

The Crest, Lot 100 Meatworks Avenue, Oxford Falls Proposed Industrial Development (Stage 2) Construction Traffic Management Plan

Ref: 19179
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Issue: A

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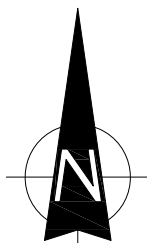
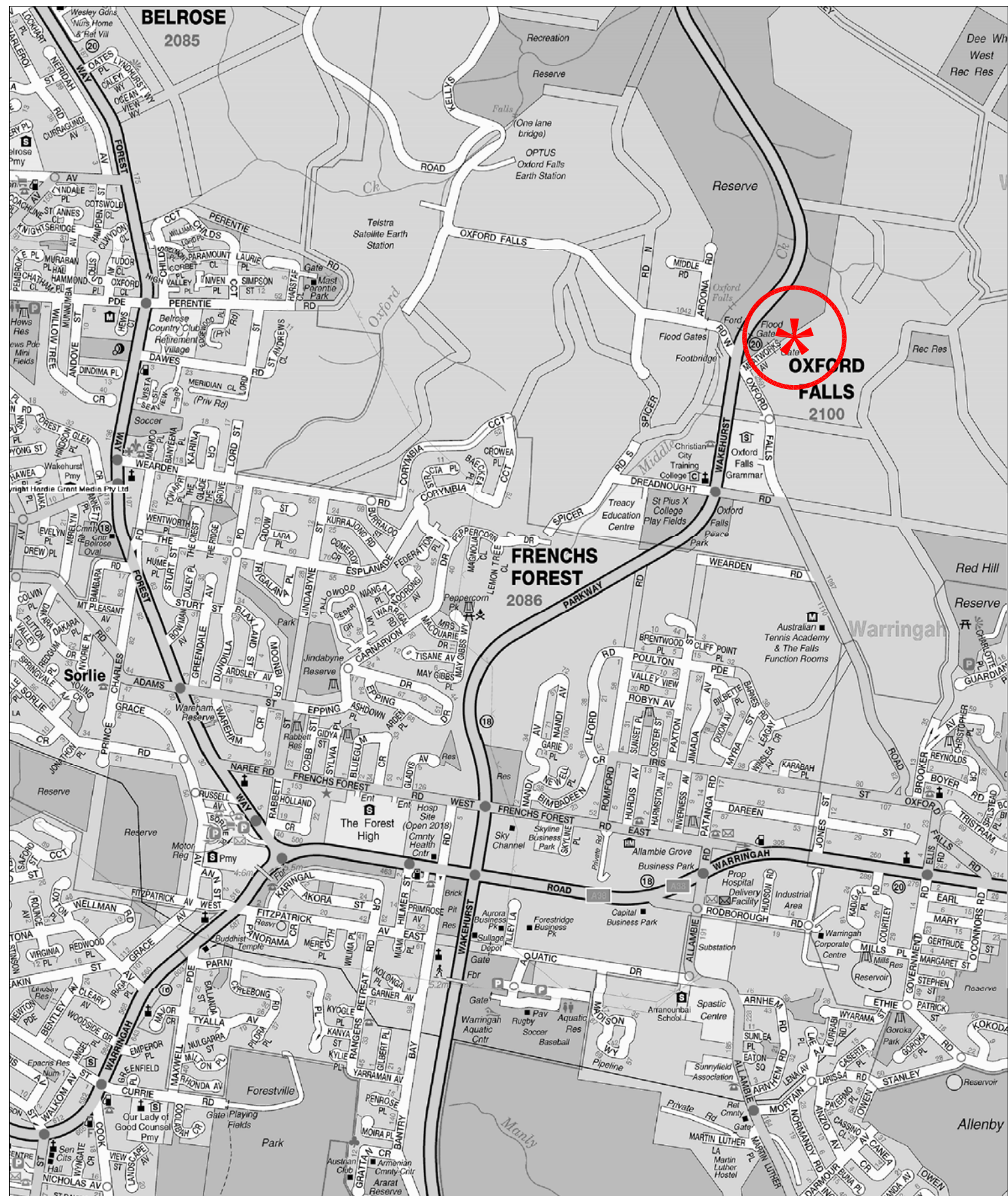
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1.0 Introduction

This Construction Traffic Management Plan (CTMP) has been prepared to accompany a Development Application to Northern Beaches Council for the proposed industrial development (Stage 2) of the Industrial Estate on a site at Lot 100, Meatworks Avenue, Oxford Falls (Figure 1). The site is located to the south of the Stage 1 development which is currently under construction.

The proposed development scheme involves the construction of:

- 13 industrial units with a total of some 2,318m²
- a commercial/industrial building of some 1,433m²
- an ancillary building of some 398m²
- vehicle access through the Stage 1 area.



LOCATION

FIG 1

2.0 Proposed Development

2.1 Site, Context and Existing Use

The development site (Figure 2) is a consolidation of Lot 100 - DP 102318, Part Lot 1046 - DP 752038, Part Lot 1047 - DP 752038 Part Lot 1053 DP 752038, which occupies an irregular shaped area of 18,525.73m².

The site is located at the north eastern end of Meatworks Avenue, which comprises a cul-de-sac of 150 metres in length and intersects with Oxford Falls Road. The site is bounded on all sides by wooded bushlands. The Oxford Falls Grammar School is located 400m to the southwest of the site on Oxford Falls Road while the C3 Church is located 700m to the southwest of the site on the western side of the Wakehurst Parkway.

The Stage 1 development on the site comprises:

- * 7 new buildings accommodating a total of 30 small industrial units with each unit will include a loading door and external standing area for service vehicles.
- * Vehicle access via a circulation roadway
- * parking will be located throughout the site in close proximity to the related unit.

Details of the approved Stage 1 development are provided on the plans prepared by Gelder Architects and are reproduced in part in Appendix A.

2.2 Proposed Development Scheme

It is proposed to demolish the existing structures and construct 3 new buildings comprising:

| | |
|--------------------------------|-----------------------|
| Commercial/Industrial Building | 1422.86m ² |
| Ancillary Building | 364.71m ² |

13 industrial units (total of 2,317.93m²) with the following breakdown:

- | | |
|---------------------------------|---------------------------------|
| - Unit 30: 152.38m ² | - Unit 37: 120.13m ² |
| - Unit 31: 151.43m ² | - Unit 38: 120.13m ² |
| - Unit 32: 151.43m ² | - Unit 39: 120.82m ² |
| - Unit 33: 151.43m ² | - Unit 40: 397.78m ² |
| - Unit 34: 152.13m ² | - Unit 41: 278.69m ² |
| - Unit 35: 120.58m ² | - Unit 42: 280.87m ² |
| - Unit 36: 120.13m ² | |

The overall floor area of the Stage 2 development equates to 4,105.50m²

Parking will be provided on 3 levels comprising:

| | |
|---------------------|---|
| Ground | 8 on-grade spaces + 37 covered spaces |
| Ground (Mezzanine) | 48 spaces (including 2 accessible spaces) |
| Level 1 (Mezzanine) | 18 spaces |
| Total: | 111 spaces (including 2 accessible spaces) |

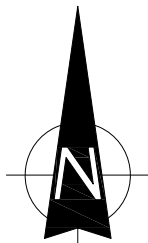
It is proposed to provide 2 combined ingress/egress driveways on the proposed service road to be constructed as part of Stage 1 development.

Details of the proposed Stage 2 development are provided on the plans prepared by Gelder Architects which accompany the application and are reproduced in part in Appendix B.

2.3 Construction Program

A process has been established for completion of the various work processes as follows:

| | |
|--------------------------|-----------|
| Early Works & Excavation | 2 months |
| Construction | 24 months |
| Fitout | 6 months |



SITE

FIG 2

Total:

32 months

2.4 Construction Process

EARLY WORKS & EXCAVATION

The proposed early works construction activities will include the site clearing and excavation to prepare for the construction of the three 3-storey buildings and carparks. The early works will be proceeded by the erection of A-Class perimeter fencing with gates provided at the northern frontage of the site along the proposed service road to be constructed as part of Stage 1 development off Meatworks Avenue. The site clearing/excavation process will take 2 months to complete and will involve minor excavation for a new level building platform using up to 8.8m medium rigid vehicles (MRVs). All excavated materials will be removed from the site.

The truck activity associated with this process will average some 30 visitations a day and trucks will enter and exit the site in a forward direction via the proposed Stage 1 service road under the management of a traffic controller.

The number of workers on-site will be some 10 – 15 persons. Limited on-site car parking spaces will be provided within the site and all workers will be encouraged to carpool. A tool drop-off and storage facility will be provided within the site. This would allow tradespeople to drop-off and store their tools and machinery, allowing them to carpool on a daily basis. Workers will also be informed of the appropriate tool/equipment drop-off and storage arrangements made within site sheds and amenities provided on site.

CONSTRUCTION

The construction phase will be the process of longest duration (approximately 24 months) and at peak, activity involve in the order of 40 – 50 people on the site any one time. While the activity on the site will be more intense during this period, the movement of heavy vehicles will reduce to an average of around 5 – 8 visitations per day with more during concrete pours. A maximum number of concrete trucks per day

on the busiest concrete pour day will include some 8 to 12 concrete trucks. This equates to some 16 to 24 truck movements (two-way) per day.

Limited on-site car parking spaces will be provided within the site, however, once the carpark levels are built (and when construction activity is at its most intensive), up to 111 worker parking may be available in the on-site car parking levels. Notwithstanding this provision, the workers will continue to be encouraged to car pool whenever possible.

The largest trucks associated with the construction process will be 8.8m MRVs. The provision for loading/unloading for this process will involve truck standing along the northern frontage of the building with all materials be unloaded and stored within the site to the west of the building.

FITOUT

The fitout process will take up to 6 months and will involve up to 20-30 persons on the site at any one time. While the number of workers is high on site during this period, the predominant workers are comprised of tradespersons arriving/departing with their respective specialist trade utility vehicles (i.e., utes or vans). Truck visitation will only be very minor generally involving white goods deliveries and is anticipated to be some 4 – 6 visitations per day. Deliveries of goods during this period will generally involve small to medium rigid trucks of up to 8.8 metres long. Tradespersons' vehicles will be parked inside the completed carpark at this stage. Unloading will occur on the northern side of the building or in the on-site car parking area.

3.0 Existing Road Network and Traffic Conditions

3.1 Road Network

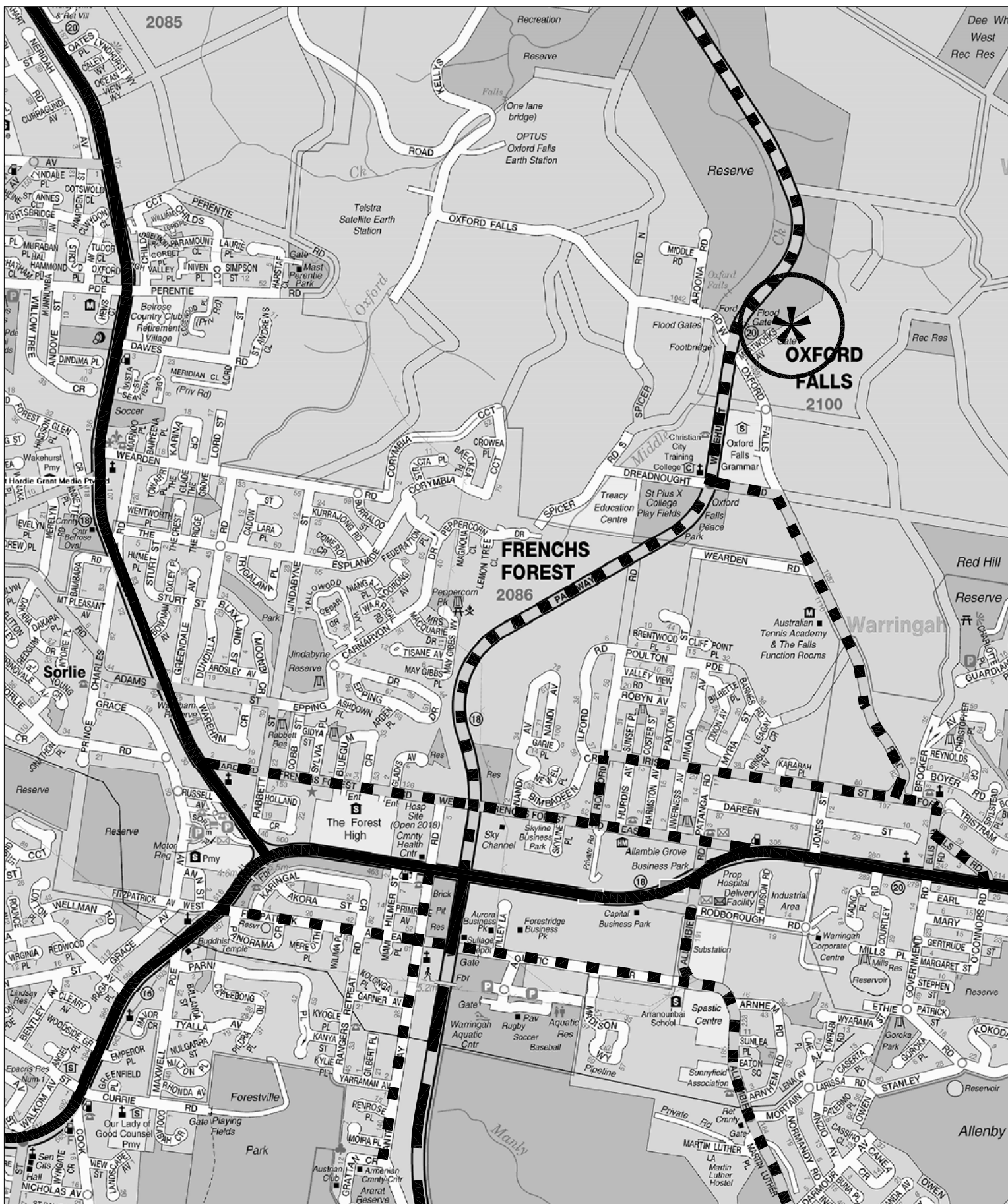
The road network serving the site (Figure 3) comprises:

- ❖ *Wakehurst Parkway* – a 2-lane carriageway State Road and arterial/sub-arterial route connecting between Pittwater Road at Narrabeen and Sydney Road at Balgowlah. Wakehurst Parkway provides an alternative to Pittwater Road for motorists travelling between the northwest (e.g. Chatswood) and the peninsular.
- ❖ *Warringah Road* – a State Road and arterial route connecting between Pittwater Road at Brookvale and across Roseville Bridge to Eastern Valley Way and Pacific Highway via Boundary Road
- ❖ *Pittwater Road* – a State Road and sub-arterial route running along the northern beaches peninsular connecting between North Sydney (as Military Road) and Palm Beach
- ❖ *Oxford Falls Road* – a local road and provides a connection between Beacon Hill and Oxford Falls, intersecting Wakehurst Parkway via Dreadnaught Road and a traffic signal-controlled intersection.
- ❖ *Meatworks Avenue* – a local cul-de-sac, having a length of 150 metres, which connects between the northern end of Oxford Falls Road and the site. Meatworks Avenue currently provides access to the site only.




3.2 Traffic Controls

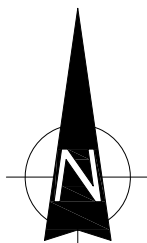
The existing traffic controls, which have been applied to the road system serving the site (Figure 4) comprise:

- ❖ the traffic signals at the intersection of Wakehurst Parkway/Dreadnought Road
- ❖ the roundabout at Oxford Falls Road/Oxford Falls Grammar School access



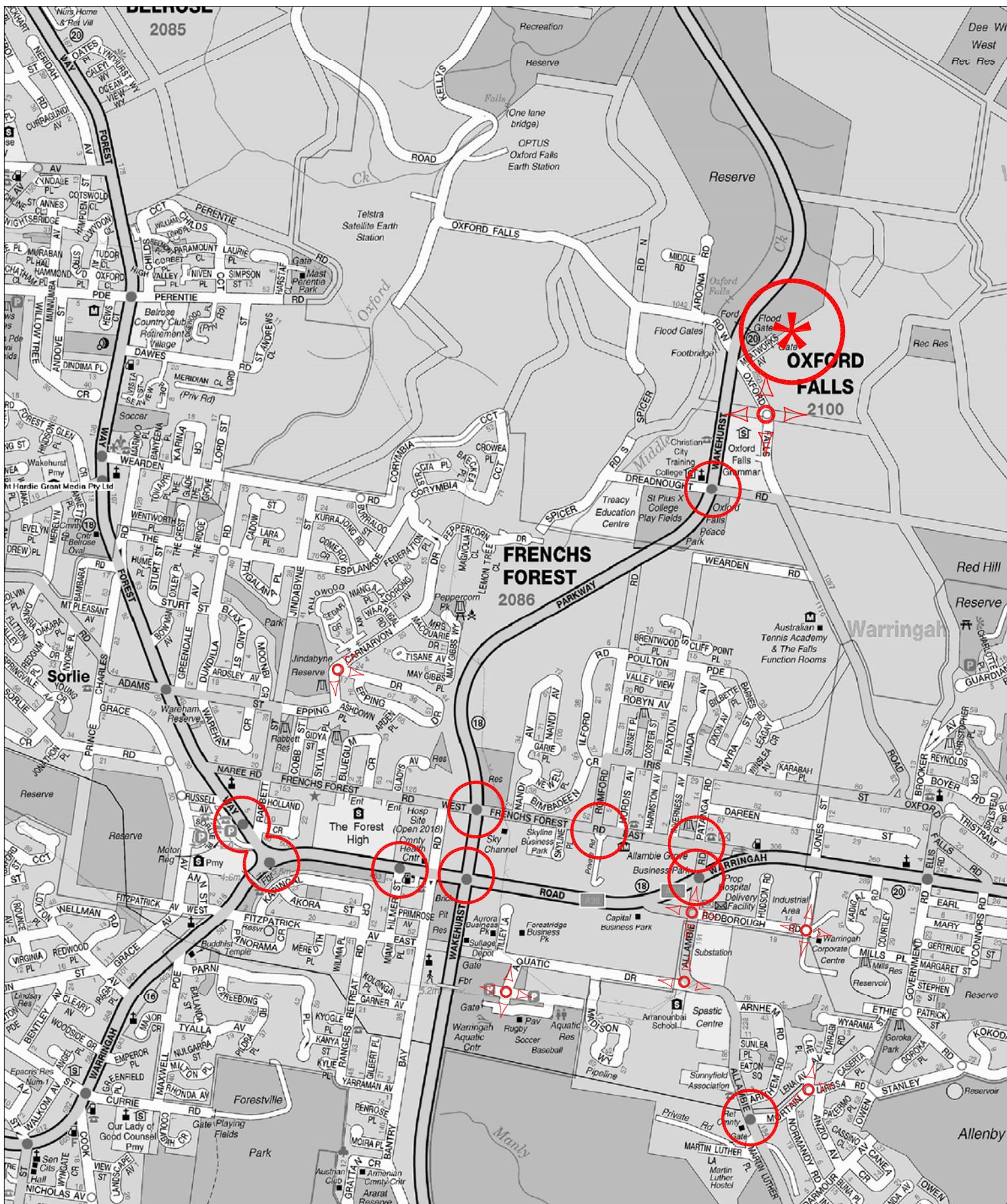
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-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR





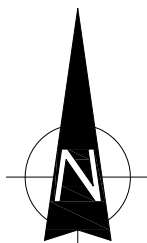
ROAD NETWORK

FIG 3



LEGEND

-  TRAFFIC SIGNAL CONTROL
-  ROUNDABOUT



TRAFFIC CONTROLS

FIG 4

- ❖ give-way intersections of:
 - Oxford Falls Road/Dreadnought Road
 - Oxford Falls Road/Iris Street
 - Spicer Road/Dreadnought Road
- ❖ the 80 kmph speed restriction on Wakehurst Parkway and 50 kmph speed restriction on the local and collector roads
- ❖ the 40 kmph school zone on Dreadnought Road and Oxford Falls Road

3.3 Traffic Conditions

An indication of traffic conditions on the road system serving the area is provided by surveys undertaken as part of the study. Traffic surveys have been undertaken at the Wakehurst Parkway/Dreadnought Road intersection during the AM and PM peak periods on Tuesday, 27 August 2019.

The operational performance of intersection of Wakehurst Parkway/Dreadnought Road has been assessed using SIDRA and the results indicating satisfactory performances are provided in Appendix C and summarised in the following, while the criteria for interpreting the results are reproduced overleaf:

| AM Peak | | PM Peak | |
|---------|-------|---------|-------|
| LOS | AVD | LOS | AVD |
| C | 37.7s | D | 54.4s |

The results of the SIDRA assessments indicate that the intersection operates at acceptable LOS D or better during the AM and PM peak periods.

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

| LOS | Traffic Signals and Roundabouts | Give Way and Stop Signs |
|-----|---|--|
| 'A' | Good | Good |
| 'B' | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| 'C' | Satisfactory | Satisfactory but accident study required |
| 'D' | Operating near capacity | Near capacity and Accident Study required |
| 'E' | At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode | At capacity and requires other control mode |
| 'F' | Unsatisfactory and requires additional capacity | Unsatisfactory and requires other control mode |

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

| Level of Service | Average Delay per Vehicle (secs/veh) | Traffic Signals, Roundabouts | Give Way and Stop Signs |
|------------------|--------------------------------------|---|---|
| A | Less than 14 | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| C | 29 to 42 | Satisfactory | Satisfactory but accident study required |
| D | 43 to 56 | Operating near capacity | Near capacity and accident study required |
| E | 57 to 70 | At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode | At capacity and requires other control mode |

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**¹ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

¹ the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

4.0 Proposed Construction Traffic Management Plan

4.1 Construction Vehicle Route

Truck movements associated with the construction and fitout processes will approach and depart the site via Meatworks Avenue. The construction vehicles in relation to excavation material, storage, building materials, cranes, concrete trucks, delivery vehicles, etc. will utilise an existing service road off Meatworks Avenue. The truck routes are illustrated in Figure 5.

Details of vehicle access at the site showing access and egress for an 8.8m long MRV are provided in Appendix D. Traffic controllers will be in place at the site entry/exit points to control heavy vehicle movements in order to maintain the safety of all road users and pedestrians.

4.2 Truck Movements

The envisaged truck arrivals will be:

| | |
|--------------------------|--|
| Early Works & Excavation | Up to 30 per day |
| Construction | 5 – 8 per day (8 – 12 per day during concrete pours) |
| Fitout | 4 – 6 per day |

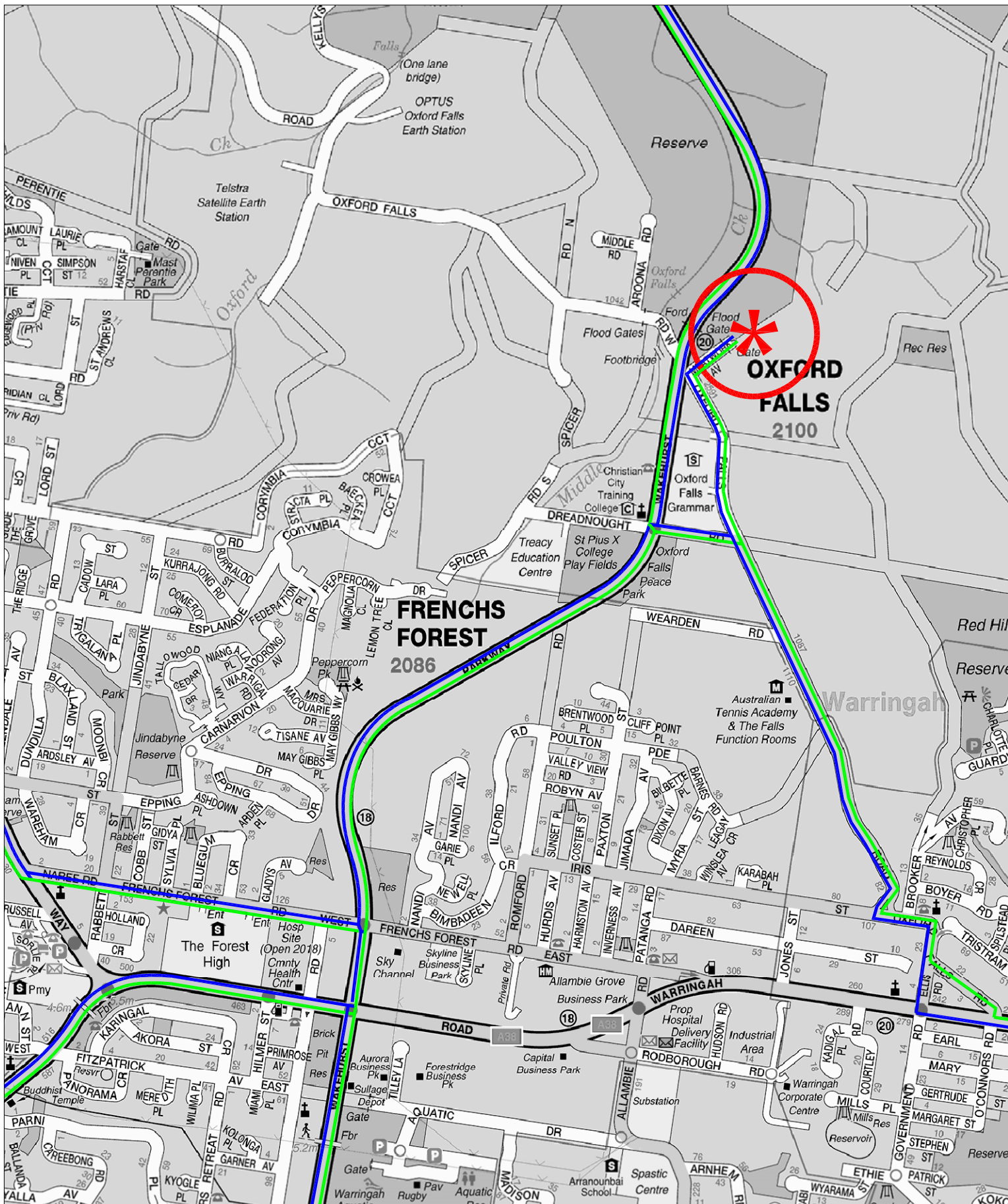
4.3 Construction Hours

The approved hours of construction activity will be:

| | |
|------------------|------------------|
| 7.00am – 5.00pm | Monday to Friday |
| 8.00am – 12.00pm | Saturday |

4.4 Works Zone

Works zone will not be required as part of the construction process. All loading/unloading will occur on the site. Cranes and concrete pumps will also be



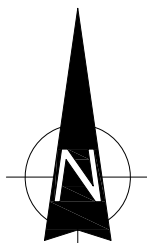
LEGEND



ARRIVAL



DEPARTURE



TRUCK ROUTES

FIG 5

positioned within the site.

4.5 Cranage and Materials Handling

All construction materials will be transported and stored using a mobile crane on-site. Forklifts or trolleys will be used to load/unload light materials.

4.6 Site Induction

All workers and visitors on the site will be subject to a formal 'site induction' process and all the inductions will be performed specifically to each trade according to Workcover OH&S requirements.

4.7 Traffic Guidance Scheme

The TGS presents the principles of traffic management, with the detailed information for work site operations is contained in the Roads and Maritime Services Traffic Control at Work Sites Technical Manual Version 5.0 dated 27 July 2018. The control of traffic at work sites must be undertaken with reference to WorkCover requirements and the contractor's Workplace Health and Safety Manuals. The TGS prepared by a Certified Traffic Controller (under RMS regulations) in accordance with Australian Standards 1742.3, is provided in Appendix E.

4.8 Pedestrian Management

RMS accredited traffic controllers shall supervise all vehicle and materials movements into and out of the site at all times.

4.9 Spoil Management

To ensure that soil/excavated material is not transported on wheels or tracks of vehicles or plant and deposited on surrounding roadways, wheel wash station will be positioned at all entry/exit points.

4.10 Road Serviceability

The contractor will be responsible for ensuring that the roads and footpaths along the service road remain in clean and serviceable states during the course of the construction.

4.11 Traffic Management Plan

The principle elements of the traffic management plan (Figure 6) are:

- * Vehicle access point
- * A Class fencing and gate
- * Rubbish & recycling bins
- * Materials handling and storage areas
- * Sheds and amenities
- * Mobile crane/truck standing/loading area
- * Accredited traffic controllers/site personnel

4.12 Public Notification

The contractor would prepare notification letters, under the approval of Council, that would be dropped and emailed to adjoining property owners, to advise of the timeframes for completion of each phase of the development/construction process. The notification will be provided a minimum of 14 days prior to the implementation of any temporary traffic control measure.

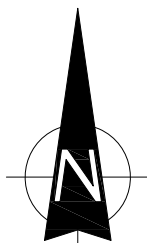
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SITE BOUNDARY & A CLASS HOARDING

LOADING AREA/VEHICLE
STANDING AREA

SITE ACCESS (GATE)
ACCREDITED TRAFFIC
CONTROLLER/ SITE PERSONNEL



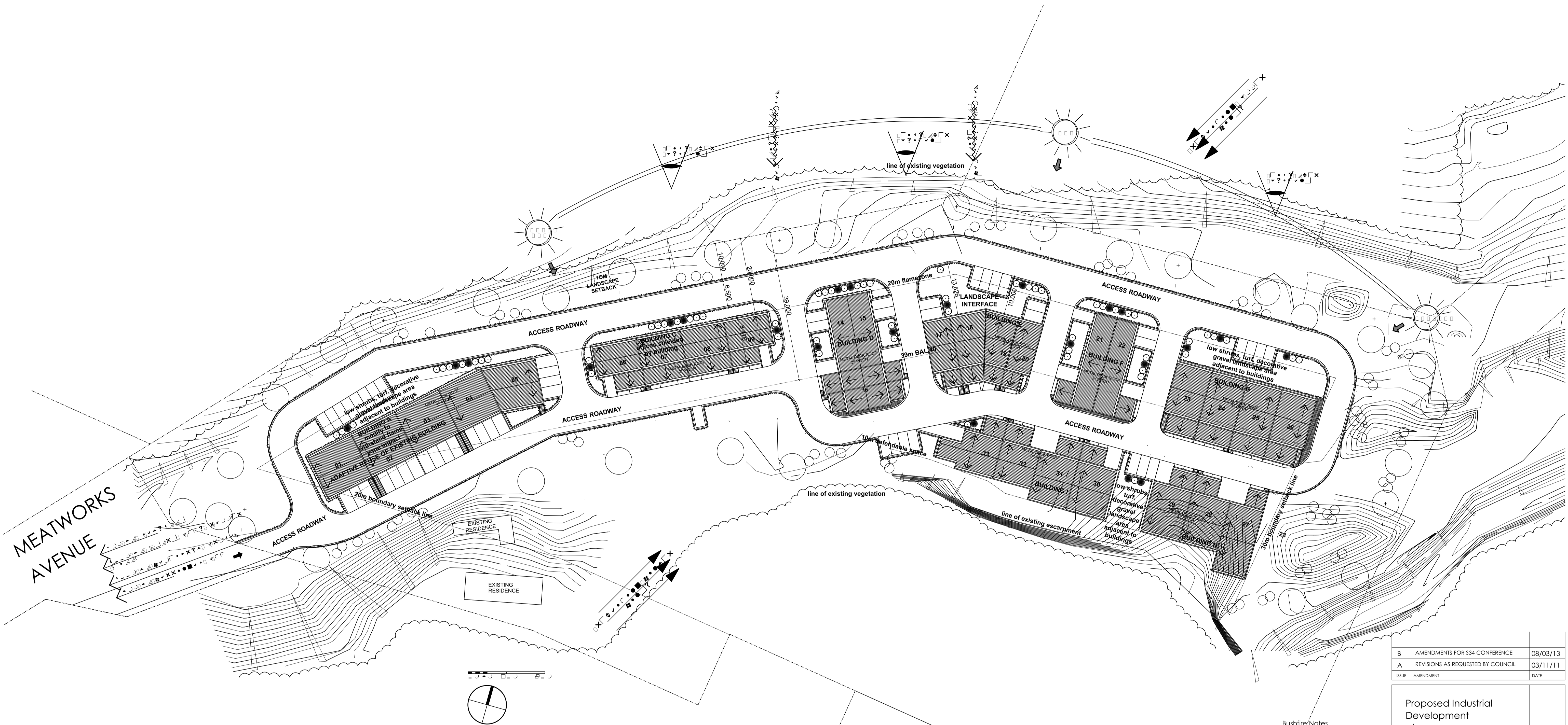
TRAFFIC MANAGEMENT PLAN

FIG 6

Appendix A

Approved Stage 1 Architectural Plans





Bushfire Notes
All work to comply with the Building Code Of Australia.
All work to comply with Australian Standard 3959 2009.
All parts of the existing buildings to be converted and located within BAL FZ shall comply with AS 3959 Section 9 (within 30m).
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Floors (BAL FZ)
Concrete slabs on ground shall comply with AS 3959 Section 9.3.1.
Elevated floors (first floors) to comply with AS 3959 Section 9.3.2.1 for enclosed floors.
Elevated floors (first floors) to comply with AS 3959 Section 9.3.2.2 part (a-d) for unenclosed subfloor spaces.
External Walls (BAL FZ)
Exposed components of external walls shall comply AS 3959 Section 9.4.
External Glazed Elements and Assemblies and External Doors (BAL FZ)
Bushfire shutters and screens for windows and doors to comply with AS 3959 Sections 8.5.1 & 8.5.1A.
Windows, doors and openings in the building to comply with AS 3959 Section 9.5.2, 9.5.3, 9.5.4 & 9.5.5.
Roofs (BAL FZ)
Construction of roofs to comply with AS 3959 Section 9.6.
Steps, Ramps & Landings (BAL FZ)
Construction of steps, ramps & landings to comply with AS 3959 Section 9.7.
All parts of the building located in BAL 40 shall comply with AS 3959 Section 6 (more than 30m).
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| | | | |
|-------|-----------|-----------------------------------|----------|
| B | | AMENDMENTS FOR S34 CONFERENCE | 08/03/13 |
| A | | REVISIONS AS REQUESTED BY COUNCIL | 03/11/11 |
| ISSUE | AMENDMENT | | DATE |

Proposed Industrial Development at Meatworks Avenue Oxford Falls 2100 for Mr K Edwards

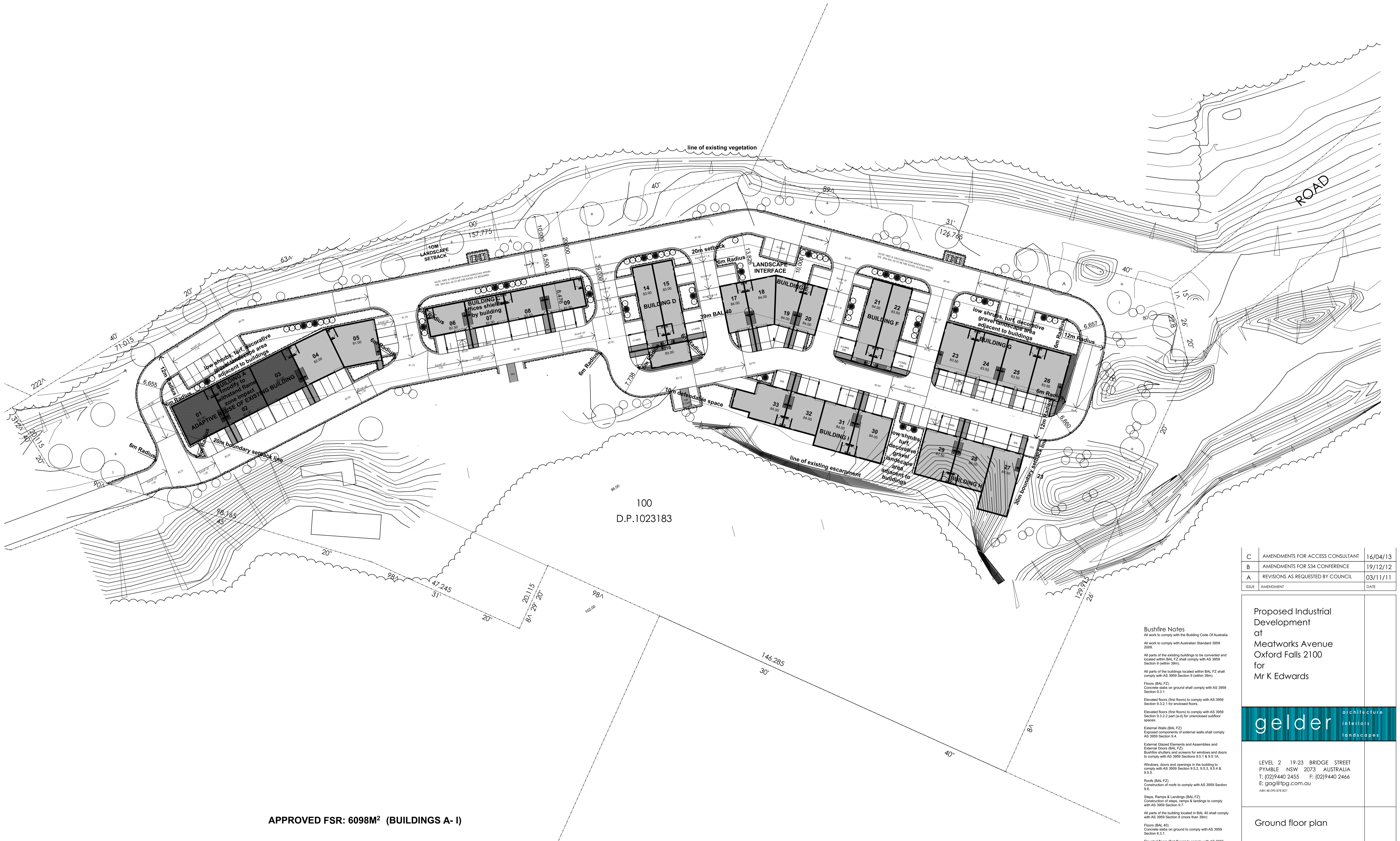
gelder architecture interiors landscapes

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Site Analysis/Roof Plan

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| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA01 | B |
| Date Plotted: 4/09/2017 | | |



APPROVED FSR: 6098M² (BUILDINGS A- I)

PROPOSED FSR (BUILDINGS J-M) TOTAL 2766 m²

PROPOSED SECTION 96 FSR + 6098M² TOTAL 8864m²

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| | | |
|-------|-----------------------------------|----------|
| C | AMENDMENTS FOR ACCESS CONSULTANT | 16/04/13 |
| B | AMENDMENTS FOR S34 CONFERENCE | 19/12/12 |
| A | REVISIONS AS REQUESTED BY COUNCIL | 03/11/11 |
| ISSUE | AMENDMENT | DATE |

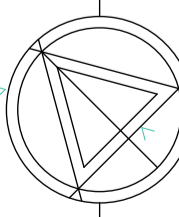
Proposed Industrial Development
at
Meatworks Avenue
Oxford Falls 2100
for
Mr K Edwards

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landscapes

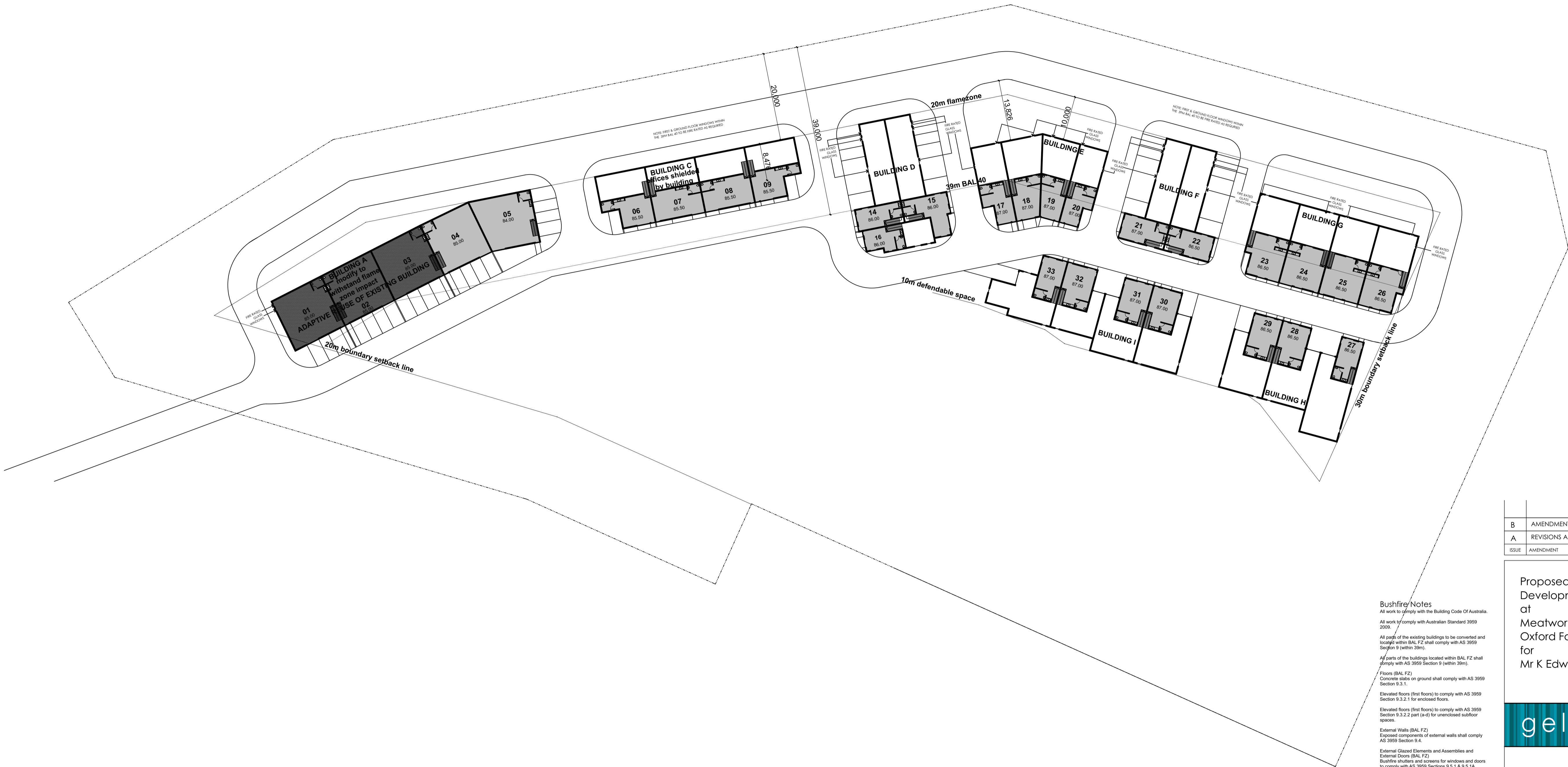
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Ground floor plan

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| | | |
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| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA02 | C |
| Date Plotted: 4/09/2017 | | |



Bushfire Notes
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All parts of the building located in BAL 40 shall comply with AS 3959 Section 6 (more than 39m).
Floors (BAL 40)
Concrete slabs on ground to comply with AS 3959 Section 9.3.1.
Elevated floors (first floors) to comply with AS 3959 Section 8.3.2.1 for enclosed floors.
Elevated floors (first floors) to comply with AS 3959 Section 8.3.2.2 part (a-d) for unenclosed subfloor spaces.
External Walls (BAL 40)
Exposed components of external walls shall comply AS 3959 Section 8.4.
External Glazed Elements and Assemblies and External Doors (BAL 40)
Bushfire shutters and screens for windows and doors to comply with AS 3959 Sections 8.5.1 & 8.5.1A.
Windows, doors and openings in the building to comply with AS 3959 Section 8.5.2, 8.5.3, 8.5.4 & 8.5.5.
Roofs (BAL 40)
Construction of roofs to comply with AS 3959 Section 8.6.
Steps, Ramps & Landings (BAL 40)
Construction of steps, ramps & landings to comply with AS 3959 Section 8.7.

| | | | |
|-------|-----------|-----------------------------------|----------|
| B | | AMENDMENTS FOR S34 CONFERENCE | 08/03/13 |
| A | | REVISIONS AS REQUESTED BY COUNCIL | 03/11/11 |
| ISSUE | AMENDMENT | | DATE |

Proposed Industrial Development
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Meatworks Avenue
Oxford Falls 2100
for
Mr K Edwards

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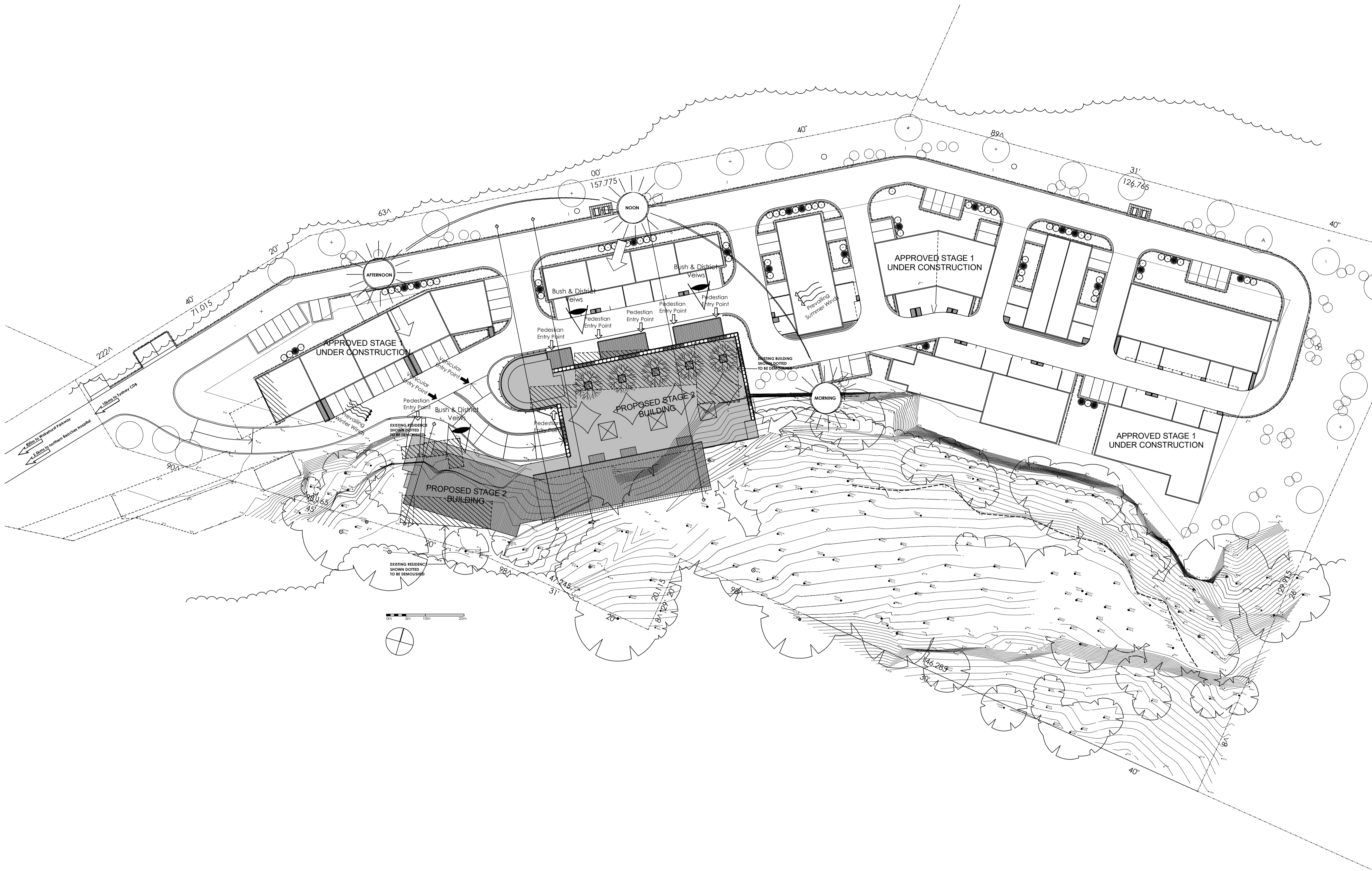
First floor plan

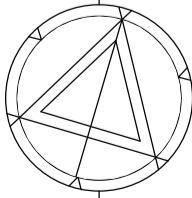
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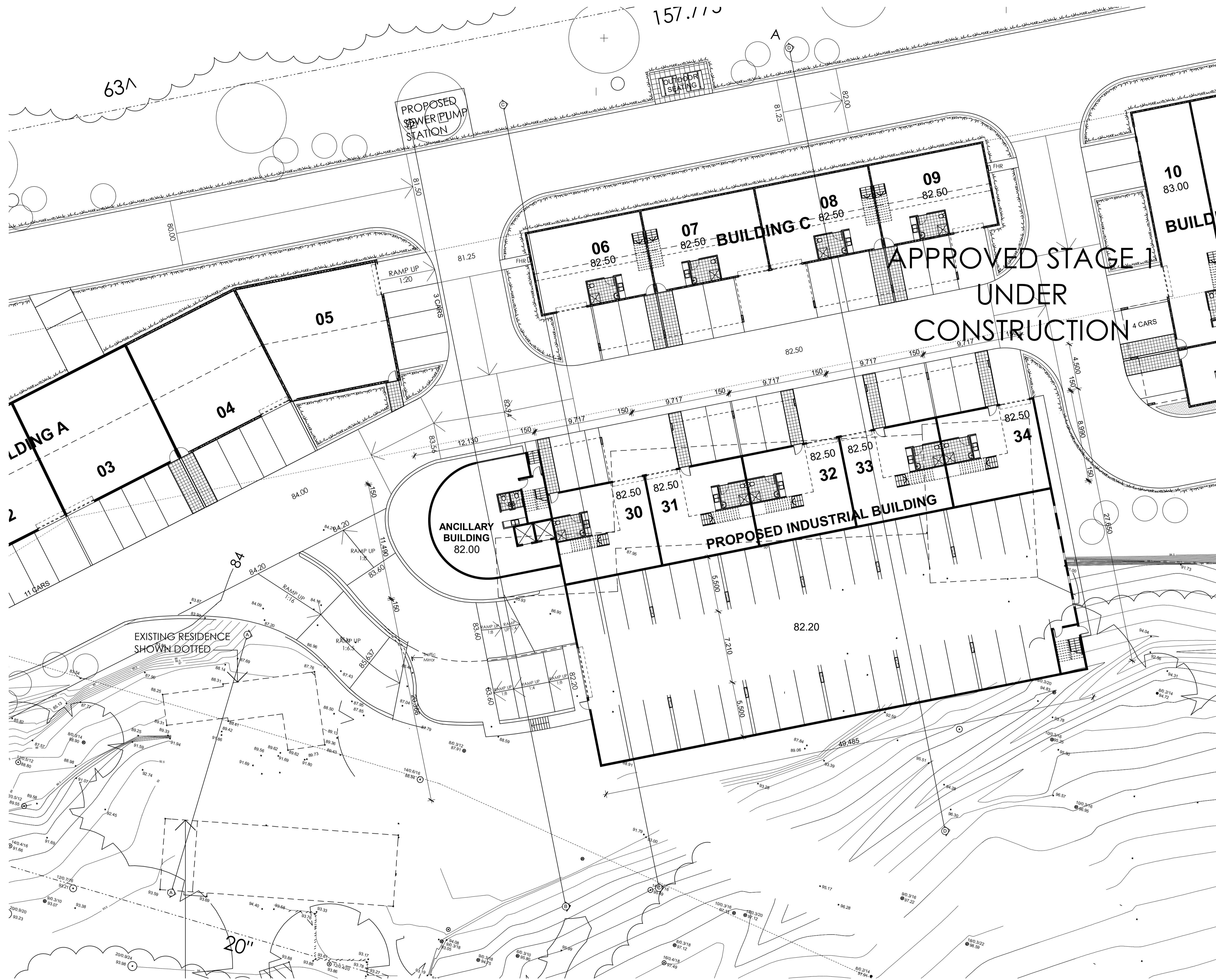
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|-------------------------|------------------|-------|
| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA03 | B |
| Date Plotted: 4/09/2017 | | |

Appendix B

Stage 2 Architectural Plans



| | | | |
|---|---------------------|---|----------|
| B | | COMMERCIAL INDUSTRIAL BLD REVISED | 30/09/19 |
| A | | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | | DATE |
| Proposed Industrial Development at Meatworks Avenue Oxford Falls 2100 for Mr W Edwards | | | |
| gelder | | architecture interiors landscapes | |
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| Site/Site Analysis Plan | | | |
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| Date: Jan 2005 | Project No: 823 | AMEND | |
| Scale: 1 : 100 | Drawing No: DA00 | B | |
| Date Plotted: 01-Oct-19 | | | |



STAGE 2 AREAS

COMMERCIAL/INDUSTRIAL BUILDING

| | |
|--------------------|-------------------|
| Level 1 | 540.86sqm |
| Roof Terrace Level | 445.00sqm |
| Upper Roof Level | 437.00sqm |
| TOTAL | 1422.86sqm |

ANCILLARY BUILDING

| | |
|---------------|------------------|
| Ground Level | 110.06sqm |
| Carpark Level | 108.96sqm |
| Level 1 | 145.69sqm |
| TOTAL | 364.71sqm |

UNITS 30-42

| | |
|--------------|-------------------|
| Unit 30 | 152.38sqm |
| Unit 31 | 151.43sqm |
| Unit 32 | 151.43sqm |
| Unit 33 | 151.43sqm |
| Unit 34 | 152.13sqm |
| Unit 35 | 120.58sqm |
| Unit 36 | 120.13sqm |
| Unit 37 | 120.13sqm |
| Unit 38 | 120.13sqm |
| Unit 39 | 120.82sqm |
| Unit 40 | 397.78sqm |
| Unit 41 | 278.69sqm |
| Unit 42 | 280.87sqm |
| TOTAL | 2317.93sqm |

OVERALL TOTAL STAGE 2 4105.50sqm

| | | |
|-------|------------------------------|----------|
| D | DRIVEWAY REVISION | 30/09/19 |
| C | PRELIMINARY CONSULTANT ISSUE | 02/08/19 |
| B | REVISED STAGE 2 | 19/09/18 |
| A | UPDATED CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

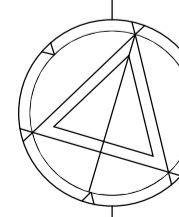
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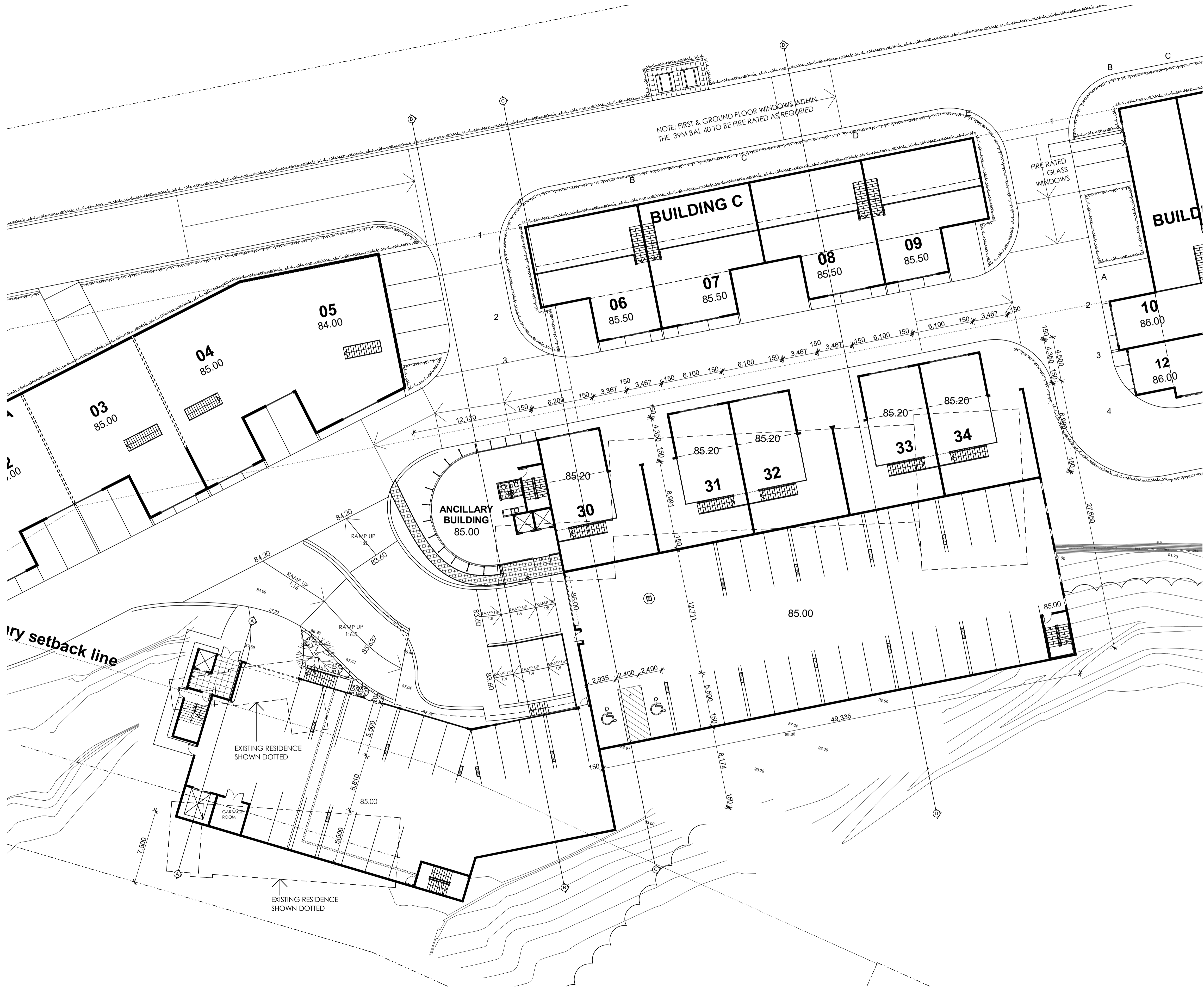
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Ground floor Stage 2

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| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA01 | D |
| Date Plotted: 01-Oct-19 | | |



| | | |
|-------|---|----------|
| E | DRIVEWAY REVISION COMMERCIAL INDUSTRIAL BLD REVISED | 30/09/19 |
| D | UPDATED CONSULTANT ISSUE | 06/09/19 |
| C | PRELIMINARY CONSULTANT ISSUE REVISED STAGE 2 | 02/08/19 |
| B | UPDATED CONSULTANT ISSUE | 19/09/18 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

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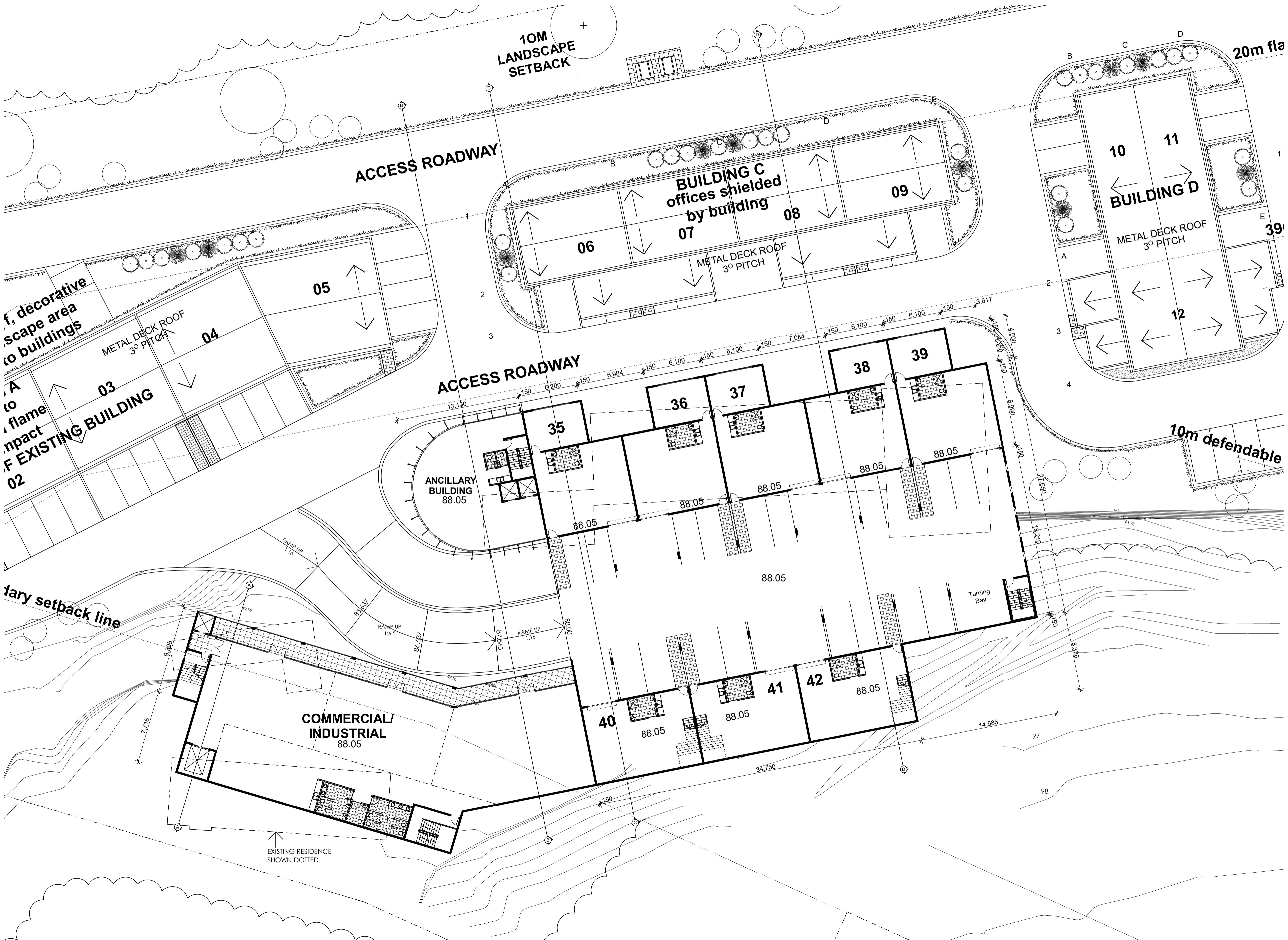
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Ground floor mezzanine Stage 2

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|-------------------------|------------------|-------|
| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA02 | E |
| Date Plotted: 01-Oct-19 | | |



| | | |
|-------|---|----------|
| E | TURNING BAY ADDED | 01/10/19 |
| D | COMMERCIAL INDUSTRIAL BLD REVISED | 30/09/19 |
| C | PRELIMINARY CONSULTANT ISSUE REVISED STAGE 2 | 02/08/19 |
| B | UPDATED CONSULTANT ISSUE | 19/09/18 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

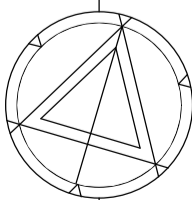
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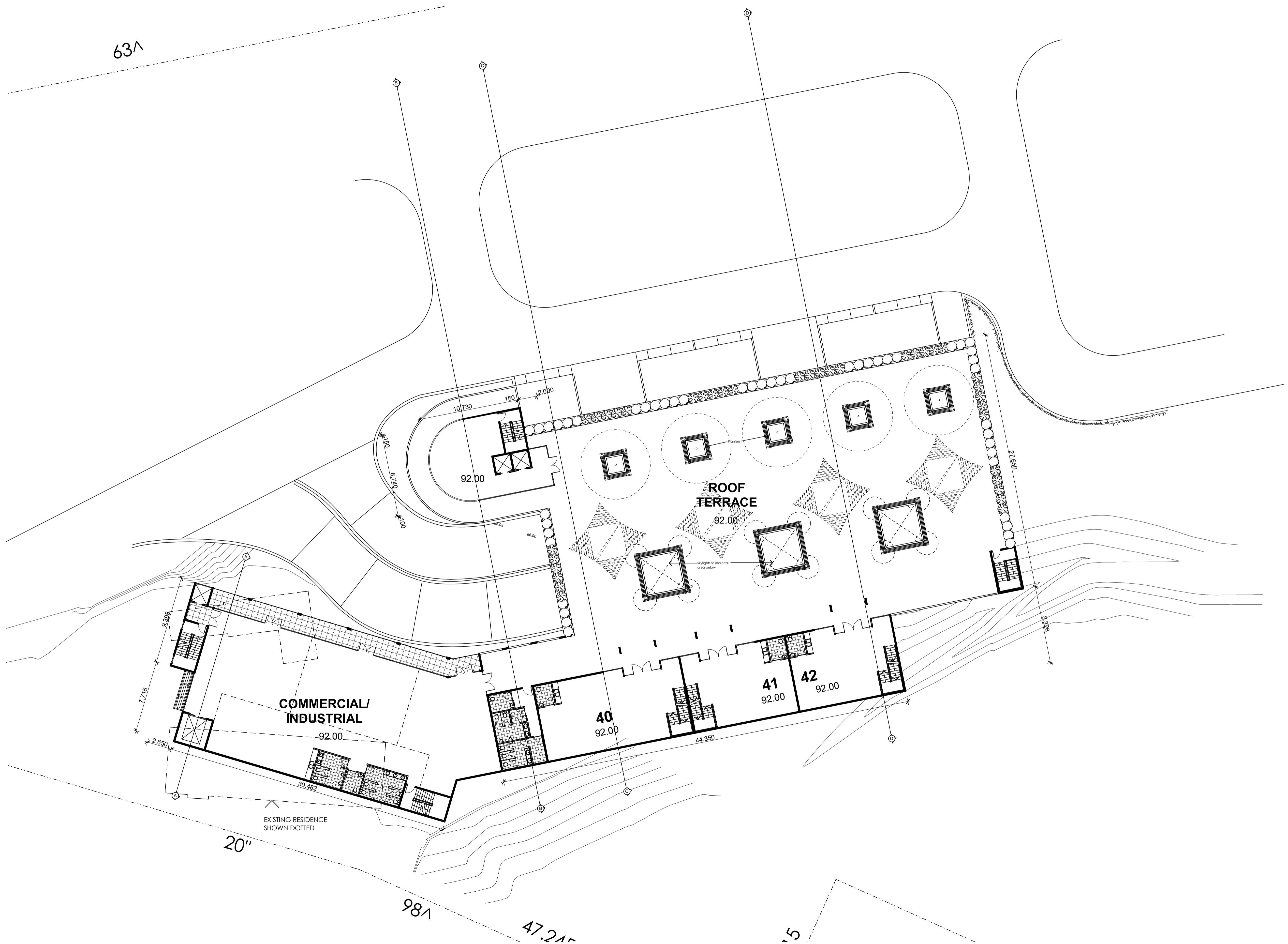
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Level 1 Mezzanine Stage 2

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| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA03 | E |
| Date Plotted: 01-Oct-19 | | |



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|-------|---|----------|
| D | COMMERCIAL INDUSTRIAL BLD REVISED | 30/09/19 |
| C | PRELIMINARY CONSULTANT ISSUE REVISED STAGE 2 | 02/08/19 |
| B | UPDATED CONSULTANT ISSUE | 19/09/18 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

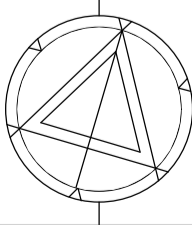
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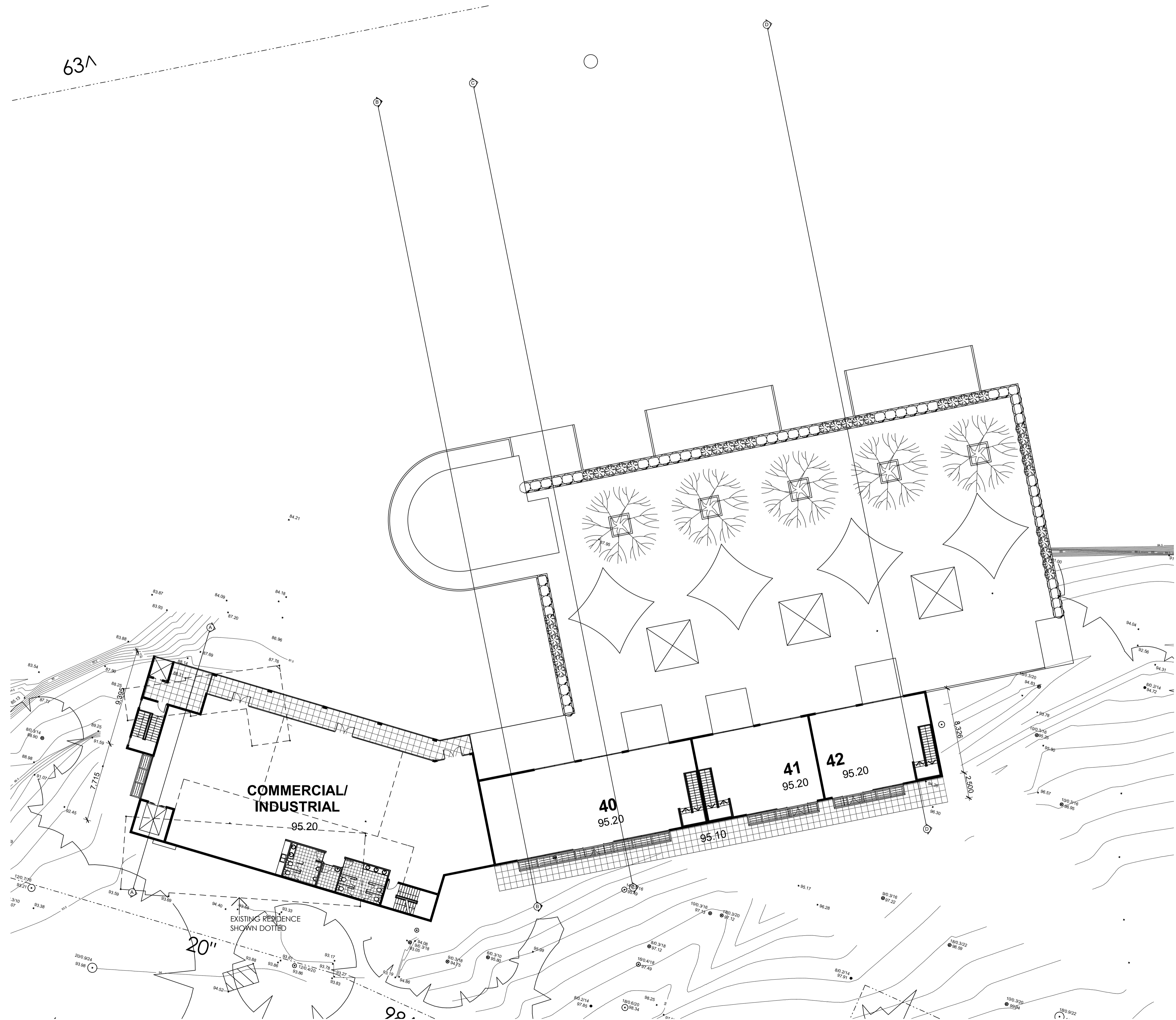
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Roof Terrace Level

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|-------------------------|------------------|-------|
| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA04 | D |
| Date Plotted: 01-Oct-19 | | |



| | | |
|-------|---|----------|
| D | COMMERCIAL INDUSTRIAL BLD REVISED | 30/09/19 |
| C | PRELIMINARY CONSULTANT ISSUE REVISED STAGE 2 | 02/08/19 |
| B | UPDATED CONSULTANT ISSUE | 19/09/18 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

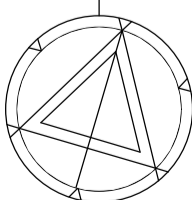
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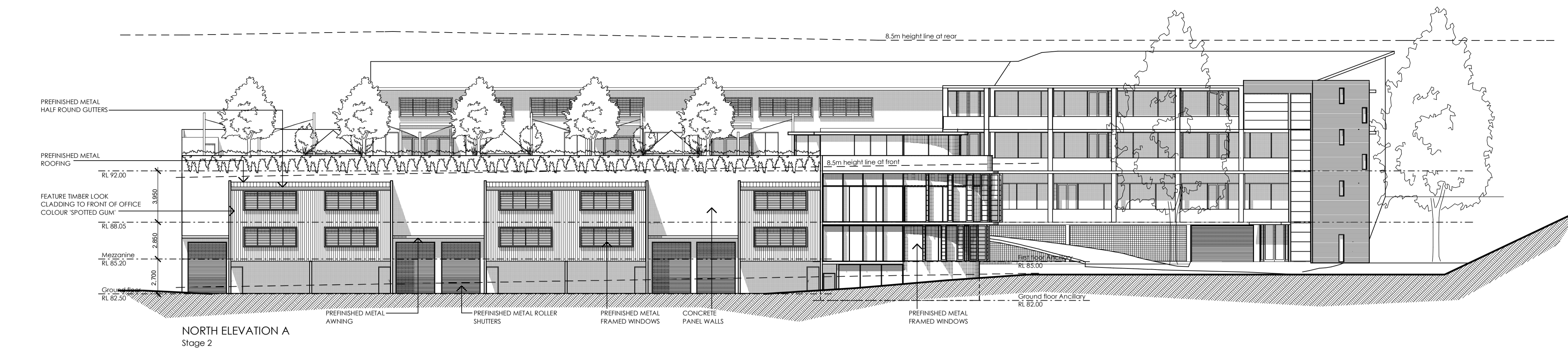
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Upper Roof Terrace

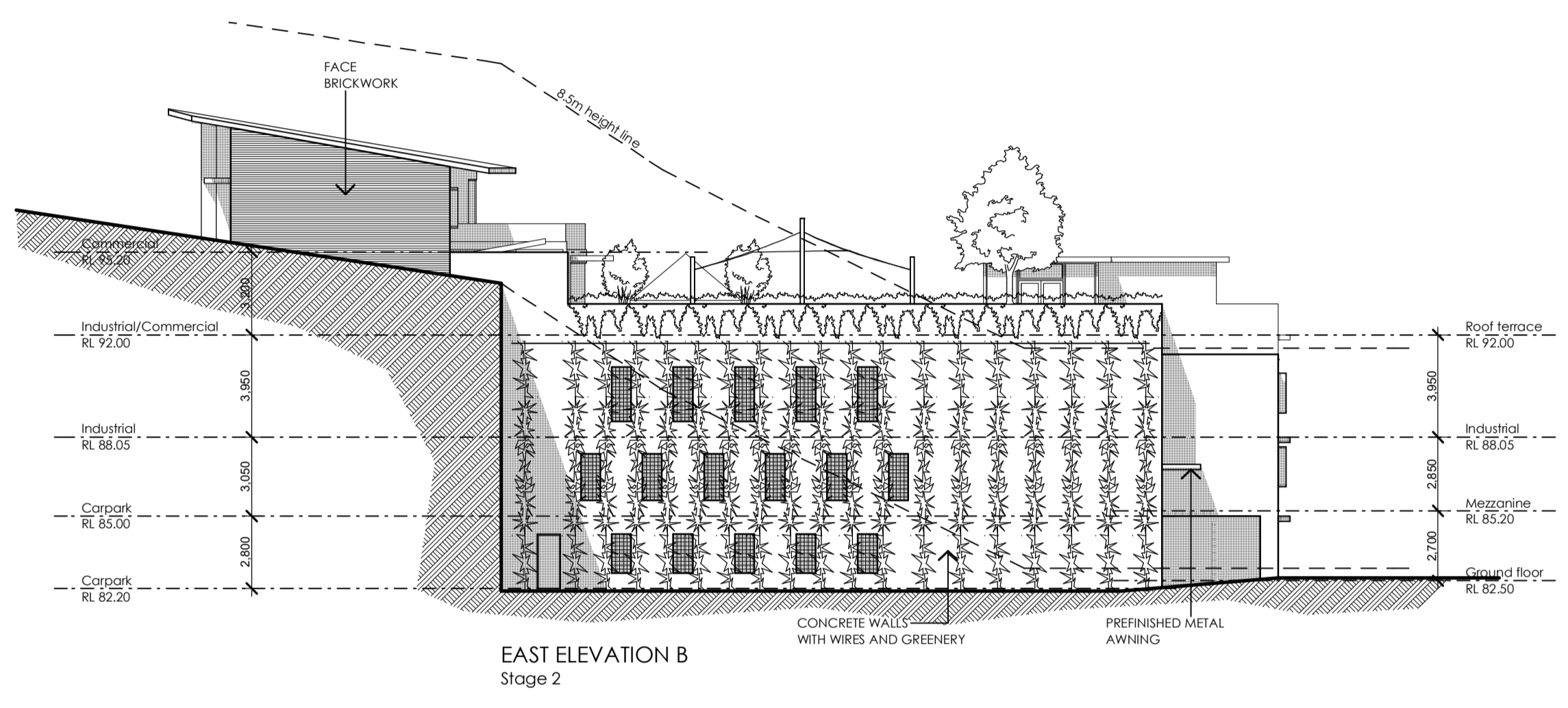
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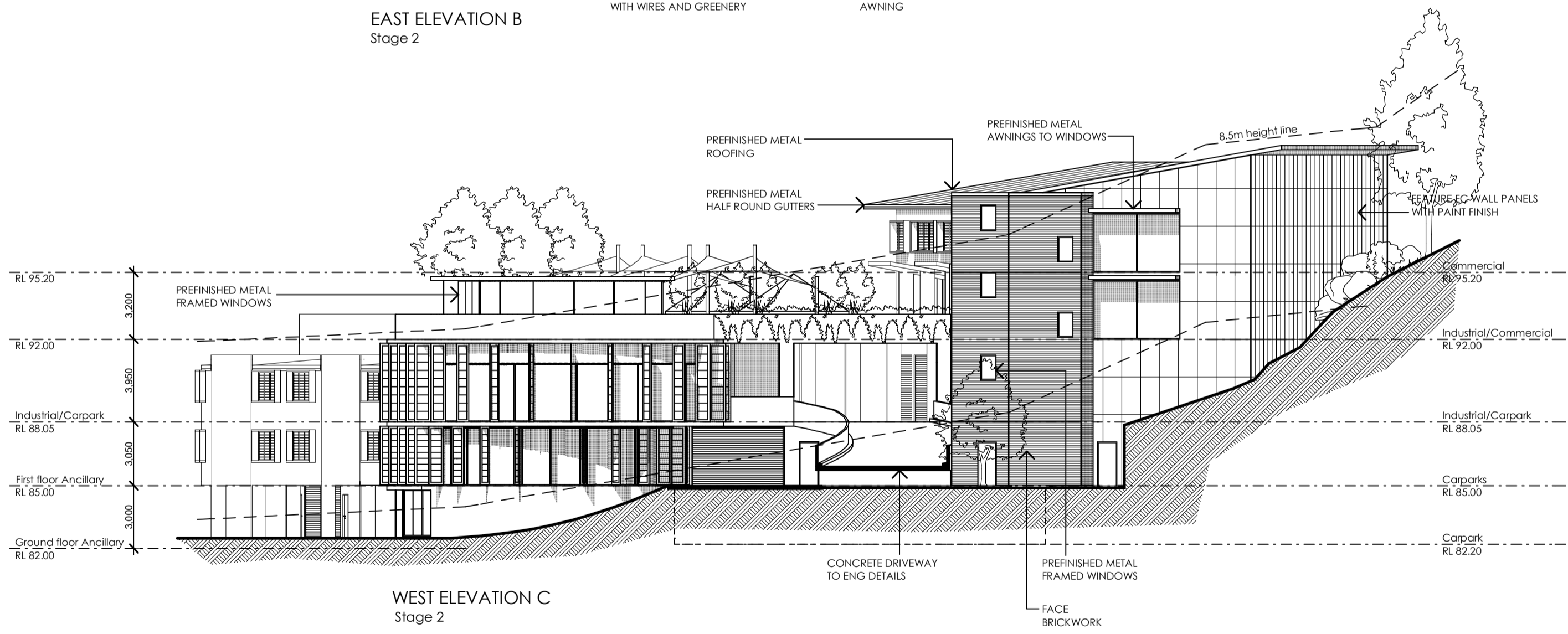
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|-------------------------|------------------|-------|
| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA05 | D |
| Date Plotted: 01-Oct-19 | | |



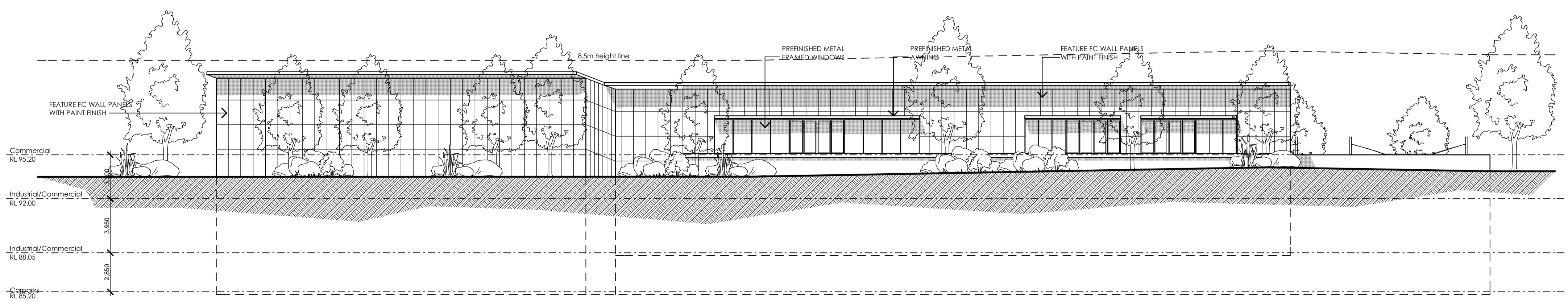
NORTH ELEVATION A
Stage 2



EAST ELEVATION B
Stage 2



WEST ELEVATION C
Stage 2



SOUTH ELEVATION D
Stage 2

| | | |
|-------|---------------------------------|----------|
| C | ELEVATIONS UPDATED AS PER PLANS | 30/09/19 |
| B | UPDATED CONSULTANT ISSUE | 26/08/19 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

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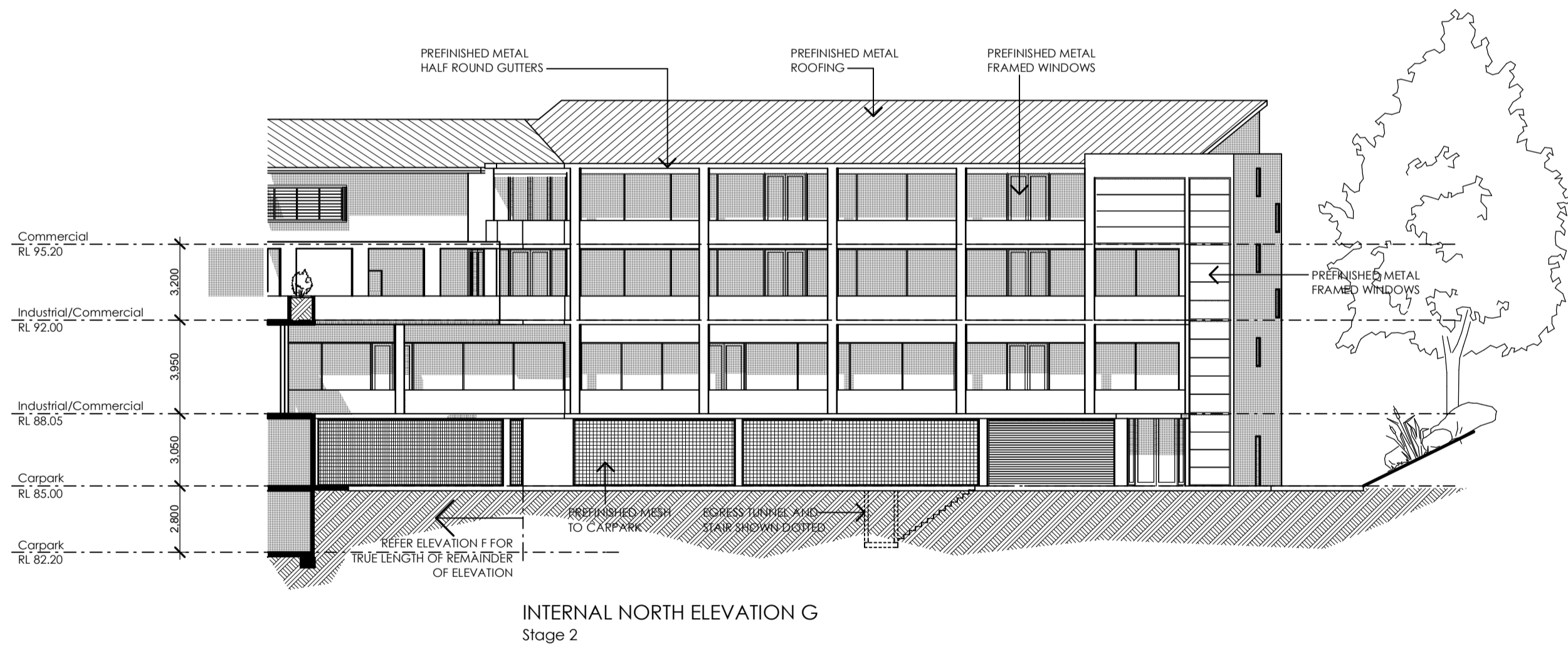
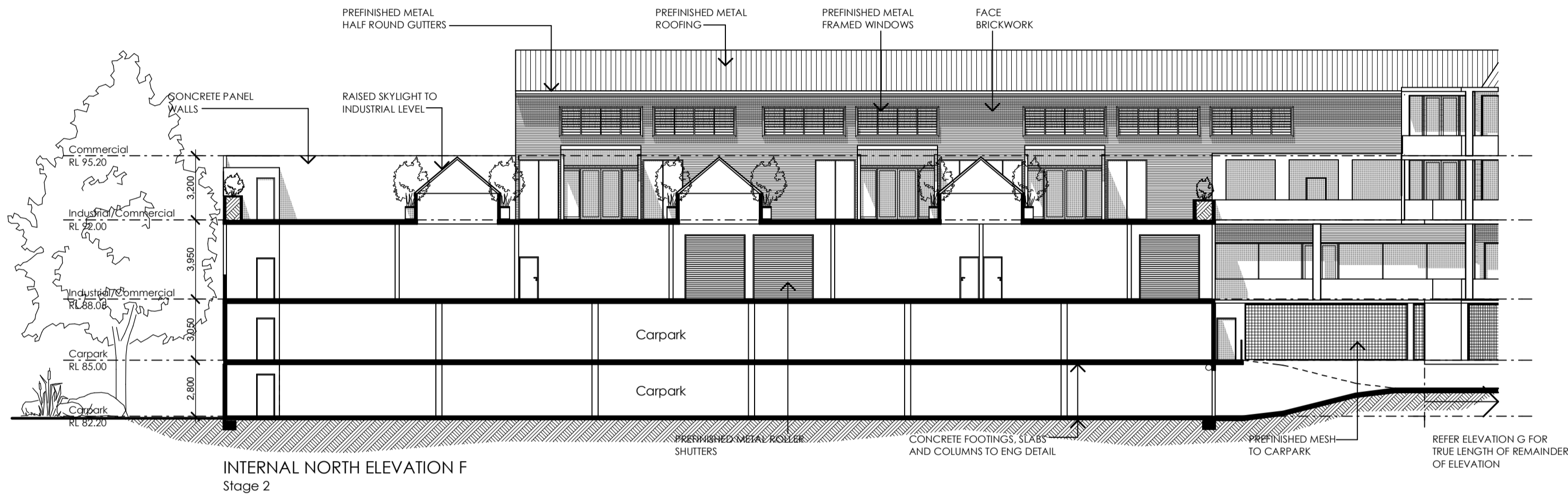
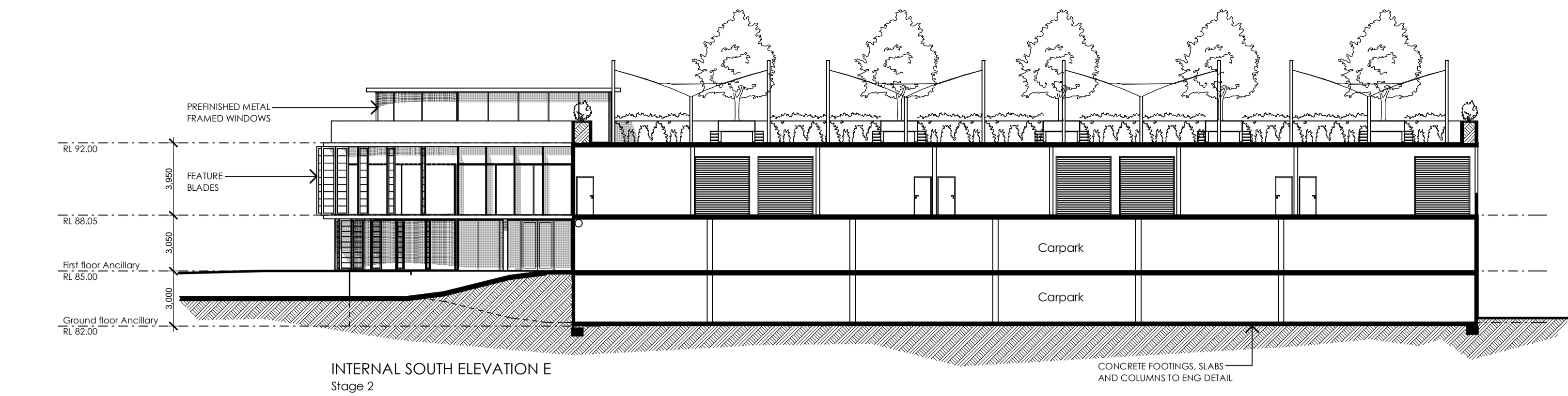
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|-------------------------|------------------|-------|
| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA06 | C |
| Date Plotted: 01-Oct-19 | | |



| | | |
|-------|--------------------------------|----------|
| C | ELEVATIONS UPDATED AS PER PLAN | 30/09/19 |
| B | UPDATED CONSULTANT ISSUE | 26/08/19 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

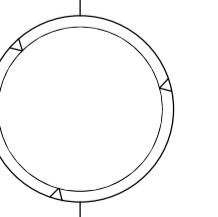
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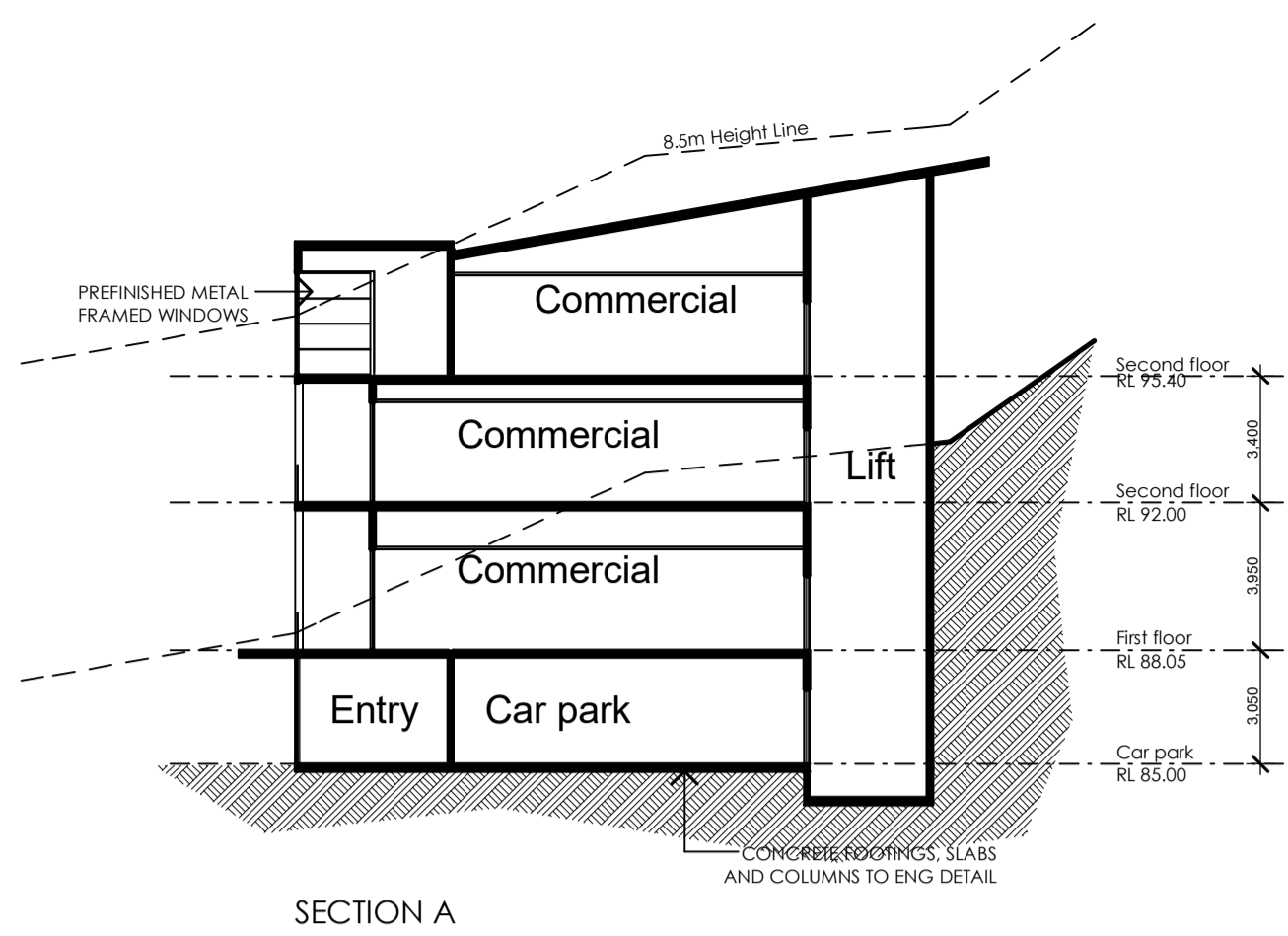
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Elevations

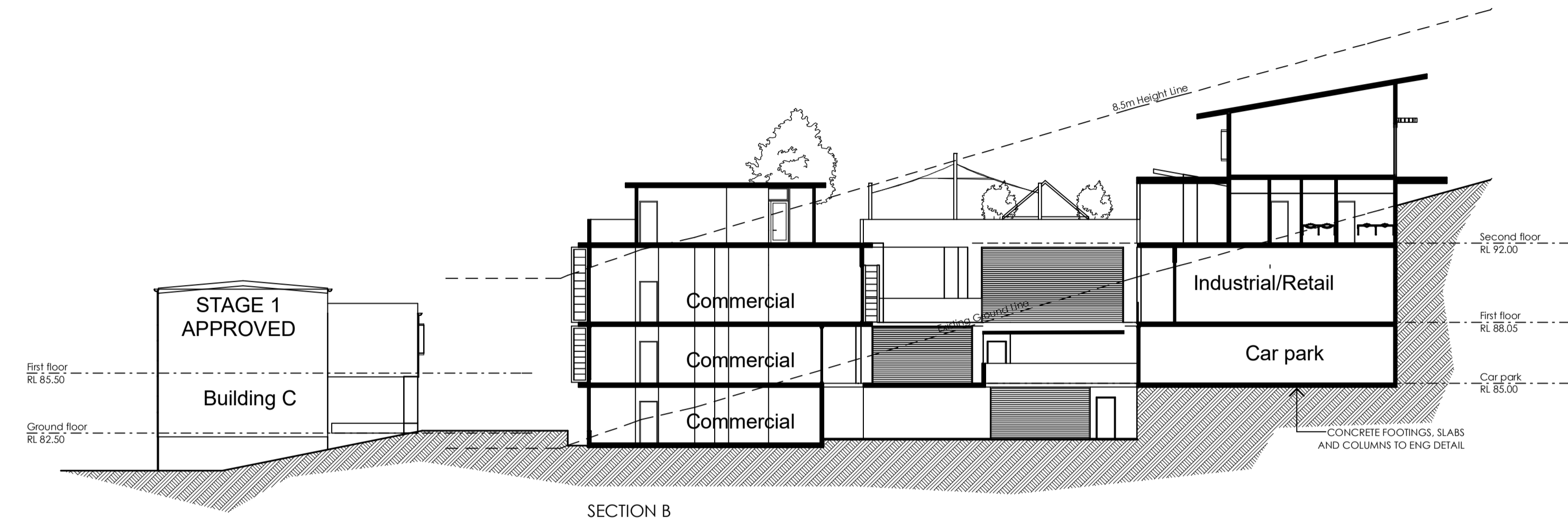
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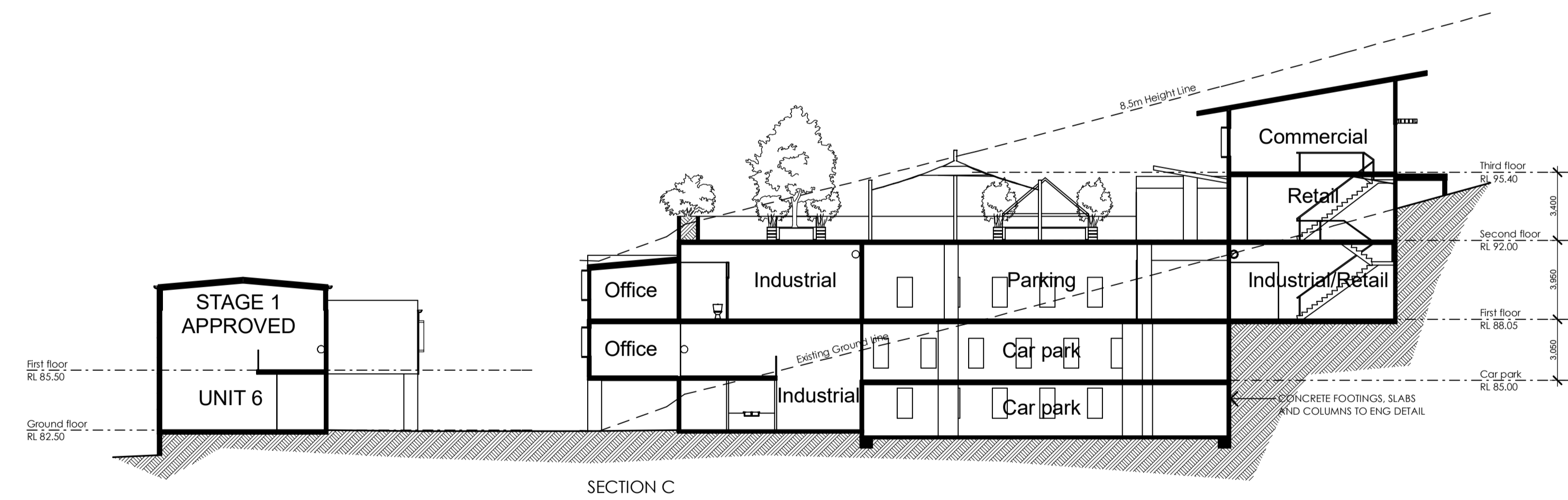
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| Scale: 1 : 100 | Drawing No: DA07 | C |
| Date Plotted: 01-Oct-19 | | |



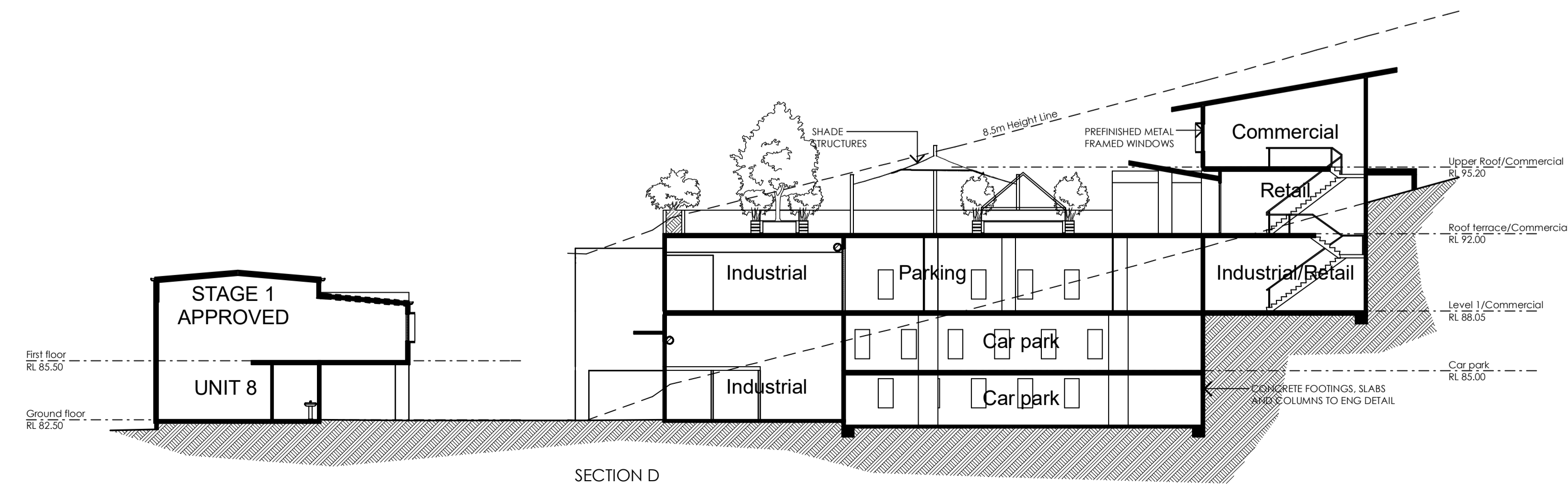
SECTION A



SECTION B



SECTION C



SECTION D

| | | |
|-------|---|----------|
| C | PRELIMINARY CONSULTANT ISSUE REVISED STAGE 2 | 02/08/19 |
| B | UPDATED CONSULTANT ISSUE | 19/09/18 |
| A | PRELIMINARY CONSULTANT ISSUE | 04/09/18 |
| ISSUE | AMENDMENT | DATE |

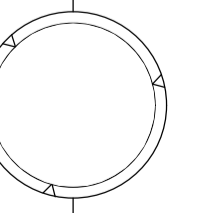
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| Date: Jan 2005 | Project No: 823 | AMEND |
| Scale: 1 : 100 | Drawing No: DA08 | C |
| Date Plotted: 01-Oct-19 | | |

Appendix C

SIDRA Output



MOVEMENT SUMMARY



Site: 101 [EX AM PEAK WAKEHURST PARKWAY - DREADNOUGHT ROAD]

New Site

Site Category: (None)

Signals - Actuated Isolated Cycle Time = 140 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---------------------------------|------|--------------------|------------|---------------|-------------------|------------------|--------------------------------|------------|--------------|---------------------|------------------|--------------------|
| Mov ID | Turn | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: WAKEHURST PARKWAY | | | | | | | | | | | | |
| 1 | L2 | 17 | 2.0 | 0.030 | 27.9 | LOS B | 0.5 | 3.3 | 0.70 | 0.69 | 0.70 | 43.5 |
| 2 | T1 | 360 | 2.0 | 0.595 | 28.8 | LOS C | 15.1 | 92.6 | 0.88 | 0.76 | 0.90 | 49.0 |
| 3 | R2 | 113 | 2.0 | 0.508 | 47.8 | LOS D | 5.8 | 35.5 | 0.94 | 0.79 | 0.94 | 37.6 |
| Approach | | 490 | 2.0 | 0.595 | 33.1 | LOS C | 15.1 | 92.6 | 0.88 | 0.76 | 0.91 | 45.6 |
| East: DREADNOUGHT ROAD | | | | | | | | | | | | |
| 4 | L2 | 150 | 2.0 | 0.194 | 28.1 | LOS B | 6.3 | 39.0 | 0.60 | 0.70 | 0.60 | 36.0 |
| 5 | T1 | 13 | 2.0 | 0.194 | 23.5 | LOS B | 6.3 | 39.0 | 0.60 | 0.70 | 0.60 | 34.2 |
| 6 | R2 | 328 | 2.0 | 0.822 | 48.5 | LOS D | 19.1 | 117.4 | 0.89 | 0.83 | 0.89 | 29.9 |
| Approach | | 491 | 2.0 | 0.822 | 41.6 | LOS C | 19.1 | 117.4 | 0.79 | 0.79 | 0.79 | 31.6 |
| North: WAKEHURST PARKWAY | | | | | | | | | | | | |
| 7 | L2 | 335 | 2.0 | 0.876 | 43.1 | LOS D | 28.8 | 177.0 | 0.82 | 0.82 | 0.85 | 40.6 |
| 8 | T1 | 722 | 2.0 | 0.876 | 35.9 | LOS C | 29.1 | 178.7 | 0.81 | 0.76 | 0.84 | 44.1 |
| 9 | R2 | 14 | 2.0 | 0.031 | 30.9 | LOS C | 0.6 | 3.4 | 0.66 | 0.67 | 0.66 | 41.6 |
| Approach | | 1071 | 2.0 | 0.876 | 38.1 | LOS C | 29.1 | 178.7 | 0.81 | 0.78 | 0.84 | 42.9 |
| West: DREADNOUGHT ROAD | | | | | | | | | | | | |
| 10 | L2 | 2 | 2.0 | 0.013 | 24.4 | LOS B | 0.3 | 2.0 | 0.65 | 0.48 | 0.65 | 36.8 |
| 11 | T1 | 7 | 2.0 | 0.013 | 19.8 | LOS B | 0.3 | 2.0 | 0.65 | 0.48 | 0.65 | 37.2 |
| 12 | R2 | 3 | 2.0 | 0.006 | 37.2 | LOS C | 0.1 | 0.8 | 0.66 | 0.61 | 0.66 | 30.7 |
| Approach | | 12 | 2.0 | 0.013 | 24.9 | LOS B | 0.3 | 2.0 | 0.65 | 0.51 | 0.65 | 35.3 |
| All Vehicles | | 2064 | 2.0 | 0.876 | 37.7 | LOS C | 29.1 | 178.7 | 0.82 | 0.77 | 0.85 | 40.0 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians | | | | | | | | | |
|------------------------------------|---------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|---------------------|--|
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate | |
| P3 | North Full Crossing | 53 | 64.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | |
| All Pedestrians | | 53 | 64.3 | LOS F | | | 0.96 | 0.96 | |

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY



Site: 101 [EX PM PEAK WAKEHURST PARKWAY - DREADNOUGHT ROAD]

New Site

Site Category: (None)

Signals - Actuated Isolated Cycle Time = 142 seconds (Site User-Given Phase Times)

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---------------------------------|------|-----------------------|---------------|------------------|----------------------|------------------|--------------------------------------|--------------------------------|--------------|---------------------|------------------|-----------------------|
| Mov ID | Turn | Demand Total veh/h | Flows HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Back of Queue Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: WAKEHURST PARKWAY | | | | | | | | | | | | |
| 1 | L2 | 12 | 0.0 | 0.012 | 17.9 | LOS B | 0.3 | 1.8 | 0.49 | 0.67 | 0.49 | 51.2 |
| 2 | T1 | 1004 | 2.0 | 1.001 | 56.9 | LOS E | 64.4 | 395.6 | 1.00 | 1.10 | 1.30 | 29.3 |
| 3 | R2 | 59 | 2.0 | 0.086 | 30.9 | LOS C | 2.3 | 14.4 | 0.66 | 0.70 | 0.66 | 45.4 |
| Approach | | 1075 | 2.0 | 1.001 | 55.0 | LOS D | 64.4 | 395.6 | 0.98 | 1.07 | 1.26 | 30.0 |
| East: DREADNOUGHT ROAD | | | | | | | | | | | | |
| 4 | L2 | 82 | 2.0 | 0.111 | 30.4 | LOS C | 3.5 | 21.7 | 0.61 | 0.68 | 0.61 | 35.2 |
| 5 | T1 | 6 | 0.0 | 0.111 | 25.8 | LOS B | 3.5 | 21.7 | 0.61 | 0.68 | 0.61 | 33.4 |
| 6 | R2 | 298 | 2.0 | 0.911 | 65.0 | LOS E | 20.8 | 127.6 | 0.97 | 0.89 | 1.05 | 26.4 |
| Approach | | 386 | 2.0 | 0.911 | 57.0 | LOS E | 20.8 | 127.6 | 0.89 | 0.84 | 0.95 | 27.9 |
| North: WAKEHURST PARKWAY | | | | | | | | | | | | |
| 7 | L2 | 103 | 0.0 | 0.692 | 59.4 | LOS E | 20.3 | 123.8 | 0.93 | 0.81 | 0.93 | 35.2 |
| 8 | T1 | 564 | 2.0 | 0.692 | 52.6 | LOS D | 21.0 | 129.2 | 0.93 | 0.81 | 0.93 | 36.8 |
| 9 | R2 | 6 | 2.0 | 0.045 | 73.3 | LOS F | 0.4 | 2.4 | 0.94 | 0.64 | 0.94 | 26.2 |
| Approach | | 673 | 1.7 | 0.692 | 53.8 | LOS D | 21.0 | 129.2 | 0.93 | 0.81 | 0.93 | 36.5 |
| West: DREADNOUGHT ROAD | | | | | | | | | | | | |
| 10 | L2 | 16 | 0.0 | 0.066 | 27.6 | LOS B | 1.1 | 6.7 | 0.74 | 0.61 | 0.74 | 35.0 |
| 11 | T1 | 19 | 0.0 | 0.066 | 23.0 | LOS B | 1.1 | 6.7 | 0.74 | 0.61 | 0.74 | 35.3 |
| 12 | R2 | 41 | 0.0 | 0.111 | 48.1 | LOS D | 2.1 | 12.8 | 0.77 | 0.71 | 0.77 | 27.6 |
| Approach | | 76 | 0.0 | 0.111 | 37.5 | LOS C | 2.1 | 12.8 | 0.76 | 0.67 | 0.76 | 30.7 |
| All Vehicles | | 2210 | 1.8 | 1.001 | 54.4 | LOS D | 64.4 | 395.6 | 0.94 | 0.94 | 1.09 | 31.3 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

| Movement Performance - Pedestrians | | | | | | | | | |
|------------------------------------|---------------------|----------------------|----------------------|------------------|--|--------------------------------|--------------|---------------------|--|
| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Back of Queue Distance m | Prop. Queued | Effective Stop Rate | |
| P3 | North Full Crossing | 53 | 65.3 | LOS F | 0.2 | 0.2 | 0.96 | 0.96 | |
| All Pedestrians | | 53 | 65.3 | LOS F | | | 0.96 | 0.96 | |

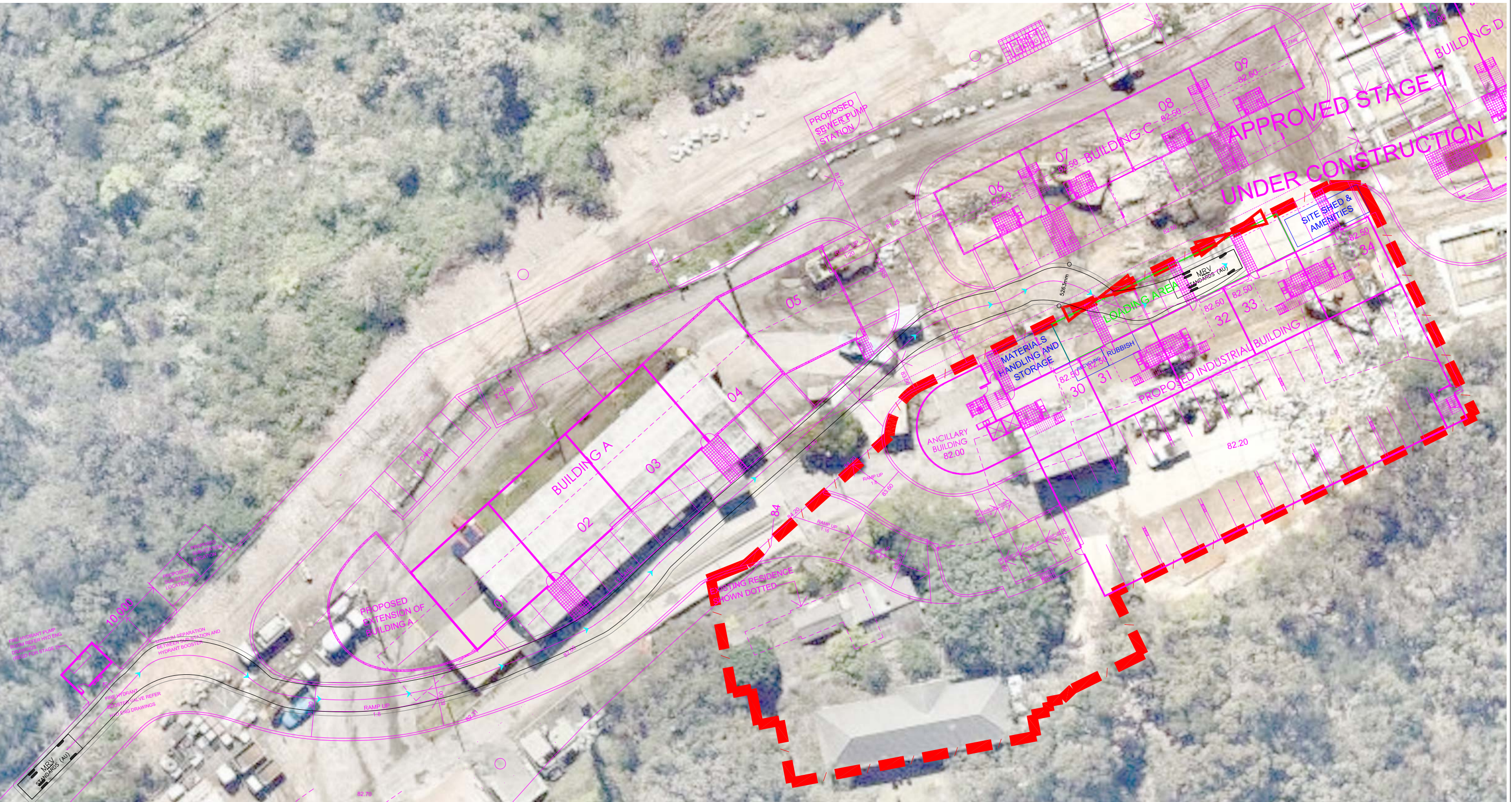
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

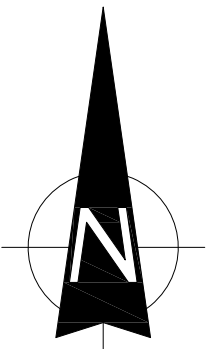
Appendix D

Turning Path Assessment



LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTURN PRO10 in conjunction with AutoCAD 2018. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS
OF AN 8.8m MEDIUM RIGID
VEHICLES ENTERING THE SITE**

Appendix E

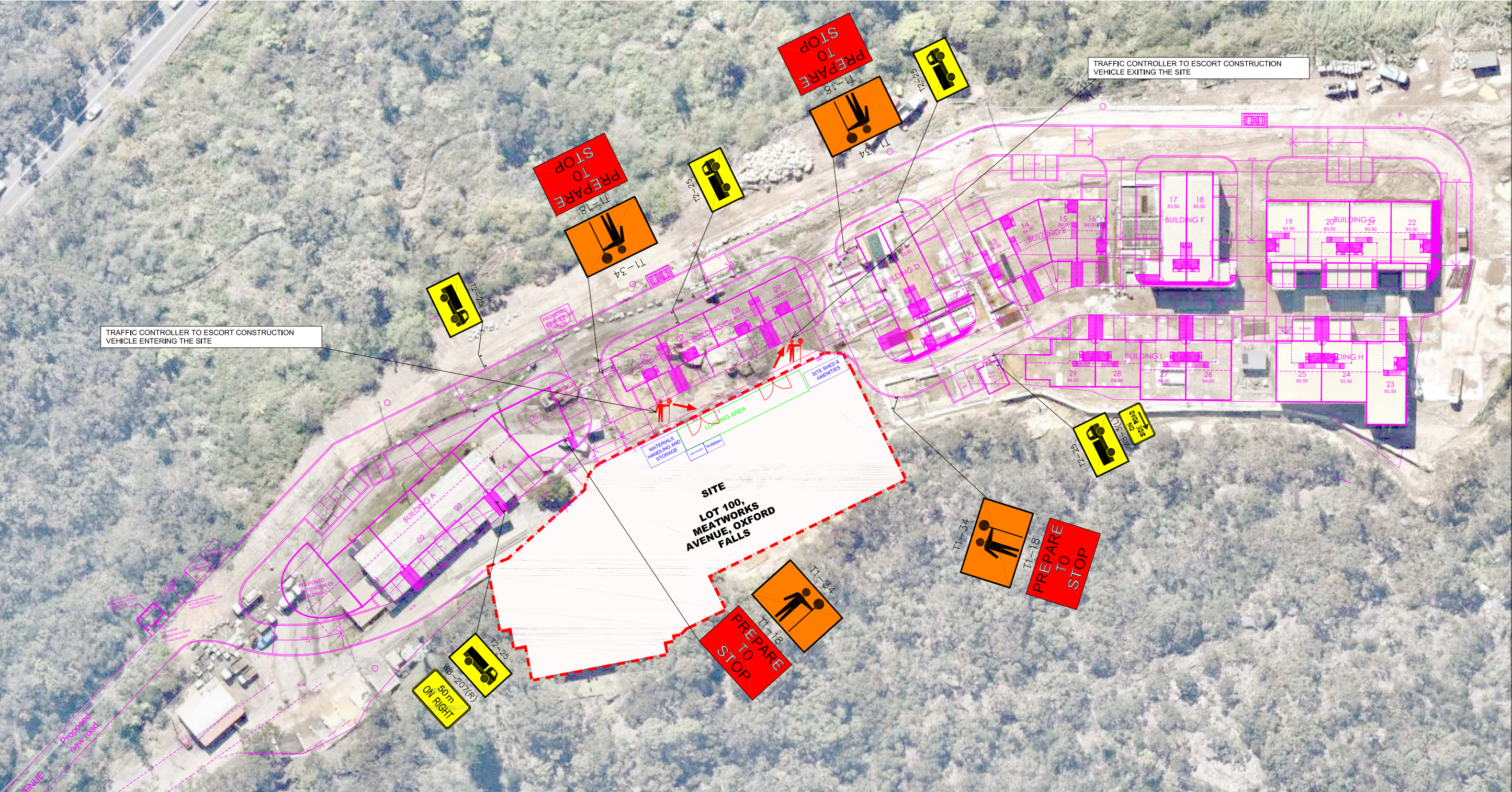
Traffic Guidance Scheme

LEGEND:

- CONSTRUCTION FENCE (WORK SITE BOUNDARY)
- WORK SITE ACCESS
- ACCREDITED RMS TRAFFIC CONTROLLER
- SIGN POST

CERTIFICATION

1. ALL SIGNS SHALL BE MINIMUM SIZE A.
2. ALL SIGNS SHALL BE CLASS 1 RETROREFLECTIVE.
3. LOCATION OF SIGNS SHALL BE CONFIRMED ON-SITE TO ENSURE APPROPRIATE VISIBILITY.
4. ALL SIGNAGE SHALL BE CLEAN, CLEARLY VISIBLE AND NOT OBSCURED.
5. ALL TRAFFIC CONTROL PLANS SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE RMS "TRAFFIC CONTROL AT WORK SITES" MANUAL, VER 5 (RMS 2018) AND AUSTRALIAN STANDARDS AS1742.3:2009 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 3: TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS.
6. THIS TRAFFIC CONTROL PLAN SHALL BE SET UP BY A PERSON HOLDING AN "IMPLEMENT TRAFFIC MANAGEMENT PLAN" TICKET AND THE RMS TRAFFIC CONTROL AT WORK SITES CHECKLIST SHALL BE COMPLETED PRIOR TO IMPLEMENTATION.
7. THE ACCREDITED PERSONNEL SHALL IMPLEMENT THE APPROVED TCP BEFORE ANY PHYSICAL WORK COMMENCES. ENSURE A COPY OF THE TCP IS KEPT ON-SITE. THE ACCREDITED PERSONNEL SHALL DRIVE THROUGH THE SITE BEFORE WORKS BEGIN TO ENSURE THAT THE TCP HAS BEEN IMPLEMENTED CORRECTLY AND THAT IT WILL WARN, INSTRUCT AND GUIDE ROAD USERS AS DESIGNED. ANY AMENDMENTS MADE TO THE PLAN MUST BE MARKED ON THE PLAN AND INITIALLED BY THE ACCREDITED PERSONNEL.
8. IT IS THE RESPONSIBILITY OF AN ACCREDITED PERSONNEL WITH A 'PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN' TICKET TO ENSURE THE FOLLOWING:
 - THE INTEGRITY OF ALL TRAFFIC CONTROL MEASURES THROUGH TO THE FINAL REMOVAL. THIS INCLUDES DAILY CHECKS OF ALL SIGNS AND DEVICES. THE CORRESPONDING RECORDS OF CHECKS SHALL BE KEPT ON FILE FOR AUDITING PURPOSES.
 - VEHICULAR ACCESS AND SERVICING REQUIREMENTS SHALL BE MAINTAINED AT ALL TIMES TO ADJACENT PROPERTIES AFFECTED BY TRAFFIC CONTROL MEASURES.
 - AT ALL TIMES AN UP-TO-DATE COPY OF "TRAFFIC CONTROL AT WORK SITES" SHALL BE AVAILABLE FOR REFERENCE AND IMPLEMENTATION AS REQUIRED ON-SITE.
9. IT IS THE DEVELOPERS DUTY TO ENSURE THAT THE APPROPRIATE MEASURES ARE TAKEN TO PROVIDE A SAFE ENVIRONMENT FOR VEHICLES AND PEDESTRIANS TO RELEVANT AUSTRALIAN STANDARDS WHEN THE WORK SITE IS LEFT UNATTENDED.
10. NOT ALL DIMENSIONS SHOWN ARE TO SCALE.



CERTIFICATIONS

THE UNDERSIGNED HAS COMPLETED AND OBTAINED "PREPARE A WORK ZONE TRAFFIC MANAGEMENT PLAN"

CERTIFICATE NO: 0052125163 (EXPIRY DATE: 28/08/2022)

PREPARE A WORK ZONE TMP CARD

LACHLAN ELLSON

LOT 100, MEATWORKS AVENUE, OXFORD FALLS

SITE ACCESS ON STAGE 1 INTERNAL ACCESS ROAD

TRAFFIC GUIDANCE SCHEME

DRAWING REF NO. 19179-01-01

ISSUE A

ISSUE DATE 15 SEPTEMBER 2019

DESIGNED BY
C.YOU

REVIEWED BY
M.KONG

SCALE
A3

0 NTS NTS

NOT TO SCALE



FINAL PLAN

ANY CHANGES TO THE PLAN SHALL BE DONE WITHIN ALLOWANCE PROVIDED IN THE ROADS AND MARITIME SERVICES TRAFFIC CONTROL AT WORK SITES TECHNICAL MANUAL, VERSION 5.0 DATED 27 JULY 2018

WARNING

THE LOCATION OF VEHICULAR SERVICES ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE PROVIDED ON SITE. ALL SIGNING SHALL BE DONE IN ACCORDANCE WITH THE RMS "TRAFFIC CONTROL AT WORK SITES" MANUAL, VER 5 (RMS 2018) AND AUSTRALIAN STANDARDS AS1742.3:2009 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 3: TRAFFIC CONTROL DEVICES FOR WORKS ON ROADS.

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES

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