



South Cell at Woy Woy Waste Management Facility

Technical Report 8 – Landscape Character & Visual Impact Assessment

Central Coast Council

06 December 2023

→ **The Power of Commitment**



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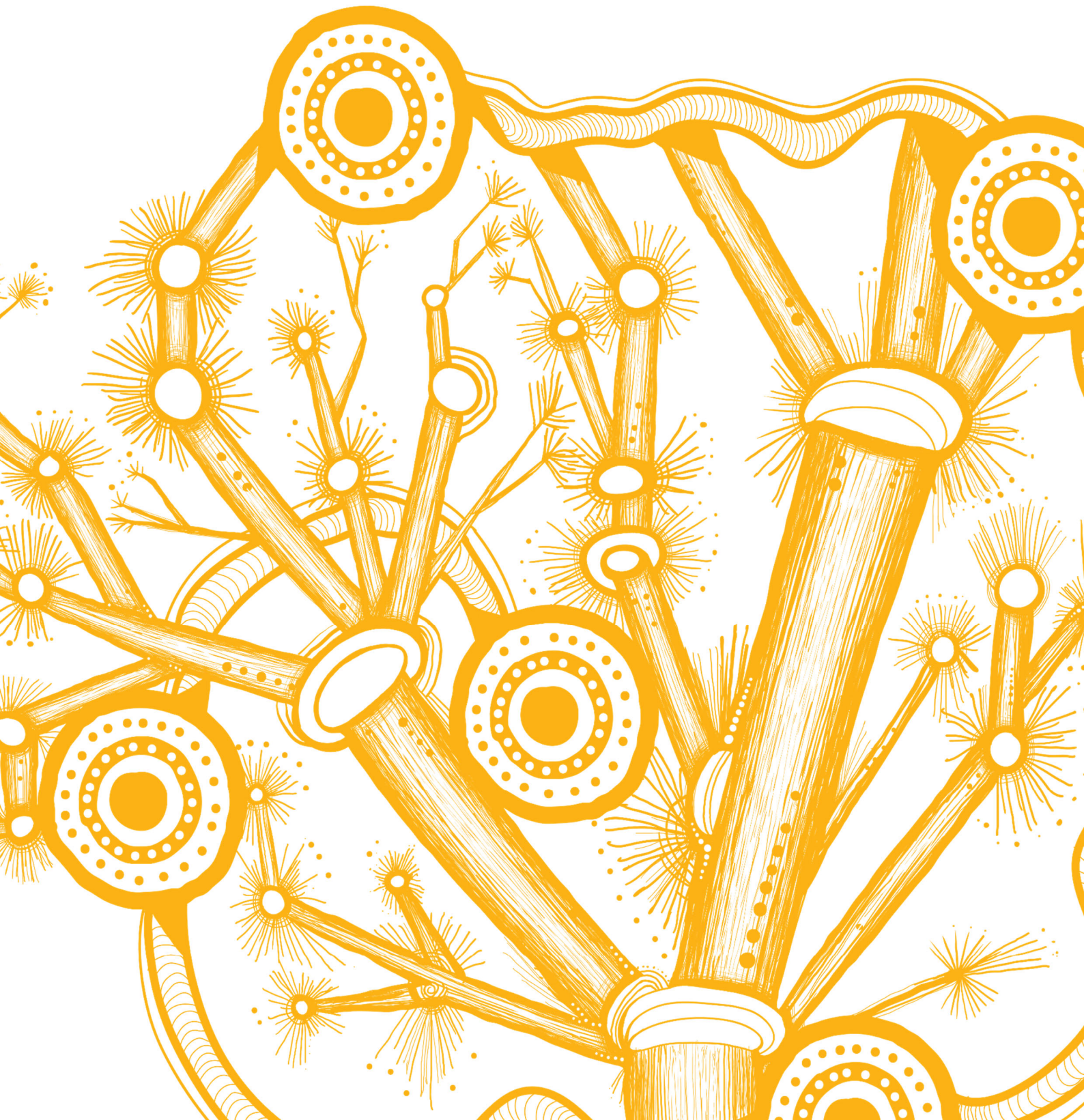
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Acknowledgement of Country

GHD acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the land, water and sky throughout Australia on which we do business. We recognise their strength, diversity, resilience and deep connections to Country. We pay our respects to Elders of the past, present and future, as they hold the memories, knowledges and spirit of Australia. GHD is committed to learning from Aboriginal and Torres Strait Islander peoples in the work we do.



Executive summary

The project

Central Coast Council (Council) is proposing to develop a new 'South Cell' at the existing Woy Woy Waste Management Facility (WMF) ('the project'). The project would optimise the remaining landfill air space at the site and ensure that the WMF remains open for as long as possible to accept putrescible waste from the Local Government Area (LGA). The construction of the proposed new South Cell is required to be completed and able to receive waste when the current tipping area reaches capacity in mid to late 2024.

The project is deemed regionally significant development and is subject to approval by the Hunter and Central Coast Regional Planning Panel under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report

This report has been prepared on behalf of Council to support the environmental impact statement (EIS) for the project and responds to the Secretary's Environmental Assessment Requirements (SEARs) for landscape character and visual impacts.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.5 and the assumptions and qualifications contained throughout the report.

Existing environment

The project site is located within an area which is defined by a multitude of hills and valleys. The surrounding topography is typically grading steeply towards the WMF on the western, eastern and southern sides, which situates the project site within a narrow valley running toward the north. The local topography therefore forms physical and visual barriers which surround the WMF and project site, blocking both distant and close views towards the site from the surrounding areas.

The WMF is surrounded to the west, east, north and south by thick native bushland of the Brisbane Water National Park. The bushland acts as a natural screening barrier, which limits any visibility towards the site from surrounding locations, even within elevated areas in close proximity to the project site.

Landscape character impact assessment

The project would be indiscernible and therefore have no impact upon the existing landscape character zones. The project site is located within an area which is defined by a multitude of hills and valleys covered with dense natural bushland. The surrounding topography is typically grading steeply towards the project site on the western, eastern and southern sides, which situates the site within a narrow valley blocking both distant and close views of the site.

Overall, the impacts on the landscape character of the project have been assessed as negligible.

Visual impact assessment

The local topography and bushland forms physical and visual barriers which block both distant and close views towards the site from the surrounding areas.

Where the proposed development would be visible (from the Great North Walk viewpoint), the existing landscape is already highly modified, with the project site located within the existing footprint of the WMF.

Overall, the impacts on the visual amenity of the project have been assessed as negligible.

Mitigation measures

To assist in minimising any landscape character and visual impacts of the project, the following mitigation measures are proposed.

In the event that any outdoor lighting would be required during construction or operational activities associated with the project, lighting would be required to be provided in accordance with AS 4282 – *Control of the obtrusive*

effects of outdoor lighting. This Standard specifically refers to the potentially adverse effects of outdoor lighting on nearby residents, whereby design of outdoor lighting would be required to control any obtrusive effects to an acceptable degree.

Contents

1.	Introduction	1
1.1	Overview	1
1.2	The project	1
1.2.1	Location	1
1.2.2	Key features	2
1.2.3	Construction overview	2
1.3	Secretary's Environmental Assessment Requirements	2
1.4	Purpose of this report	3
1.5	Scope and limitations	3
1.5.1	Scope	3
1.5.2	Limitations	3
1.6	Assumptions	4
2.	Methodology	5
2.1	Landscape character impact assessment	5
2.2	Visual impact assessment	6
2.3	Evaluating impact	7
3.	Context analysis	8
3.1	Project site location	8
3.2	Surrounding land uses	10
3.3	Topography, landform & vegetation	12
3.4	Zoning	15
3.5	WMF site history	17
4.	Landscape character analysis	18
4.1	Landscape character zones	18
4.2	Landscape character impact assessment	20
4.2.1	LCZ 1 – Waterway	20
4.2.2	LCZ 2 – Residential	22
4.2.3	LCZ 3 – Infrastructure & Industrial	24
4.2.4	LCZ 4 – Nature reserve & Bushland	26
5.	Visual impact assessment	28
5.1	Key viewpoints	28
5.2	Visual impact assessment	30
5.2.1	Viewpoint 1 – Umina Beach residential area	30
5.2.2	Viewpoint 2 – Woy Woy Road Horsfield Bay	31
5.2.3	Viewpoint 3 – WMF entry Nagari Road	31
5.2.4	Viewpoint 4 – Great North Walk	32
6.	Impact assessment summary	35
7.	Mitigation measures	36
8.	References	37

Table index

Table 1.1	SEARs relevant to this assessment	2
Table 2.1	Sensitivity ranking	6
Table 2.2	Magnitude ranking	6
Table 2.3	Viewpoint sensitivity ranking	7
Table 2.4	Magnitude of change ranking	7
Table 2.5	Impact rating matrix	7
Table 4.1	Landscape character (LCZ 1)	20
Table 4.2	Measure of impact (LCZ 1)	20
Table 4.3	Landscape character (LCZ 2)	22
Table 4.4	Measurement of impact (LCZ 2)	22
Table 4.5	Landscape character (LCZ 3)	24
Table 4.6	Measurement of impact (LCZ 3)	24
Table 4.7	Landscape character (LCZ 4)	26
Table 4.8	Measurement of impact (LCZ 4)	26
Table 5.1	Viewpoint 1 Sensitivity	30
Table 5.2	Viewpoint 1 Impact	30
Table 5.3	Viewpoint 2 Sensitivity	31
Table 5.4	Viewpoint 2 Impact	31
Table 5.5	Viewpoint 3 Sensitivity	32
Table 5.6	Viewpoint 3 Impact	32
Table 5.7	Viewpoint 4 Sensitivity	33
Table 5.8	Viewpoint 4 Impact	34
Table 6.1	Landscape character impact summary	35
Table 6.2	Visual impact summary	35

Figure index

Figure 3.1	Project site location	9
Figure 3.2	Project site location and context	11
Figure 3.3	Orthographic aerial view of the project site	12
Figure 3.4	Elevation map and profiles	14
Figure 3.5	Landuse zoning	16
Figure 4.1	Landscape character zone map	19
Figure 4.2	LCZ 1 – Waterway – Horsfield Bay from Woy Woy Road	21
Figure 4.3	LCZ 1 – Waterway – Horsfield Bay looking south towards Woy Woy	21
Figure 4.4	LCZ 2 - Residential – flat terrain areas of Umina Beach	23
Figure 4.5	LCZ 2 - Residential – elevated bushland areas of Umina Beach	23
Figure 4.6	LCZ 3 – Infrastructure & Industry – Entry to the WMF Nagari Road	25
Figure 4.7	LCZ 3 – Infrastructure & Industry – Woy Woy self storage facility Nagari Road	25
Figure 4.8	LCZ 4 – Nature reserve & Bushland – Van Dahls firetrail on the Great North Walk	27
Figure 4.9	LCZ 4 – Nature reserve & Bushland – Van Dahls firetrail on the Great North Walk	27
Figure 5.1	Key viewpoints map	29

Figure 5.2	Viewpoint 1 – Umina Beach residential area	30
Figure 5.3	Viewpoint 2 – Woy Woy Road Horsfield Bay	31
Figure 5.4	Viewpoint 3 – WMF entry Nagari Road	32
Figure 5.5	Viewpoint 4 – Great North Walk	33
Figure 5.6	Viewpoint 4 – Great North Walk – Post Development Final Landform	33

Abbreviations

Term/Acronym	Definition
AHD	Australian Height Datum
Council	Central Coast Council
DA	Development application
EIS	Environmental Impact Statement
EPA	Environmental Protection Authority
EP&A Act	<i>Environment Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
GHD	GHD Pty Ltd
ha	hectares
km	kilometres
LEP	local environmental plan
LGA	local government area
LCZ	Landscape Character Zone
LCVIA	Landscape Character and Visual Impact Assessment
m	metres
mm	millimetres
m ²	metres squared
m ³	cubic metres
NSW	New South Wales
Central Coast LEP	<i>Central Coast Local Environment Plan 2022</i>
Project site	The project site encompasses the area that is subject to assessment as part of the EIS
Precincts - Regional SEPP	<i>State Environmental Planning Policy (Precincts - Regional) 2021</i>
RL	Reduced level
RSD	Regionally significant development
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State Significant Development
SSI	State Significant Infrastructure
WMF	Waste Management Facility

1. Introduction

1.1 Overview

Central Coast Council (Council) owns and operates the existing Woy Woy Waste Management Facility (WMF) located on Nagari Road, Woy Woy. The WMF is the primary waste disposal facility for the southern Central Coast community and has operated since 1974. The WMF operates in accordance with Environment Protection Licence (EPL) No. 6053. The EPL permits resource recovery, waste disposal (application to land) and waste storage and authorises landfilling of up to 100,000 tonnes per year of putrescible and non-putrescible general solid waste, tyres and asbestos.

Key components of the existing WMF include:

- Weighbridge and office/education centre
- Current active landfill cell and tipping area
- Transfer station
- Garden organics (GO) facility
- Excavation and stockpiling area
- Stormwater, leachate and gas management infrastructure

In 2020 Council commissioned the *Woy Woy Waste Management Facility – Development Strategy* (SMEC, 2020) (the 'Development Strategy') to guide the future use and development of the WMF. The Development Strategy identified the existing excavation and stockpile area at the southern end of the WMF site as the location for the next waste cell (known as the new 'South Cell').

Council is now proposing to develop the new South Cell to optimise the remaining landfill air space at the WMF and ensure that the WMF remains open for as long as possible to accept putrescible waste from the Local Government Area (LGA).

The construction of the proposed new South Cell is required to be completed and able to receive waste when the current tipping area reaches capacity in mid to late 2024. Construction would commence following receipt of planning approval and be completed in two stages. Each stage is expected to take four to six months.

The project is deemed regionally significant development (RSD) and is subject to approval by the Hunter and Central Coast Regional Planning Panel under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental impact statement (EIS) for the project. The EIS has been prepared to support the application for approval of the project and address the environmental assessment requirements of the Secretary of the NSW Department of Planning and Environment (the SEARs) dated 24 August 2023.

1.2 The project

1.2.1 Location

The project would be located within the existing Woy Woy WMF. The WMF is about 10 kilometres south of Gosford across Brisbane Water, within the Central Coast LGA (refer Figure 3.1).

The WMF site consists of:

- Lot 110 DP 755251
- Lot 1 DP 126813
- Lot 1 DP 654885

The project site is about five hectares in area and located on the southern portion of the WMF. It comprises part of Lot 110 DP 755251.

1.2.2 Key features

Key features of the project include:

- Cell construction including excavation and earthworks to form the base of the cell and lining installation
- Development of associated access, stormwater and leachate management infrastructure
- Continuation of current landfilling operations in the new cell location
- Capping, closure and rehabilitation

The project is expected to provide up to approximately an additional 920,000 cubic metres of airspace or 7.7 years of filling capacity (based on current filling rates). It is also expected to generate additional cell construction and cover materials for the ongoing landfilling operations.

No change is proposed to the existing approved annual disposal capacity or waste types as per EPL 6053.

The other existing operations (weighbridge and office/education centre, transfer station, GO facility etc) at the WMF would continue to be operated in conjunction with the project.

Further information on the project is provided in the EIS.

The project site layout is shown in Figure 3.1.

1.2.3 Construction overview

Construction of the project would be subject to the methods proposed by the construction contractor, but is expected to involve the following:

- Site establishment: establishment of site environmental controls including sediment and erosion controls
- Earthworks: excavation and grading along the base of the landfill cell in accordance with the requirements of the *Environmental Guidelines: Solid waste landfills* (NSW EPA, 2016)
- Lining and gravel placement: installation of basal, batter and sidewall liners systems
- Development of ancillary infrastructure including access roads, leachate, gas and water management infrastructure

Construction is expected to take about three months to complete.

The construction activities would be carried out during the following hours, consistent with the recommended standard hours of the *Interim Construction Noise Guideline* (NSW DECC, 2009):

- 7 am to 6 pm Monday to Friday
- 8 am to 1 pm Saturdays
- No work on Sundays or Public Holidays

The construction workforce is expected to range between five and ten workers per day.

Further information on the construction of the project is provided in the EIS.

1.3 Secretary's Environmental Assessment Requirements

The specific SEARs addressed in this report are summarised in Table 1.1.

Table 1.1 SEARs relevant to this assessment

Requirement	Where addressed in this report
Visual – including an impact assessment at private receptors and public vantage points.	Section 5 Visual impact assessment

1.4 Purpose of this report

The purpose of this report is to assess both the potential landscape character impacts (impact on the area's built, natural and cultural character or sense of place) and the visual impacts associated with the project (impact on views in and around the area). The report:

- Addresses the SEARs listed in Table 1.1
- Assesses the impacts from construction and operation of the project
- Recommends measures to mitigate and manage the potential impacts identified

The specific SEARs addressed in this report are summarised in Table 1.1.

1.5 Scope and limitations

1.5.1 Scope

This LCVIA report includes a landscape character and visual impact assessment prepared with reference to EIA-N04 Environmental Impact Assessment Practice Note – Landscape character and visual impact assessment (Transport for NSW, 2020). This includes:

- **Site analysis and identification of landscape character zones** - Based on desktop and field analysis, the natural environment is identified and described as well as the human intervention and shaping of that environment, including settlements and the interaction between place and community.
- **Assessment of landscape character impacts** - The impact of the development and associated infrastructure on each zone is identified and assessed. Impacts are based on the sensitivity of the landscape character zone to change and the magnitude of the development within that landscape.
- **Assessment of the visibility of the Project** - Based on desktop and site analysis, the extent of the development that is visible is defined.
- **Identification of key viewpoints** - Based on desktop and field analysis, a schedule of key viewpoints is developed. The final list of receptors does not represent the entire number of receptors likely to be visually impacted by the Project, but rather gives an indication of the typical range of views that receptors would have.
- **Assessment of visual impacts** - The unmitigated impact of the development on each representative viewpoint is assessed. Impacts are based on a composite of the sensitivity of the view and magnitude of the development in that view, before any mitigation strategy has been put in place.
- **Development of mitigation strategy** - Principles and strategies are developed to mitigate landscape character and visual impacts in the ongoing development of the design.

1.5.2 Limitations

This report: has been prepared by GHD for Central Coast Council and may only be used and relied on by Central Coast Council for the purpose agreed between GHD and Central Coast Council as set out in Section 1.4 of this report.

GHD otherwise disclaims responsibility to any person other than Central Coast Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.6 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.6 Assumptions

Visual impact analysis and visual representations of the project have been undertaken to represent the final landform at the project site. Analysis would not be undertaken for specific stages during the works program and does not include any potential future / post project redevelopment works.

2. Methodology

Landscape Character and Visual Impact Assessment (LCVIA) is by its nature not an exact science and consequently is subject to varied methodologies 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.

As such, the LCVIA has been undertaken in accordance with methodology provided in the NSW Roads and Maritime Services as set out in the *Environmental Impact Assessment Practice Note – Guideline for landscape character and visual impact assessment* (RMS 2018) as it provides a robust process and clearly defined criteria on which to assess the potential impacts of the project and has consistency been accepted by DPE as a valid methodology for such assessments.

Key components of the LCVIA methodology include:

- **Site analysis and identification of landscape character zones** - Based on desktop and field analysis, the natural environment is identified and described as well as the human intervention and shaping of that environment, including settlements and the interaction between place and community.
- **Assessment of landscape character impacts** - The impact of the development and associated infrastructure on each zone is identified and assessed. Impacts are based on the sensitivity of the landscape character zone to change and the magnitude of the development within that landscape.
- **Assessment of the visibility of the Project** - Based on desktop and site analysis, the extent of the development that is visible is defined.
- **Identification of key viewpoints** - Based on desktop and field analysis, a schedule of key viewpoints is developed. The final list of receptors does not represent the entire number of receptors likely to be visually impacted by the Project, but rather gives an indication of the typical range of views that receptors would have.
- **Assessment of visual impacts** - The unmitigated impact of the development on each representative viewpoint is assessed. Impacts are based on a composite of the sensitivity of the view and magnitude of the development in that view, before any mitigation strategy has been put in place.
- **Development of mitigation strategy** - Principles and strategies are developed to mitigate landscape character and visual impacts in the ongoing development of the design.

2.1 Landscape character impact assessment

For this assessment, it is GHD's interpretation of the landscape character values and attributes that determine the rankings for the landscape character impact assessment, not an interpretation of the values or perceptions of individuals or the community.

Sensitivity and magnitude provide measures to assess impacts from the project on the landscape character. The sensitivity and magnitude for landscape character are as follows:

- **Sensitivity:** refers to how sensitive the character of the setting is to the proposed change and its capacity to absorb the change.
- **Magnitude:** refers to the scale, form, and character of a project.

A series of landscape character zones (LCZ) are identified, having a distinct character resulting from a combination of urban and landscape features that include landform, built form, vegetation, and land use.

The rankings outlined in Table 2.1 and Table 2.2 below, have been used to determine the sensitivity and magnitude of the project on each LCZ.

Table 2.1 *Sensitivity ranking*

Ranking	Description
High	Pristine landscape with regionally important landscape heritage or biodiversity features. Predominantly intact and very good condition landscape with distinctive character and strong sense of place.
Moderate	Locally important but undesignated landscape heritage or biodiversity features. Land use retains some of the original/intrinsic character but also reflects modern changes. Moderate condition landscape but could have some erosion or loss. Moderate level of scenic beauty.
Low	Undesignated landscape heritage or biodiversity features. Land use retains little original or intrinsic value with strong modern trends. Moderately settled with medium level of built form. Limited representation of landscape character type. Low scenic beauty.
Negligible	Undesignated landscape heritage or biodiversity features. Densely settled with some noticeable erosion/loss. Few/poor/negative perceptual and aesthetic qualities and poor representation of landscape character type.
None	No defining features or contribution to local character. Land use retains no original/intrinsic character and modern trends are widespread. Very densely settled with landscapes of very low quality and in degraded condition/derelict. Widespread erosion or loss. No sense of remoteness.

Table 2.2 *Magnitude ranking*

Ranking	Description
High	Substantial or total loss of key elements/features/characteristics of the landscape character and/or introduction of elements that are considered to be totally uncharacteristic.
Moderate	Partial loss of/or alteration to one or more key elements/features/characteristics of the landscape character and/or introduction of elements that may be prominent but not considered to be substantially uncharacteristic.
Low	Minor loss of/or alteration to one or more key elements/features/characteristics of the landscape character (with recovery expected in the short term 0-4 years) and/or introduction of elements that are consistent with the existing character.
Negligible	Very minor loss or alteration to one or more key elements/features/characteristics of the landscape character and/or introduction of elements that are consistent with the existing character.
None	No part of the project is discernible.

2.2 Visual impact assessment

The levels of potential visual impact have been assessed through consideration of the combination of magnitude of change within a viewshed and viewpoint sensitivity.

The magnitude of visual change is influenced by the level of visibility of the project resulting from the combination of the physical scale of the project, how distant it is and the contrast it presents to the existing condition.

Viewpoint sensitivity refers to the qualities of the view, the number and type of receivers, viewer distance and typical duration the view is able to be perceived. For example, people driving on a busy road and/or at high speeds are likely to be less sensitive to a change in the environment since they are focused on changes in traffic conditions and driving, compared to someone who is enjoying a recreational experience or someone who is viewing the scene from their living room.

The rankings outlined in Table 2.3 and Table 2.4 below, have been used to determine the viewpoint sensitivity and the magnitude of change from each viewpoint.

Table 2.3 Viewpoint sensitivity ranking

Ranking	Description				
	View Duration	Viewer Numbers	Viewer Type	Viewer Distance	View Sensitivity
High	Long	High	Resident	Short <150 m	Pristine
Moderate	Moderate	Moderate	Pedestrian	Medium 150 m to 600 m	Minimally Modified
Low	Short	Low	Cyclist	Long 600 m to 1km	Moderately Modified
Negligible	Glimpse	Negligible	Motorist	Distant >1km	Significantly Modified

Table 2.4 Magnitude of change ranking

Ranking	Description
High	Substantial to total loss of key elements/features/characteristics of the existing visual character and/or introduction of elements considered to be totally uncharacteristic of the existing character.
Moderate	Partial loss of/or alteration to one or more key elements/features/characteristics of the existing visual character and/or introduction of elements that may be prominent but not considered to be substantially uncharacteristic of the existing landscape character.
Low	Minor loss of/or alteration to one or more key elements/features/characteristics of the existing visual character and/or introduction of elements that are consistent with the existing landscape character.
Negligible	Very minor loss or alteration to one of more key elements/features/characteristics of the existing visual character and/or introduction of elements that are consistent with the visual character to the existing landscape character.

2.3 Evaluating impact

The combination of sensitivity and magnitude provides the rating of the landscape character and visual impacts of the project, as set out in the *Environmental Impact Assessment Practice Note – Guideline for landscape character and visual impact assessment* (RMS 2018) (refer Table 2.5).

Table 2.5 Impact rating matrix

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High	Moderate - High	Moderate	Negligible
	Moderate	Moderate - High	Moderate	Moderate - Low	Negligible
	Low	Moderate	Moderate - Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

3. Context analysis

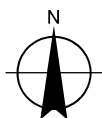
3.1 Project site location

The project site is approximately 5 hectares in area, located on the southern portion of the existing Woy Woy WMF. The WMF is located on eastern edge of Brisbane Water National Park, approximately 1 km west of the township of Umina Beach, approximately 10 km south of Gosford, within the Central Coast LGA (refer Figure 3.1 below).



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Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Central Coast Council
South Cell at Woy Woy WMF
Landscape Character & Visual Impact Assessment

Project No. **12595244**
Revision No. **0**
Date **7/12/2023**

Site location

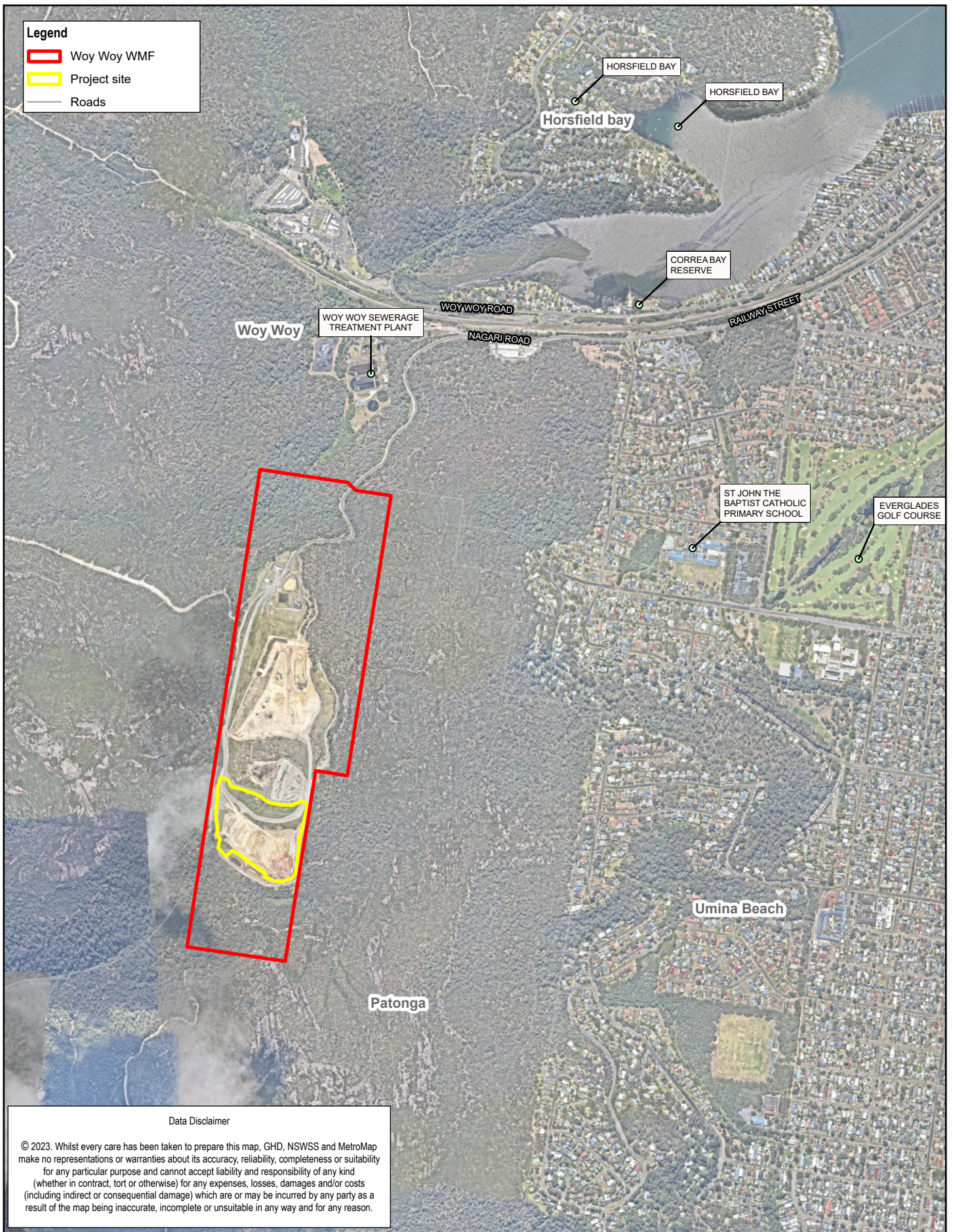
FIGURE 3.1

3.2 Surrounding land uses

Within the locality are the residential suburbs of Umina Beach, Horsfield Bay and Woy Woy, with the nearest residential area located approximately 1 km to the east on The Citadel, Umina Beach. Natural ridgelines and dense vegetation provide both a physical and visual barrier between the project site and the residential areas to the east (refer Figure 3.2 below).

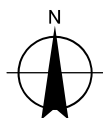
Land use to the south and west of the project site is dominated by the vast expanse of Brisbane Waters National Park, featuring dense bushland and a multitude of valleys and peaks, including Mount Wondabyne. Within the national park, immediately to the west to the project site is a section of the Great North Walk, which follows the site boundary fence for approximately 200 m. The Great North Walk is a 250 km bushwalking track linking the Sydney CBD with the Hunter Valley and Newcastle. The track passes through a number of national parks, including Brisbane Water National Park (for 34 km).

To the north of the project site is the Main Northern Railway Line, Woy Woy Road and the Woy Woy Sewerage Treatment Plant (STP).



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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Central Coast Council
South Cell at Woy Woy WMF
Landscape Character & Visual Impact Assessment

Project No. 12595244
Revision No. 0
Date 7/12/2023

Site location and context

FIGURE 3.2

To the immediate north of the project site is the existing WMF. Entry to the WMF is from the north via Nagari Road. All customers enter and exit the WMF via weighbridges and a gatehouse. An office/waste information room, a carpark and a landfill gas generation unit and flare are located to the south of the gatehouse.

The main areas for waste sorting and disposal are listed below and shown on Figure 3.3 below.

- **Current active tipping area:** Council's domestic waste contractor and other large operators or those with specialised wastes drop waste directly at the active tipping area.
- **Transfer station:** A transfer bay is located on a completed section of the landfill. The general public and smaller commercial operators drop off waste and recycling to the transfer bay. Dry waste is then sorted to remove scrap metal and transferred to alternative disposal facilities. Recyclable materials are stored in this area until they are collected by the various contractors for further separation and/or recycling off-site. Recyclable materials include concrete, brick and tiles, scrap metal, untreated timber, comingled recyclables, batteries, e-waste, mattresses, motor oil, gas bottles and fluorescent globes.
- **GO facility:** The GO facility is located adjacent to the transfer bay. Here GO material is received, temporarily stored and then transferred off-site again. No processing of GO occurs.
- **Excavation and stockpile area:** South of the transfer station and GO facility is the excavation and stockpile area. The excavated material is used for building landfill cell walls and covering the waste.

The excavation and stockpile area was previously proposed for an Alternative Waste Treatment (AWT) facility (URS, 2007) however, this area is now proposed to be used for the new South Cell. All other areas of the WMF would continue to operate as they currently do in conjunction with the project.



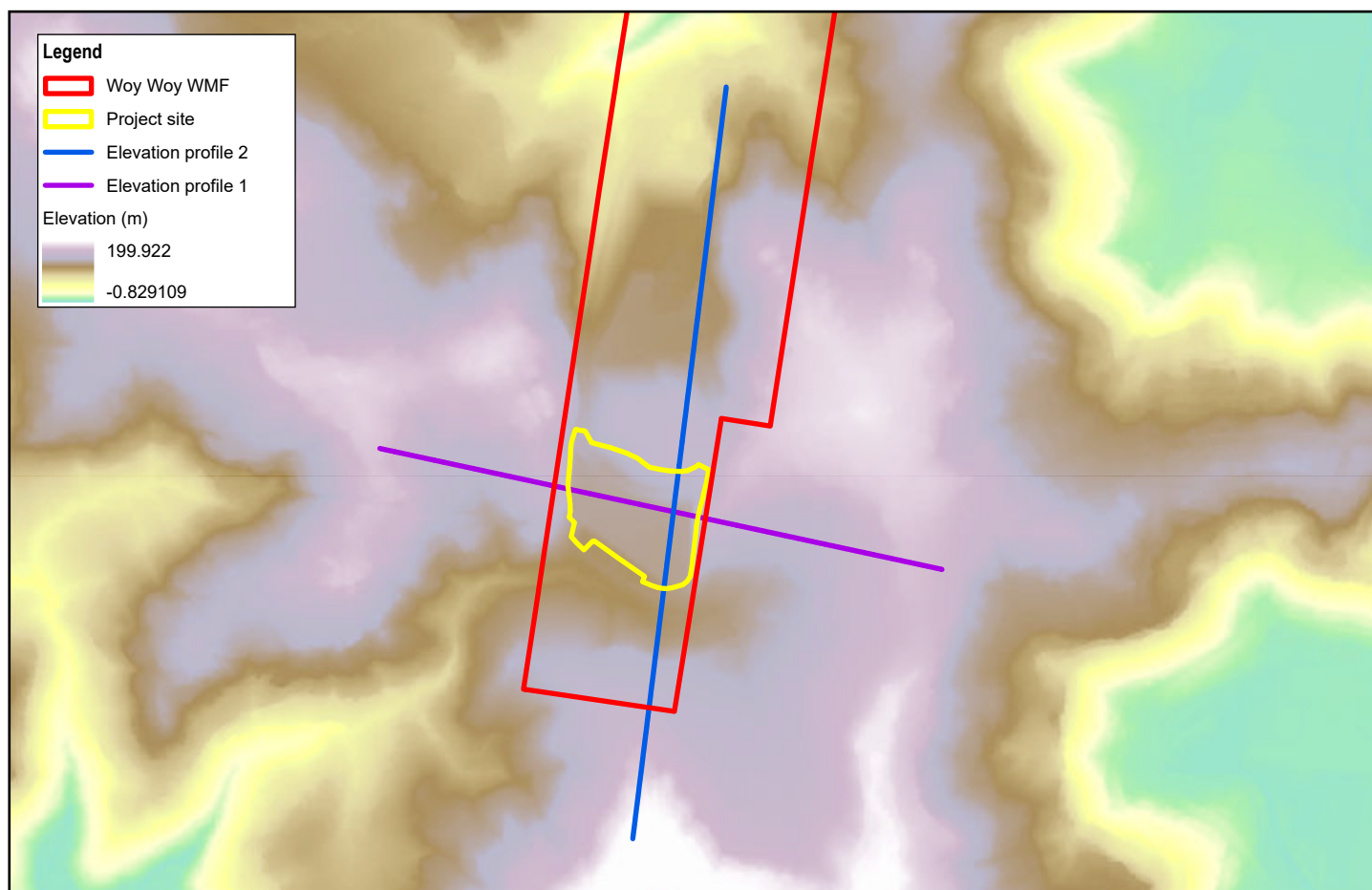
Figure 3.3 Orthographic aerial view of the project site

3.3 Topography, landform & vegetation

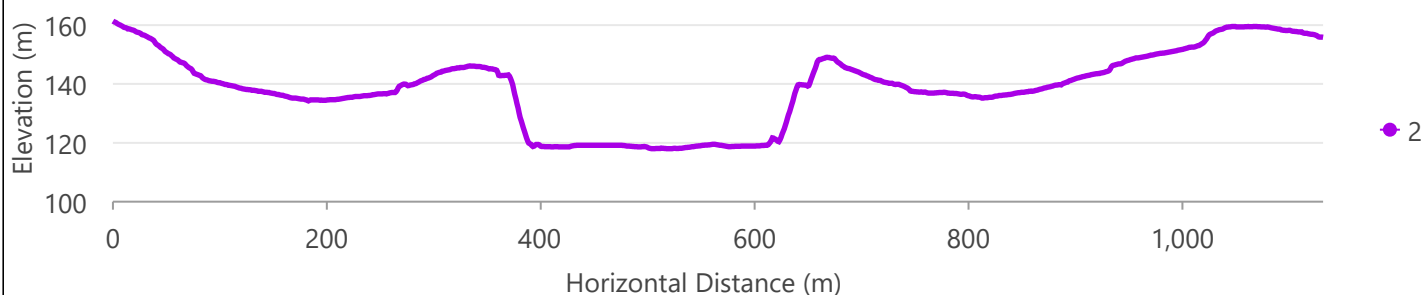
The project site is located within an area which is defined by a multitude of hills and valleys. The surrounding topography is typically grading steeply towards the WMF on the western, eastern and southern sides, which situates the project site within a narrow valley running toward the north. The local topography therefore forms physical and visual barriers which surround the WMF and project site, blocking both distant and close views towards the project site from the surrounding areas (refer Figure 3.4 and elevation profiles below).

The topography of the WMF has been heavily altered from the original natural conditions as a result of landfill construction and operations, with a large portion of the WMF having been utilised for landfilling. The South Cell has been used to date as a borrow pit for the WMF with excavation well progressed.

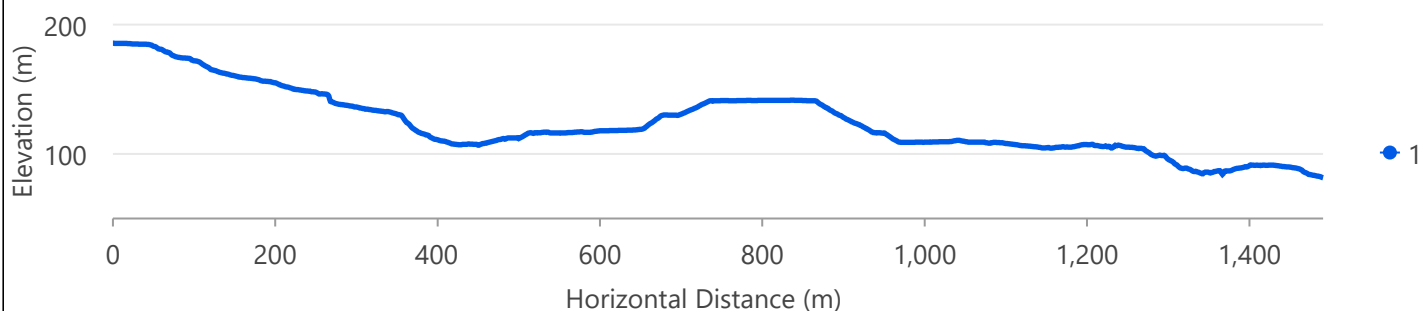
The WMF is surrounded to the west, east, north and south by thick native bushland of the Brisbane Water National Park. The bushland acts as a natural screening barrier, which limits any visibility in towards the WMF from surrounding locations, even within elevated areas in close proximity to the WMF. The former filled areas in the northern portion of the WMF are grassed. Along the eastern edge of the WMF, a vegetated batter grades towards the existing, active waste processing area.



Elevation profile 1



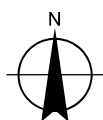
Elevation profile 2



Data Disclaimer

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Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

Central Coast Council
South Cell at Woy Woy WMF
Landscape Character & Visual Impact Assessment

Project No. 12595244
Revision No. 0
Date 7/12/2023

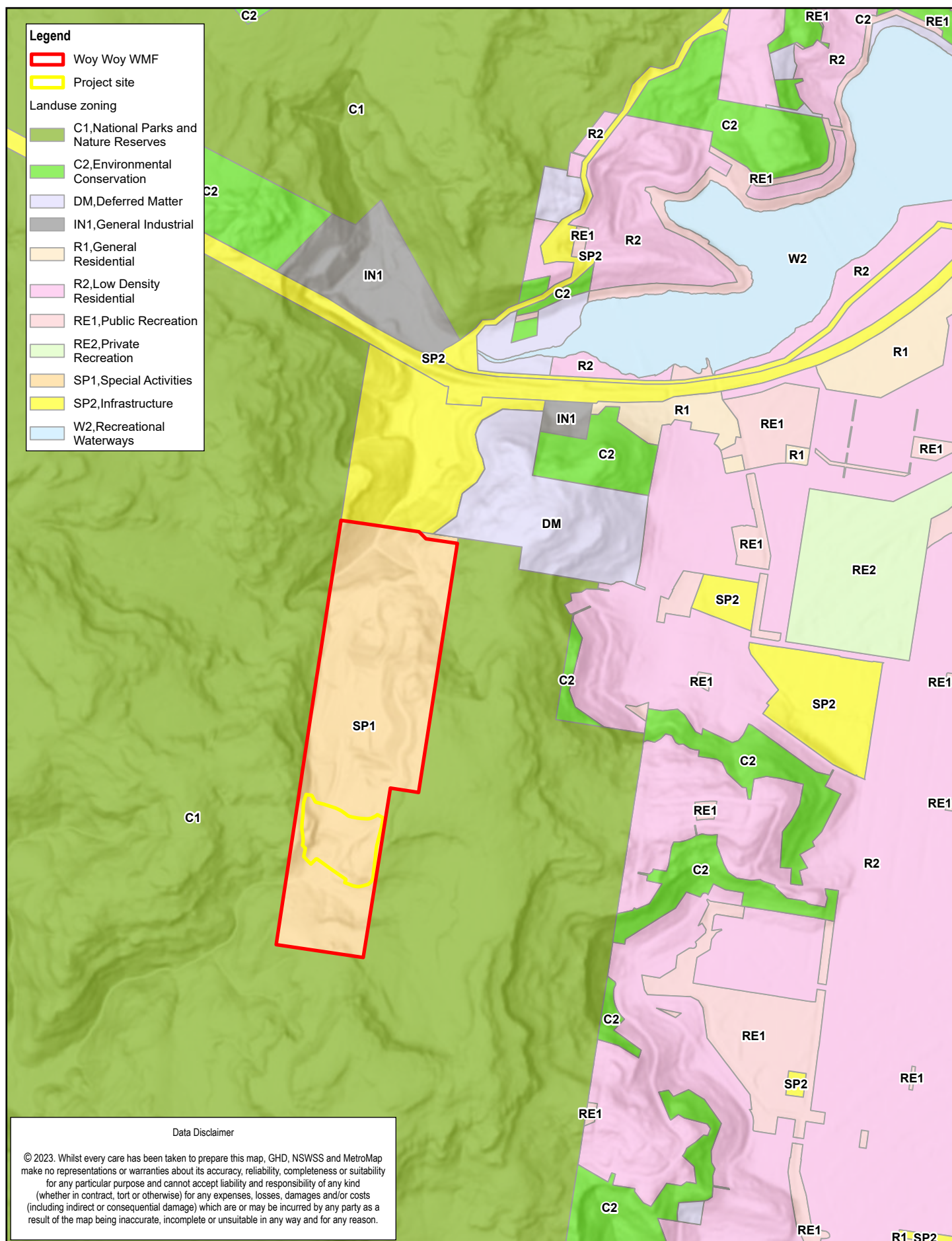
Elevation map and profiles

FIGURE 3.4

3.4 Zoning

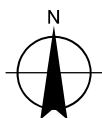
The project site is zoned SP1 Special Activities under *Central Coast Local Environmental Plan 2022*. In accordance with the zone provisions, waste management facilities are permissible with consent in the SP1 Special Activities (Waste or Resource Management Facility or Resource Management Facility) zone.

Land use zones north of the project site include SP2 Infrastructure, which contains the Woy Woy sewerage treatment plant, Woy Woy Road and the Main Northern Railway Line. Small areas zoned IN1 accommodate two storage facilities. The vast majority of the surrounding land, to the west, south and east is zoned C1 National Parks and Nature Reserves, which contains the large area associated with the Brisbane Water National Park. Further east, land use zoning include residential zones associated with suburban areas, including Umina Beach and Woy Woy (refer Figure 3.5 below).



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Central Coast Council
South Cell at Woy Woy WMF
Landscape Character & Visual Impact Assessment

Project No. 12595244
Revision No. 0
Date 7/12/2023

Land use zoning

FIGURE 3.5

3.5 WMF site history

In 1994 a legal review of the development consent for the Woy Woy WMF site (Dawson, 1994) found the following:

- 1928 – Site used as a quarry
- 1933 – Part of the WMF was used for the disposal of night soil
- 1968 – Gosford Planning Scheme Ordinance zone land 1(b) – extractive industry
- 1974 – Gosford City Council applied for and obtained the consent of the then Health Commission to use the WMF as a solid waste disposal depot. The records of a Council meeting on the 19 February 1974 showed that Gosford City Council resolved to accept the conditions on the use of the site imposed by the Health Commission. Public notices were then issued to the community regarding the opening of the waste disposal depot.

In 2012, a decision was made to transport all dry waste off-site to alternate disposal facilities and to landfill only putrescible waste in order to extend the current life of the WMF.

In 2020 Council commissioned the 'Woy Woy Waste Management Facility – Development Strategy' (SMEC, 2020) (the 'Development Strategy') to guide the future use and development of the WMF. The Development Strategy identified the existing excavation and stockpile area at the southern end of the Woy Woy WMF site as the location for the next waste cell (known as the new 'South Cell')

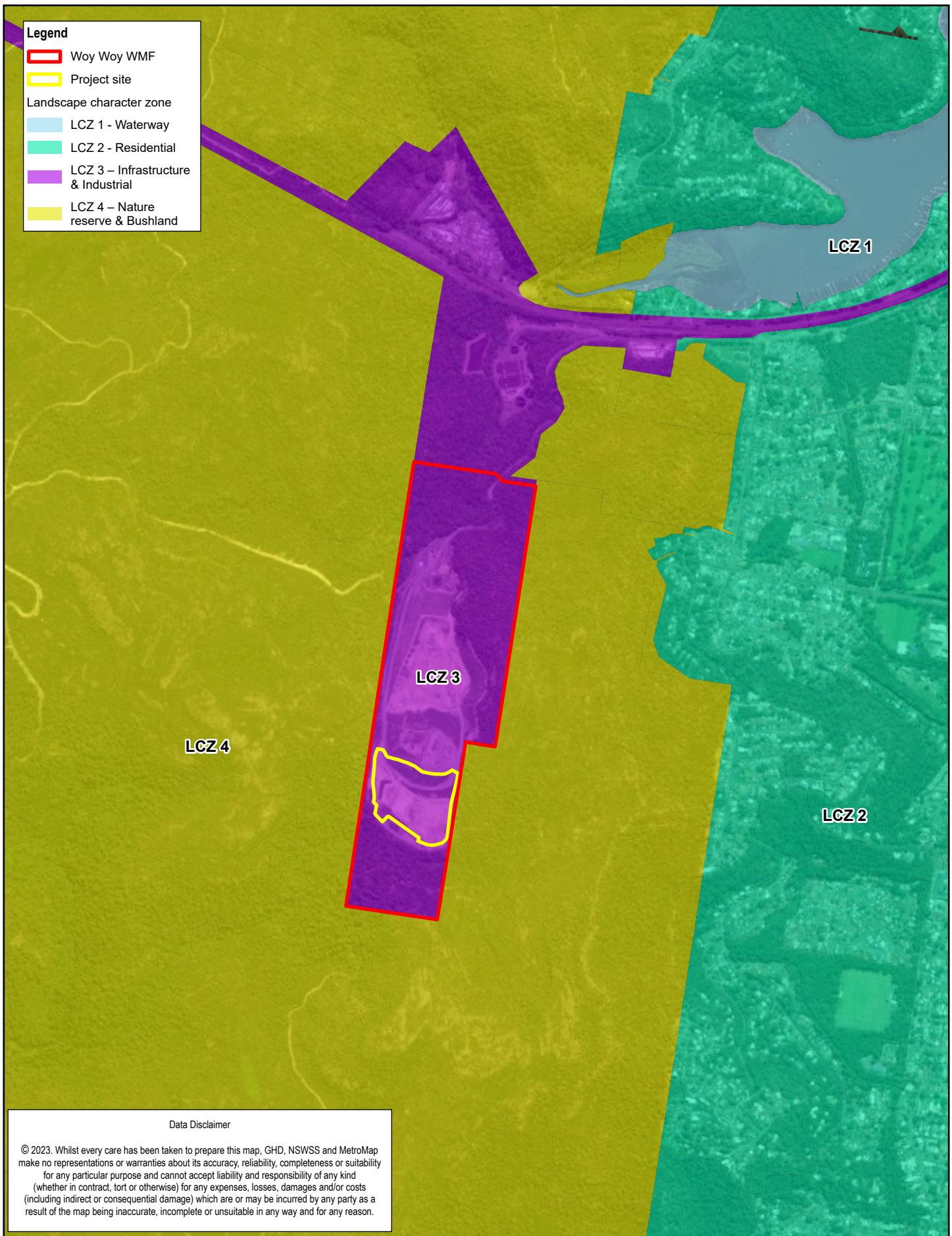
4. Landscape character analysis

4.1 Landscape character zones

A series of landscape character zones (LCZ) were identified that have a distinct character resulting from a combination of urban and landscape features that include landform, built form, vegetation, and land use for the study area. The landscape character zones for the study area have been identified as:

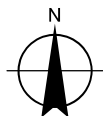
- LCZ 1 – Waterway
- LCZ 2 – Residential
- LCZ 3 – Infrastructure & Industrial
- LCZ 4 – Nature reserve & Bushland

The LCZs are presented in Figure 4.1 below.



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Central Coast Council
South Cell at Woy Woy WMF
Landscape Character & Visual Impact Assessment

Project No. 12595244
Revision No. 0
Date 7/12/2023

Landscape character zone map

FIGURE 4.1

4.2 Landscape character impact assessment

4.2.1 LCZ 1 – Waterway

The existing landscape character of LCZ 1 is described in Table 4.1, with photographs provided in Figure 4.2 and Figure 4.3 The measurement of impact is provided in Table 4.2.

Table 4.1 *Landscape character (LCZ 1)*

Summary	This landscape is characterised by both vast open and enclosed waterways of Brisbane Waters. These waterways are bounded by both steep sided, densely vegetated shorelines which conceal low density residential dwellings and also less elevated, sparsely vegetated shorelines, where residential dwellings and boatramps / jettys dominate the edges.
Landform	– Both flat and steep shorelines
Vegetation	– Dense natural bushland
Landscape features	– Large open and enclosed water bodies – Hills and ridgelines
Infrastructure	– Residential dwellings – Boatramps / jettys – Electricity transmission lines
Land use/built environment	– Residential dwellings
Spatial quality/amenity	– Obscured / screened, elevated, open and distant outlooks – High amenity water views

Table 4.2 *Measure of impact (LCZ 1)*

Sensitivity	Moderate
Magnitude	Negligible
Impact	Negligible
Comments	Locally important but undesignated landscape heritage or biodiversity features. Land use retains some of the original/intrinsic character but also reflects modern changes. Moderate condition landscape with some erosion or loss. High level of scenic beauty. No part of the project would be discernible.



Figure 4.2 **LCZ 1 – Waterway – Horsfield Bay from Woy Woy Road**



Figure 4.3 **LCZ 1 – Waterway – Horsfield Bay looking south towards Woy Woy**

4.2.2 LCZ 2 – Residential

The existing landscape character of LCZ 2 is described in Table 4.3, with photographs provided in Figure 4.4 and Figure 4.5. The measurement of impact is provided in Table 4.4.

Table 4.3 *Landscape character (LCZ 2)*

Summary	Bounded to the west by dense natural bushland covered hills and ridgelines, with concealed low density residential dwellings, built on steep slopes. To the east, the topography is flat and dominated by residential, grid street layout. This zone is bounded to the north by Woy Woy Road and the Main Northern Rail line. Access to this zone is predominantly via Woy Woy Road.
Landform	– Undulating hills, valleys and ridgelines on the western perimeter – Flat featureless landform to the east
Vegetation	– Dense natural bushland to the west – Mostly unvegetated to the east apart from a mixture of domestic plantings and street trees
Landscape features	– Undulating landforms and heavily vegetated ridgelines, peaks and valleys on the western perimeter
Infrastructure	– Residential streets and overhead power transmission lines
Land use/built environment	– Residential dwellings
Spatial quality/amenity	A combination of open and enclosed outlooks often screened and or forested with dense bushland on the western perimeter

Table 4.4 *Measurement of impact (LCZ 2)*

Sensitivity	Moderate
Magnitude	Negligible
Impact	Negligible
Comments	Locally important but undesignated landscape heritage or biodiversity features. Land use retains some of the original/intrinsic character but also reflects modern changes. Moderate condition landscape with some erosion or loss. High level of scenic beauty. No part of the project would be discernible.



Figure 4.4 *LCZ 2 - Residential – flat terrain areas of Umina Beach*



Figure 4.5 *LCZ 2 - Residential – elevated bushland areas of Umina Beach*

4.2.3 LCZ 3 – Infrastructure & Industrial

The existing landscape character of LCZ 3 is described in Table 4.5, with photographs provided in Figure 4.6 and Figure 4.7. The measurement of impact is provided in Table 4.6.

Table 4.5 *Landscape character (LCZ 3)*

Summary	This landscape character zone has a landform that is predominantly enclosed and consists of dense natural bushland undulating hills and distinct valleys and ridgelines. Pockets of cleared areas accommodate light industrial uses and infrastructure, including the STP and two storage facilities. The WMF is the major feature within this zone, and while substantially modified, has a feeling of enclosure, contained within a natural valley. Other infrastructure includes Woy Woy Road and the Main Northern Railway Line.
Landform	– Undulating hills, valleys and ridgelines
Vegetation	– Dense natural bushland surrounding light industrial uses – Cleared areas to accommodate light industrial uses and infrastructure
Landscape features	– Undulating hills, valleys and ridgelines. – WMF
Infrastructure	– WMF – Woy Woy Road – Main Northern Railway Line – Woy Woy STP – Overhead powerlines
Land use/built environment	– Light industrial zones include storage facilities with low scale metal sheds within cleared areas – Special activities areas include the STP and the WMF, which contain low to medium scale built elements
Spatial quality/amenity	– This is a very vast and open landscape which is characterised predominately by dispersed residential houses and small agricultural structures/equipment. – Due to the flatness and low-lying nature of the area, there is an awareness of proximity to the other surrounding landscape characters, particularly the sand dunes to the East – Movement is concentrated along the main two roads mentioned above but is otherwise a calm and still environment

Table 4.6 *Measurement of impact (LCZ 3)*

Sensitivity	Low
Magnitude	Negligible
Impact	Negligible
Comments	Undesignated landscape heritage or biodiversity features. Land use retains little original or intrinsic value with strong modern trends. Moderately settled with medium level of built form. Limited representation of landscape character type within the cleared areas, with low scenic beauty, although the natural landscape surrounds the cleared areas. Very minor loss or alteration to the landscape character and/or introduction of elements that are consistent with the existing character.



Figure 4.6 LCZ 3 – Infrastructure & Industry – Entry to the WMF Nagari Road



Figure 4.7 LCZ 3 – Infrastructure & Industry – Woy Woy self storage facility Nagari Road

4.2.4 LCZ 4 – Nature reserve & Bushland

The existing landscape character of LCZ 4 is described in Table 4.7 with photographs provided in Figure 4.8 and Figure 4.9. The measurement of impact is provided in Table 4.8.

Table 4.7 *Landscape character (LCZ 4)*

Summary	This landscape is within the Brisbane Waters National Park, which characterised by densely vegetated valleys and ridgelines. This landscape includes both enclosed and distant outlooks, which are generally screened by dense natural bushland. This is a naturally calm and secluded environment which is home to various fauna and flora.
Landform	– Undulating hills, valleys and ridgelines
Vegetation	– Dense natural bushland
Landscape features	– Undulating hills, valleys and ridgelines – Dense natural bushland
Infrastructure	– Walking tracks and fire trails – Small scale signage
Land use/built environment	– National park land
Spatial Quality/amenity	– Distinctive natural bushland character and a strong sense of place and high amenity. – Enclosed and distant screened outlooks.

Table 4.8 *Measurement of impact (LCZ 4)*

Sensitivity	High
Magnitude	Negligible
Impact	Negligible
Comments	This is a diverse and pristine landscape with a combination of both open and enclosed outlooks. It has regionally important landscape heritage or biodiversity features and is predominantly intact with distinctive character and a strong sense of place. There would be very minor loss or alteration to the characteristics of the landscape character, as the landform and vegetation provide a natural screening to the local built environment. As such, the project is not anticipated to result in any alteration to the landscape character of this LCZ.



Figure 4.8 LCZ 4 – Nature reserve & Bushland – Van Dahls firetrail on the Great North Walk



Figure 4.9 LCZ 4 – Nature reserve & Bushland – Van Dahls firetrail on the Great North Walk

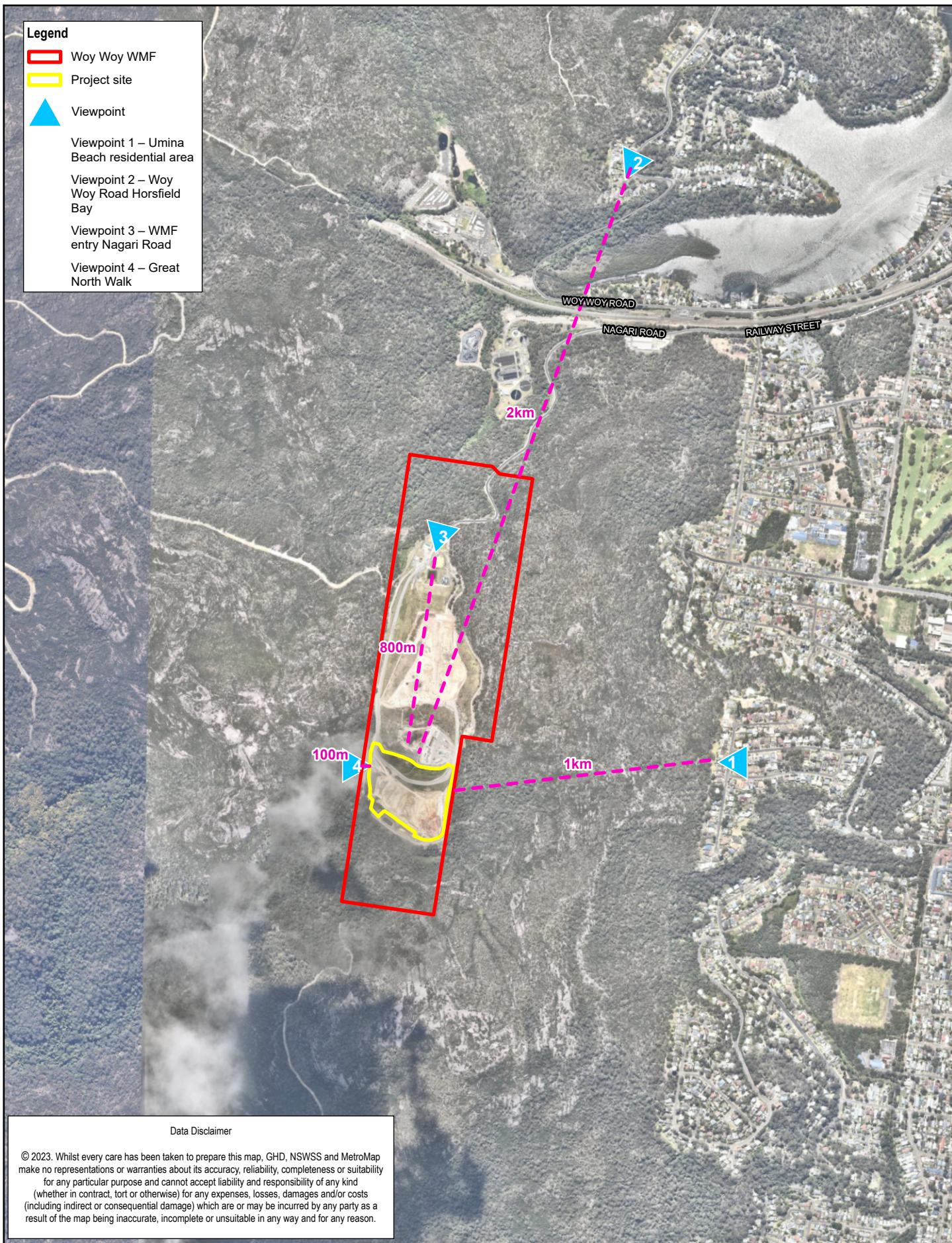
5. Visual impact assessment

5.1 Key viewpoints

Four key viewpoints have been selected as a representation of a view or potential view from a particular public visual catchment area. The viewpoints have been selected due to their elevation and or distance from the project site (refer to Figure 5.1 below), these include:

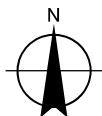
- Viewpoint 1 – Umina Beach residential area
- Viewpoint 2 – Woy Woy Road Horsfield Bay
- Viewpoint 3 – WMF entry Nagari Road
- Viewpoint 4 – Great North Walk

The viewpoints have been determined based on-site investigations and desktop analysis including 3D topographic information and aerial photographs. Analysis illustrates what is visible from a height of 1.7 metres at that location (i.e. from average eye height) and is therefore largely subject to topography and vegetation which in most cases screens the viewshed and obscures views of the project site.



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Central Coast Council
South Cell at Woy Woy WMF
Landscape Character & Visual Impact Assessment

Project No. 12595244
Revision No. 0
Date 7/12/2023

Key viewpoints map

FIGURE 5.1

5.2 Visual impact assessment

The location of the project's key elements is identified on the following key viewpoint images by a solid red pin. Where the nature of topography and trees screen the elements, open red pins signify their approximate location.

5.2.1 Viewpoint 1 – Umina Beach residential area

The current view of the project site from the viewpoint is shown in Figure 5.2. **This view would be unaffected, as the project site is not visible.** The viewpoint sensitivity and impact ratings are provided in Table 5.1 and Table 5.2.



Figure 5.2 Viewpoint 1 – Umina Beach residential area

Table 5.1 Viewpoint 1 Sensitivity

Criteria	Description	Ranking
View duration	Long	High
Viewer numbers	Moderate	Moderate
Viewer type	Resident	High
Viewer distance	Long	Low
View sensitivity	Moderately Modified	Low

Table 5.2 Viewpoint 1 Impact

Sensitivity	Moderate
Magnitude	Negligible
Impact	Negligible
Comments	This view point and others within the vicinity are bounded by dense natural bushland covered ridgelines and residential dwellings. The proposed development would be completely screened and not discernible.

5.2.2 Viewpoint 2 – Woy Woy Road Horsfield Bay

The current view of the project site from the viewpoint is shown in Figure 5.3. **This view would be unaffected, as the project site is not visible.** The viewpoint sensitivity and impact ratings are provided in Table 5.3 and Table 5.4.



Figure 5.3 Viewpoint 2 – Woy Woy Road Horsfield Bay

Table 5.3 Viewpoint 2 Sensitivity

Criteria	Description	Ranking
View duration	Short	Low
Viewer numbers	High	High
Viewer type	Motorist	Negligible
Viewer distance	Distant	Negligible
View sensitivity	Moderately Modified	Moderate

Table 5.4 Viewpoint 2 Impact

Sensitivity	Low
Magnitude	Negligible
Impact	Negligible
Comments	This view point and others within the vicinity are bounded by dense natural bushland covered ridgelines and residential dwellings. The proposed development would be completely screened and not discernible.

5.2.3 Viewpoint 3 – WMF entry Nagari Road

The current view of the project site from the viewpoint is shown in Figure 5.4. **This view would be unaffected, as the project site is not visible.** The viewpoint sensitivity and impact ratings are provided in Table 5.5 and Table 5.6.



Figure 5.4 Viewpoint 3 – WMF entry Nagari Road

Table 5.5 Viewpoint 3 Sensitivity

Criteria	Description	Ranking
View duration	Short	Low
Viewer numbers	Low	Low
Viewer type	Motorist	Negligible
Viewer distance	Long	Low
View sensitivity	Significantly Modified	Negligible

Table 5.6 Viewpoint 3 Impact

Sensitivity	Negligible
Magnitude	Negligible
Impact	Negligible
Comments	Receptors from this view point are entering in to the WMF, which is a significantly modified landscape. The topography of the Woy Woy Waste Management Facility has been heavily altered from the original natural conditions as a result of landfill construction and operations, with previous landfill areas capped and turfed. The project site is within a well excavated area, which is hidden behind the previous landfill area. The proposed development would be completely screened and not discernible.

5.2.4 Viewpoint 4 – Great North Walk

The current view of the project site from the viewpoint is shown in Figure 5.5. Figure 5.6 illustrates a visual representation of the final landform, from this viewpoint, post completion of the project. The viewpoint sensitivity and impact ratings are provided in Table 5.7 and Table 5.8.



Figure 5.5 **Viewpoint 4 – Great North Walk**

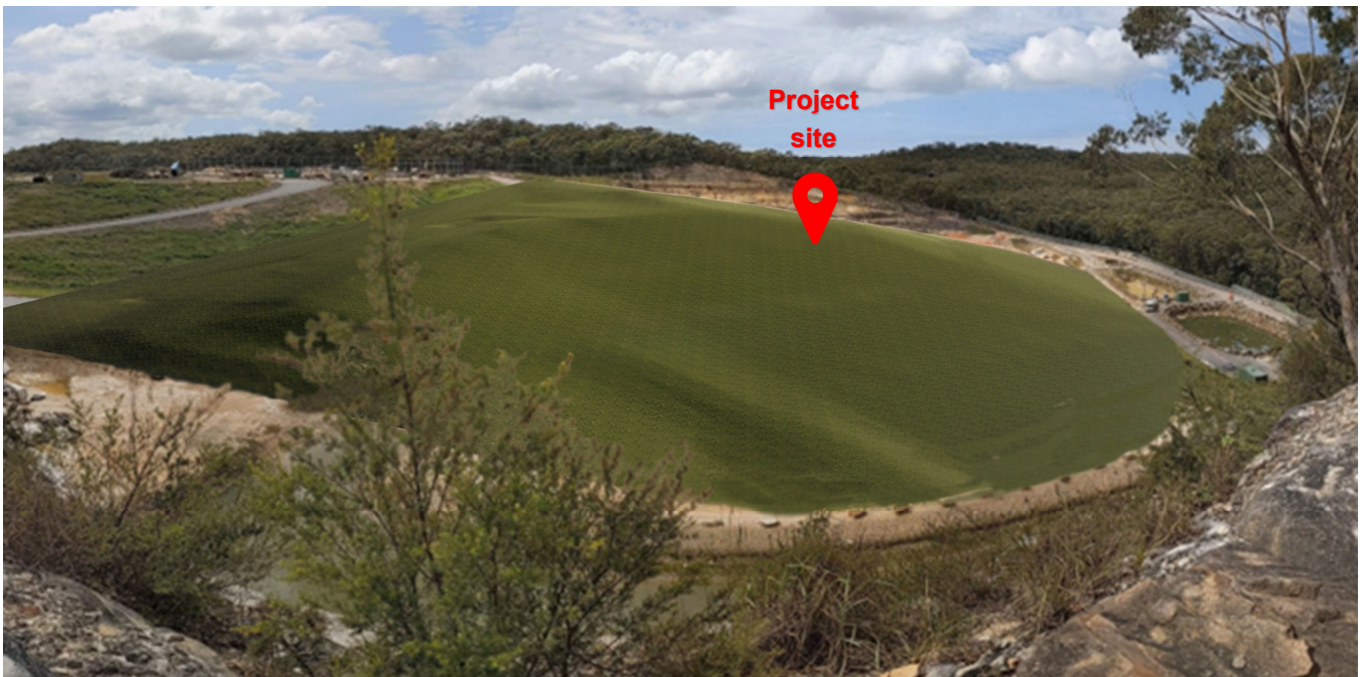


Figure 5.6 **Viewpoint 4 – Great North Walk – Post Development Final Landform**

Table 5.7 **Viewpoint 4 Sensitivity**

Criteria	Description	Ranking
View duration	Low	Low
Viewer numbers	Low	Low
Viewer type	Pedestrian	Moderate
Viewer distance	Short	High
View sensitivity	Significantly Modified	Negligible

Table 5.8 **Viewpoint 4 Impact**

Sensitivity	Low
Magnitude	Negligible
Impact	Negligible
Comments	Receptors from this view point are recreational walkers, hiking along the Great North Walk. This short (approximately 150m) portion of the walk, follows the WMF boundary fence, allowing views into the project site. The WMF is a significantly modified landscape and has been since prior to formalisation of the Great North Walk in 1988.

6. Impact assessment summary

A summary of the landscape character and visual impact assessment findings is provided in Table 6.1 and Table 6.2 below. Overall, the impacts on the landscape character and visual amenity of the project have been assessed as negligible.

The project would be indiscernible and therefore have no impact upon the existing landscape character zones. The project site is located within an area which is defined by a multitude of hills and valleys covered with dense natural bushland. The surrounding topography is typically grading steeply towards the project site on the western, eastern and southern sides, which situates the project site within a narrow. The local topography and bushland therefore forms physical and visual barriers which block both distant and close views towards the project site from the surrounding areas.

Where the project would be visible (from the Great North Walk viewpoint), the existing landscape is already highly modified, with the project site located within the existing footprint of the WMF.

Table 6.1 *Landscape character impact summary*

Landscape Character Impact Assessment	
Landscape Character Zone – LCZ	Impact
LCZ 1	Negligible
LCZ 2	Negligible
LCZ 3	Negligible
LCZ 4	Negligible

Table 6.2 *Visual impact summary*

Visual Impact Assessment	
Key Viewpoint	Impact
Viewpoint 1	Negligible
Viewpoint 2	Negligible
Viewpoint 3	Negligible
Viewpoint 4	Negligible

7. Mitigation measures

In the event that any outdoor lighting would be required during construction or operational activities associated with the project, lighting would be required to be provided in accordance with AS 4282 – *Control of the obtrusive effects of outdoor lighting*. This Standard specifically refers to the potentially adverse effects of outdoor lighting on nearby residents, whereby design of outdoor lighting would be required to control any obtrusive effects to an acceptable degree.

8. References

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