CLOUSTON associates

LENDLEASE
JORDAN SPRINGS WETLAND BASIN I
LANDSCAPE CHARACTER AND VISUAL IMPACT ASSESSMENT

JOR-0033
ISSUE B
15/06/2018

Document Set ID: 8944318
Version: 1, Version Date: 28/11/2019

Cover page: Looking north from the southern tip of the proposed basin.
This page: Looking south along the south-western access road to the west of the basin.

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Version: 1, Version Date: 28/11/2019

JORDAN SPRINGS WETLAND BASIN I LANDSCAPE CHARACTER AND VISUAL IMPACT ASSESSMENT

DRAFT

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Document	Issue	Date	Status	Reviewed	Verified	Validated
JOR-0033-R01	A	01/06/18	DRAFT	NS	JH	-
JOR-0033-R01	B	15/06/18	FINAL	NS	NS	CL

Note: This document is Preliminary unless Validated.

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Looking east from The Northern Road access point.

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Looking north from the proposed basin site.

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EXECUTIVE SUMMARY

CLOUSTON Associates has been engaged to prepare an assessment of the surrounding visual catchment and key views in relation to the proposed Basin I within the St Marys site that informs a Landscape Character and Visual Impact Assessment (LCVIA) report.

The purpose of the proposed works is to construct a detention basin to allow for its future use for stormwater management, in accordance with the provisions of SREP 30 and the Central Precinct Plan. Basin I will work in a coordinated fashion with Basin B (subject to a separate application).

The LCVIA addresses the possible effects of change in the landscape in relation to views and visual amenity through examining the principal legislative and planning context and applying the relevant methodologies to assessment. The planning instruments and guidelines that have the most direct bearing on the visual assessment of the project include:

- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy No 19 - Bushland in Urban Areas;
- State Environmental Planning Policy No 55 - Remediation of Land;
- Sydney Regional Environmental Plan No 30 - St Marys;
- Penrith Local Environmental Plan 2010

The landscape character surrounding the proposed Basin I is a contrast between the remaining vegetation types of the reserve which include weedy Freshwater wetlands, moderate quality River Flat Eucalypt forest and areas of exotic grassland and the surrounding suburban developments of Jordan Springs, Cranebrook, Cambridge Gardens and Werrington Downs.

After undertaking a visual catchment assessment of the wider context of the site a number of suitable viewpoints were selected to analyse for visual impact. A range of viewpoints were selected both within and outside the current reserve, as well as at varying distances.

Of the 10 viewpoints selected and analysed the findings are as follows:

- **negligible** impact ratings - 5
- **low** impact ratings - 1
- '**moderate**' impact ratings - 2
- '**moderate/high**' impact ratings - 2

A range of potential mitigation measures have been considered in order to reduce any visual impacts. After an analysis of the visual impacts the most appropriate form of mitigation would be Alleviation, based around new plantings if mitigation is required to alter any visual impacts.

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PART A

existing conditions

Looking north from proposed basin location.

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Looking east along Jubilee Drive

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1.0 INTRODUCTION

PURPOSE OF THIS REPORT

CLOUSTON Associates has been commissioned by Lendlease to prepare this Landscape Character and Visual Impact Assessment (LCVIA) for the proposed Regional park Detention Basin I.

BACKGROUND

St Marys Land Limited owns the St Marys site, and is a subsidiary of ComLand Limited. Maryland development Company is the joint venture company that was established by ComLand and Lendlease Development to develop the larger site surrounding the proposed basin.

The overall site, which has been rezoned for a variety of uses, comprises six development "precincts" shown in Figure 1.0, which include the:

- Western Precinct (Jordan Springs)
- Central Precinct
- North Dunheved Precinct
- South Dunheved Precinct
- Ropes Creek Precinct (part of Ropes Crossing)
- Eastern Precinct (Ropes Crossing)

The purpose of the proposed works is to construct a detention basin to allow for its future use for stormwater management, in accordance with the provisions of the SREP 30 and the Central Precinct Plan. Basin I will work in a coordinated fashion with Basin B, located to the north-east, subject to a separate application.

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1.0 INTRODUCTION

APPROACH TO VISUAL IMPACT ASSESSMENT

Landscape Character and Visual Impact Assessments aim to ensure that all possible effects of change and development in the landscape, views and visual amenity are taken into account. It is concerned with how the surroundings of individuals or groups of people may be specifically affected by change in the landscape, both quantitatively and qualitatively.

Judgement as to the significance of the effects is arrived at by a process of reasoning, based upon analysis of the baseline conditions, identification of receptors and assessment of their sensitivity, as well as the magnitude and nature of the changes that may result from any development.

This assessment is an independent report and is based on a professional analysis of the landscape and the proposal at the time of writing. The current and potential future viewers (visual receptors) themselves have not been consulted about their perceptions.

The analysis and conclusions are therefore based solely on a professional assessment of the anticipated impacts, based on a best practice methodology.

RELEVANT METHODOLOGIES

In the planning context of NSW there are several methodologies documented by the NSW State Government that relate to the assessment of visual impact for varying types of development.

The most relevant to this assessment is

- EIA-N04 Environmental Impact Assessment Practice Note: Guideline for Landscape Character and Visual Impact Assessment. Roads and Maritime Services, Sydney, NSW.

Importantly also the Commissioners of the NSW Land and Environment Court have developed Planning Principles that relate to visual impact assessment derived from two key cases, namely Tenacity Consulting v Warringah Council and Rose Bay Marina Pty Limited v Woollahra Municipal Council (2013).

The latter case prompted the Commissioners to establish a suite of Planning Principles relating to public domain views, in which the assessment required five steps to be followed:

Step 1: identify the nature and scope of the existing views from the public domain. This identification should encompass (but is not limited to):

- the nature and extent of any existing obstruction of the view
- relevant compositional elements of the view (such as is it static or dynamic and, if dynamic, the nature and frequency of changes to the view)
- what might not be in the view - such as the absence of human structures in the outlook across a natural area
- is the change permanent or temporary
- what might be the curtilages of important elements within the view.

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1.0 INTRODUCTION

Step 2: identify the locations in the public domain from which the potentially interrupted view is enjoyed. (Note that the Planning Principles give primacy of views from the public domain over views from private land).

Step 3: identify the extent of the obstruction at each relevant location.

Step 4: identify the intensity of public use of those locations where that enjoyment will be obscured, in whole or in part, by the proposed development.

Step 5: identify whether or not there is any document that identifies the importance of the view to be assessed. The absence of such provisions does not exclude a broad public interest consideration of impacts on public domain views.

Of the two methodologies the RMS guidelines are the most comprehensive with respect to land based built form (including a methodology for documenting landscape character) and thus forms the core methodology adopted fort his study.

FIELD OF VIEW

It is important to note that the process of assigning visual impact ratings to viewpoints has been undertaken during a site visit and is calculated from a human vision perspective, on site. Photographic images should be considered **representative only**.

The photos within the following viewpoint analysis are taken with a Sony Alpha ILCE-A7 II with the following specification:

- Body type: Compact
- Sensor size: 855.62mm^2 (35.80mm x 23.90mm)
- Sensor type: CMOS Full Frame
- ISO: Auto
- Focal length 50mm

QUANTITATIVE AND QUALITATIVE VALUES

The visual experience of the area and its landscape setting varies depending on the viewer's standpoint within and outside the site and indeed from the viewer's personal perceptions of what they may appreciate in any given setting.

This requires an assessment to address both the quantitative (objective) characteristics of the landscape and views (What elements form the scene? What features dominate? What breadth of view is offered – narrow vista or wide panorama?) and the qualitative (subjective) assessment of the values ascribed to those scenes.

The quantitative-based strategies are less debatable (Can that view still be seen when the new built form is introduced? How much of that view will we lose?) than in establishing the qualitative strategies (Which view is more important to retain?); the latter could be perceived differently by every viewer that sees that scene. Such variation of perception is particularly acute around the built form.

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Existing box culvert exit point at proposed Basin I location.

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1.0 INTRODUCTION

CHRONOLOGY OF ASSESSMENT

For this LCVIA the sequential assessment steps employed in determining the potential visual impact of Regional Detention Basin I are as follows:

- Stage 1: Establishing the baseline – drawing on background documents and site investigation to document the existing landscape character and visual environment of the study area and its visual catchment. This leads to determining the most significant views and vistas currently enjoyed within the surrounding area.

- Stage 2: Visual Impact Assessment - assessment of the visual impacts of proposed development options for the basin, set against the planning and design principles. This leads to determining any mitigation measures that may be required to reduce visual impacts from the preferred development option.

A detailed methodology is provided in Appendix A.

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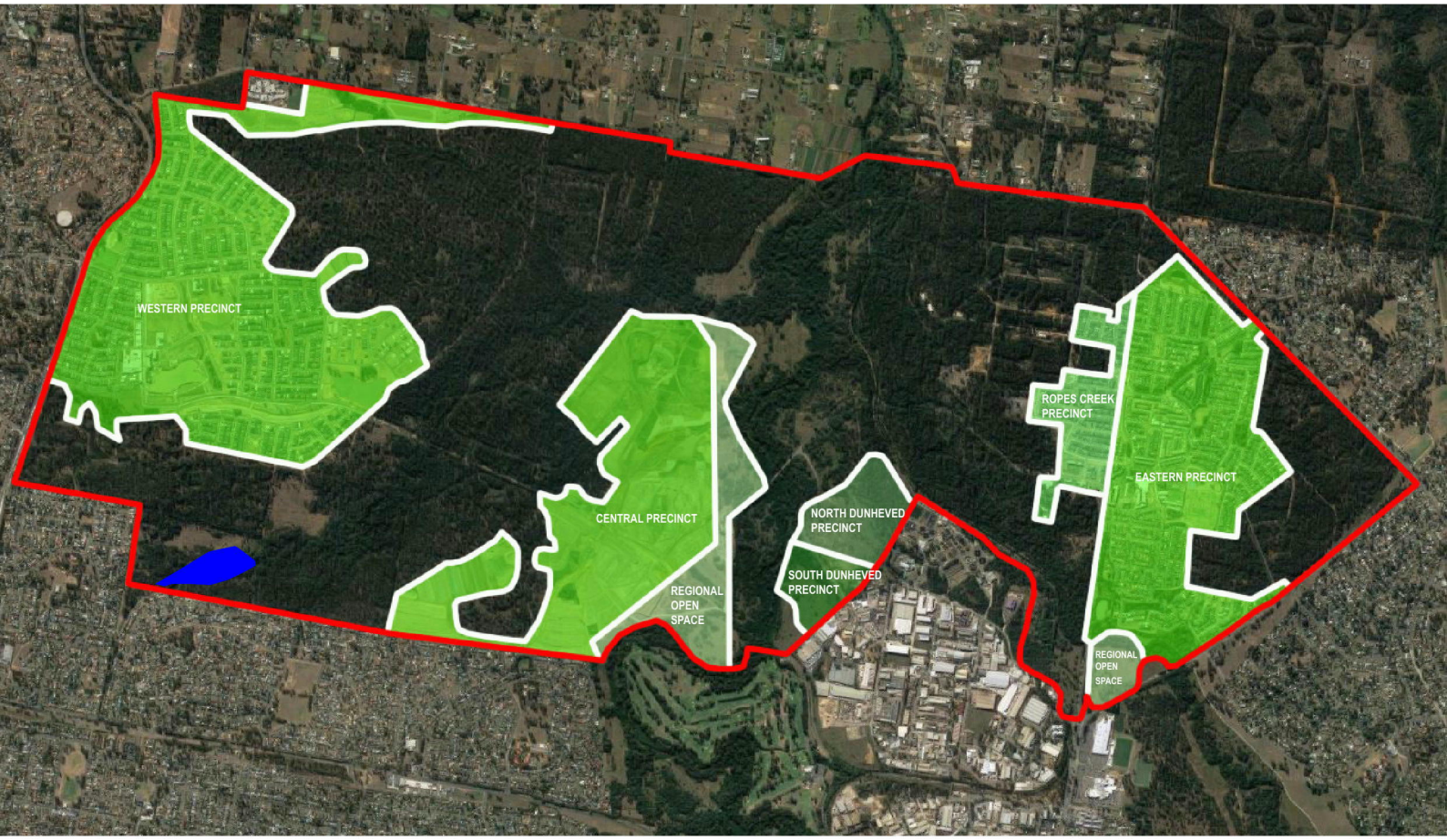

Figure 1.0 - St Marys Site and Precincts

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2.0 THE SITE

THE SITE

The St Marys site was endorsed by the NSW Government for inclusion on the Urban Development Program (UDP) in 1993. It is located approximately 45 kilometres west of the Sydney CBD, 5 kilometres north-east of the Penrith City centre and 12 kilometres west of the Blacktown City centre.

The St Marys site has an area of 1,545 ha, and stretches approximately 7 kilometres from east to west and 2 kilometres from north to south. It is bounded by Forrester Road and Palmyra Avenue in the east, The Northern Road in the west, Ninth Avenue and Palymyra Avenue in the north, and the Dunheved Industrial Area, Dunheved Golf Club and Cambridge Gardens, Werrington Gardens and Werrington County residential estates in the south.

The site of the proposed development generally relates to the St Marys Central Precinct (refer Figure 1.0) within the Penrith City Council LGA. The area known as 'Regional Detention Basin I' is located west of the Central Precinct urban area, within land that is zoned Drainage and Regional Park.

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2.0 THE SITE

Figure 2.0 - Surrounding context of Basin I

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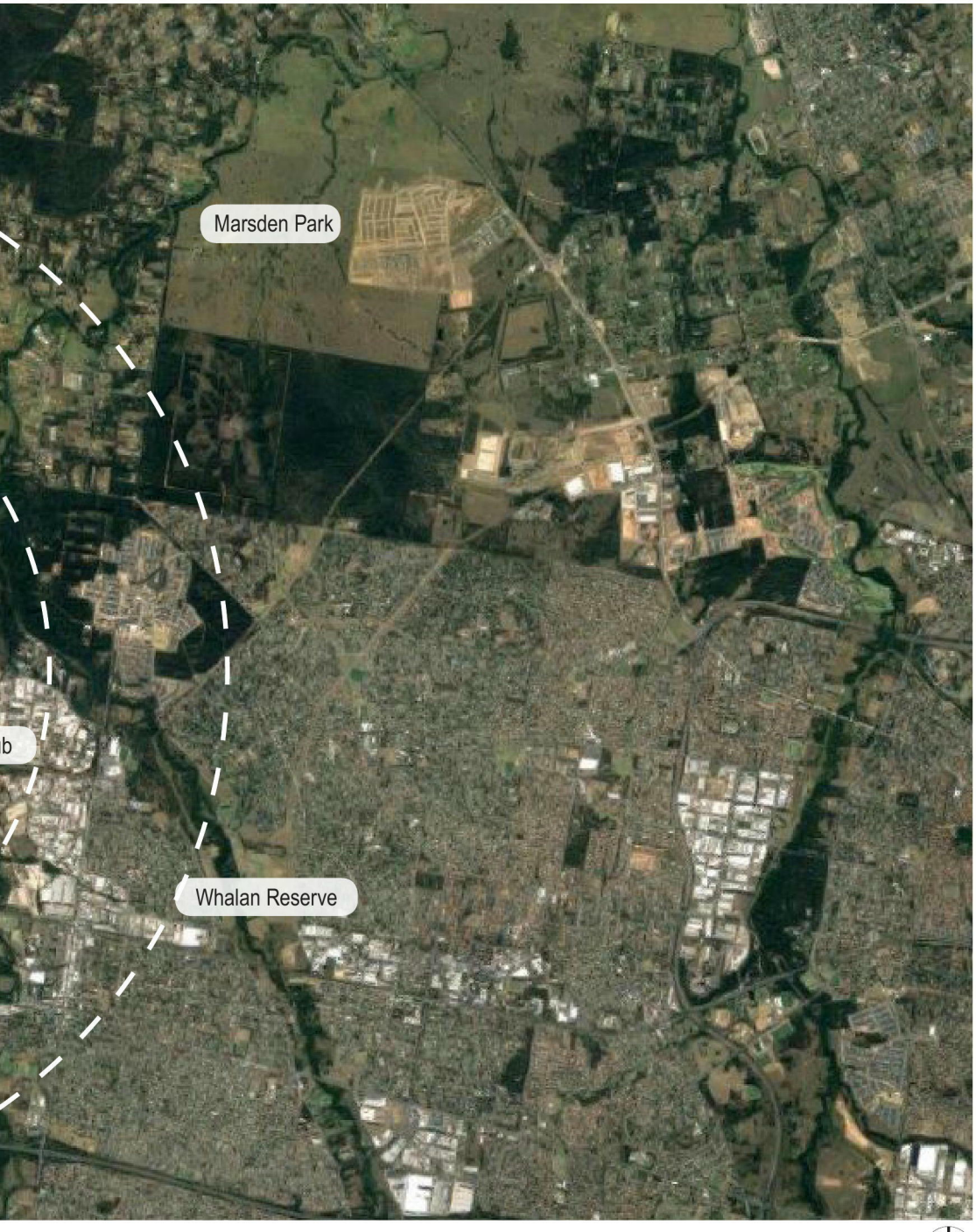

Basin I location.

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Boronia Village Park, Jordan Springs

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3.0 PLANNING CONTEXT

LEGISLATIVE POLICY AND CONTEXT

The key legislative and planning instruments that have a bearing on the visual assessment and implications of the proposed development include;

A. State Environmental Planning Policy (Infrastructure) 2007;

B. State Environmental Planning Policy No 19 - Bushland in Urban Areas;

C. State Environmental Planning Policy No 55 - Remediation of Land;

D. Sydney Regional Environmental Plan No 30 - St Marys;

E. Penrith Local Environmental Plan 2010; and

3.0 State Environmental Planning Policy (Infrastructure) 2007

The aim of this Policy is to facilitate the effective delivery of infrastructure across the State by:

- (a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and
- (b) providing greater flexibility in the location of infrastructure and service facilities, and
- (c) allowing for the efficient development, redevelopment or disposal of surplus government owned land,and
- identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and
- providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing

3.1 State Environmental Planning Policy No 19 - Bushland in Urban Areas

- (1) The general aim of this Policy is to protect and preserve bushland within the urban areas referred to in Schedule 1 because of:

  (a) its value to the community as part of the natural heritage
  (b) its aesthetic value, and
  (c) its value as a recreational, educational and scientific resource

3.2 State Environmental Planning Policy No 55 - Remediation of Land

Relevant sections of this Policy include:

- (1) a consent authority must not consent to the carrying out of any development on land unless:

  (a) it has considered whether the land is contaminated, and
  (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

  (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the

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3.0 PLANNING CONTEXT

land will be remediated before the land is used for that purpose.

3.3 Sydney Regional Environmental Plan No 30 - St Marys

Cl 3 - Aims of this plan

(a) support the St Marys Environmental Planning Strategy; 2000 of the Department of Urban Affairs and Planning by providing a framework fir the sustainable development and management of the land to which the plan applies, and

(b) rezone certain land for urban and employment-generating development, and

(c) rezone land for conservation purposes and conserve the significant heritage values of the land to which this plan applies, and

(d) ensure that urban development on the land achieves desirable environmental, social and economic outcomes, and

(e) provide opportunities for recreation facilities that meet the needs of the regional and local community, and

(f) ensure that development of the land to which this plan applies is integrated with established surrounding areas.

Cl 28 - Watercycle

(2) The use of the land to which this plan applies is to incorporate stormwater management measures that ensure there is no net adverse impact upon the water quality (nutrients and suspended solids) in South Creek and Hawkesbury-Nepean catchments.

(5) There is to be only minimal impact upon flood levels upstream or downstream of the land to which this plan applies as a consequence of its development.

(7) Development is to be carried out in a manner that minimises flood risk to both people and property.

Cl 42 - Drainage zone

(1) The objectives of the Drainage zone are:

(a) to enable certain land that adjoins or is substantially surrounded by land within the Regional Park zone to be used for the purpose of stormwater management, and

(b) to permit development for the purpose of stormwater management, as well as development which is compatible with both the use of land for stormwater management and with the conservation objectives of the adjoining land zoned Regional Park.

3.4 Penrith Local Environmental Plan 2010

Cl 7.2 - Flood planning

(1) The objectives of this clause are as follows:

(a) to minimise the flood risk to life and property associated with the use of the land,

(b) to limit uses of those compatible with flow conveyance function and flood hazard

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3.0 PLANNING CONTEXT

(c) to manage uses to be compatible with flood risks,
(e) to ensure the existing flood regime and flow conveyance capacity is not compromised,
(f) to avoid detrimental effects on the environment that would cause avoidable erosion, siltation, destruction of riparian vegetation or reduction in the stability of river banks or waterways.

3.5 Penrith Development Control Plan 2014

On-Site Stormwater Detention (OSD)

(c) Detention storage is to be located at a level that is above the 1:5 ARI flood level.
(f) On-site stormwater detention mechanisms should have a maintenance program in place.

3.6 Wianamatta Regional Park Plan of Management

Water and drainage infrastructure traversing through the Park will be confined to established easements, agreed to prior to transfer of the Regional Park land to the Department, with the exception of those drainage basins identified in the structure plan of SREP30 and excluded from the Park.

The design, location and management of these basins (by an external agency) will have the least possible impact on the Park, consistent with the requirements of the SREP 30, the EPS and the St Marys Development Agreement. There will be no formed trunk drainage channels on land zoned for the regional park as stated under the EPS.

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4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

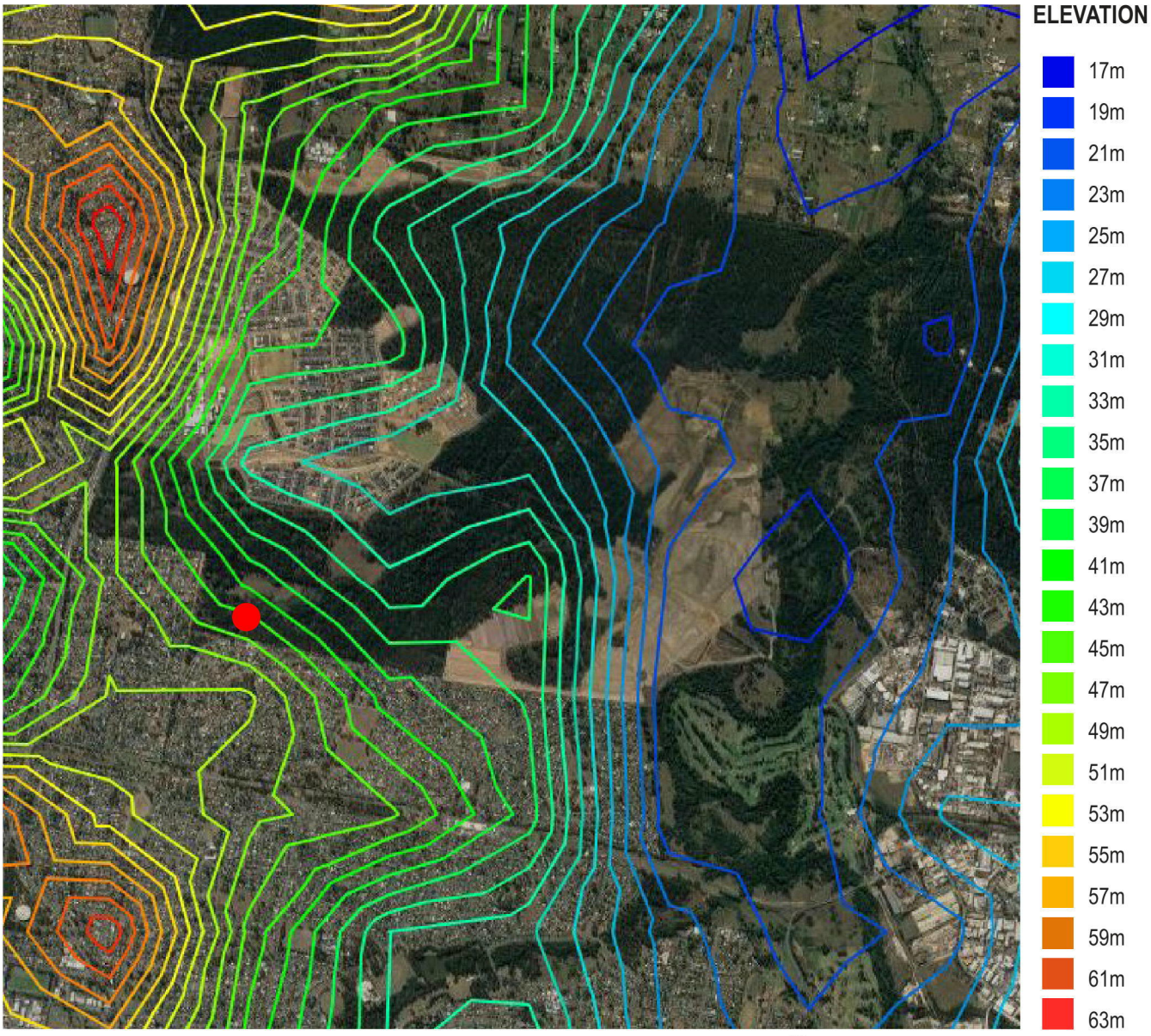

Figure 4.0 - Coarse Grain Elevation Map of Surrounding Area (created using Contour Map Creator)

Basin I Location

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4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

EXISTING LANDSCAPE CHARACTER

The current zoned area for Basin I under SREP 30, is approximately 7.4ha, and includes an area occupied of weedy freshwater wetlands, moderate quality River Flat Eucalypt Forest, as well as small areas of exotic grassland.

The landscape character surrounding Basin I is a contrast between the remaining vegetation types of the reserve where the basin is proposed, and the surrounding suburban developments of Jordan Springs, Cranebrook, Cambridge Gardens and Werrington Downs.

The dominant landscape characteristics may briefly be summarised under the following headings.

Natural Topography

The topography of the surrounding area can be broadly described as moving from a lower elevation in the east to a higher one in the west moving closer to the Blue Mountains. The site sits within the relative mid-ground in terms of elevation for the immediate area at around 37m as shown in Figure 4.0.

The broader landscape demonstrates varied topography, with Jordan Springs lying between two slightly more elevated land areas to either side as a result of South Creek in the east and the Nepean River in the west as can be seen in Figure 4.1.

Built Form

To the north of the proposed Basin is the suburb of Jordan Springs, which was registered with the Geographical Names Board of New South Wales in 2011, and upon completion is expected to be home to 13,000 residents.

Like other neighbourhoods in proximity to the proposed basin such as Cambridge Downs, Werrington Downs or Cranebrook, the majority of built form consists of residential housing with a mix of both single and double story dwellings. A mixture of building materials can be seen within surrounding neighbourhoods, however brick comprises a large proportion of the built form.

Public Space

To the west of the basin is Wianamatta Regional Park which includes heritage listed Cumberland Plain Woodland, provides a natural habitat for native wildlife and plants and will soon include a range of eco-sensitive facilities including walking and bike trails.

The surrounding neighbourhoods contain a variety of neighbourhood parks and open spaces which cater for both active recreation in terms of sports areas, as well as spaces more intended for passive recreation. Jordan Springs, once complete, will offer a total of 17ha of open space and parks.

Wianamatta Regional Park increased in size by 237 hectares when land was transferred from Lend Lease to the National Parks and Wildlife Service which increased the park size to over 300 hectares. The area has a history of timber cutting, farming and housing explosives and a munitions filling factory between World War Two and the 1980s, and as a result the area that is now park has been closed to the public for 50 years.

In 2002 the St Mary's Development Agreement between the NSW Government and Lend Lease earmarked the land as a future reserve, which when complete will make Wianamatta Regional Park around 900 hectares, making it the largest regional park in Sydney.

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Looking south from the proposed basin location.

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4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

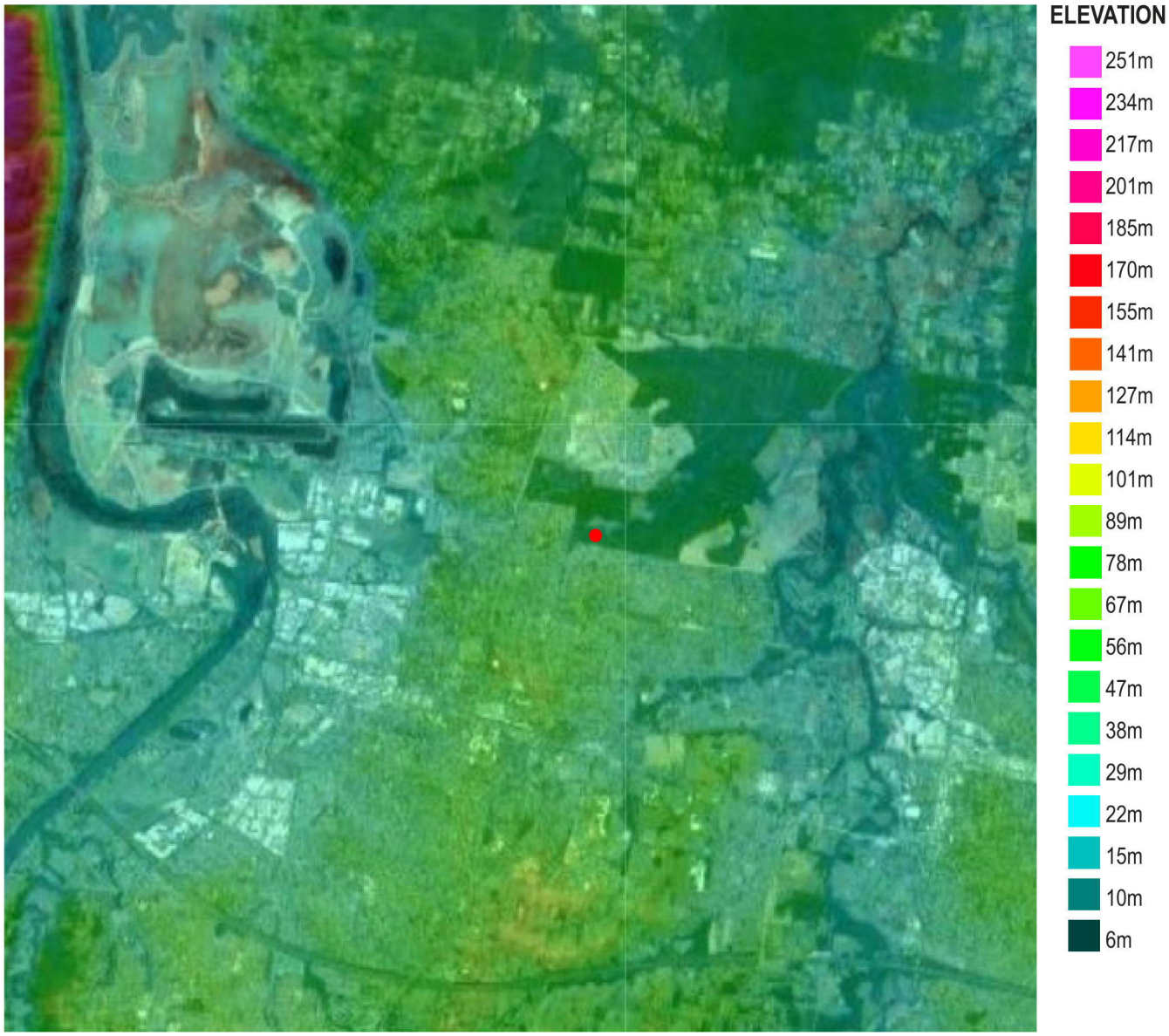

Figure 4.1 - Topography Map of Surrounding Area (created using Topographic Map)

Basin I Location

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Shale plains woodland on site.

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4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

SIGNIFICANT VIEWS AND VISTAS

No significant public or private views have been identified within the SEARs, nor has any record been found of significant views within the immediate vicinity of Basin I being documented.

NEARBY PUBLIC SPACES

The most prominent public space within close proximity to the site is the Wianamatta Regional Park. Village Centres are also located within the surrounding area, with the Jordan Springs Village Centre being in closest proximity to the proposed basin. A network of neighbourhood parks are located in all surrounding neighbourhoods providing a mixture of both active and passive recreation opportunities.

PANORAMIC VIEWPOINTS

In the following pages the 10 selected viewpoints evaluated are shown in panoramic form to illustrate the variety of landscape character across the locality. The basis on which these views were selected is described in more detail in Chapter 6 - View Selection Criteria.

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4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

The map and photos that follow broadly illustrate the typical landscape character around the site.

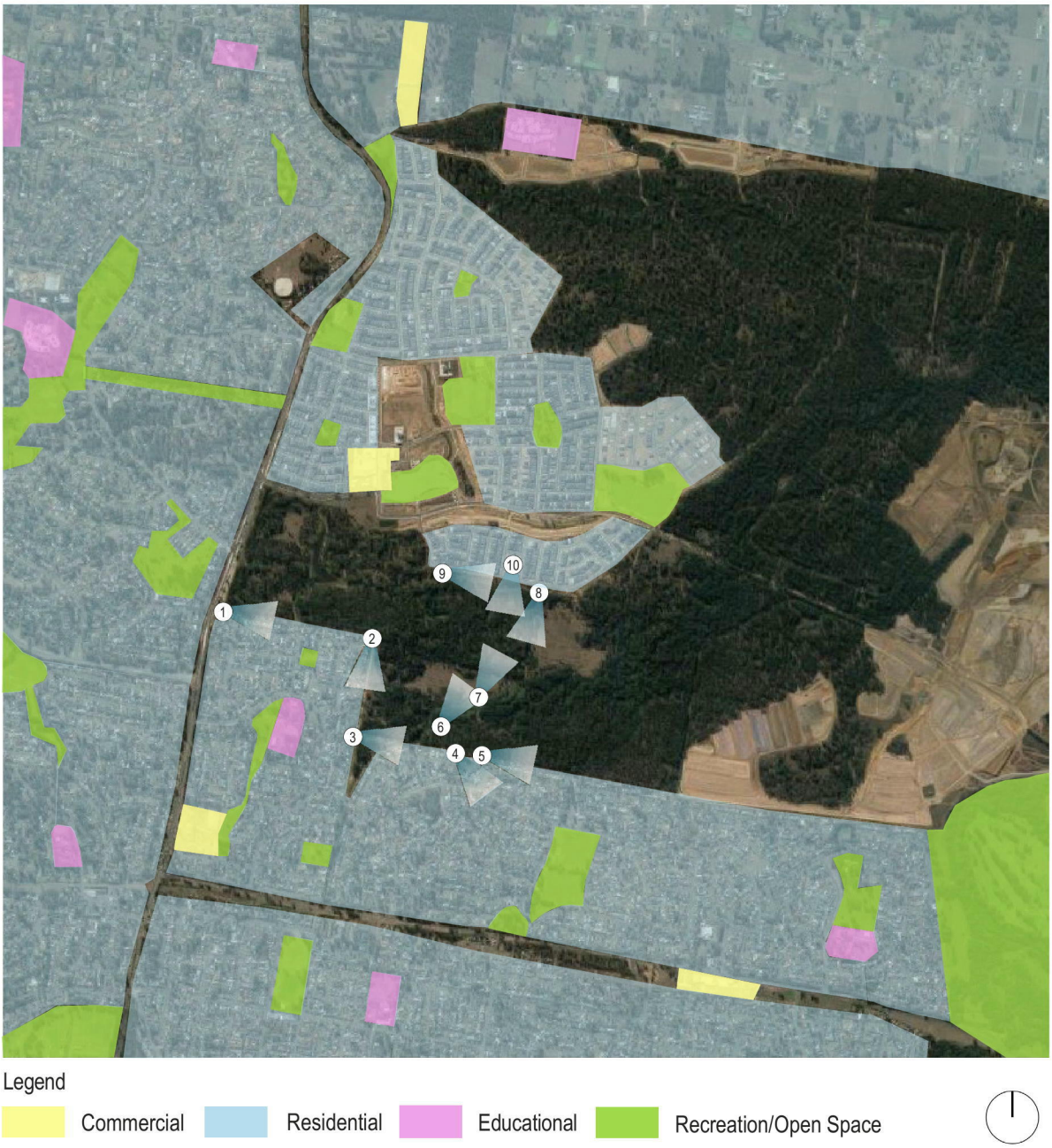

Figure 4.2 - Coarse Grain Existing Landscape Character

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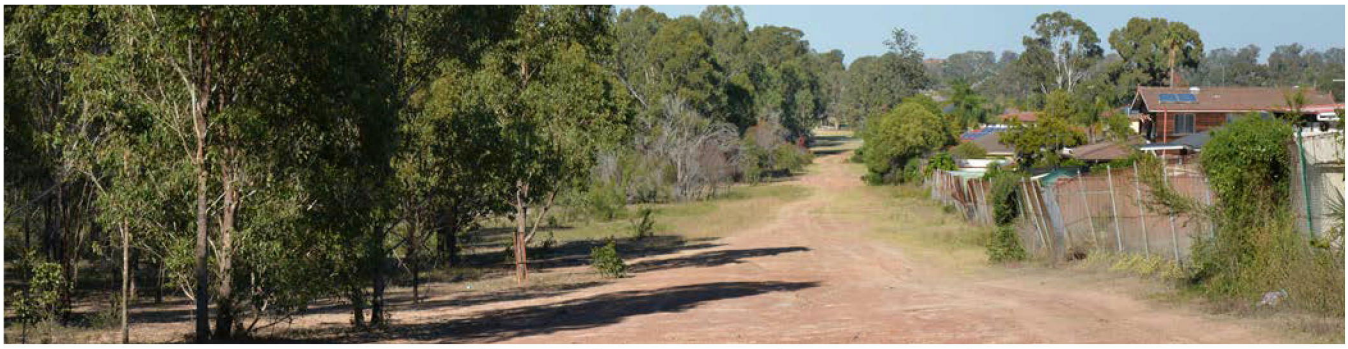
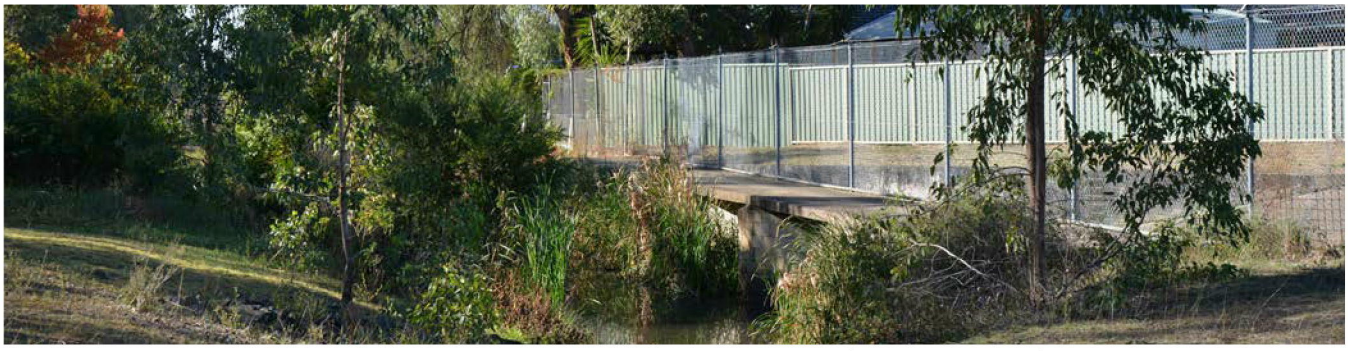
4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

View 1 - Looking east from the Northern Road Entrance with the residential boundary of Cambridge Gardens to the right. Stitched using 50mm focal length



View 2 - Looking south with the residential boundary of Cambridge Gardens to the right. Stitched using 50mm focal length

View 3 - Looking east with open grassland and residential boundary of Werrington Downs to the right. Stitched using 50mm focal length



View 4 - Looking south-east at existing box culvert and Werrington Downs residential boundary. Stitched using 50mm focal length.

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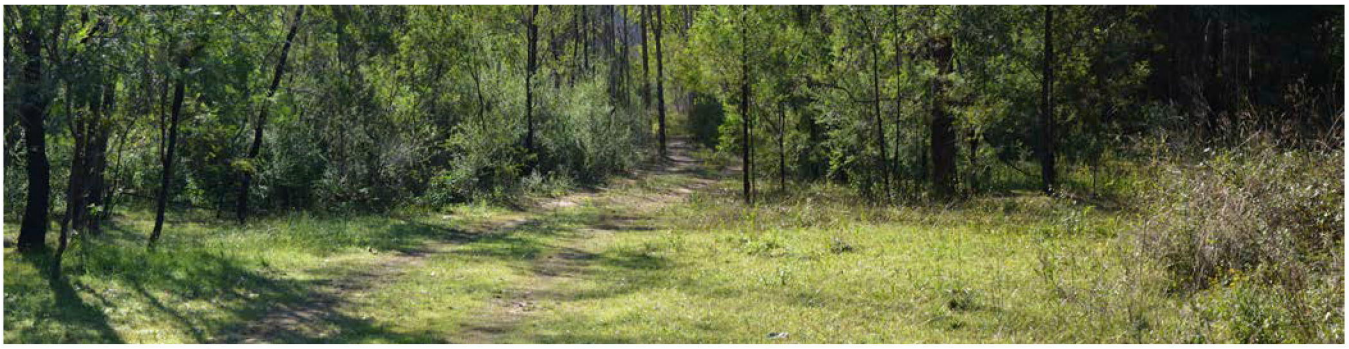
4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT

View 5 - Looking east with Werrington Downs residential boundary to the right. Stitched using 50mm focal length.



View 6 - Looking north from the track next to the proposed basin. Stitched using 50mm focal length

View 7 - Looking north from the northern edge of the proposed basin. Stitched using 50mm focal length.

View 8 - Looking south from the Jubilee Drive entrance. Stitched using 50mm focal length.

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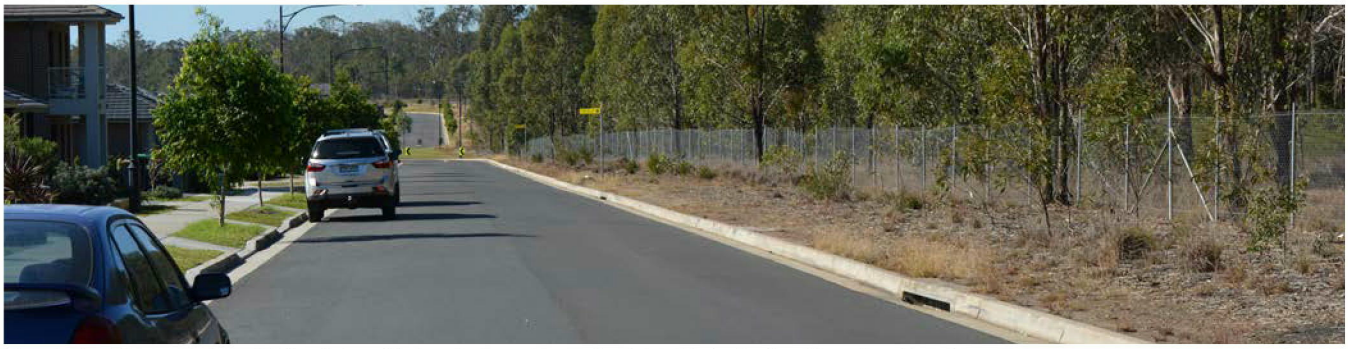
4.0 LANDSCAPE CHARACTER AND VISUAL ENVIRONMENT



View 9 - Looking east along Jubilee Drive with the site boundary to the right. Stitched using 50mm focal length.

View 10 - Looking south from Jubilee Drive across Boronia Village Park. Stitched using 50mm focal length.

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5.0 VISUAL CATCHMENT ANALYSIS

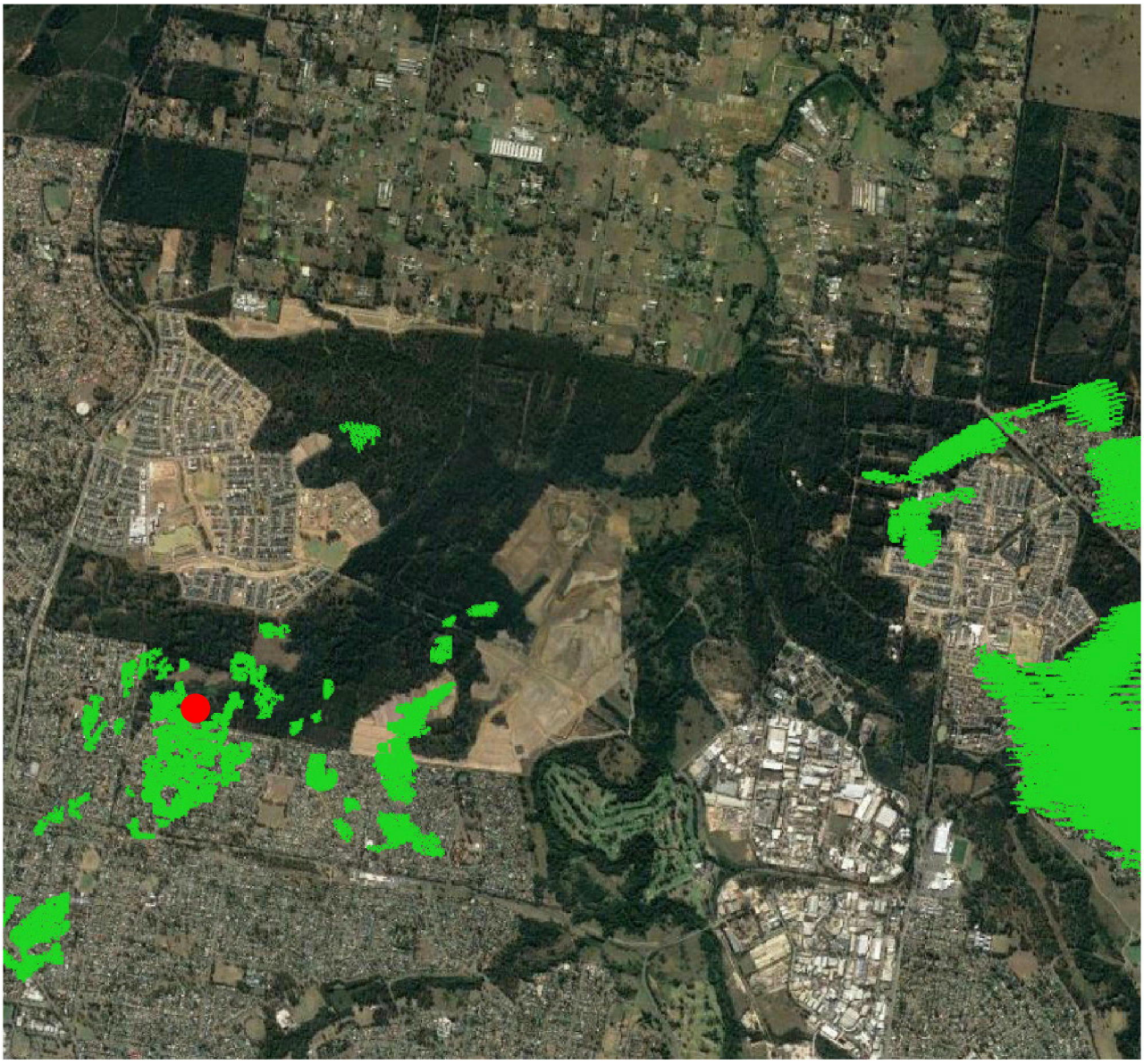

Figure 5.0 - Estimated Viewshed Based on Topography Only. Source: Google Earth

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5.0 VISUAL CATCHMENT ANALYSIS

EXISTING VISUAL CATCHMENT

This desktop topography study is sourced from Google Earth and is limited to an estimated viewshed based on topography only, without taking into account vegetation or building heights. This analysis has been used as a guide only, while significant ground studies have been conducted in and around the site to ascertain the key locations from which the proposal would potentially be visible.

It is anticipated that the visual catchment from ground level is very minimal due to the level of existing vegetation within the regional park combined with the low number residential housing with visual access to the proposed basin site.

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Regenerating River-flat Eucalypt forest on proposed basin site.

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6.0 VIEW SELECTION CRITERIA

BASIS OF SELECTION

The selection of views for detailed evaluation later in this report has been based on the following sources:

- Visual assessment policy guidance in particular the NSW Land and Environment Court Planning Principles
- Background documents and in particular the Urban Design Framework
- Desktop mapping
- In field evaluation undertaken for this report
- Wianamatta Regional Park Masterplan

Based on the above, the selection criteria for the views assessed in detail in section 8.0 include, in order of priority:

- Views from the public domain (principally streets, parks and waterways)
- Views of pedestrians and cyclists
- Close and direct views
- Views from transport (private and public)
- Distant and filtered views.

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PART B

visual impact assessment

View from proposed basin location

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Wildlife on exotic grasslands area adjacent to proposed basin

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7.0 THE PROJECT

Basin I is located immediately downstream of the Werrington Downs and Cambridge gardens existing urban area. It receives runoff from an existing open trapezoidal channel, that conveys surface runoff from an urbanised Penrith City Council catchment area, which does not currently have any water quality controls.

Runoff will enter the basin and receive treatment before it is discharged back into an existing creek within the Regional Park. Water quality treatment in the basin takes place through the settlement of suspended solids and any associated pollutants, and through nutrient uptake by the macrophyte aquatic planting system.

The physical works involve excavation to provide the required shape and dimension of the basin which consists of a 2m deep open water zone, a safety bench area to be planted with the macrophytes all around the water edge and hydraulic controls at the inlet and outlets of the basin that are adequately lined to prevent erosion. Surface runoff received into this basin will not be for re-use purposes.

The proposed excavation volume for Basin I is approximately 11,000m^3. The inlet into Basin I will be from an existing open channel at the boundary of the site. Basin I will be an on-line basin that receives surface runoff from a Council catchment at the boundary at Werrington Downs, approximately 250m downstream of Pasturegate Avenue. The outlet of Basin I discharges into the existing creek in the Regional Park area .

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Figure 7.0 - Indicative Basin I Plan

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Exotic grassland on site.

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

Based on the foregoing selection criteria this section maps and describes 10 views of the site from a variety of close and more distant viewpoints. A photograph of each viewpoint is accompanied by a description of the view and the major visual elements within that view.

(See Appendix A for details of the impact rating methodology).

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

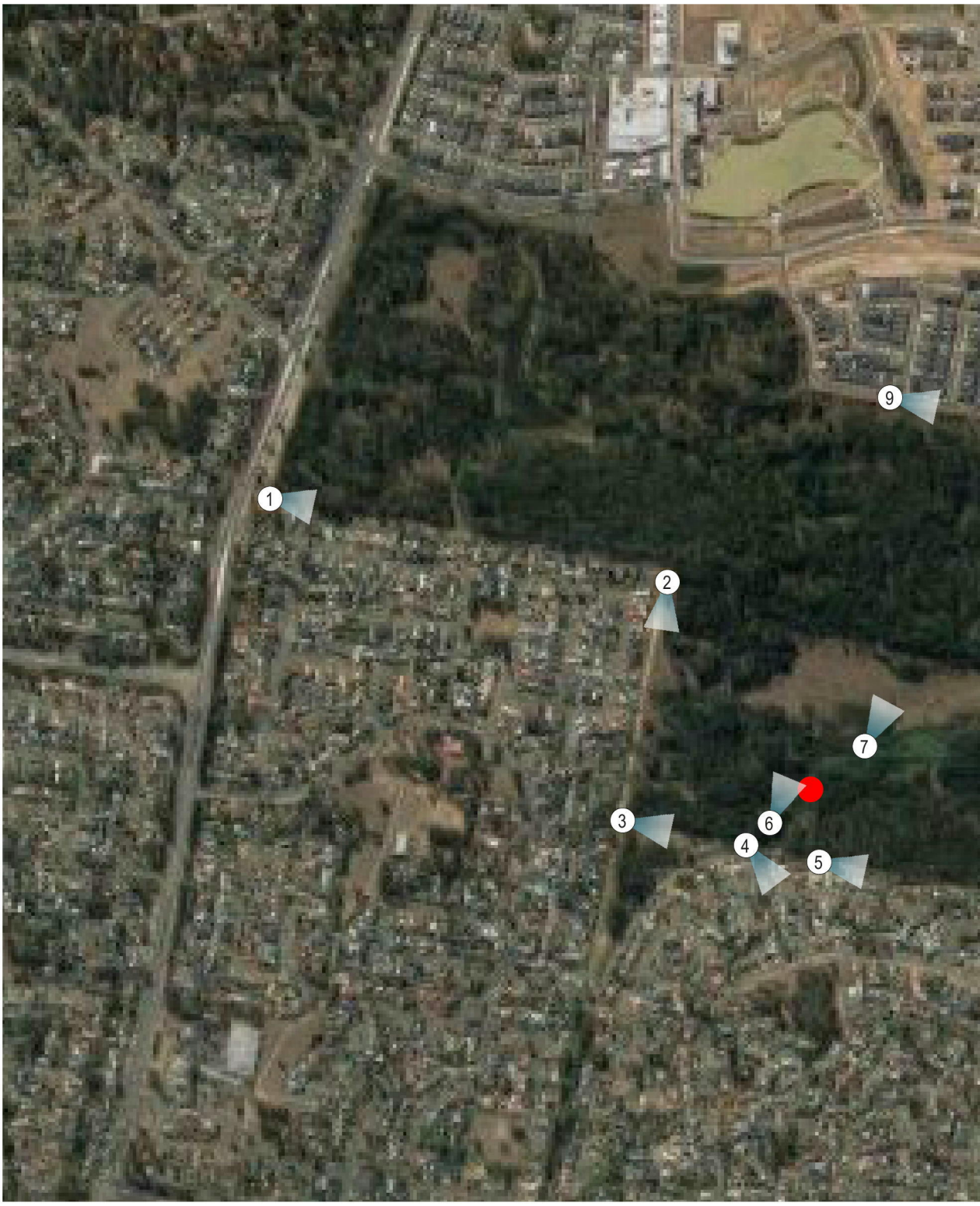

Figure 8.0 - Viewpoint Locations. (source nearmap)

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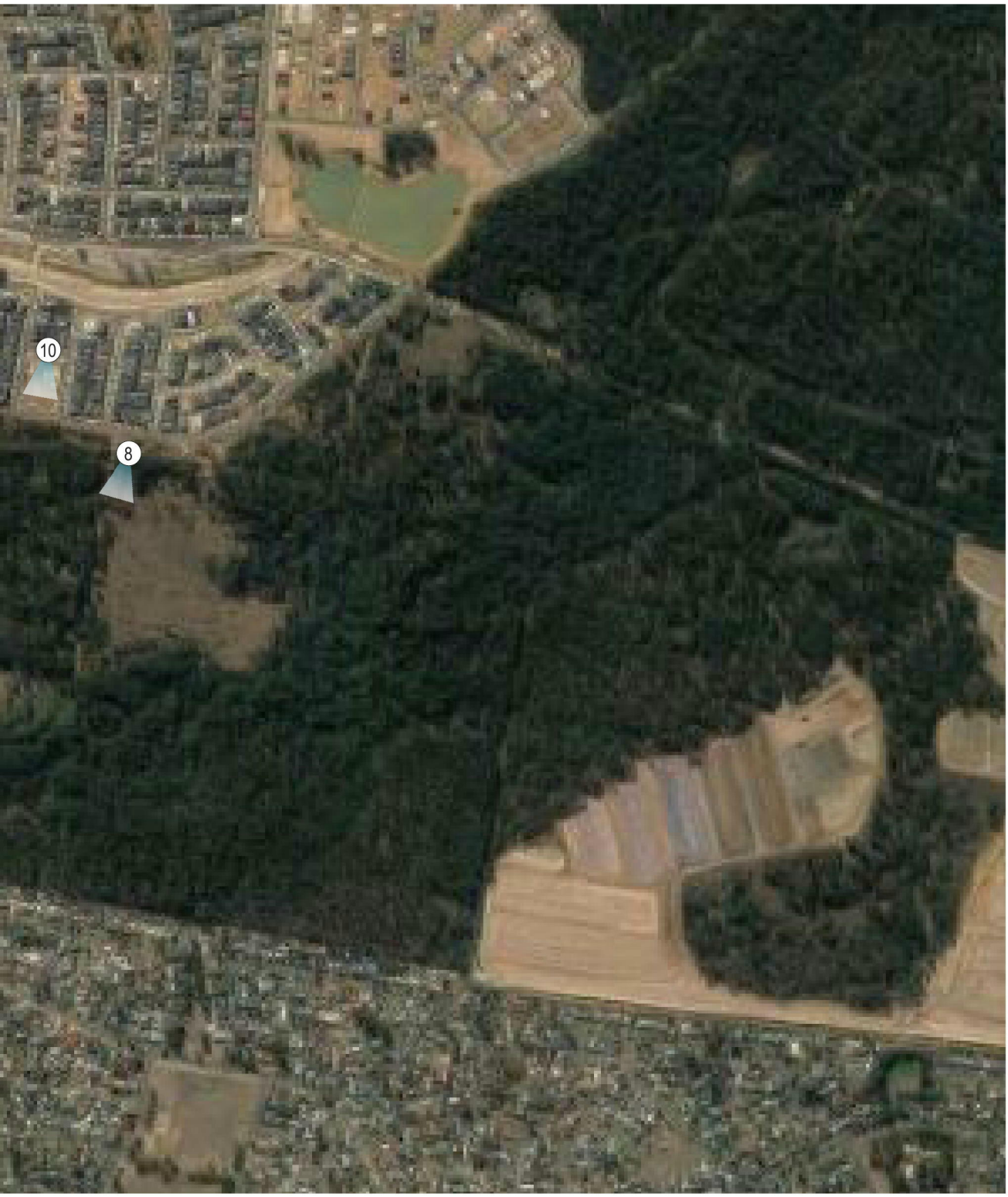

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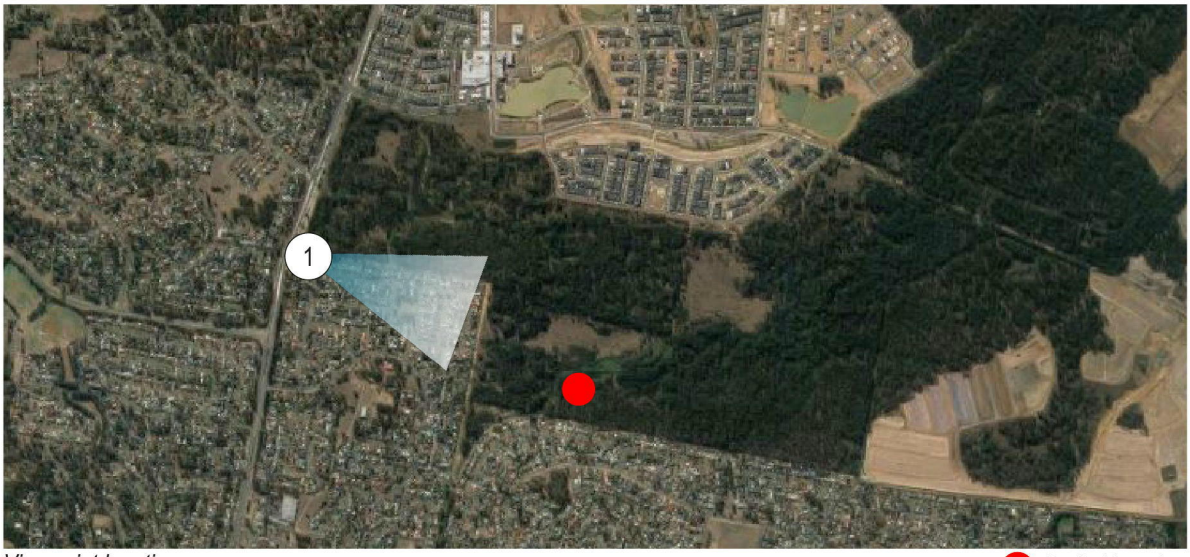
VIEWPOINT 1



Viewpoint location

Basin I Location

Viewpoint 1

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking east from the Northern Road Entrance with the residential boundary of Cambridge Gardens to the right.
DISTANCE	940m
RECEPTORS	Limited number of residents along boundary and Regional Park Rangers
NO. OF VIEWERS	Low
EXISTING VIEW	The existing view looks east along an unsealed dirt and grass track. To the right of the view is the back property line of a number of Cambridge Gardens residents. To the left of the view is shale plains woodland within the regional park land which is comprised of mature trees (predominantly eucalyptus) and a relatively open understory. In the middle ground of the scene can be seen a slight depression in the track with vegetation in an existing creek significantly narrowing the track at the point where a stormwater exit point is located.

EXPECTED VISUAL IMPACT
Due to the existing properties of Cambridge Gardens the basin will not be visible from this location. Mature vegetation both within the residential properties as well as the Regional Park will completely obscure the basin. As a result of this a **negligible** visual impact is anticipated.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	2	0	0	0	1.0
Visual Impact Rating	NEGLIGIBLE					

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VIEWPOINT 2

Viewpoint location

Basin I Location

Viewpoint 2

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Version: 1, Version Date: 28/11/2019

8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking south with the residential boundary of Cambridge Gardens to the right.
DISTANCE	400M
RECEPTORS	Limited number of residents along boundary and Regional Park Rangers
NO. OF VIEWERS	Low
EXISTING VIEW	This view looks south along a dirt track within the Regional Park area. To the right of the view can be seen the back property lines of a row of Cambridge Gardens residences. The left of the view can be seen a mixture of regenerating Cumberland Plain Woodlands, exotic grasslands and Shale Plains Woodland. This is comprised of a mixture of regenerating and mature trees, a sparse understorey and grasslands and intermittent tracks running through the area. In the distance can be seen a fence line and an open grass area which signals the termination of the regional park grounds.

EXPECTED VISUAL IMPACT
Due to the existing vegetation within the regional park the basin will not be visible from this location. Although the understorey is sparse in some parts the basin will be below the ground plane and so will be obscured by surrounding trees and understorey. As a result of this a **negligible** visual impact is anticipated.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	2	0	0	0	1.0
Visual Impact Rating	NEGLIGIBLE					

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VIEWPOINT 3

Viewpoint location

Basin I Location

Viewpoint 3

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking east with open grassland and residential boundary of Werrington Downs to the right
DISTANCE	192m
RECEPTORS	Regional Park Rangers
NO. OF VIEWERS	Low
EXISTING VIEW	An unsealed vehicle track runs through the centre of the view to the right of which can be seen open grassland with a stand of mature trees. Bordering this can be seen the back fence line of residential properties in Werrington Downs. To the left of the view can be seen shale plains woodland within the Regional Park and extending into the distance. Within the centre of the view can be seen lower height vegetation in the distance surrounding the exit point of a box culvert, with runoff from the culvert connecting to an existing creek.

EXPECTED VISUAL IMPACT
The lower height vegetation and box culvert exit point mark the southern edge of the proposed basin, where the inflow point and rock grading will be located. It is expected that a reduction in the level of vegetation will be visible in order to accommodate the proposed regrading required for the basin and rock lining area, and will result in the track on the eastern side of the proposed basin becoming more visible in the centre of the view from this location. As a result of this a **low** visual impact is anticipated.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	2	0	0	1	1.2
Visual Impact Rating	LOW					

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VIEWPOINT 4

Viewpoint location

Basin I Location

Viewpoint 4

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking south-east at existing box culvert and Werrington Downs residential boundary
DISTANCE	0m
RECEPTORS	Regional Park Rangers
NO. OF VIEWERS	Low
EXISTING VIEW	To the right of the view can be seen the back property line of residential properties within Werrington Downs which border an open grass area. An existing concrete path runs over the box culvert exit point. Water from the box culvert can be seen feeding into the creek, with vegetation both within the water and on the sloped bank surrounding it. Low height trees can be seen to the right of the view surrounding the creek bed, with larger mature trees visible in the distance behind them.

EXPECTED VISUAL IMPACT
This will serve as an inflow point for the basin, and as a result the existing vegetation in this area will be removed. Local regrading has been proposed to prevent ponding, as well as rock lining in the vicinity of the box culvert. A 3m wide vehicular path will be where the current path is. It is expected that this area will become more open with the regrading and removal of the existing vegetation, allowing for views across the basin to the track on the eastern side (currently obscured). The level of permanent water visible will be more noticeable from this location due to the regrading increasing the visible distance between the existing banks. As a result of this a **moderate** visual impact is anticipated.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	3	2	1	1	2.0
Visual Impact Rating	MODERATE					

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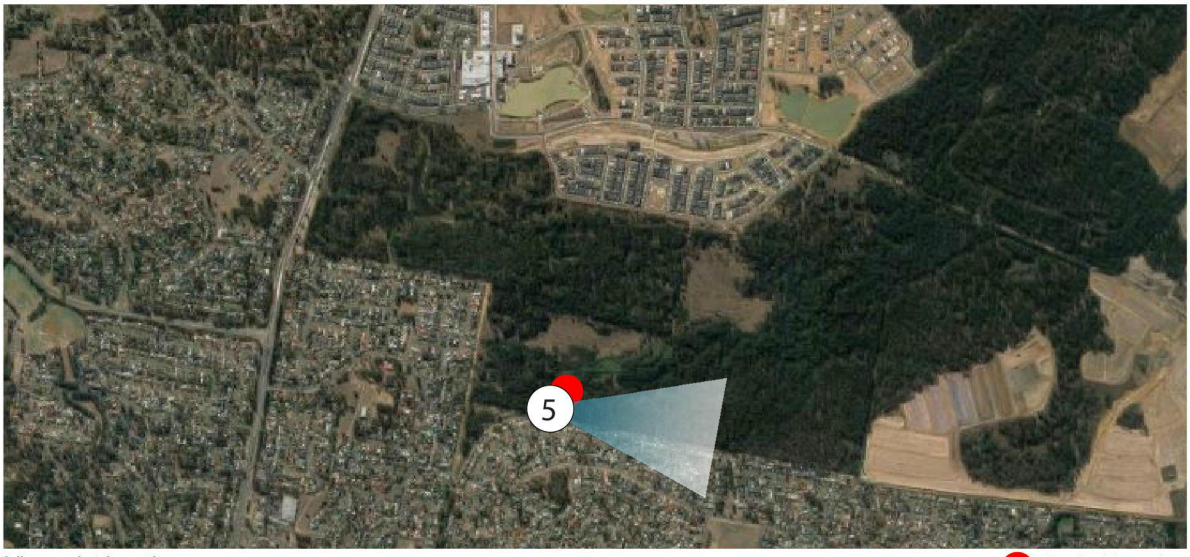
VIEWPOINT 5



Viewpoint location

Basin I Location

Viewpoint 5

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking east with Werrington Downs residential boundary to the right
DISTANCE	5m
RECEPTORS	Regional Park Rangers, residents with chain link back fences
NO. OF VIEWERS	Low
EXISTING VIEW	To the right of the view can be seen the back property line of residences along Wintercorn Row and Cobbity Ave. This property edge is comprised of chain link fences which allow for views from the backyard to the track. To the left of the view is the existing mature vegetation of the alluvial woodland and is comprised of tall mature trees, with a lower height understory of shrubs, bushes and grasses.

EXPECTED VISUAL IMPACT
A small band of existing vegetation will be retained along the track edge which will provide filtered views to the basin. A noticeable reduction in the density of vegetation looking north will be apparent both from the track and from the backyards of the properties facing the direction of the basin. As a result of this a **moderate** visual impact is anticipated.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	3	1	1	2	2.0
Visual Impact Rating	MODERATE					

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VIEWPOINT 6

Viewpoint location

Basin I Location

Viewpoint 6

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking north from the track next to the proposed basin
DISTANCE	0m
RECEPTORS	Regional Park Rangers
NO. OF VIEWERS	Negligible
EXISTING VIEW	The existing view looks north along an unsealed track within the alluvial woodland. Mature vegetation can be seen consisting of a mixture of tall tree species as well as a developed understory and small areas of open grassland.

EXPECTED VISUAL IMPACT
The existing view of vegetation will be replaced by views of standing water within the basin surrounded by a ring of macrophytes to the waters edge, with the basin edge sloping upwards to meet the surrounding existing ground level. As a result of this the existing visual scene will be significantly altered and it is expected a **moderate/high** visual impact will result.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	3	3	2	2	2.6
Visual Impact Rating	MODERATE/HIGH					

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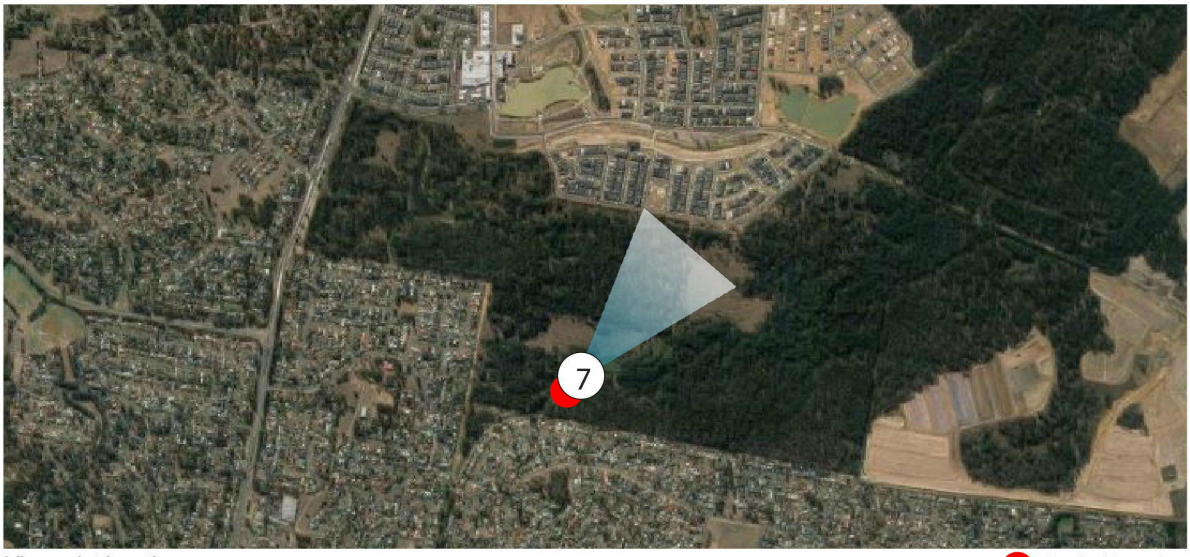
VIEWPOINT 7



Viewpoint location

Basin I Location

Viewpoint 7

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking north from the northern edge of the proposed basin
DISTANCE	0m
RECEPTORS	Regional Park Rangers
NO. OF VIEWERS	Negligible
EXISTING VIEW	The existing view looks north over exotic grasslands. Within this area sporadic trees or grouping of trees, with the overall character of the area being open. In the distance can be seen the established mature vegetation of the shale plains woodland forming a dense backdrop and preventing distant views.

EXPECTED VISUAL IMPACT

This is in the vicinity of the northern most part of the basin, and as a result of this a portion of the exotic grassland will be lost and replaced with the basin. This will comprise of standing water with macrophytes ringing the edge of the basin at the permanent water height. From here the basin will slop up to meet the existing ground level.

Open grasslands will remain visible beyond the edge of the basin, as will the existing mature vegetation in the distance.

As a result of this it is expected that a **moderate/high** visual impact will occur.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	3	2	2	2	2.4
Visual Impact Rating	MODERATE/HIGH					

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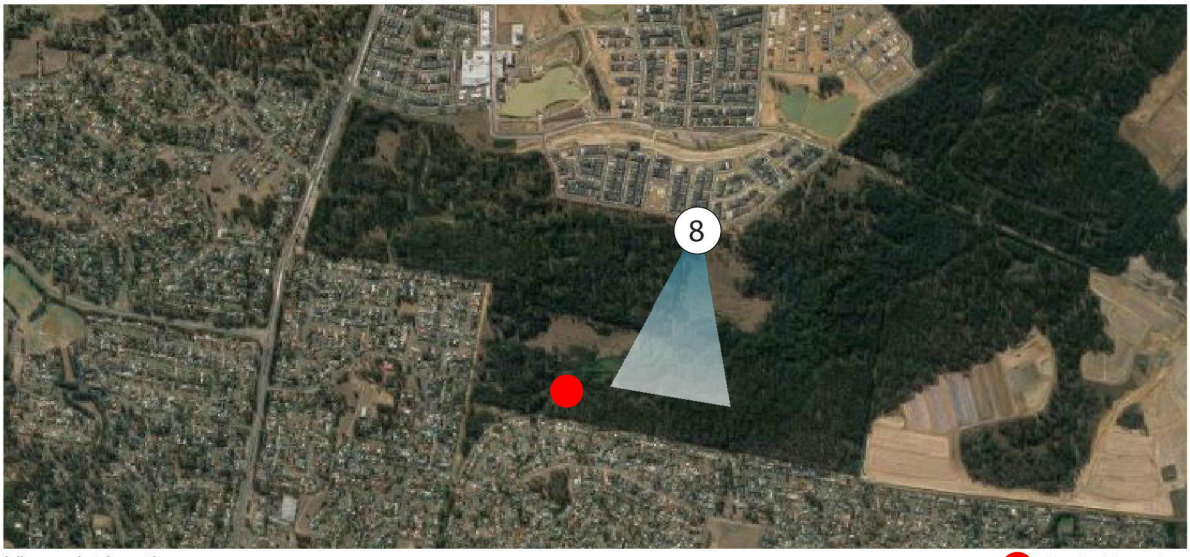
VIEWPOINT 8



Viewpoint location

Basin I Location

Viewpoint 8

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking south from the Jubilee Drive entrance
DISTANCE	520m
RECEPTORS	Regional Park Rangers
NO. OF VIEWERS	Negligible
EXISTING VIEW	The view looks south from the Jubilee Drive entrance to the site along a dirt track. To either side of the track can be seen Shale Plains Woodland consisting of mature trees of varying heights and a sparse understory and groundcover.

EXPECTED VISUAL IMPACT
Due to the established woodlands the project will be shielded from this location as well as further down the track. As a result of this it is expected that a **negligible** visual impact will result.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	2	0	0	0	1.0
Visual Impact Rating	NEGLIGIBLE					

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VIEWPOINT 9

Viewpoint location

Basin I Location

Viewpoint 9

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking east along Jubilee Drive with the site boundary to the right
DISTANCE	560m
RECEPTORS	Local residents as well as road users
NO. OF VIEWERS	Low
EXISTING VIEW	The view looks east along Jubilee Drive towards the entrance area of viewpoint 8. To the right of the view can be seen the fenced border of the Regional Park. Within the border of the Regional Park can be seen sporadic trees amongst open grassland areas before the woods become more dense. To the left of the view can be seen the developed suburban area of Jordan Springs, combining a mixture of predominantly one storey residences with the occasional two storey residence.

EXPECTED VISUAL IMPACT
Although the topography itself does not vary greatly from Jubilee Drive to the basin location, the woodlands will prevent views from both the street and the houses along Jubilee Drive. As a result of this a **negligible** visual impact is expected.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	1	2	0	0	0	0.6
Visual Impact Rating	NEGLIGIBLE					

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VIEWPOINT 10

Viewpoint location

Basin I Location

Viewpoint 10

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8.0 IDENTIFICATION OF KEY VIEWS, VISTAS AND ANALYSIS

LOCATION	Looking south from Jubilee Drive across Boronia Village Park
DISTANCE	630m
RECEPTORS	Park users
NO. OF VIEWERS	Low
EXISTING VIEW	This view looks south across Boronia Village Park towards to Regional Park. This is a neighborhood park containing a small amount of play equipment such as slides and swings, as well as open mown grass areas and seating. It is bordered to the north, east and west by residences and to the south by the regional park.

EXPECTED VISUAL IMPACT
The basin will not be visible from this location due the density of the woodland. As a result of this a **negligible** visual impact will result.

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	2	0	0	0	1.0
Visual Impact Rating	NEGLIGIBLE					

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9.0 MITIGATION RECOMMENDATIONS AND CONCLUSION

9.1 APPROACHES TO MITIGATION

There are typically six broad approaches to mitigating the visual impacts of any change to a scene that entails built form development. These are through:

- The Design Brief - typically best practice for visual management of a proposed development entails identification of significant views in planning documents and the integration of these into the Design Brief, also including any specific guidance as to how the design should respond to minimising such impacts
- Avoidance – where the visual impact of the proposal is deemed of a scale that cannot be mitigated by any of the approaches outlined below, this approach implies relocating the proposal elsewhere on the site with lesser visual impacts or not proceeding with the proposal on the site at all
- Reduction – typically this approach seeks to mitigate impacts through the reduction of some part of the proposed structure or development (ie. reduced height or omission of parts of the built structure/s)
- Alleviation – this approach entails design refinements to the proposal to mitigate visual impacts. These refinements might typically include built form articulation, choice of material and colours and/or planting design
- Offsite Compensation – where none of the above approaches will provide adequate visual impact mitigation for offsite visual receptors, this approach entails offsite works on the land from which the viewpoint is experienced (eg screening close to the viewpoint).
- Management – in this approach the mitigation response typically entails an operational or management action such as construction management.

Set out below are the relevant responses to these approaches with respect to Basin I.

RECOMMENDED MITIGATION

Out of the aforementioned mitigation techniques, **Alleviation** would appear to be the most suitable. This could be achieved primarily through the use of planting around the proposed basin site in order to provide filtered views across the basin.

As the basin will not have any height above ground the adoption of a carefully considered planting plan will help to minimise views of the basin from both close proximity as well as from more distant views.

CONSTRUCTION IMPACTS

The Project will involve a construction phase with associated additional visual impacts. The following activities are likely to occur:

- clearing of vegetation
- setting up of site compounds
- stockpiling
- earthworks
- site fencing
- increased site traffic including heavy vehicles

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9.0 MITIGATION RECOMMENDATIONS AND CONCLUSION

During the construction period, all viewpoints studied within this report are likely to have increased visual impacts. Views of site compounds, storage areas and increased site traffic (including trucks) will lead to a reduction in visual amenity.

Impacts will reduce as viewing distance and screening vegetation increase.
These visual impacts will be of a temporary nature and will reduce for all viewpoints once the project is complete.

9.2 CONCLUSION

A comprehensive landscape character and visual impact assessment of the proposed basin and of the surrounding area has been conducted.

The study has identified and evaluated the existing visual environment, key views and view types before progressing to an assessment of quantitative and qualitative criteria using best practice methodology.

Whilst it is acknowledged that the perceived visual impact of the proposal will vary from person to person, the methodology used to evaluate visual impact in this instance is informed by internationally accredited approaches and the author's 20 years of experience in the field of visual impact.

This methodology takes into consideration the local context and references both international standards and local legislation, policy and Land and Environment Court principles.

In weighing up the overall implications of the visual impacts described in this assessment, we note the following conclusions can be drawn on the basins impact to the visual amenity of the surrounding area:

- The visual catchment of the proposed basin is very limited in extent; the proposal will be visible primarily to a small number of residents on Wintercorn Row and Cobbity Ave who have properties that border onto the Regional Park and to the north of the proposed basin in the open grassland that is not accessible to the public
- Existing planting surrounding the proposed basin site will largely eliminate the view of the basin
- Visual impacts reduce with increased viewing distance from the basin site
- Moderate/High visual impacts are only recorded directly adjacent to the basin, with the ratings dropping to Low or Negligible over a relatively short amount of distance once moving away from the basin site
- The most noticeable visual impact will be the removal of some existing vegetation and its replacement with a standing body of water
- While the proposed basin alters the current configuration of the land that it will be sited on, it will not be greatly at odds with its surrounding environment, as a basin already exists to the north-west of the site.

On balance it is therefore the professional opinion of the authors of this assessment that the mostly modest scale, character and catchment of the visual impacts of this proposal are such that they would not constitute reasons for the proposed basin not to proceed on visual impact grounds.

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PART C

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Indicative Photomontage 1: Looking south-west across the basin

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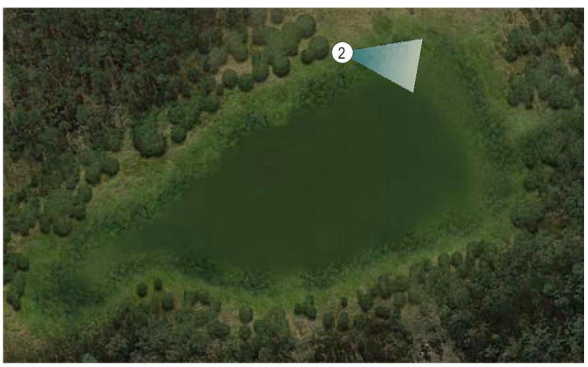

Indicative Photomontage 2: Looking east from the western side of the basin.

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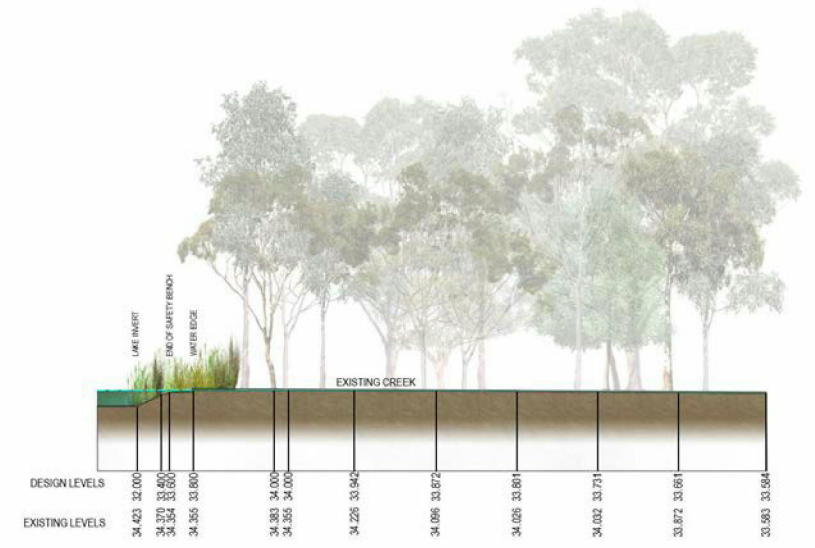
Section A



Section B

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PART D

appendices

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APPENDIX A - DETAILED METHODOLOGY

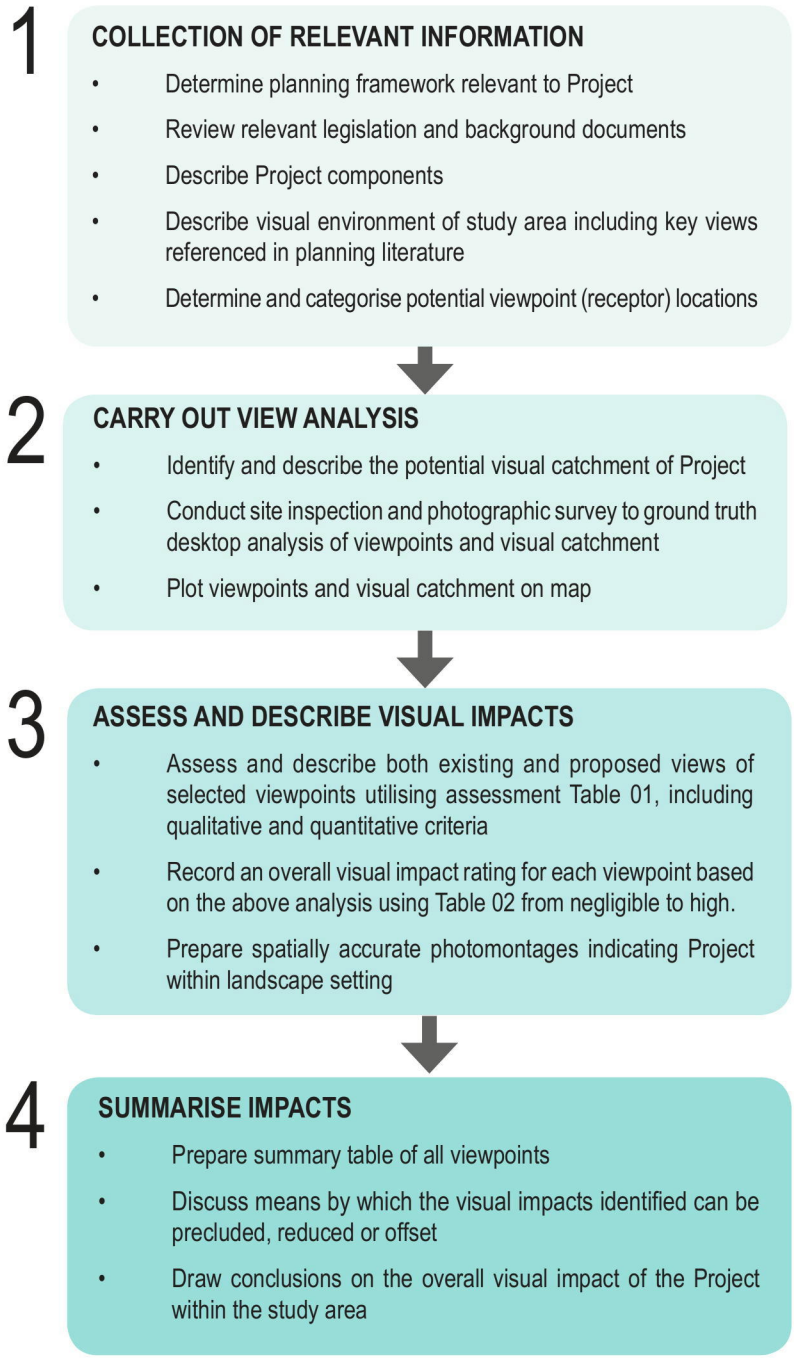

Figure 9.0 - Summary of CLOUSTON methodology

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APPENDIX A - DETAILED METHODOLOGY

METHODOLOGY

Given the subjective nature of an individual's appreciation of any given scene, Visual Impact Assessment is by its nature not an exact science and consequently methodologies for preparing VIAs vary both in Australia and overseas.

Potentially subjective assessment material and differences of opinion about how to best assess visual characteristics, qualities, degrees of alteration and viewer sensitivity often arise.

As a consequence, and as identified by the NSW Land and Environment Court, the key to a robust process is to explain clearly the criteria upon which an assessment is made:

'The outcome of a qualitative assessment will necessarily be subjective. However, although beauty is inevitably in the eye of the beholder, the framework for how an assessment is undertaken must be clearly articulated. Any qualitative assessment must set out the factors taken into account and the weight attached to them. Whilst minds may differ on outcomes of such an assessment, there should not be issues arising concerning the rigour of the process.'

VIA methodologies are often inconsistent and while various governments have generated specific methodologies, no Australian national framework exists. Within NSW, there are two guidelines prepared by the NSW State Government that are recognised as best practice:

- Guidelines for Landscape Character and Visual Impact Assessment, WIA-N04, as published by the Roads and Maritime Service (RMS)
- Appendix D of the Sydney Harbour Foreshore Waterways Area Development Control Plan (SHFWA DCP), as published by the Department of Planning and developed for marina assessment.

Internationally, the following methodologies and guidelines are broadly considered best practice:

- Guidelines for Landscape and Visual Impact Assessment, 3rd edition, as published by the Landscape Institute UK and IEMA
- Visual Assessment of Windfarms: Best Practice as published by Scottish Natural Heritage.

In the case of the former guidelines these have been widely adopted through Europe in seeking to meet the EU Directive 2011/92/EU concerning preparation of Environmental Impact Assessment (EIA).

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APPENDIX A - DETAILED METHODOLOGY

Assessment methodology

CLOUSTON Associates has developed a best practice methodology based on these internationally accredited approaches and 20 years of experience in the field of visual assessment. There are several critical dimensions demonstrated through this assessment and evaluation:

- ensuring all receptors (viewers) have been adequately identified, even at distance, with emphasis on public domain views
- comprehensive evaluation of context to determine visual catchment of site from these areas
- being clear on and separately defining quantitative impacts (distance, magnitude, duration etc) as against qualitative impacts (viewer type and context of view)
- providing a clear rationale for how impacts are compared and contrasted
- ensuring photomontages include views from highest potential impact locations, identified from analysis above
- being clear on the differing forms of mitigation options, namely avoidance, amelioration (eg design), mitigation (eg screening) and compensation (on or offsite).

The methodology employed for this assessment is described in Figure XX.

Rating System

The overall visual impact rating of the Project on any given viewpoint/visual receptor is based on themes of magnitude and sensitivity, recorded using a six band scoring system from negligible to high - refer Table 02.

Sensitivity

Each visual receptor type has an inherent and varied sensitivity to change in the visual scene based on the personal context in which their view is being experienced (ie. at home, on the street, in a a park etc.) This sensitivity has a direct bearing on the perception of visual impact experienced by the receptor and qualifies the quantitative impacts.

Magnitude

A measure of the magnitude of the visual effects of the development within the landscape. A series of quantitative assessments are studied, including distance from development, quantum of view, period of view and scale of change. Table 01 describes the ratings assigned to these quantitative assessments and the numerical score allocated to each impact band.

Overall Rating

The scores for each assessment factor are totalled and an average taken, determining the overall visual impact rating on a six band scale - refer Table 03.

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	FACTOR		NEGLIGIBLE 0 POINT	LOW IMPACT 1 POINT	MODERATE IMPACT 2 POINTS	HIGH IMPACT 3 POINTS
QUALITATIVE	Viewer Sensitivity	Each visual receptor type has an inherent and varied sensitivity to change in the visual scene based on the personal context in which their view is being experienced. This sensitivity has a direct bearing on the perception of visual impact experienced by the receptor and qualifies the quantitative impacts. Number of viewers also has a bearing on sensitivity. Viewpoints have a varied number of potential receivers depending on whether the viewpoint is public or private, the popularity of the viewing location and its ease of accessibility. Views from public reserves and open space are often given the highest weighting due to the increased number of viewers affected.	Vacant lot, uninhabited building, car park.	Minor roads, service providers.	Residential properties with limited views, commercial properties, scenic public roads (eg official tourist routes).	Public open space, public reserves, living areas or gardens/ balconies of residential properties with direct views of Project.
QUANTITATIVE	Quantum of View	The quantum of view relates to the openness of the view and the receptor's angle of view to the scene. A development located in the direct line of sight has a higher impact than if it were located obliquely at the edge of the view. Whether the view of the Project is filtered by vegetation or built form also affects the impact, as does the nature of the view (panoramic, restricted etc.). A small element within a panoramic view has less impact than the same element within a restricted or narrow view.	Only an insignificant part of the Project is discernible.	An oblique, highly filtered or largely obscured view of the Project or a view where the Project occupies a very small section of the view frame.	A direct view of the Project or its presence in a broader view where the Project occupies a moderate proportion of the view frame.	A direct view of the Project or its presence (sometimes in a very narrow or highly framed view), where the Project occupies the greater proportion of the view frame.
	Distance of View	The effect the Project has on the view relating to the distance between the Project and the visual receptor. The distances are from the approximate boundary of the Project site.	Over 3000m	Viewing distance of between 1000-3000m.	Viewing distance between 100m and 1000m.	Viewing distance between 0 and 100m.
	Period of View	The length of time the visual receptor is exposed to the view. The duration of view affects the impact of the Project on the viewer - the longer the exposure the more detailed the impression of the proposed change in terms of visual impact.	Less than 1 second	1 to 10 seconds: often from a road or walking past.	1 to 5 minutes: usually from a road/ driveway entrance, walking past.	Significant part of the day: usually residential property.
	Scale of Change	Scale of change is a quantitative assessment of the change in compositional elements of the view. If the proposed development is largely similar in nature and scale to that of existing elements in the vicinity, the scale of change is low. If the development radically changes the nature or composition of the elements in the view, the scale of change is high. Distance from the development would accentuate or moderate the scale and variety of visible elements in the overall view and hence influence this rating.	Project barely discernible	Elements and composition of the view would remain largely unaltered.	Elements within the view would be at odds with existing features in the landscape	Elements within the view would greatly dominate existing features in the landscape

Table 01 - Magnitude ratings

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APPENDIX A - DETAILED METHODOLOGY

0 - 1	Negligible	Only an insignificant part of the Project is discernible.
1 - 1.3	Low	The Project constitutes only a minor component, which might be missed by the casual observer or receptor. Awareness of the proposal would not have a marked effect on visual amenity.
1.4 - 1.7	Moderate/low	Whilst discernible, the Project does not dominate the visual scene and has only slight impacts on visual character.
1.8 - 2.3	Moderate	The Project may form a visible and recognisable new element within the overall scene that affects and changes its overall character.
2.4 - 2.6	Moderate/High	The Project is a discernible feature of the scene leading to moderately high impacts on visual character.
2.7 - 3.0	High	The Project becomes the dominant feature of the scene to which other elements become subordinate, and significantly affects and changes the visual character.

Table 02- Rating system.

Common Terms
The following provides a brief explanation of the terms used within this report:

View: the sight or prospect of some landscape or scene.

View Corridor: a line of sight of an observer looking toward an object.

View Frame: the extent of the observable world that can be seen by an observer from a fixed location, moving their head from side to side.

Visual Accessibility: the extent to which an area or object is visible to an observer.

Visual Amenity: the measure of the visual quality of a site or area experienced by residents, workers or visitors. It is the collective affect of the visual components which make a site or an area pleasant to be in.

Viewshed/Visual Catchment: the area which the Project is visible to the human eye from a fixed vantage point.

Receptor/Receiver: the public or community at large who would have views of the Project site either by virtue of where they live and/or work or from transport routes, paths, lookouts and the like.

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APPENDIX A - DETAILED METHODOLOGY

EXAMPLE

LOCATION	Newham Drive
DISTANCE	50 m
RECEPTORS	Road Users
NO. OF VIEWERS	Low
EXISTING VIEW	As can be seen...

Viewpoint location
Distance to Project site boundary
Description of viewers
Number of viewers
Description of current view

EXPECTED VISUAL IMPACT
The Project will be..

Description of expected view

RECEPTOR TYPE	RECEPTOR SENSITIVITY	MAGNITUDE				SUMMARY OF RATINGS
		DISTANCE	QUANTUM OF VIEW	PERIOD OF VIEW	SCALE OF CHANGE	
Public	3	2	1	2	1	1.8
Visual Impact Rating	LOW/MODERATE					

Assessment matrix table
Assessment criteria average
Overall visual impact rating

Table 03 - Example assessment

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Document Set ID: 8944318
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