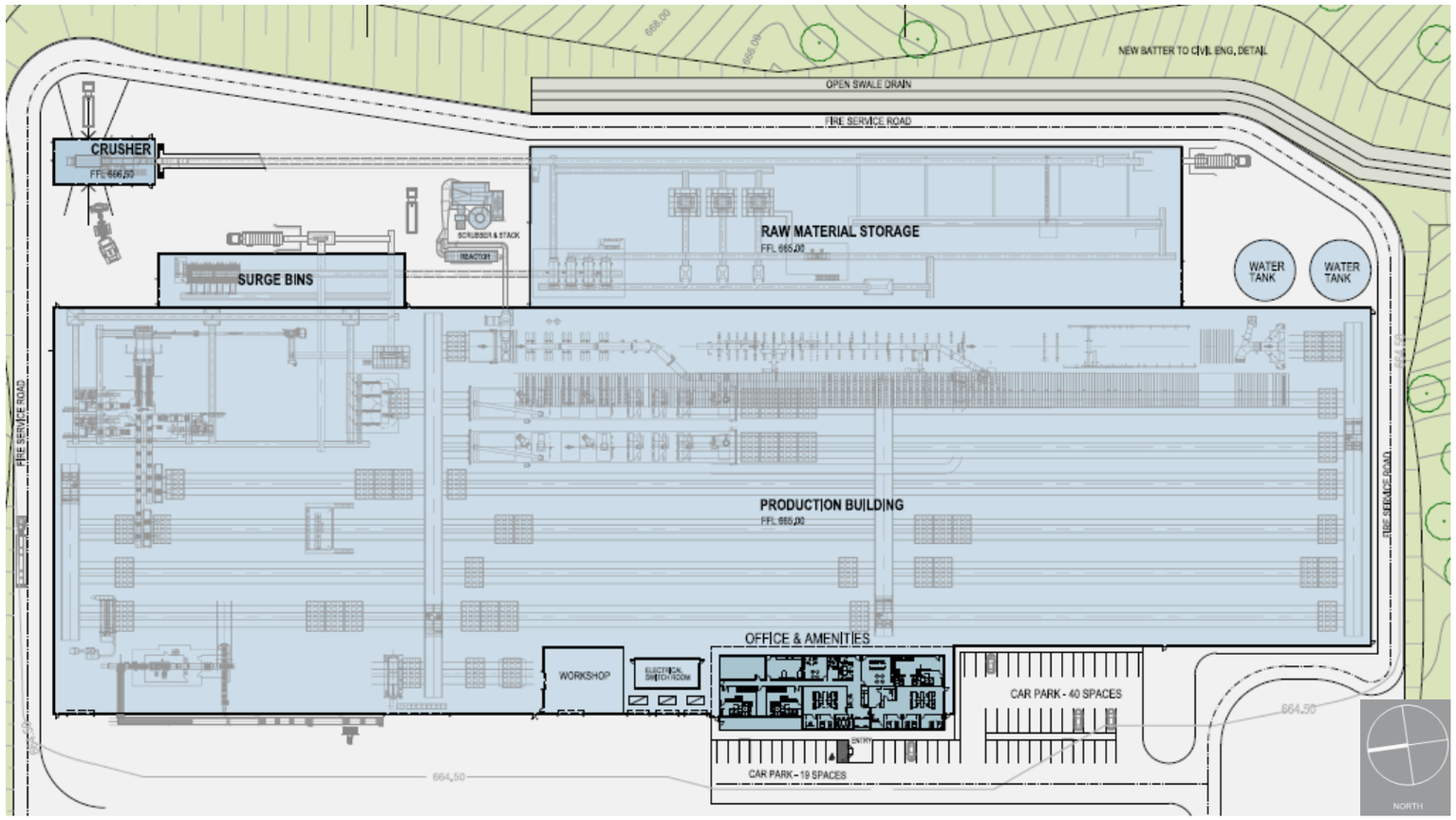
- Single production building with office, surge bins and raw materials storage
- On grade storage yard
- On grade carpark

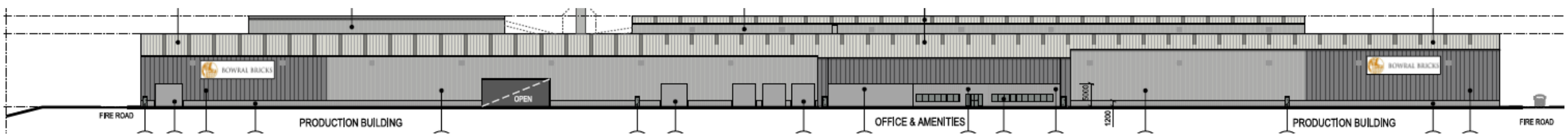


# The Development

**BCA Characteristics**

- Single storey building
- Large-Isolated Building
- Type C Construction
- Effective height less than 12m
- Class 5 (Office), Class 7b (Warehouse) and Class 8 (Production building)
- Floor Area (Approximate)
  - Production Building: 26,000m²
  - Office and amenities: 880m²
  - Raw Material Storage: 5,500m²
  - Total: 32,380m²



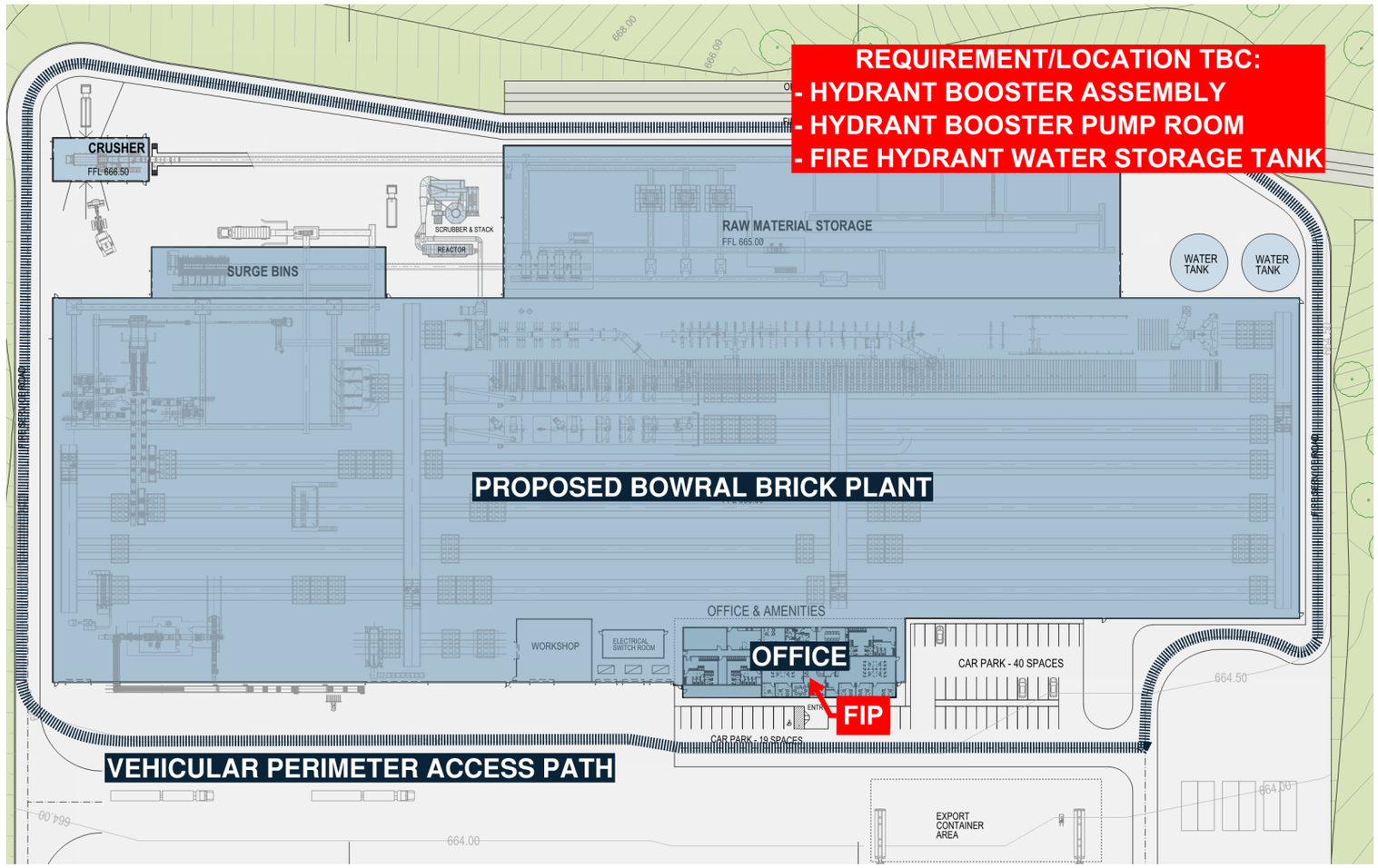




**Western Elevation**

# Site Fire Services

**Proposed Locations**

- Fire Control Centre with Fire Indicator Panel located in office foyer
- The location of the following fire services is TBC:
  - Hydrant booster assembly
  - Hydrant booster pump
  - Hydrant water tank storage



# Performance Solution Proposed

## BCA DtS Provision C2.4 – Requirements for Vehicular Access

### DtS Requirement

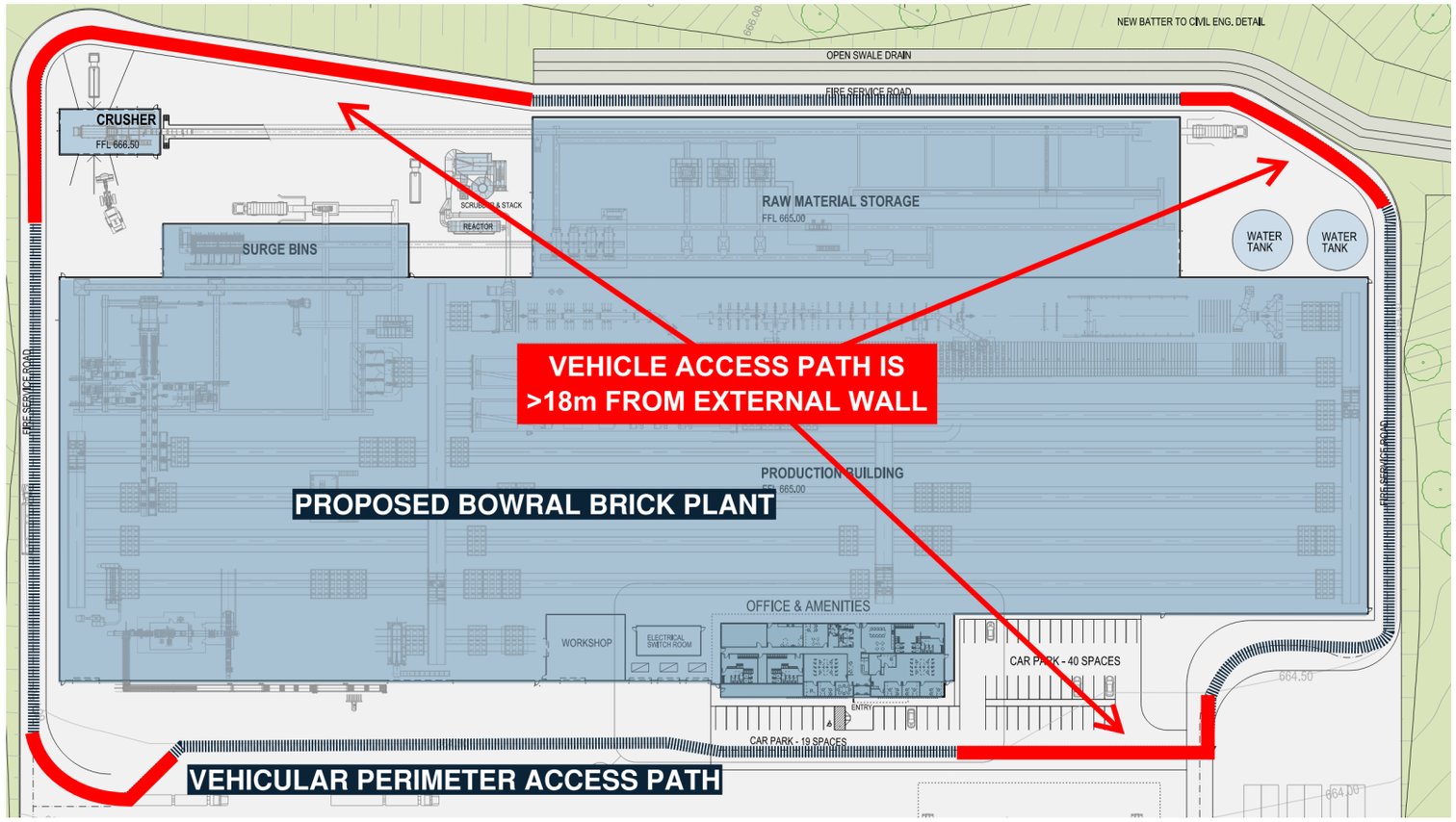
- Perimeter access path, 6m wide, continuous around the building

### Non-compliance

- Road extends greater than 18m from building in parts

### Proposed measures

- Sealed perimeter access path to be provided around the building
- Load-bearing capacity and swept paths to be in accordance with FRNSW guideline
- External hydrant system provided, access from perimeter access path



# Performance Solution Proposed

## BCA DtS Provision D1.4/D1.5/E2.2 – Exit travel distances and Smoke Hazard Management

**DtS Requirement**

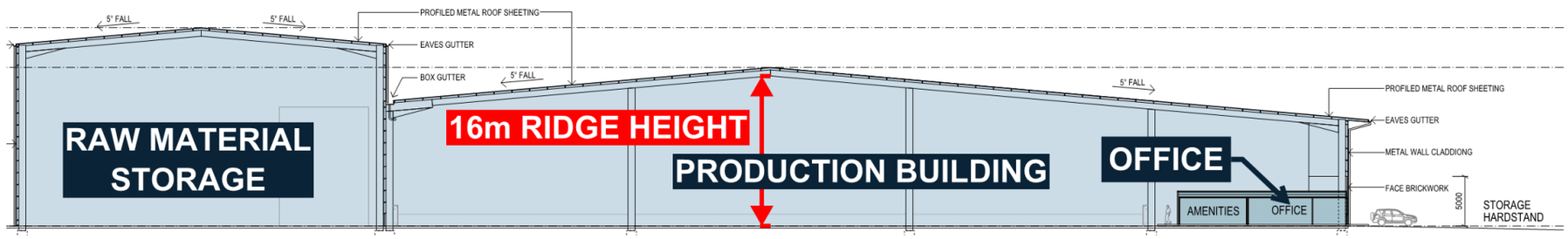
- Up to 40m travel distance to the nearest exit
- Up to 60m travel distance between alternative exits
- An automatic smoke exhaust system is required as the building volume exceeds 108 000 $m^3$

**Non-compliance**

- Up to 80m travel distance to the nearest exit and 160m between exits
- No smoke exhaust proposed

**Proposed measures**

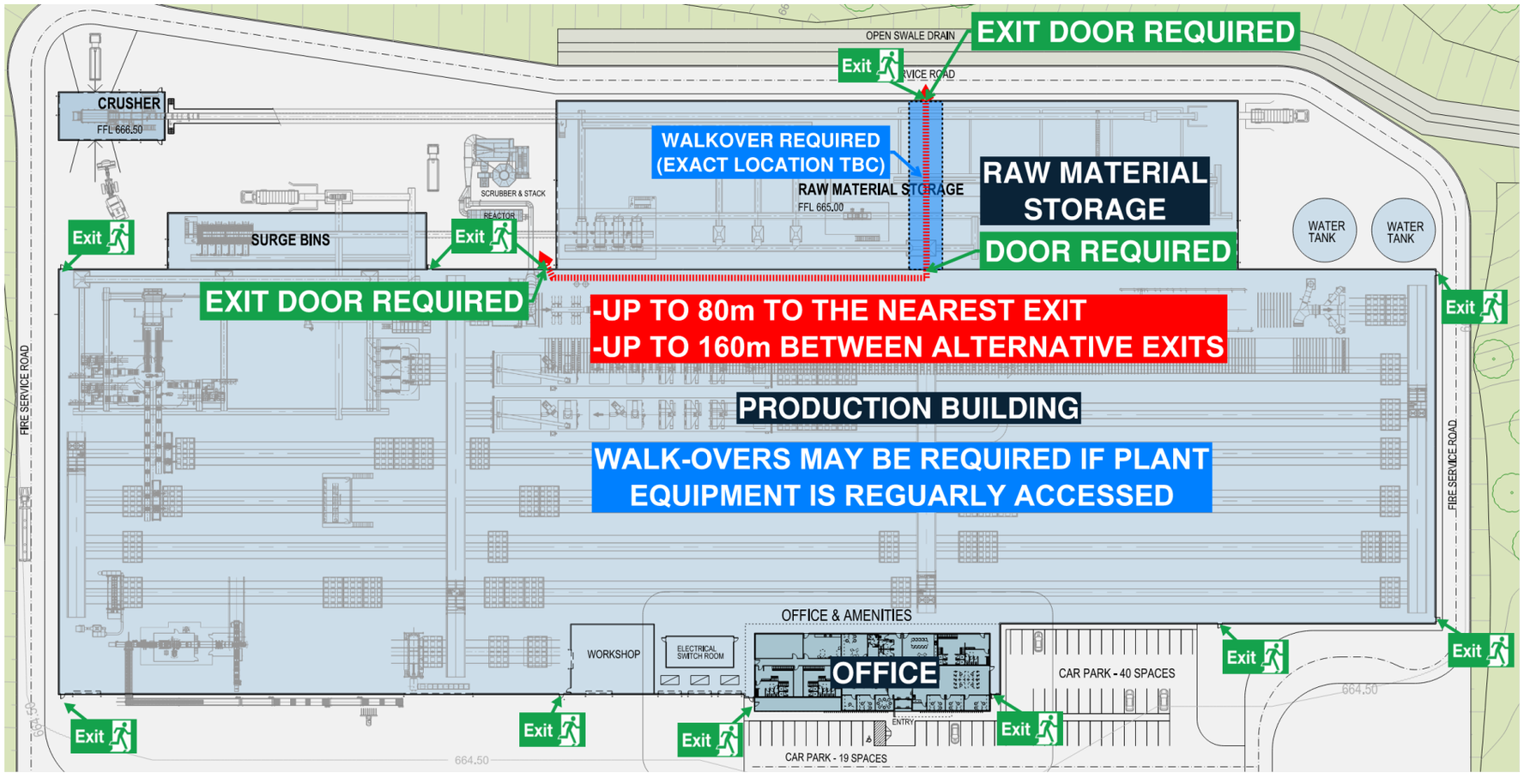
- Occupant warning initiated by thermal fire detection suitable for industrial applications and manual call points as a redundancy measure (TBC)
- Low occupancy and trained personnel
- Minimal combustible materials to limit fire size (TBC)
- Large smoke reservoir (~16m ridge height) to extend period of tenability



# Performance Solution Proposed

## BCA DtS Provision D1.4/D1.5/E2.2 – Exit travel distances and Smoke Hazard Management

- To reduce travel distances from within the production building walk-overs may be required. Locations of walk-overs are to be coordinated with final exit door locations to reduce travel distances
- If platforms, walkways, stairways and ladders in accordance with AS1657 are proposed to serve areas other than machinery rooms or plant rooms a Performance Solution will be required



# Performance Solution Proposed

**BCA DtS Provision E1.5 – Fire Sprinkler System**

**DtS Requirement**

- Fire sprinkler system required to be installed throughout the large isolated building

**Non-compliance**

- No sprinkler protection proposed

**Proposed measures**

- Low occupancy and trained personnel
- Minimal combustible materials to limit fire size (TBC)
- Vehicular perimeter access path
- Provision of external hydrant system, with ring main
- Building occupant warning, activated by thermal fire detection suitable for industrial applications and manual call points as a redundancy measure (TBC)
- Minimal combustible materials stored within 18m of the facility (drawing equivalence to precedent set by open space requirements of Provisions C2.3/C2.4 of the BCA)

# Fire Safety Systems

| FIRE SAFETY MEASURE | DtS REQUIREMENT | PROPOSED DESIGN / PERFORMANCE SOLUTION |
|---|---|---|
| Fire hydrants | AS2419.1:2005 | Installation to include ring main. Where internal hydrants are required, FRNSW progressive coverage required (50m / 25m) to be incorporated |
| Fire hose reels<br>*FHRs not required in Class 5 Office* | AS2441:2005 | To be provided as per DtS requirements |
| Fire sprinklers | E1.5, AS2118.1:2017 | No sprinklers (Performance Solution) |
| Portable fire extinguishers | AS2444:2001 | To be provided as per DtS requirements |
| Smoke hazard management | Specification E2.2b | No exhaust (Performance Solution) |
| Fire Control Centre | E1.8, FCC required as floor area >18, 000 m² | FIP at office main entrance, AS1670.1:2018 |

# Fire Safety Systems

| FIRE SAFETY MEASURE | DtS REQUIREMENT | PROPOSED DESIGN / PERFORMANCE SOLUTION |
|---|---|---|
| Fire detection | Spec E2.2a, AS1670.1:2018 | • Linear heat detection cable throughout Production Building (Section 4.2 of AS1670.1:2018)<br>• Smoke detectors shall be provided to the Office<br>• Manual Call Points shall be provided at major exits and production control locations (TBC) |
| Building occupant warning system, activated by the fire sprinkler system | BCA spec E1.5 and Clause 3.22 AS1670.1:2018 | • To be provided |
| Exit signage | AS2293.1:2018 | • To be provided |
| Emergency lighting | AS2293.1:2018 | • To be provided |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