2.9 EXISTING URBAN TREE CANOPY - PUBLIC

We have also highlighted the amount of tree canopy currently achieved on public land only, noting that the public domain is where the DPE and local governments have the greatest ability to influence the tree canopy.

If we take into account only the existing tree canopy within public lands, the existing percentage of canopy coverage gets lower values and defines a bigger shortfall to achieve the target tree canopy cover.

What this highlights is the amount of key areas that are below 15% coverage and how crucial it is for these areas to be well provisioned in order to achieve good canopy cover.

<table>
<thead>
<tr>
<th>Land Area (ha)</th>
<th>INDUSTRIAL</th>
<th>URBAN</th>
<th>SUBURBAN</th>
<th>HERITAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>84.72 ha</td>
<td>126.57 ha</td>
<td>16.46 ha</td>
<td>44.14 ha</td>
</tr>
<tr>
<td>Public Land (%)</td>
<td>2.4%</td>
<td>8.1%</td>
<td>19.2%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Target (%)</td>
<td>15%</td>
<td>25%</td>
<td>40%</td>
<td>25%</td>
</tr>
<tr>
<td>Shortfall (%)</td>
<td>12.6%</td>
<td>16.9%</td>
<td>20.8%</td>
<td>14.1%</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>Proposed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Existing Dwellings</strong></td>
<td>8,000</td>
<td>14,800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing Residential Dwellings (2018)</td>
<td>8,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Residential Dwellings</td>
<td>6,800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Residential Dwellings (2036)</td>
<td>14,800</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing Non-residential GFA</strong></td>
<td>740,000 sqm</td>
<td></td>
</tr>
<tr>
<td>Existing Non-residential GFA (2018)</td>
<td>740,000 sqm</td>
<td></td>
</tr>
<tr>
<td>Additional Non-residential GFA</td>
<td>110,000 sqm</td>
<td></td>
</tr>
<tr>
<td>Proposed Non-residential GFA (2036)</td>
<td>850,000 sqm</td>
<td></td>
</tr>
</tbody>
</table>
## 3.0 CHANGE SUMMARY

The purpose of this change summary is to capture the likely changes occurring in St Leonards and Crows Nest over the long term. The Department of Planning and Environment’s proposed changes to the land zoning, height of buildings and FSR are underpinned by forecast growth for additional residential dwellings and non-residential Gross Floor Area (GFA). The following changes are proposed for St Leonards and Crows Nest.

### CHANGE TABLE

<table>
<thead>
<tr>
<th></th>
<th>Area</th>
<th>271.9 ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Open Space</td>
<td></td>
<td>21 ha</td>
</tr>
<tr>
<td>Existing Dwellings</td>
<td></td>
<td>8,000 dwellings</td>
</tr>
<tr>
<td>Existing Population</td>
<td></td>
<td>15,591 people</td>
</tr>
<tr>
<td>Estimated Future Dwellings</td>
<td></td>
<td>14,800 dwellings</td>
</tr>
<tr>
<td>Estimated Future Population</td>
<td></td>
<td>26,400 people</td>
</tr>
</tbody>
</table>

### 15,591 People 26,400 People

**EXISTING POPULATION**  **FUTURE POPULATION**

**Existing Residential Population (TZP 2016)**  15,591

**Future Residential Population (2036)**  26,400

**21 Hectares**

**Existing Open Space Provision**  21 Ha
The overarching vision for open space and landscape is to:

“Deliver green infrastructure that provides social, environmental and economic benefits for the people who live, work and visit St Leonards and Crows Nest.”

**OPEN SPACE FOR RECREATION**
Establish an interconnected network of open spaces that are flexible, diverse, safe and equitable to meet the community’s needs for recreation space and foster the community’s values for healthy, vibrant and active living.

**OPEN SPACE FOR BIODIVERSITY**
Enhance the natural identity of the landscape and harbour-to-harbour biodiversity corridors to provide a range of environmental and social benefits.

**URBAN TREE CANOPY**
Reinforce urban tree canopy in the public domain to maximise comfort and enhance the liveability, health and well-being of both the community and the environment.
4.2 GUIDING PRINCIPLES

**PEOPLE**

**PRINCIPLE 1 COMMUNITY NEED**
Deliver a high quality public domain aligned with the community’s needs

**PRINCIPLE 2 HUMAN SCALE**
Plan for people-oriented spaces and streets to prioritise pedestrians

**PRINCIPLE 3 LOCAL IDENTITY**
Enhance the local character and identity to create a strong sense of place

**NATURE**

**PRINCIPLE 4 NETWORK**
Create a network of open space to enhance biodiversity and connectivity

**PRINCIPLE 5 QUALITY AND QUANTITY**
Maintain and improve the quality and quantity of future open space

**PRINCIPLE 6 HIERARCHY**
Clarify the open space hierarchy and establish clear focal points

**HEALTH**

**PRINCIPLE 7 EQUITY**
Ensure equitable access to open space to increase its usage and functionality

**PRINCIPLE 8 SAFETY**
Provide a safe, comfortable environment to encourage activation and vibrancy

**PRINCIPLE 9 WELLNESS**
Promote active and healthy living to contribute to the well-being of the community

**ECONOMY**

**PRINCIPLE 10 FLEXIBILITY**
Design for flexibility and adaptability to cater for the future population

**PRINCIPLE 11 DELIVERY**
Facilitate a coordinated, strategic delivery and provision of open space

**PRINCIPLE 12 FUNDING**
Optimise funding of open space through innovative financing models
The Open Space Plan responds to the vision and guiding principles articulated in the previous section of the Green Plan. It responds to the open space provision when considering proposed growth. In addition to the previously proposed new open spaces it includes additional open spaces and identifies infrastructure initiatives, which are classified into one of three categories in line with the regional NSW policy.

The categories are as follows:

<table>
<thead>
<tr>
<th>ID</th>
<th>Category</th>
<th>Time frame (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Committed Initiative</td>
<td>0-10</td>
</tr>
<tr>
<td></td>
<td>Initiatives for Investigation</td>
<td>0-10 or 10-20</td>
</tr>
<tr>
<td></td>
<td>Visionary Initiatives</td>
<td>20+</td>
</tr>
</tbody>
</table>

Committed Initiatives have been identified as having a path of funding and delivery.

Initiatives for Investigation have been identified as having potential funding mechanisms but the delivery method may be uncertain. These initiatives require further investigation to resolve.

Visionary Initiatives have no identified funding or delivery mechanisms and require further investigation as to their feasibility.
5.1 INITIATIVES

Committed Initiatives

There are a number of projects in the area that are either already being undertaken, or that they have been committed to by the three Councils. These include the following:

- **Gore Hill Oval upgrade works and regional playground** – Gore Hill Oval is being upgraded by Willoughby Council to meet identified recreational needs and increase capacity of oval. A regional playground is also proposed with $2,000,000 allocated in the draft St Leonards Crows Nest Special Infrastructure Contribution (SIC) to deliver the regional playground.

- **Hume St Park** – North Sydney Council plans to close part of Hume Street to expand Hume Street Park. A later stage of these plans includes relocating both the indoor sports facility and car parking underground to increase open space.

- **Friedlander Place** – Friedlander Place and surrounds are being upgraded as part of developments that have been approved by Lane Cove Council and are currently proceeding.

- **101-111 Willoughby Road** – A publicly accessible plaza is being delivered as part of the new mixed use development at Nos.101-111 Willoughby Rd.

- **Royal North Shore Hospital Campus** – Open space areas are proposed throughout the hospital campus in accordance with the site’s masterplan.

- **St Leonards Plaza (over railway line between Lithgow St and Canberra Ave)** – Lane Cove Council is proposing a 5,000m² plaza and public transport interchange over the railway line south of the Pacific Highway. This would create new open space in the centre of St Leonards and improve links to additional community facilities.

- **Oxley St and Mitchell St Linear Parks** – North Sydney Council is proposing widening footpaths, additional tree planting and public domain improvements along both Oxley St and Mitchell St. This would be facilitated by increasing building setbacks along these streets and upgrades may be delivered as part of adjacent development proposals.

Initiatives for Investigation

There are several initiatives proposed by the Councils and the Department that should be investigated to deliver additional open space in the area. These include:

- **Northern Linear Park between Chandos St and Talus Reserve** – Provide northern linear park from Herbert Street bridge to Chandos Street. This would form part of the foreshore-to-foreshore green link. $28,059,000 has been allocated in the draft St Leonards Crows Nest Special Infrastructure Contribution (SIC) to deliver this north linear park.

- **Southern Linear Park on Lithgow St adjacent to rail corridor** – It is proposed to investigate Lithgow St and the land adjacent to the railway line as an opportunity to provide a linear park forming part of a larger walking and cycling network. It might include exercise equipment, dog area, drinking fountains and other furniture. This would also form part of the foreshore-to-foreshore link. $1,700,000 has been allocated in the draft St Leonards Crows Nest Special Infrastructure Contribution (SIC) to deliver the south linear park.

- **Hume St Park** – It is proposed to investigate further land acquisitions to supplement North Sydney Council’s existing plans for Hume Street Park to provide a larger consolidated open space area in the heart of the area. $25,900,000 has been allocated in the draft SIC for land acquisition to expand Hume Street Park.

- **Christie St Reserve** – North Sydney Council are proposing upgrades to Christie St Reserve. This is likely to be undertaken as part of an adjoining development and is being investigated by Council.

- **Embellishment of Talus St Reserve and St Thomas Rest Park** – Opportunities should be investigated by Willoughby and North Sydney Councils to embellish existing open space areas within Talus St Reserve and St Thomas Rest Park.

- **St Leonards South** – Lane Cove Council have identified indicative new open space areas within South St Leonards however, the location of the open space is subject to the finalisation of an existing planning proposal.

- **Willoughby Road Plaza** – North Sydney Council have a concept proposal to close Willoughby Road (south of Burlington St) and create a pedestrian plaza between Burlington St and Falcon St.
• Artarmon Industrial Area Tree Plantings - Opportunities for additional tree plantings should be investigated along Herbert St, Westbourne St, Clarendon St and Hotham St.

• Embellishment of Land on Taylor Lane and Punch St – Existing parcels of land on Taylor Lane and Punch St that are zoned RE1 Public Recreation should be investigated by Willoughby Council for open space embellishments.

• Assist Councils to support green infrastructure initiatives in their DCPs – Investigate what assistance could be given to Willoughby, Lane Cove and North Sydney Councils to include provisions for publicly accessible green infrastructure (eg green roofs) in their strategic planning controls.

• Engage with Councils to develop methodology to deliver enhanced Urban Link between St Leonards Station and Crows Nest Metro.

• Engage with Councils to develop methodology to deliver major Blue and Green Links - New major blue and green links at Falcon Street, portion of the Pacific Highway and to Oxley Street, along the railway and adjacent to the M1-M2 Motorway.

• Engage with Councils to develop methodology to deliver secondary Blue and Green Links - New secondary green and blue links connecting the open space network across the area. Some of these links include Reserve Road through the industrial zone, Nicholson Street through proposed mixed use zone, and Chandos Street and Alexander Street connecting the heritage zone.

Visionary Initiatives

This draft Green Plan has also investigated potential ‘visionary’ options which are potential long term open space solutions which are unfunded and that are subject to future investigation. These include:

• Open Space Area north of St Leonards Station – Investigate an open space area over the railway line to the north of St Leonards station connecting to Talus Reserve and Herbert St and including community facilities.

• Working with government agencies to explore the opportunity to provide Green Rooftops at facilities such as 2-4 Herbert St.

The Open Space Plan balances the upcoming developments and responds to the current demand for recreational spaces and green pockets. Adding approximately 8.57 hectares of open space.

Note: All additional new open spaces proposed are subject to future investigation and feasibility testing with stakeholders.
### Building Open Space

<table>
<thead>
<tr>
<th>Name</th>
<th>HA</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gore Hill Park</td>
<td>4.52</td>
<td></td>
</tr>
<tr>
<td>Pacific Hwy</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>The Forum Plaza</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Christie St Plaza</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Manly St Reserve</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Herbet St</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Ellis St - Dalleys Rd</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Tennis court at Wheatleigh St</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>Brook St</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>St Thomas Rest Park</td>
<td>1.93</td>
<td></td>
</tr>
<tr>
<td>Mitchell Alley St Plaza</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Humie St Park Embolishment</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>Ernst Place</td>
<td>0.34</td>
<td></td>
</tr>
<tr>
<td>Cahill Park</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Haybeny St</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Christie St Reserve</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>Umpqua St</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>Newlands Park</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>Berry Rd</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Playing Playground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portview Road Reserve</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Reserve Road RNSHI</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>Valley Le</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Punch St</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Total Existing within the boundary</td>
<td>12.70</td>
<td></td>
</tr>
</tbody>
</table>

### Previously Proposed Open Space

<table>
<thead>
<tr>
<th>Name</th>
<th>HA</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-24 Park Rd (LCC)</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>19-25, Berry Rd (LCC)</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>13 Holdsworth Ave (LCC)</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>18 Holdsworth Ave (LCC)</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>10-12, Marshall Ave (LCC)</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>2-8, Marshall Ave (LCC)</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>30-32, Berry road (LCC)</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>29-31, Holdsworth Ave (LCC)</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>21 Holdsworth Ave (LCC)</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>33 Canterbury Ave (LCC)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Mitchell St Linear Park (NSC)</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Oakley St Linear Park (NSC)</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Oakley St Linear Park (NSC)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Oxley St Linear Park (NSC)</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>30 Leichardt Place-West (LCC)</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>10-111, Willoughby Rd</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Humie St Park extension (DEPE)</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>Ernest St / Alexander St</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>Holtermann St Hospital Ln (NSC)</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>Willoughby Rd South (NSC)</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Thunder Place (LCC)</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td>Total already proposed</td>
<td>3.53</td>
<td></td>
</tr>
</tbody>
</table>

### Newly Proposed Open Space

<table>
<thead>
<tr>
<th>Name</th>
<th>HA</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Leonards Central (HSC)</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>Platform Park</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td>Total Proposed Open Space</td>
<td>0.96</td>
<td></td>
</tr>
</tbody>
</table>

### Linear Parks

<table>
<thead>
<tr>
<th>Name</th>
<th>HA</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotham Parade 20-96</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>Clarendon St</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>Herber Le</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Westbourne St</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>Lithgow St</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Total Linear Parks</td>
<td>0.76</td>
<td></td>
</tr>
</tbody>
</table>

### Green Rooftop

<table>
<thead>
<tr>
<th>Name</th>
<th>HA</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-4 Herbert St</td>
<td>1.40</td>
<td></td>
</tr>
<tr>
<td>Total Green Rooftop</td>
<td>1.40</td>
<td></td>
</tr>
<tr>
<td>Total Newly Proposed</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Total Proposed</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>TOTAL OPEN SPACE</td>
<td>29.58</td>
<td></td>
</tr>
</tbody>
</table>

### Legend

- Existing Open Space
- Previously Proposed Open Space
- Open Space for Future Investigation
- Green Rooftop
- Streetscape Canopy
- Open Space to Embellish
- Foreshore-to-foreshore Link
- Major Green and Blue Link
- Secondary Green and Blue Link
- Urban Link
- Signalised crossing
- Boundary

**Figure 9:** Open Space Plan (Source: AECOM, 2018)
Figure 9: Open Space Plan (Source: AECOM, 2018)
Good accessibility to open space is a key requirement to maximise the use of parks and efficient utilisation by the neighbouring community. The proposed Open Space Plan proposes improved accessibility to open space.

The southern portion of the area already had good accessibility to open space due to a network of green pocket areas. The improved access to open space in the northern industrial area will provide workers opportunities to use open space during lunch time and after work.
5.4 URBAN TREE CANOPY PLAN - PUBLIC DOMAIN

The Urban Tree Canopy Plan responds to the shortfall of urban tree canopy cover in the study area. While the Urban Tree Canopy Plan focuses on urban tree canopy in the public domain, it must be noted that the private domain also plays a significant role in contributing to the overall urban tree canopy targets of 15% for Industrial areas, 25% for Urban areas, 40% for Suburban areas and 25% for Heritage Residential areas.

The Urban Tree Canopy Plan takes into account the proposed changes to land uses and development controls. In any new open spaces, the Urban Tree Canopy Plan applies the average of urban tree canopy of existing open spaces.

In order to identify the number of additional new trees required to meet the proposed targets, the Urban Tree Canopy Plan makes the following assumptions:

- All new rows of trees assume a 5 metre radius tree canopy, resulting in a canopy cover of 78.5 sqm per tree and a planting distance of 12 metres between one tree and the next.
- No additional trees within roads with a Right of Way less than 5.5 metres.
- One row of trees within all the roads with a Right of Way included between 5.5 and 8.5 metres.
- Two rows of trees within all the roads with a Right of Way greater than 8.5 metres.
- Three rows of trees within the proposed major blue and green links.
- The urban tree canopy coverage over all the existing open space will be implemented to achieve a minimum 45% of the site as per the existing average.
- All proposed new open spaces will be counted with an average urban tree canopy site coverage of 45%, as per the average urban tree canopy coverage over previous case studies.
- 12 metre planting distance will not necessary reflect the actual planting distance. This number has been adopted as a conservative average distance able to accommodate possible site-specific issues such as private lot driveway entrance, bus stop, facilities box and others factors.

Using these assumptions, the Urban Tree Canopy Plan achieves:

- 16% canopy coverage within the industrial area, adding a total of 1,083 trees.
- 25.7% canopy coverage within the urban area adding a total of 640 trees.
- 32.7% canopy coverage within the Heritage Residential area, adding a total of 315 trees.
- A total amount of 2,038 additional trees

<table>
<thead>
<tr>
<th></th>
<th>INDUSTRIAL</th>
<th>URBAN</th>
<th>HERITAGE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area (ha)</td>
<td>84.71 ha</td>
<td>143.03 ha</td>
<td>44.13 ha</td>
<td>271.9 ha</td>
</tr>
<tr>
<td>Existing Tree Canopy over Private Land (ha)</td>
<td>3.30 ha</td>
<td>18.47 ha</td>
<td>7.11 ha</td>
<td>28.9 ha</td>
</tr>
<tr>
<td>Existing Tree Canopy on Roads (ha)</td>
<td>1.74 ha</td>
<td>8.76 ha</td>
<td>3.89 ha</td>
<td>14.4 ha</td>
</tr>
<tr>
<td>Maximum Tree Canopy on Roads (ha)</td>
<td>9.10 ha</td>
<td>11.99 ha</td>
<td>6.36 ha</td>
<td>27.5 ha</td>
</tr>
<tr>
<td>Additional Tree Canopy on Roads (ha)</td>
<td>7.35 ha</td>
<td>3.23 ha</td>
<td>2.47 ha</td>
<td>13.1 ha</td>
</tr>
<tr>
<td>Trees added on Roads</td>
<td>936 trees</td>
<td>411 trees</td>
<td>315 trees</td>
<td>1662 trees</td>
</tr>
<tr>
<td>Tree Canopy on Existing Open Spaces (ha)</td>
<td>0.14 ha</td>
<td>4.60 ha</td>
<td>0.94 ha</td>
<td>5.7 ha</td>
</tr>
<tr>
<td>Tree Canopy on New Open Space (ha)</td>
<td>1.16 ha</td>
<td>1.80 ha</td>
<td>none</td>
<td>2.96 ha</td>
</tr>
<tr>
<td>Trees added on New Open Spaces</td>
<td>147 trees</td>
<td>229 trees</td>
<td>none</td>
<td>476 trees</td>
</tr>
<tr>
<td>Total Additional Tree Canopy (ha)</td>
<td>8.51 ha</td>
<td>5.03 ha</td>
<td>2.47 ha</td>
<td>16.01 ha</td>
</tr>
<tr>
<td>Total Trees added</td>
<td>1,083 trees</td>
<td>640 trees</td>
<td>315 trees</td>
<td>2,038 trees</td>
</tr>
<tr>
<td>Overall Tree Canopy (ha)</td>
<td>13.69 ha</td>
<td>36.86 ha</td>
<td>14.41 ha</td>
<td>64.96 ha</td>
</tr>
<tr>
<td>Overall Tree Canopy (%)</td>
<td>16%</td>
<td>25.7%</td>
<td>32.7%</td>
<td>23.8%</td>
</tr>
<tr>
<td>Tree Canopy Target (%)</td>
<td>15%</td>
<td>25%</td>
<td>25%</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Figure 11: Tree Canopy Plan (Source: AECOM, 2018)
The Open Space Plan proposes an enhanced, interlinked network of green infrastructure by identifying embellishments to existing open space and suggesting additional open space. It addresses future needs and demands and enhances the quality of living for the community.

The Open Space Plan comprises a series of new medium to large parks and linear parks. They provide an opportunity for multifunctional, passive and active recreation that caters for a diverse range of community needs. The linear parks reinforce important green and blue links that connect open spaces and community destinations, providing enhanced amenity for the people living and working in the area.

For the purpose of this report we have illustrated four future typologies of the possible function of proposed open spaces. The four Concept Plans are:

- **Concept Plan 1 Linear Park (Urban)**
  The Linear Park is located towards the southern side of the area and is adjacent to the train carriageway to the west and Lithgow Street to the east. The primary purpose of the proposed design is to enhance the pedestrian and cyclist experience through the existing link by providing additional amenities.

- **Concept Plan 2 Streetscape Canopy (Industrial)**
  Located along Clarendon Street. The street canopy open space reinforces the green and blue connections for pedestrians and cyclists. The primary purpose of the linear park is to provide workers with the opportunity to access open space facilities that would be conclusive to a healthy work/life balance ie. eating lunch, staff BBQs, collaboration etc.

- **Concept Plan 3 Hume Street Park**
  The park is bounded by Clarke Street (south), Hume Lane (east) and Pole Lane (north). The previous concept design for the park has been extended to provide additional open space with deep soil that allows for larger urban tree canopy for shade and passive recreation.

- **Concept Plan 4 Platform Park**
  Located towards the northern side of the St Leonards train station in between Chandos Street and Herbert Street. The park is bounded by residential development on one side and future mixed use on the other side. The primary purpose of the park is to provide multifunctional open space to the surrounding community and wider community.

Note: All additional open spaces proposed are subject to future investigation and feasibility testing with stakeholders. All Concept Plans are indicative only and are subject to community and stakeholder feedback and detailed design.
6.1 REFERENCES PLAN

Figure 12: Concept plans reference plan (Source: AECOM, 2018)
COMMITTED INITIATIVE

The Open Space Plan highlights the importance of providing green and blue links that enhance the community’s needs for active lifestyle. The Linear Park serves primarily as a cycle and pedestrian link adjacent to the train line. With the projected increase in population in the adjacent areas, the park serves for a wide range of ages.

Due to the existing topography, the park celebrates the level changes and proposes an amphitheatre to the south that wraps around the existing tree canopies. The main ramp winds around the site to take cyclists and visitors on a journey of active and passive landscape nooks. These nooks include coffee shop to the north, passive seating areas and active exercise equipments. Consequently this maximises the use of the open space and promotes healthy living for the adjacent and wider community.

The Linear Park is composed of the following main components:

- Two amphitheatre spaces
- Active landscape nooks
- Passive landscape nooks
Amphitheatre overlooking rail

Landscape Nook / passive seating area

Landscape Nook / activity and exercise node

Amphitheatre wrapping around existing trees

Secondary ramp

Widened bridge

Stairs

Primary ramp access

Figure 13: Linear Park Concept Plan (Source: North Sydney Council and AECOM, 2018)
6.3 CONCEPT PLAN 2 - STREETSCAPE CANOPY (INDUSTRIAL)

VISIONARY INITIATIVE
The Open Space Plan has identified streets to be selected on the basis of enhancing the safety and comfort of workers and visitors to the area. The Street Canopy Concept Plan focuses on providing thermal comfort through the integration of canopy cover and WSUD elements. In addition, the widening of the footpath allows for safer cycling and walking by providing a better quality of journey. The concept reflects the character and accommodates the functionality and needs of the industrial zone.

The Industrial streetscape canopy corridor is characterised with narrow footpaths, wide setbacks, inconsistent verges, sparse urban tree canopy and wide carriageway. The concept design recommends consistent planting and maximum urban tree canopy to provide passive recreation space for workers and connectivity by widening footpath and reducing private setbacks.

It is recommended that the streetscape canopy evolves over time to provide minimal disruption and allowance for funding to be achieved. The short term plan introduces general pedestrian amenity and the long term optimises canopy cover by primarily grounding overhead services.

For the purpose of this Concept Plan we have illustrated the change over time.

The streetscape canopy is crucial to enable the industrial area to improve its worker environment, provide a walkable link to transport and to aid in the reduction of the heat island effect. It is important for the industrial area to play its part in providing quality urban tree canopy.

Figure 14: Existing Conditions Concept Plan (Source: AECOM, 2018)

Figure 15: Existing Conditions Indicative Section (Source: AECOM, 2018)
Figure 16: Streetscape Canopy Short Term Concept Plan (Source: AECOM, 2018)

Figure 17: Streetscape Canopy Short Term Indicative Section (Source: AECOM, 2018)

Figure 18: Streetscape Canopy Long Term Concept Plan (Source: AECOM, 2018)

Figure 19: Streetscape Canopy Long Term Indicative Section (Source: AECOM, 2018)

**PROPOSED - INDUSTRIAL STREETSCAPE CANOPY (SHORT TERM)**

- New road central median to minimise industrial character and provide visual buffer
- Provide consistent planting in the verge and small trees to comply with overhead power lines
- Driveway

**PROPOSED - PROPOSED STREETSCAPE CANOPY (LONG TERM)**

- Increase footpath to 3m to allow for better shared pedestrian, cyclist amenity and furniture
- Indented parking to formalise parking and integrate WSUD
- Driveway

AECOM Department of Planning and Environment
6.4 CONCEPT PLAN 3 - HUME STREET EXTENSION

VISIONARY INITIATIVE

The Open Space Plan highlights the importance of providing open space that is multifunctional and addresses a wide range of uses and users. The Hume Street Park builds on a previous concept design undertaken for the North Sydney Council by JMD design. The extension concept design is a vision that focuses on providing open space that is flexible, adaptable and comfortable. This is achieved by providing two kick about spaces; the green space to the north enables passive recreation with activities for the elderly, such as bocce. The space to the south provides area for lunching and passive recreational activities such as table games which may include chess tables. The space is activated by proposed dual facing shops spilling out to Hume Lane.

In addition, Hume Street Park plays an important role in connecting the proposed new metro station to the west and Willoughby Road to the east.

Hume Street Park is composed of the following main components:

• Underground basketball and multifunctional playing courts
• Childrens playground
• Two large pen lawn spaces
• Water feature for water harvesting and cooling
Deep soil kickabout space with informal seating

Outdoor cafe space

Primary crossing and connection to proposed metro station

Design adopted from TZG/JMD for North Sydney Council for the purpose of this expanded concept

Figure 20: Hume Street Park Concept Plan (Source: North Sydney Council and AECOM, 2018)
6.5 CONCEPT PLAN 4 - PLATFORM PARK

VISIONARY INITIATIVE
The Open Space Plan highlights the importance of providing open space that is multifunctional and addresses a wide range of uses and users. Previous social infrastructure studies identifies a lack of facilities within the area for the ageing community. The Platform Park focuses on providing an open space that is adaptable and comfortable. This is achieved by providing two kick about spaces; one space enables sporting activities and the other becomes a space for different demographics such as elderly and/or children for active use.

In addition, the Platform Park plays an important role in connecting the two disjointed parks; Gore Hill Oval to the south west of the park and Naremburn Park to the north east.

The Platform Park is composed of the following main components:
• Extension of the St Leonards Plaza.
• Terraced green steps.
• Sheltered barbecue area.
• Two large flexible open spaces.
Figure 21: Platform Park Concept Plan (Source: AECOM, 2018)

- Existing residential development
- Flexible multi-user open space
- Shelter, seating and barbecue area
- Kick about space
- Deep soil for additional canopy
- Extend bridge to enhance pedestrian and cycle connection
- Shade structure
- Possible community facility—buildings under structure
- Shared pathway
- Entry Plaza
- Train station plaza with seats
- Terraced open space
- Bridge connection to Talus St
- Extend bridge to enhance pedestrian and cycle connection
- Future mixed-use development
- Extend bridge to enhance pedestrian and cycle connection
- Shared pathway
- Entry Plaza
- Train station plaza with seats
- Terraced open space
- Bridge connection to Talus St
- Future mixed-use development

Figure 22: Platform Park Indicative Section (Source: AECOM, 2018)
7.0 CONCLUSION

OPEN SPACE

The Green Plan has determined that the existing public open space provision needs to be increased however there is limited available space to achieve this.

The Green Plan proposes a total of 8.57 hectares of new open spaces to be added to the 21 hectares of existing open space, achieving 29.58 hectares of overall open space within St Leonards and Crows Nest. Approximately half of this new open space needs to come from the utilisation of road reserves and air space over the rail corridor. This requires innovative approaches to creating urban green spaces to maximise the available opportunities.

This recommendation is aspirational and is to be used as a guide for the future provision of open space over time. This can be achieved through acquisitions by negotiations, through various other funding opportunities and through the SIC plan. This recommendation is not binding and will be subject to ongoing revision and feasibility assessments of suitability and cost effectiveness.

URBAN TREE CANOPY

The following assumptions have been considered to develop the Urban Tree Canopy Plan:

- The area has been subdivided within three future areas: industrial, urban and heritage residential. Within each area, a minimum urban tree canopy has been targeted of 15, 25 and 25% respectively.
- The Urban Tree Canopy Plan suggests possible interventions on public land only under the control of public agencies while also measuring urban tree canopy in the private domain.

The current urban tree canopy covers:

- 6.92% of the industrial area.
- 21.4% of the urban area.
- 40% of the suburban area.
- 27% of the heritage residential area.

The Urban Tree Canopy Plan takes into account the proposed changes to land uses and development controls and therefore it shows an updated zoning between the industrial, urban, suburban areas and heritage residential areas.

Considering the new zoning, the Urban Tree Canopy Plan proposes a total of 2,038 new trees to be added to public areas within St Leonards and Crows Nest in order to achieve:

- 16% tree canopy in public and private areas in the industrial area
- 25.7% tree canopy in public and private areas in the urban area
- 32.7% tree canopy in public and private areas in the heritage residential area.
7.1 NEXT STEPS

Suggested next steps to be taken by the Department are:

- Undertake detailed analysis of viability for the areas selected as future parks and Green and Blue Links including acquisition, public ownership and right of ways/access, costing, detailed planning and design and method for delivery.
- Ensure public agency engagement for whole of Government problem-solving to facilitate delivery.
- Support long term strategic planning by agencies - e.g. services to enable tree canopy delivery or to open up public land for open space and access.
- Develop an investigation mechanism for upgrading existing Open Space.
- DPE to assist in the coordination of the DCPs regarding the management of the tree canopy in the private domain.
- Review Council’s street tree policy to enable canopy planting.
- DPE to undertake a review of the planning controls (LEP), development control plans (DCP), civil works standards, development contributions (Section 94 plans) and voluntary planning agreement (VPA) policies to investigate ways to encourage creation of public open space and tree canopy within the study area.
8.0 GLOSSARY

A

Accessibility: ease of access is critical to the community to enjoy and use public open and recreation facilities.

B

Biodiversity: is the foundation of ecosystem services to which human well-being is intimately linked.

Biodiversity corridors: are areas of vegetation that allow animals to travel from one patch of native forest to another.

Built Environment: comprises the extent of our human-made environment, as distinguished from the natural environment. It includes all aspects of our surroundings made by people that provide the place for human activity. The built environment can be understood to include cities and towns, neighbourhoods, parks, roads, buildings and even utilities like water and electricity.

C

Canopy: the layer of leaves, branches, and stems of trees that cover the ground when viewed from above.

Connectivity: creating an interconnected network of open space.

Context: the physical, social, cultural, economic, environmental and geographic circumstances that form the setting for a place or building.

D

Diversity: the range of open space setting types within a given area will determine the diversity of recreation opportunity for a community.

Distribution: the spread of supply of open space and tree canopy.

E

Equitable: a built environment that is fair and accessible for all citizens.

G

Green and Blue Link: selected road connecting several open spaces within a continuous walkable network of footpaths, laneways, pedestrian bridges and undercrossing. This link will define a major route for bikes, pedestrians, water management and biodiversity, therefore, possible further enhancement of streetscape amenity, verge vegetation, water sensitive urban design strategies and setback treatment will be encouraged.

Green Plan: The framework assessing open space and tree canopy proposed in.

Greater Sydney: is defined as the 33 local government areas of Bayside, Blacktown, Blue Mountains, Burwood, Camden, Campbelltown, Canada Bay, Canterbury, Bankstown, Cumberland, Fairfield, Georges River, Hawkesbury, Hornsby, Hunters Hill, Inner West, Ku-ring-gai, Lane Cove, Liverpool, Mosman, Northern Beaches, North Sydney, Parramatta, Penrith, Randwick, Ryde, Strathfield, Sutherland, and The City of Sydney.

Green Grid: strategic planning document for the greater Sydney region, and a precursor to the Greener Places policy comprising a cohesive map of green assets across metropolitan Sydney.

Green Infrastructure: describes the network of parks, trees and water systems that deliver multiple environmental, economic and social values and benefits to urban communities. Refer to Section 1.1 of this document for entire definition.

Green Space: an area of grass, trees, and other vegetation set apart for recreational or aesthetic purposes in an urban environment.

Grey Infrastructure: refers to the human-engineered infrastructure for water resources such as water and wastewater treatment systems, piped drainage and reservoirs.

H

Healthy: a place or space that promotes positive social, emotional and physical health for its people.

High Performing Green Space / High Quality Green Space: are multifunctional spaces designed to produce concurrent ecological, social, environmental and economic benefits.

I

Integration: combining green space with urban development and grey infrastructure.

L

Liveable: a built environment which supports and responds to people’s patterns of living, and is suitable and appropriate for habitation, promoting enjoyment, safety and prosperity.

M

Master Plan: a framework document showing how development will occur in a given place and includes building parameters like height, density, shadowing and environmental concerns. It is a visual document that details a clear strategy or plan for the physical transformation of a place, supported by financial, economic, and social policy documents which outline delivery mechanisms and implementation strategies.
**Multifunctionality:** the ability of Green Infrastructure to deliver multiple ecosystem services simultaneously, providing added value, and improved health and well-being.

**Open space:** land that has no buildings or other built structures, which is accessible to the public, including green space.

**Park - Pocket:** defines parks with maximum area 0.4 hectare and with a walking catchment area of 300 metres.

**Park - Local:** defines parks with areas varying from 0.4 to 1 hectare and with a walking catchment area of 400 metres.

**Park - Neighbourhood:** defines parks with areas varying from 1 to 5 hectare and a walking catchment area of 800 metres.

**Participation:** the involvement of stakeholders in the development and implementation of neighbourhood, local, district and regional Green Infrastructure policies and actions.

**Place:** is a social and a physical concept – a physical setting, point or area in space conceived and designated by people and communities. In this sense, place can describe different scales of the built environment – for example, a town is a place, as well as a building can be a place.

**Place Making:** proposes a multi-faceted approach to the planning, design and management of public spaces. ‘Place Making’ looks at understanding the local community with the intention of creating public spaces that promote health and well-being.

**Priority Growth Areas:** The Priority Growth Areas Greater Sydney are identified by the NSW Government as major greenfield development areas. Information about Priority Growth Areas is available at [http://www.planning.nsw.gov.au](http://www.planning.nsw.gov.au).

**Priority s:** areas that have a wider social, economic or environmental significance for the community or have redevelopment potential on a scale that is important in implementing the State’s planning objectives. Priority s are envisaged as larger areas, usually made up of multiple land holdings, capable of delivering significant additional growth and requiring coordination from State and local governments to realise their potential.

**Public Realm:** is the collective, communal part of cities and towns, with shared access for all. It is the space of movement, recreation, gathering, events, contemplation and relaxation. The public realm includes streets, pathways, rights of way, parks, accessible open spaces, plazas and waterways that are physically and visually accessible regardless of ownership.

**Quality:** the standard of something, measured comparatively against things of a similar kind.

**Quantity:** the amount or number of open space or abstract thing not usually estimated by spatial measurement.

**Recreation - Active:** activities that require physical exertion and considerable expenditure of energy; such as football and soccer.

**Recreation - Passive:** activities that require minimum physical exertion; such as reading and relaxing.

**Resilient:** place or space that can withstand or recover from difficult conditions.

**Scale:** the relative size or extent of something – scale is a device used to quantify objects in a sequence by size; for example a city scale, or a building scale. In architecture, scale is also used to describe a ratio of size in a map, model, drawing, or plan.

**State Environmental Planning Policy (SEPP):** is a statutory plan, typically prepared by the Department of Planning and Environment and endorsed by the Minister for Planning. It can be a spatial plan for particular land in NSW, and/or it can set policy which applies to particular land or all land in NSW.

**Strategic Plan:** document that guides the implementation of a strategy for a particular area.

**Statutory Plan:** is part of the planning process that is concerned with the regulation and management of changes to land use and development.

**Sustainable:** relates to the endurance of systems, buildings, spaces and processes – their ability to be maintained at a certain rate or level, which contributes positively to environmental, economic and social outcomes.

**Urban Forest:** the layer of trees and tree populations that exist in urban settings.

**Urban Tree Canopy:** the layer of leaves, branches, and stems of trees that cover the ground when viewed from above.

**Water Sensitive Urban Design (WSUD):** is the sustainable integration of water cycle management into planning, design and construction of the built environment. It is the term given to the replication of natural processes into treatment of water in an urbanised environment and is relevant to all built environments from highly urbanised to rural settings.
About AECOM

AECOM is a premier, fully integrated professional and technical services firm positioned to design, build, finance and operate infrastructure assets around the world for public- and private-sector clients. The firm’s global staff — including architects, engineers, designers, planners, scientists and management and construction services professionals — serves clients in over 150 countries around the world. AECOM is ranked as the #1 engineering design firm by revenue in Engineering News-Record magazine’s annual industry rankings, and has been recognized by Fortune magazine as a World’s Most Admired Company. The firm is a leader in all of the key markets that it serves, including transportation, facilities, environmental, energy, oil and gas, water, high-rise buildings and government. AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering customized and creative solutions that meet the needs of clients’ projects. A Fortune 500 firm, AECOM companies, including URS Corporation and Hunt Construction Group, have annual revenue of approximately $19 billion.

More information on AECOM and its services can be found at www.aecom.com.

Follow us on Twitter: @aecom