# 9. Appendix



## **Mapping Methodology**

## **LSPS Green Grid**

The LSPS for The Inner West provides a local response to the planning priorities and objectives outlined in The Greater Sydney Region Plan and the Eastern City District Plan, and established the baseline to start the analysis to be further detailed and developed.

Together with a review of a collection of documents prepared by Council, spatial data was collected to create a technical evidence base to assist in the determination of each link that forms the Blue-Green Grid.

## Validating and Testing

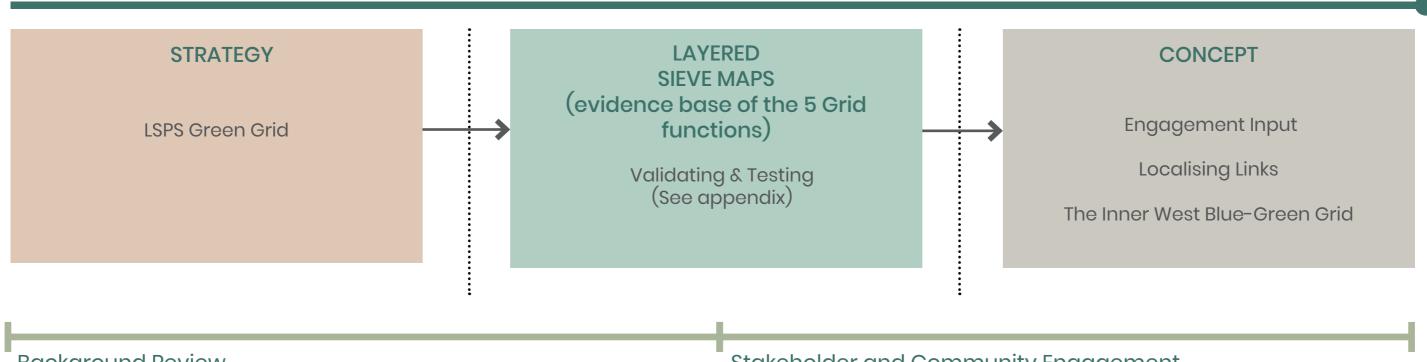
The LSPS Green Grid was tested over multiple seive maps and with engagement input to see where links were missing or where links could be amended that would better suit the Blue-Green Grid.

## Localising Links and Defining the Network

With the previous technical analysis it was possible to localise opportunities and identify new links. This evidence is themed against the LSPS goals to provide a direct link between community, Council and the design.

It is extremely important to guarantee that the community is involved and driving the vision. A map was created based on community and stakeholder aspirations, vision, needs and priorities, and additional routes and places were included in the grid.

## **Mapping**



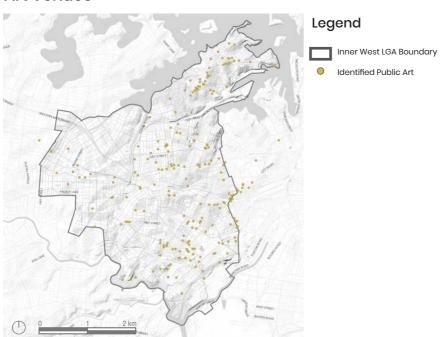
**Background Review** 

Stakeholder and Community Engagement

## 93

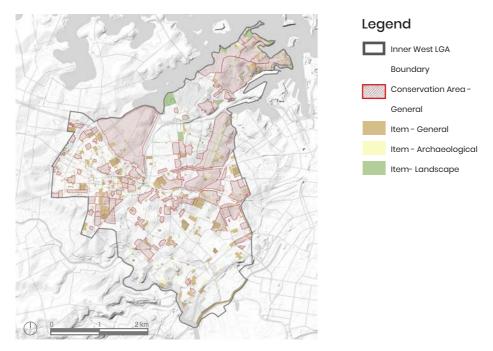
## THE ABORIGINAL AND TORRES STRAIT ISLANDER, ARTS, CULTURE AND HERITAGE GRID MAPPING LAYERS

## **Art Venues**



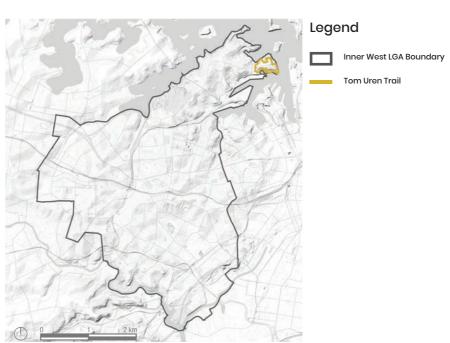
The grid could incorporate places where public art is found to promote art and culture.

## Heritage



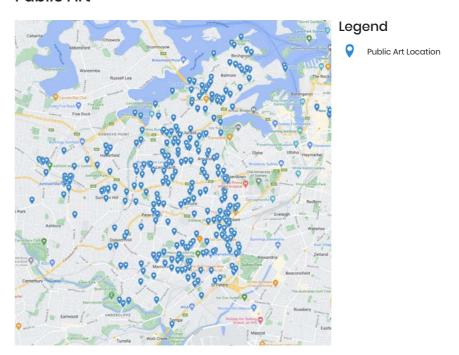
Places of heritage can be connected and enhanced throughout the grid.

## Tom Uren Trail



The Tom Uren Trail is named after the politician, Tom Uren who worked to preserve the heritage of Inner Sydney. The trail can be connected to the grid.

## **Public Art**



Public art can be explored through implementation of links through the Blue-Green Grid.



## Localising and Defining the Network

## THE ABORIGINAL AND TORRES STRAIT ISLANDER, ARTS, CULTURE AND HERITAGE GRID

## OPPORTUNITIES TO BETTER RESPOND TO THE GRID

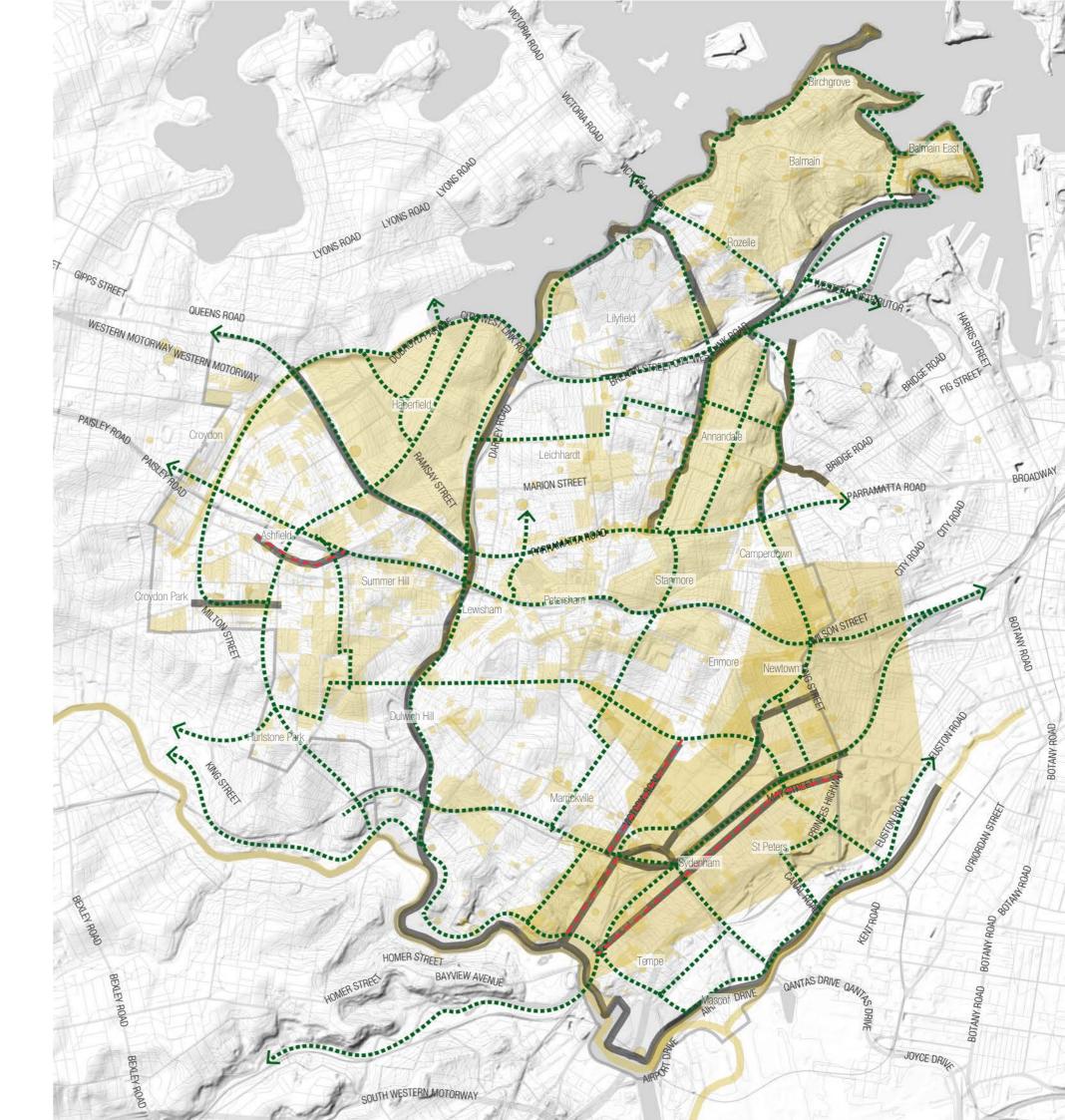
Key findings of the ARSIACH Grid Sketch are 4 main routes, improving connectivity between links, indigenous heritage areas and waterways, with focus on Sydenham area.

# Legend Inner West LGA Boundary 3+ Overlapping Layers 1 Layer Initial Grid Sketch LSPS Blue Green Grid

- - Opportunity new links for the Grid

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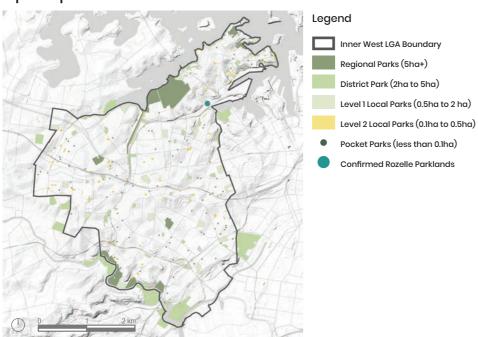




## **DRAFT**

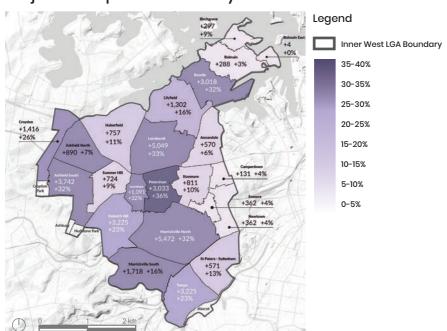
## THE RECREATIONAL GRID MAPPING LAYERS

## Open Space Network



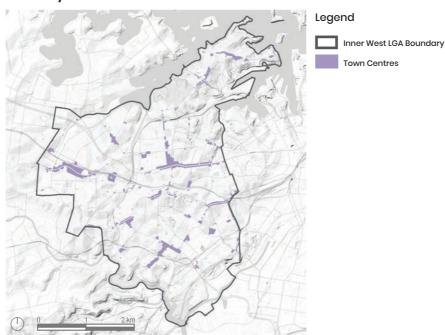
The Recreational Grid will link parks and open s paces and provide loops and routes for people to follow, enhancing access to a diversity of recreational open spaces.

## **Projected Population Density**



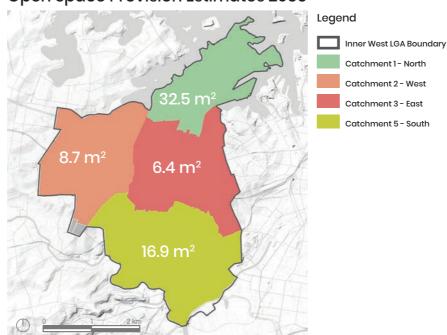
High density areas identify priority areas for implementation of the Recreational Grid, representing larger proportion of people to be positively impacted.

## **Activity Centres**



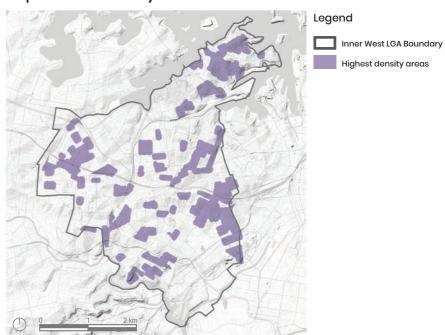
Key town centres are known as places of recreational shopping and eating and so will be connected through the Recreational Grid

## Open Space Provision Estimates 2036



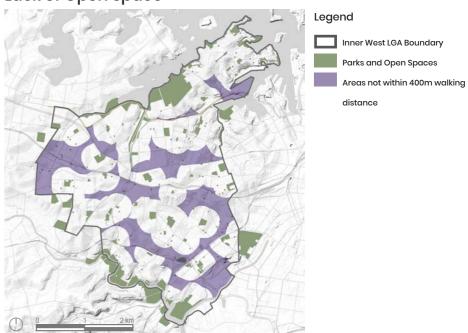
The map indicates main areas that lack parks and green open spaces, representing opportunities of improvement with the Recreational Grid.

## **Population Density**



High density areas identify priority areas for implementation of the Recreational Grid, representing larger proportion of people to be positively impacted.

## Lack of Open Space



The map indicates main areas that lack parks and green open spaces, representing opportunities of improvement with the Recreational Grid.



## Localising and Defining the Network

## THE RECREATIONAL GRID

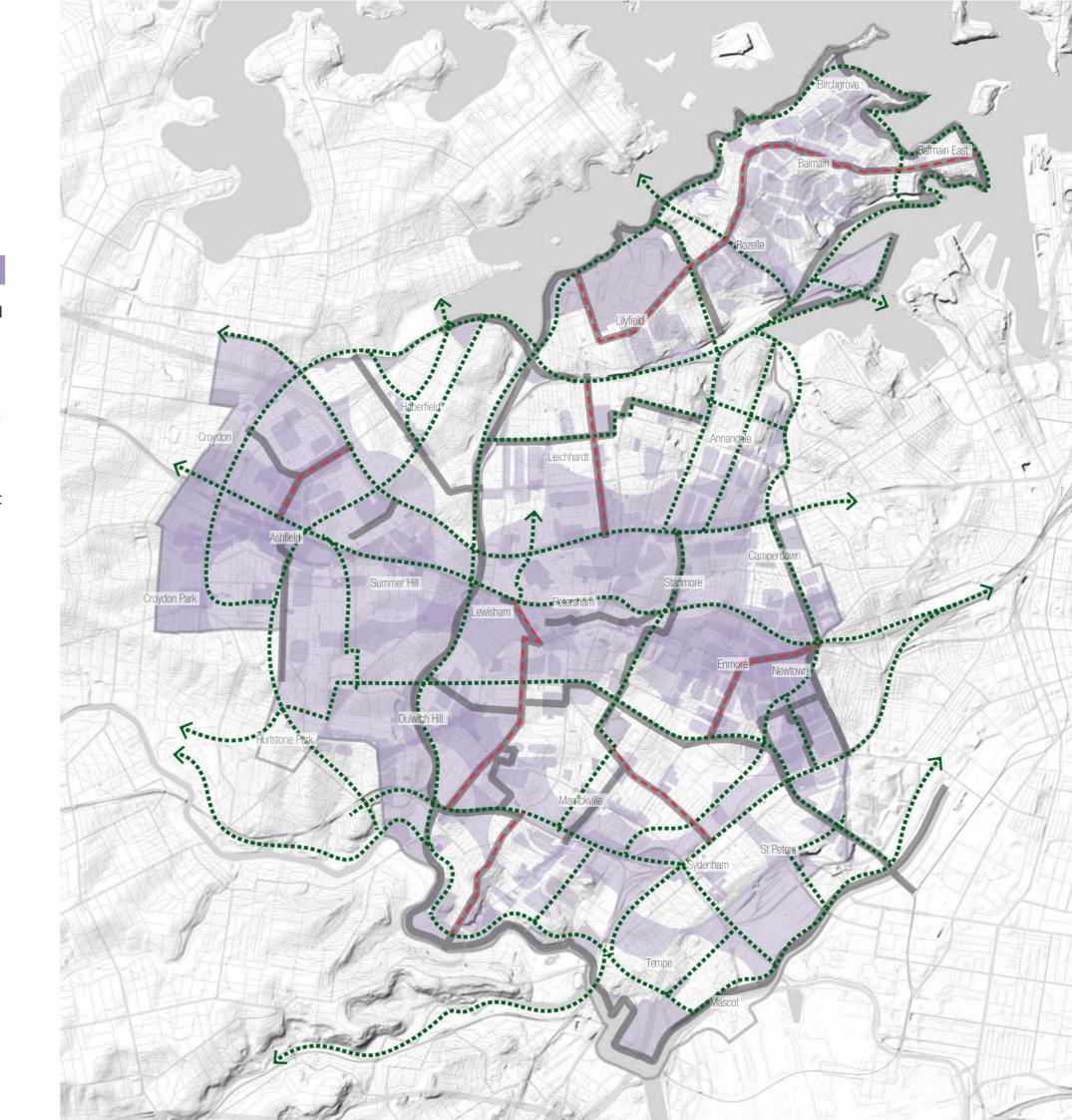
## OPPORTUNITIES TO BETTER RESPOND TO THE GRID

The LSPS already responds well to the most overlapped layers on the recreational criterion, providing connections along east/west and central zone of the LGA.

The Sketch Recreation Grid provides refined connection between links, providing 7 new main routes that will improve connectivity between areas of poor accessibility to open space, high density, and lack of recreational parks.

Lilyfield, Balmain in the northeast will potentially benefit from the new recreational grid.

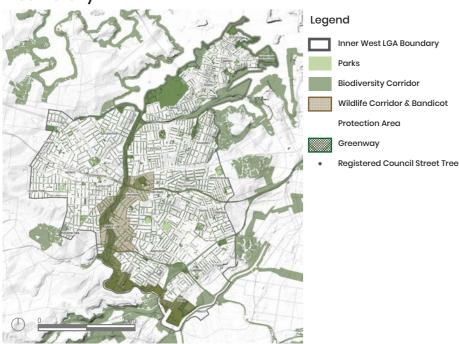
# Legend Inner West LGA Boundary 3+ Overlapping Layers 1 Layer Initial Grid Sketch LSPS - Green Grid - Opportunity new links for the Grid 0 1 2 km





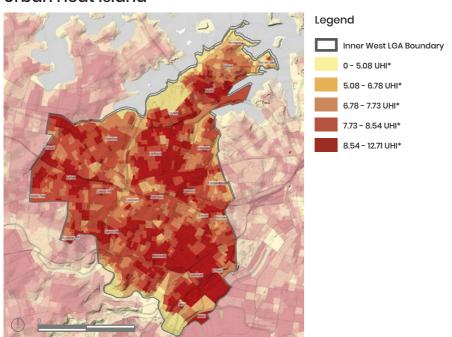
## THE ECOLOGICAL GRID MAPPING LAYERS

## Biodiversity



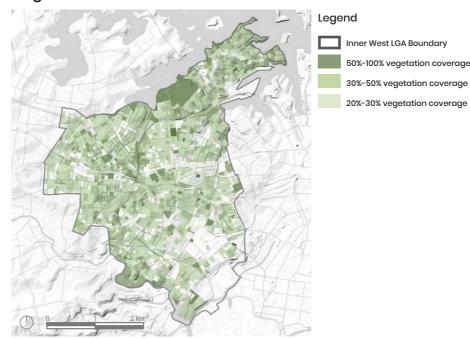
Parks and Open Spaces are areas of high biodiversity value and should be protected, enhanced and connected by the Ecological Grid.

## **Urban Heat Island**



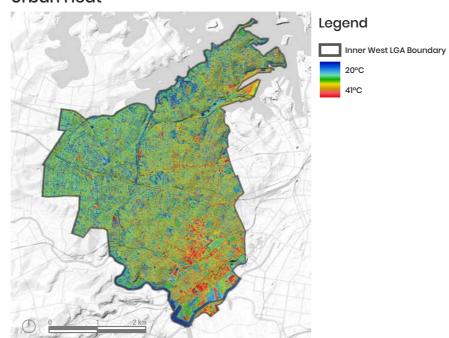
Applying the Grid in areas facing extreme urban heat often correlating with lack of vegetation.

## **Vegetation Concentration**



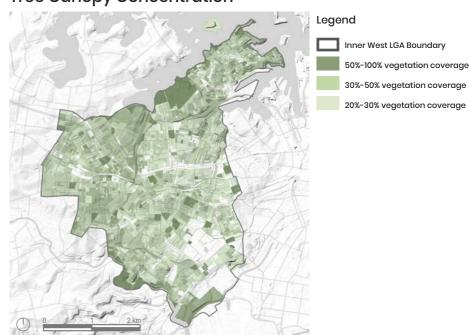
The Ecological Grid will incorporate areas with existing vegetation coverage as well as seek areas which would benefit from additional diverse vegetation.

## **Urban Heat**



Applying the Grid in areas facing extreme urban heat often correlating with lack of vegetation.

## **Tree Canopy Concentration**



The Ecological Grid will incorporate areas with existing canopy coverage as existing links as well as seek areas which would benefit from additional tree canopy, and see the relationship between urban heat and trees.

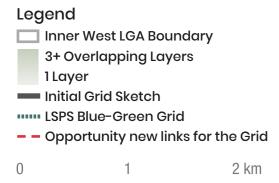


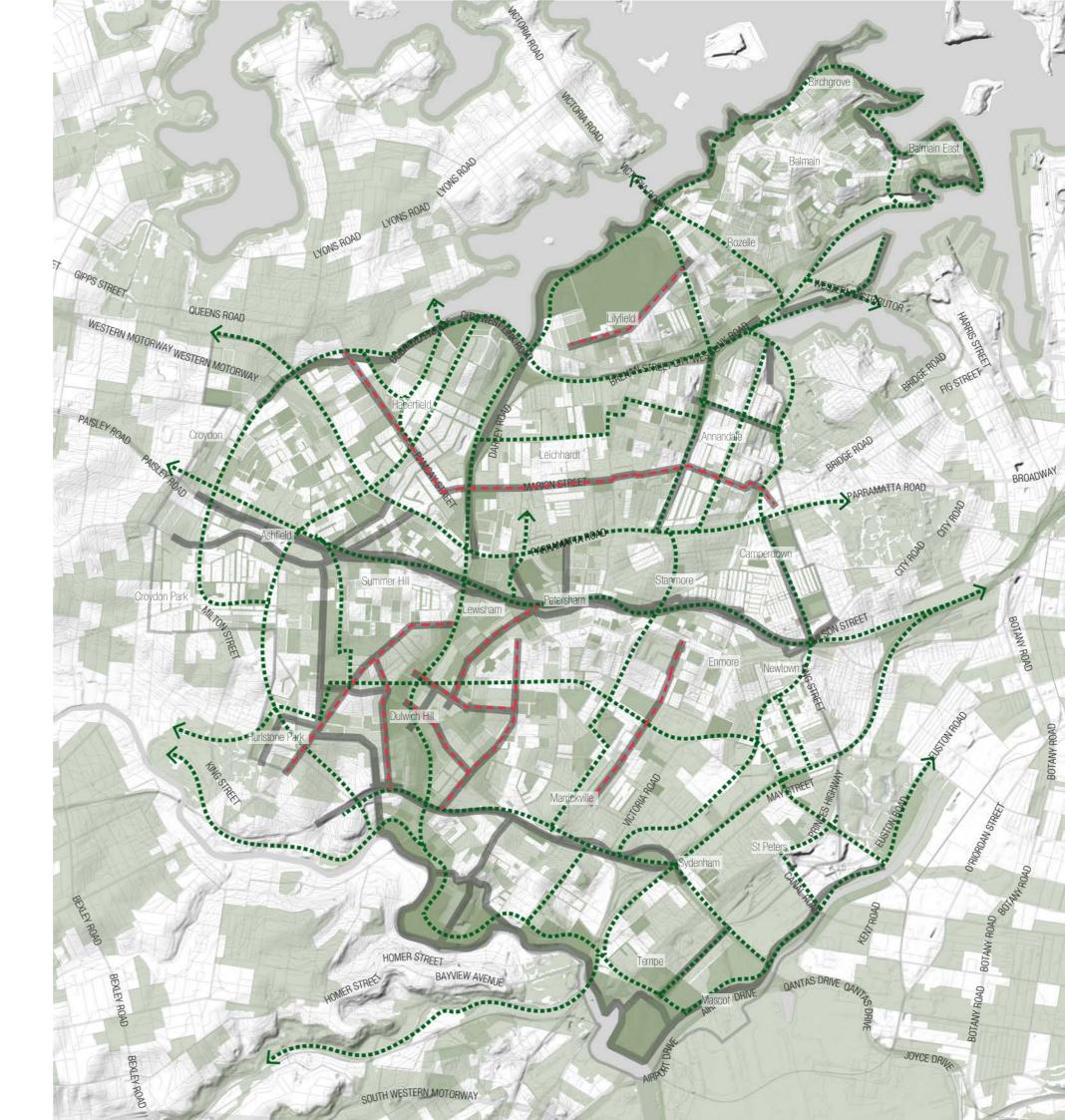
## Localising and Defining the Network

## THE ECOLOGICAL GRID

## OPPORTUNITIES TO BETTER RESPOND TO THE GRID

Maintaining and enhancing areas of high biodiversity is encouraged by the LSPS. The Sketch Ecological Grid indicates 9 new routes that give an opportunity to better respond to areas that lack vegetation and tree canopy at a finer grain level. They incorporate the living streets and better connect to the Greenway to local parks, mainly around Dulwich Hill, Lewisham and Hurlstone Park, and the Hawthorne Canal with new west/east corridors, to benefit Haberfield and Leichhardt suburbs.

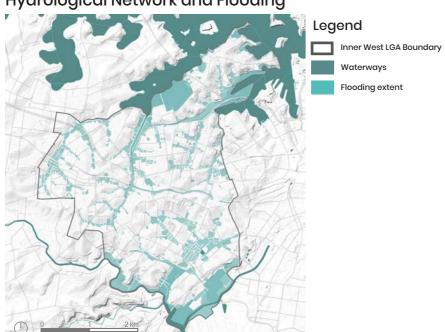




## **DRAFT**

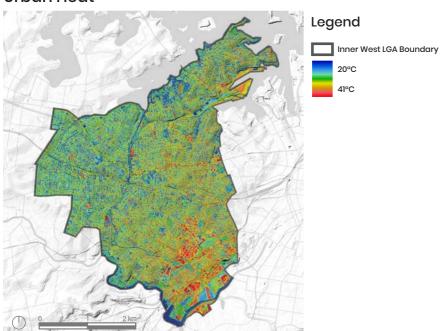
## THE HYDROLOGICAL GRID MAPPING LAYERS

## Hydrological Network and Flooding



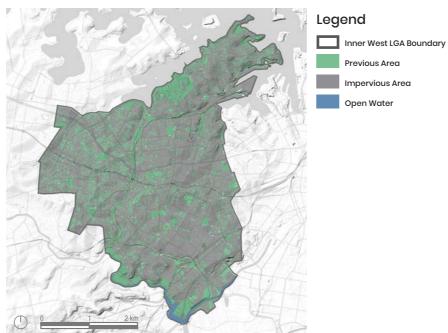
The implementation of the Hydrological Grid will assist in mitigating impacts of flooding, protect and enhance existing waterways and riparian areas, by incorporating them as places of high amenity.

## **Urban Heat**



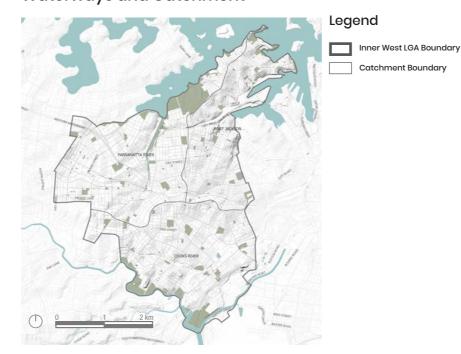
Hydrology can be used in to combat heat through evaporative cooling.

## Permeable Surfaces

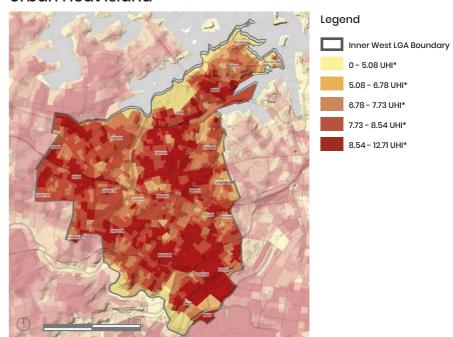


Understanding where less permeable surfaces are which correlates with flooding.

## Waterways and Catchment

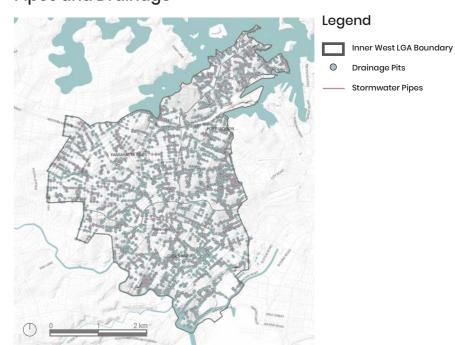


## **Urban Heat Island**



Hydrology can be used in to combat heat through evaporative cooling.

## Pipes and Drainage





## Localising and Defining the Network

## THE HYDROLOGICAL GRID

## **OPPORTUNITIES TO BETTER RESPOND TO THE GRID**

The LSPS Green Grid already responds well to the hydrological systems in the Inner West. The Sketch Hydrological Grid indicates new 7 links to better reduce flooding risks and less permeable surfaces.

# Legend Inner West LGA Boundary 3+ Overlapping Layers 1 Layer Initial Grid Sketch LSPS Blue-Green Grid Opportunity new links for the Grid 1 2 km





## (101

## THE CONNECTED GRID MAPPING LAYERS

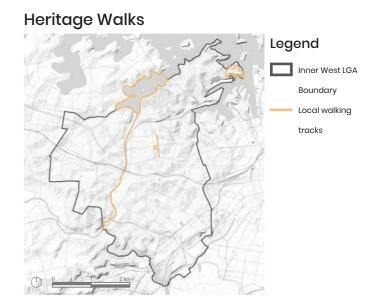
## Open Space Network **Activity Centres** Legend Legend Inner West LGA Inner West LGA Boundary Regional Parks (5ha+) District Park (2ha to 5ha) Level 1 Local Parks (0.5ha to 2 ha) Level 2 Local Parks (0.1ha to 0.5ha) Pocket Parks (less than 0.1ha) Confirmed Rozelle

Parks will be easily accessible by high amenity routes.

Activity anchors such as schools and town centres to be connected to other POIs.

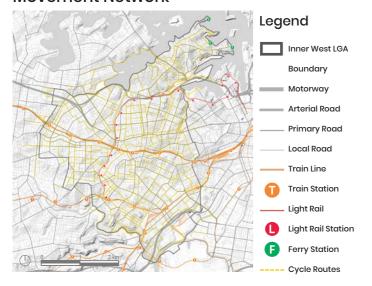
# Points of Interest Legend Inner West LGA Boundary POI

The Connected Grid will improve connectivity to and between POIs, such as hospitals, education facilities, picnic areas, lookouts etc.



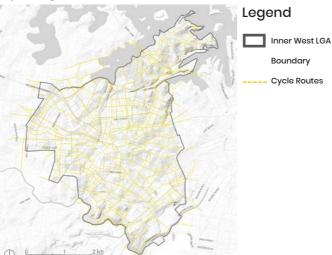
Existing routes and trails can be incorporated into the grid and connected to the grid.

## **Movement Network**



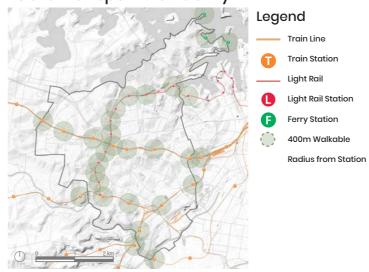
The Connected Grid will improve the connectivity of areas of high volume of pedestrians such as train stations, lightrail stations and bus stops.

## **Cycling Routes**



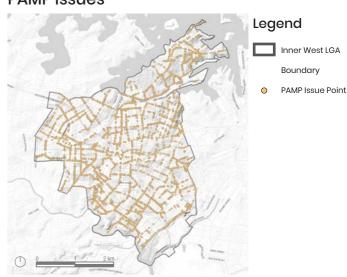
Cycle routes will form part of the Blue Green Grid as active transport corridors.

## Public Transport Walkability



The Connected grid will improve the most commonly travelled paths that where identified in different hours and days of the week to understand high use routes.

## **PAMP** Issues



Pedestrian, Access, Mobility Plan (PAMP) Elabotrate on what a PAMP issue is and how we can use this data can be incorporated into the grid and connected to the grid.



## Localising and Defining the Network

## THE CONNECTED GRID

## **OPPORTUNITIES TO BETTER RESPOND TO THE GRID**

The Sketch Connected Grid improves east/west connections, and creates 18 new links to enhance the existing LSPS Green Grid.

Suburbs to benefit with the new routes, to improve connectivity within and its surroundings are Marrickville, in the southeast part of the LGA, Balmain in the northeast and Leichhardt.

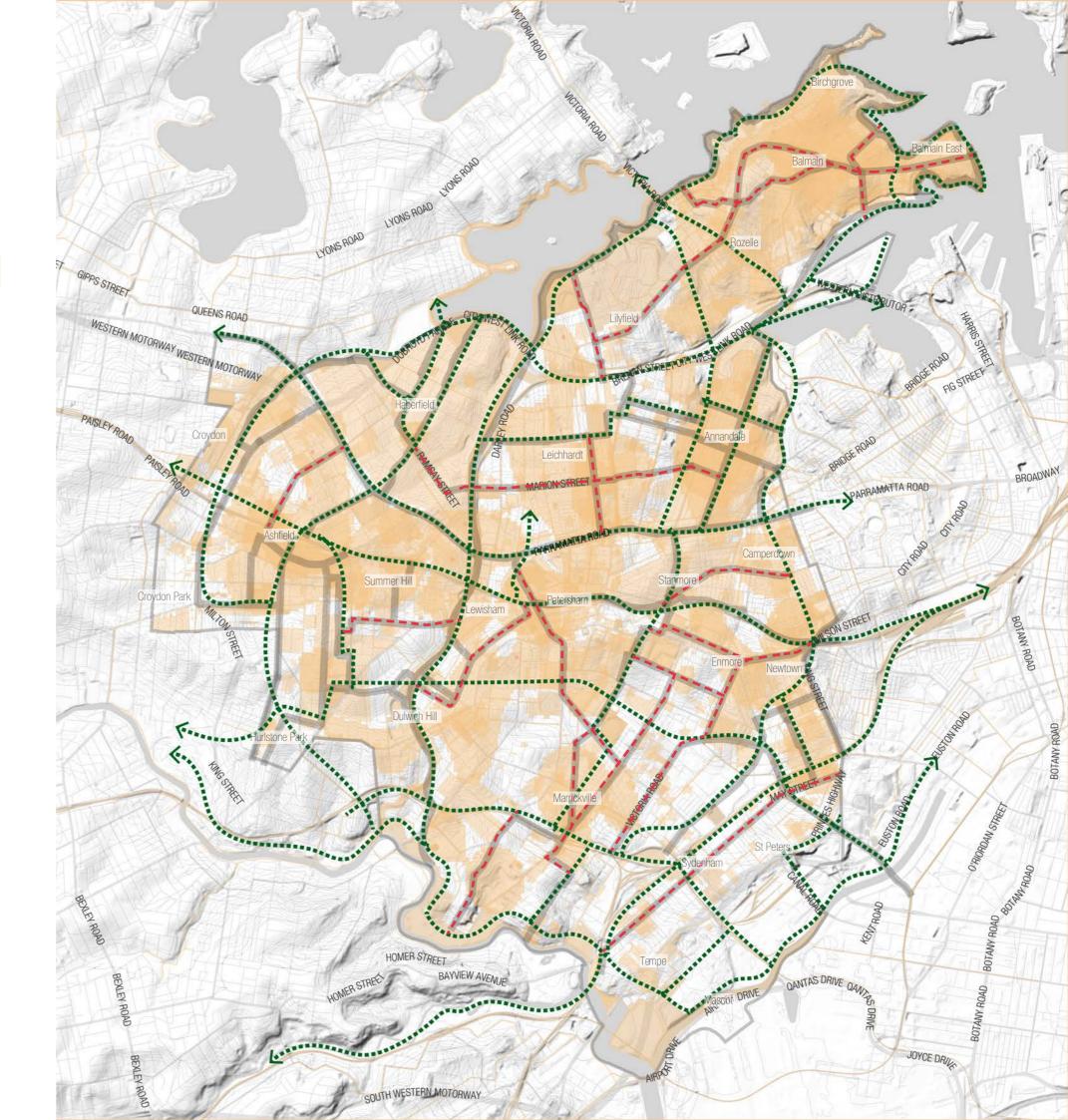
## Legend



Opportunity new links for the Grid

2 km







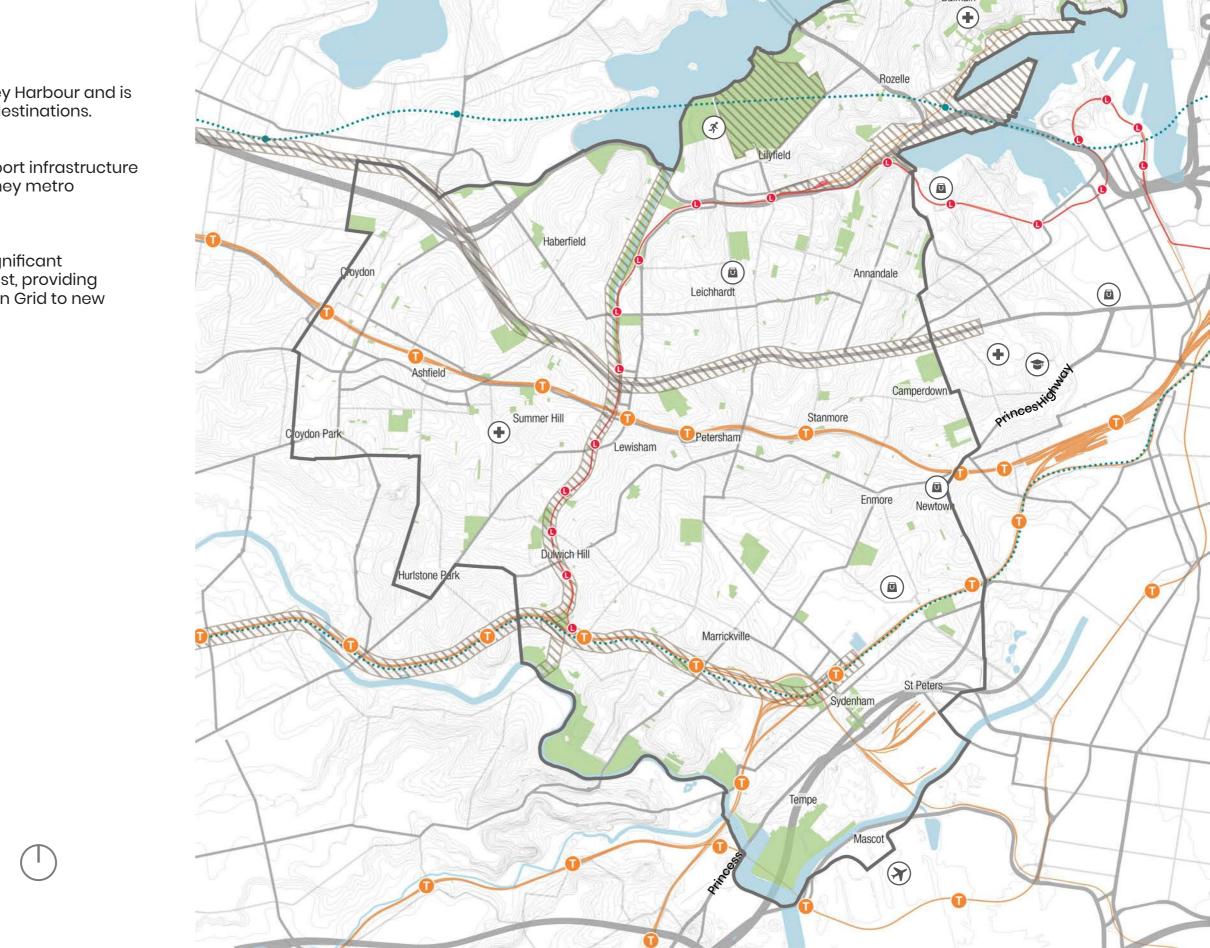
## **LOCAL CONTEXT**

The Inner West borders with the Sydney Harbour and is located within close proximity to key destinations.

The local area has a prominent transport infrastructure network, with plans to extend the Sydney metro network.

The local area has numerous State significant projects running through the Inner West, providing an opportunity to apply the Blue-Green Grid to new projects.

- Inner West LGA Boundary
- Parks
- Water bodies
- State significant projects
- Train Line
- Train Station
- Light Rail
- Light Rail Station
- ····· Under construction Metro line
- Under construction Metro Station
- University
- + Hospital
- Shopping & Eating
- Sports & Entertainment
- (A) Airport









## Tom Uren Trail

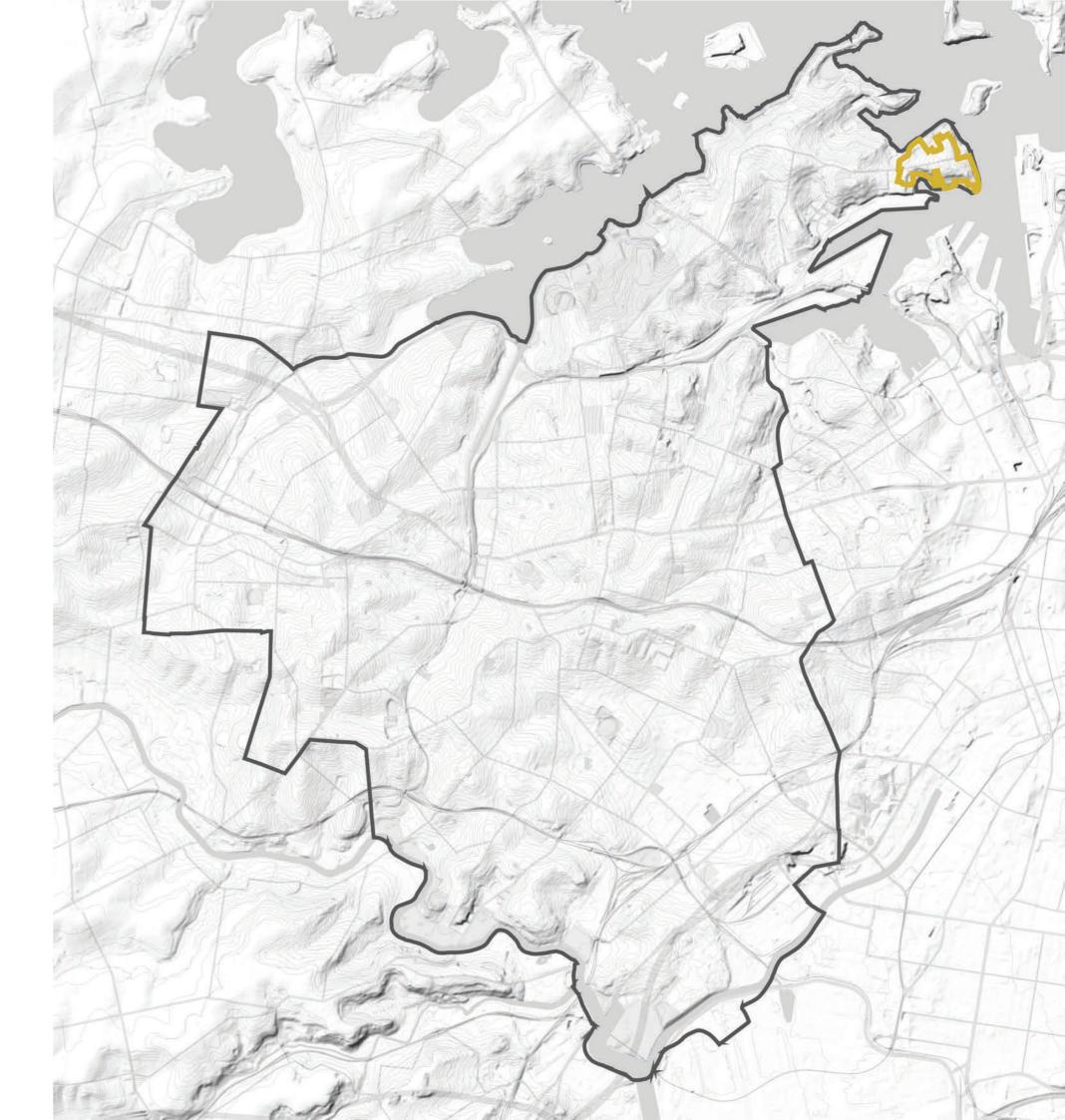
The Tom Uren Trail is an important route that connects significant places in the Inner West. It should be connected to the Blue-Green Grid as its historical and heritage significance.

Map source: https://www.innerwest.nsw.gov.au/explore/libraries/community-history/our-history/self-guided-heritage-walks/tom-uren-trail

## Legend

Inner West LGA BoundaryTom Uren Trail



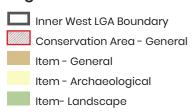


## Heritage

Key heritage areas can both contribute to the Blue-Green Grid and be protected by it.

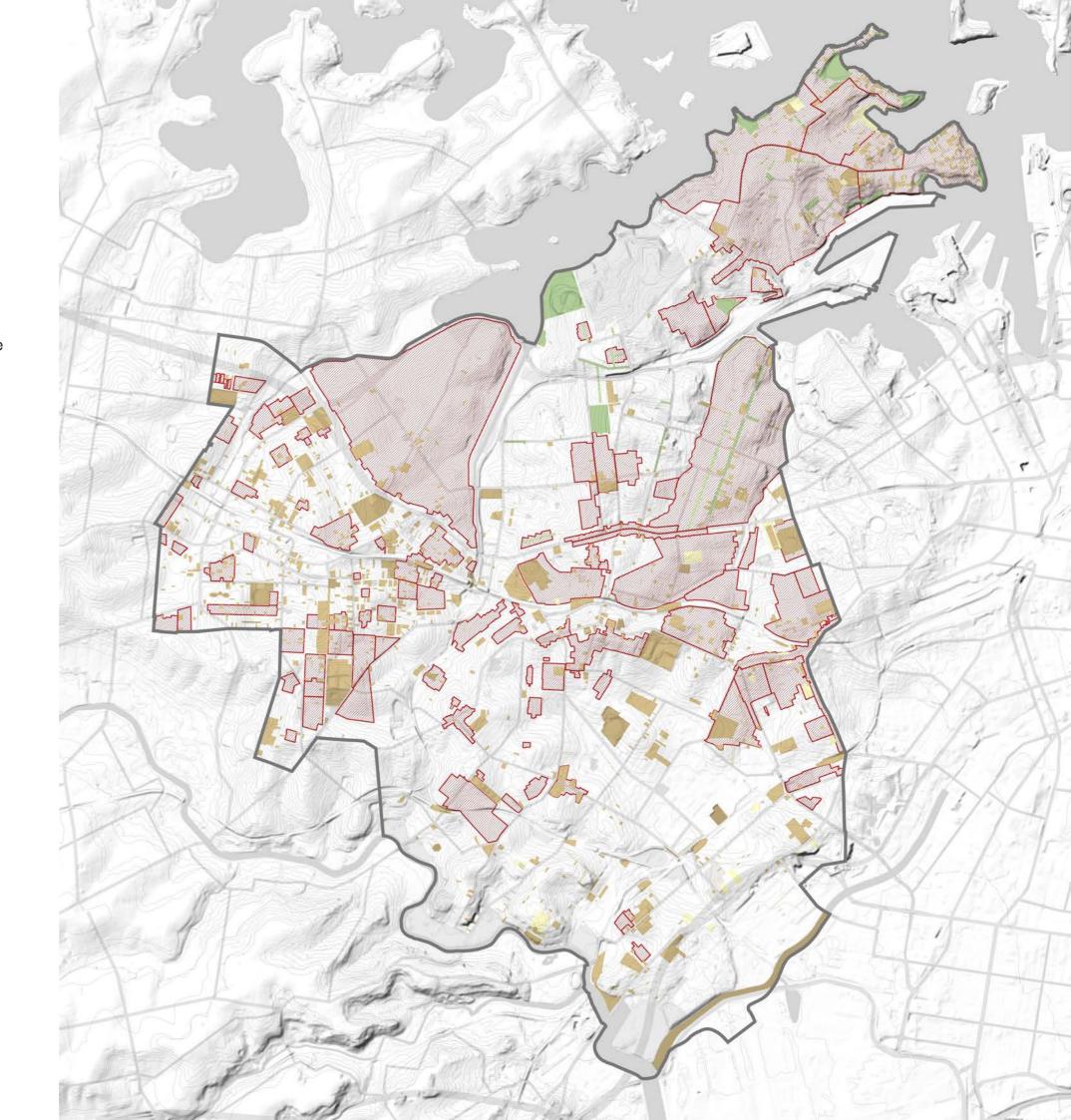
The design can include strategies to celebrate heritage items through displaying and educating.

Map Source: Shapefile Provided by Inner West Council.











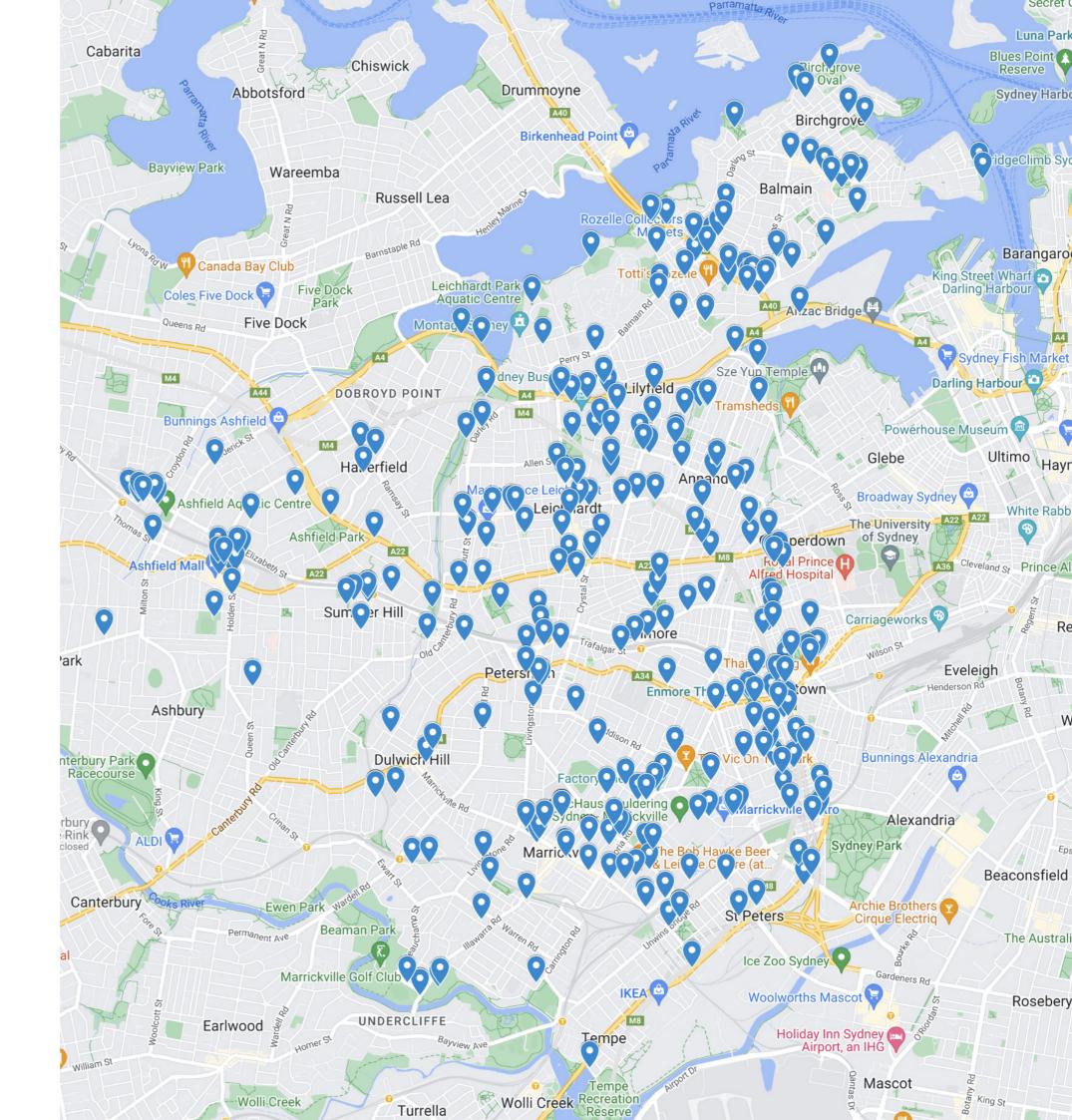
## **Public Art**

The ARSIACH Grid will be enhanced by exposing pubic art along the Blue-Green Grid to enhance art and culture.

Map Source: Inner West Council.







## **Open Spaces Network**

The Blue-Green Grid will link parks and open spaces to provide loops and routes for people to follow, enhancing access to a diversity of recreational open spaces.

Map source: 2021 Recreational Needs Study, Inner West Council.

## Legend



Regional Parks (5ha+)

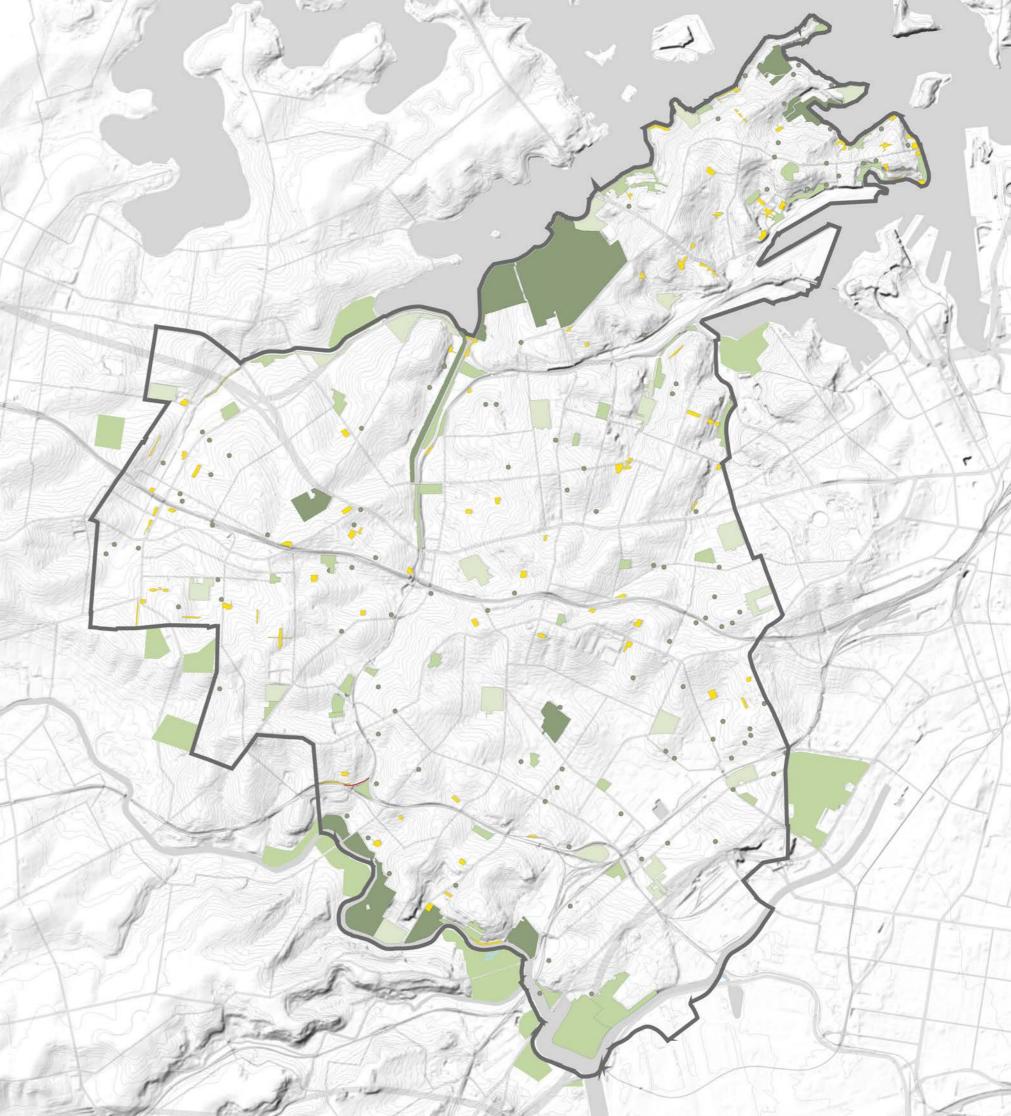
District Park (2ha to 5ha)

Level 1 Local Parks (0.5ha to 2 ha)

Level 2 Local Parks (0.1ha to 0.5ha)

• Pocket Parks (less than 0.1ha)



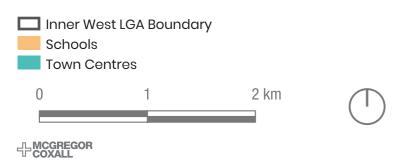


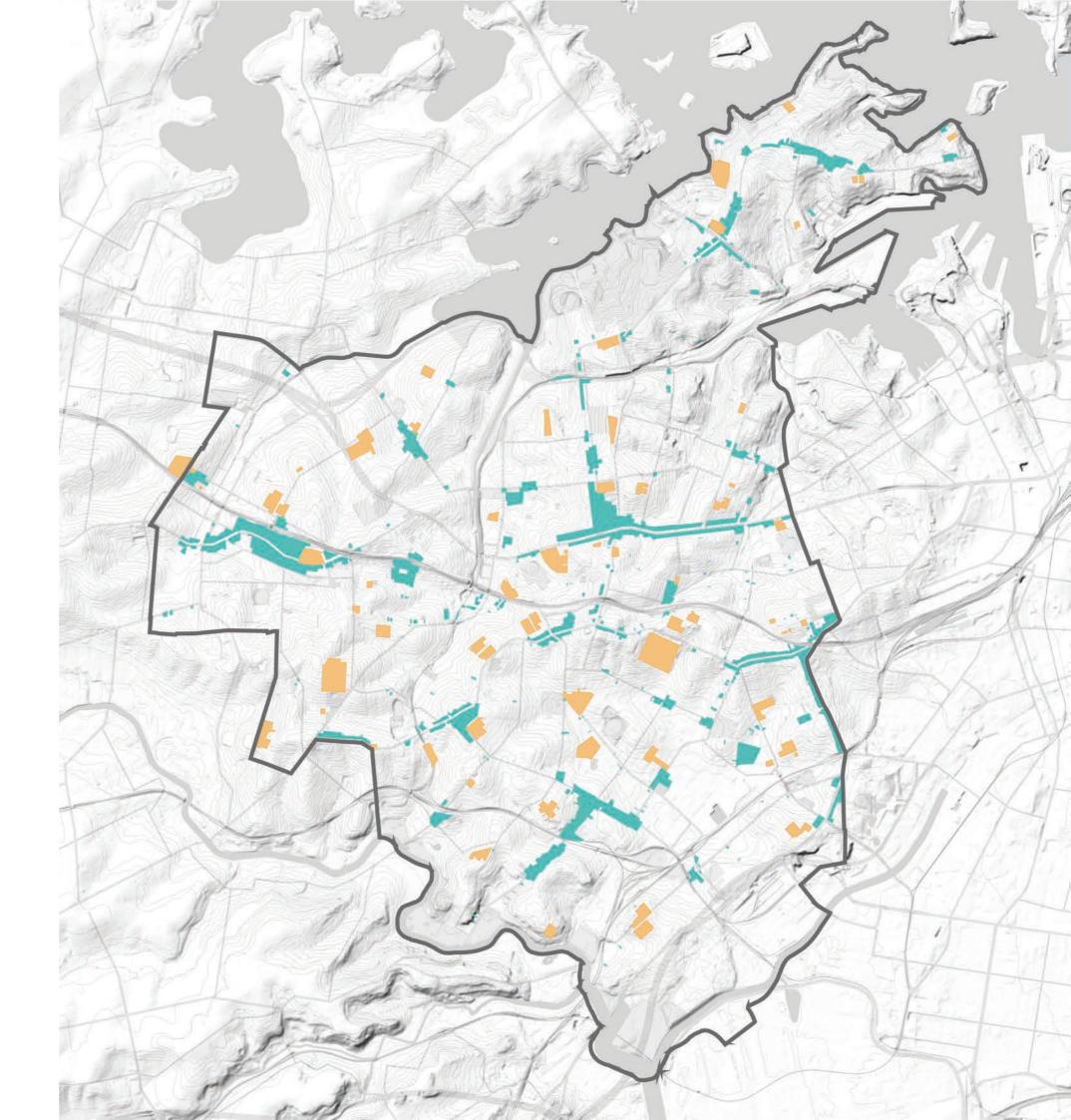


## **Activity Centres**

Key town centres and schools are natural anchors for neighbourhoods. They represent areas of high movement and recreation activities, and should comprise part of the Blue-Green Grid as places that require good accessibility and public amenity.

Map source: Inner West Council.

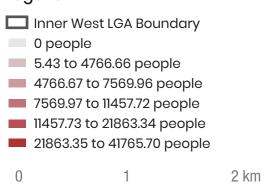


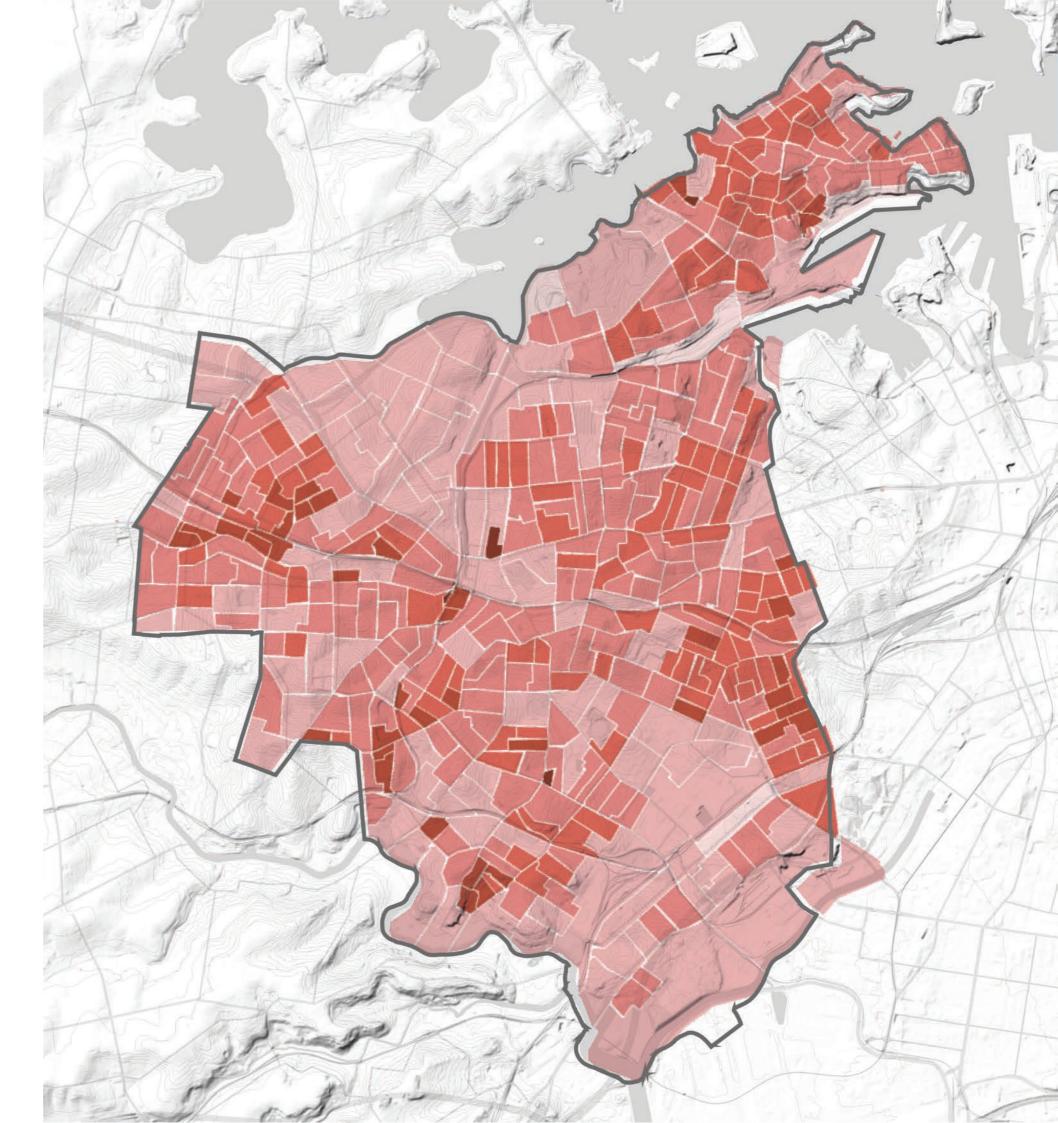


## **Population Density**

High density areas would be prioritised, reflecting areas to have the largest amount of people to benefit from the Blue-Green Grid.

Map source: https://atlas.id.com.au/inner-west/maps/population-density

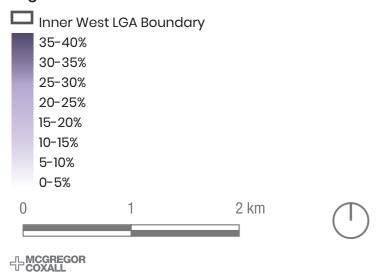


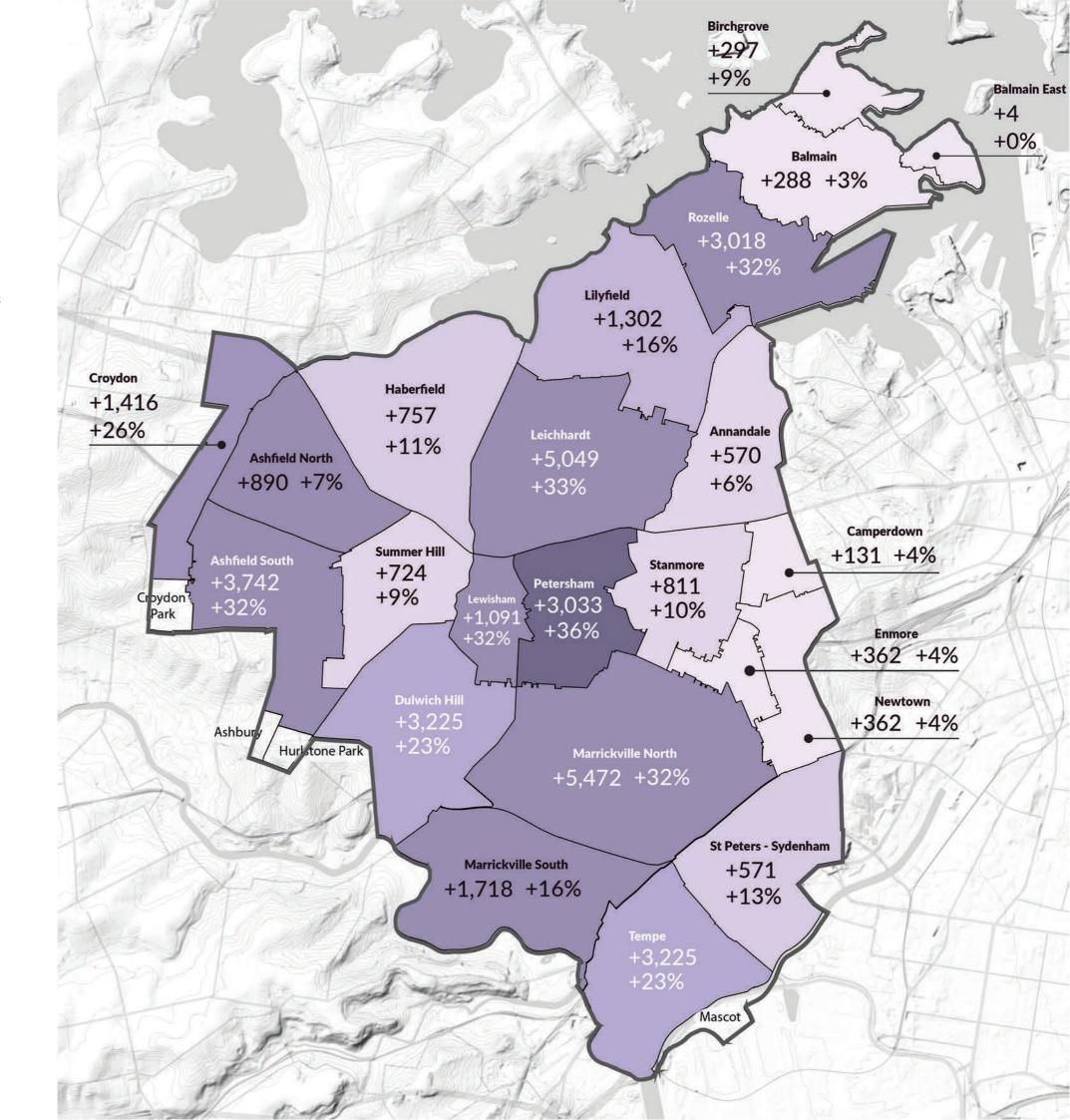


## **Projected Population**

High density areas would be prioritised, reflecting areas to have the largest amount of people to benefit from the Blue-Green Grid.

Map source: Inner West Council





## **Provision of Open Space**

The map indicates provision of green open space per person. The map shows a decline in open space per person, indicating a loss of open space and a rise in population. The East and West catchments are of particular concern, with a particularly low amount of open space available per person. The Blue-Green Grid can contribute to recreational needs within areas that lack open space and better connect people to the open space that does exist to them.

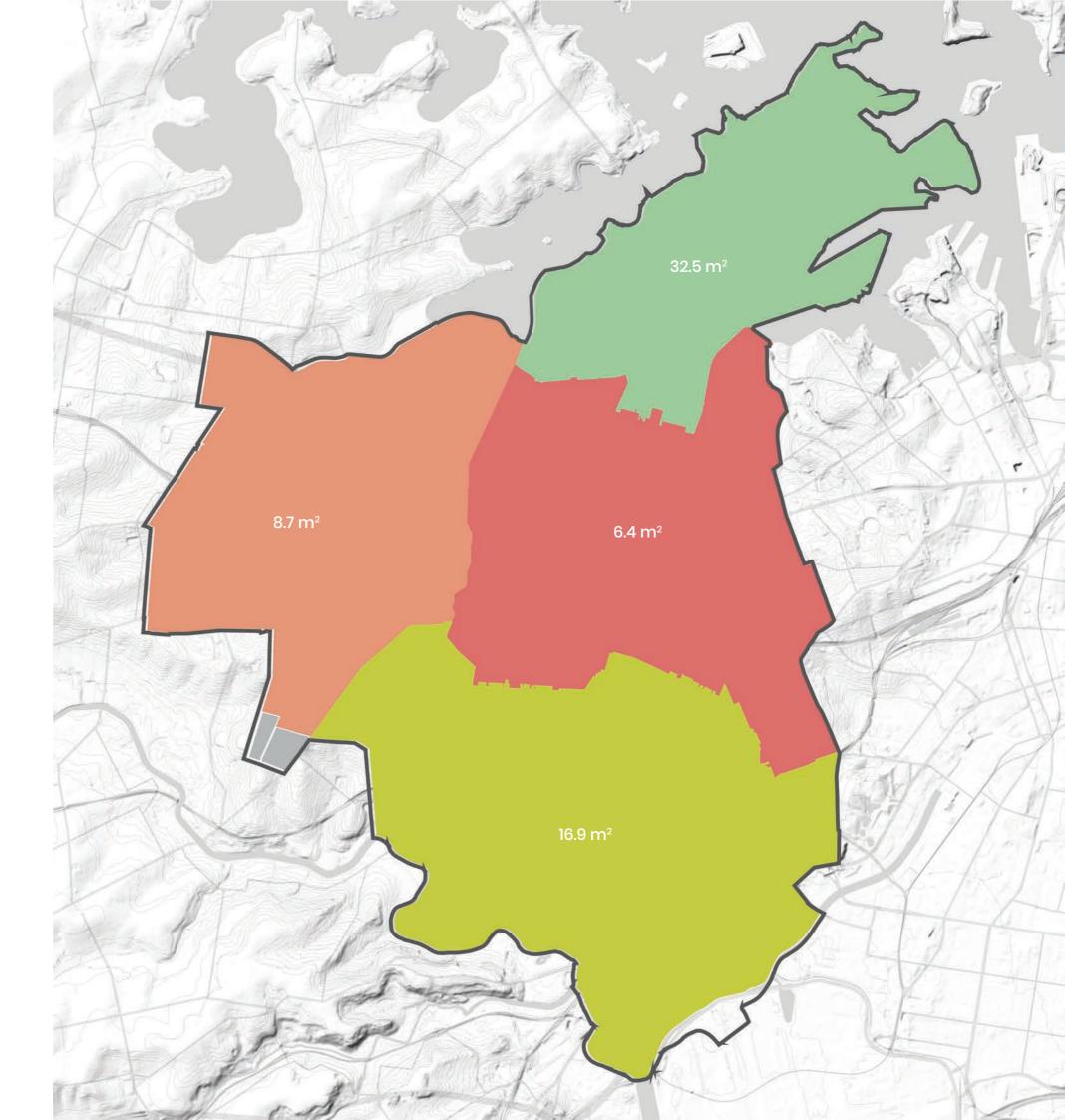
Map source: 2021 Recreational Needs Study, Inner West Council.

## Legend

Inner West LGA Boundary
Catchment 1 - North
Catchment 2 - West
Catchment 3 - East
Catchment 4 - South

0 1 2 km







## Accessibility to Open Space

Perimeters of major parks were offset to find ~400m of walkable distance from the perimeter from the parks without major barriers such as main roads and train lines which prevent ease of pedestrian accessibility.

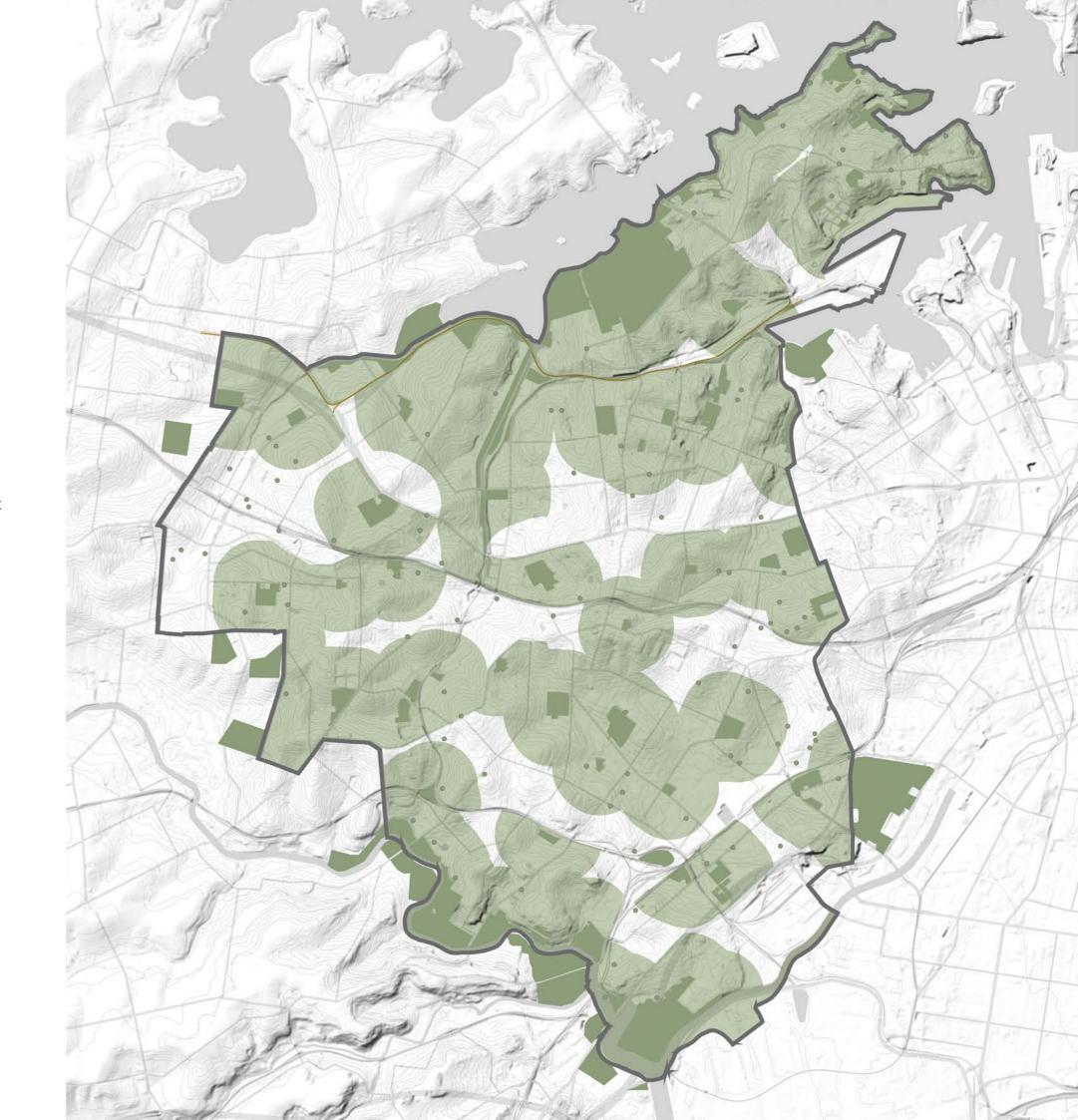
This in turn begins to show which areas benefit from a strong existing presence of greenery and which areas heavily lack green open spaces.

Map source: 2021 Recreational Needs Study, Inner West Council.

## Legend

Inner West LGA Boundary
Major Parks
400m walkability zone of Major Parks





## **Areas Lacking Open Space**

This map was extracted from *Recreation Needs Study*, and identify areas that have below benchmark access to open space.

The catchment areas exclude areas that are across access barriers such as major roads and above ground train lines.

The map indicates areas that would benefit from the addition of the Blue-Green Grid.

Map source: 2021 Recreational Needs Study, Inner West Council.

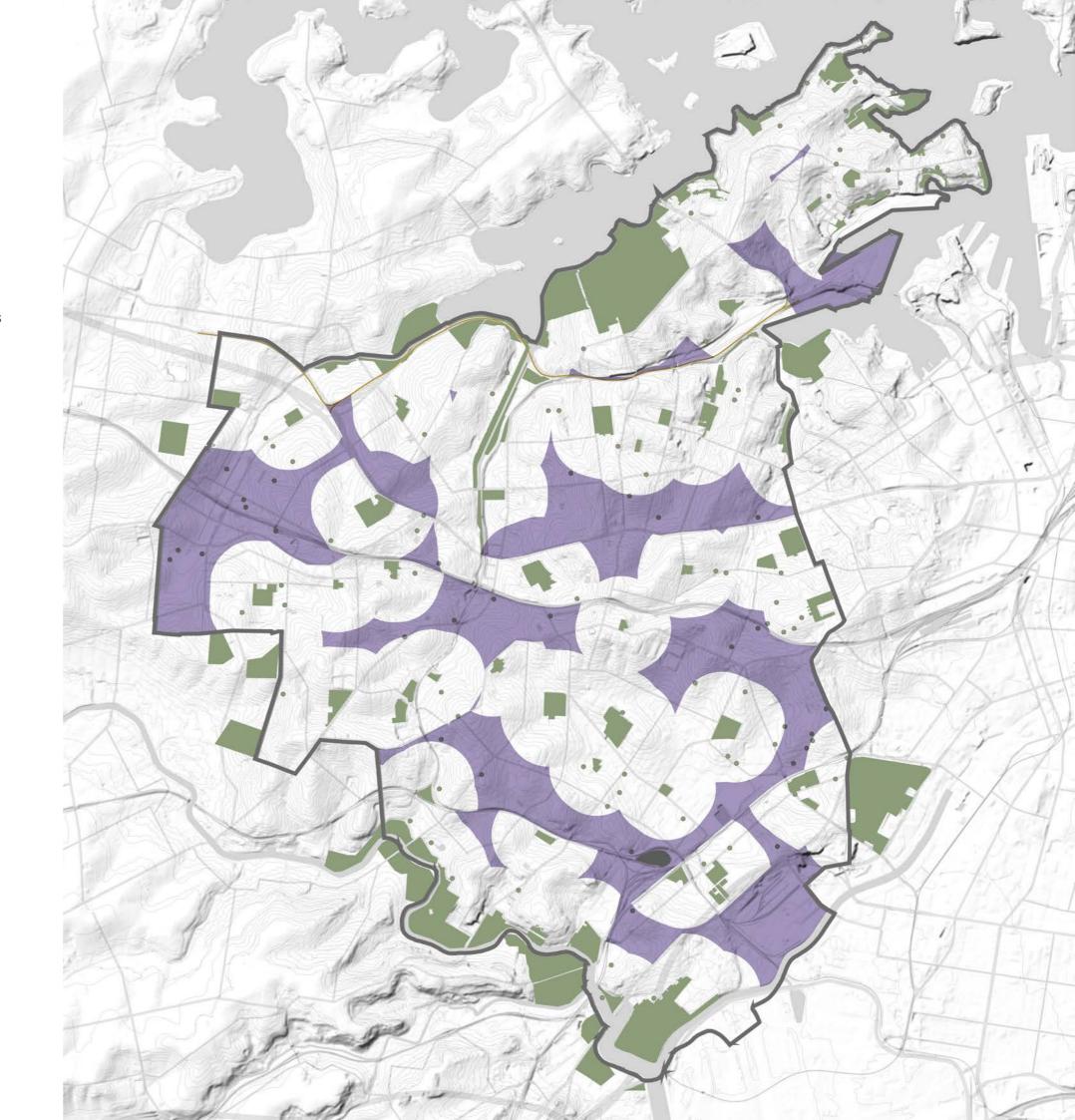
## Legend

Inner West LGA Boundary

Parks and Open Spaces

Areas not within 400m easy walking distance.

1 2 km





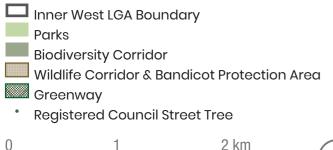
## **Biodiversity**

A significant percentage of greenery comes from parks which contributes to the Blue-Green Grid as an existing system. Areas with high biodiversity value should be included in the grid, as it will serve as protection to the existing ecologies and enhance future ecosystems.

Two major corridors improves North / South connection, and three key zones are identified with high value biodiversity. Biodiversity East/West connection can be improved by Blue-Green Grid.

The Indigenous people are the traditional carers of land and themselves utilised the local environment as infrastructure for food and shelter. Their history and knowledge should be referenced and utilised.

Map source: SSROC Biodiversity Corridors 2016 (Provided by Inner West Council), Shapefiles provided by Inner West Council.









## **Vegetated Areas**

Vegetation on this map includes all cataloged vegetation types; grass, shrubs and trees.

The mapping shows where theres a higher concentration of greenery, which is inevitably where the parks are.

Key to the Blue-Green Grid is considering plants of various sizes to provide habitat to small ground and lower dwelling animals such as the Long-nosed Bandicot and Superb Fairy Wren as well as contribute to a strong green character.

Shown in this map, is the lack of diverse vegetation particularly on the eastern side of the Inner West LGA, highlighting East Marrickville, Sydenham and St Peters as areas with particularly lack of greenery.

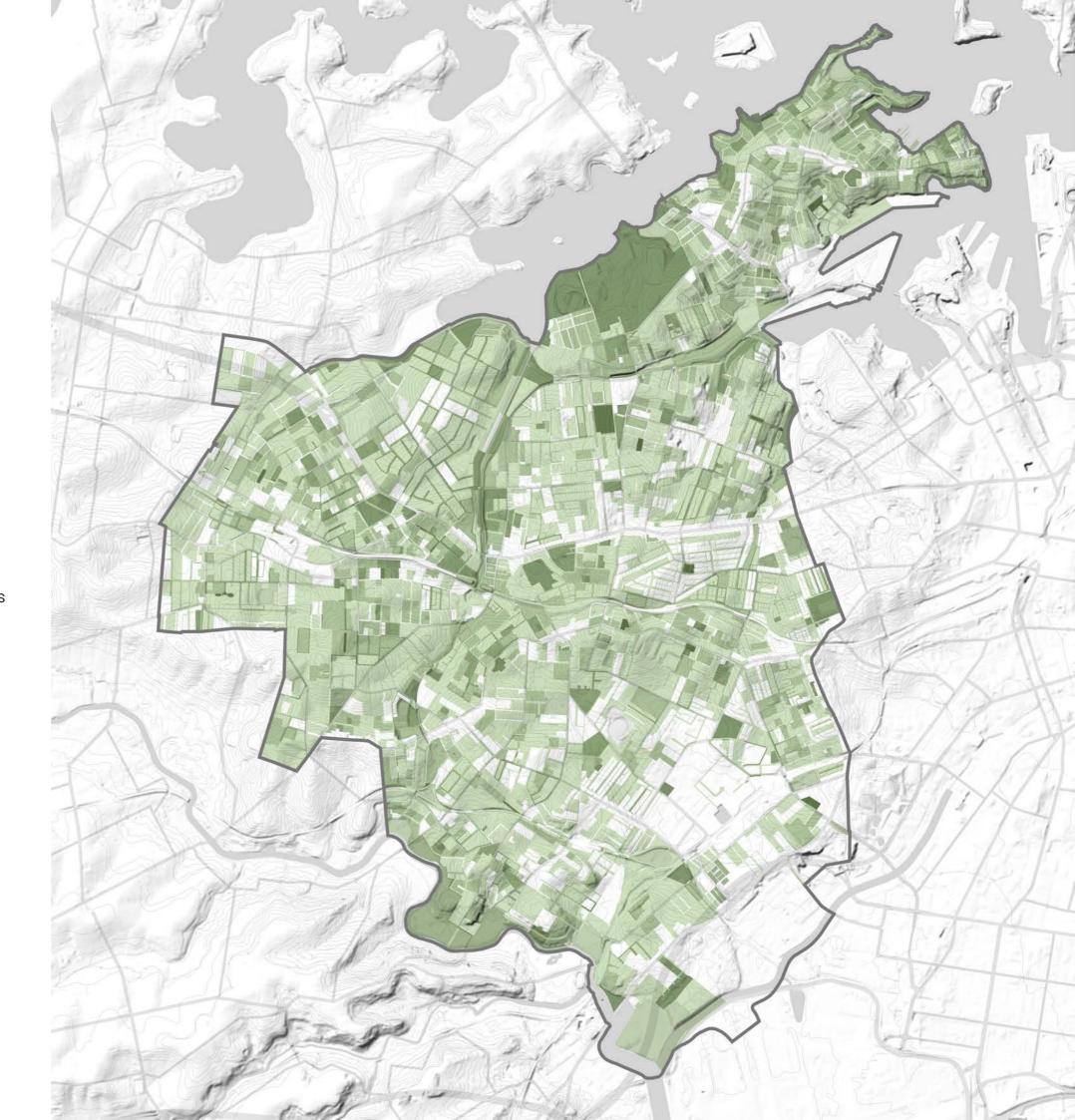
Identified areas correlate with previous map and areas that lack walkability to green open spaces.

Map source: Shapefile provided by Inner West Council, OEH 2019.

## Legend

Inner West LGA Boundary
50%-100% vegetation coverage
30%-50% vegetation coverage
20%-30% vegetation coverage
0 1 2 km







## **Tree Canopy Cover**

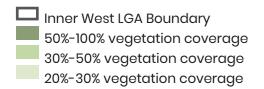
Understanding tree canopy in the Inner West shows where existing trees contribute to the Blue-Green Grid, and where the Blue-Green Grid can contribute to areas that lack canopy.

Tree canopy is crucial to providing shady areas and combating urban heat, as well as playing a key role in sequestering carbon.

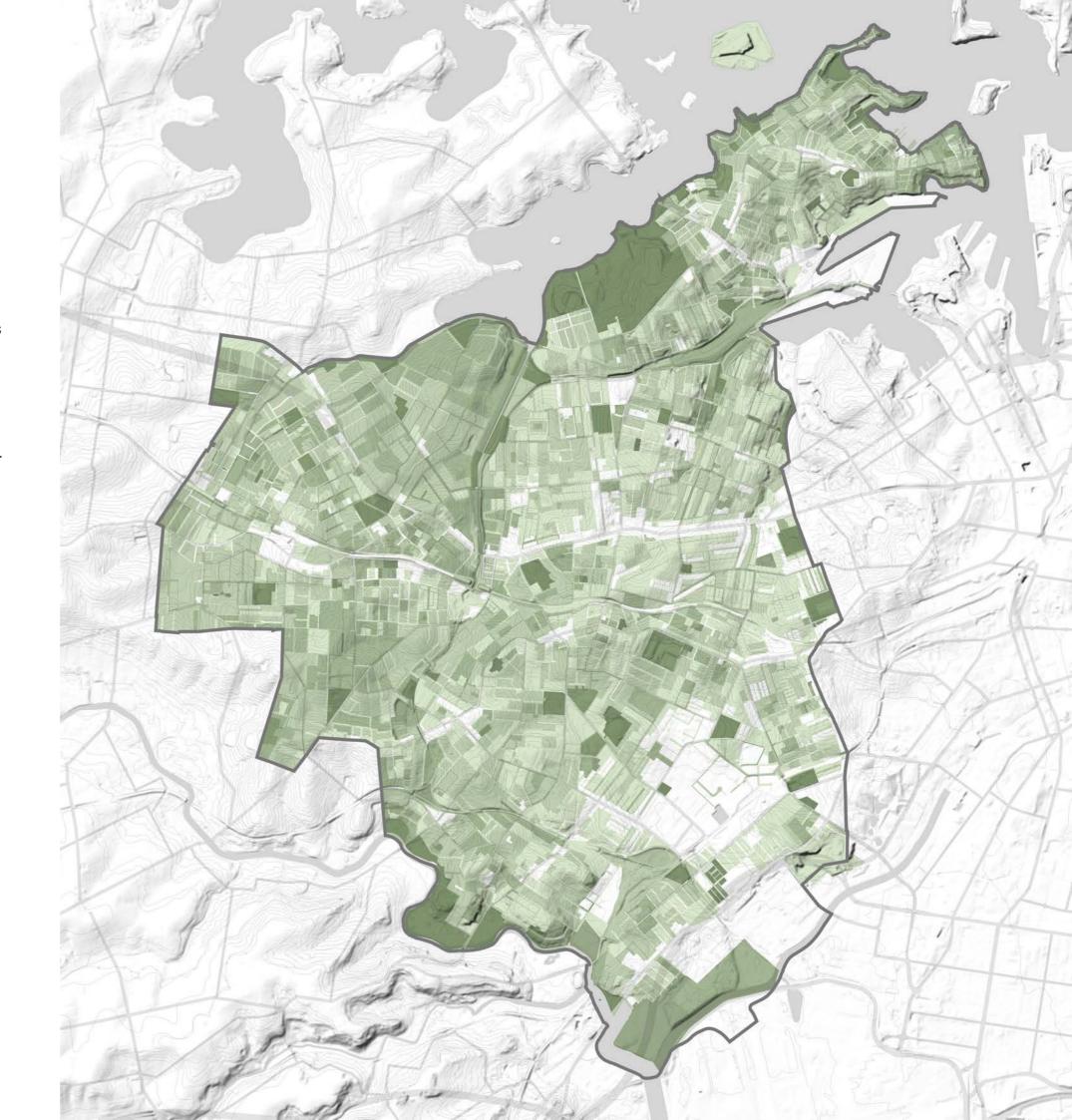
Tree canopy also provides habitat to tree dwelling animals, which some require consecutive trees in order to move around safely.

Similarly to the preceding vegetation map, shown is a lack of tree canopy on the south eastern side of the Inner West LGA, with East Marrickville, Sydenham and St Peters particularly lacking in tree canopy coverage.

Map source: Shapefile provided by Inner West Council, OEH 2019..







## **Urban Heat Island**

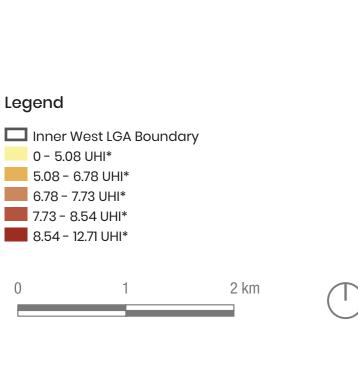
The presence of medium-high density dwellings, industrial and commercial areas and a relative lack of large areas of bushland makes the Inner West susceptible to the Urban Heat Island effect.

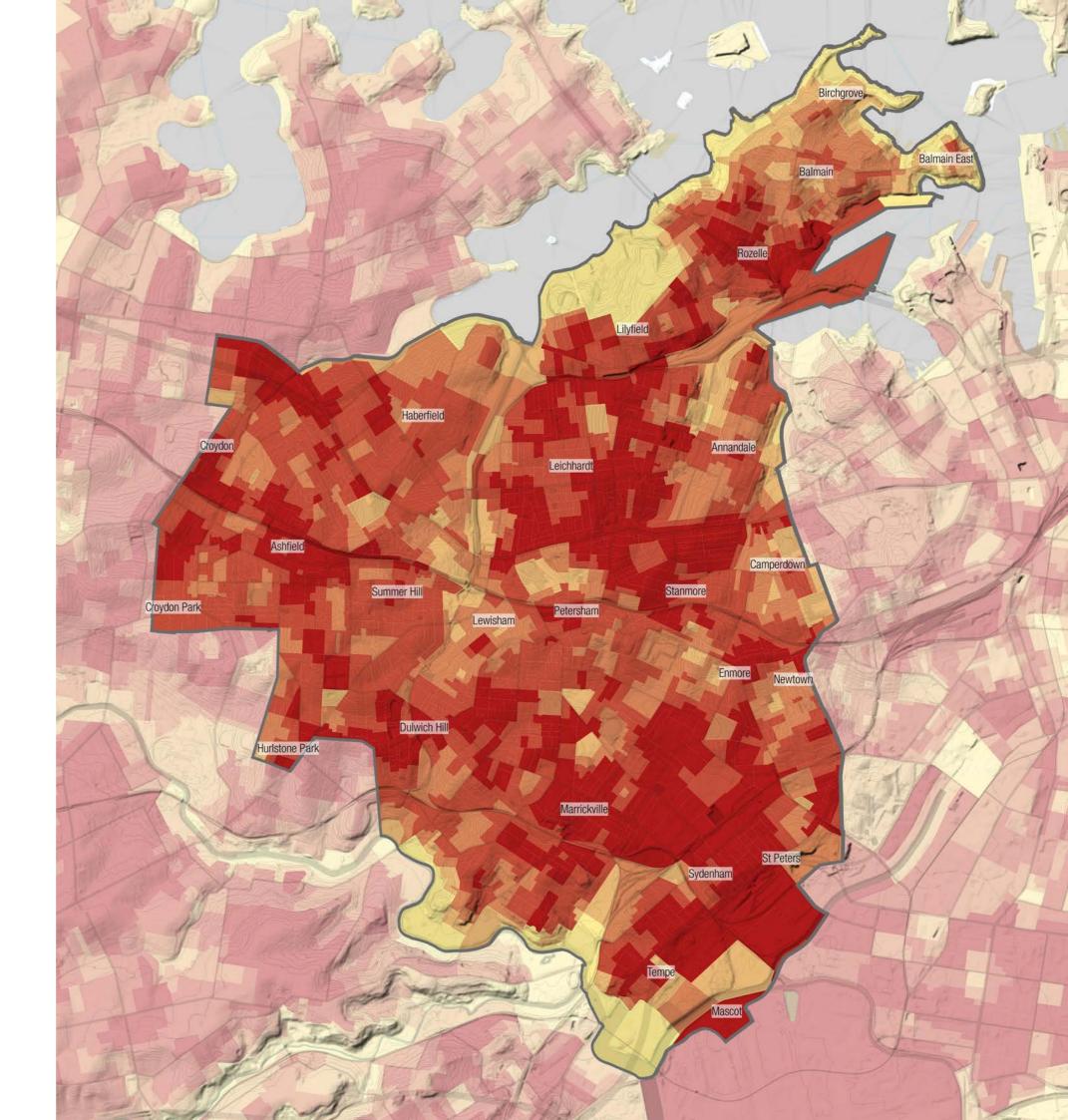
The map highly correlates with preceding vegetation and tree canopy maps, where the lack of greenery on the eastern side of the LGA has likely contributed to a higher heat vulnerability, where areas with a higher concentration of greenery and water bodies have a lower heat vulnerability.

Areas with a high Urban Heat Island Effect (UHI) would greatly benefit from the implementation of a Blue-Green Grid, as shown, existing greenery such as found in the GreenWay, around the cooks river and the northern point with a high concentration of parks.

Map source: NSW Government Dataset, 2016.

Inner West LGA Boundary 0 - 5.08 UHI\* 5.08 - 6.78 UHI\* 6.78 - 7.73 UHI\* 7.73 - 8.54 UHI\* 8.54 - 12.71 UHI\*







## **Heat Map**

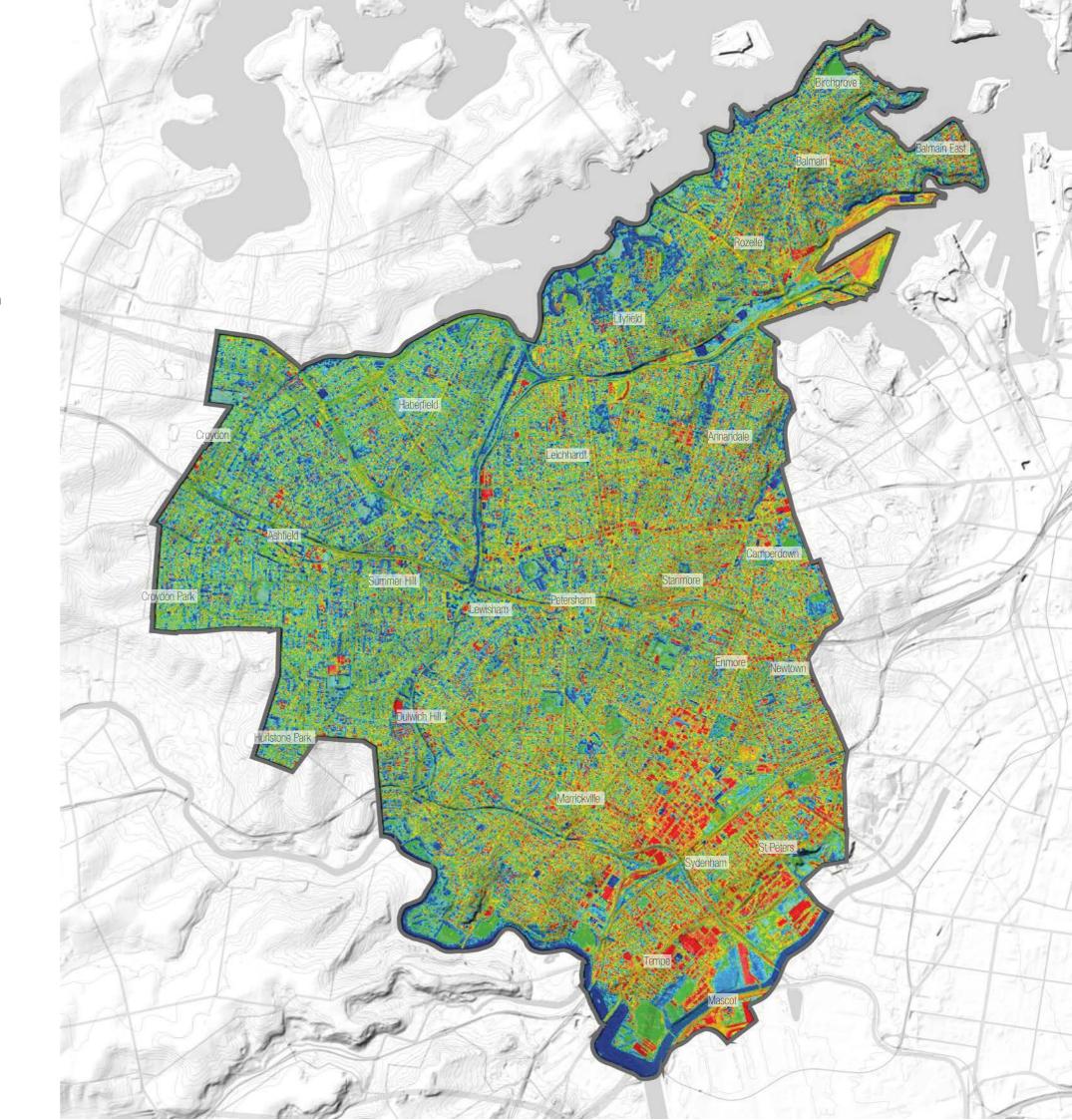
Similarly to the UHI map, the map highly correlates with preceding vegetation and tree canopy maps, where the lack of greenery on the eastern side of the LGA has likely contributed to a higher heat vulnerability, where areas with a higher concentration of greenery and water bodies have a lower heat vulnerability.

Areas of high urban heat would benefit from the implementation of greenery associated with the Blue-Green Grid.

Map source: Inner West Council







## White Bay Eco-Corridor

White Bay Eco-corridor can contribute as ecological links.

Map source: https://glebesociety.org.au/updateproposed-eco-corridor-as-part-of-the-future-forbays-west/

## Legend

Inner West LGA Boundary
White Bay eco-corridor
Bays West eco-corridors









## **Hydrological Network**

The Blue-Green Grid inevitably will create a hydrological network. The implementation of the Blue-Green Grid will provide an opportunity to rejuvenate the struggling waterways, bringing together ecology with hydrology to aid in the nitrogen cycle.

Utilising the water network and where water naturally collects, will indicate areas that will benefit from the application of a the Blue-Green Grid to reduce flooding, naturally provide water to plants and enhance the interaction between plants and water which will contribute to lowering urban heat.

Six main water corridors are identified in the area, representing key hydrological network.

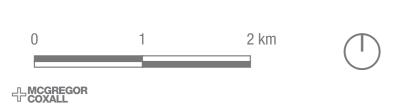
Flooding areas can be mitigated and indicate opportunities for implementation of Blue-Green corridors.

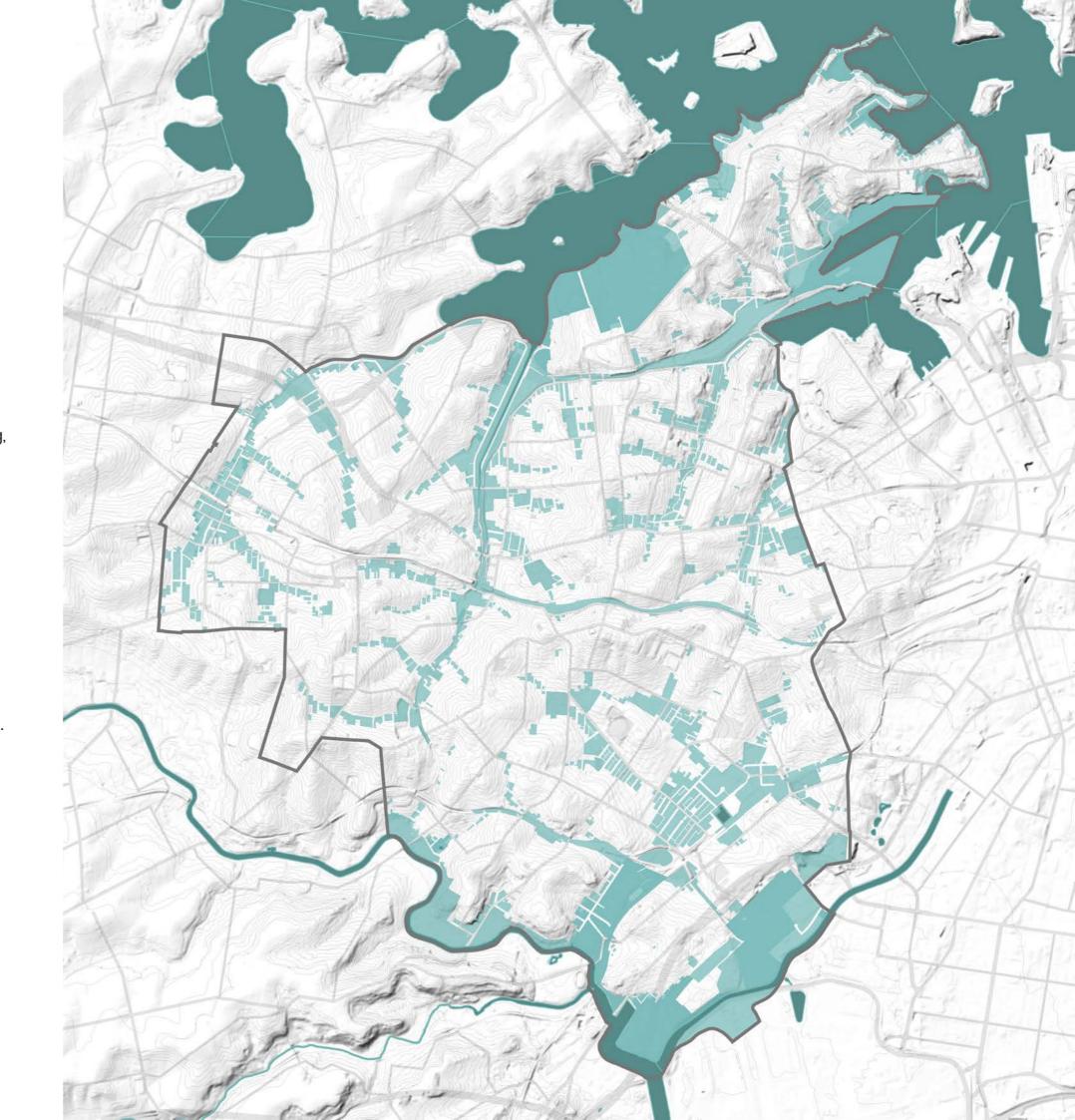
Notably, flooding occurs at the site which was previously a swamp (see Indigenous Historical Hydrological Systems Map).

Map source: Shapefiles provided by Inner West Council.

## Legend

Inner West LGA Boundary
Water bodies
Creeks
Flooding Extent

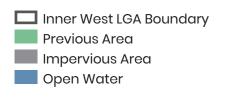




## Permeable Surfaces

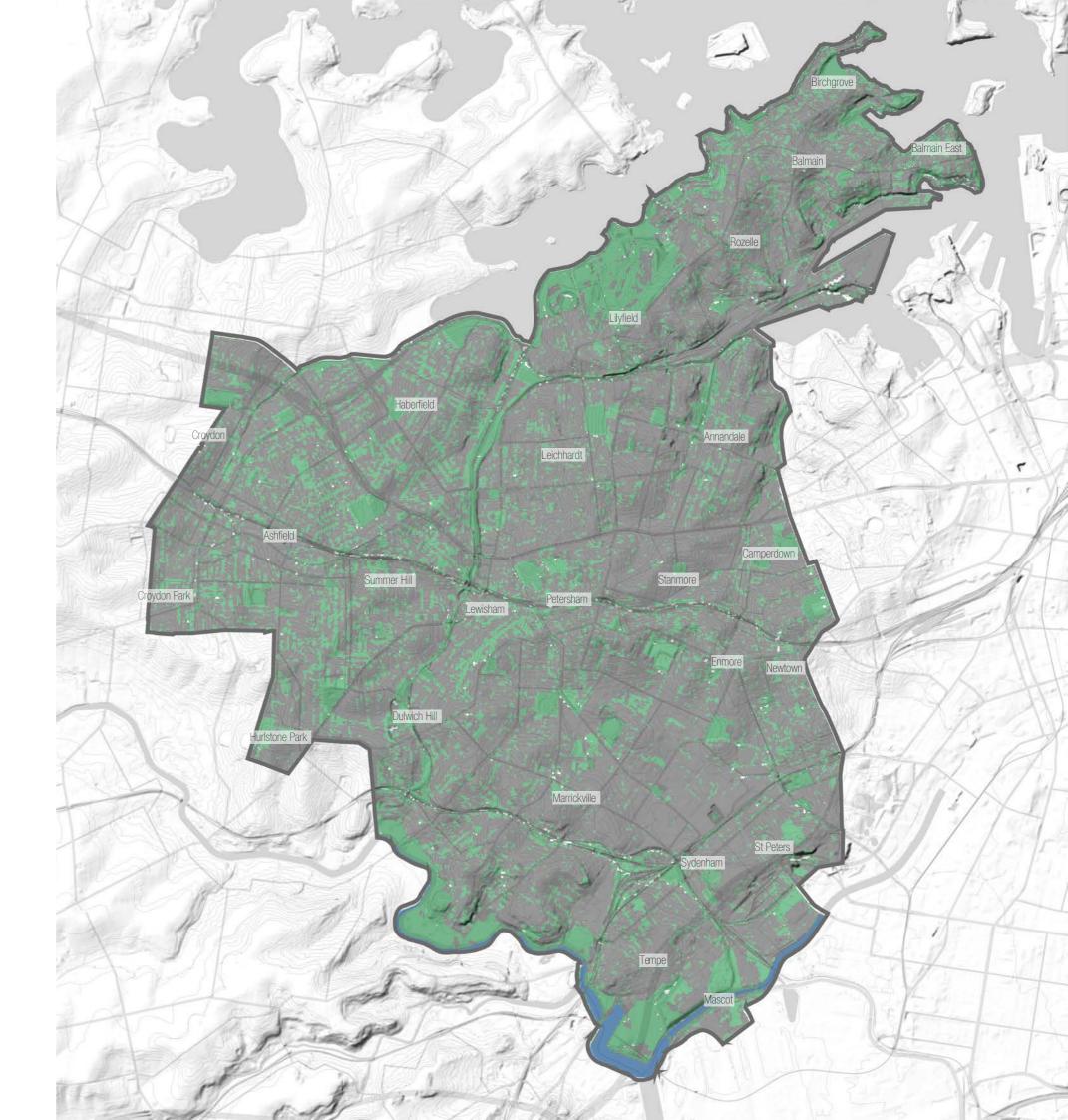
Understanding where less permeable surfaces are which correlates with flooding.

Map source: Inner West Council.











## Points of Interest (POI)

The Blue-Green Grid is about providing high amenity, green routes along commonly traveled paths and routes. The POI map outlines the specific places to connect. POI's include:

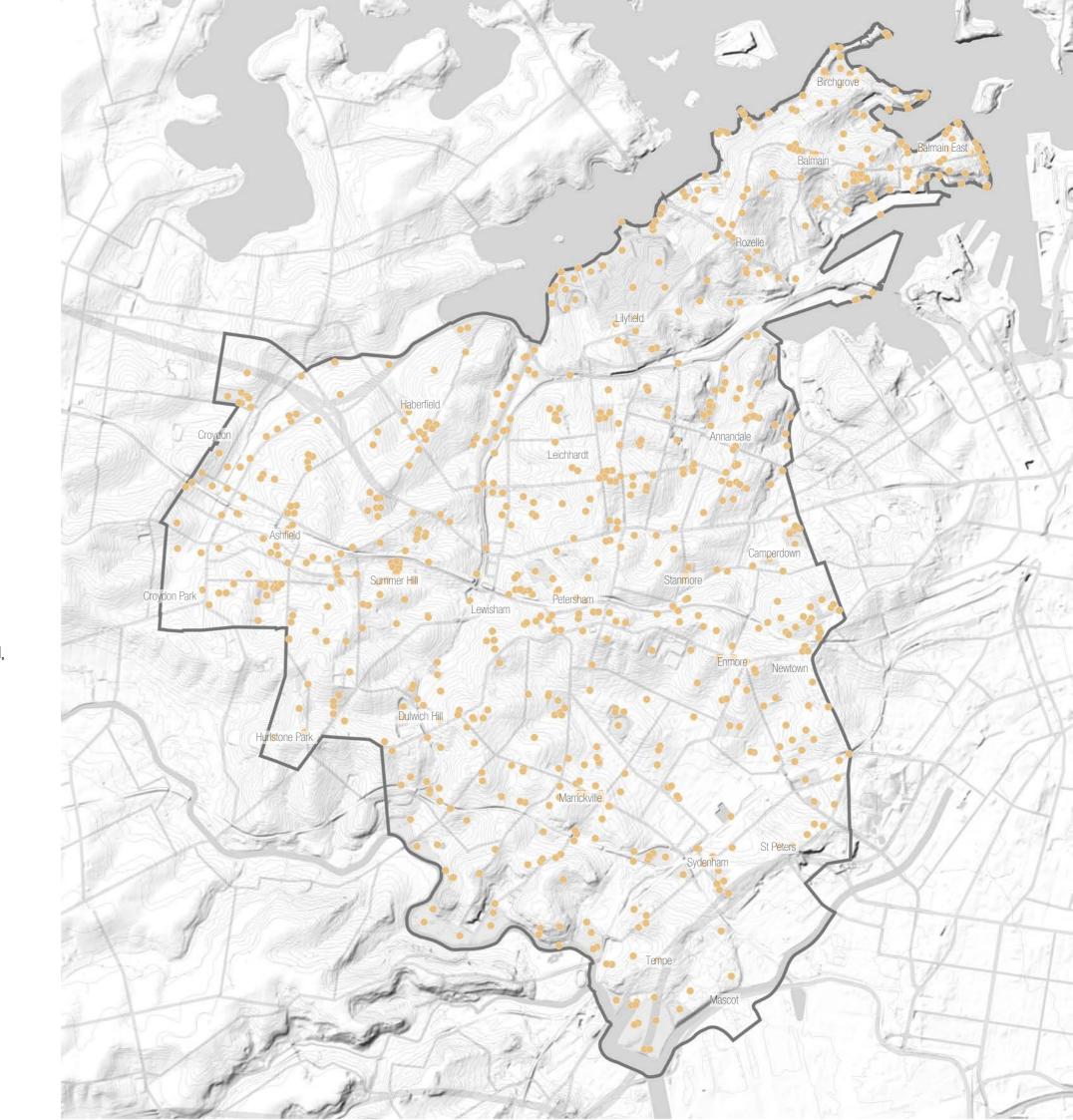
Ambulance Stations, Art Galleries, Athletic Tracks, Boat Ramps, Cemeteries, Child Care Centres, Clubs, Community Facilities, Comunity Homes, Convent/Monasteries, Court Houses, Education Facilities, Embassies, Fire Stations, General Hospitals, Historic Sites, Libraries, Local Government Chambers, Lookouts, Monuments, Museums, Nursing Homes, Parks, Picnic Areas, Places of Worship, Police Stations, Post Offices, Preschools, Pumping Stations, Retirement Villages, Rubbish Depots, SES facilities, Schools (High schools, primary schools, special schools, public and private) Shopping Centres, Slipways, Sports Centres, Sports courts and fields, Swimming Pools, TAFE colleges, Transport interchanges, Universitieis, Urban Places, and, Wharfs.

Map source: https://datasets.seed.nsw.gov.au/dataset/nsw-points-of-interest-poi

## Legend

Inner West LGA Boundary
POI





## **Water Catchment**

Understanding where less permeable surfaces are which correlates with flooding.

Map source: https://datasets.seed.nsw.gov.au/dataset/42582022-ed91-45df-b542-8af77f564020/metaexport/html

## Legend

Inner West LGA BoundaryCatchment Boundary









## Pipes and Drainage

The Blue-Green Grid will provide WSUD in areas which require drainage to naturally control what enters our waterways.

Map source: Inner West Council.

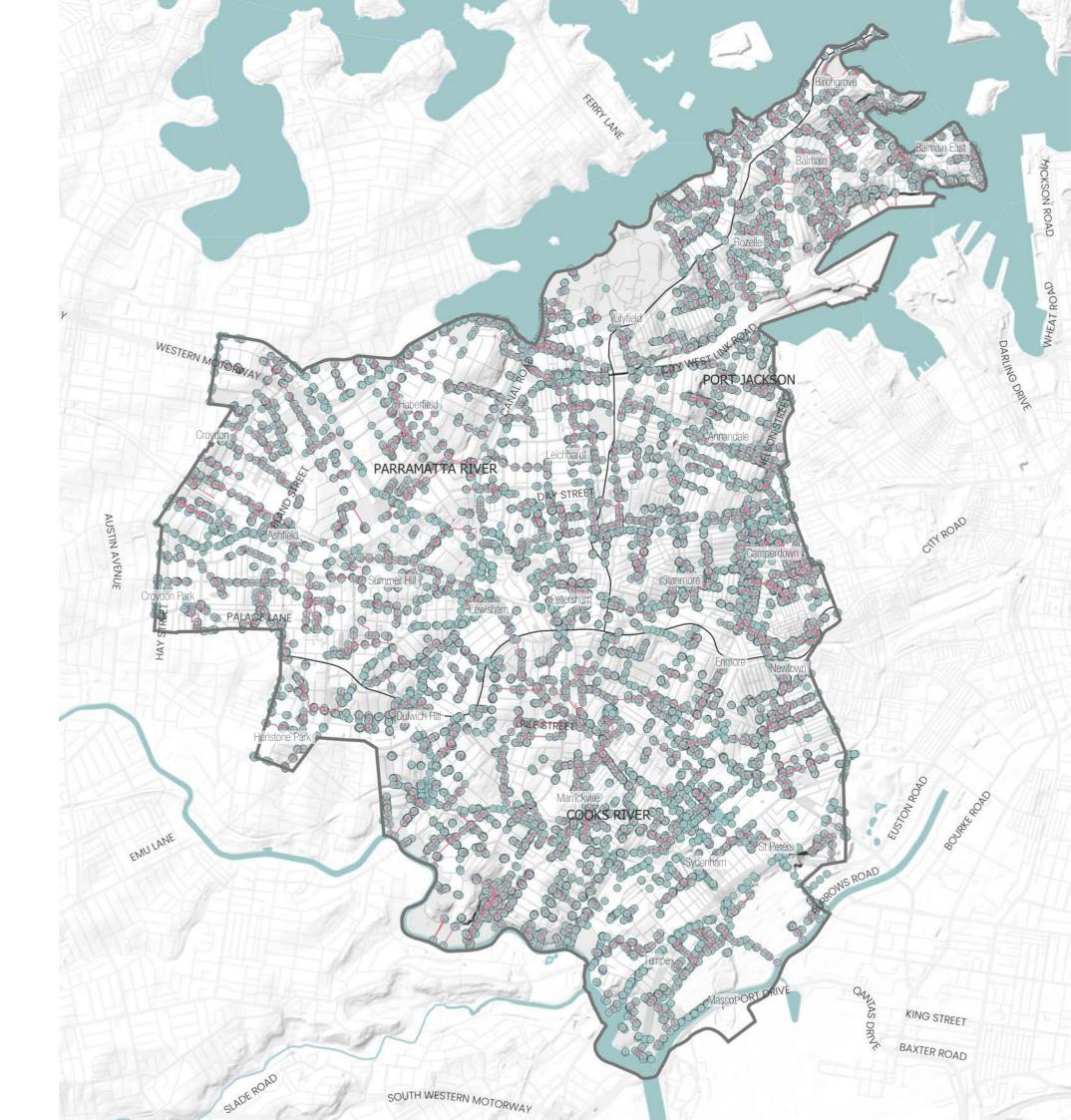
## Legend

Inner West LGA Boundary

Drainage Pits

— Stormwater Pipes





## Points of Interest (POI) - Heat Map

The Points of Interest (POI) heatmap represents an aggregate of location of a feature, service or activity that people may want to see, know about or visit across the LGA. The POI dataset is acquired from and maintained by State Government of NSW and Spatial Services (DCS).

POI dataset includes features related to Community, Education, Recreation, Transportation, Utility, or Hydrography, Physiography and Place, and defined as a place with a prescribed name. The spatial analysis technique uses this dataset with density calculation to estimate density-clusters across a study area. It calculates the density of interest points by spreading the influence of each point throughout the study area using a kernel function. The resulting output of this analysis method helps in analysing potential pedestrian mobility and behaviour with the LGA.

The POI Heat Map expands on the previous POI map. This in turn helps identify a broader Blue-Green Grid, which runs broadly near POIs in circumstances a link may not be suitable along that specific route.

Map source: https://datasets.seed.nsw.gov.au/dataset/nsw-points-of-interest-poi

Map produced by McGregor Coxall with GIS.

## Legend

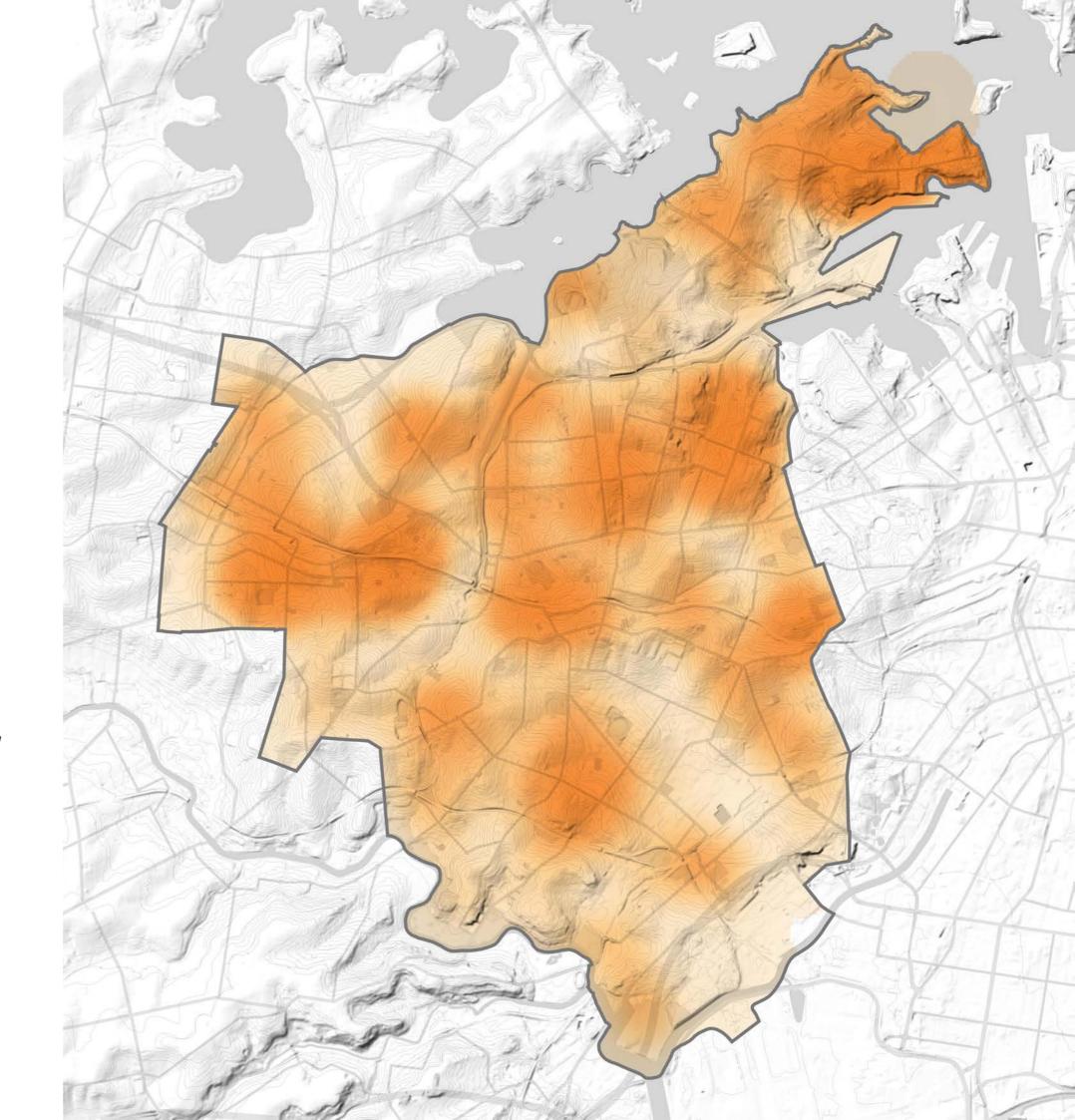
Inner West LGA Boundary

More Points of Interest

Less Points of Interest

1 2 km







## **Movement Network**

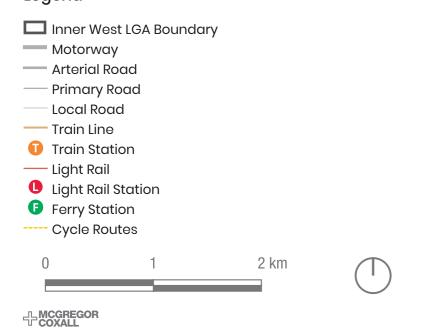
The Inner West Network is key to movement within, to and from the area, with plans to improve the network with the addition of the Metro.

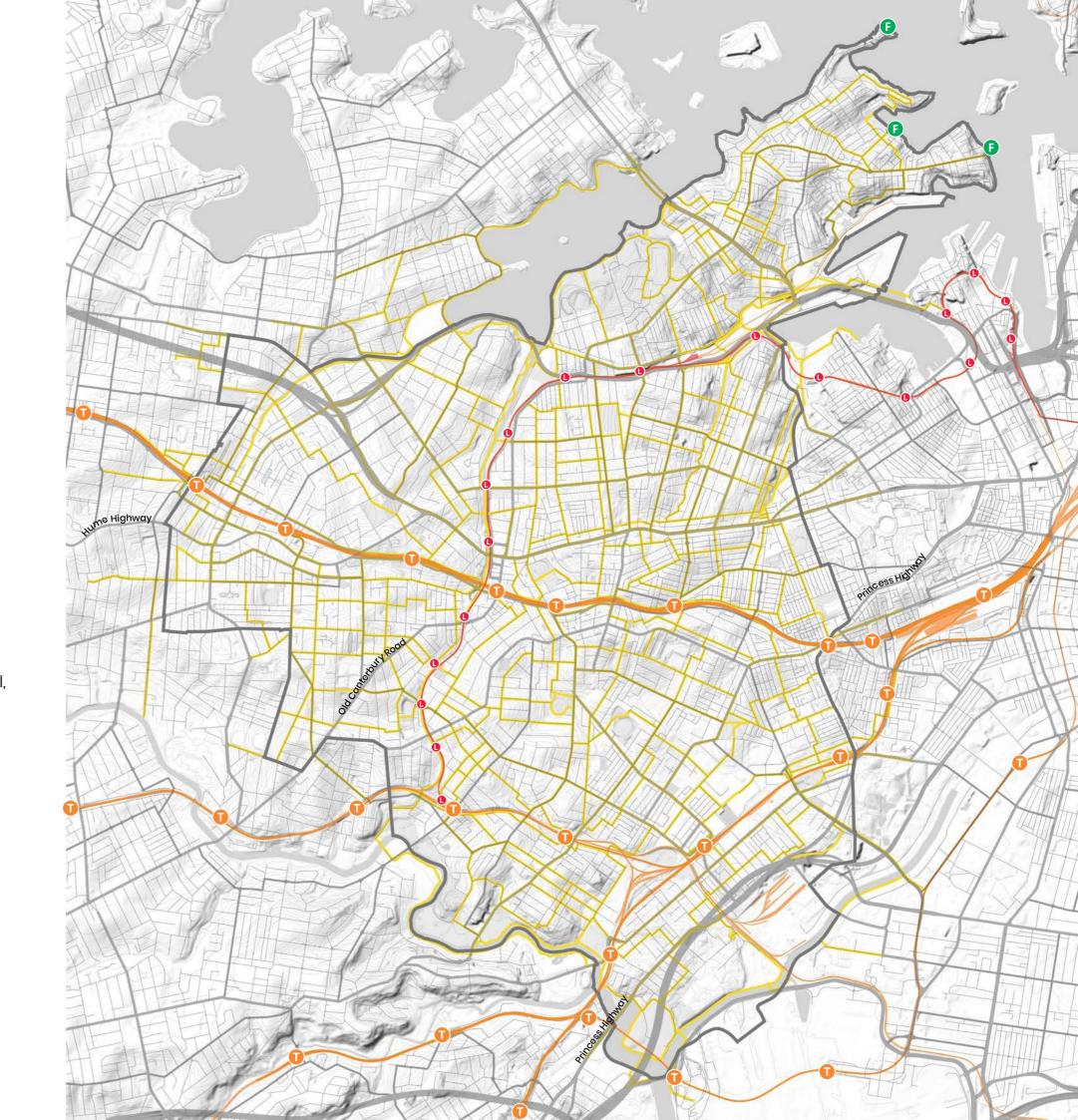
The existing cycle routes provide hints as to where the Blue-Green Grid could go and indicate gaps to be improved.

Proximity to public transport from the Blue-Green Grid provides accessibility to green spaces, whilst also encourages use of public transport through providing direct accessible paths and active transport over private car use, as the Blue-Green Grid will produce more attractive routes that are lush and cool which people want to use.

The Blue-Green Grid has potential to follow the train lines and main roads, using trees to reduce noise, improve aesthetics and creating a corridor of wildlife and biodiversity.

Map source: Shapefiles provided by Inner West Council, NSW DPIE, Six Maps.





## **Transport Walkability**

Whilst the Inner West boasts an excellent rail network, much of the Inner West remains outside the walkable radius of stations.

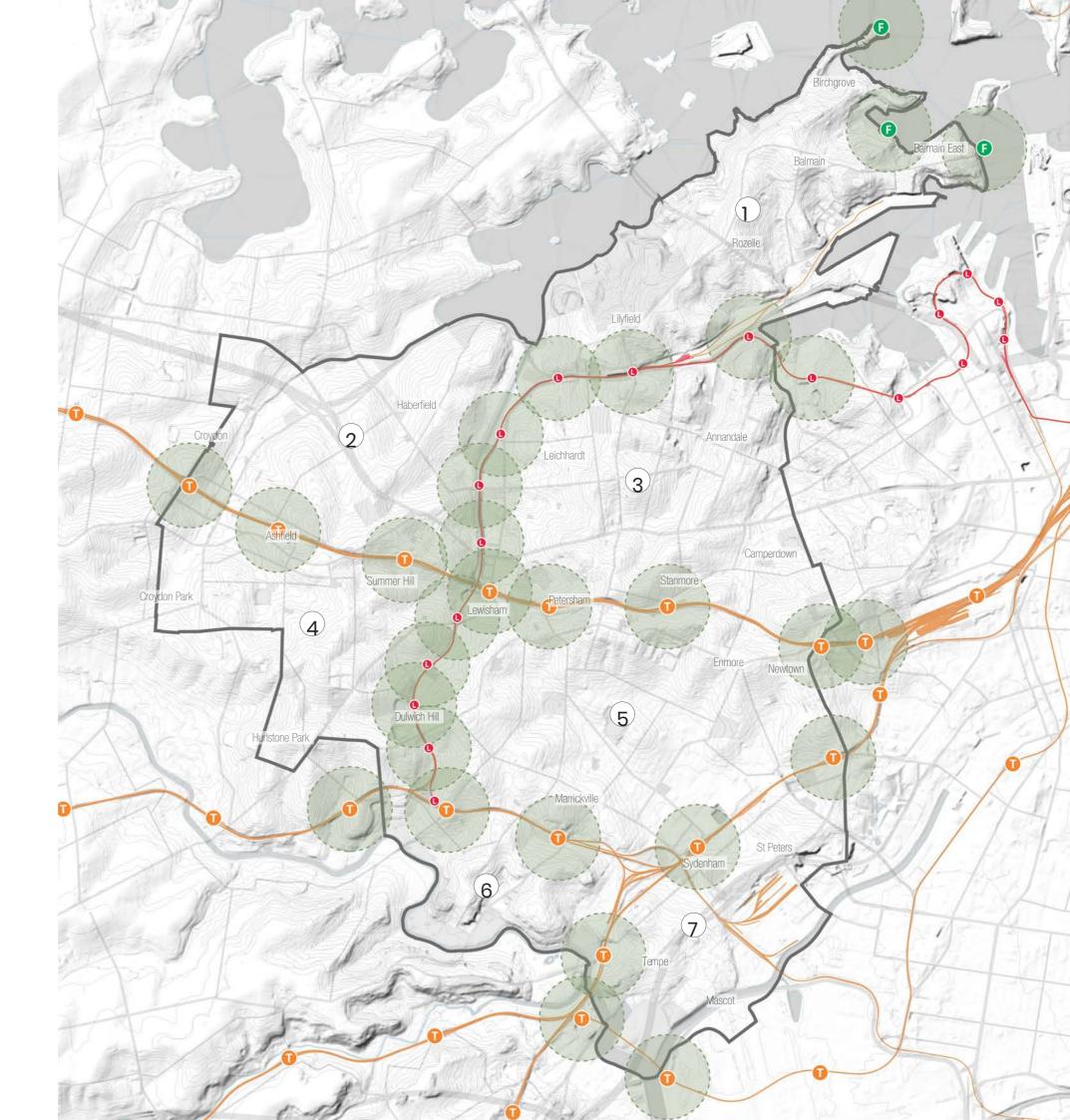
The Blue-Green Grid can be placed to support longer walking distances, and should be located to create access to stations.

Blue-Green Grid opportunities identified in 7 areas that lack suitable walking connectivity to stations.

Map Source: Shapefiles provided by Inner West Council, NSW DPIE, Six Maps.

2 km







## **Pedestrian Hotspots**

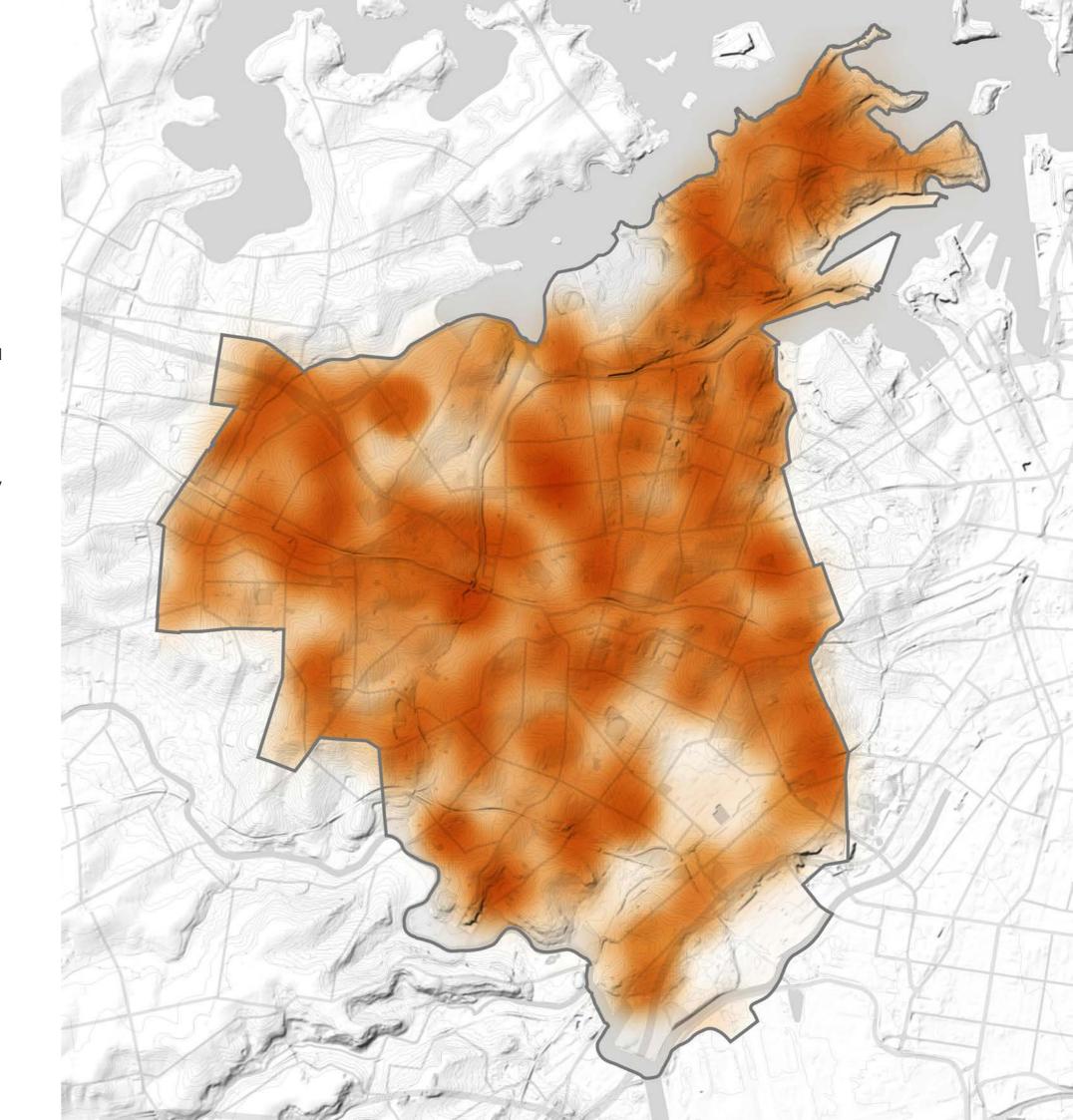
The pedestrian heat map represents an aggregate of pedestrian activity across the LGA. The pedestrian location points is a collection of raw data set of mobile location data acquired from Echo Analytics. The spatial analysis technique uses this data set with density calculation to estimate density-clusters across a study area. It calculates the density of events (such as occurrences, observations, or incidents) by spreading the influence of each event throughout the study area using a kernel function. The resulting output of this analysis method helps in analysing pedestrian mobility and behaviour with the LGA.

The Blue-Green Grid will go through commonly used routes. This map uses GPS data which mapped locations of people at different times of the day. A heat map was then created using an algorithm that identifies multiple data sets in high location concentration.

Map Source: Echo Analytics.

Map produced by McGregor Coxall with GIS.





## **Public Art**

There is Opportunity for public art to comprise some of the Blue-Green Grid to promote art and culture.

Map source: https://www.innerwest.nsw.gov.au/explore/parks-sport-and-recreation/walking-and-cycling/walking-and-cycling-routes

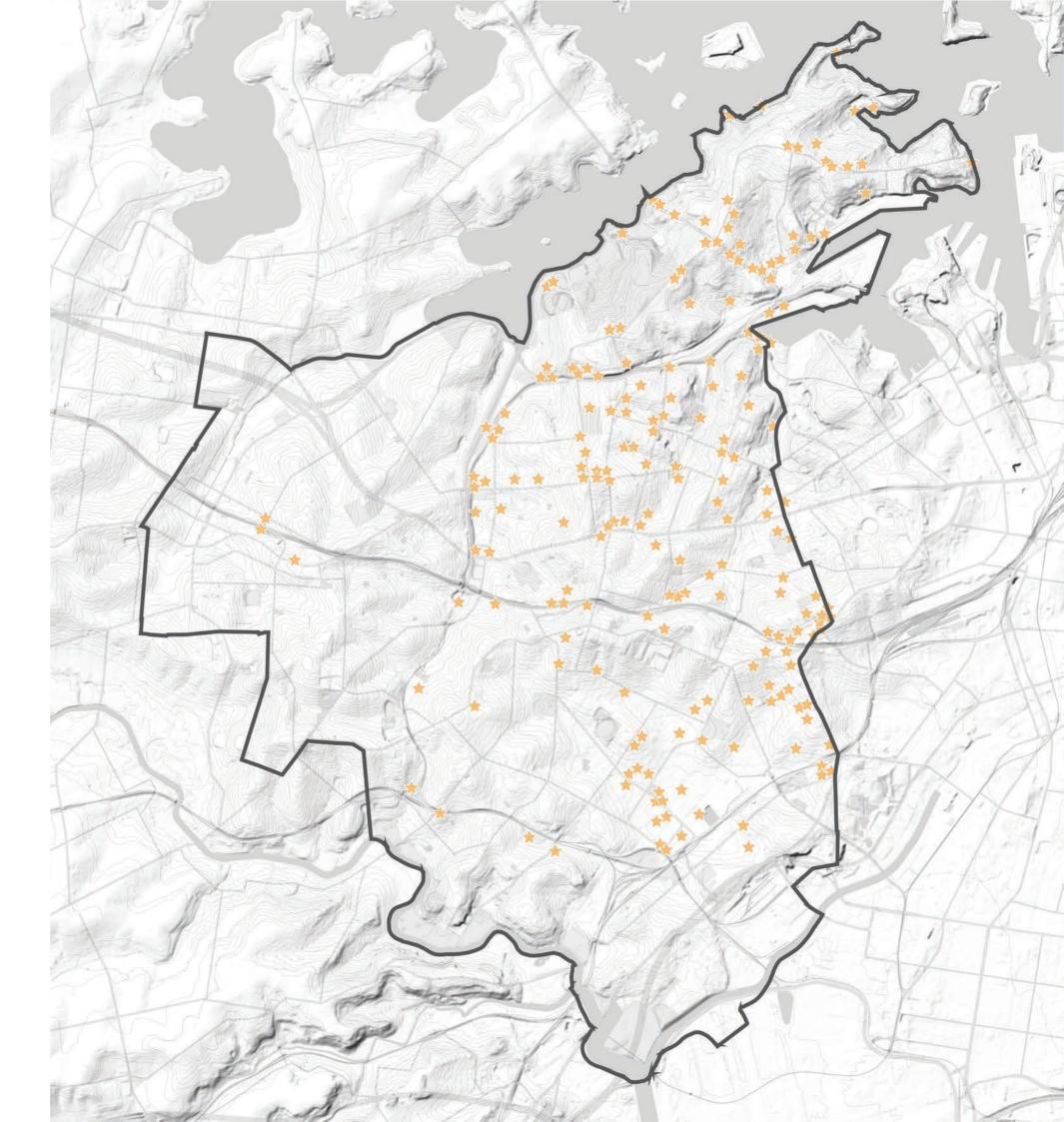
## Legend

Inner West LGA Boundary

Holic Art







## (131)

## **Mapping Layers**

## Heritage Walks

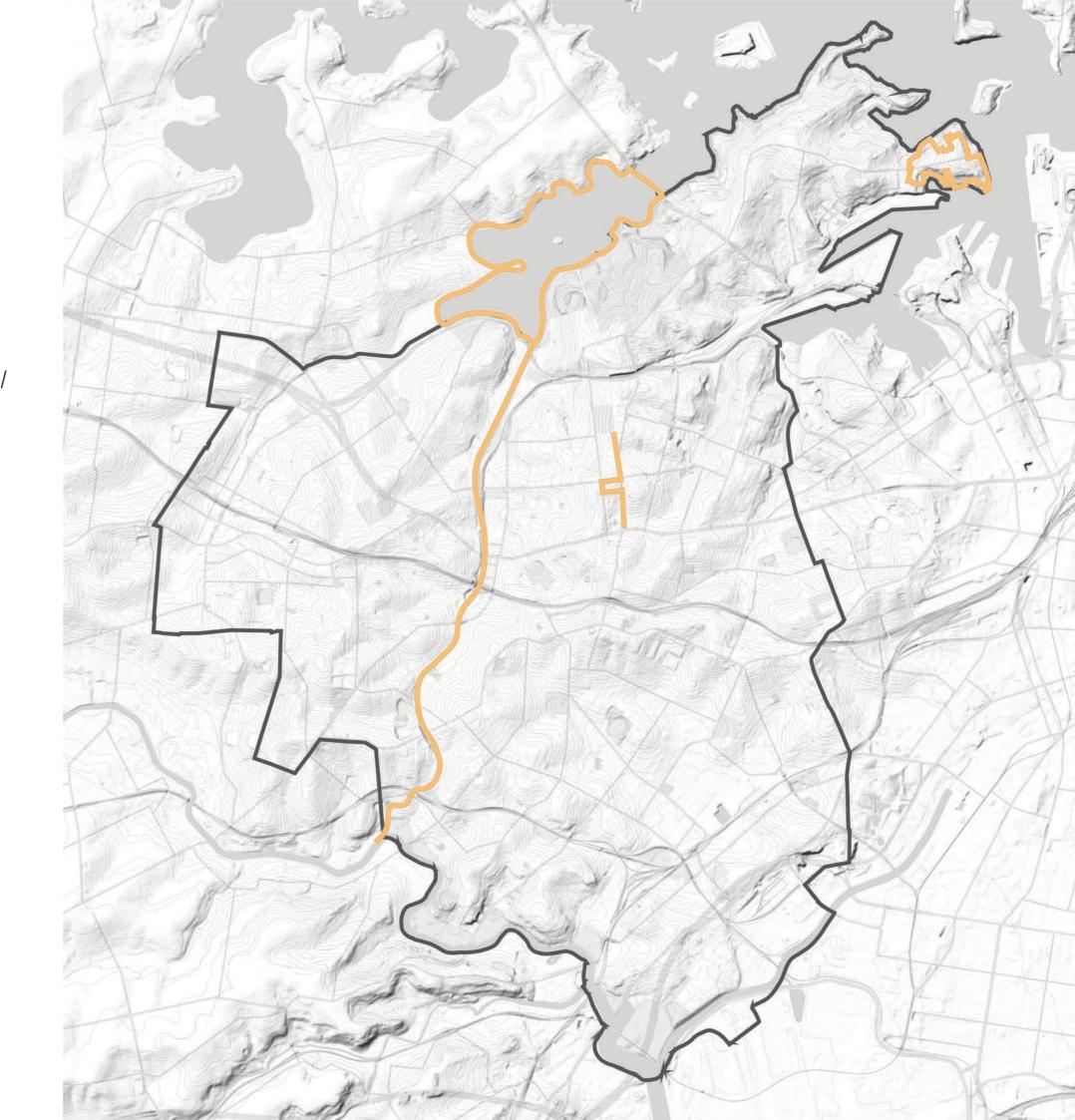
Trails can contribute to the Blue-Green Grid as existing routes.

Map source: https://www.innerwest.nsw.gov.au/explore/parks-sport-and-recreation/walking-and-cycling/walking-and-cycling-routes.

## Legend

Inner West LGA Boundary
Local walking tracks





## **Footpath Widths**

Footpaths around the Inner West vary in width, shown in the adjacent map.

The width of the footpath impacts how they can be used, the safety of users, streetscape and implementation of blue and green infrastructure. Wider footpaths offer more opportunity due to adequate space allowing the addition of greenery and WSUD.

This map was used on the implementation stage to indicate actions in priority areas.

Map source: Inner West Council

## Legend

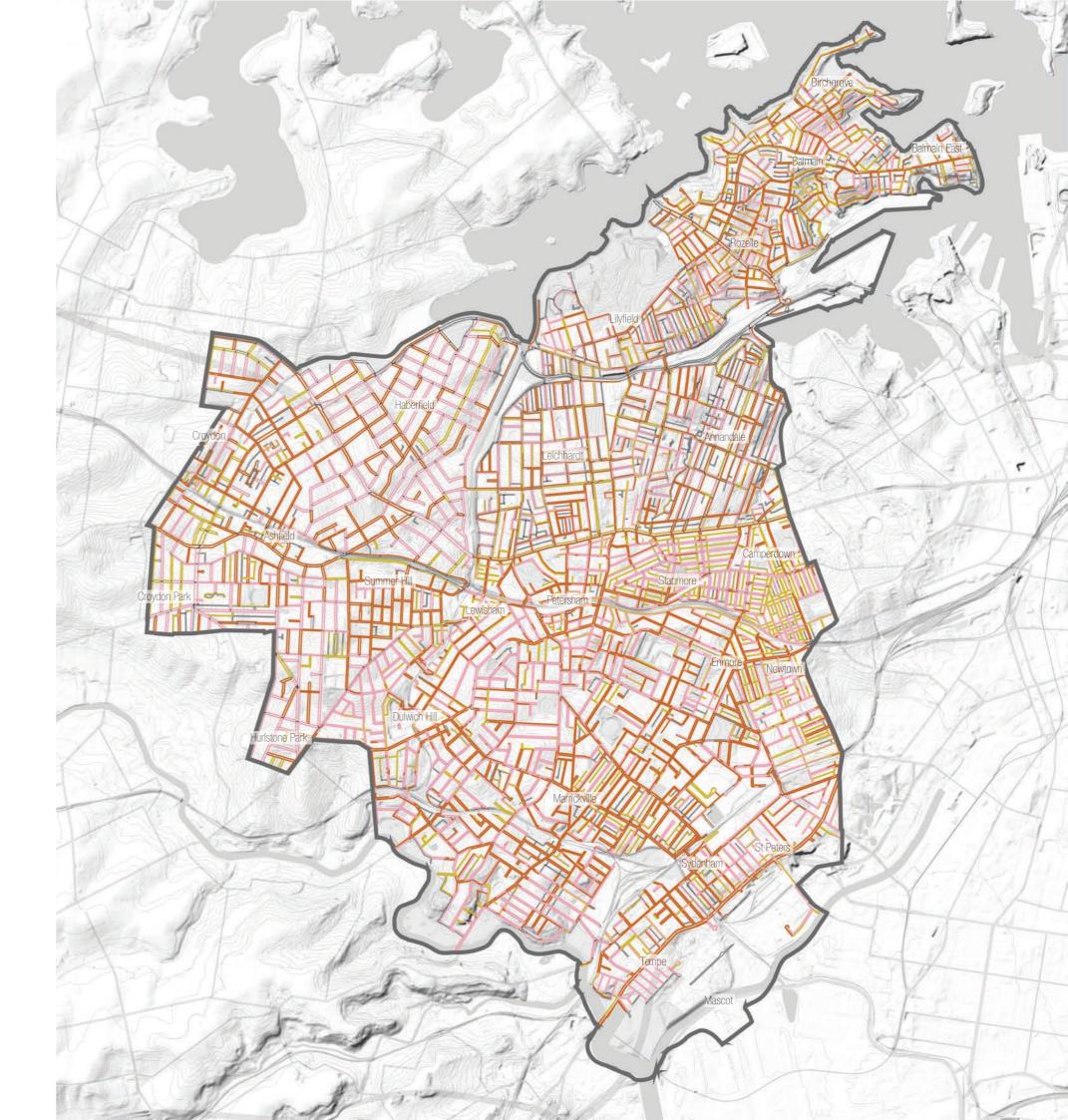
Inner West LGA Boundary

0-1.5m Footpath

1.5-2m Footpath

\_\_\_ 2-11m Footpath







## **Crown Land**

Mapping council and crown land shows areas which the strategy can easily be implemented.

Map source: Shapefile provided by Inner West Council.





