

# Appendix A:

Solar Testing



# LEPPINGTON TOWN CENTRE SHADOW ANALYSIS

28 October 2021 - DRAFT

The following shadow analyses was undertaken to test the impact of built form that achieves HillPDA's proposed FSRs on key open spaces.

The building envelopes shown in this model have been prepared for the purpose of identifying reasonable building heights that achieve the base FSRs. Bonus FSR scenarios have not been modelled.

Shadows were cast from modelled built form between 9am and 3pm 21 June (winter solstice).

The percentage of open space that receives solar access has been calculated for selected key open spaces including:

- Civic Square (north of the railway line)
- Railway Square
- Civic Park
- East-West Open Space Spine (excluding Playing Fields)

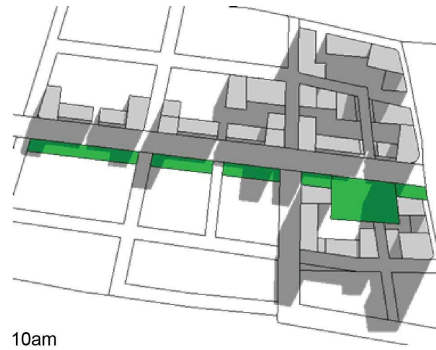
Other open spaces, such as the North-South Open Space Wedge, Park south of Bringelly Road B3 Zone and North-South Open Space Spine have not been subject to solar access calculations as the diagrams visually indicate that these spaces will receive adequate solar access.



# 1. Northern Linear Plaza (East of Rickard Road) and Civic Square (North of Railway Line)



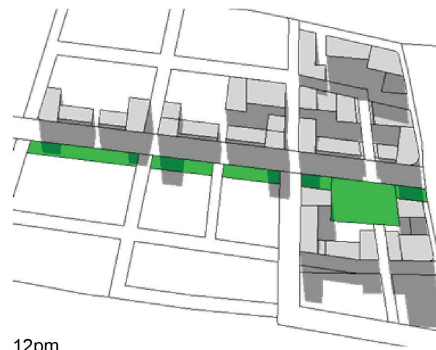
9am



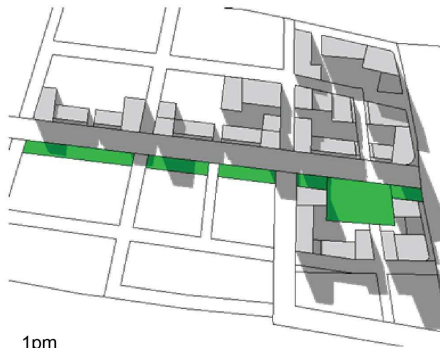
10am



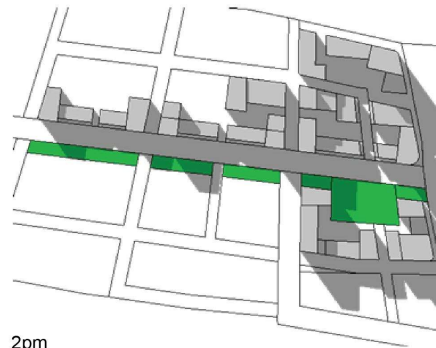
11am



12pm



1pm



2pm



3pm



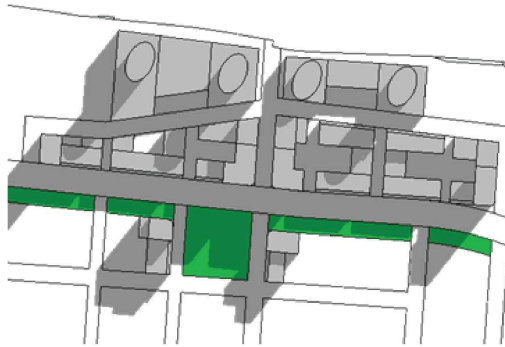
Sunlit Area calculated: Civic Square (does not include Linear Plaza)

| Time | Total Open Space Area (m2) | Overshadowed Area (m2) | Sunlit Area (m2) | % Sunlit Area |
|------|----------------------------|------------------------|------------------|---------------|
| 9am  | 4785                       | 3401                   | 1384             | 29%           |
| 10am | 4785                       | 2248                   | 2537             | 53%           |
| 11am | 4785                       | 1150                   | 3635             | 76%           |
| 12pm | 4785                       | 840                    | 3945             | 82%           |
| 1pm  | 4785                       | 1164                   | 3621             | 76%           |
| 2pm  | 4785                       | 2186                   | 2599             | 54%           |
| 3pm  | 4785                       | 4506                   | 279              | 6%            |

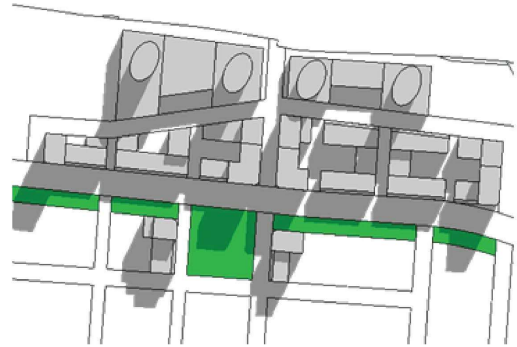




## 2. Park South of the Bringelly Road B3 Zone



9am



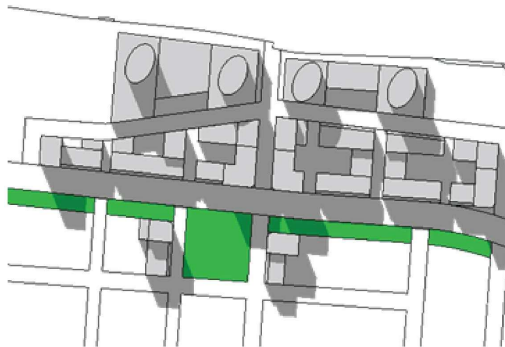
10am



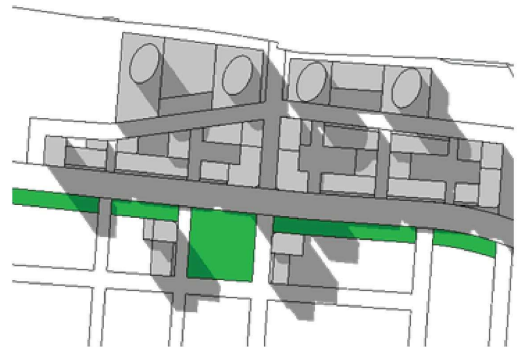
11am



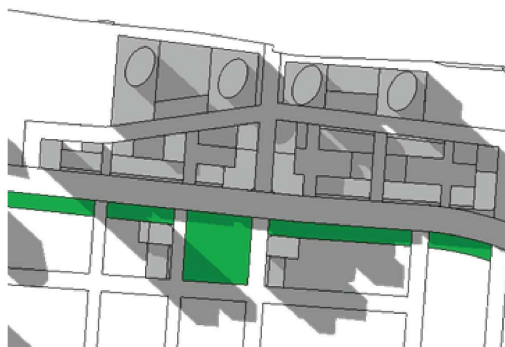
12pm



1pm



2pm



3pm

**(Sunlit Area Not Calculated)**



### 3. Railway Square, Civic Park and East-West Open Space Spine (west of Rickard Road)



9am



10am



11am



12pm



1pm



2pm



3pm

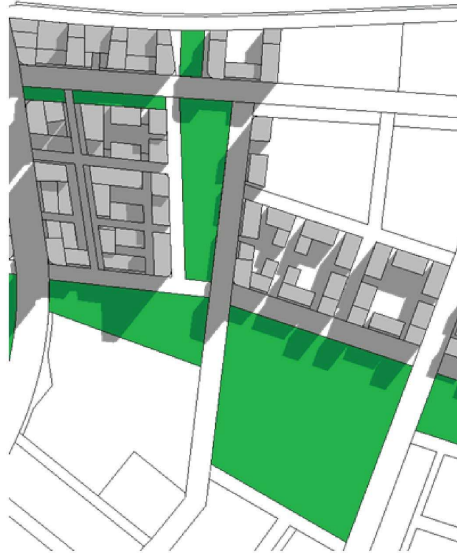


Sunlit Area Calculated:

| Open Space  | Time | Total Open Space Area (m2) | Overshadowed Area (m2) | Sunlit Area (m2) | % Sunlit Area |
|---|------|----------------------------|------------------------|------------------|---------------|
| Civic Park  | 9am  | 9283                       | 6322                   | 2961             | 32%           |
|   | 10am | 9283                       | 4402                   | 4881             | 53%           |
|   | 11am | 9283                       | 3465                   | 5818             | 63%           |
|   | 12pm | 9283                       | 3150                   | 6133             | 66%           |
|   | 1pm  | 9283                       | 2952                   | 6331             | 68%           |
|   | 2pm  | 9283                       | 3136                   | 6147             | 66%           |
|   | 3pm  | 9283                       | 3720                   | 5563             | 60%           |
| Railway Square  | 9am  | 2196                       | 479                    | 1717             | 78%           |
|   | 10am | 2196                       | 259                    | 1937             | 88%           |
|   | 11am | 2196                       | 35                     | 2161             | 98%           |
|   | 12pm | 2196                       | 200                    | 1996             | 91%           |
|   | 1pm  | 2196                       | 460                    | 1736             | 79%           |
|   | 2pm  | 2196                       | 795                    | 1401             | 64%           |
|   | 3pm  | 2196                       | 1235                   | 961              | 44%           |
| East-West OS Spine<br>(West of North-South<br>Town Centre Street) | 9am  | 6995                       | 1917                   | 5078             | 73%           |
|   | 10am | 6995                       | 691                    | 6304             | 90%           |
|   | 11am | 6995                       | 83                     | 6912             | 99%           |
|   | 12pm | 6995                       | 429                    | 6566             | 94%           |
|   | 1pm  | 6995                       | 1269                   | 5726             | 82%           |
|   | 2pm  | 6995                       | 3675                   | 3320             | 47%           |
|   | 3pm  | 6995                       | 6586                   | 409              | 6%            |
| East-West OS Spine<br>(West of Rickard Rd)                        | 9am  | 18092                      | 13206                  | 4886             | 27%           |
|   | 10am | 18092                      | 9201                   | 8891             | 49%           |
|   | 11am | 18092                      | 7713                   | 10379            | 57%           |
|   | 12pm | 18092                      | 8086                   | 10006            | 55%           |
|   | 1pm  | 18092                      | 9081                   | 9011             | 50%           |
|   | 2pm  | 18092                      | 11072                  | 7020             | 39%           |
|   | 3pm  | 18092                      | 13061                  | 5031             | 28%           |



#### 4. North-South Open Space Wedge, East-West Open Space Spine (East of Rickard Road) and Playing Fields



9am



10am



11am



12pm



1pm



2pm



3pm

**Sunlit Area Calculated:**

| Open Space                              | Time | Total Open Space Area (m2) | Overshadowed Area (m2) | Sunlit Area (m2) | % Sunlit Area |
|---|------|----------------------------|------------------------|------------------|---------------|
| East-West OS Spine (East of Rickard Rd) | 9am  | 10788                      | 4406                   | 6382             | 59%           |
|   | 10am | 10788                      | 2509                   | 8279             | 77%           |
|   | 11am | 10788                      | 2221                   | 8567             | 79%           |
|   | 12pm | 10788                      | 2328                   | 8460             | 78%           |
|   | 1pm  | 10788                      | 2792                   | 7996             | 74%           |
|   | 2pm  | 10788                      | 3992                   | 6796             | 63%           |
|   | 3pm  | 10788                      | 6635                   | 4153             | 38%           |

**(Sunlit Area Not Calculated – North-South Open Space Wedge and Playing Fields)**





## 5. North-South Open Space Spine



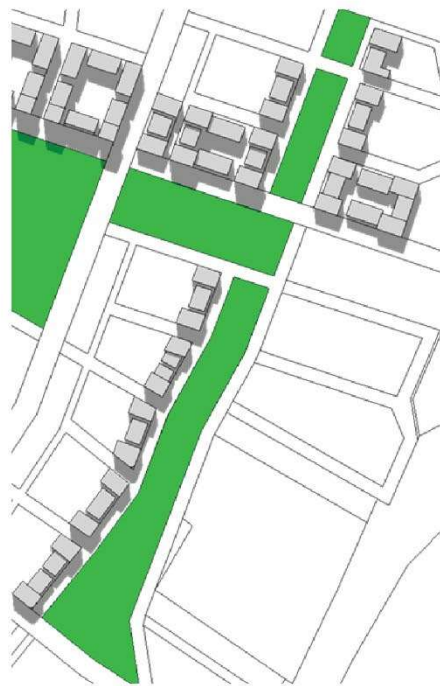
9am



10am



11am



12pm



1pm



2pm



3pm

**(Sunlit Area Not Calculated)**


























# Appendix B:

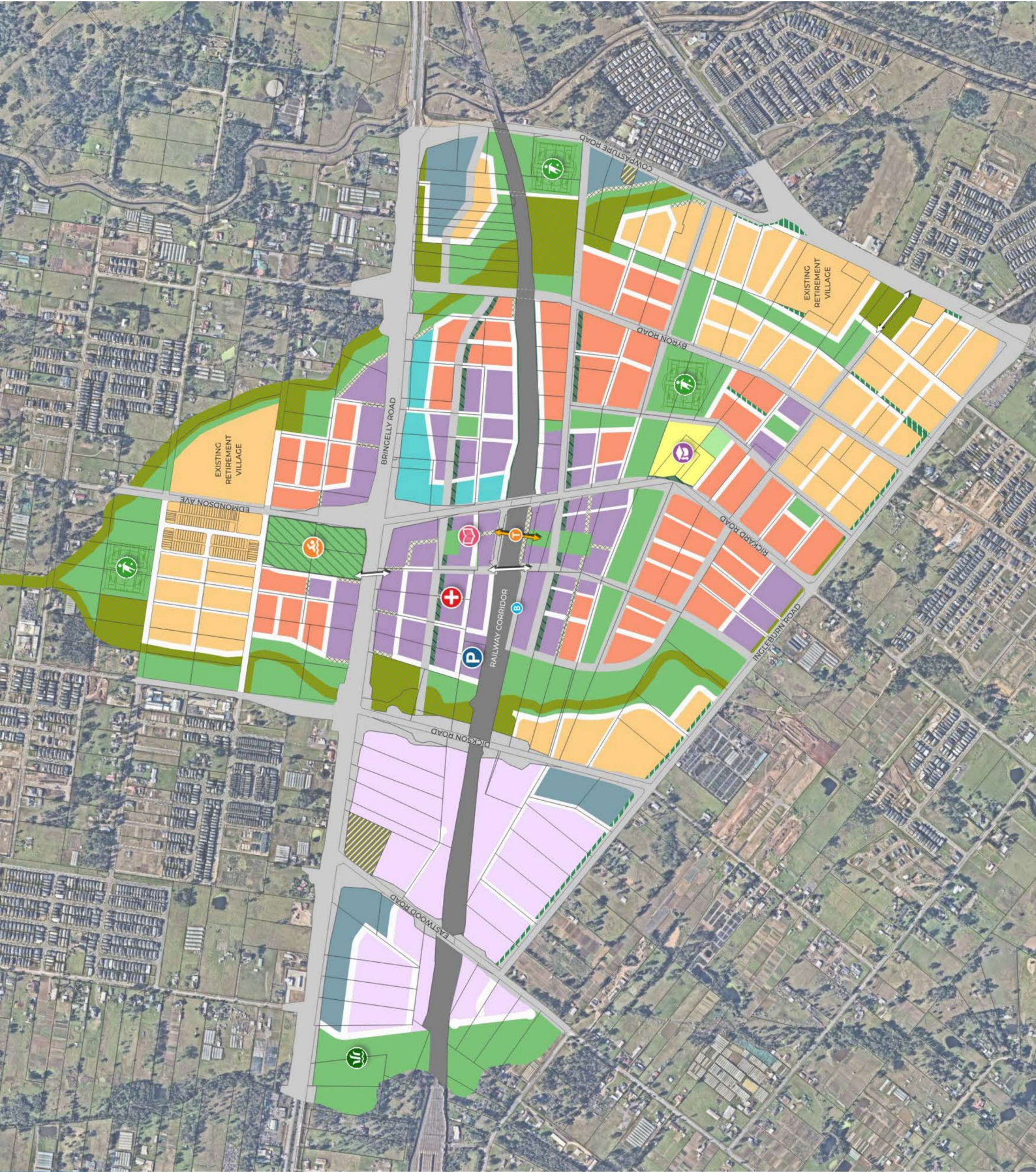
DCP Figures



# Leppington Town Centre Indicative Layout Plan

## Legend

-  Commercial
-  Mixed Use
-  Business Development
-  Light Industrial
-  Medium Density Residential
-  High Density Residential
-  Railway Corridor
-  Public Recreation
-  Private Recreation
-  School
-  Utilities Infrastructure
-  Drainage and Riparian
-  Landscaped Road Reserve
-  Linear Plaza
-  Road
-  Pedestrian Priority Street
-  Recreation Facility
-  Education
-  Playing Field
-  Health Hub
-  Nature Reserve
-  Commuter Car Park
-  Community Centre
-  Train Station
-  Bus Interchange
-  Primary Active Link
-  Proposed Active Link

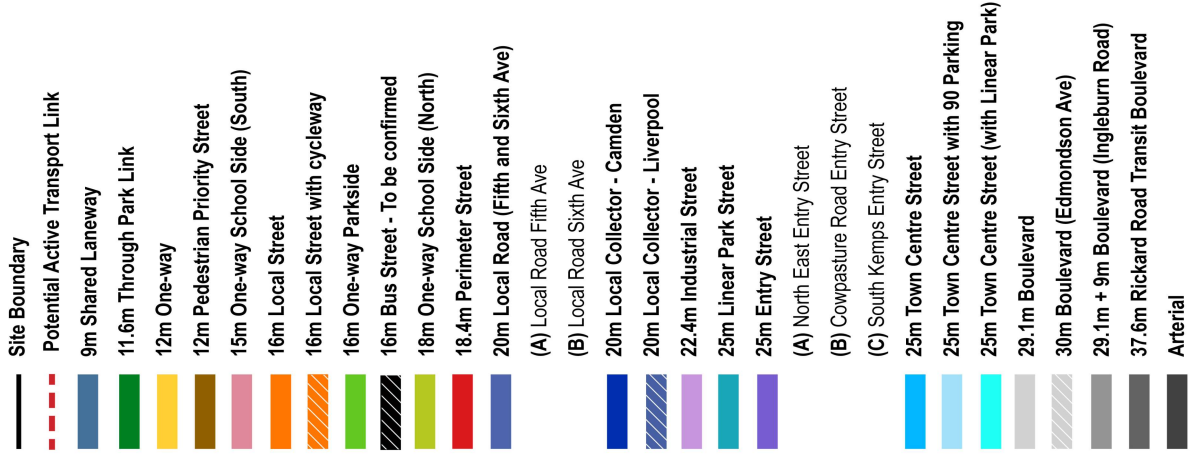


MAP DATE:  
01-09-2022





# Street Typology Map



\* This street must be modified to be similar to a Town Centre Street and must accommodate potential bus stop infrastructure on both sides of the street. Bidirectional cycling infrastructure must also be provided on the north side of street. Cycling infrastructure must be designed to be safe and compatible with bus stop infrastructure



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## DCP DIAGRAM - STREET TYPOLOGY MAP

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Project No. 2022-6723  
 Project Name LEPPINGTON TOWN CENTRE

# Intersection Crossing Types








- Site Boundary
- Potential signalised intersection
- Potential roundabout
- Scramble crossings
- Crossing with different road material
- Entire intersection raised to footpath level
- Crossing raised to footpath level
- Entire road raised to footpath level
- Potential active transport link
- Active transport underpass
- Drainage and Riparian
- Open Space
- Leppington Train Station and Railway Corridor
- Main Roads

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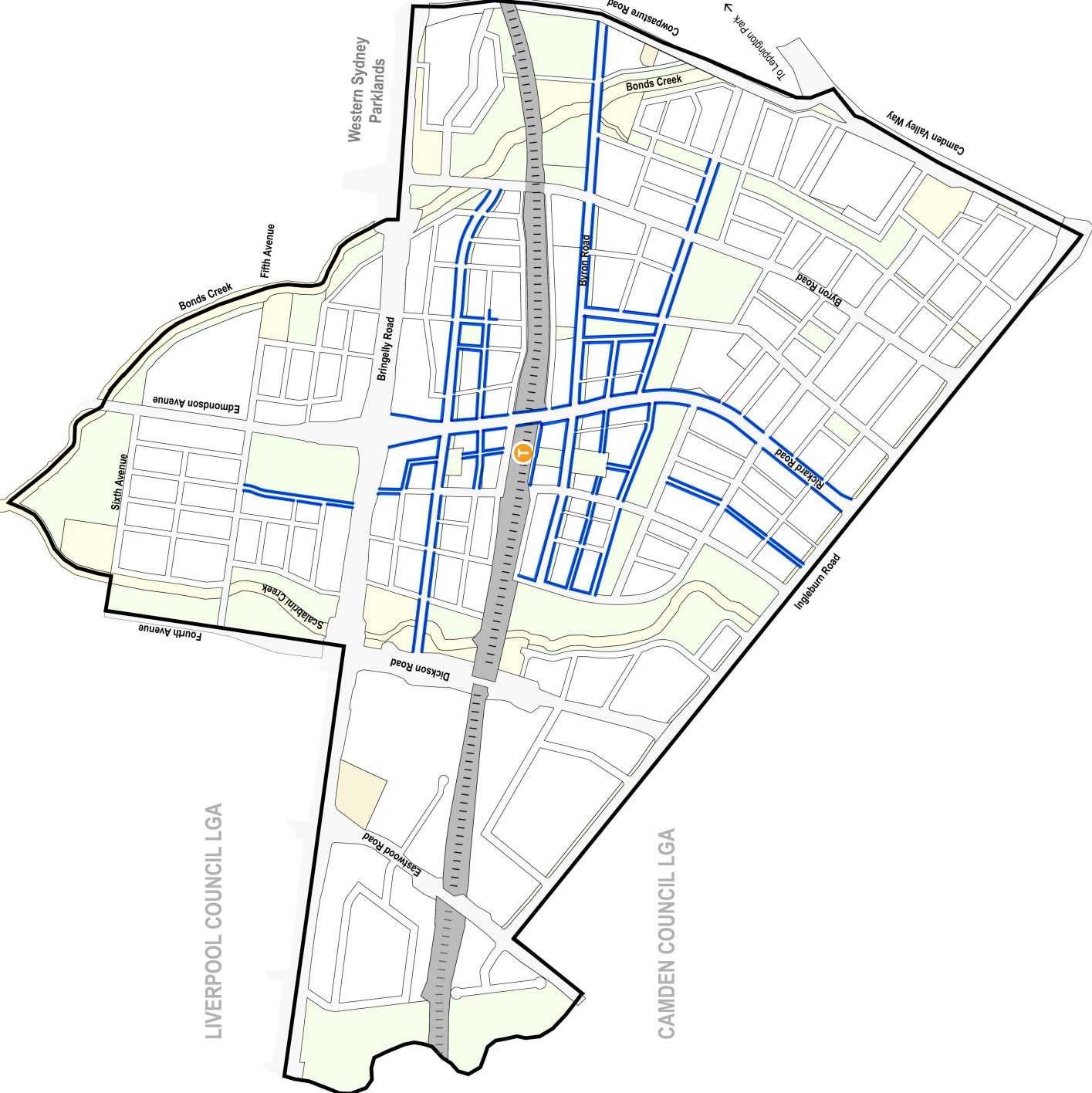
# Town Centre Material Treatments on Footpath Map

-  Site Boundary
-  Town Centre Footpath Paving
-  Drainage and Riparian
-  Utilities Infrastructure
-  Open Space
-  Leppington Train Station and Railway Corridor
-  Main Roads

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DCP DIAGRAM - SPECIAL MATERIAL TREATMENTS ON FOOTPATH MAP

0 100 200 500m

Drawing No. **DCP 04** Rev **07-09-2022**








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 Project Name **LEPPINGTON TOWN CENTRE**





# Special Intersection Design

-  Site Boundary
-  Special Intersection Design Locations
-  Drainage and Riparian
-  Utilities Infrastructure
-  Open Space
-  Leppington Train Station and Railway Corridor
-  Main Roads



# Key Pedestrian Desire Lines Map

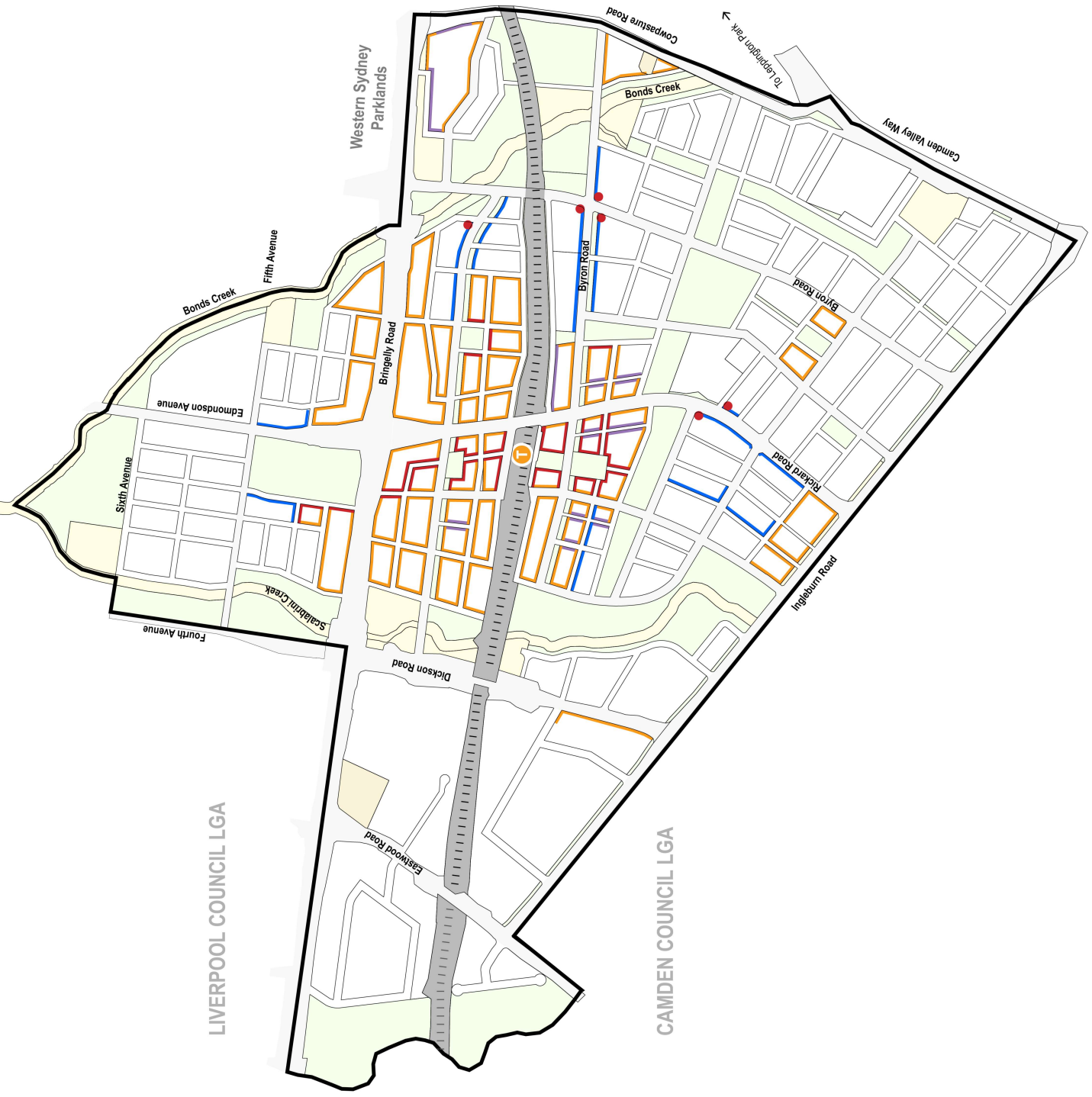
- Site Boundary
- Key Pedestrian Desire Lines
- Through Site Links
- Drainage and Riparian
- Utilities Infrastructure
- Open Space
- Leppington Train Station and Railway Corridor
- Main Roads

Note: Scramble crossing is recommended at the corner of Byron Road for ease of access to the park.



# Active Frontages

- Site Boundary
- Active Commercial Frontage - Type A
- Active Commercial Frontage - Type B
- Active Commercial Frontage - Type C
- Flexible Residential Frontage
- Commercial frontage encouraged on key corner
- Drainage and Riparian
- Utilities Infrastructure
- Open Space
- Leppington Train Station and Railway Corridor
- Main Roads



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## DCP DIAGRAM - ACTIVE FRONTAGES





















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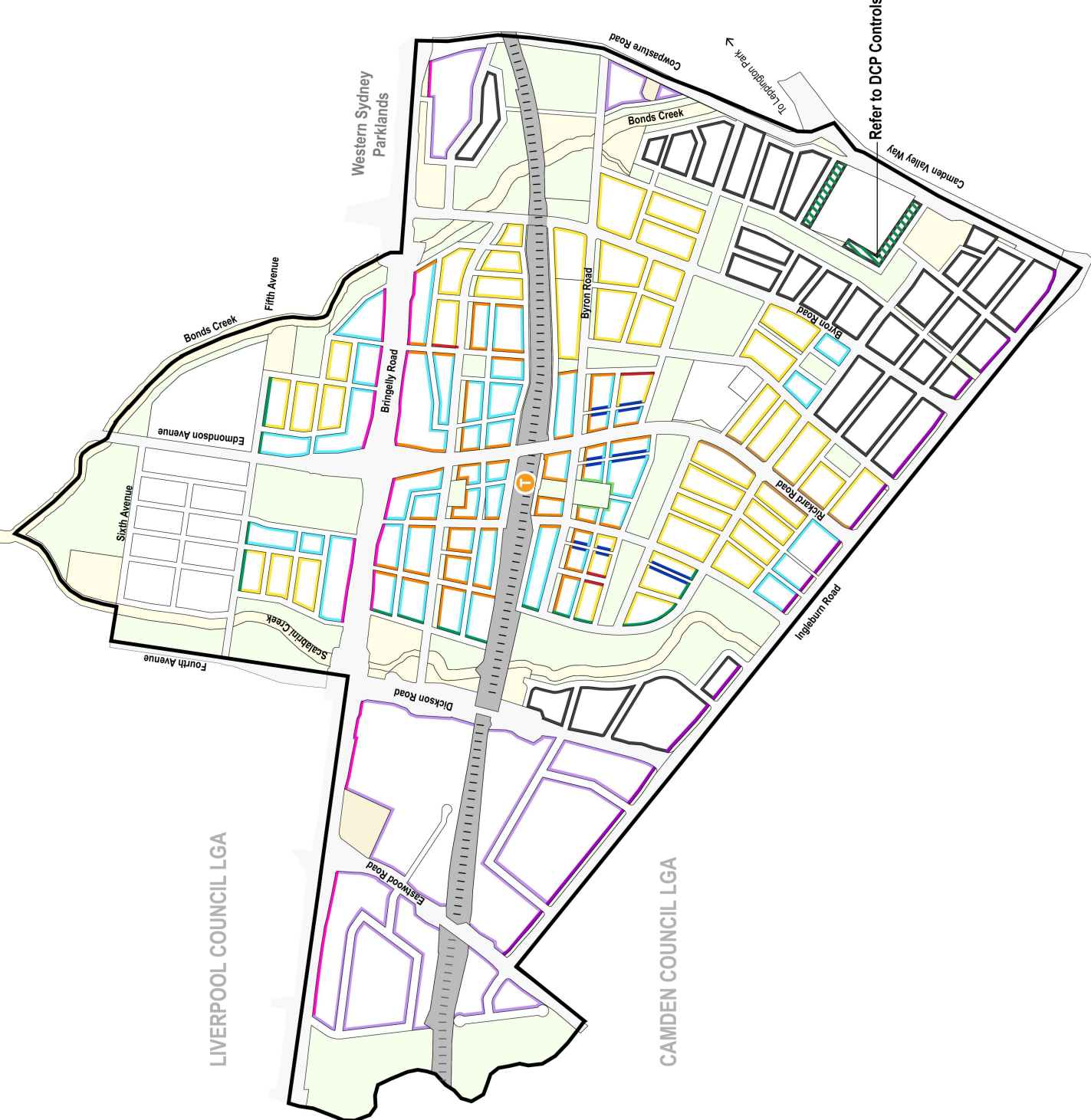
Drawing Status **FINAL FOR EXHIBITION**  
 Project No. **2022-6723**

Project Name **LEPPINGTON TOWN CENTRE**






# Setbacks Map

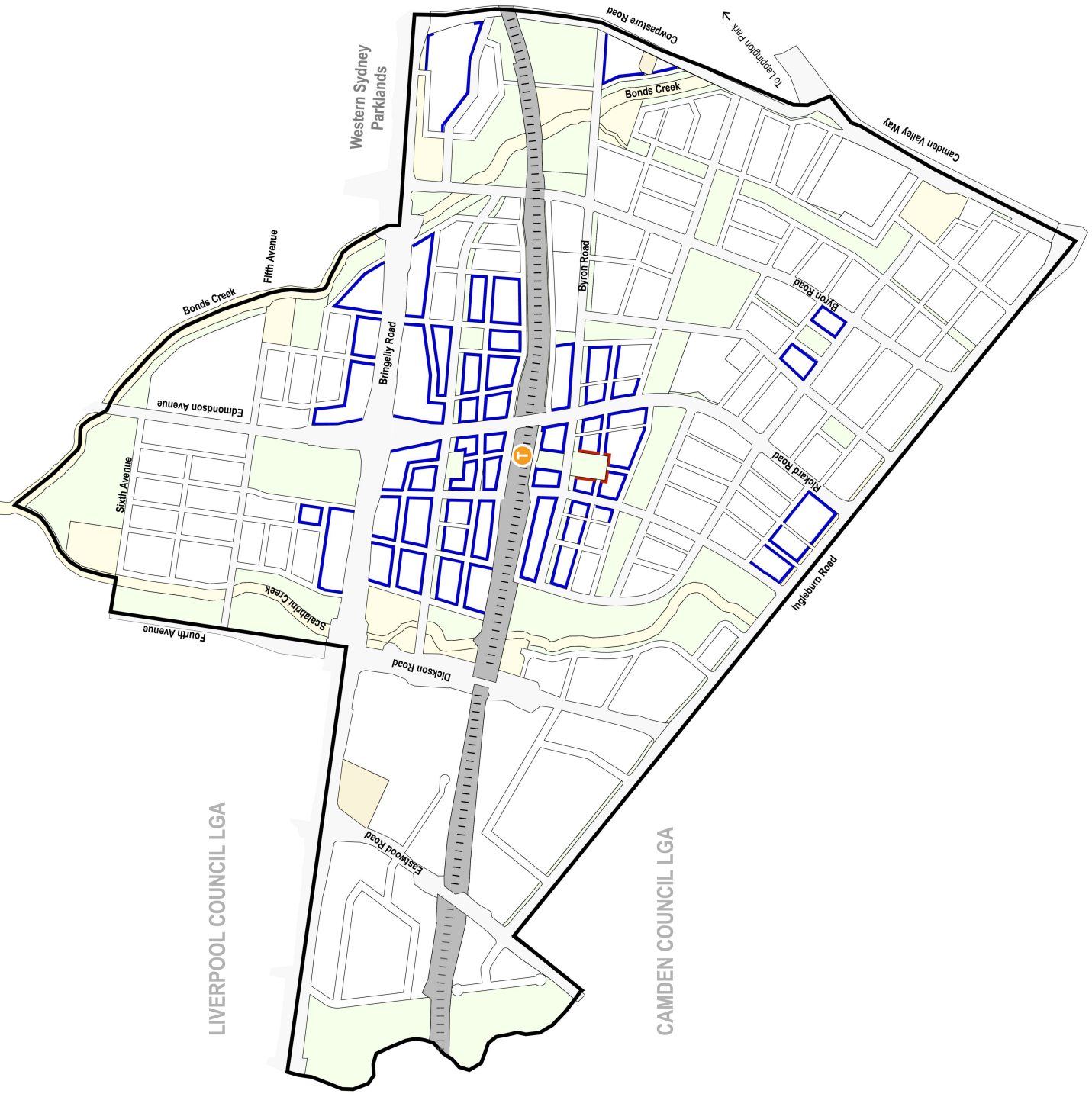
-  Site Boundary
-  Civic Park setback
-  Zero setback - 6 storey street wall, 4m upper setback
-  Zero setback - 4 storey street wall, 4m upper setback
-  Zero setback - 2 storey street wall, 4m upper setback
-  Zero setback (to service lane)
-  Bringelly Road setback
-  Ingleburn Road setback
-  Industrial Use and Business development uses setback
-  Zero setback - 6 storey street wall, 4m upper setback (3m articulation zone for the first two storeys and 2m articulation zone above)
-  Zero setback - 4 storey street wall, 4m upper setback (3m articulation zone for the first two storeys and 2m articulation zone above)
-  3m setback - 4 storey street wall, 4m upper setback (Above ground floor, 1m articulation zone within setback and 2m articulation zone behind building line, up to four storeys. Above street wall, 2m articulation zone within upper setback)
-  6m setback with 4m setback to corners
-  Drainage and Riparian
-  Utilities Infrastructure
-  Open Space
-  Leppington Train Station and Railway Corridor
-  Main Roads





# Awnings Map

-  Site Boundary
-  Continuous Awnings
-  Colonnade
-  Drainage and Riparian
-  Utilities Infrastructure
-  Open Space
-  Leppington Train Station and Railway Corridor
-  Main Roads



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DCP DIAGRAM - AWNINGS MAP



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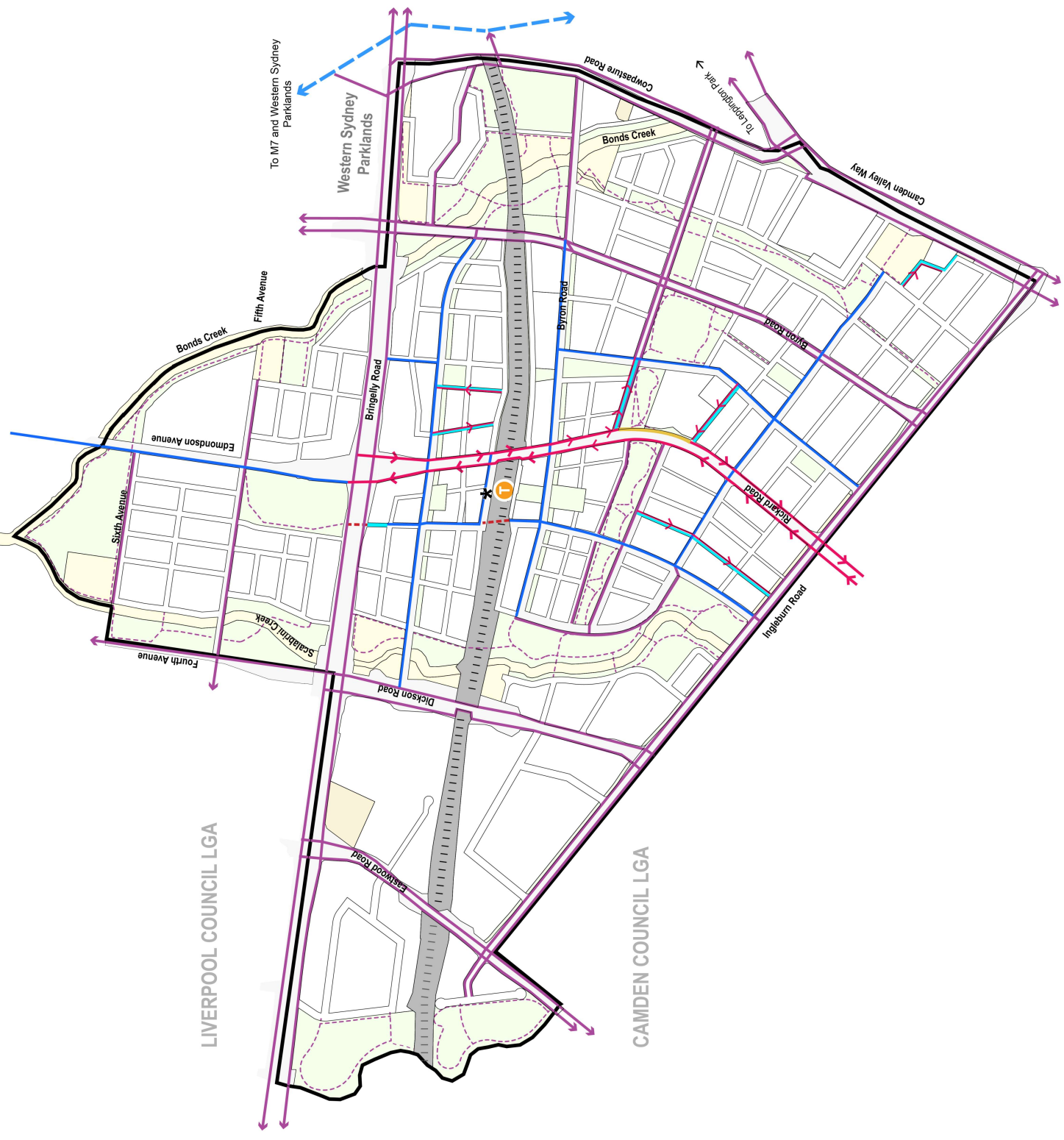
# Cycle Route Map

- Site Boundary
- Potential Active Transport Link
- Uni directional cycleway
- Bi directional cycleway
- Shared path
- Potential connections through open space
- Future Upper Sydney Water Canal Trail
- Cycle on quiet street
- Cycle Plaza
- Drainage and Riparian
- Utilities Infrastructure
- Open Space
- Leppington Train Station and Railway Corridor
- Main Roads

\* Note: This street must be modified to be similar to a Town Centre Street and must accommodate potential bus stop infrastructure on both sides of the street. Bidirectional cycling infrastructure must also be provided on the north side of street. Cycling infrastructure must be designed to be safe and compatible with bus stop infrastructure

Note Council to confirm final strategy for Industrial Streets and Local Collector

All local streets are considered to be quiet streets where it will be safe to cycle on the road



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## DCP DIAGRAM - CYCLE ROUTE MAP



|             |     |            |                      |             |                        |
|-------------|-----|------------|----------------------|-------------|------------------------|
| Drawing No. | Rev | Date       | Drawing Status       | Project No. | Project Name           |
| DCP10       |     | 08-09-2022 | FINAL FOR EXHIBITION | 2022-6723   | LEPPINGTON TOWN CENTRE |

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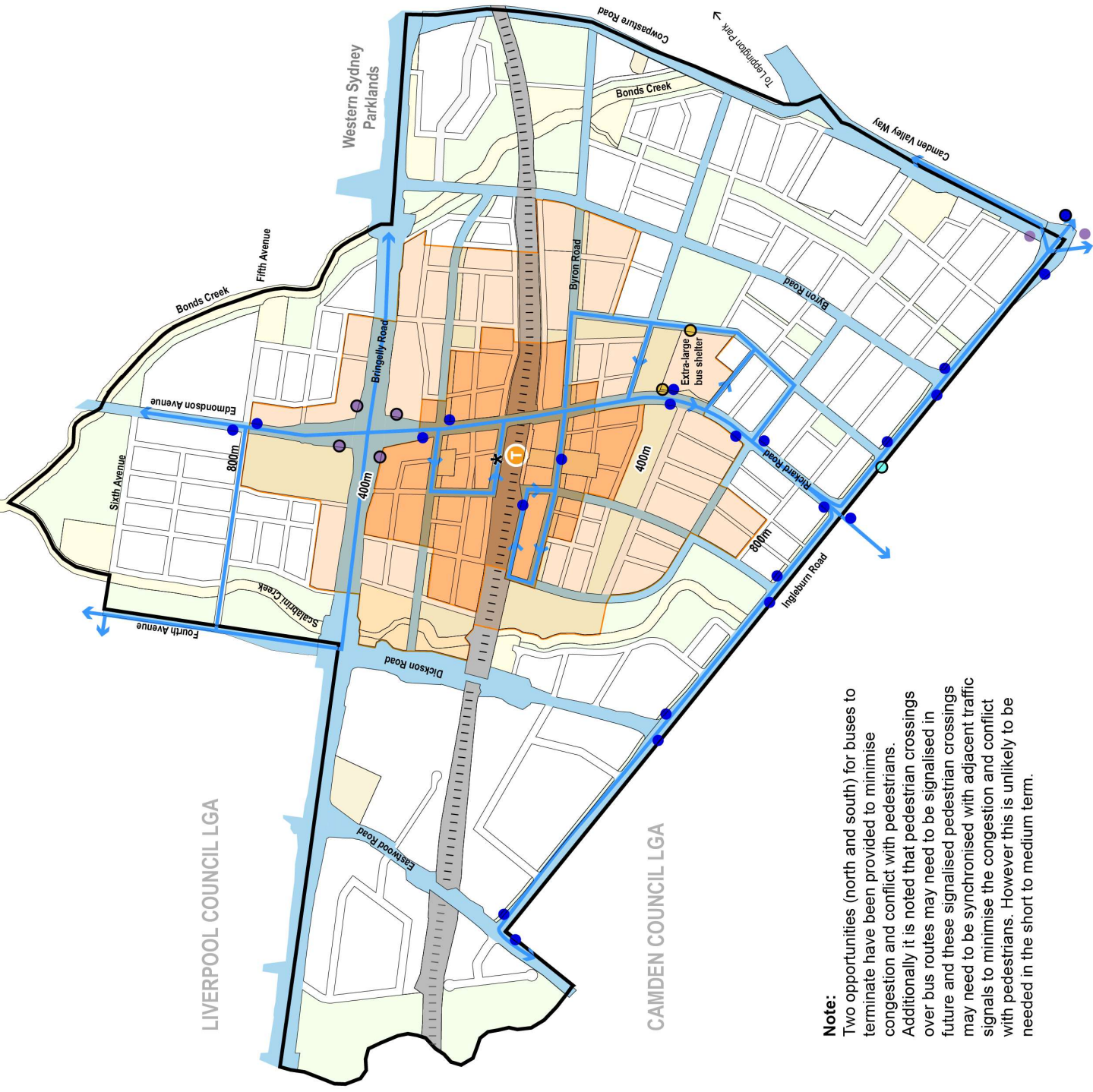




# Public Transport Map

- Site Boundary
- Indicative bus routes
- Future bus routes
- Indicative school bus stop
- Indicative proposed bus stop
- Indicative proposed bus stop (requires shelter)
- Existing bus stop
- Existing bus stop (requires upgrade for shelter)
- Bus Capable Road
- Leppington Train Station and Railway Corridor
- 400m walking distance from Station
- 800m walking distance from Station
- Main Roads
- Drainage and Riparian
- Open Space

- This street must be modified to accommodate potential bus stop infrastructure. Bidirectional cycling infrastructure must also be provided on the north side of street. Cycling infrastructure must be designed to be safe and compatible with bus stop infrastructure
- \*



**Note:**  
 Two opportunities (north and south) for buses to terminate have been provided to minimise congestion and conflict with pedestrians. Additionally it is noted that pedestrian crossings over bus routes may need to be signalised in future and these signalised pedestrian crossings may need to be synchronised with adjacent traffic signals to minimise the congestion and conflict with pedestrians. However this is unlikely to be needed in the short to medium term.



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## DCP DIAGRAM - PUBLIC TRANSPORT MAP



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 Project Name LEPPINGTON TOWN CENTRE

# View Corridor Map

- Site Boundary
- Ridge Line
- View Line
- Distant view to Sydney skyline
- View to Blue Mountains
- Drainage and Riparian
- Utilities Infrastructure
- Open Space
- Leppington Train Station and Railway Corridor
- Main Roads

- View Lines**
- 1) View to Scalabrini Creek
  - 2) View to Bonds Creek
  - 3) View to through Civic Park to Community Spine
  - 4) View to Scalabrini Creek
  - 5) View to Scalabrini Creek
  - 6) View to Town Centre Park 2
  - 7) View to Byron Road Sport Precinct and Community Spine
  - 8) View to Scalabrini Creek
  - 9) View to Town Centre Park 2
  - 10) View Bonds Creek
  - 11) View to Byron Road Sport Precinct
  - 12) View to Green Spine
  - 13) View to Scalabrini Creek
  - 14) View to Scalabrini Creek
  - 15) View to Bonds Creek
  - 16) View to Scalabrini Creek





# Height Strategy to achieve appropriate solar access and urban design outcomes

- Preferred podium height**
- 1 - 5 storeys
  - 2 - 4 storeys
  - 3 - 4 storeys
  - 4 - 6 storeys
  - Likely to remain at existing height (1-2 storeys) in short to medium term

- Preferred tower height (inclusive of podium)**
- 5 - 7 storeys
  - 6 storeys
  - 6 - 8 storeys
  - 10 - 12 storeys
  - 10 - 15 storeys
  - 12 - 18 storeys
  - 12 - 22 storeys
  - 18 - 28 storeys

**Note:** Heights are indicative. All INZ and B5 Zones land to be max. 25m as per SEPP maps.



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## DCP DIAGRAM - HEIGHTS STRATEGY MAP

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