

Attachment

# 06 Revised Transport Impact Assessment



# **TRANSPORT IMPACT ASSESSMENT**

Barfield Road Structure Plan

Hammond Park

June 2019

Rev A



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## Appendices

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**Appendix 1** - The layout of the proposed development

**Appendix 2** - Transport Planning and Traffic Plans

## **1. Executive Summary**

### **Site Context**

- Barfield Road Structure Plan is located within Hammond Park suburb, City of Cockburn.
- The Structure Plan area is fronting Frankland Avenue to the east, Barfield Road to the west and Rowley Road to the south.
- The previously approved Barfield Road Structure Plan is being amended/updated, and following changes are the focus of this report:
  - Addition of Lots 15 and 37 to the Structure plan
  - Redesign of Lot 18
  - The Local Centre land use is changed to a Child Care Centre
  - Minor changes in R-Code densities.

### **Technical Findings**

- The entire Barfield Road Structure Plan area is expected to generate up to 3,497 VPD, 421 VPH in AM peak and 416 VPH in PM peak in total. The additional traffic generated by Lot 15 and Child Care Centre is 629 VPD, 72 VPH in AM peak and 67 VPH in the PM Peak. KCTT believe that the well-planned road network will successfully absorb the additional traffic. Six major routes will be available for accessing the Structure Plan area:
  - Via Rowley Road towards east (Kwinana Freeway)
  - Via Barfield Road towards north
  - Via Frankland Avenue and Hammond Road towards north
  - Via Wattleup Road towards west
  - Via Proposed Scolaro Road towards north (proposed High School)
  - Via Irvine Parade towards north (proposed Primary School)

### **Relationship with Policies**

- The predominant use is residential and to comply with the R-Codes, it is expected that all residences will provide a garage for each dwelling. KCTT believe that by having a garage for the owner, visitors are likely to park in the driveway space in front of the garage.
- According to City of Cockburn Town Planning Scheme No. 3, the childcare centre will require 21 bays. The approved Childcare Centre located on Lot 9 Irvine Parade will have 21 parking spaces as per the plan included in MSWJDAP/180, therefore meeting the requirements.
- It is expected that delivery and service vehicles (such as waste removal vehicles) servicing the area will not require designated parking spaces given that they can operate safely within the road reserve.

### **Other**

- The following intersection controls are proposed:
  - Frankland Avenue / Whadjuk Drive - Roundabout – constructed
  - Irvine Parade / Whadjuk Drive - Roundabout – constructed
  - Rowley Road / Irvine Parade - Roundabout - constructed as an interim solution. When Rowley Road is upgraded and under MRWA jurisdiction, it is expected that this roundabout and intersection with Barfield Road will be terminated. The exact timeframes for these changes are unknown currently.

- Road 02 - Barfield Road - No vehicle access, only cycling. There is potential for a Left-in only, however this will be assessed at a more detailed stage of planning.
- All other intersections - Give-way/Yield

## 2. Transport Impact Assessment

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### 2.1. Location

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Structure Plan      | Barfield Road Structure Plan                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Lot Numbers         | Lots 13-14, 15,18, 37 & 47-51 Hammond Park                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Road Name(s)        | Barfield Road, Rowley Road, Frankland Avenue                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Suburb              | Hammond Park                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description of Site | Barfield Road LSP area is located in Hammond Park, City of Cockburn. Previously approved Barfield Road Structure Plan is being amended/updated, and following changes are the main subjects of this report: <ul style="list-style-type: none"><li>• Addition of Lots 15 and 37 to the Structure plan</li><li>• Redesign of Lot 18</li><li>• The Local Centre land use is changed to a Child Care Centre</li><li>• Minor changes in R-Code densities.</li></ul> |

### 2.2. Technical Literature Used

|                                                                                                                                                                                 |                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Local Government Authority                                                                                                                                                      | City of Cockburn                                                                                                                       |
| Type of Development                                                                                                                                                             | Residential                                                                                                                            |
| Are the R-Codes referenced?                                                                                                                                                     | YES                                                                                                                                    |
| <i>If YES, nominate which:</i>                                                                                                                                                  | State Planning Policy 3.1 Residential Design Codes 2018 R-Codes (incorporating amendments gazetted on 2/8/2013, 23/10/15 and 2/3/2018) |
| Are other State Planning Policies referenced?                                                                                                                                   | NO                                                                                                                                     |
| Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation / attraction rates for various land uses) referenced? | YES                                                                                                                                    |
| Which WAPC Transport Impact Assessment Guideline should be referenced?                                                                                                          | Volume 2 - Planning Schemes, Structure Plans & Activity Centre Plans<br>Volume 5 - Technical Guidance                                  |

|                                                                    |                                             |
|--------------------------------------------------------------------|---------------------------------------------|
| Are there applicable LGA schemes for this type of development?     | YES                                         |
| Name Number of Scheme                                              | City of Cockburn Town Planning Scheme No. 3 |
| Are Austroads documents referenced?                                | YES                                         |
| Is the Perth Transport Plan for 3.5 million and Beyond referenced? | YES                                         |

## 2.3. Land Uses

|                                                                  |                                                                   |
|------------------------------------------------------------------|-------------------------------------------------------------------|
| Are there any existing Land Uses within the Structure Plan Area? | YES                                                               |
| <i>If YES, nominate:</i>                                         | Approximately 70 dwellings (part of Barfield Road Structure Plan) |

### Proposed Land Uses

|                                                                          |                                                                                                                                                   |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| How many types of land uses are proposed?                                | Three                                                                                                                                             |
| Nominate land use type and yield                                         | Residential (436 dwellings + 44 additional to the LSP area = a total of 480 dwellings), Child Care Centre (77 children and 13 staff members), POS |
| Are the proposed land uses complimentary with the surrounding land-uses? | YES                                                                                                                                               |

## 2.4. Local Road Network Information

How many existing roads are there within the Structure Plan Area?

*Name of Roads within the Structure Plan Area / Road Classification and Description:*

### Road 1

|                                   |                                                  |
|-----------------------------------|--------------------------------------------------|
| <b>Road Name</b>                  | Barfield Road                                    |
| Number of Lanes                   | two way, one lane each direction, undivided      |
| Road Reservation Width            | 20m                                              |
| Road Pavement Width               | 6.2m                                             |
| Classification                    | Significant Urban Local Road / Local Distributor |
| Speed Limit                       | 70kph                                            |
| Bus Route                         | YES (North of Gaebler Road)                      |
| <i>If YES Nominate Bus Routes</i> | 536                                              |
| On-street parking                 | NO                                               |

### Road 2

|                        |                                                                                     |
|------------------------|-------------------------------------------------------------------------------------|
| <b>Road Name</b>       | Frankland Avenue                                                                    |
| Number of Lanes        | two way, one lane each direction, undivided                                         |
| Road Reservation Width | 20m                                                                                 |
| Road Pavement Width    | 7.3m                                                                                |
| Classification         | Urban Local Road / Access Road; Significant Urban Local Road / Regional Distributor |
| Speed Limit            | 50kph or State Limit; 70kph                                                         |

Bus Route NO  
 On-street parking NO

### **Road 3**

|                        |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|
| <b>Road Name</b>       | Irvine Parade                                                                     |
| Number of Lanes        | two way, one lane (no linemarking), undivided                                     |
| Road Reservation Width | 20m                                                                               |
| Road Pavement Width    | 7.2m                                                                              |
| Classification         | Significant Urban Local Road / Local Distributor ; Urban Local Road / Access Road |
| Speed Limit            | 50kph or State Limit                                                              |
| Bus Route              | NO                                                                                |
| On-street parking      | NO                                                                                |

*Name of Other Roads within 2km radius of site, or roads likely to take increased traffic due to the development.*

### **Road 1**

|                                   |                                                     |
|-----------------------------------|-----------------------------------------------------|
| <b>Road Name</b>                  | Wattleup Road                                       |
| Number of Lanes                   | two way, one lane each direction, undivided         |
| Road Reservation Width            | 20m                                                 |
| Road Pavement Width               | 6.5m                                                |
| Classification                    | Significant Urban Local Road / Regional Distributor |
| Speed Limit                       | 80kph                                               |
| Bus Route                         | NO                                                  |
| <i>If YES Nominate Bus Routes</i> |                                                     |
| On-street parking                 | NO                                                  |

### **Road 2**

|                                   |                                             |
|-----------------------------------|---------------------------------------------|
| <b>Road Name</b>                  | Rowley Road                                 |
| Number of Lanes                   | two way, one lane each direction, undivided |
| Road Reservation Width            | 20m                                         |
| Road Pavement Width               | 7.5                                         |
| Classification                    | Rural Local Road / Regional Distributor     |
| Speed Limit                       | 70kph                                       |
| Bus Route                         | NO                                          |
| <i>If YES Nominate Bus Routes</i> |                                             |
| On-street parking                 | NO                                          |

### **Road 3**

|                        |                                           |
|------------------------|-------------------------------------------|
| <b>Road Name</b>       | Kwinana Freeway                           |
| Number of Lanes        | two way, two lanes per direction, divided |
| Road Reservation Width | 130m                                      |
| Road Pavement Width    | 14.4m (7.2m each direction)               |
| Classification         | Rural Highway / Primary Distributor       |
| Speed Limit            | 100kph                                    |
| Bus Route              | YES                                       |

*If YES Nominate Bus Routes*

On-street parking

NO

## 2.5. Traffic Volumes

| Road Name        | Location of Traffic Count               | Vehicles Per Day (VPD) | Vehicles per Peak Hour (VPH) |                    |               |                    | Heavy Vehicle %<br><br><i>If HV count is Not Available, are HV likely to be in higher volumes than generally expected?</i> | Year                  |                                                                              |
|------------------|-----------------------------------------|------------------------|------------------------------|--------------------|---------------|--------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------|
|                  |                                         |                        | AM Peak Time                 | AM Peak - Peak VPH | PM Peak Time  | PM Peak - Peak VPH |                                                                                                                            | Date of Traffic Count | <i>If older than 3 years multiply with a growth rate to the current year</i> |
| Barfield Road    | 650m north of Rowley Road*              | 3,112                  | N/A                          |                    | N/A           |                    | 4.6%                                                                                                                       | Nov 2016              | 3,401 (3% annual growth rate)                                                |
|                  | 75m north of Ironbark Terrace*          | 2,050                  | N/A                          |                    | N/A           |                    | 7.8%                                                                                                                       | Nov 2016              | 2,240 (3% annual growth rate)                                                |
| Frankland Avenue | 60m south of Woodrow Avenue*            | 1,311                  | 08:00 - 159                  |                    | 15:00 - 166   |                    | 7.1%                                                                                                                       | Mar 2017              | –                                                                            |
|                  | 160m south of Wattleup Road*            | 5,113                  | N/A                          |                    | N/A           |                    | 20.4%                                                                                                                      | Feb 2016              | 5,587 (3% annual growth rate)                                                |
| Gibbs Road       | East of Kwinana Freeway                 | 18,076                 | 07:45 – 1,426                |                    | 16:45 – 1,852 |                    | N/A                                                                                                                        | 2017/2018             | –                                                                            |
| Hammond Road     | North of Russell Road                   | 10,386                 | 07:30 – 1,055                |                    | 15:30 – 1,081 |                    | 7.8%                                                                                                                       | 2016/2017             | –                                                                            |
| Irvine Parade    | 180m south of Gaebler Road*             | 1,426                  | N/A                          |                    | N/A           |                    | 4.8%                                                                                                                       | May 2016              | 1,558 (3% annual growth rate)                                                |
| Kwinana Freeway  | Northbound - South of Armadale Road     | 47,121                 | 05:15 - 3,634                |                    | 14:15 – 3,134 |                    | N/A                                                                                                                        | 2017/2018             | –                                                                            |
|                  | Southbound - South of Armadale Road     | 55,643                 | 06:45 – 3,554                |                    | 15:15 – 4,619 |                    |                                                                                                                            |                       | –                                                                            |
|                  | Northbound at Bridge Under Russell Road | 38,593                 | 05:15 – 3,037                |                    | 14:15 – 2,549 |                    | 18.9%                                                                                                                      | 2017/2018             | –                                                                            |
|                  | Southbound at Bridge Under Russell Road | 43,331                 | 07:00 – 2,765                |                    | 14:45 – 3,448 |                    | 13.7%                                                                                                                      |                       | –                                                                            |
|                  | Northbound - South of Russell Road      | 41,610                 | 05:15 – 3,204                |                    | 14:15 – 2,750 |                    | 13.3%                                                                                                                      | 2017/2018             | –                                                                            |

|                                             |                                          |        |               |               |       |               |   |
|---------------------------------------------|------------------------------------------|--------|---------------|---------------|-------|---------------|---|
|                                             | Southbound -<br>South of<br>Russell Road | 46,591 | 07:15 – 3,043 | 14:45 – 3,738 | 13.2% |               | – |
|                                             | Northbound -<br>South of<br>Rowley Road  | 40,773 | 05:15 - 3,132 | 14:45 - 2,619 | 21.6% | 2017/<br>2018 | – |
|                                             | Southbound -<br>South of<br>Rowley Road  | 43,399 | 07:00 - 2,928 | 16:15 - 3,226 | 13.0% |               | – |
| Rowley<br>Road                              | East of<br>Kwinana<br>Freeway            | 11,892 | 07:15 – 1,018 | 16:30 – 972   | 7.9%  | 2017/<br>2018 | – |
|                                             | West of<br>Kwinana<br>Freeway            | 7,853  | 06:30 – 724   | 15:00 – 670   | 14.9% |               | – |
| Russell<br>Road                             | West of<br>Brushfoot<br>Boulevard        | 15,111 | 07:30 – 1,298 | 16:30 – 1,423 | 12.3% | 2014/<br>2015 | – |
| Russell<br>Road on to<br>Kwinana<br>Freeway | Northbound -<br>North of<br>Russell Road | 6,990  | 10:45 – 483   | 14:45 – 566   | 12.7% | 2014/<br>2015 | – |
| Wattleup<br>Road                            | 300m west of<br>Frankland<br>Avenue*     | 4,742  | 06:00 - 494   | 16:00 - 419   | 25.8% | Sep<br>2017   | – |

*Note \* - These traffic counts have been obtained from the City of Cockburn's Intramaps*

## 2.6. Vehicular Crash Information

Is Crash Data Available on Main Roads WA website?

YES

If YES, nominate important survey locations:

Location 1

Rowley Road [SLK 0.00 - 0.80]

Location 2

Frankland Avenue [SLK 1.94 - 2.74] – no crashes

Location 3

Barfield Road [SLK 1.01-2.36]

Location 4

Barfield Road & Rowley Road

Location 5

Frankland Avenue & Rowley Road – no crashes

Period of crash data collection

01/01/2014 - 31/12/2018

| Road / Intersection Name                                | SLK         | Functional Classification                       | Road Hierarchy                           | Speed Limit   | Crash Statistics                                                                         |                                 |                         |                         |
|---------------------------------------------------------|-------------|-------------------------------------------------|------------------------------------------|---------------|------------------------------------------------------------------------------------------|---------------------------------|-------------------------|-------------------------|
|                                                         |             |                                                 |                                          |               | No of KSI Crashes                                                                        | No of Medical Attention Crashes | No of PDO Major Crashes | No of PDO Minor Crashes |
| Rowley Road                                             | 0.00 - 0.80 | Rural Local Road                                | Regional Distributor                     | 70kph         | 0                                                                                        | 0                               | 2                       | 0                       |
| No of MVKT Travelled at Location                        |             |                                                 |                                          |               | approximately 7,500 VPD * 365 * 5 years * 0.8 km = 10.95 MVKT                            |                                 |                         |                         |
| KSI Crash Rate                                          |             |                                                 |                                          |               | 0 KSI crashes / 10.95 MVKT = 0 KSI crashes/MVKT                                          |                                 |                         |                         |
| All Crash Rate                                          |             |                                                 |                                          |               | 2 crashes / 10.95 MVKT = 0.18 crashes/MVKT                                               |                                 |                         |                         |
| Comparison with Crash Density and Crash Rate Statistics |             |                                                 |                                          |               | The average of 0.18 crashes/MVKT is lower than the network average of 0.81 crashes/MVKT. |                                 |                         |                         |
| Barfield Road                                           | 1.01-2.36   | Significant Urban Local Road                    | Local Distributor                        | 70kph         | 0                                                                                        | 0                               | 1                       | 0                       |
| No of MVKT Travelled at Location                        |             |                                                 |                                          |               | approximately 3,000 VPD * 365 * 5 years * 1.35 km = 1.48 MVKT                            |                                 |                         |                         |
| KSI Crash Rate                                          |             |                                                 |                                          |               | 0 KSI crashes / 1.48 MVKT = 0 KSI crashes/MVKT                                           |                                 |                         |                         |
| All Crash Rate                                          |             |                                                 |                                          |               | 1 crashes / 1.48 MVKT = 0.67 crashes/MVKT                                                |                                 |                         |                         |
| Comparison with Crash Density and Crash Rate Statistics |             |                                                 |                                          |               | The average of 0.18 crashes/MVKT is lower than the network average of 0.81 crashes/MVKT. |                                 |                         |                         |
| Barfield Road & Rowley Road                             | N/A         | Significant Urban Local Road / Rural Local Road | Local Distributor / Regional Distributor | 70kph / 70kph | 0                                                                                        | 0                               | 2                       | 0                       |
| No of MVKT Travelled at Location                        |             |                                                 |                                          |               | approximately 10,000 VPD * 365 * 5 years * 0.3 km = 5.48 MVKT                            |                                 |                         |                         |
| KSI Crash Rate                                          |             |                                                 |                                          |               | 0 KSI crashes / 5.48 MVKT = 0 KSI crashes/MVKT                                           |                                 |                         |                         |
| All Crash Rate                                          |             |                                                 |                                          |               | 2 crashes / 5.48 MVKT = 0.37 crashes/MVKT                                                |                                 |                         |                         |
| Comparison with Crash Density and Crash Rate Statistics |             |                                                 |                                          |               | The average of 0.37 crashes/MVKT is lower than the network average of 1.73 crashes/MVKT. |                                 |                         |                         |

The following table shows the Crash Density and Crash Rates on Metropolitan Local Roads as obtained from Main Roads WA on the 14<sup>th</sup> May 2018 by email request: -

**Crash Density and Crash Rate on Metropolitan Local Roads Network only**

|                             | All Crashes                                   |                                              | Serious Injury Crashes (Fatal+Hospital)             |                                                    |
|-----------------------------|-----------------------------------------------|----------------------------------------------|-----------------------------------------------------|----------------------------------------------------|
|                             | Average Annual Crash Density (All Crashes/KM) | Average Annual Crash Rate (All Crashes/MVKT) | Average Annual Crash Density (Ser. Inj. Crashes/KM) | Average Annual Crash Rate (Ser. Inj. Crashes/MVKT) |
| Metro Local Road - Midblock | 2.99                                          | 0.81                                         | 0.13                                                | 0.03                                               |
| Metro Local Road - All      | 6.41                                          | 1.73                                         | 0.26                                                | 0.07                                               |

Note: Based on 5-years data for the period 2013 to 2017.

## 2.7. Public Transport Accessibility

How many bus routes are within 400 metres of the subject site?

None

How many bus routes are within 800 metres of the subject site?

Three (3)

| Bus / Rail Route | Description                                                     | Peak Frequency | Off-Peak Frequency |
|------------------|-----------------------------------------------------------------|----------------|--------------------|
| 535              | Aubin Grove Station - Hammond Park West via Macquarie Boulevard | 20 minutes     | 60 minutes         |
| 536              | Aubin Grove Station - Hammond Park East via Barfield Road       | 20 minutes     | 60 minutes         |
| 537              | Aubin Grove Station - Wandi via Lyon Road                       | 10 minutes     | 60 minutes         |

Walk Score Rating for Accessibility to Public Transport.

25-49 | Some Transit. A few nearby public transportation options.

Is the development in a Greenfields area?

NO

## 2.8. Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

| Classification                                           | Road Name                |
|----------------------------------------------------------|--------------------------|
| "Principal Shared Path"                                  | Kwinana Freeway          |
| "Other Shared Path (Shared by Pedestrians and Cyclists)" | Along Inverson Boulevard |
| Does the site have existing pedestrian facilities        | YES                      |
| Does the site propose to improve pedestrian facilities?  | YES                      |

If YES, describe the measures proposed.

Refer to Section 2.19 Proposed Internal Road Network for roads with the proposed pedestrian paths.

What is the Walk Score Rating?

0-24 | Car-Dependent. Almost all errands require a car.

## 2.9. Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site? YES

If YES, describe:

| Classification                                           | Road Name                                                                                                               |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| "Principal Shared Path"                                  | Kwinana Freeway                                                                                                         |
| "Other Shared Path (Shared by Pedestrians and Cyclists)" | Along Inverson Boulevard, Kesiya Turn, Macquarie Boulevard, Botany Parade, Durango Turn                                 |
| "Good Road Riding Environment"                           | Irvine Parade, Gaebler Road, Lyon Road, Kesiya Turn, Macquarie Boulevard, Botany Parade, Ironbark Terrace, Durango Turn |
| "Perth Bicycle Network - Continuous Signed Routes"       | SW18 - Wattleup Road, Rowley Road; SE41 - Barfield Road                                                                 |

Are there any PBN Routes within a 400m radius of the subject site? YES

If YES, describe:

| Classification                                           | Road Name                                               |
|----------------------------------------------------------|---------------------------------------------------------|
| "Principal Shared Path"                                  | Kwinana Freeway                                         |
| "Other Shared Path (Shared by Pedestrians and Cyclists)" | Along Inverson Boulevard, Kesiya Turn                   |
| "Good Road Riding Environment"                           | Irvine Parade, Kesiya Turn                              |
| "Perth Bicycle Network - Continuous Signed Routes"       | SW18 - Wattleup Road, Rowley Road; SE41 - Barfield Road |

Does the site have existing cyclist facilities? YES

Does the site propose to improve cyclist facilities? YES

If YES, describe the measures proposed.

Refer to Section 2.19 Proposed Internal Road Network for roads with the proposed pedestrian paths.

## 2.10. Vehicular Parking

|                                    |                                                                   |
|------------------------------------|-------------------------------------------------------------------|
| Local Government                   | City of Cockburn                                                  |
| Local Government Document Utilised | Town Planning Scheme No. 3<br>State Planning Policy 3.1 - R-Codes |

Description of Parking Requirements in accordance with Scheme:

**City of Cockburn - Town Planning Scheme No. 3**

"Dwelling - As prescribed in the Residential Design Codes

Child Care Premises:

- 1:1 employee Plus
- 1:10 children"

**R-Codes:**

"The following minimum number of on-site car parking spaces is to be provided for each single house, grouped dwelling and special purpose dwelling comprising the following number of bedrooms:

- 1-bedroom dwellings – Location B – 1 bay per dwelling
- 2+ bedroom dwellings – Location B – 2 bays per dwelling"

**Justification**

Predominant use is residential and to comply with the R-Codes, it is expected that all residences will provide a garage for each dwelling. KCTT believe that by having a garage for the owner, visitors are likely to park in the driveway space in front of the garage. Access Street "C" can accommodate on-street parking to provide additional

bays but also to visually narrow the street and improve safety in the pedestrian environment. Neighbourhood Connector B roads are expected to have parking on both sides of the road.

The approved Childcare Centre located on Lot 9 Irvine Parade will have 21 parking spaces as per the plan included in MSWJDAP/180.

Have Vehicle Swept Paths been checked for Parking? NO

## 2.11. Bicycle Parking

Local Government

City of Cockburn

Reference Document Utilised

Town Planning Scheme No. 3

State Planning Policy 3.1 - R-Codes

Description of Parking Requirements in accordance with Scheme:

**City of Cockburn - Town Planning Scheme No. 3**

*" Dwelling - For Grouped and Multiple Dwellings.*

- 1:4 units for residents
- 1:16 units for visitors"

Justification

It is expected that any grouped and multiple dwellings would provide bicycle parking as outlined by the City of Cockburn Town Planning Scheme No. 3.

The approved Childcare Centre located on Lot 9 Irvine Parade will have 1 bicycle rack as per the plan included in MSWJDAP/180.

## 2.12. ACROD Parking

Class of Building

Class 1a - a single dwelling

Class 2 - a building containing 2 or more sole-occupancy units each being a separate dwelling

Does this building class require specific provision of ACROD Parking?

NO

Reference Document Utilised

Building Code of Australia

Justification

The approved Childcare Centre located on Lot 9 Irvine Parade will have 1 accessible car parking bay as per the plan included in MSWJDAP/180.

## 2.13. Delivery and Service Vehicles

Guideline Document used as reference  
Requirements

NSW RTA Guide to Traffic Generating Developments

*Residential flat buildings (> 200 flats or home Units) - 4 + 1 per 100 units over 200 plus 1 space per 1,000 m2 of public area set aside for bar, tavern, lounge and restaurant*

Justification

It is expected that delivery and service vehicles (such as waste removal vehicles) servicing the area will not require designated parking spaces given that they can operate safely within the road reserve.

## 2.14. Calculation of Development Generated / Attracted Trips

|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What are the likely hours of operation?                                                                                                                                                                                                                                                                                                 | For residential land uses, the hours of operation are not applicable.<br>Child Care Centre 06:30 - 18:30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| What are the likely peak hours of operation?                                                                                                                                                                                                                                                                                            | AM 08:00 - 09:00<br>PM 17:00 - 18:00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Do the development generated peaks coincide with existing road network peaks?                                                                                                                                                                                                                                                           | YES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| If YES, Which:                                                                                                                                                                                                                                                                                                                          | Partially, AM peak only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Guideline Document Used                                                                                                                                                                                                                                                                                                                 | <b>WAPC Transport Assessment Guidelines for Developments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Rates from above document:                                                                                                                                                                                                                                                                                                              | <b>Residential</b> – 0.8 vehicle trips per dwelling for the AM and PM peak hours. A 25% IN / 75% OUT split has been adopted for the AM peak and a 67% IN / 33% OUT split for the PM peak hour;<br><b>Schools</b> - The rates are based on data from the PARTS surveys that indicate that around 65% - 70% of children are driven to primary school, with an average occupancy of around 1.4 - 1.5 children per car. This equates to 0.5 trips per child to school and 0.5 trips per child from school in each of the AM and PM peak hours. For secondary schools the PARTS data indicate that the proportion driven to school is generally a little lower but, to simplify the process of determining the level of assessment required and for the broad assessment of structure plans, it is suggested that the above primary school rates be used for all schools. |
| Guideline Document Used                                                                                                                                                                                                                                                                                                                 | <b>NSW RTA Guide to Traffic Generating Developments</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Rates from above document:                                                                                                                                                                                                                                                                                                              | The NSW RTA Guide to Traffic Generating Developments suggest residential developments of this type in Sydney tend to generate between 4 and 5 vehicular trips per dwelling. In Perth, the Department of Planning and Infrastructure conducted a series of studies in the late 1990's / early 2000's which showed that higher density dwellings tended to average closer to 6.7 vehicle movements per day. KCTT propose using an average VPD of 6.7 vehicular trips per day per residence for R30 and below and an average VPD of 5.5 vehicular trips per day per residence for R40 and above (these rates were used in the previously approved TIA for the Barfield Road Structure Plan).                                                                                                                                                                            |
| Guideline Document Used                                                                                                                                                                                                                                                                                                                 | <b>ITE Trip Generation Report (9th Edition)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Rates from above document:                                                                                                                                                                                                                                                                                                              | <b>Elementary School</b><br><i>Students: 1.29 vehicular trips per day per student</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Child care centres</b> vehicular daily trips can be assumed to be a maximum of 4 VPD per child and 2 VPD per employee. Each parent generates 2 vehicular trips when dropping off the child to the day care centre and 2 vehicular trips when picking the child up. Employees generate 1 vehicular trip arriving at work, and another |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Transport Impact Assessment**  
**KC00050.000 Barfield Road, Hammond Park**

vehicular trip when leaving work. It is a conservative assumption based on the idea that every child in the centre is driven to the premises and that there are no siblings in the centre.

|                                                        | Land Use Type                   | Rate above                                                                                                                                                                                          | Yield                                                  | Daily Traffic Generation | AM Peak    | PM Peak    |
|--------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------|------------|------------|
| Previously approved Barfield Road Local Structure Plan | Residential (R25-R30)           | 6.7 vehicle trips per day<br>0.8 vehicle trips per peak hour                                                                                                                                        | 392 dwellings                                          | 2,626                    | 314        | 314        |
|                                                        | Residential (R40-R60)           | 5.5 vehicle trips per day<br>0.8 vehicle trips per peak hour                                                                                                                                        | 44 dwellings                                           | 242                      | 35         | 35         |
| Amendments to Barfield Road Local Structure Plan       | Residential (R30)               | 6.7 vehicle trips per day<br>0.8 vehicle trips per peak hour                                                                                                                                        | 44 dwellings                                           | 295                      | 35         | 35         |
|                                                        | Approved Child Care Centre      | 4 vehicle trips per child<br>2 vehicle trips per staff member<br>*Peak hour traffic generation was adopted from the TIS report for the proposed child care centre prepared by Cirqa - November 2018 | 77 children<br>13 staff members                        | 334                      | 37*        | 32*        |
|                                                        | <b>Total LSP Traffic - (A):</b> |                                                                                                                                                                                                     |                                                        | <b>3,497</b>             | <b>421</b> | <b>416</b> |
| Land Uses Outside of the LSP Area                      | Primary School                  | *Assume up to 60% of all children are driven to school<br>1.2 vehicle trips per child per day<br>0.5 vehicle trips per child per peak hour                                                          | Assume up to 300 children and up to 30 staff members   | 360                      | 150        | 150        |
|                                                        | High School                     | *Assume up to 30% of all children are driven to school<br>0.6 vehicle trips per child per day<br>0.3 vehicle trips per child per peak hour                                                          | Assume up to 1,000 children and up to 50 staff members | 600                      | 300        | 300        |
| <b>Total (B):</b>                                      |                                 |                                                                                                                                                                                                     |                                                        | <b>4,457</b>             | <b>871</b> | <b>866</b> |

**Justification**

Does the site have existing trip generation / attraction?

YES

|                                                           |                                                                                                                                                                  |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No of Daily Trips                                         | Approximately 70 dwellings (according to the latest aerial imagery)<br>$70 * 6.7 \text{ VPD} = 469 \text{ VPD}$ <b>(C)</b>                                       |
| No of AM Peak Hour Trips                                  | $70 * 0.8 = 56 \text{ VPH}$                                                                                                                                      |
| No of PM Peak Hour Trips                                  | $70 * 0.8 = 56 \text{ VPH}$                                                                                                                                      |
| What is the total impact of the new proposed development? | <b>A - C</b> = 3,028 VPD; AM 365 VPH; PM 360 VPH<br>The impact of the proposed development on the surrounding road network is high according to WAPC guidelines. |

## 2.15. Trip Purposes

| Land Use    | Employment | Shopping | Education | Social / Recreational |
|-------------|------------|----------|-----------|-----------------------|
| Residential | 40%        | 17.5%    | 25%       | 17.5%                 |

## 2.16. Expected Origin / Destination

*Name the closest existing major residential generators and non-residential attractors of traffic and the distance from the boundaries of the Structure Plan Area.*

|                    |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Residential</b> | Employment (profile.id) | <p>The majority of employment trips is expected to be external to the proposed Structure Plan Area. The ID website on the City of Cockburn's webpage suggests the following breakdown for employment destinations for residents of the City of Cockburn:</p> <ul style="list-style-type: none"> <li>• Cockburn (C) - 28.1%</li> <li>• Melville (C) - 11.1%</li> <li>• Perth (C) - 10.8%</li> <li>• Fremantle (C) - 9.6%</li> <li>• Canning (C) - 5.8%</li> <li>• No Fixed Address (WA) - 4.4%</li> <li>• Belmont (C) - 2.6%</li> <li>• Stirling (C) - 2.4%</li> <li>• Kwinana (C) - 2.3%</li> <li>• Rockingham (C) - 2.2%</li> <li>• Victoria Park (T) - 2.2%</li> <li>• Gosnells (C) - 1.8%</li> <li>• Armadale (C) - 1.4%</li> <li>• Subiaco (C) - 1.4%</li> <li>• Swan (C) - 1.3%</li> <li>• Vincent (C) - 1.1%</li> <li>• South Perth (C) - 1.1%</li> <li>• Ashburton (S) - 1.1%</li> <li>• Nedlands (C) - 1.0%</li> <li>• Others – less than 1.0% each</li> </ul> <p>The City Cockburn i.d. site shows that up to 71.6% of all work trips are undertaken using a vehicle (i.e. vehicle as driver plus vehicle as passenger).<br/> Given the predominant transport mode and distribution of destinations, which excluding working from home, shows that</p> |
|--------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | there is no source of employment within the structure plan area, the following roads in KCTT's opinion will be predominantly used for access/egress to the site: -                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                       | <ul style="list-style-type: none"> <li>• Rowley Road</li> <li>• Frankland Avenue</li> <li>• Barfield Road</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Shopping              | Shopping centre is not proposed within the structure plan area. The nearest shopping centres are: <ul style="list-style-type: none"> <li>• Aubin Grove Local Centre located 1km to the north-east</li> <li>• The Park Hive located 1.6km to the north</li> <li>• Harvest Lakes Shopping centre 2km to the north-east</li> </ul>                                                                                                                                                                                                                                                         |
| Education             | There are no schools proposed within the structure plan area, however a Childcare Centre has been approved on Lot 9 Irvine Parade. Several schools are located in close vicinity: <ul style="list-style-type: none"> <li>• Hammond Park Catholic Primary School is adjacent to the structure plan area to the north</li> <li>• Future high school is currently being constructed adjacent to the structure plan area to the north</li> <li>• Hammond Park Primary School is located 800m to the north-west</li> <li>• Aubin Grove Primary School is located 800m to the east</li> </ul> |
| Social / Recreational | It is deemed that a minimum of 80% of the trips for social and recreational purpose will be external.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## 2.17. Traffic Flow Distribution onto External Road Networks

How many routes are available for access / egress to the site? 6

### Route 1

|                                                  |                                                       |
|--------------------------------------------------|-------------------------------------------------------|
| Provide details for Route No 1                   | <b>Via Rowley Road towards east (Kwinana Freeway)</b> |
| Percentage of Vehicular Movements via Route No 1 | 24% = 1,070 VPD / AM 209 VPH / PM 208 VPH             |

### Route 2

|                                                  |                                         |
|--------------------------------------------------|-----------------------------------------|
| Provide details for Route No 2                   | <b>Via Barfield Road towards north</b>  |
| Percentage of Vehicular Movements via Route No 2 | 17% = 758 VPD / AM 148 VPH / PM 147 VPH |

### Route 3

|                                                  |                                                            |
|--------------------------------------------------|------------------------------------------------------------|
| Provide details for Route No 3                   | <b>Via Frankland Avenue and Hammond Road towards north</b> |
| Percentage of Vehicular Movements via Route No 3 | 34% = 1,515 VPD / AM 296 VPH / PM 294 VPH                  |

### Route 4

|                                                  |                                         |
|--------------------------------------------------|-----------------------------------------|
| Provide details for Route No 4                   | <b>Via Wattleup Road towards west</b>   |
| Percentage of Vehicular Movements via Route No 4 | 13% = 579 VPD / AM 113 VPH / PM 113 VPH |

### Route 5

|                                                  |                                                                       |
|--------------------------------------------------|-----------------------------------------------------------------------|
| Provide details for Route No 5                   | <b>Via Proposed Scolaro Road towards north (proposed High School)</b> |
| Percentage of Vehicular Movements via Route No 5 | 7% = 312 VPD / AM 61 VPH / PM 61 VPH                                  |

### Route 6

|                                       |                                                                  |
|---------------------------------------|------------------------------------------------------------------|
| <b>Provide details for Route No 6</b> | <b>Via Irvine Parade towards north (proposed Primary School)</b> |
|---------------------------------------|------------------------------------------------------------------|

|                                                         |                                      |
|---------------------------------------------------------|--------------------------------------|
| <b>Percentage of Vehicular Movements via Route No 6</b> | 5% = 223 VPD / AM 44 VPH / PM 43 VPH |
|---------------------------------------------------------|--------------------------------------|

*\*Note - To and from Rowley Road will only be permitted until construction of the land identified in the WAPC application 149269 has been completed and all Lots developed contained therein being sold to prospective purchasers. Once the construction and sale of these lots has been completed, access to and from Rowley Road for Irvine Parade will be removed at the full cost of the developer / applicant / original landowner and reconfigured to a T-intersection. No access will be permitted to or from Rowley Road for Irvine Parade once the above criteria have been met.*

*\*\*Note - Access to and from Rowley Road for Barfield Road will be either a cul-de-sac or an underpass as communicated in Main Roads response to the WAPC application 149269. In the short-term only a cul-de-sac will be permitted.*

## 2.18. Road Safety

Are sight distances adequate at proposed intersections? YES

### Justification

Liveable Neighbourhoods guidelines state that junction spacing for access streets or laneway junctions are not to be located closer than 20m. The proposed road network complies with this requirement.

## 2.19. Proposed Internal Road Network

|                                                                          |                                                                     |
|--------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>Guideline Document used as reference</b>                              | Liveable Neighbourhoods                                             |
| <b>How many proposed roads are there within the Structure Plan Area?</b> | total of 27 roads, 10 of which are partly or completely constructed |

*The classification below is reflective of minimal traffic requirements. The road reservation widths can be expanded and re-organised to satisfy different types of requirements (e.g. civil engineering, environmental, conservational, urban design etc.), therefore roads that have lower order hierarchy according to traffic engineering requirements might have wider road reservations if required.*

*Name of Roads within the Structure Plan Area / Road Classification and Description:*

### Road 1-2

|                                                          |                                                                                                                                                                                                                                           |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name of Roads</b>                                     | Whadjuk Drive, Barfield Road (north of Road 02)                                                                                                                                                                                           |
|                                                          | <i>*Note - It is expected that Whadjuk Drive (east of Frankland Avenue) will have 3,200 VPD in 2031. However, KCTT believe that traffic will not grow further, and therefore there will be no for upgrading this road section to NC A</i> |
| <b>Projected Traffic Volumes</b>                         | < 3,000 VPD                                                                                                                                                                                                                               |
| <b>Proposed Number of Lanes</b>                          | one lane per direction                                                                                                                                                                                                                    |
| <b>Proposed Road Reservation Width</b>                   | 19.4m                                                                                                                                                                                                                                     |
| <b>Proposed Road Pavement Width</b>                      | 7.0m                                                                                                                                                                                                                                      |
| <b>Proposed Median Width</b>                             | -                                                                                                                                                                                                                                         |
| <b>Proposed Pedestrian / Cyclist / Shared Path Width</b> | 2.1-2.3m shared path on at least one side of the road reservation                                                                                                                                                                         |
| <b>Proposed Classification</b>                           | Neighborhood Connector "B"                                                                                                                                                                                                                |
| <b>Proposed Speed Limit</b>                              | 50 km/h                                                                                                                                                                                                                                   |

**Proposed Bus Route Extension / Introduction** YES

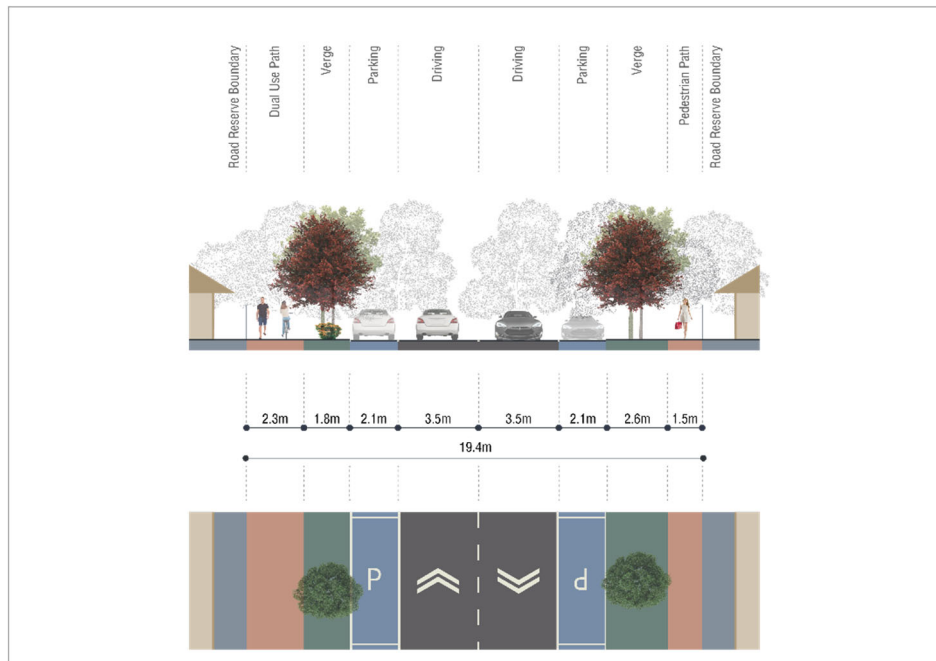
*If YES Nominate Bus Routes*

Bus route is planned along Barfield Road and Whadjuk Drive to a location near Rowley Road.

**Proposed On-street parking**

YES – 2.1m parallel parking

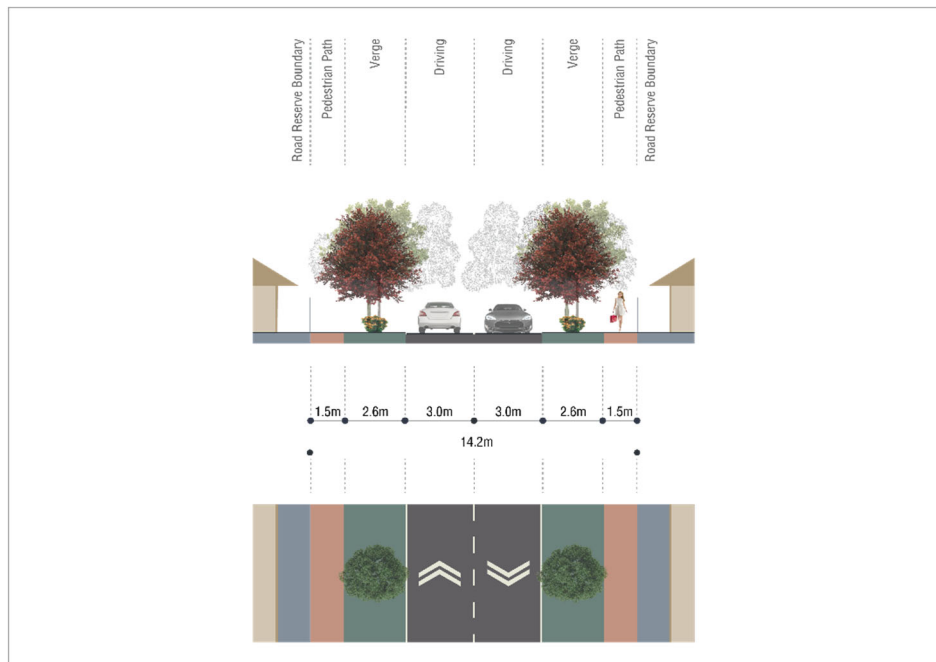
*Provide graphics of the proposed internal road cross section within the Structure Plan Area*



### Road 3 - 19

|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>                                              | Road 01, Road 03, Road 04, Scolaro Road, Irvine Parade, Rechen Chase, Prato Vista, Corsia Crescent, Varese Road, Liscia Way, Caro Way, Iseo Way, Campana Rise, Napoli Drive, Bari Road, Venezia Ridge<br>*Note - It is expected that Irvine Parade (south of Whadjuk Drive) will have 1,070 - 1,080 VPD. However, given this is an internal road, KCTT believe that traffic will not grow further, and therefore there will be no for upgrading this road section to NC B. |
| <b>Projected Traffic Volumes</b>                         | <1,000 VPD                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Proposed Number of Lanes</b>                          | one lane per direction                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Proposed Road Reservation Width</b>                   | 14.2m                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Proposed Road Pavement Width</b>                      | 6.0m                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Proposed Median Width</b>                             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Proposed Pedestrian / Cyclist / Shared Path Width</b> | 1.5m pedestrian path on at least one side of the road reservation                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Proposed Classification</b>                           | Neighborhood Connector "B"                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Proposed Speed Limit</b>                              | 40 km/h                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Proposed Bus Route Extension / Introduction</b>       | NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Proposed On-street parking</b>                        | NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

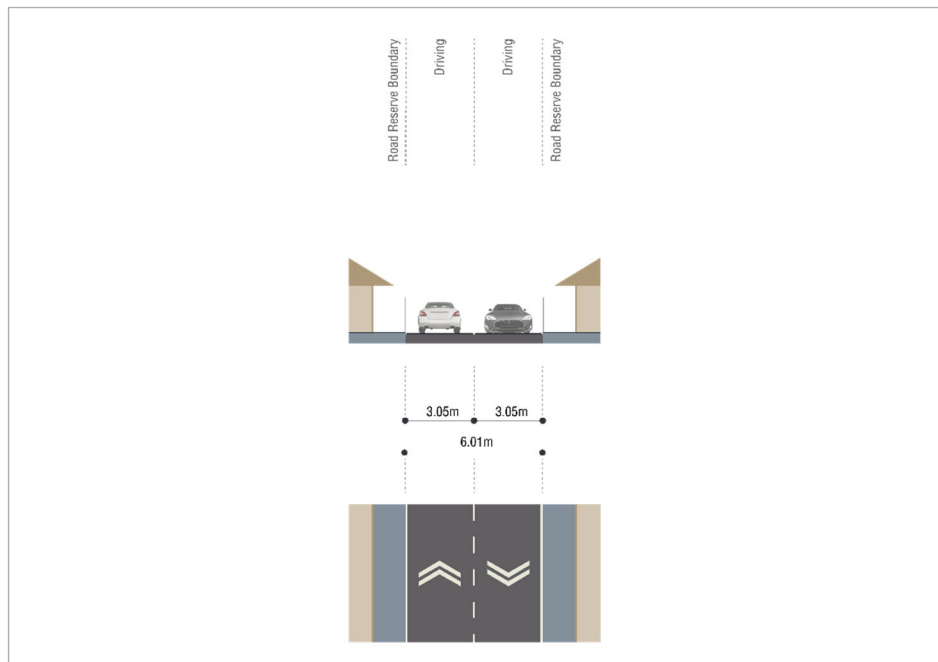
*Provide graphics of the proposed internal road cross section within the Structure Plan Area*



### Road 20 - 26

|                                                   |                                                                            |
|---------------------------------------------------|----------------------------------------------------------------------------|
| Name                                              | Seme Lane, Bello Lane, Capello Lane, Volere Lane, Cembra Lane, Tesoro Lane |
| Projected Traffic Volumes                         | <100 VPD                                                                   |
| Proposed Number of Lanes                          | one lane per direction                                                     |
| Proposed Road Reservation Width                   | 6.01m                                                                      |
| Proposed Road Pavement Width                      | 6.01m                                                                      |
| Proposed Median Width                             | -                                                                          |
| Proposed Pedestrian / Cyclist / Shared Path Width | -                                                                          |
| Proposed Classification                           | Laneway                                                                    |
| Proposed Speed Limit                              | 15 km/h                                                                    |
| Proposed Bus Route Extension / Introduction       | NO                                                                         |
| Proposed On-street parking                        | NO                                                                         |

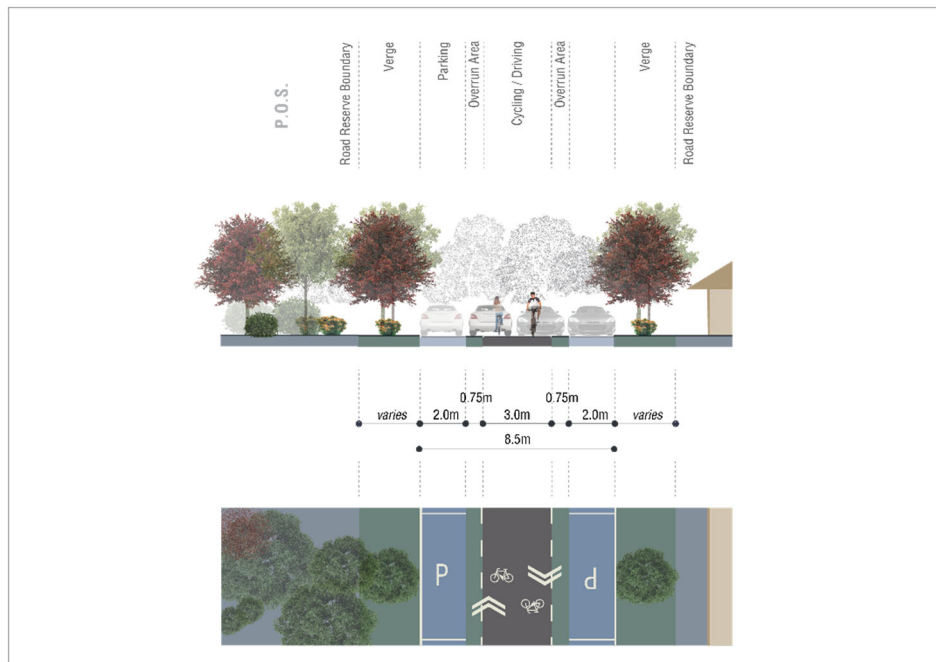
*Provide graphics of the proposed internal road cross section within the Structure Plan Area*



## Road 27

|                                                   |                                                                                                                                  |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Name                                              | Road 02                                                                                                                          |
| Projected Traffic Volumes                         | <100 VPD                                                                                                                         |
| Proposed Number of Lanes                          | one lane per direction                                                                                                           |
| Proposed Road Reservation Width                   | varies                                                                                                                           |
| Proposed Road Pavement Width                      | 3.0                                                                                                                              |
| Proposed Median Width                             | -                                                                                                                                |
| Proposed Pedestrian / Cyclist / Shared Path Width | 3.0m shared space                                                                                                                |
| Proposed Classification                           | Safe Active Street<br><i>It should be noted that SAS can take up many forms, the one presented below is one of the examples.</i> |
| Proposed Speed Limit                              | 15 km/h                                                                                                                          |
| Proposed Bus Route Extension / Introduction       | NO                                                                                                                               |
| Proposed On-street parking                        | YES - 2.0m parallel parking                                                                                                      |

*Provide graphics of the proposed internal road cross section within the Structure Plan Area*



## 2.20. Proposed Intersection Controls

How many proposed intersections have been analysed?

*Name of Intersections within the Structure Plan Area / Road Classification and Description:*

### Intersection 1

|                               |                                  |
|-------------------------------|----------------------------------|
| Name                          | Frankland Avenue / Whadjuk Drive |
| Proposed Intersection Control | Roundabout – constructed         |

### Intersection 2

|                               |                               |
|-------------------------------|-------------------------------|
| Name                          | Irvine Parade / Whadjuk Drive |
| Proposed Intersection Control | Roundabout – constructed      |

### Intersection 3

|                               |                                                                                                                                                                  |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                          | Irvine Parade / Rowley Road                                                                                                                                      |
| Proposed Intersection Control | Roundabout – constructed as an interim solution;<br>When Rowley Road is upgraded, most likely the roundabout will be terminated. Timeframe is unknown currently. |

### Intersection 4

|                               |                                                                                                                                             |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Name                          | Road 02 - Barfield Road                                                                                                                     |
| Proposed Intersection Control | No vehicle access, only cycling. There is potential for a Left-in only, however this will be assessed at a more detailed stage of planning. |

### All other intersections

|                               |                         |
|-------------------------------|-------------------------|
| Name                          | All other intersections |
| Proposed Intersection Control | Give-way/Yield *        |

\*Note - Intersection with Irvine Parade north of Rowley Road might have Left-in/Left-out only configuration until the roundabout is closed. After roundabout closure, this intersection might be configured to a full movement T-intersection.

### *Name additional recommendations*

Liveable Neighbourhoods suggest 6.0 metres kerb radii for access street intersections in order to discourage reckless driving therefore it would be prudent to allow for 6.0 metres curb radii for Access Street D intersections and laneways internal to the LSP area.

## 2.21. Proposed Internal Transport Networks

Are there any changes / additions to the existing road network?

- 28 proposed roads, some of them are already constructed or under construction as part of the approved structure plan area.
- The existing Rowley Road / Irvine Parade roundabout will serve as an interim solution. It is expected that this roundabout will be closed when Rowley Road is upgraded. However, the exact timeframe for this is unknown. Similarly, the intersection of Barfield Road and Rowley Road is expected to be terminated in the future.

Were there any discussions / agreements with MRWA regarding intersections with, or direct access onto roads under their jurisdiction?

YES

*If YES, nominate:*

The proposed access/egress arrangements to Rowley Road are short to medium term only and are subject to rationalisation in the future when MRWA constructs new Rowley Road geometry.

Are there any pedestrian / cycle networks and crossing facilities proposed for the roads within the Structure Plan Area?

YES

*If YES, nominate:*

- Proposed pedestrian path on one side of all proposed streets within the subject area
- Proposed shared path on one side of Road 01 and Road 02
- Proposed shared path on Serpentine Road, connecting the existing PSP path along Kwinana Freeway to the good road environment on Baldivis Road.

Were there any discussions / agreements with the local authority over local road networks and pedestrian and cycle facilities?

NO

Were there any discussions / agreements with PTA / Transperth on new bus services or extensions / alterations to existing bus services to serve the Structure Plan Area?

YES

*If YES, nominate:*

- Bus route 525 is planned to service the Structure Plan Area with a network to be confirmed along Barfield Road to a location near Rowley Road.
- Bus route 526 is planned to service the western portion of the Structure Plan Area with a network to be confirmed along the future Hammond Road and / or Frankland Road.

## 2.22. Changes to External Transport Networks

Are there any proposed changes of the road network?

YES:

- Rowley Road has been identified as a primary freight route to the Naval Base / Kwinana Beach industrial areas. It will be constructed to four lanes and divided in accordance with Main Roads WA standards. However, timing for these upgrades are unknown at this stage (Perth and Peel @3.5 million - Road Network Plan).
- Hammond Road extension south to Rowley Road, with the connection ultimately extending to Anketell Road.

Are there any proposed changes of the intersection controls?

YES

- There are plans for grade separation on the intersection of Hammond Park and Rowley Road Extension, however this is yet to be confirmed at a more detailed planning stage.

Are there any proposed changes of the pedestrian / cycle networks and crossing facilities?

YES

- Several new pedestrian and cycling facilities are planned as part of the adjoining structure plans areas in Hammond Park, Wattelup and Mandogalup.

Are there any proposed changes of the public transport services?

YES:

- Bus route 525 is planned to service the Structure Plan Area with a network to be confirmed along Barfield Road to a location near Rowley Road.
- Bus route 526 is planned to service the western portion of the Structure Plan Area with a network to be confirmed along the future Hammond Road and / or Frankland Road.

*These changes could be those committed or proposed by others, MRWA or local authority, or by the proponent as part of the structure plan.*

## **2.23. Integration with Surrounding Area**

Are there any existing major residential generators of traffic within a minimum of 800 metres from the boundaries of the Structure Plan Area?

YES:

*If YES, nominate:*

- Hammond Park residential area north of the subject site
- Aubin Grove residential area west of the subject site

Are there any existing major non-residential attractors of traffic within a minimum of 800 metres from the boundaries of the Structure Plan Area?

YES

*If YES, nominate:*

- Aubin Grove Local Centre located 1km to the north-east
- The Park Hive located 1.6km to the north
- Harvest Lakes Shopping centre 2km to the north-east
- Hammond Park Catholic Primary School is adjacent to the structure plan area to the north
- Future high school is currently being constructed adjacent to the structure plan area to the north
- Hammond Park Primary School is located 800m to the north-west
- Aubin Grove Primary School is located 800m to the east
- A large residential area is planned south of the subject site as part of the Mandogalup East LSP and Mandogalup West LSP with R-codes ranging from 30 to 80. Additionally, the plans outline a primary school and local centre site.
- Southern Suburbs District Structure Plan for the area north and west of the subject site outline medium to high residential densities with mixed business, schools and local centres. Parts of this area are already constructed or under construction.

Identify any proposals for major changes to the land uses within 800 metres of the boundaries of the Structure Plan Area.

What are the main desire lines between the structure plan land uses and these external attractors / generators?

- Barfield Road
- Hammond Road/Frankland Avenue
- Rowley Road
- Kwinana Freeway
- Lyon Road

Will the existing transport networks, plus any proposed changes, adequately match these desire lines, particularly for pedestrians, cyclist and public transport users?

- Structure Plan Area is well connected to the metropolitan road network with connectivity to Rowley Road and Kwinana Freeway for major external trips, Frankland Avenue / Future Hammond Road alignment for external trips to the west and

Barfield Road for localised travel between the existing Hammond Park area and the Structure Plan Area.

Propose remedial measures to address these deficiencies.

The area is well planned, when all infrastructure is completed, it is expected that the network will function without any major issues.

## 2.24. Analysis of Transport Networks

Determine the year(s) for assessment and the time period(s) for the traffic flow analysis.

2025 and 2031

Determine structure plan generated traffic.

Refer Sections 2.14. and 2.17.

| Road Name        |                                          | Existing Traffic Volumes | Date | Forecasted Traffic Volumes in 2025 | Forecasted Traffic Volumes in 2031 |
|------------------|------------------------------------------|--------------------------|------|------------------------------------|------------------------------------|
| Barfield Road    | Northern Boundary of Structure Plan Area | 3,112                    | 2016 | 2,280                              | 2,480                              |
| Frankland Avenue | North of Wattleup Road                   | 1,311                    | 2017 | 2,430                              | 2,080                              |
|                  | North of Rowley Road                     | 5,113                    | 2016 | 6,270                              | 2,990                              |
| Rowley Road      | East of Barfield Rd                      | 7,853                    | 2018 | 8,900                              | 9,550                              |
| Irvine Parade    | North of Whadjuk Drive                   | N/A                      | N/A  | 300                                | 300                                |
|                  | South of Whadjuk Drive                   | N/A                      | N/A  | 1,070                              | 1,080                              |
|                  | North of Rowley Road                     | N/A                      | N/A  | 310                                | 310                                |
| Whadjuk Drive    | East of Frankland Avenue                 | N/A                      | N/A  | 3,000                              | 3,200                              |
|                  | West of Barfield Road                    | N/A                      | N/A  | 1,950                              | 2,150                              |
| Prato Vista      | East of Frankland Avenue                 | N/A                      | N/A  | 730                                | 730                                |
| Parko Glade      | West of Irvine Parade                    | N/A                      | N/A  | 260                                | 260                                |
| Napoli Drive     | South of Whadjuk Drive                   | N/A                      | N/A  | 350                                | 350                                |
|                  | North of Venezia Ridge                   | N/A                      | N/A  | 50                                 | 50                                 |
| Rechen Chase     | South of Whadjuk Drive                   | N/A                      | N/A  | 300                                | 300                                |
| Corsia Crescent  | West of Irvine Parade                    | N/A                      | N/A  | 490                                | 490                                |
| Liscia Way       | West of Barfield Road                    | N/A                      | N/A  | 300                                | 300                                |
| Genoa Parkway    | West of Barfield Road                    | N/A                      | N/A  | 110                                | 110                                |
| Venezia Ridge    | West of Barfield Road                    | N/A                      | N/A  | 110                                | 110                                |
| Road 01          | East of Barfield Road                    | N/A                      | N/A  | 100                                | 100                                |
| Road 02          | East of Barfield Road                    | N/A                      | N/A  | 100                                | 100                                |
| Road 03          | East of Barfield Road                    | N/A                      | N/A  | 300                                | 300                                |
| Road 04          | Between Road 02 and Road 03              | N/A                      | N/A  | 200                                | 200                                |

Identify all schools within the structure plan area and those within 800 metres of the structure plan area.

There are no schools proposed within the structure plan area, however a Childcare Centre has been approved on Lot 9 Irvine Parade.

Several schools are located in vicinity:

- Hammond Park Catholic Primary School is adjacent to the structure plan area to the north
- Future high school is currently being constructed adjacent to the structure plan area to the north
- Hammond Park Primary School is located 800m to the north-west
- Aubin Grove Primary School is located 800m to the east

Identify the most likely walk and cycle routes to each school from the catchment areas.

It is expected that all proposed roads will have pedestrian paths in their road reserves. The main collector roads will be Irvine Parade, Napoli Drive and Rechen Chase and further via or across Whadjuk Drive to Irvine Parade (the proposed Primary School) or Scolaro Road (the proposed High School).

## 2.25. Site-Specific Issues and Proposed Remedial Measures

How many site-specific issues need to be discussed? One (1)

### Site Specific Issue No 1

Remedial Measure / Response

### Traffic Impact of the proposed changes to the Local Structure Plan

The proposed changes will provide approximately 600 VPD (approximately 70 VPH in peak hours) in addition to the original Structure Plan. Since this additional traffic will be spread throughout the internal and external network with traffic distribution as described in Section 2.17, these amendments will not have a significant impact on the road network and its performance. KCTT believe that the proposed road network will successfully absorb the traffic generated by the proposed LSP area.

# **Appendix 1**

## **The Layout of the Proposed Development**



LEGEND

- STRUCTURE PLAN BOUNDARY

**ZONES**

  - RESIDENTIAL
  - LOCAL CENTRE
- RESERVES**

  - PARKS AND RECREATION
  - PUBLIC PURPOSE
- OTHER ELEMENTS THAT INFORM THE LSP**

  - R25 RESIDENTIAL DENSITY CODE
  - PROPOSED BUS ROUTE
  - DISTRICT CYCLE CONNECTION
- PLANNING CONTROL AREA No. 95

LAND WITHIN FLAMEZONE NOT CAPABLE OF BEING DEVELOPED UNTIL ADJOINING BUSH FIRE HAZARD REMOVED

DEVELOPMENT SUBJECT TO DWELLING CONSTRUCTION UNDER AS3959-2009



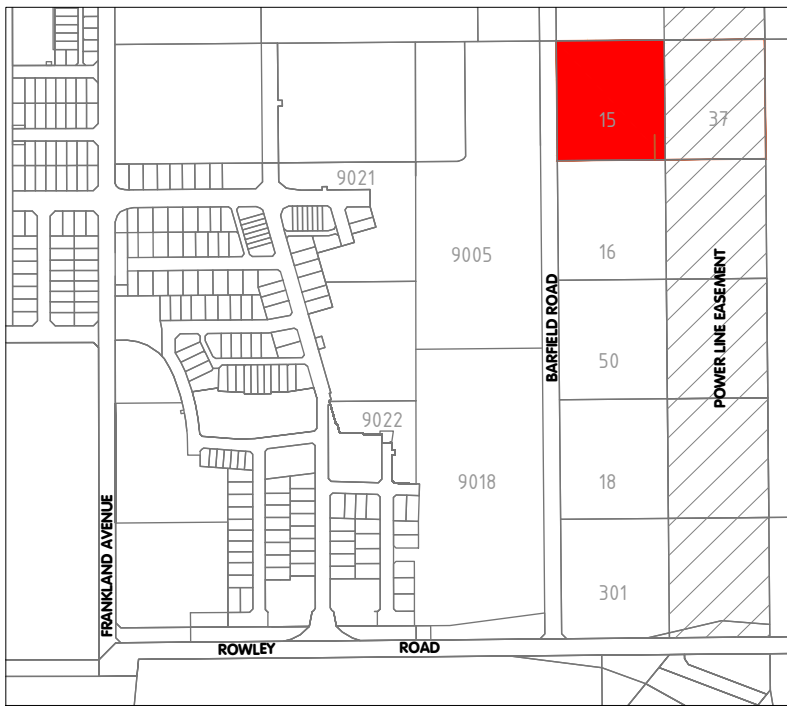
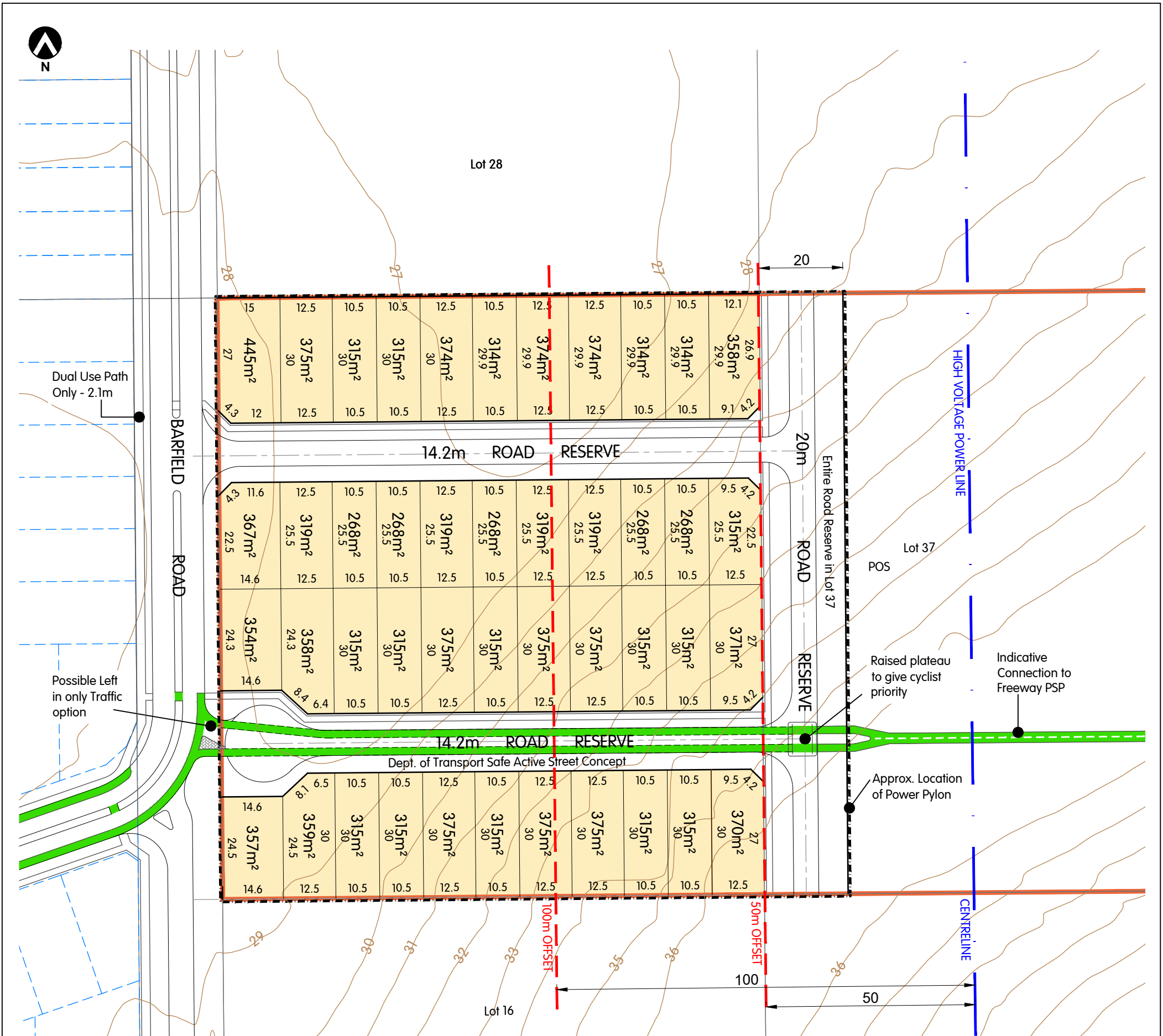
CADASTRAL INFORMATION  
SOURCE: McMULLEN NOLAN  
YYMMDD: 140501  
DWG REF: 96236  
PROJECTION: PCG 94

SIZE A3  
1:3000

|     |                       |        |       |        |
|-----|-----------------------|--------|-------|--------|
| J   | UPDATE PER RD1 150D   | 190510 | SB    | ED     |
| I   | STRUCTURE PLAN UPDATE | 190417 | HH    | EH     |
| H   | MINOR BOUNDARY ADJUST | 181001 | ED    | -      |
| G   | ALIGN R30             | 180927 | ED    | -      |
| REV | DESCRIPTION           | YYMMDD | DRAWN | APPR'D |

BARFIELD ROAD STRUCTURE PLAN  
Lots 13-14, 18 & 47-51 Hammond park  
City of Cockburn

|         |          |      |
|---------|----------|------|
| REF NO. | DRAW NO. | REV. |
| RIC HAM | RD1 045  | J    |



LOCATION PLAN EXISTING LOTS

■ SUBJECT LOT

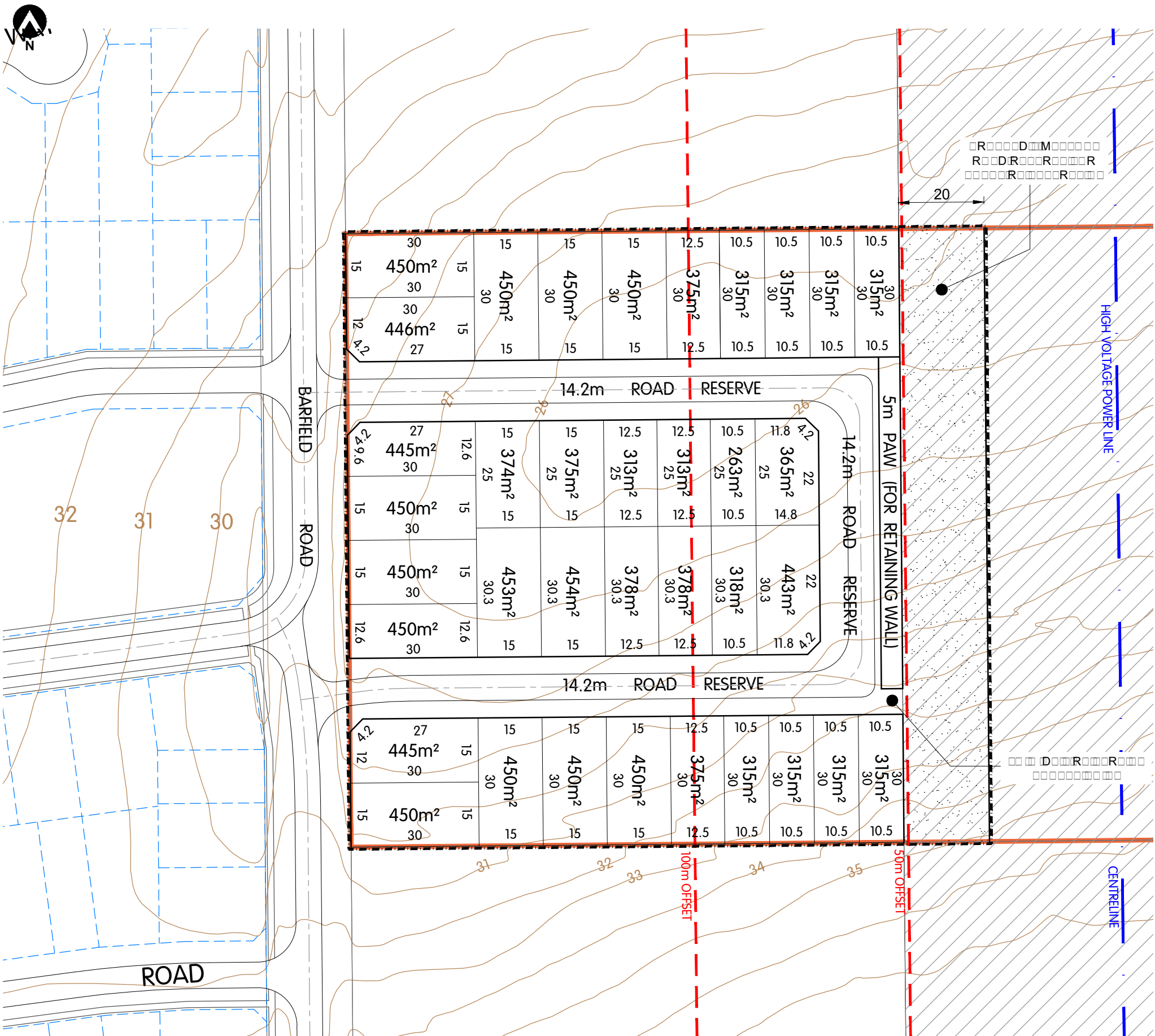
| LOT SUMMARY          |                     |
|----------------------|---------------------|
| NUMBER OF LOTS       | 44                  |
| TOTAL AREA OF LOTS   | 14736m <sup>2</sup> |
| AVERAGE AREA OF LOTS | 334m <sup>2</sup>   |
| MINIMUM LOT AREA     | 268m <sup>2</sup>   |
| MAXIMUM LOT AREA     | 433m <sup>2</sup>   |

LEGEND

- PROPOSED SUBDIVISION - SUBJECT LOTS
- EXISTING LOT
- PROPOSED LOT BOUNDARY
- EXISTING LOT BOUNDARIES
- EXISTING LOT BOUNDARIES TO BE REMOVED
- EXISTING CONTOURS
- 1012 EXISTING LOT NUMBERS
- INDICATIVE FUTURE LOT BOUNDARIES

Department of Transport Safe Active Streets Concept





LOCATION PLAN EXISTING LOTS

SUBJECT LOTS

36 LOTS

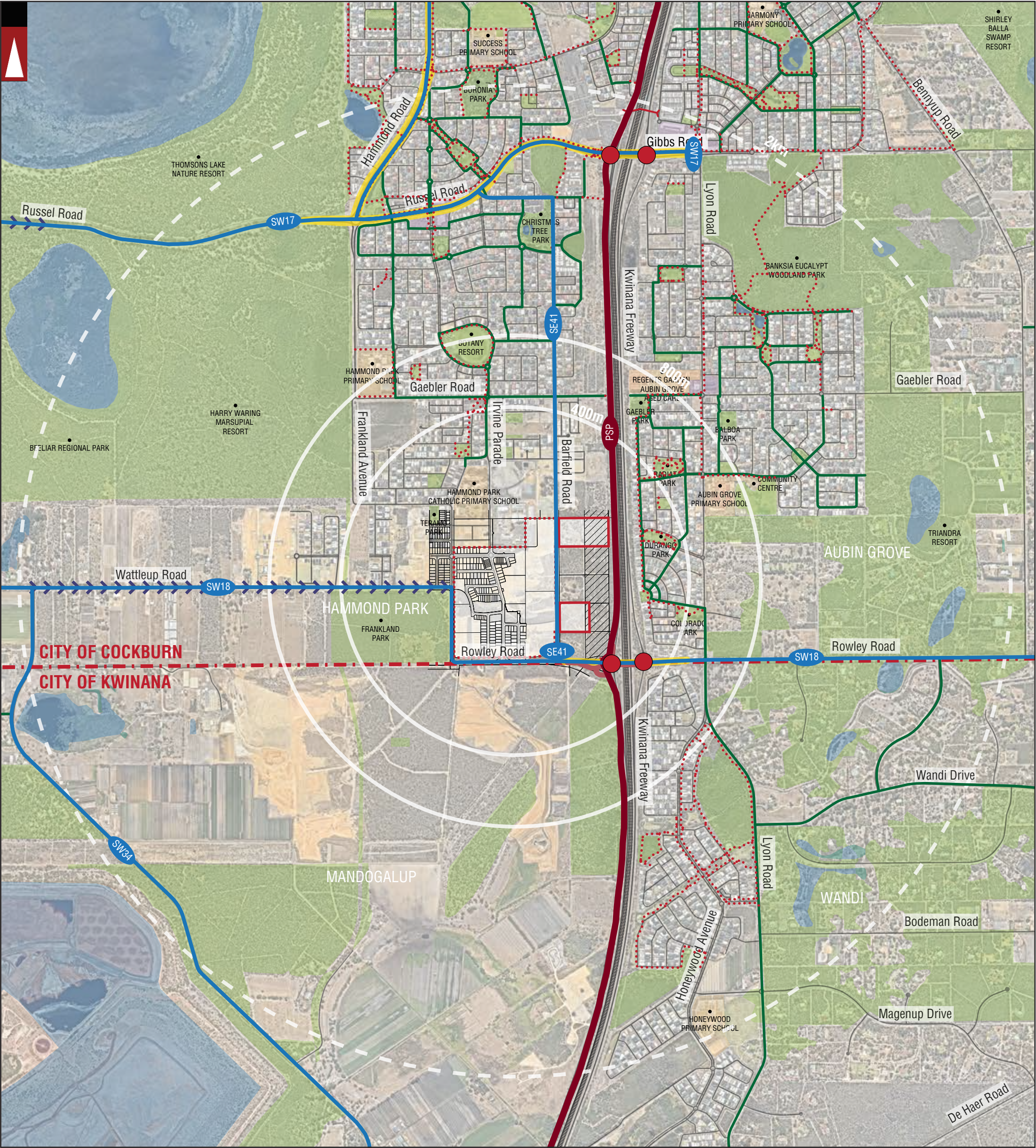
LEGEND

- PROPOSED SUBDIVISION - SUBJECT LOTS
- EXISTING LOT
- PROPOSED LOT BOUNDARY
- EXISTING LOT BOUNDARIES
- EXISTING LOT BOUNDARIES TO BE REMOVED
- EXISTING CONTOURS
- EXISTING LOT NUMBERS
- INDICATIVE FUTURE LOT BOUNDARIES
- HIGH VOLTAGE POWER LINE

# **Appendix 2**

## **Transport Planning and Traffic Plans**





PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

RAILWAY

ROAD BRIDGE, FOOT BRIDGE UNDERPASS

APPROVED STRUCTURE PLAN BOUNDARY

PROPOSED ADDITIONS TO STRUCTURE PLAN

DISTANCE FROM LOCATION

LOCAL GOVERNMENT NAME

LOCAL AUTHORITY BOUNDARY

HAMMOND PARK SUBURB

PSP

PRINCIPAL SHARED PATH (PSP)

HIGH QUALITY SHARED PATH

OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)

GOOD ROAD RIDING ENVIRONMENT

PERTH BICYCLE NETWORK (PBN) - CONTINUOUS SIGNED ROUTES

BICYCLE LANES OR SEALED SHOULDER EITHER SIDE

GRADIENT ARROW

TRAFFIC LIGHT

Certified System

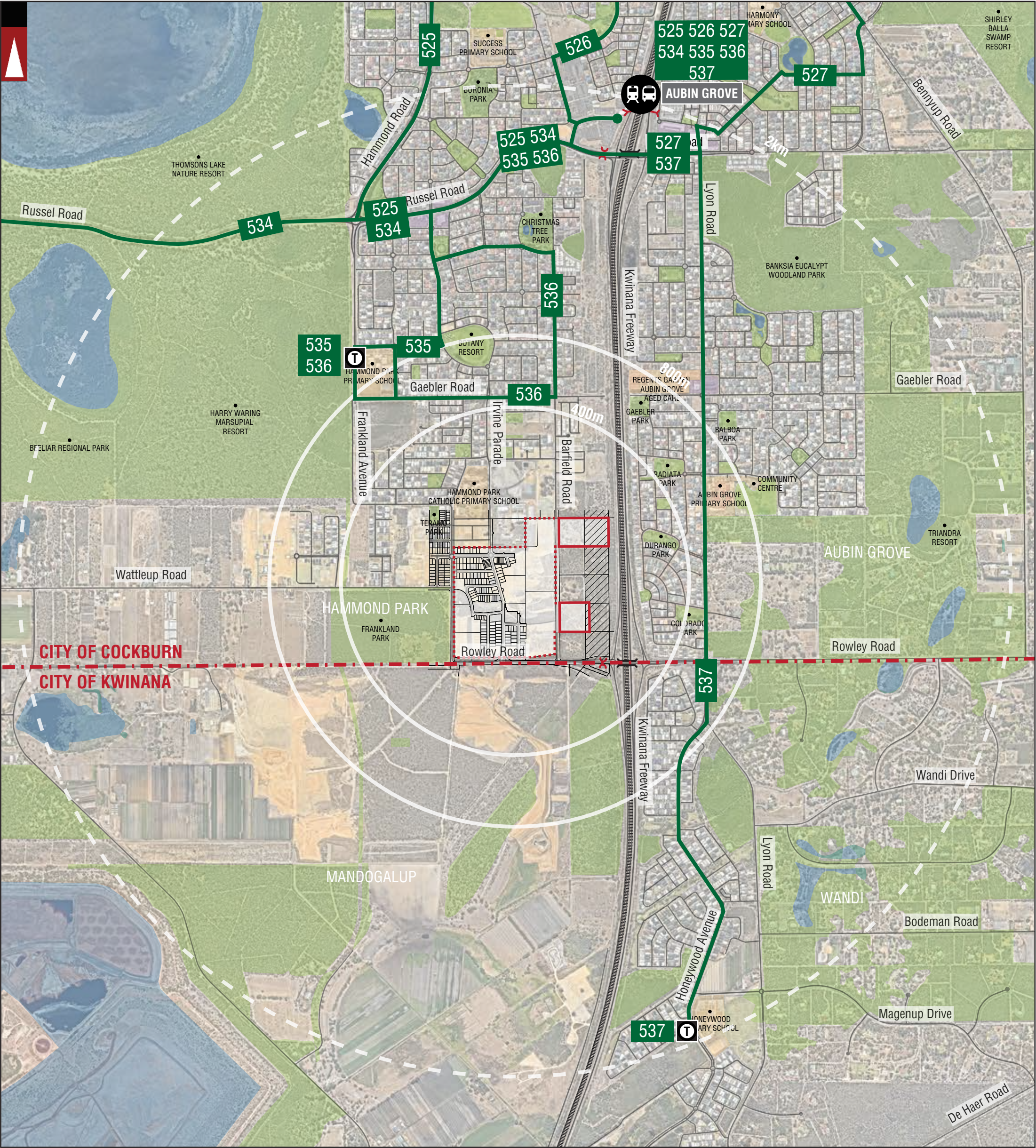
Quality ISO 9001

SAI GLOBAL

LEGEND

|    |            |                   |                                             |           |                                                                                                                                     |                                                                                       |
|----|------------|-------------------|---------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |            |                   | PROJECT:<br>BARFIELD ROAD, HAMMOND PARK     | DRAWN BY: | Civil & Traffic Engineering Consultants<br>Suite 7 No 10 Whipple Street Balcatta WA<br><br>PH: 08 9441 2700<br>WEB: www.kctt.com.au |  |
|    |            |                   | TITLE:<br>BICYCLE NETWORK PLAN - 2KM RADIUS | A.N.      |                                                                                                                                     |                                                                                       |
| A  | 10-05-2019 | ISSUED FOR REVIEW | DRAWING NUMBER:<br>KC00050.000_ S02         |           |                                                                                                                                     |                                                                                       |
| No | DATE       | AMENDMENT         |                                             |           |                                                                                                                                     |                                                                                       |





PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

RAILWAY

ROAD BRIDGE, FOOT BRIDGE, UNDERPASS

APPROVED STRUCTURE PLAN BOUNDARY

PROPOSED ADDITIONS TO STRUCTURE PLAN

DISTANCE FROM LOCATION

LOCAL GOVERNMENT NAME

LOCAL AUTHORITY BOUNDARY

CITY OF COCKBURN

HAMMOND PARK SUBURB

BUS ROUTES

103

BUS ROUTE NUMBER

TRAIN AND BUS TRANSFER

BUS TERMINUS

NOTE : FOR MORE INFORMATION REGARDING THE DESCRIPTION OF BUS ROUTES AND THEIR INDICATIVE PEAK AND OFF-PEAK FREQUENCIES REFER TO TIA REPORT

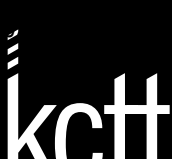
LEGEND

Certified System

Quality ISO 9001

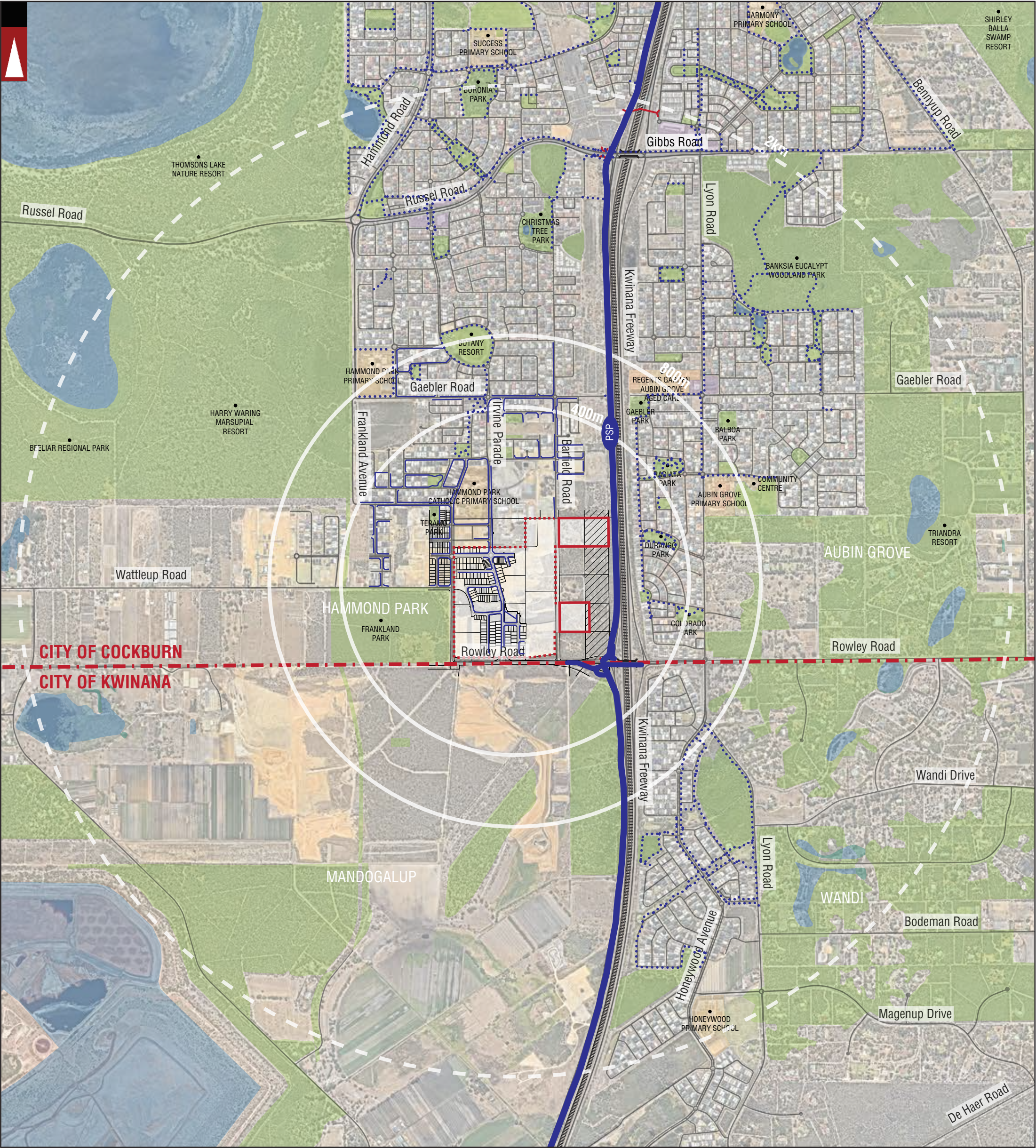
SAI GLOBAL

|    |            |                   |                                              |           |                                                                                                                                     |
|----|------------|-------------------|----------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|
|    |            |                   | PROJECT:<br>BARFIELD ROAD, HAMMOND PARK      | DRAWN BY: | Civil & Traffic Engineering Consultants<br>Suite 7 No 10 Whipple Street Balcatta WA<br><br>PH: 08 9441 2700<br>WEB: www.kctt.com.au |
|    |            |                   | TITLE:<br>PUBLIC TRANSPORT PLAN - 2KM RADIUS | A.N.      |                                                                                                                                     |
|    |            |                   | DRAWING NUMBER:<br>KC00050.000_ S03          |           |                                                                                                                                     |
| A  | 10-05-2019 | ISSUED FOR REVIEW |                                              |           |                                                                                                                                     |
| No | DATE       | AMENDMENT         |                                              |           |                                                                                                                                     |









PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

RAILWAY

ROAD BRIDGE, FOOT BRIDGE, UNDERPASS

APPROVED STRUCTURE PLAN BOUNDARY

PROPOSED ADDITIONS TO STRUCTURE PLAN

DISTANCE FROM LOCATION

LOCAL GOVERNMENT NAME

LOCAL AUTHORITY BOUNDARY

CITY OF COCKBURN

HAMMOND PARK SUBURB

PSP

PRINCIPAL SHARED PATH

HIGH QUALITY SHARED PATH

OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)

PEDESTRIAN PATH

Certified System

Quality ISO 9001

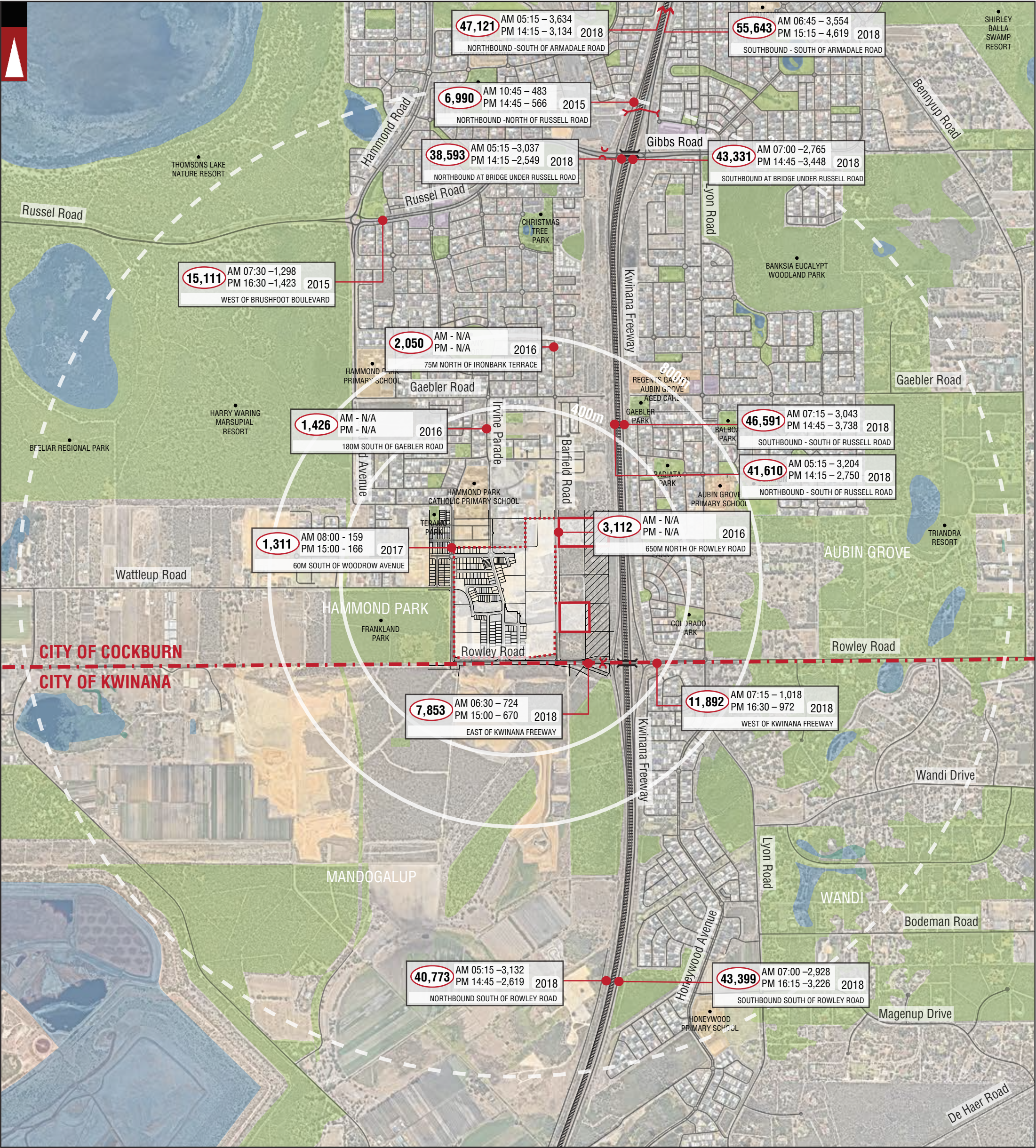
SAI GLOBAL

LEGEND

|    |            |                   |                                              |           |                                                                                     |
|----|------------|-------------------|----------------------------------------------|-----------|-------------------------------------------------------------------------------------|
|    |            |                   | PROJECT:<br>BARFIELD ROAD, HAMMOND PARK      | DRAWN BY: | Civil & Traffic Engineering Consultants<br>Suite 7 No 10 Whipple Street Balcatta WA |
|    |            |                   | TITLE:<br>PEDESTRIAN PATHS PLAN - 2KM RADIUS | A.N.      | PH: 08 9441 2700<br>WEB: www.kctt.com.au                                            |
| A  | 10-05-2019 | ISSUED FOR REVIEW | DRAWING NUMBER:<br>KC00050.000_ S04          |           |                                                                                     |
| No | DATE       | AMENDMENT         |                                              |           |                                                                                     |







PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

RAILWAY

ROAD BRIDGE, FOOT BRIDGE, UNDERPASS

APPROVED STRUCTURE PLAN BOUNDARY

PROPOSED ADDITIONS TO STRUCTURE PLAN

DISTANCE FROM LOCATION

LOCAL GOVERNMENT NAME

LOCAL AUTHORITY BOUNDARY

CITY OF COCKBURN

HAMMOND PARK SUBURB

5,512

NUMBER OF VEHICLES PER DAY

AM 11:45 – 381  
PM 16:30 – 480

NUMBER OF VEHICLES PER AM PEAK HOUR  
NUMBER OF VEHICLES PER PM PEAK HOUR

2014

YEAR

EAST OF HARLOW ROAD

LOCATION

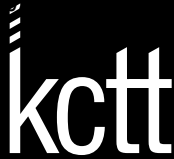
Certified System

Quality ISO 9001

SAI GLOBAL

LEGEND

|    |            |                   |                                         |           |                                                                                     |
|----|------------|-------------------|-----------------------------------------|-----------|-------------------------------------------------------------------------------------|
|    |            |                   | PROJECT:<br>BARFIELD ROAD, HAMMOND PARK | DRAWN BY: | Civil & Traffic Engineering Consultants<br>Suite 7 No 10 Whipple Street Balcatta WA |
|    |            |                   | TITLE:<br>EXISTING TRAFFIC COUNTS       | A.N.      | PH: 08 9441 2700<br>WEB: www.kctt.com.au                                            |
| A  | 10-05-2019 | ISSUED FOR REVIEW | DRAWING NUMBER:<br>KC00050.000_ S05     |           |                                                                                     |
| No | DATE       | AMENDMENT         |                                         |           |                                                                                     |















Attachment

# 07

## Lot 15 Native Vegetation Clearing Permit