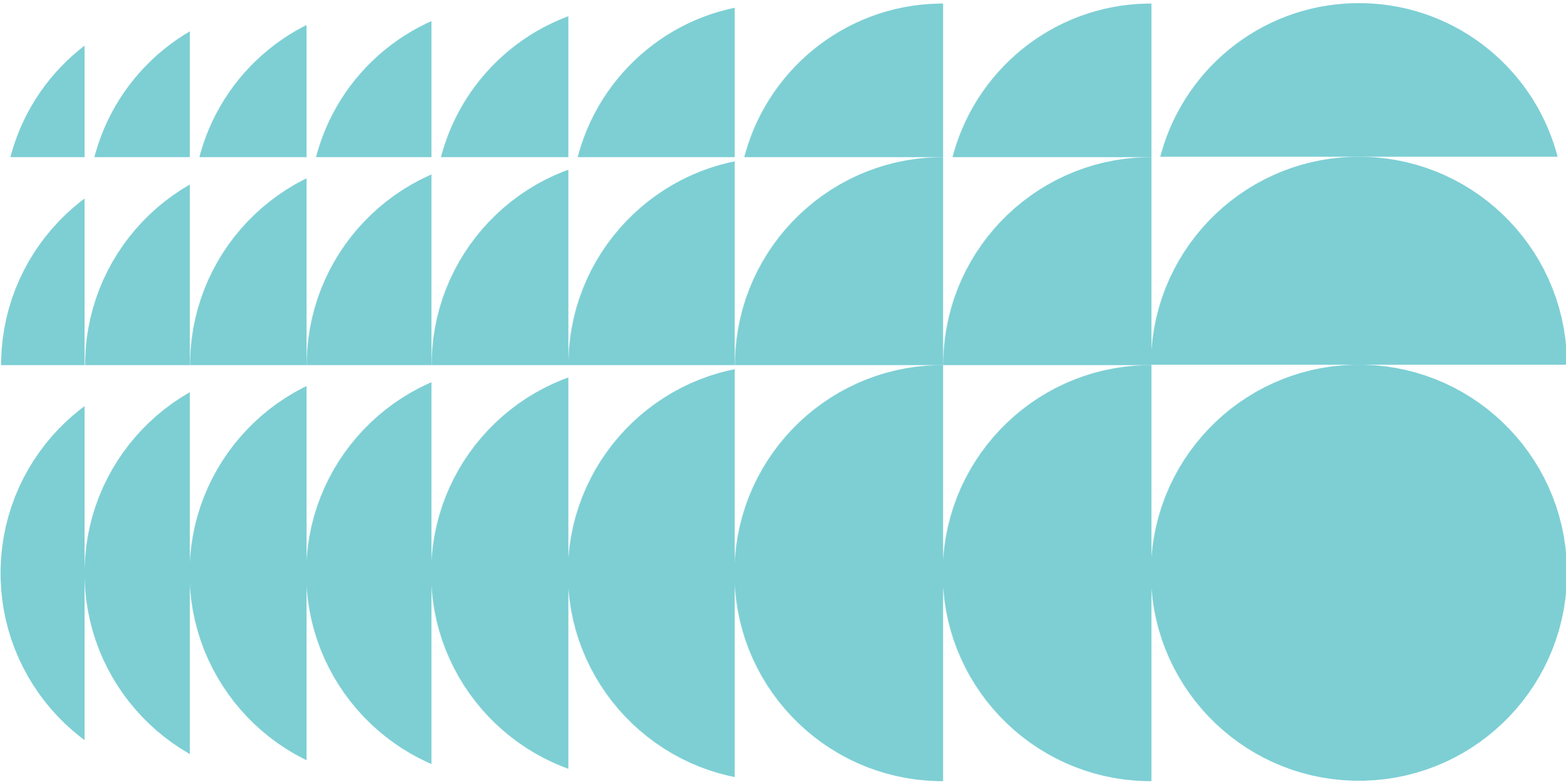


**ETHOS  
URBAN**

Western Sydney Parklands Sydney Zoo, Bungarribee

Visual Impact Assessment  
November — 2021

Issue A — 218335



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Chee Heng Tan 10.11.21 Ivan Ip 10.11.21

The information contained in this document is for submission to the Department of Planning, Industry and Environment. The client shall make its own enquiries analysis and calculations and form its own views in relation to the use or development of the property including the application of local government and statutory controls. It is assumed that the client will rely on its own expertise in considering the information. ACN 615 087 931 Pty Ltd operates under a Quality Management System that has been certified as complying with ISO 9001:2008. This report has been prepared and reviewed in accordance with that system. If the report is not signed above, it is a preliminary draft.

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VERSION NO.	DATE OF ISSUE	REVISION BY	APPROVED BY
P1 (Draft)	08.11.21	CT	II
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URBAN**

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View of site setting. Source: Nearmap



## Executive Summary

Ethos Urban has been engaged by Sydney Zoo to prepare a Visual Impact Assessment for a ferris wheel located at Bungarribee within the Sydney Zoo compound.

This report details the methodology used as well as the analysis undertaken in order to choose viewpoints for analysis that specifically address the local character and wider visual catchment.

Ferris wheel 3D has been modelled based on the engineering plans provided by Sydney Zoo.

The results of this study indicate that the proposal is of **low** visual impact.

# 1.0 Introduction

## 1.1 Project Understanding

The Modification of State Significant Development Application 7228 (SSD 7228) seeks approval for the permanent installation of a ferris wheel. The design amendment is sought by Sydney Zoo following the successful operation of a temporary ferris wheel during 2020. The ferris wheel has once more been installed as of mid October 2021 as a temporary structure as shown in Figure 3 and 4.

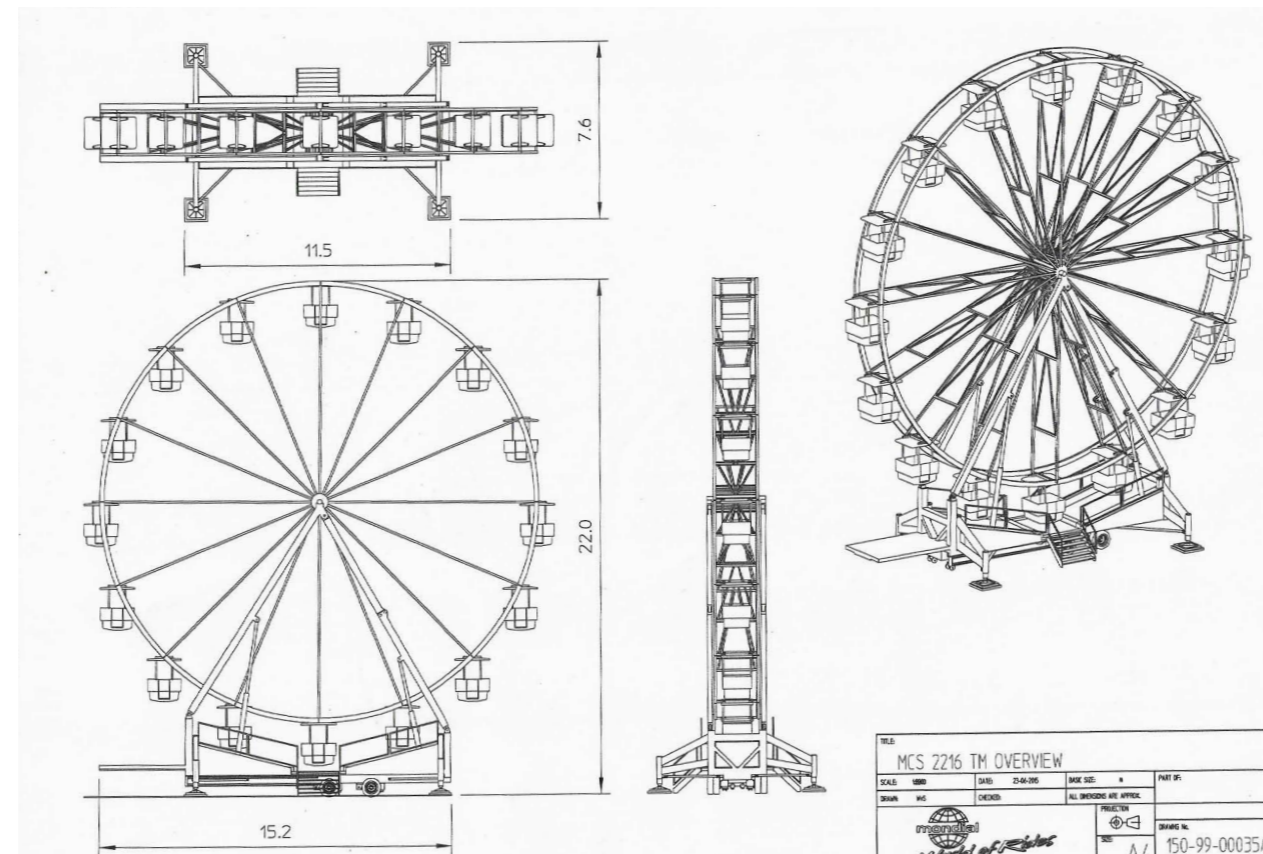
The key focus of this study will be the proposed ferris wheel structure within the Sydney Zoo compound in the north-eastern portion of the site near the main food outlet for the zoo. The proposed location for ferris wheel is shown in Figure 1.

Technical drawing of the proposed ferris wheel from Mondial Rides are shown in Figure 2. The ferris wheel is 22m tall and is approximately 19m in width. It has 16 cars measuring 1.59m x 1.8m x 2.35m each and is supported by steel structures spanning approximately 10m and 7.6m apart at the base.

A detailed description of the proposed structure and operation is provided in the Planning Modification Report.



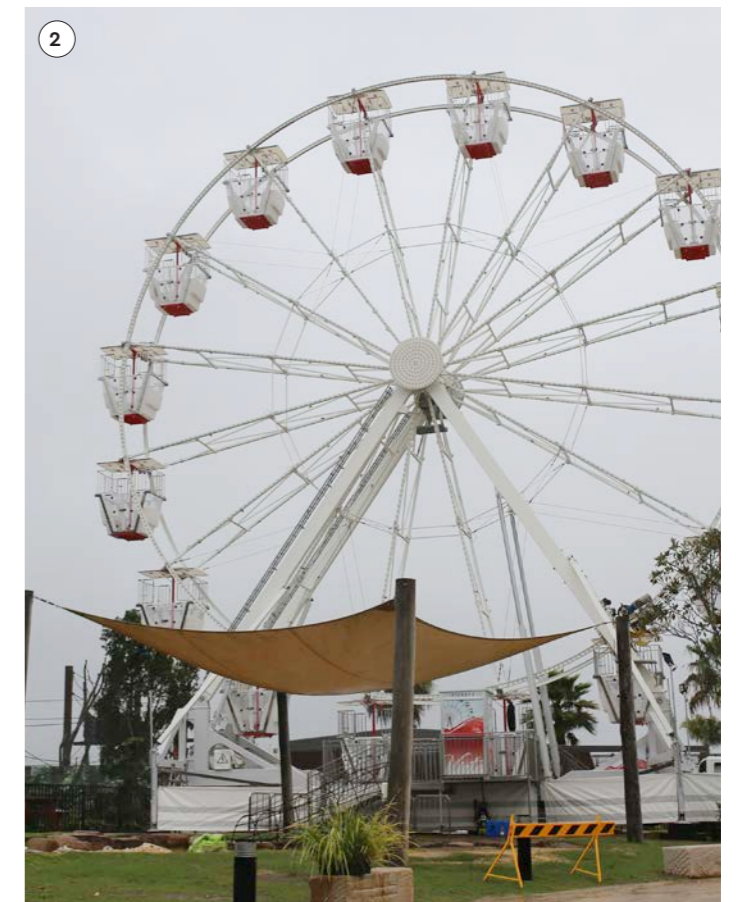
01 Site Plan - Proposed area for ferris wheel  
Source: Sydney Zoo



02 Technical drawings of ferris wheel  
Source: Sydney Zoo and Mondial Rides



03 View of ferris wheel from Sydney Zoo entrance



04 View of ferris wheel towards south west

# 1.0 Introduction

## 1.2 Study Area

Sydney Zoo is located approximately 33 kilometers west of Sydney CBD and is approximately 15 kilometers east of Penrith.

The site falls within the Western Sydney Parkland and is in close proximity to Great Western Highway, M4 Western Motorway and Westlink M7. The site has a site area of approximately 165,057 m<sup>2</sup>. The site is legally identified as 700 Great Western Highway Bungarribee (Lot 11 in DP1247378) and is owned by the Western Sydney Parklands Trust.

The immediate surrounding of Sydney Zoo are primarily industrial area to the east and south with Western Sydney Parkland directly to the north and west. The closest residential area is approximately 800m north of Sydney Zoo. The western edge of the site borders Eastern Creek.

Access to the site is afforded off the Great Western Highway.



LEGEND  
[Red outline] Subject Site

05 Study area

SCALE 1:25,000 @ A3

# 1.0 Introduction

## 1.3 Methodology

The method used in this visual impact assessment is based on the international standard Guidelines for Landscape and Visual Impact Assessment 3 (GLVIA3), adjusted to better suit an urban and NSW context. While the method is detailed, in summary it results in visual impact being considered against visual values and significance. Visual values are derived from the planning framework, and significance is derived from a combination of the factors of sensitivity and magnitude.

The methodology has also been influenced by a set of considerations typically required by the Department of Planning and Environment in setting SEARS for Development.

The methodology for the preparation of the photomontages has been explained in section 1.4.

The core methodology follows three key steps:

1. **Visual Character:** what is the character of the proposals visual catchment
2. **Visual effect and impact:** assessment of the nature and scale of the proposal on the existing visual catchment and assessment of the impact of the visual effect following application of other, relevant considerations
3. **Mitigation and Recommendation:** what measures are needed to ensure acceptability of impact and can the proposal be supported in its current form based on a balance of considerations relevant to visual impact.

Based on the findings of this core methodology, a determination is then made as to whether the proposal can be supported in its current form from a visual impact perspective, and if so, whether any elements are critical to ensure its continued acceptability as it evolves from concept to detail design and development.

### 1.3.1 Visual Character Assessment

Visual character is formed by patterns created by the relationship of all elements within an area, including both the public and private domain; The combination of the public and private realms (Victorian Department of Environment, Land, Water and Planning, 2015).

The visual character of the study area was identified through the background literature review, desktop analysis and ground-truthing on site. A site inspection was undertaken on 13/10/2021.

Urban landscape analysis plans mapped the following component layers of the cityscape in the broader study area, and were analysed to determine the influence of each element on views within the study area:

- Key routes and intersections (Road Hierarchy)
- Open space
- Topography
- Land use zoning

The above mapping identified a viewshed and land that, theoretically, is susceptible to the visual effects of the proposal, described as the Primary Visual Catchment.

Within the area of visibility, typical views that are afforded and influenced by the above factors were identified. Visual receptors were also identified within the primary visual catchment, representing clusters of people or places that will be visually affected by estimated changes. Visual receptors can include:

- people who live or work in the area,
- people travelling through or by,
- people visiting promoted landscapes or attractions, and
- people engaged in recreation of various types, and;
- potential places of visual significance in terms of natural, cultural or scenic value were identified and described in terms of the nature and frequency of views from that location.

### 1.3.2 Viewpoint Selection

Viewpoints selected to be used in this assessment were informed by a combination of visual catchment analysis and desktop analysis of publicly accessible land including transport routes, recreational areas, sensitive residential interfaces. Fieldwork was conducted throughout the primary visual catchment to verify the potential viewpoint locations and visual character of the study area.

The viewpoints associated with each visual receptor were identified and categorised in terms of whether they are representative of a number of similar views (representative), specific viewpoints at key or promoted viewing locations (specific), or viewpoints that will demonstrate a particular effect or issue relating to the site or proposal (illustrative).

Each viewpoint was then assessed in terms of their sensitivity, with the following considered to identify the high, medium and low sensitivity receptors:

- Number of people likely to be affected;
- Social and cultural value of receptor;
- Visual characteristics of the existing views (nature of view, composition, focal and scale).

### 1.3.3 Night-time Lighting

External lighting will be located around buildings and walkways and along the internal access road. All outdoor lighting will be designed in accordance with Australian Standard 4282-1997 'Control of the obtrusive effects of outdoor lighting', and is expected to be predominantly low luminosity solar lighting. As such, it will not impact off-site receptors.

# 1.0 Introduction

## 1.4 Preparation of Photos

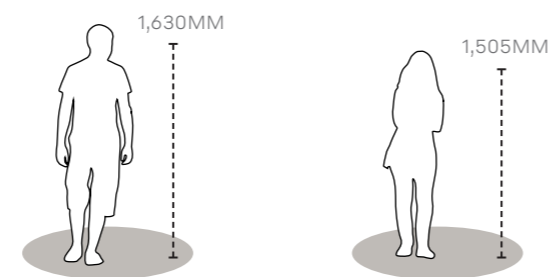
Traditionally photomontages are prepared in accordance with the Land and Environment Court's Policy however for the purpose of this study and the nature of the proposed ferris wheel structure, a conceptual methodology for the preparation of photomontages has been outlined in this section with consideration of the following:

- The Human Perspective
- Bearing of viewpoint in relation to the centre of the development
- Camera type and lens
- Software
- Limitations and Assumptions

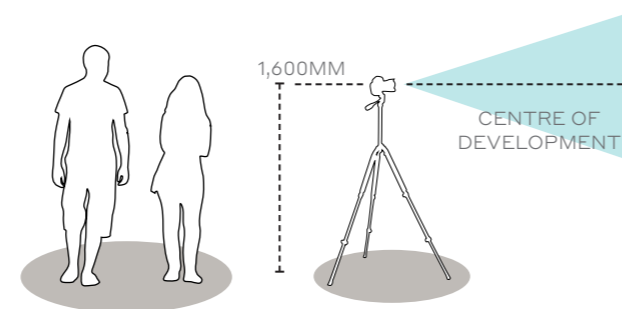
### 1.4.1 Human Perspective

Anthropometrics is the science concerned with the measurement of human kind. While many people vary in height the average dimensions for both male and female adult eye heights are shown below (Metric Handbook, David Adler)

- Male Eye height: 1630mm
- Female Eye height: 1505mm



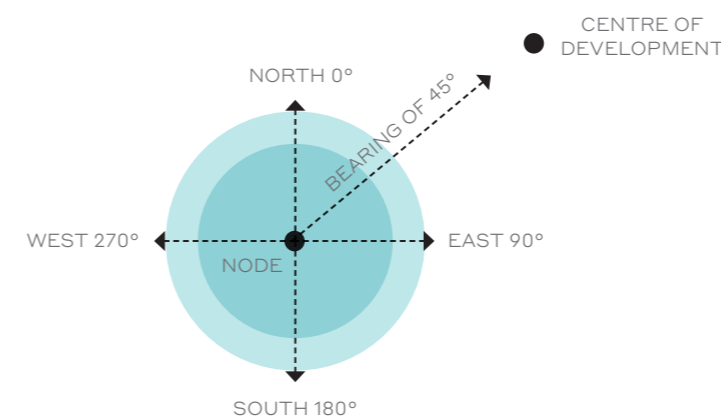
On the basis of the above dimensions and for the purpose of this Visual Impact Analysis, the Camera has been fixed on a tripod approximately 1,600mm above ground level. This is illustrated in the diagram below.



### 1.4.2 Location of Viewpoints (Nodes)

Five views have been chosen based on analysis that has identified the views within close proximity of key Visual Receptors within proximity to the site - within it's primary visual catchment.

The Camera bearing ensures that the centre of development is the focus of the image. This is illustrated in the below diagram.



### 1.4.3 Camera Type & Lens

In order to accurately depict the proposed ferris wheel within the Sydney Zoo, Ethos Urban has used a 35mm lens as this lens captures a perspective that is the closest to that of the human eye.

- Camera Body: Canon 6D
- Camera Lens: Sigma 35mm

### 1.4.4 Software

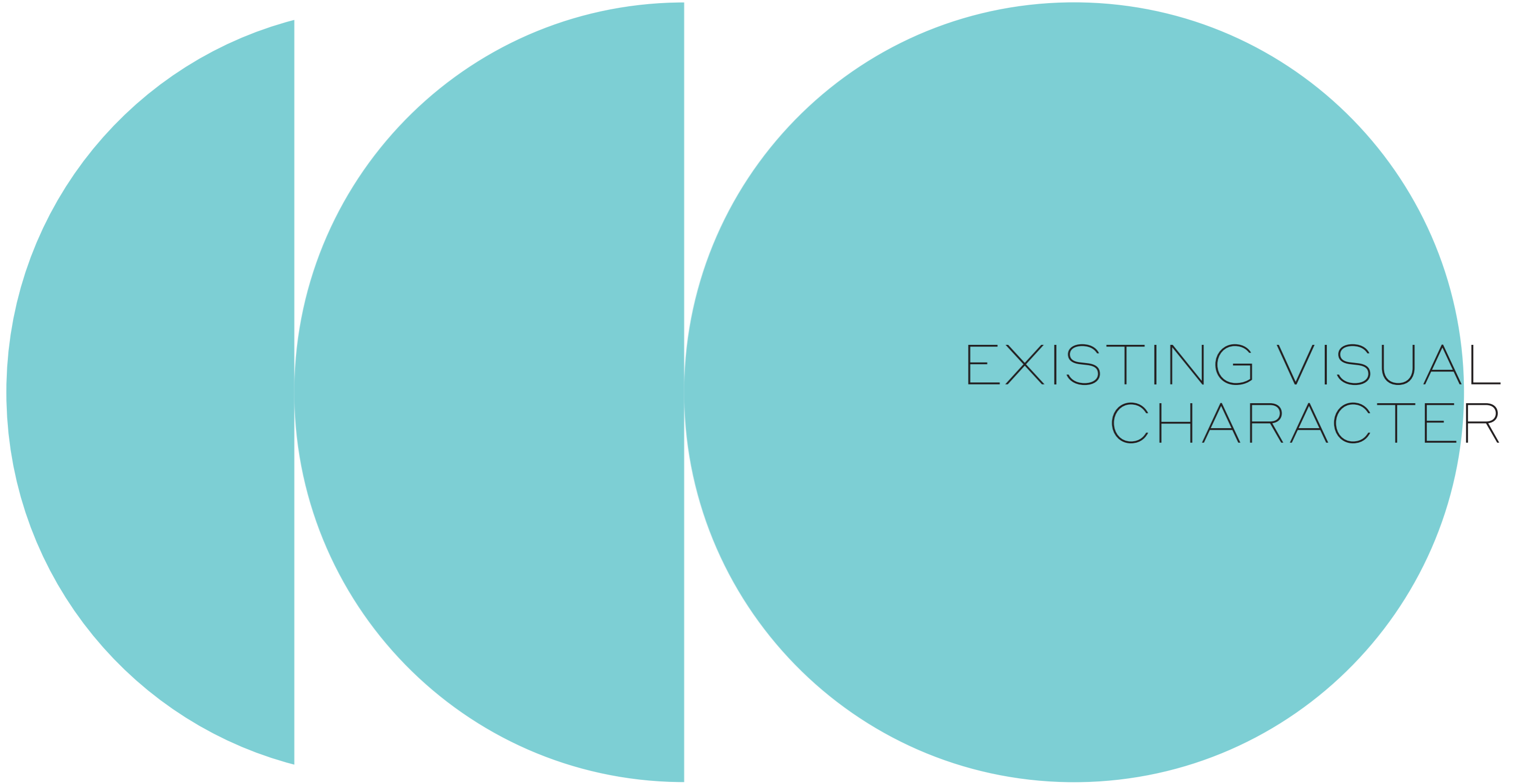
The software used to match the photographs and the proposed development at Bungarribee is Rhino. Rhino is a 3D modelling and rendering tool used in architecture and urban design. The software allows you set up views with a specific location, target and focal length. The Location is set to the coordinates in which each photo was taken and the target being the centre of development as outlined in 1.5.2. The focal length in software is then assigned to match the 35mm lens used on site.

### 1.4.5 Limitations & Assumptions

Limitations of the View Impact Analysis presented in this report include:

- The locations of each photo is matched as close as possible using a combination of Nearmap and Google Maps on a phone with GPS. These locations are not verified by a surveyor.
- The bearing in which the camera faces in order to focus on the centre of development has been matched as close as possible to features of the existing environment. This angle has not been verified by a surveyor and has been based on a desktop analysis in CAD and Rhino.





EXISTING VISUAL  
CHARACTER

## 2.0 Existing Visual Character

### 2.1 Site Photos & Character Areas

The site fronts Great Western Highway with green open space and zoo car parking separating the highway and main zoo compound. The northern, eastern and western boundary of Sydney Zoo borders Western Sydney Parkland.

The northern edge of Sydney Zoo borders car parking for Bungarrabee Park with a number of recreation facilities including playground, picnic area and dog park. Bungarrabee Park and open space around Eastern Creek also functions as a wetland.

Western edge of the site borders Eastern Creek with mature native tree in a natural setting. Eastern edge has similar character with trees reaching a height of more than 25m as shown in Figure 6.

The wider setting in which the site is located has been summarised on the following page. The images represent the primary visual catchment and consider the key character areas which have varying sensitivity.



06 View looking south west towards Sydney Zoo from Doonside Road



07 View looking south along Doonside Road



08 View looking north west along Doonside Road



09 View looking north east towards Sydney Zoo from across Great Western Highway



10 View looking north towards Sydney Zoo from Rudders Street



11 View looking south from Bungarrabee Park in Western Sydney Parkland

## 2.0 Existing Visual Character



### 1 Bungarrabee Residential Area

Residential area along Velocity Parade directly north of Sydney Zoo is the nearest residential area (approximately 800m north). Single detached dwellings has direct view to the Western Sydney Parkland with the tree line of native vegetation within the park serves as a visual and environmental buffer, obstructing any direct view to Sydney Zoo.



### 2 Doonside Road

Doonside Road is a main arterial road east of Sydney Zoo and is heavily used by vehicle travelling to/from Bungarrabee and Blacktown to broader Sydney via Great Western Highway. Thick vegetation between Sydney Zoo and Doonside Road blocks any direct view towards the proposed location of ferris wheel.



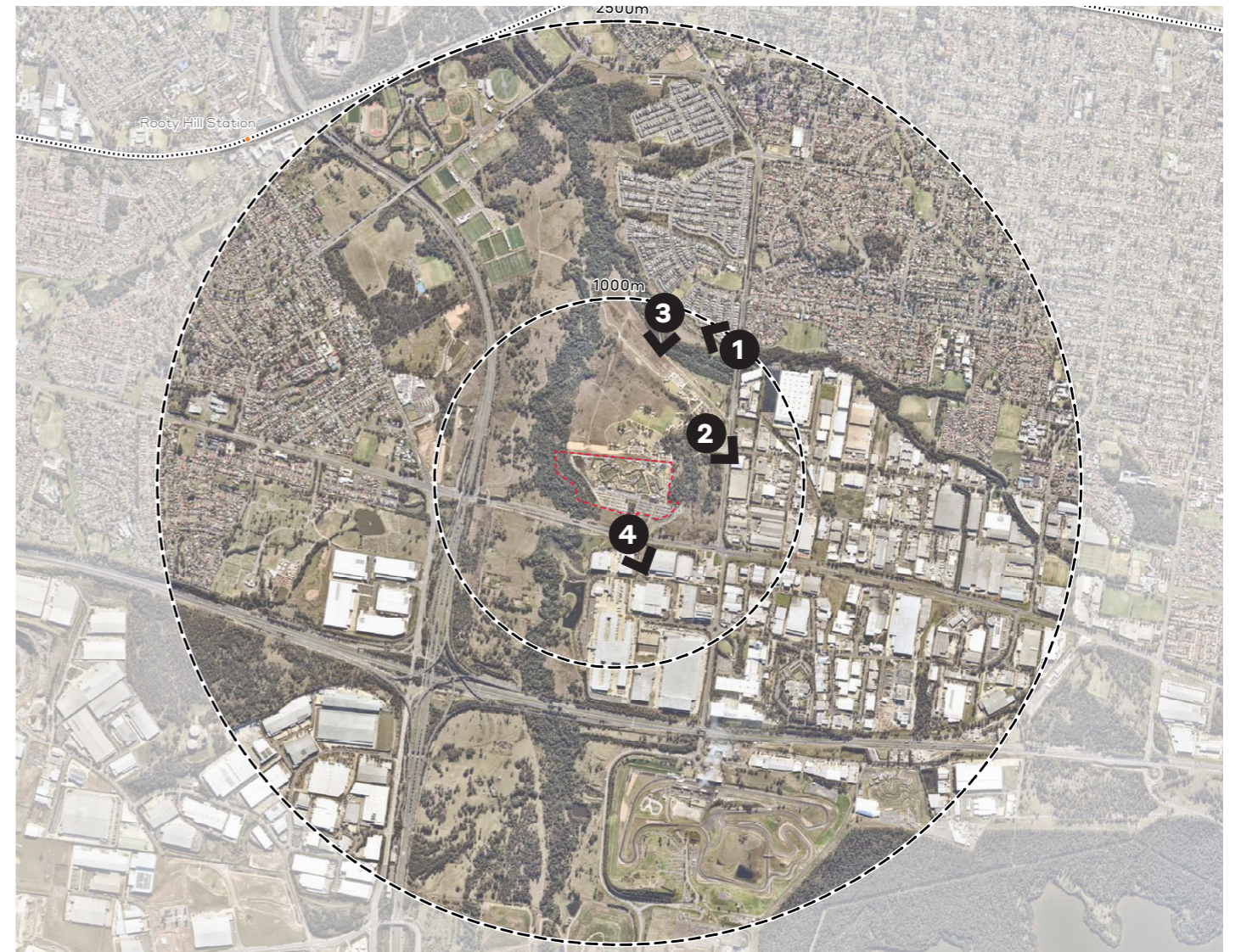
### 3 Bungarrabee Park

Bungarrabee Park is a 200-hectare park with walking trails, picnic shelters, barbecue area and playground. It is part of the Western Sydney Parklands with Bungarrabee Creek and Eastern Creek cutting through the park. The wetland within the park is protected and native trees are gradually being planted to restore the original landscape known as Cumberland Plain.



### 4 Rudders Street

Rudders Street is a key access point for Bungarrabee Industrial Estate to the Great Western Highway. The terrain falls gradually away from the highway with key buildings on the Sydney Zoo site barely visible at the intersection of Rudders Street and William Dean Street approximately 200m south.



12 Character areas is the primary visual catchment

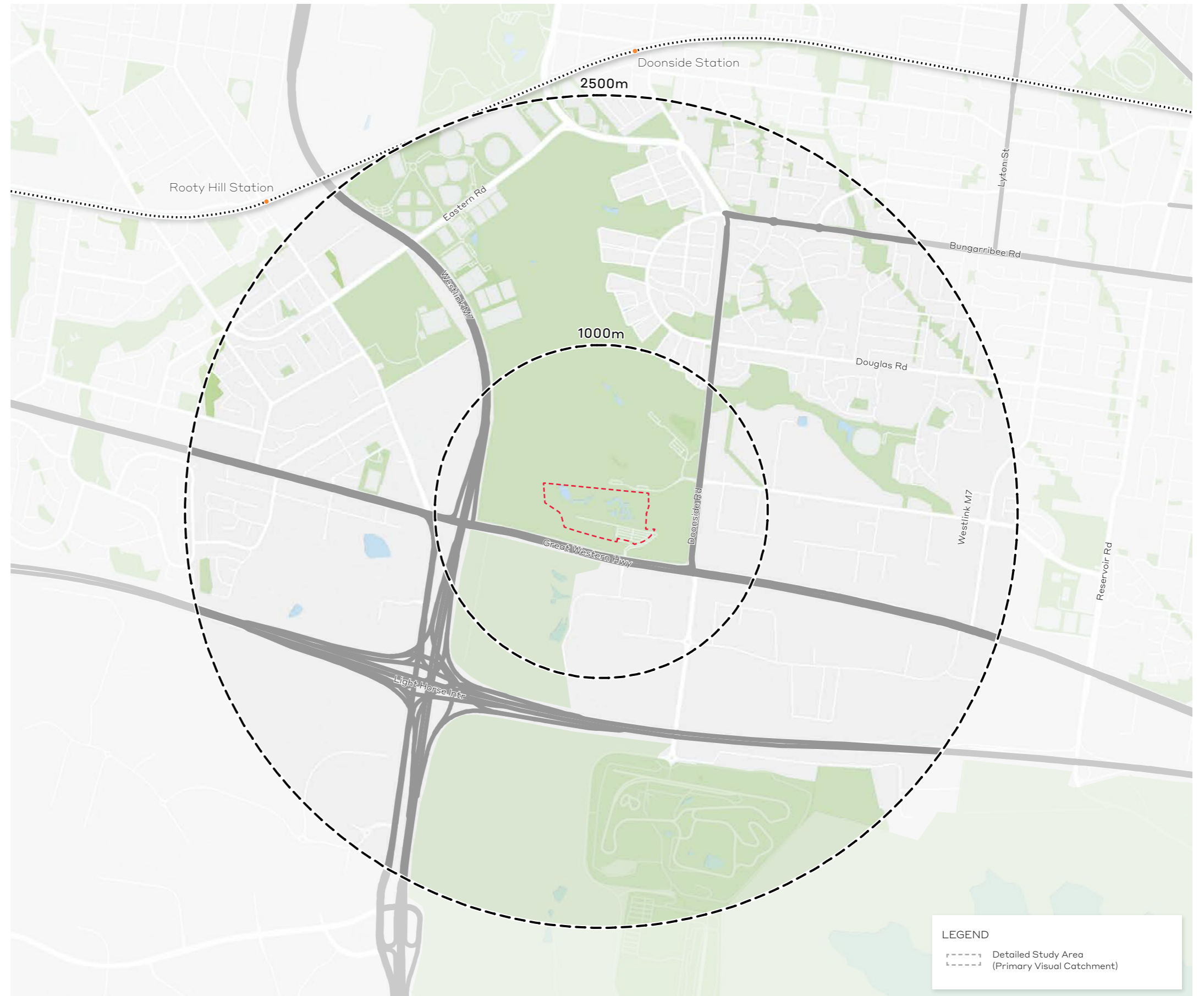
## 2.0 Existing Visual Character

### 2.2 Key Routes & Intersections

The site and immediate Western Sydney Parkland borders by Doonside Road, Great Western Highway and the Westlink M7 motorway, being the primary routes surrounding the site that carries traffic between the Eastern Creek and all areas of metropolitan Sydney.

Besides the exposure of the site's frontage along the Great Western Highway, the visual significance is otherwise low with no long vistas or views as it sits surrounded by dense vegetation and bushland.

There are minimal pedestrian routes and the street network in which the site is situated is heavily used by trucks as it mainly neighbours industrial precincts.



13 Key routes and intersections map

SCALE 1:25,000 @ A3

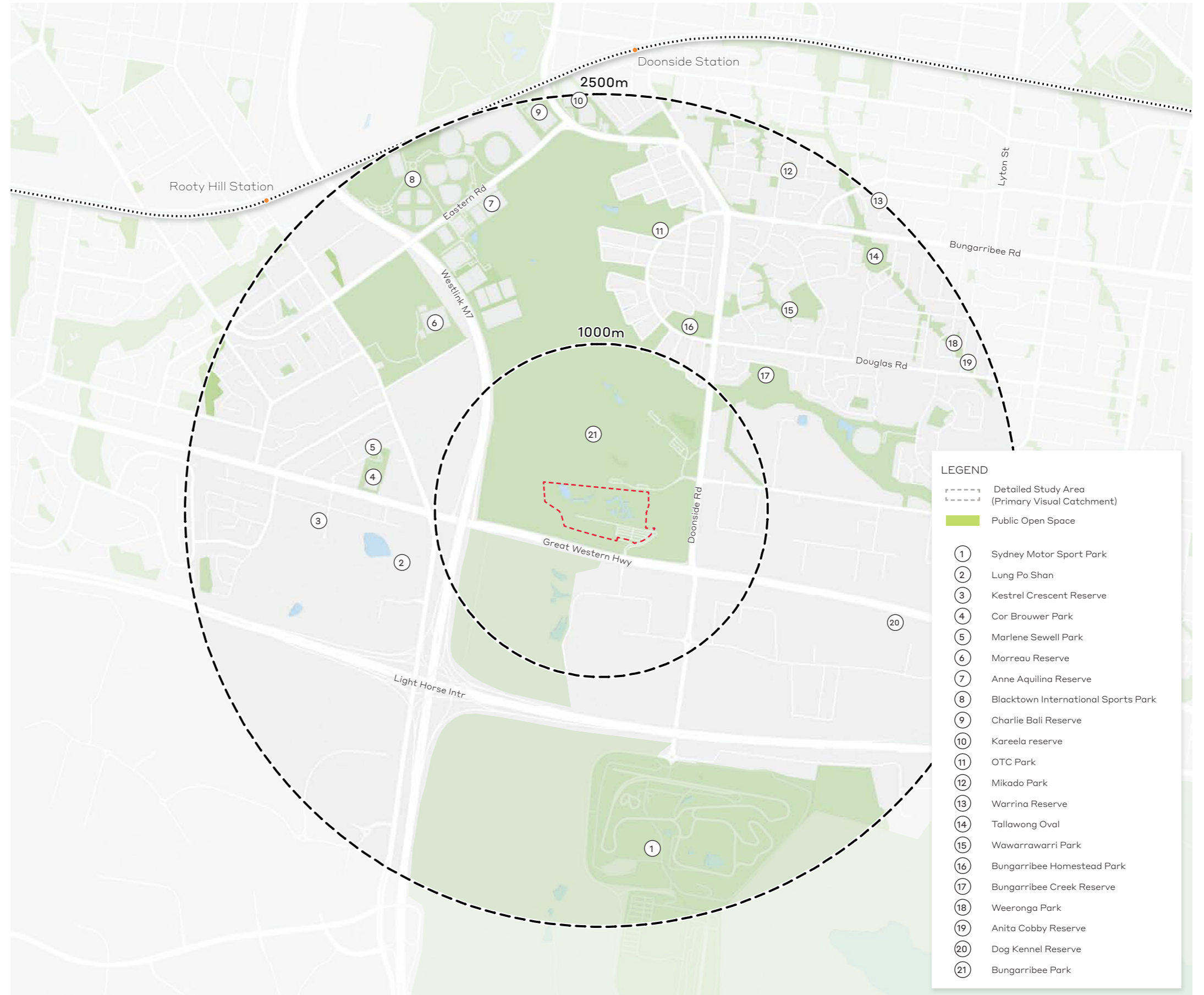
## 2.0 Existing Visual Character

### 2.3 Open Space

The site forms part of Western Sydney Parkland which is a regional park and nature reserve in Western Sydney covering more than 5000ha and stretching over 27km. As shown in the open space analysis, strong vegetation buffers are used to shield recreational land uses from road infrastructure and industrial areas.

The primary visual catchment consists of regional serving parks which are co-located within the suburban neighbourhoods of Bungarribee and Rooty Hill.

Due to the distance and sparsity of open space, there are no long vistas or views where the site has the potential to interrupt the scenic and cultural value from open space.



14 Open space map

SCALE 1:25,000 @ A3

## 2.0 Existing Visual Character

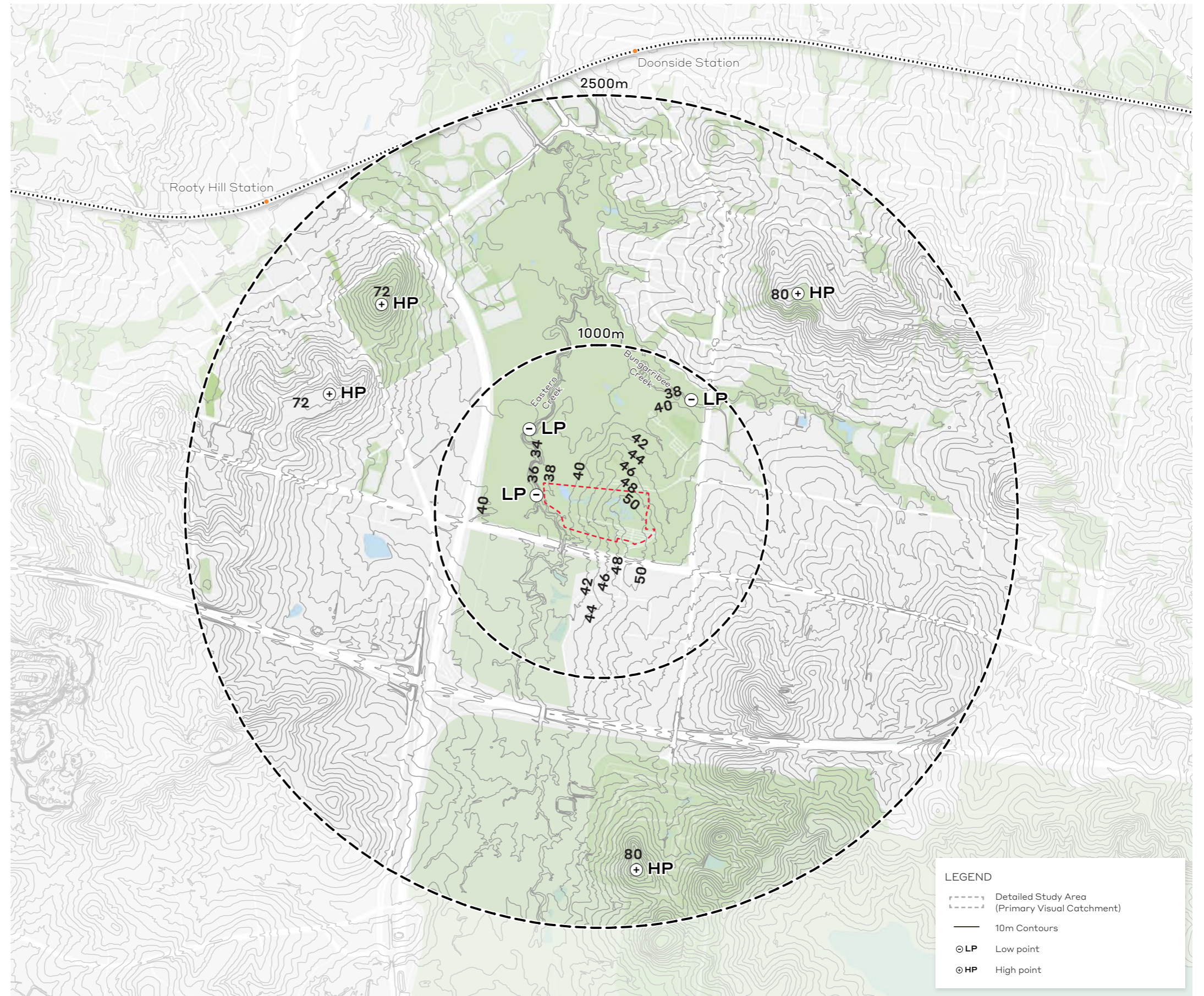
### 2.4 Topography

The site has varying terrain between RL50 to the east and RL38 to the west. There are subtle elevation changes throughout the visual catchment.

Low points are located along Eastern Creek (approx RL34) west of the site and Bungarrabee Creek (approx RL38) north of the site while high points (approx RL80 - 90) are located north east and south east of the site.

Due to the surrounding parklands and minor change in landform, the site is relatively hidden from the surrounding primary road network and residential neighbourhood.

There are no key district views or vistas located within the primary visual catchment created by land form where the site is of high visual significance.



15 Topography map

SCALE 1:25,000 @ A3

## 2.0 Existing Visual Character

### 2.5 Land Use Zoning

The site falls within the Western Sydney Parklands and is subject to State Environmental Planning Policy (Western Sydney Parklands) 2009. Extract from SEPP (Western Sydney Parkland) 2009 on land use are as below:

#### 9 Land use zones

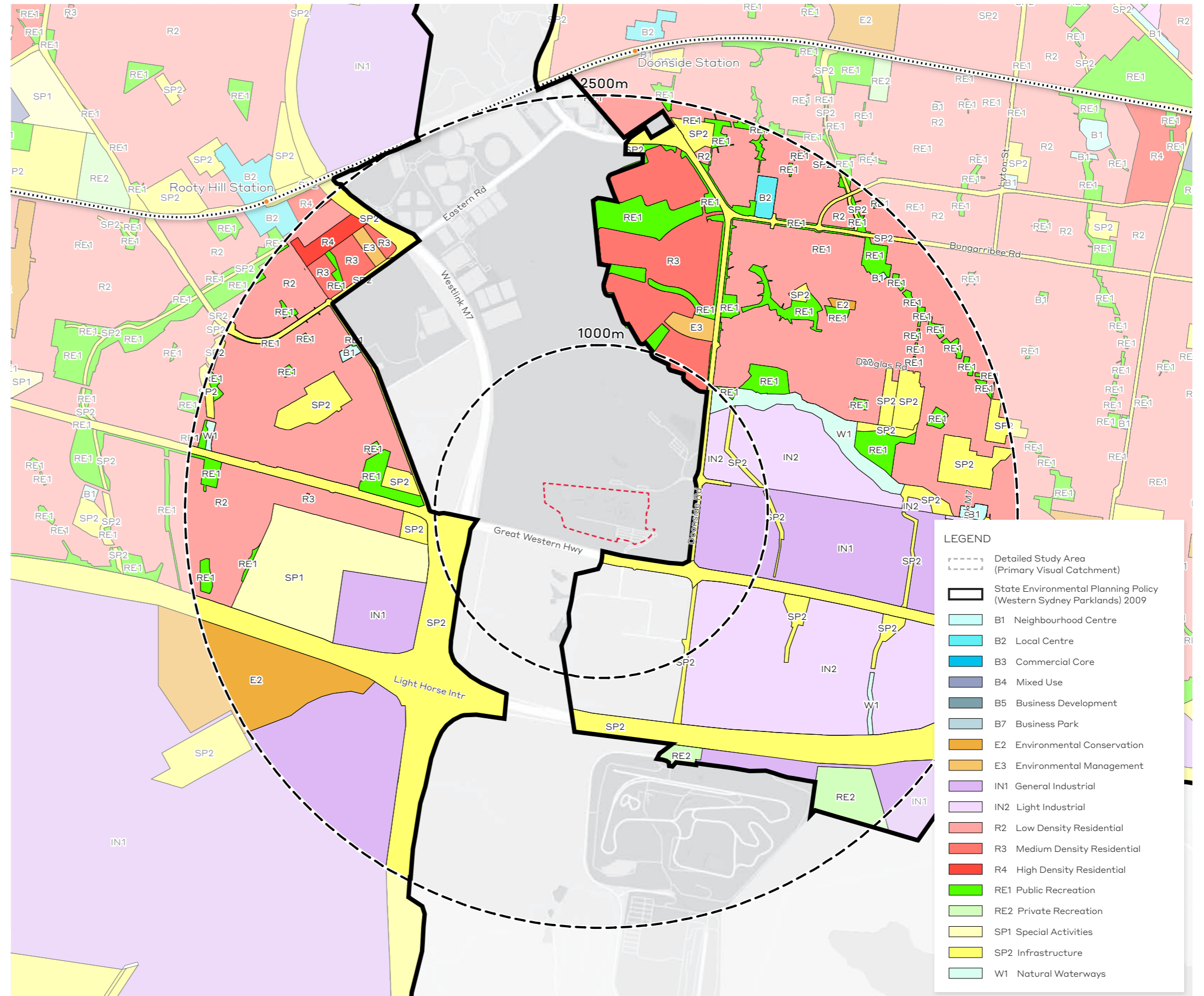
(1) Subclause (2) applies to land that before the commencement of this Policy was not in the Western Parklands and was zoned under a local environmental plan but that after the commencement of this Policy is in the Western Parklands.

(2) From the commencement of this Policy the land is unzoned.

Note - Land that before the commencement of this Policy was in the Western Parklands but after the commencement is no longer in the Western Parklands has been rezoned by amendment in Schedule 3 to the relevant local environmental plan.

Western Sydney Parkland where the site sits form a north south green corridor which serves the recreational needs of the residents of Western Sydney.

The site is surrounded by primarily industrial zone to the east and south with some residential area to the north and west approximately 800m away.



16 Land use zoning map

SCALE 1:25,000 @ A3





KEY VIEWS &  
IMPACT ASSESSMENT

## 3.0 Key Views & Impact Assessment

### 3.1 View Points & Visual Receptors

It is best practice to select a number of viewpoints as the basis for visual impact assessment that:

- illustrate the full range of likely visual effects
- favour locations in the public domain that are highly used
- are taken from all relevant distances and directions
- ideally include different elevations relative to the natural ground level of the site.

On this basis, **Table 1** identifies viewpoints that have been considered for this visual impact assessment based on desktop work and on field observations.

All final views are considered to be of low sensitivity due to their prominence in the public domain, scenic value, land use and viewing period.

**Table 1** – View Summary

View/Receptor	Coordinates (approx)
① Viewpoint 1 - Doonside Road	-33.788619, 150.872012
② Viewpoint 2 - Velocity Parade	-33.782093, 150.871713
③ Viewpoint 3 - Bungarrabee Park	-33.782316, 150.866407
④ Viewpoint 4 - Rudders Street	-33.792213, 150.867083
⑤ Viewpoint 5 - Great Western Highway	-33.791403, 150.864816



17 View points map

ⓘ NOT TO SCALE

## 3.0 Key Views & Impact Assessment

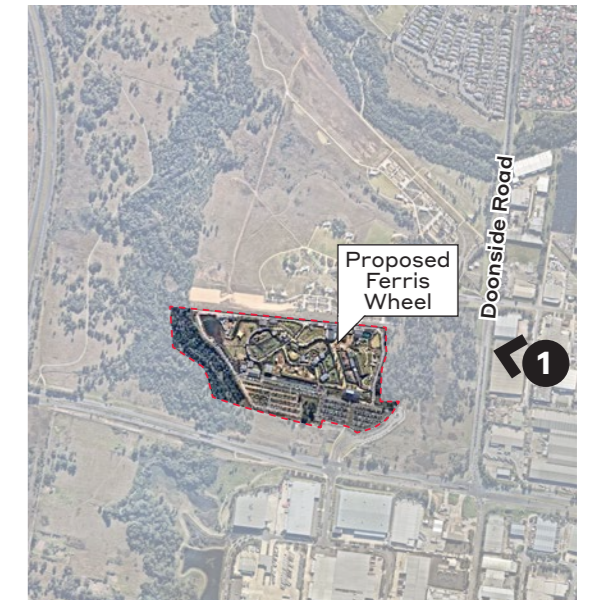
### 3.2 Viewpoint 1 Doonside Road

Distance	445m
Direction	West
Elevation	2m lower than site
Camera	Canon 6D - 35mm Lens
Coordinate	-33.788619, 150.872012

Doonside Road is a main arterial road in a north south orientation and connects Doonside, Blacktown and Bungarribee with Great Western Highway. It has two lanes on both directions with green verge on the edge. There is no pedestrian walkway on either side of the road.

The road is characterised by large industrial shed and wire fencing along the eastern edge with mature native vegetation to the west within Western Sydney Parkland. Thick tree line form an environmental buffer between the Sydney Zoo and industrial park both physically and visually.

**Combining sensitivity and magnitude, the significance of the visual effects of this viewpoint is no visual impact.**



18 Viewpoint 1 – Doonside Road Existing View



19 Viewpoint 1 – Doonside Road Proposed View

## 3.0 Key Views & Impact Assessment

### 3.3 Viewpoint 2 Velocity Parade

Distance	820m
Direction	South
Elevation	10m below site
Camera	Canon 6D - 35mm Lens
Coordinate	-33.782093, 150.871713

Viewpoint 2 is taken along Velocity Parade looking south from the residential area approximately 820m north of proposed location of ferris wheel in Sydney Zoo. There is a 10m fall in terrain between proposed location of ferris wheel and Velocity Parade.

The view looks across Bungarrabee Park and Bungarrabee Creek with thick native vegetation, shrubs, and mature tree line in a natural setting. The proposed ferris wheel is not visible from this location.

**Combining sensitivity and magnitude, the significance of the visual effects of this viewpoint is no visual impact.**



20 Viewpoint 2 – Velocity Parade Existing View



21 Viewpoint 2 – Velocity Parade Proposed View

## 3.0 Key Views & Impact Assessment

### 3.4 Viewpoint 3 Bungarrabee Park

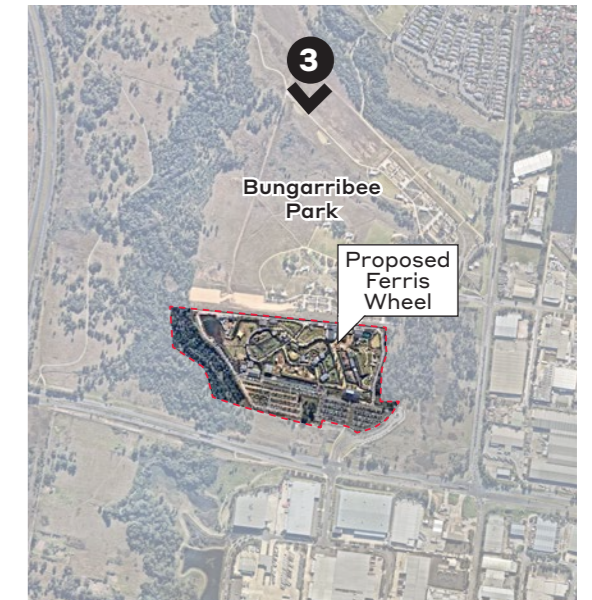
Distance	680m
Direction	South east
Elevation	12m lower
Camera	Canon 6D - 35mm Lens
Coordinate	-33.782316, 150.866407

View 3 is a view of an park setting characterised by wetland, shrubs and native trees in the background.

This view has low sensitivity due to its main use for recreational purposes. While the users of the park are able to see the ferris wheel from a distance, the ferris wheel has similar height with the existing tree in the background and blends in well with its setting.

There is an unobstructed view to native trees in all directions particularly along Eastern Creek and Bungarrabee Creek north and southwest of the view 3 position. There are no invitations to stop, linger or gather in this location.

**Combining sensitivity and magnitude, the significance of the visual effects of this viewpoint is low.**



22 Viewpoint 3 – Bungarrabee Park Existing View



23 Viewpoint 3 – Bungarrabee Park Proposed View

## 3.0 Key Views & Impact Assessment

### 3.5 Viewpoint 4 Rudders Street

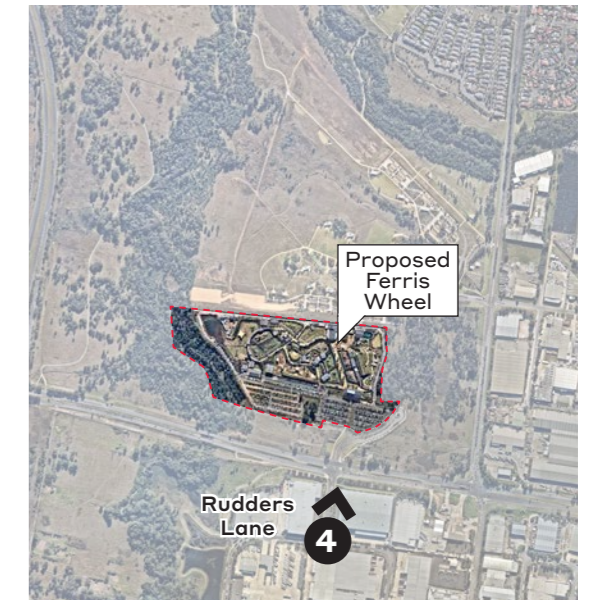
Distance	425m
Direction	North
Elevation	In-line with site
Camera	Canon 6D - 35mm Lens
Coordinate	-33.792213, 150.867083

View 4 is a view of a business park setting. Rudders Street is one of the key connection to Bungarrabee Industrial Estate occupied by large shed including parcel sorting facility and warehouses.

This view has low sensitivity due to its main use by trucks carrying out logistical movement of goods. While this view can be observed by pedestrians, it is located directly next to a busy intersection adjacent to the Western Sydney Parkland (WSP) sign in red background and a tall mature tree, which appears more prominent than the proposed ferris wheel.

The scale is low through the background with the proposal at a slightly greater height and sits between the WSP sign and Sydney Zoo entrance building.

Combining sensitivity and magnitude, the significance of the visual effects of this viewpoint is low.



24 Viewpoint 4 – Rudders Street Existing View



25 Viewpoint 4 – Rudders Street Proposed View

## 3.0 Key Views & Impact Assessment

### 3.6 Viewpoint 5 Great Western Highway

<b>Distance</b>	400m
<b>Direction</b>	North east
<b>Elevation</b>	7m lower than site
<b>Camera</b>	Canon 6D - 35mm Lens
<b>Coordinate</b>	-33.791403, 150.864816

View 5 is a view of from southern edge of Great Western Highway looking north towards Sydney Zoo. It is a major transport link connecting Eastern Sydney and Western Sydney.

The ferris wheel is visible very briefly by users commuting along Great Western Highway with trees along Eastern Creek and the surrounding of Sydney Zoo car park obstructing direct view to the structure. Proposed ferris wheel structure is dwarfed in the context of vast parkland area and mature trees with a greater height.

The view is taken from a maintenance driveway for a billboard sign and does not otherwise has pedestrian access.

**Combining sensitivity and magnitude, the significance of the visual effects of this viewpoint is low.**



26 Viewpoint 5 – Great Western Highway Existing View



27 Viewpoint 5 – Great Western Highway Proposed View





CONCLUSION &  
RECOMMENDATIONS



---

## 4.0 Conclusion & Recommendations

### 4.1 Recommendation

The following mitigation measures are recommended to reduce any adverse impacts on the view locations.

- The gradual planting of native trees in Western Sydney Parkland as part of the effort to restore the original landscape - Cumberland Plain will help to further decrease the visual impact of the proposal.

### 4.2 Conclusion

As a result of the analysis undertaken, we have concluded that there is low view impact as a result of the proposed ferris wheel for the following reasons:

- The proposal does not have negative effects on features which are associated with high visual significance or scenic quality within the primary visual catchment area.
- The proposed ferris wheel structure sits well with the other built forms in Sydney Zoo and blends in with the native trees in the Western Sydney Parkland. The proposal does not decrease the presence or conflict with existing visual character of landscape, built form, building scale and urban fabric.
- The presence of proposed ferris wheel in the vast Western Sydney Parkland is dwarfed in comparison with native trees at a much greater height and acts as environmental buffer to the nearest residential area.
- The setting, composition and nature of each view does not change.
- There is no view loss or blocking is apparent.

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