Pacific Highway Upgrade: Oxley Highway to Kempsey

Kundabung to Kempsey Urban Design and Landscape Plan

Prepared for:
Roads and Maritime Services

Prepared by:
HBO+EMTB Urban and Landscape Design

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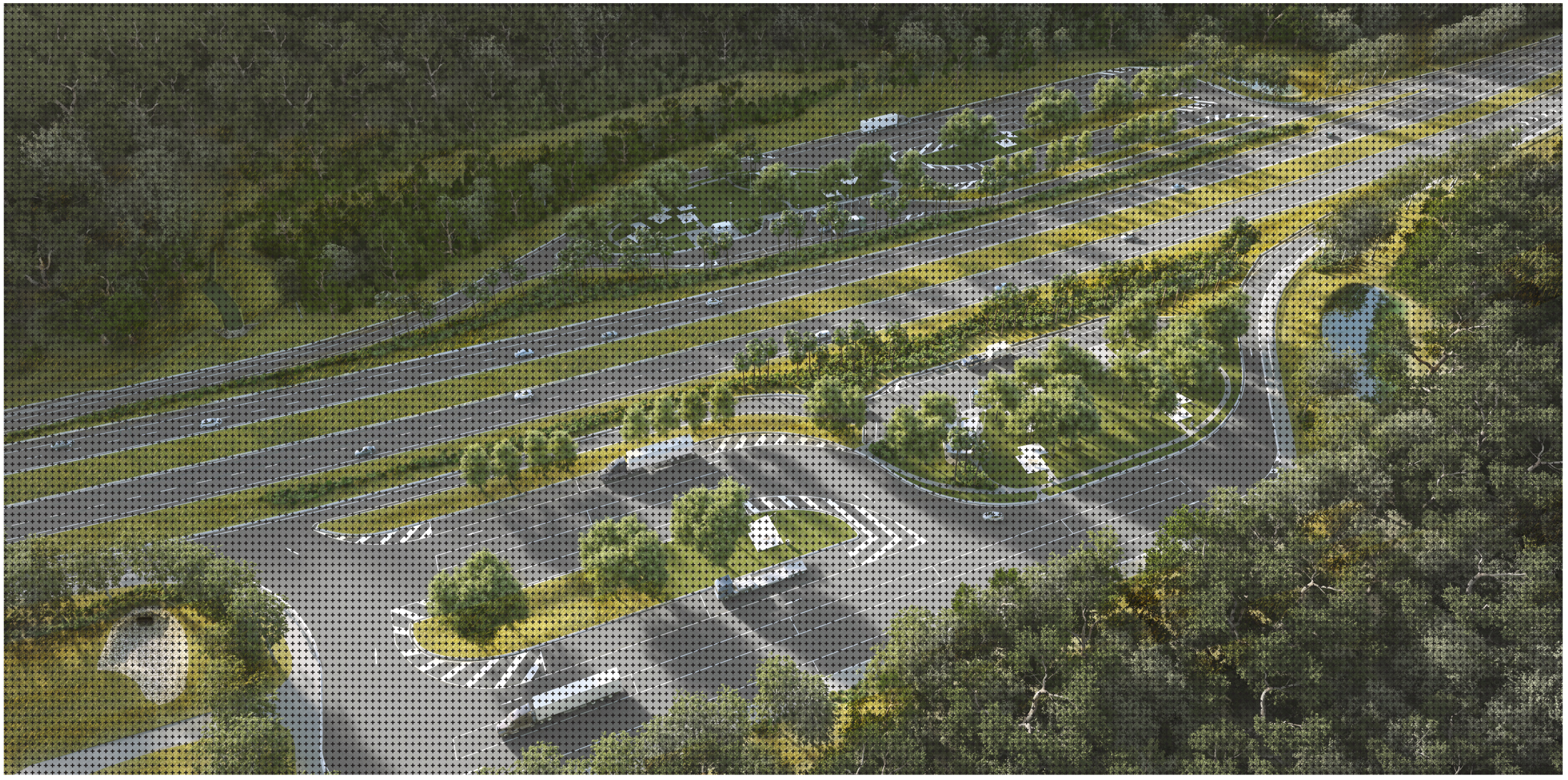
HBO+EMTB



Project:
Pacific Highway Upgrade: Oxley Highway to Kempsey

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Project number:
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Client:
Roads and Maritime Services

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1 INTRODUCTION

1.1 BACKGROUND

The proposed upgrade of the Pacific Highway between the Oxley Highway and Kempsey is part of the Pacific Highway Upgrade Program. This program is a joint commitment by the New South Wales and Federal Governments to provide a continuous dual carriageway on the Pacific Highway between Hexham (near Newcastle) and the Queensland border. The Oxley Highway to Kempsey (OH2K) Project is approximately 37 kilometres in length, from its southern extent, approximately 700 metres north of the Oxley Highway interchange, to its northern connection to the Kempsey Bypass, just south of Kempsey.

The Pacific Highway is both the major eastern coastal route linking Sydney to Brisbane and also an important part of the regional road network, particularly for travel between major coastal towns.

The *Oxley Highway to Kempsey – Upgrading the Pacific Highway - Environmental Assessment* (RTA 2010) assessed the impacts of construction and operation of the Project on the local environment.

The OH2K Upgrade is divided into two sections:

- Oxley Highway to Kundabung
- Kundabung to Kempsey.

This report relates tot eh Kundabung to Kempsey section only.

1.2 PURPOSE OF THIS REPORT

This Urban Design and Landscape Plan (UDLP) has been prepared to address the requirements, as they apply to the Kundabung to Kempsey (K2K) Project, of the Minister's Conditions of Approval (CoA), the Roads and Maritime Services (Roads and Maritime) Statement of Commitments (SoC), the mitigation and management measures listed in the Oxley Highway to Kempsey Environmental Assessment (EA) and all applicable legislation.

The purpose of this Plan is to describe how the urban design and landscape design elements of the Oxley Highway to Kempsey (OH2K) Upgrade will be managed for the Kundabung to Kempsey project.

1.3 PROJECT TYPE AND STAGING

As described in the *Oxley Highway to Kempsey Pacific Highway Upgrade Project Staging Report* (February 2013), the Project is being delivered in stages. Due to the Project's length and funding models available, the Project will be essentially delivered in two main sections – from the Oxley Highway to Kundabung (approximately 23 kilometres) and from Kundabung to Kempsey (approximately 14 kilometres). The delivery of these two sections will be undertaken in four stages. The stages are presented in their corresponding chronological order of construction. Due to funding, it is likely that the first three stages may all be under construction at the same time.

The Project includes Class A and Class M road types. The main difference between these two road standards is:

- Class A, arterial standard, allows some local access to highway from upgraded intersections onto the highway.
- Class M, motorway, only allows access to the highway from dedicated interchanges. Service roads provide local access.

The project stages are:

- Stage 1 - Sancrox Road traffic arrangement (detailed design developed and delivery to be via a construct only contract)
- Stage 2 - Kundabung to Kempsey (K2K) (Class A detailed design developed and delivery to be via a construct only contract)
- Stage 3 - Oxley Highway to Kundabung (OH2K) (refined concept design developed and delivery to be via a detailed design and construct contract; Class M with Class A elements)
- Stage 4 - Class A sections upgraded to Class M (refined concept design developed and delivery model to be determined).

This urban design and landscape plan is for the K2K section only.

1.4 PROJECT OBJECTIVES

The objectives of the overall Oxley Highway to Kempsey (OH2K) Project, of which the Kundabung to Kempsey (K2K) Upgrade forms part, are described in Section 3.2 of the Environmental Assessment (EA). These objectives take into account the broader Pacific Highway upgrade program objectives. The Project specific objectives, as stated in the EA, include:

- Develop a dual carriageway road with potential to reduce crash rates to 15 crashes per 100 million vehicle kilometres over the project length
- Develop a refined design that meets or exceeds B-double requirements, including at intersections, where required
- Maximise the use of the existing road reserve, where possible
- Integrate input from local communities into the development of the Project through the implementation of a comprehensive program of community consultation and participation, consistent with Roads and Maritime increased customer focus
- Satisfy the technical and procedural requirements of Roads and Maritime with respect to the design of the project
- Provide for transport developments that are complementary with land use
- Allow for all connections, modifications and improvements necessary to upgrade the existing highway where it is retained as part of the Project
- Consider delay management strategies to minimise disruption to local and through traffic and maintain access to affected properties and land during construction
- Provide flood immunity for a one in 100 year flood event
- Provide intersections designed to achieve at least a level of service C 20 years post-completion to accommodate the 100th highest hourly volume
- Develop solutions that address community expectations for access to the new highway
- Develop a refined design generally meeting the criteria for a 110 km/h design speed for the vertical alignment and horizontal alignment
- Ensure the Project outcomes achieve value for money
- Provide a strategy for future upgrades to be easily integrated into the Project from both engineering and environmental perspectives
- Minimise the need to modify the preferred route option and refined design during subsequent Project phases
- Provision of a safe worksite for both construction workforce and road users.

2 LEGISLATIVE AND PROJECT REQUIREMENTS

2.1 REFERENCE DOCUMENTS

The following reference documents outline the requirements for the design:

- The Environmental Assessment (Part 3A) dated September 2010 and the associated Final Submissions and Decision Reports
- Upgrading Program beyond 2006: Pacific Highway Design Guidelines (April 2012)

The following standards are applicable to the design:

- Roads and Maritime publications including the Roads and Maritime Road Design Guide
- Austroads Guides
- Australian Standards AS 4419 Soils for Landscape and Garden Use
- Australian Standards AS 4454 Composts, Soil Conditioners and Mulches
- Roads and Maritime Construction Specifications including R178 vegetation and R179 planting
- RTA Beyond the Pavement, RTA Urban Design Policy, Procedures and Design Principles, 2009
- Roads and Maritime, Bridge Aesthetics, July 2012
- RTA Landscape Guideline, April 2008
- RTA Shotcrete Design Guidelines, June 2005
- Kempsey Council Landscape Design Guidelines and Specifications.

Unless stated otherwise the order of precedence of design reference documents for the Kundabung to Kempsey (K2K) Project is:

- Upgrading Program beyond 2006: Pacific Highway Design Guidelines (April 2012)
- Roads and Maritime publications
- AUSTROADS (previously NAASRA)
- Council Standards
- Australian Standards
- Standards Australia handbooks
- Other sources, as agreed with Roads and Maritime's Representative.

2.2 MINISTER'S CONDITIONS OF APPROVAL

On the 8 December 2006 the Project was declared by the then Minister for Planning to be a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies. An Environmental Assessment (EA) was prepared and placed on public exhibition between September and October 2010. Following consideration of submissions made during the exhibition period, the submissions report, including changes to the proposal following consideration of submissions, was submitted to the Minister for Planning and Infrastructure seeking approval. Approval of the Project was granted on 8 February 2012, subject to a number of Conditions of Approval (CoA) and Modifications post approval.

Following are the Minister's Conditions of Approval for the project relating to urban and landscape design. The location where each specific condition is addressed in this Report is noted adjacent to the Minister's Requirement.

Table 2.2.1 Conditions of Approval relevant to the UDLP

CoA No.	Condition Requirements	Document Reference
B20	The Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The Plan shall be prepared in consultation with the relevant council and shall present an integrated urban design for the project. The Plan shall include, but not necessarily be limited to: (a) a principal goal of achieving the urban design objectives outlined in Table 17-4 of Volume 1 of the EA;	This plan Section 5
	(b) location of existing vegetation and proposed landscaping (including use of indigenous and endemic species where possible) and design features;	Sections 8 and 9 Appendix A
	(c) graphics such as sections, perspective views and sketches for key elements of the project (including, but not limited to built elements such as retaining walls, cuttings, embankments, bridges, and noise barriers);	Section 7 Section 8.11 Section 8.18
	(d) a description of locations along the project corridor directly or indirectly impacted by the construction of the project (eg temporary ancillary facilities, access tracks, watercourse crossings, etc) and details of the strategies to progressively rehabilitate regenerate and/ or revegetate the locations with the objective of promoting biodiversity outcomes and visual integration. Details of species to be replanted/ revegetated shall be provided, including their appropriateness to the area and considering existing vegetation and habitat for threatened species;	Section 6.2 Section 8 Section 8.4 Section 8.6 Section 9 Appendix A Appendix E
	(e) an assessment of the visual screening effects of existing vegetation and the proposed landscaping. Where residences and businesses have been identified as likely to experience high visual impact as a result of the project and high residual impacts are likely to remain, the Proponent shall in consultation with affected receptors, identify opportunities for providing at-receptor landscaping to further screen views of the project. Where agreed to with the landowner, these measures shall be implemented during the construction of the project;	Section 8.10
	(f) strategies for progressive landscaping of other environmental controls such as erosion and sedimentation controls, drainage and noise mitigation;	Section 8 generally Section 8.4
	(g) location and design treatments for any associated footpaths and cyclist elements, and other features such as seating, lighting (in accordance with AS 4282-1997 Control of the Obtrusive Effect of Outdoor Lighting), fencing, and signs;	Section 7 Section 8.11
	(h) evidence of consultation with the relevant council and community on the proposed urban design and landscape measures prior to its finalisation; and	Section 3 Appendix D
	(i) monitoring and maintenance procedures for the built elements, rehabilitated vegetation and landscaping (including weed control) including performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail.	Section 9.2 Appendix B

Note in relation to items:

B20 (c) there are no retaining walls or noise barriers in the K2K Project

B20 (d) the Kundabung to Kempsey project has considered and included the urban design objectives of the Oxley Highway to Kempsey project, ensuring consistency and visual integration is achieved across the three stages.

2.3 STATEMENT OF COMMITMENTS

Relevant Statements of Commitment (SoC) are listed in Table 2.3.1 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 2.3.1 Statement of Commitments relevant to this UDLP

Outcome	Ref #	Commitment	Timing	Reference Document
	VAD1	A detailed urban and landscape design plan would be developed during the detailed design phase. The detailed design and implementation of built elements (such as new carriageways, bridges and roadside furniture) and landscapes, and the mitigation of residual impacts will be undertaken in accordance with the visual and design objectives and principles of the Proposal.	Detailed design	This plan Section 5 Section 7 Section 8
	VAD3	The schedule of species to be used in the landscaping treatments will include self-sustaining native and locally indigenous plants that will be selected in consultation with a qualified landscape officer.	Pre-construction, construction	Section 8.7 - 8.8 Appendix A
	VAD4	Disturbed areas will be progressively revegetated with consideration to related controls such as erosion and sedimentation controls, drainage and future road user safety requirements.	Construction	Section 8.4
	VAD5	Design criteria will be applied during detailed design to reduce any potential adverse visual impacts to the existing landscape character and visual amenity.	Detailed design	Section 8.10
	VAD6	Landscaped or rehabilitated areas will be monitored and maintained for a minimum of two years after opening.	Construction, operation	Section 9.2 Appendix B Appendix C

2.4 ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Urban design objectives and principles for the Kundabung to Kempsey (K2K) Project are presented in Table 17.4 of Volume 1 of the Environmental Assessment (EA) document. They are restated in Section 5.

3 CONSULTATION

The SMEC/Hyder Joint Venture (SHJV) held meetings with Port Macquarie-Hastings and Kempsey Councils on 15 August 2012 to discuss urban design and landscape issues for the Kundabung to Kempsey (K2K) Project. Refer to Appendix D for minutes and actions of these meeting. The following is a summary of the issues raised by the Councils.

Raised by	Issue	How/where addressed
Port Macquarie-Hastings Council	It was explained that good access is necessary at bridge abutments, with tiered areas, and handrails and steps used to allow safe and easy access for maintenance. It was also explained that these features were often initially included, then later omitted at the request of the urban designers based on looks. SHJV to investigate.	Access to the bridge abutments is provided by maintenance access stairs and a tiered area or bench. These features have been maintained through to the IFC drawings.
Port Macquarie-Hastings Council	Preference for bottle brushes as low shrubs for planting, due to their hardiness.	Bottlebrushes (specifically Callistemon salignus) are used, in particular at the rest area
Port Macquarie-Hastings Council	Keep median planting to a maximum height of 3m – low shrubs and grasses.	The majority of the medians are seeded with native grasses. Where frangible shrubs are used they are species <3m tall and have a 2 metre wide strip of native grasses on each carriageway side to prevent shrubs overhanging.
Kempsey Council	Kempsey Council has a master plan for landscaping proposals between South Kempsey and Eungai, available from their website.	Post meeting note – the website was checked and the document referred to is an urban master plan for South Kempsey, therefore not directly applicable to the Project.

An additional meeting was held with Port Macquarie-Hastings Council on 17 December 2012 to discuss proposed changes to the K2K Project concept design. Information describing the revised concept design was also placed on public exhibition from 3 December 2012 to 18 January 2013. Community, government agency and other Project stakeholders were invited to provide comment on the proposed design refinements.

The design team reviewed the construction drawings for the Kempsey Bypass Project to ensure that the designs were consistent and provided an integrated urban and landscape design outcome and a smooth transition at the tie-in.

Other consultation activities that took place in late 2012 include:

- Advertisements on the 30 November 2012 in local newspapers and on local radio regarding exhibition of the revised concept design
- Community update newsletter released December 2012
- Community information sessions at the Telegraph Point School of Arts on the 13 and 15 December 2012
- Roads and Maritime website updated with key Project information
- Letters to local councils, local State Members of Parliament, governmental agencies, and registered stakeholders
- Consultation with affected landowners.

Comments and feedback received have been included in a Concept Design Refinements Submissions Report prepared by the SHJV in March 2014.

The plan was publicly exhibited for 2 weeks, closing on 22 August 2014. Additionally, a community information session was held on 26 August 2014 where copies of the plan were available and representatives from the project team were in attendance to receive submissions and/ or answer any questions on the plan or the project generally. No submissions were received from the community during the display period or the community meeting.

Copies of the K2K Urban Design and Landscape Plan were sent to Kempsey Shire Council and Port Macquarie-Hastings Council for their comment. Both Councils responded to say they had no issues. Response letters are attached in Appendix D.

Refer to Appendix D for further Evidence of Consultation.

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4 PROJECT CONTEXT

4.1 ENVIRONMENTAL ASSESSMENT ANALYSIS OF ROUTE AND CONTEXT

An analysis of the route context for the Kundabung to Kempsey (K2K) Project is presented in Volume 1, Chapter 17, Section 17.2 of the Environmental Assessment (EA) document.

The assessment of route context in the EA remains valid and provides the background for the design, in particular for the landscape design. The following is a summary of the key features of the K2K route and context.

The alignment overview and strategy plan are presented in Sections 4.2 and 4.3.

4.1.1 Slope/Topography

The K2K Project commences north of Cooperabung Hill in an area classified as “steeply undulating” (15-25 per cent slopes) up to Mingaletta Road where the slopes become shallower. Throughout this zone the topography and forest vegetation restrict views of the broader landscape.

Between Mingaletta Road and the northern extent of the K2K Project the landform is described as ‘medium undulating’ (10-15 per cent slope). This zone is comprised of scattered woodland, State Forest and cleared grazing land with several creek/drainage crossings. Occasional views are available to the countryside. Where views are available and there is no requirement to screen the highway from nearby residences, the views have been maintained.

4.1.2 Landmarks

Key landmarks within the K2K Project include:

- Kundabung township and proposed landscape treatments associated with the interchange which highlight the entry/exit to the township
- The densely forested areas of the Ballengarra, and Maria State Forest and the Cooperabung Nature Reserve
- The several creek crossings including Smiths Creek, Pipers Creek, Maria River and Stumpy Creek which provide landmarks in the motorists’ journey.

Cooperabung Hill which is the most dominant topographic feature of the locality is located south of the K2K Project.

The proposed rest areas will provide a new landmark along the route when complete.

4.1.3 Fauna

The proposed highway alignment dissects a number of key habitat areas and wildlife corridors where the K2K Project passes through the Ballengarra State Forest and Maria River State Forest, and at the numerous creek crossings. Threatened terrestrial fauna identified during survey (confirmed) include Koala (*Phascolarctos cinereus*), Yellow-bellied Glider (*Petaurus australis*), Giant Barred Frog (*Mixophyes iterates*) and Green-thighed Frog (*Litoria brevipalmata*). Threatened fauna considered highly likely to occur in the study area include Brush-tailed Phascogale (*Phascogale tapoatafa*), Common Planigale (*Planigale maculate*) Spotted-tailed Quoll (*Dasyurus maculatus*) and Squirrel Glider (*Petaurus norfolcensis*).

Fauna crossings will be provided to allow the safe passage of fauna and to minimize the barrier effects and habitat fragmentation caused by the K2K Project on native and threatened fauna within the locality. The types of fauna crossings include underpasses, rope crossings and glider poles.

Proposed underpasses comprise:

- Dedicated fauna culverts
- Combined culverts
- Bridge crossings over creeks and rivers
- Incidental culverts that may provide for passage of small fauna species.

Refer to Section 8.15 for a description of landscape treatments for a typical fauna culvert.

Fish passage is provided by the four bridge crossings, five of the combined culverts and five of the incidental culvert locations.

Three rope crossings are proposed at Stations 24120, 34150 and 35700. These align with the locations proposed in the EA. Rope crossings facilitate the movement of the Squirrel Glider and Yellow-bellied Glider. Glider poles are provided at Stations 25190, 25292 and 35780. (Refer Figures 9.1.1-9.1.64)

Additional trees will be planted in the vicinity of crossings to provide escape from predators and launching/landing locations. Refer to the Landscape Plans in Section 9.1 for locations of fauna underpasses, glider poles, rope crossing, culverts and fauna fences.

Enclosed forest setting in the vicinity of the Rest Area

Kundabung Road, site of proposed Kundabung Interchange

Riparian forest vegetation at Smiths Creek

4.1.4 Broadscale Vegetation

A number of confirmed endangered ecological communities (EEC's) have been identified along the route. Confirmed EEC's include:

- Moist Floodplain Closed Forest with Rainforest Elements (Narrow floodplains in gullies by creeks with permanent water including creek beds). All patches of this community occur within the Ballengarra State Forest
- Riparian Forest (Steeper banks and floodplains immediately adjacent to creeks within the K2K Project). Riparian Forest occurs at Smiths Creek, Pipers Creek and Maria River
- Paperbark Swamp Forest (Low-lying permanently wet depressions with poor drainage, near floodplains of creeks with permanent water or fringes of dams).

Non-EEC vegetation communities include:

- Moist Floodplain Forest
- Moist Gully Forest
- Moist Slopes Forest
- Dry Ridgetop Forest.

Moist Slopes Forest is the most abundant natural community in terms of area.

Cleared, open grassland with scattered mature to regrowth native trees occurs in the vicinity of Kundabung township, mostly associated with small farm holdings.

Refer to Section 8.2 and figure 8.2.2 for a further description of the Vegetation Communities. The proposed planting schedules are derived from the vegetation communities within the K2K Project area.

4.1.5 Landuse

The following existing land uses occur within the proposal area. These include:

- Residential/Commercial
- Rural
- National Park/State Forest.

Residential/Commercial

The residential/commercial land uses at Kundabung, located east of the Pacific Highway via Kundabung Road consists of structures and associated services forming a nucleus within the K2K Project area. At the northern end of the upgrade the extent of works stops near Kempsey, which is the largest township in the area and comprises a mix of residential, industrial and commercial uses.

Rural

This land use occurs in the flatter areas around Kundabung and to a lesser extent in the north. It is predominantly grassland within clumps of remnant natural vegetation. The original vegetation has been cleared to make way for commercial agriculture although the current smallholdings suggest that most are hobby farms with associated residences and small farm structures.

Nature Reserve/State Forest

This land use is typically characterised by ridgeline/steeply undulating topography, and is located in areas that have not been used in the past for agricultural purposes. They occur on both sides of the existing highway with Ballengarra State Forest at the southern extent of the K2K Project and Maria River State Forest at the Northern extent.

Lomandra hystrix on the banks of Maria River

Maria River State Forest - Dry Ridgetop Forest

Dry Ridgetop Forest on the corner of Old Coast Road

Riparian Forest adjacent to Maria River

Moist Floodplain Forest adjacent to Ravenswood Road

Existing heritage timber and concrete bridge at Maria River (not in use)

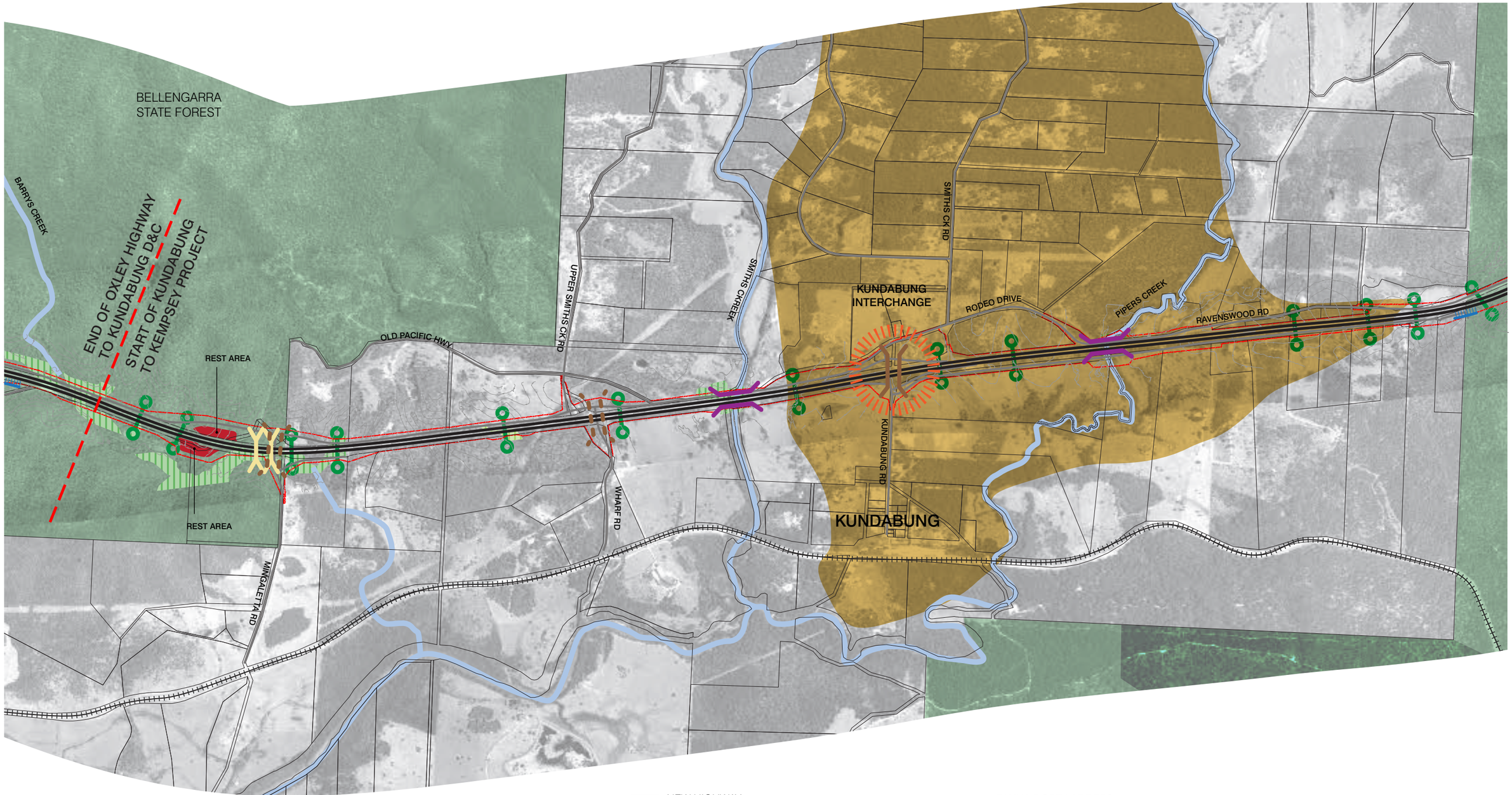

Figure 4.1.1 Alignment Overview - Sheet 1 of 2

NEW HIGHWAY
EXTENT OF WORKS
PROJECT BOUNDARY
EXISTING HIGHWAY, LOCAL ROAD, SERVICE ROAD ETC
NORTH COAST RAIL LINE
INTERCHANGES (GRADE SEPARATED)
BRIDGES
OVERBRIDGES (A CLASS WORKS)
OVERBRIDGES (M CLASS WORKS)

FAUNA ROPE LADDERS
GLIDER CROSSING POLES
FAUNA CROSSING/CULVERT
REST AREA
STATE FOREST/NATIONAL PARK
VILLAGES + COMMUNITIES
MODERATE CUTTINGS
MAJOR CUTTINGS

ENDANGERED ECOLOGICAL COMMUNITIES:
SUBTROPICAL COASTAL FLOODPLAIN FOREST
SWAMP SCHLEROPHYLL FOREST ON COASTAL FLOODPLAIN

HISTORIC FEATURES
MARIA RIVER HERITAGE BRIDGE (THREE-SPAN BRIDGE TIMBER AND CONCRETE COMPOSITE STRUCTURE)

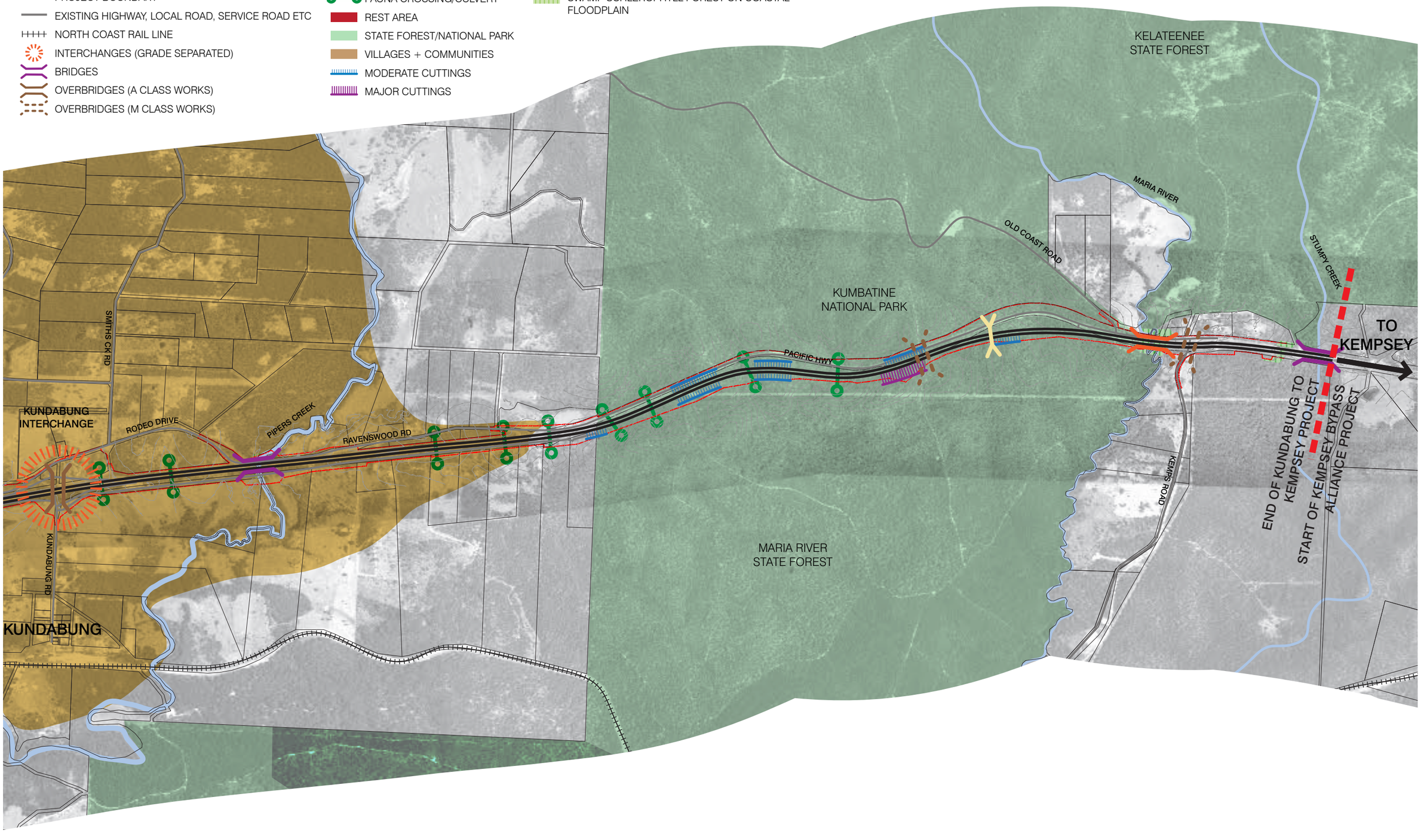

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Figure 4.1.2 Alignment Overview - Sheet 2 of 2

4.2 STRATEGY PLAN

A landscape character plan is provided in Volume 1, Chapter 17, Figure 17.2 of the Environmental Assessment (EA) which depicts the key design elements of the EA Landscape Concept Plan. Landscape zones along the route are an essential component of these plans.

As part of the review of the Landscape Concept Plan provided with the EA, an updated Strategy Plan (Figure 4.2.1 to 4.2.2) was prepared which identified "Character Zones" along the route. These can be compared directly to the EA landscape character zones. Whilst the overall characterisation of the route remains broadly unchanged, there are a number of differences which are refined in the updated Strategy Plan:

- The commencement of the upgrade has been identified as "scattered forest"" as opposed to an "open agricultural landscape". This may be a factor of the maturing regrowth vegetation which has become more prominent in the years since the EA was prepared
- "Floodplain" landscapes have been identified as being a distinct character zone
- "Riparian" character zones of the Hastings and Wilsons Rivers have been identified as being distinct from the "Floodplain" landscape
- A scattered forest zone to the west of the highway in the vicinity of the tea tree plantation has been identified
- A transition zone of "Scattered Forest" has been identified from Mingaletta Road to Wharf Road.

The updated Strategy Plan illustrates the Kundabung to Kempsey (K2K) stage of the Oxley Highway to Kempsey (OH2K) Upgrade.

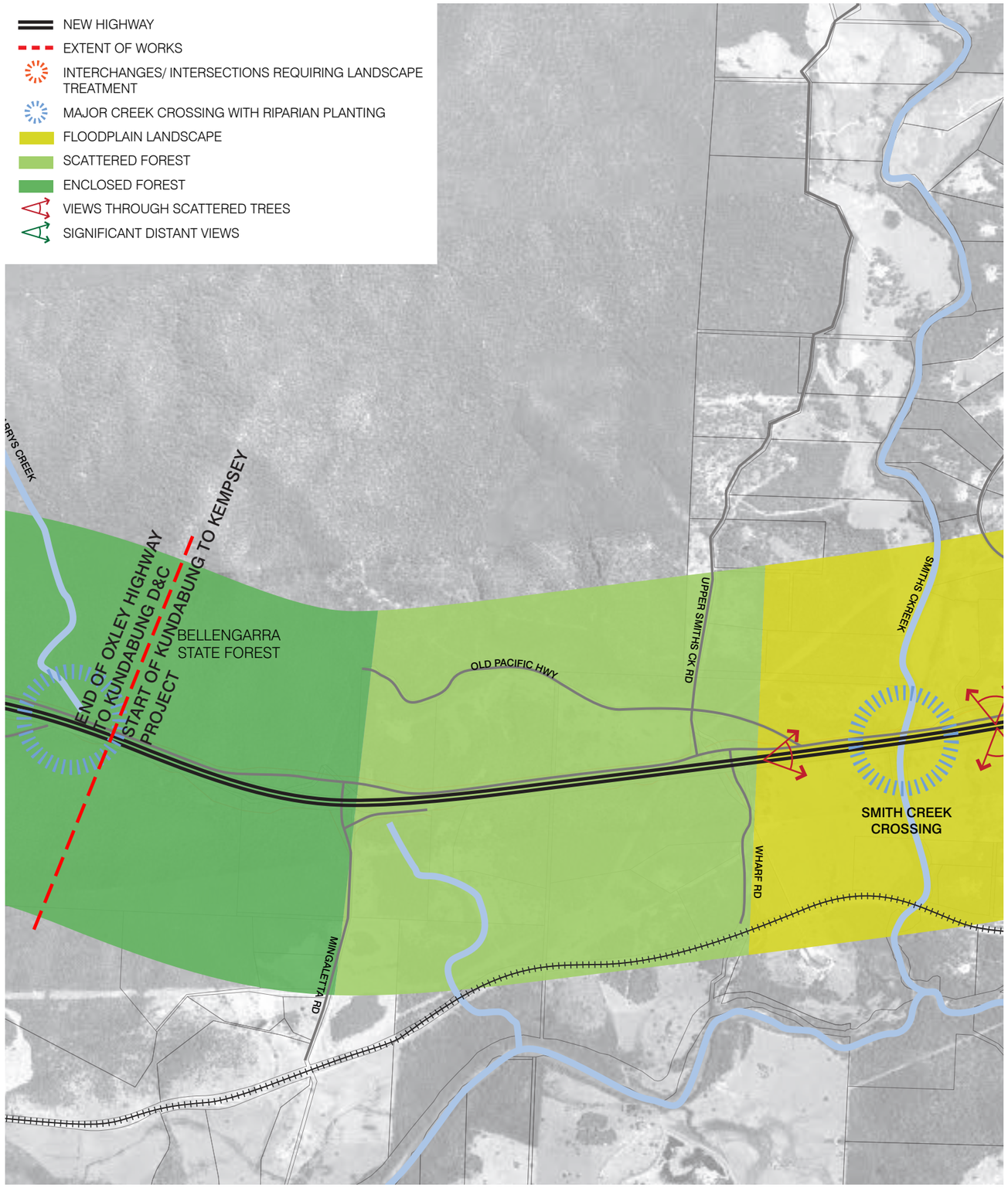

Figure 4.2.1 Strategy Plan - Sheet 1 of 2

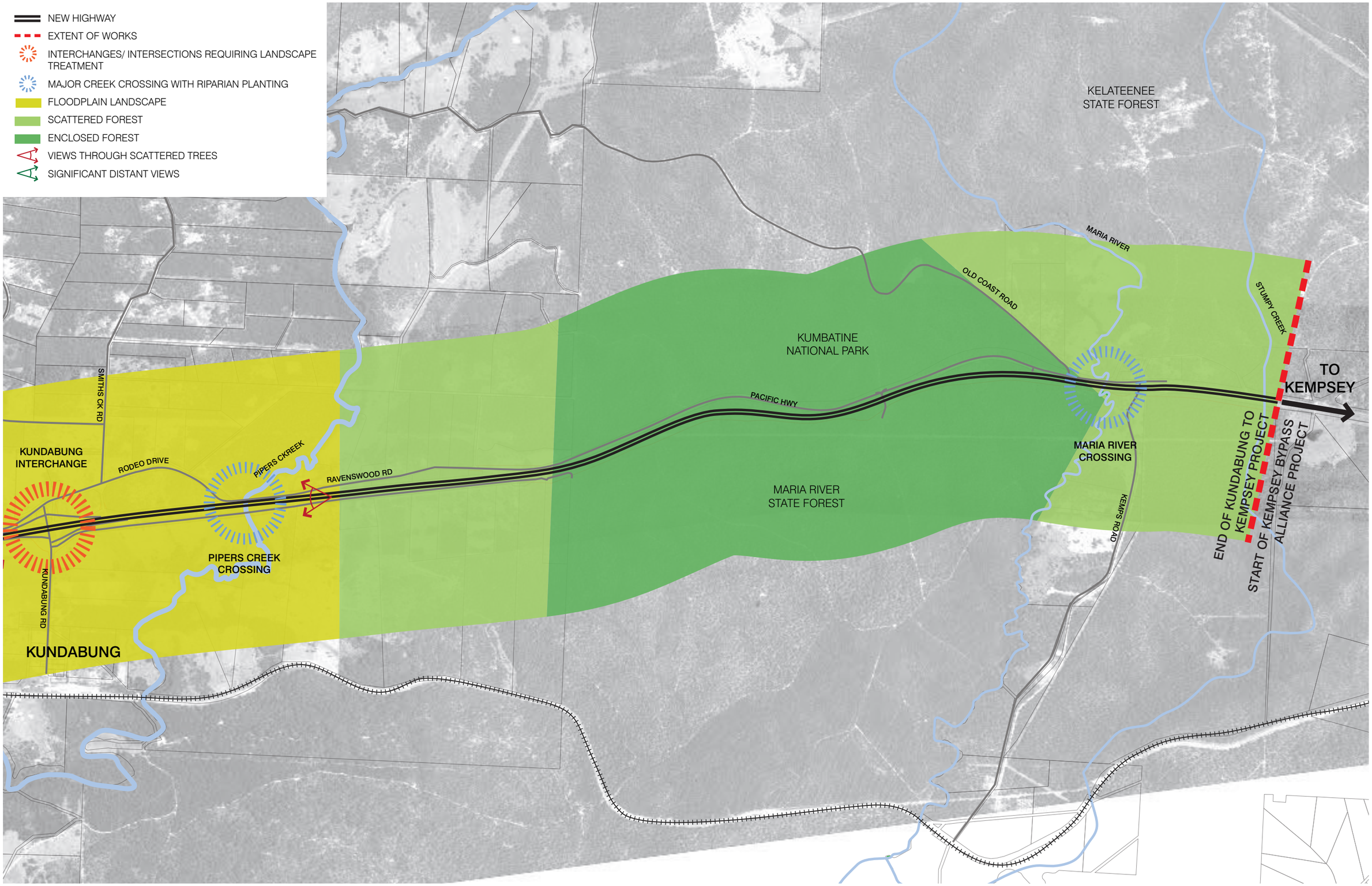

Figure 4.2.2 Strategy Plan - Sheet 2 of 2

5 URBAN DESIGN AND LANDSCAPE OBJECTIVES AND PRINCIPLES

5.1 VISION

The Vision for the Oxley Highway to Kempsey (OH2K) Project is established in the RTA publication "Pacific Highway Urban Design Framework"(The Framework) (March 2005):

The upgrade should be a sweeping, green highway providing panoramic views to the Great Dividing Range and the forests, farmlands and coastline of the Pacific Ocean; sensitively designed to fit into the landscape, and be unobtrusive; and characterised by simple and refined road infrastructure.

This comprehensive vision statement remains valid for all Pacific Highway upgrades, including the Kundabung to Kempsey (K2K) Project.

5.2 OBJECTIVES

The Proposal has been developed in accordance with the six urban design objectives set out in the Framework (March 2005) (these are also repeated in Section 17.1.3 and Table 17.4 of Volume 1 of the Environmental Assessment (EA)) and these remain valid for the Kundabung to Kempsey (K2K) Project. How the design satisfies the urban design objectives of the framework is described below.

Objective 1: Provide a flowing road alignment that is responsive to and integrated with the landscape.

A key feature of the Project and the scenic quality of the area is the existing forest in the hilly areas and the agricultural landscape in the flatter areas. The design integrates with this landscape by:

- The use of steeper batters to minimise clearing in forested areas.
- The use of flatter batters in floodplain landscapes to minimise the need for safety barriers through these zones.
- The roadside landscape is integrated with existing landscape patterns of forested and cleared areas and retains views to the wider landscape where they are available.

The horizontal and vertical geometry has been coordinated to minimise environmental impacts, improve efficiency, improve safety for road users and enhance the aesthetics of the road design. The horizontal alignment generally follows the existing Pacific Highway from the southern extents to Pipers Creek, where it deviates to the east such that the existing bridge becomes part of the service road to the west. Beyond Pipers Creek the horizontal alignment again follows the existing Pacific Highway, with the proposed northbound carriageway generally located on the alignment of the existing Pacific Highway before deviating off line to the east through the Maria River State Forest. North of the Maria River State Forest the horizontal alignment again follows the alignment of the existing Pacific Highway to the northern extents at the interface with the Kempsey Bypass project. Sections of the existing Pacific Highway pavement are being reused as part of the new northbound carriageway.

Earthworks are graded out where possible and batter slopes are rounded at the crest and toe of slopes. The gradient of batters (in particular fill batters) generally vary from 4:1 to 2:1. Material reuse sites have maximum slopes of 3:1 and rounding relevant to their height. For instance a mound of five metres high will have a minimum rounding of 10 metres radius at the crest.

Objective 2: Provide a well vegetated, natural road reserve.

The landscape design proposes native seeding with planting in specific areas. All proposed vegetation is derived directly from extant vegetation communities comprised of an appropriate mix of canopy trees, shrubs, groundcovers and grasses to match the adjoining vegetation character. Linear planting is avoided where possible especially where planting at creeks and fauna crossings can be perpendicular to the alignment. Medians are seeded with frangible shrubs with a two metre wide edge of native grasses, but benches on tall cuts have been seeded with native grasses to provide for maintenance access.

Loss of existing vegetation has been minimized and the K2K Project landscape design proposes dense vegetation except where desirable views are available and where maintenance concerns preclude dense vegetation.

Objective 3: Provide an enjoyable interesting highway with varied views and vistas of the landscape and pleasant restful places to stop.

The landscape types through which the K2K Project passes may be broadly characterised as enclosed forest, scattered forest and open agricultural/ floodplain landscape. Key natural features include large areas of state forest and nature reserves with the existing Pacific Highway being the most notable built feature within the landscape.

The landscape plan considers the key views to the open pastoral landscapes and ensures they are retained in order to provide interest in an otherwise heavily vegetated section of the Pacific Highway. The K2K Project will also provide two new rest areas south of Mingaletta Road which have been designed to be both distinctive and attractive in their own right and provide shade and amenity for users.

Objective 4: Value the communities and towns along the road.

The K2K Project passes through a predominantly forested environment with the Kundabung rural areas and others to the northern extent having scattered rural residences in proximity to the highway. The K2K Project will generally improve community connectivity with the provision of overbridges at key locations in the vicinity of Kundabung. As a result local residents will be provided with improved and safer access to the upgraded highway for access to other regional centres such as Port Macquarie and Kempsey, and safer access within the villages by separation of local and through traffic.

Views to bridges, the Kundabung interchange and the rest area have been maintained where possible to provide awareness of their presence, and distinctive vegetation and placement will help to identify these locations. Pedestrians and cyclist connectivity is provided at the rest areas and Kundabung Interchange.

Additional planting is proposed to mitigate residual impacts. Where residences have been identified as being impacted by highway noise, at receptor mitigation is proposed.

Objective 5: Provide consistency-with-variety in road elements.

Refer to Section 7 for a description of the bridges and other urban design elements. Distinctive stands of trees are proposed along the route to highlight the interchange, creek crossings and the rest areas.

All built elements are designed as a "family" with consistent and well resolved detailing at junctions and transition.

Objective 6: Provide a simplified and unobtrusive road design

Refer to Section 7 for a description of the bridges and other urban design elements.

The design of all elements have been developed to result in a simply refined and unobtrusive solution.

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6 PROJECT STAGE DESCRIPTION

6.1 KUNDABUNG TO KEMPSEY DESIGN DESCRIPTION

The Kundabung to Kempsey (K2K) Project scope of works comprises:

- Approximately 14 kilometres of Pacific Highway dual two-lane carriageway upgrade
- Approximately 10 kilometres of service/access roads, with approximately six kilometres comprising the existing Pacific Highway and existing local roads
- Local road realignment and reuse of the existing bridges at Ravenswood Road and Pipers Creek
- At grade local road connections to Mingaletta Road, Wharf Road, Upper Smiths Creek Road, Pipers Creek Access Road, the existing Pacific Highway, Old Coast Road and Kemps Road
- Overpass and diamond interchange at Kundabung Road
- An interim tie-in to the existing Pacific Highway at the southern limit of the K2K Project
- Tie-in to the Kempsey Bypass at the northern limit of the K2K Project
- Northbound and southbound rest area facilities
- A Heavy Vehicle Inspection Bay facility on the southbound carriageway
- Main carriageway twin bridges at Smiths and Pipers Creeks
- A new bridge at Stumpy Creek on the northbound carriageway and re-use of the southbound bridge
- Re-use of northbound and southbound bridges at Maria River
- A series of relatively deep cuts through Maria River State Forest
- Local property access road north of Pipers Creek
- Property adjustment works along the length of the K2K Project.

The main adverse impacts that would be caused by the construction of the proposal are:

- Loss of vegetation, habitat and state forest land
- Loss of regionally significant farm land and agricultural productivity
- Potential impacts on aboriginal heritage items
- Additional noise for some residences
- Potential visual impacts for some residences
- Construction related impacts such as noise, vibration, and air quality issues
- Increase in shading and loss of creekside vegetation at watercourse crossings.

6.2 LOCATIONS IMPACTED BY THE CONSTRUCTION OF THE KUNDABUNG TO KEMPSEY PROJECT

The following areas may be impacted by the construction of the Kundabung to Kempsey (K2K) Project: temporary ancillary facilities, access roads and watercourses that cross the project alignment.

As a minimum, these sites will be prepared as for other vegetated areas, topsoiled and seeded with native plants, native grasses or pasture grasses. In areas where it is desirable to establish indigenous and endemic vegetation communities, these will be restored to equal or better than the current state. The landscape plan (refer Figures 9.1.1-9.1.64) and schedules (refer Appendix A) nominate which species are to be used according to the vegetation community type occurring in any given area. Refer to Section 8.6.2 and 8.6.3 for the procedures required to be followed to minimize the impacts of ancillary facilities and temporary stockpile sites on the environment.

The proposed locations and landscape treatment of permanent material reuse sites on the K2K Project are shown in Appendix E. Not all material reuse sites will necessarily be installed as they are dependant on the final quantity of material remaining at completion of construction of the main works. Visual impacts associated with material reuse sites are discussed in Section 8.6.1.

Where temporary waterway crossings are required as part of the temporary works, the contractor must prepare and include in the Construction Environment Management Plan (CEMP) a Work Method Statement (WMS) detailing the control measures to avoid where possible, and minimise any adverse impact on water quality and riparian fauna and flora. The contractor must consult the Roads and Maritime Representative, Environmental Protection Agency (EPA), Department of Primary Industries (DPI) and NSW Office of Water and other relevant agencies in preparing the WMS and prior to undertaking any works near or in the waterways.

For restoration procedures proposed at permanent waterway crossings refer to Section 8.15.

Where cuttings expose Potential Acid Sulfate Rock (PASR), a series of treatments have been devised to minimize and neutralize leachate before it can harm downstream environments. Refer to Section 8.14.

The landscape design addresses some of the loss of vegetation and the visual impacts for some residences where existing vegetation is removed. Where residual visual impacts remain, these are discussed in Section 8.10.

Note that extensive headlight screen planting is proposed (approx. 2.5 kilometres) between Pipers Creek access road and the highway, and between Ravenswood Road and the highway. This planting will also assist in providing visual mitigation of the highway for adjacent residences.

For a description of the management of the existing vegetation on the K2K Project refer to Section 8.17.

The Rest Area wastewater will be treated on-site by an Aerated Wastewater Treatment System (AWTS) and apply treated wastewater via sub-surface irrigation to a purpose designed wastewater irrigation area. The plants selected for the irrigation area remove any residual nutrients remaining in the treated wastewater.

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7 URBAN DESIGN DESCRIPTION

This section describes the urban design aspects for the Kundabung to Kempsey (K2K) Project to show compliance with the urban design objectives and principles described in Section 5.

7.1 BRIDGES

The Kundabung to Kempsey (K2K) Project includes both new bridges and existing bridges which are retained and reused.

The new bridges comprise:

- Twin bridges over Smiths Creek
- Bridge over Pacific Highway at Kundabung Road
- Twin bridges over Pipers Creek
- Northbound bridge over Stumpy Creek.

The existing bridges comprise:

- Ravenswood Road Bridge over Pipers Creek (currently northbound Pacific Highway Bridge)
- Disused Heritage Bridge over Maria River (not forming part of the current works)
- Southbound Bridge over Maria River
- Northbound Bridge over Maria River
- Service Road Bridge over Stumpy Creek (currently northbound Pacific Highway)
- Southbound bridge over Stumpy Creek.

Twin bridges over Smiths Creek

New twin bridges will be constructed to carry the northbound and southbound carriageways of the main alignment over Smiths Creek. The bridges will have a medium level of visibility particularly from the potential future service road bridge. Refer Figures 7.1.1 and 7.1.2.

Each bridge consists of a four span simply supported plank structure. The overall length of each bridge is approximately 55 metres.

The abutments consist of reinforced concrete headstocks supported on three cast-in-place piles. The piers consist of 700 millimetre diameter reinforced concrete column extensions supported on cast in place piles. Reinforced concrete wingwalls are used at both abutments.

The superstructure consists of fourteen 535 millimetre deep equally spaced concrete planks per span.

The bridge barriers comprise truncated concrete parapets with twin steel rails and an overall height of 1.3 metres. The concrete barriers are constructed using precast units to form the outer face of the barrier. The twin rail and post system mounted on top of the concrete parapet maximises road user views to the surrounding landscape.

Due to possible discolouration and colour match issues, anti-graffiti coatings will be applied to extend to cover all of any one singular planar surface.

Figure 7.1.1 Twin bridges over Smiths Creek: Elevation

01 TWIN METAL RAIL BARRIER
02 CONCRETE PARAPET
03 DRAINAGE PIPE
04 PSC PLANKS
05 RIP RAP ARMOUR STONE SCOUR PROTECTION
06 MAINTENANCE ACCESS STAIRS
07 CONCRETE HEADSTOCK
08 ROUND CONCRETE PIER

0 10m

Figure 7.1.2 Twin bridges over Smiths Creek: Section

Bridge over Pacific Highway at Kundabung Road

This bridge will carry the two lanes of Kundabung Road and a shared path over the new Pacific Highway. It will have a high level of visibility particularly from the Pacific Highway and forms a visual landmark along the highway. Refer Figures 7.1.3 and 7.1.4.

The Kundabung Road overbridge is one of a group of related bridges over the Pacific Highway. The design of the bridge has been carefully considered to purposefully relate to the existing bridges of adjacent Pacific Highway upgrades.

The bridge consists of a two span simply supported concrete Super-T structure. The overall length of the bridge is approximately 55 metres.

The abutments consist of reinforced concrete headstocks supported on four cast in place piles. Reinforced concrete wingwalls are used at both abutments. They act as a screen wall to conceal the girder bearings.

The middle pier consists of a twin legged reinforced concrete portal supported on two cast in place piles. The portal pier is tapered in elevation from the Pacific Highway, with a minimum width of one metre at its base to suit Urban Design requirements. In elevation, perpendicular to the Pacific Highway, the legs are a constant width and inclined towards the centreline of the bridge at an angle of approximately seven degrees. The pier is located to allow for the potential future third lane widening of the Pacific Highway and to satisfy required sight distances.

The superstructure consists of seven simply supported 1.5 metres deep concrete Super-T Girders per span per span.

The bridge barriers adjacent to the carriageway comprise truncated concrete barriers with twin steel rails. The southern concrete traffic barrier will be constructed using precast units to form the outer face of the barrier. The internal traffic barrier adjacent to the shared path will be cast insitu. The external pedestrian barrier along the northern edge of the bridge adjacent to the shared user path will comprise a concrete upstand with a vertical face adjacent to the path supporting a 900 millimetres high hand rail. A 1.3 metres high cycle rail is provided along both sides of the shared path. The outer face of the pedestrian barrier is formed from the typical pre-cast concrete unit used for the southern barriers to maintain a consistent elevation from both the north and south along the Pacific Highway.

Safety screens are integrated with the external bridge barriers and extend a minimum of six metres beyond the traffic lanes of the Pacific Highway below. The design uses tapered steel T section posts to support the steel mesh of the screen. This T section fits neatly within the posts of the twin rail traffic barrier and the hand and cycle rail of the pedestrian barrier ensuring the safety screen is fully integrated into the bridge structure. The post of the safety screen is inclined outwards from the vertical by an angle of approximately 16 degrees to provide a feeling of openness on the bridge and a distinctive folded form. The top of the safety screen post is tapered to assist in creating a sense of visual lightness. The safety screens taper in elevation at each end to terminate in three evenly spaced sloping panels.

Due to possible discolouration and colour match issues, anti-graffiti coatings will be applied to extend to cover all of any one singular planar surface.

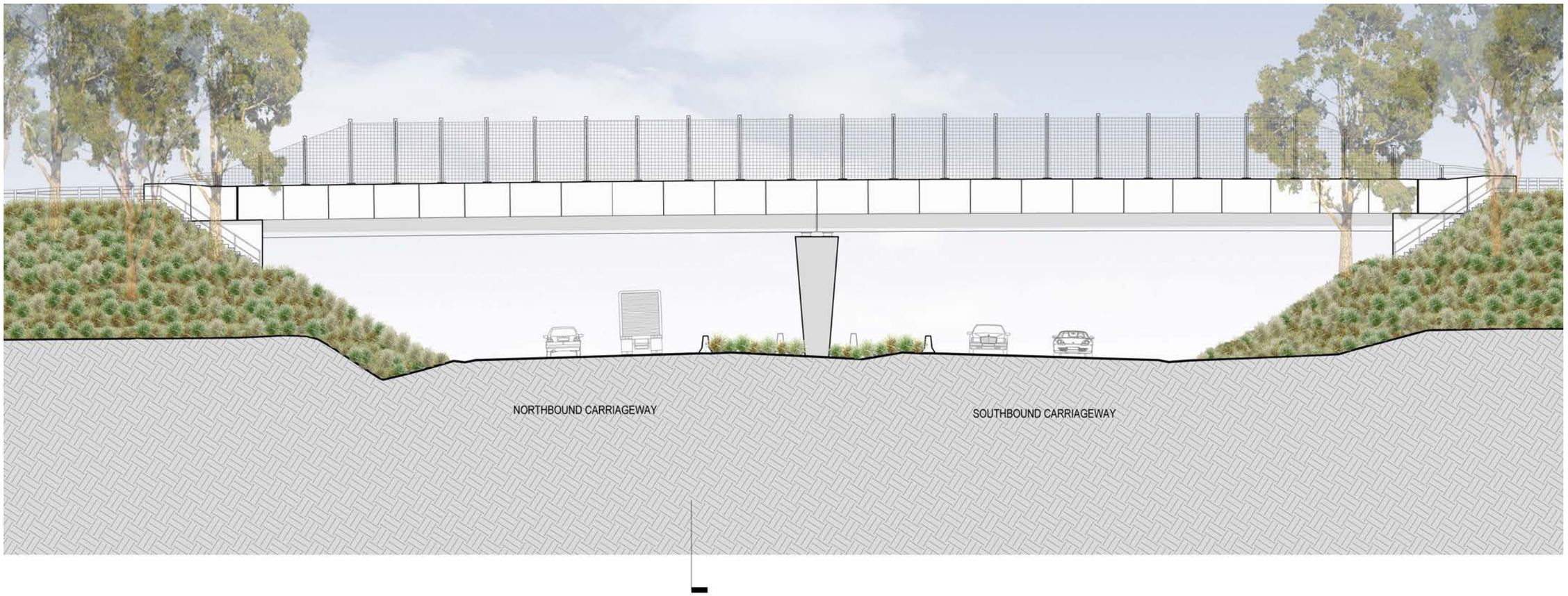

Figure 7.1.3 Bridge over Pacific Highway at Kundabung Road: Elevation

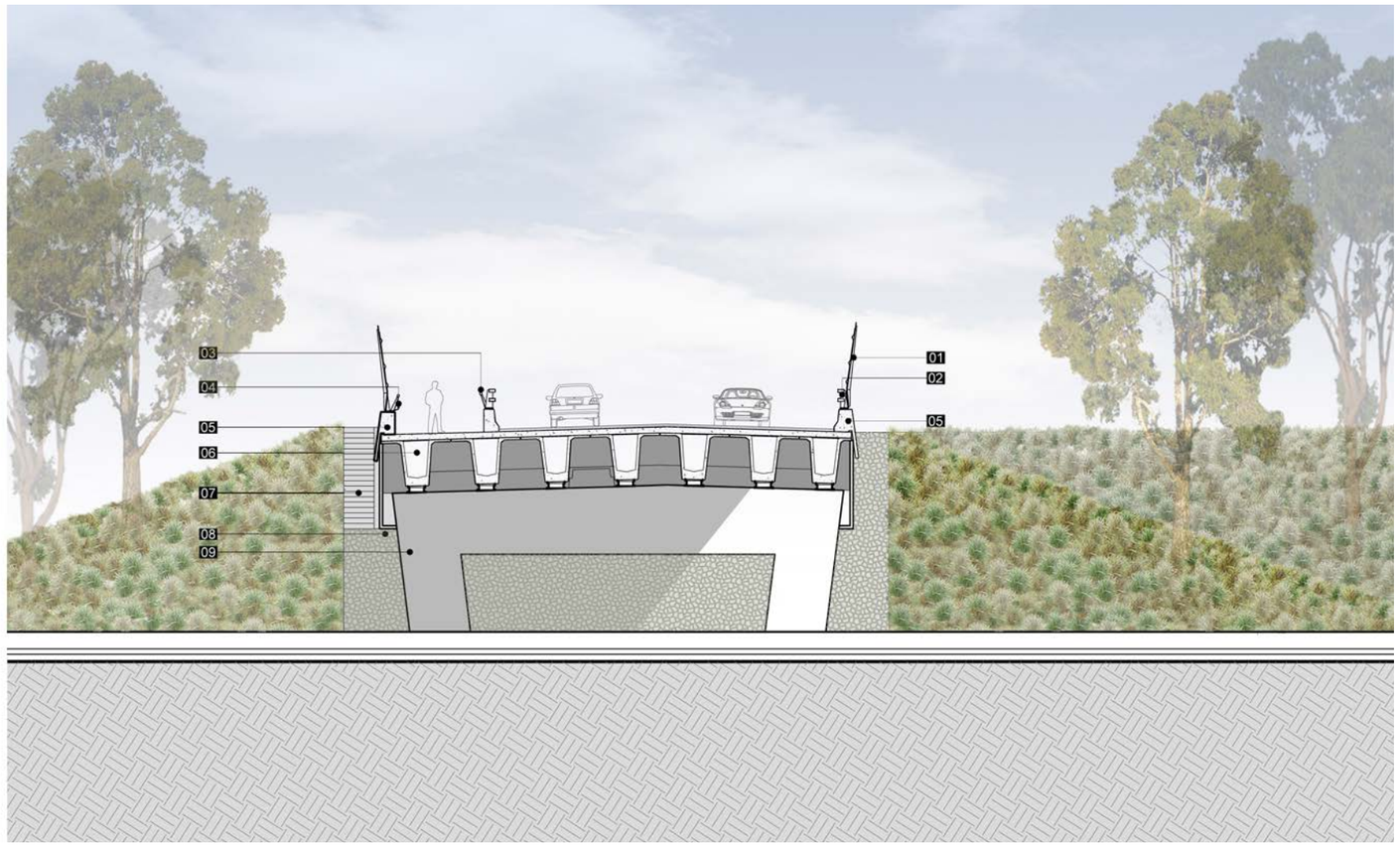

Figure 7.1.4 Bridge over Pacific Highway at Kundabung Road: Section

Twin bridges over Pipers Creek

New twin bridges will be constructed to carry the northbound and southbound carriageways of the main alignment over Pipers Creek. The existing Pacific Highway bridge over Pipers Creek is to be retained and will carry Ravenswood Road. The twin bridges will have a medium level of visibility particularly from the Ravenswood Road local road bridge. Refer Figures 7.1.5 and 7.1.6.

Each of the new twin bridges consists of a three span simply supported structure. The overall length of each bridge is approximately 45 metres. The bridges have curved horizontal alignment and a carriageway width of generally 11 metres.

The abutments consist of reinforced concrete headstocks supported on three cast in place piles. The piers consist of 700 millimetre diameter reinforced concrete column extensions supported on cast in place piles. Reinforced concrete wingwalls are used at both abutments.

The superstructure consists of fourteen 600 millimetres deep concrete planks per span.

The barriers comprise truncated concrete parapets with twin steel rails. The concrete barriers are constructed using precast units to form the outer face of the barrier. With the exception of this barrier, the twin rail and post system mounted on top of the concrete parapet maximises road user views to the surrounding landscape.

Due to possible discolouration and colour match issues, anti-graffiti coatings will be applied to extend to cover all of any one singular planar surface.

Figure 7.1.5 Twin bridges over Pipers Creek: Elevation

Ravenswood Road bridge over Pipers Creek (existing)

This bridge, constructed in 1930 and widened in 1975, is to incorporate minor modifications. Pacific Highway traffic currently using the bridge is to be removed from it and subsequently carried by the new twin bridges. The existing bridge is then proposed to carry local traffic on Ravenswood Road. It will have a medium level of visibility particularly from the adjacent twin bridges carrying the Pacific Highway traffic. No changes to the bridge appearance are proposed.

The Ravenswood Road bridge has an overall length of approximately 30.5 metres. The bridge has a constant carriageway width of approximately 8.5 metres.

The piers consist of reinforced concrete columns supported on reinforced concrete footings. The abutments consist of reinforced concrete headstocks on driven reinforced concrete piles.

The superstructure comprises five 864 millimetres deep reinforced concrete beams composite with a 190 millimetres thick reinforced concrete deck slab.

The traffic barriers on the bridge consist of a reinforced concrete kerb approximately 230 millimetres high and a steel barrier with a single rail and a steel w-beam. The total height of barriers is approximately 910 millimetres.

The following modifications are proposed to the bridge:

- Repair existing scour protection and extend it around the piers
- Provide fauna access
- Provide a waterproof coating to protect the reinforcement
- Repair a section of drummy concrete.

The chosen protective coating is clear and therefore will not affect the appearance.

Figure 7.1.6 Twin bridges over Pipers Creek and existing bridge over Ravenswood Road: Section

Disused heritage bridge over Maria River (existing)

The disused bridge originally carried the northbound carriageway and has a composite timber beam and concrete deck. It was one of the first bridges of this type of construction and is heritage listed for this reason. This bridge is to be retained in its current condition due to its heritage value. No modifications are therefore proposed for this bridge.

Northbound bridge over Maria River (existing)

This existing bridge, which was constructed in 2007, will be retained and reused to carry the northbound main carriageway. It is a single span Super-T structure and is situated between the heritage bridge and the southbound bridge over Maria River. This bridge was designed to current standards. No modifications are proposed to this bridge.

Southbound bridge over Maria River (existing)

This bridge was constructed in 1988. It is a three span simply supported concrete plank structure. The overall length of the bridge is approximately 36.5 metres. The bridge has a constant carriageway width of 9.2 metres. The existing southbound bridge will have a medium level of visibility particularly from the adjacent northbound bridge. No changes to the bridge appearance are proposed.

The abutments consist of reinforced concrete headstocks supported on three 1.05 metres diameter cast in place piles. The piers consist of two 750 millimetre diameter reinforced concrete column extensions supported on cast in place piles. Reinforced concrete wingwalls are used at both abutments.

The superstructure consists of sixteen 380 millimetres deep concrete planks.

The traffic barriers on the bridge consist of a reinforced concrete kerb approximately 410 millimetres high and a steel barrier with twin rails. The ends of the steel rail transition to a safety barrier on the approaches. The existing barriers are only suitable for a low performance rating.

The following modifications are proposed to the bridge:

- Upgrade the barrier performance from low to regular performance
- Upgrade transitions between the bridge barrier and new road barriers
- Provide a protective coating to reinforced concrete elements.

Two of the three existing bridges at Maria River: deck of the historic disused bridge on the left, the northbound highway bridge on the right

Northbound bridge over Stumpy Creek

This new bridge is a three span simply supported structure. The overall length of the bridge is approximately 32 metres. The bridge has a constant carriageway width of 11.0 metres. Refer Figures 7.1.7 and 7.1.8.

The abutments consist of reinforced concrete headstocks supported on three 900 millimetre diameter cast in place piles. The piers consist of three 700 millimetre diameter reinforced concrete column extensions supported on three 900 millimetre diameter cast in place piles. Reinforced concrete wingwalls are used at both abutments.

The superstructure consists of fourteen 455 millimetres deep concrete planks.

The barriers comprise truncated concrete parapets with twin steel rails. The concrete barriers are constructed using precast units to form the outer face of the barrier. The proposed twin rail and post system mounted on top of the concrete parapet maximises road user views to the surrounding landscape.

Due to possible discolouration and colour match issues, anti-graffiti coatings will be applied to extend to cover all of any one singular planar surface.

Southbound bridge over Stumpy Creek (existing)

As this bridge was constructed in 1988, it is proposed that it will continue to carry southbound Pacific Highway traffic. The bridge is a three span simply supported concrete plank structure. The overall length of the bridge is approximately 30.5 metres. The bridge has a constant carriageway width of 9.2 metres. It will have a medium level of visibility particularly from the adjacent northbound bridge. No changes to the bridge appearance are proposed. Refer Figure 7.1.10.

The abutments consist of reinforced concrete headstocks supported on three cast in place piles. The piers consist of two 750 millimetre diameter reinforced concrete column extensions supported on two cast in place piles. Reinforced concrete wingwalls are used at both abutments.

The superstructure consists of sixteen 300 millimetres deep concrete planks.

The existing traffic barriers on the bridge consist of a reinforced concrete kerb approximately 410 millimetres high and a steel barrier with twin rails. The total height of barriers is approximately one metre. It is proposed that the steel barrier rails be upgraded to achieve regular performance. A standard barrier railing is proposed with a modified baseplate.

The following modifications are proposed to the bridge:

- Upgrade the barrier performance from low to regular performance
- Upgrade transitions between the bridge barrier and new road barriers
- Provide a protective coating to reinforced concrete elements.

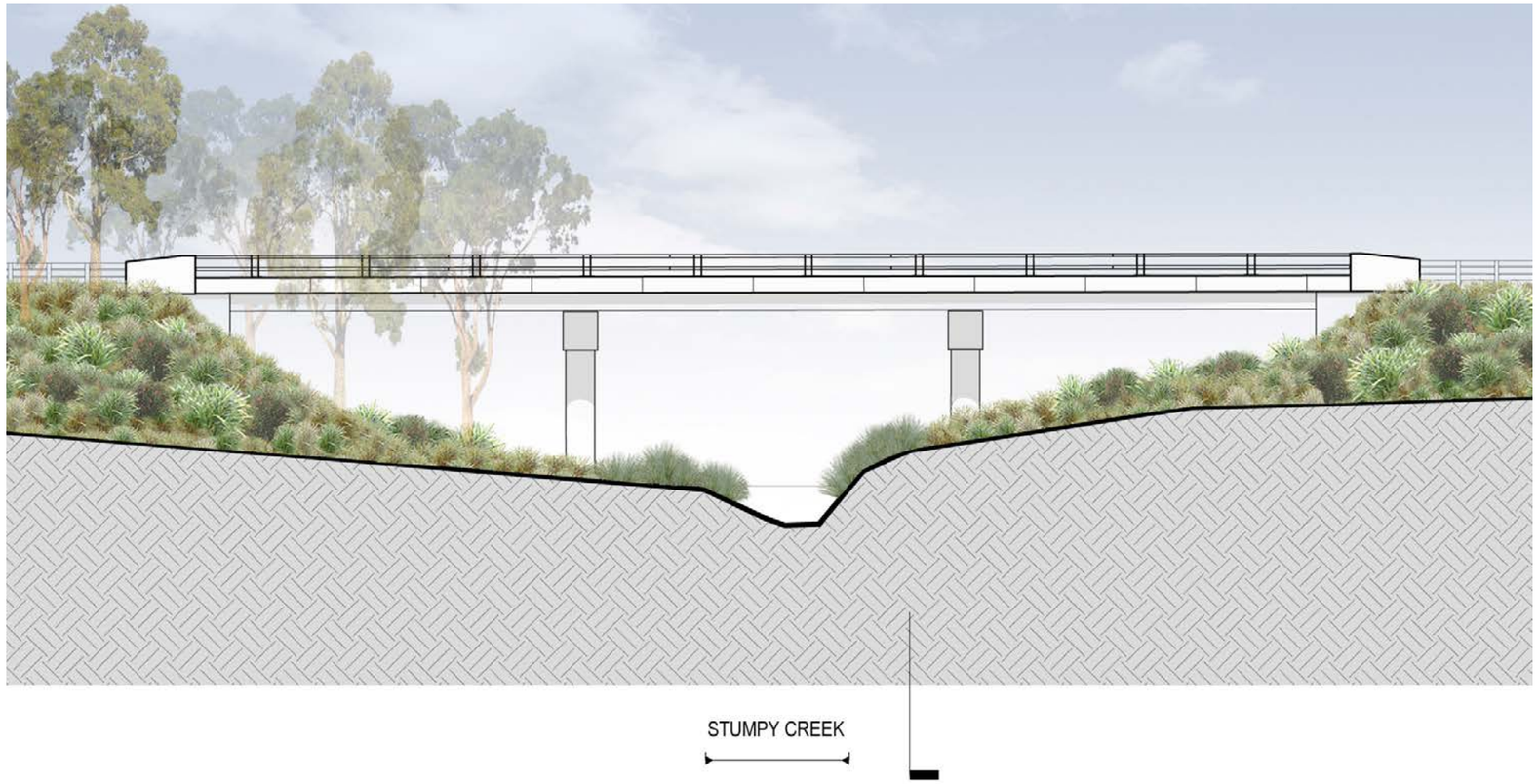

Figure 7.1.7 Northbound bridge over Stumpy Creek: Elevation

Service Road bridge over Stumpy Creek (existing)

Northbound Pacific Highway traffic is to be removed from this bridge and subsequently carried by the new northbound bridge over Stumpy Creek. The existing bridge is then proposed to be upgraded to carry only local traffic as a service road. The bridge will have a medium level of visibility, particularly from the adjacent northbound bridge carrying the Pacific Highway traffic. No changes to the bridge appearance are proposed. Refer Figure 7.1.8.

The bridge was originally constructed in 1950 as a three span timber bridge. In 1989, the existing timber superstructure was replaced with steel beams with an “Armco” bridge deck system and reinforced concrete deck. The overall length of the bridge is approximately 27 metres. The bridge has a constant carriageway width of eight metres.

The abutments consist of timber piles with timber capwales. Gravel boards are provided between the timber piles to form retaining wall abutments. The piers consist of timber piles with timber capwales and reinforced concrete headstocks. Timber cross bracing is provided to the timber piles.

The superstructure consists of seven 610 millimetres deep steel beams supporting a steel and concrete deck. 330 millimetres deep steel cross beams are provided over the abutments and piers.

The traffic barriers on the bridge consist of reinforced concrete barriers approximately 410 millimetres high supporting a guardrail. The total height of barriers is approximately 700 millimetres. It is proposed that the existing barriers are retained.

The following modifications are proposed to the bridge:

- Replace deteriorated gravel boards, install split rings on pier and abutment piles and replace corroded bolts (to be undertaken by Roads and Maritime Asset Maintenance)
- Provide scour protection
- Provide protective coating to exposed concrete surfaces.

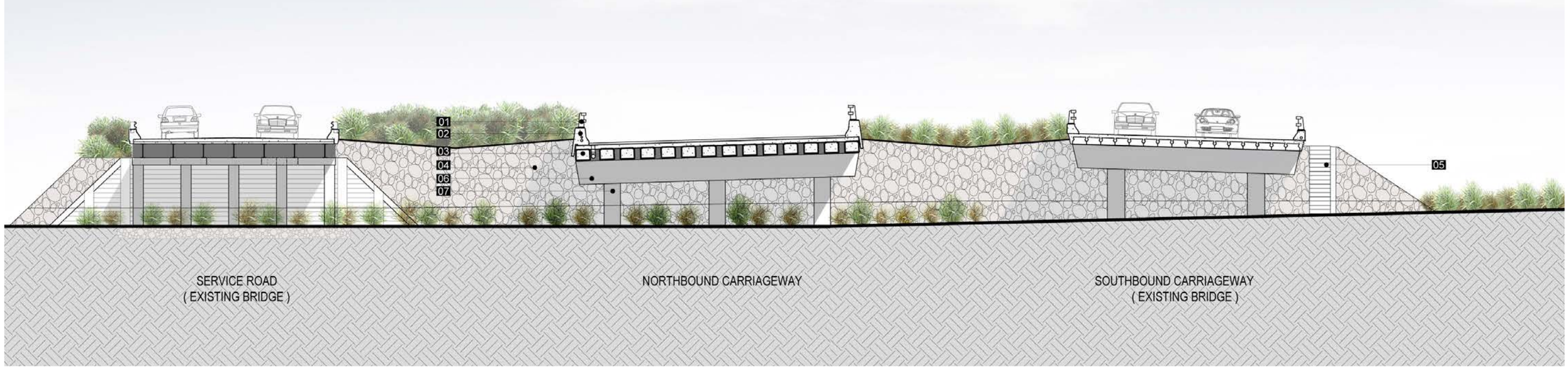

Figure 7.1.8 Northbound , southbound and service road bridges over Stumpy Creek: Section

7.2 CULVERTS

The Kundabung to Kempsey (K2K) Project includes twenty two box culverts of varying widths and lengths. The purpose of the box culverts is for drainage, combined drainage and fauna crossings, or dedicated fauna crossings. Table 7.2.1 below identifies the culverts within the K2K Project.

Table 7.2.1 Culvert Numbers, Types and Locations within the K2K Project

Culvert Name	No. of Cells	Size of Cell	Approx. length (m)
C24.43 Single Cell 3000x1800 RCBC	1	3000x1800	48
C24.7 Single Cell 3000x2400 RCBC	1	3000x2400	82
C25.10	1	1500	71
C25.42 Single Cell 3000x1500 RCBC	1	3000x1500	47
C25.44 5 Cell 3000x2400 RCBC	5	3000x2400	20
C25.68	2	1800	52
C25.85	2	900	44
C26.38	1	1500	60
C28.70 3 Cell 2400x2400 RCBC Extension	3	2400x2400	48
C29.60 4 Cell 1500x1500 RCBC Extension	4	1500x1500	82
C25.70 Single Cell 3600x2700 RCBC Combined	1	3600x2700	47
C26.40F Fauna Crossing Single Cell 3000x3000 RCBC	1	3000x3000	49
C26.78 Single Cell 3000x3000 RCBC Combined	1	3000x3000	49
C27.51 Single Cell 3000x3000 RCBC Combined	1	3000x3000	45
C30.10 Single Cell 3000x3000 RCBC Combined	1	3000x3000	49
C31.90 Single Cell 3000x2100 RCBC Combined	1	3000x2100	65
C32.35 Single Cell 3000x3000 RCBC Combined	1	3000x3000	64
C32.66 Single Cell 3000x2400 RCBC Combined	1	3000x2400	66
C32.67 Single Cell 3000x2400 RCBC Combined	1	3000x2400	20
C33.10 Single Cell 3300x3300 RCBC-Combined	1	3300x3300	52
C33.40F Fauna Crossing Single Cell 3000x3000 RCBC	1	3000x3000	49
C34.10 Single Cell 3000x3000 RCBC Combined	1	3000x3000	60
C34.72F Fauna Crossing Single Cell 3000x3000 RCBC	1	3000x3000	48
C35.70 Single Cell 3000x3000 RCBC Combined	1	3000x3000	50
C36.40 Single Cell 3000x3000 RCBC Combined	1	3000x3000	66
C34.70 3 Cell 2100x1500 RCBC	3	2100x1500	63
Note: Culvert number indicates distance in km from the Oxley Highway "Donut" interchange. *For example: C24.43 is located 24.43km from the Oxley Highway interchange.*			

The typical culvert consists of precast crown units on an in-situ reinforced concrete base slab.

Headwalls are to be cast-in-place on top of the end precast culvert crown units. Headwalls and wingwalls have been designed as soil retaining structures. The height of the headwall and wing walls has been kept to a minimum, to address both safety issues and visual impact.

Anti-graffiti protection will be provided to all exposed surfaces of the culvert headwall and wingwalls including the exposed end face of the precast crown units. The coating shall extend to cover all of any single planar surface.

The treatment of the approaches to culverts to be used for fauna passage are provided in the Landscape drawings to ensure requirements are met regarding attracting fauna to the crossing.

Proposed scour rock for combined culverts will be approximately 200mm, with a maximum of 400mm. In addition, fauna pathways would be created off to the sides of the central flow path to tie into fauna paths within the underpass, with 50 - 100mm diameter rock, loosely compacted into the large diameter rock to ensure ground traversing fauna can move across the surface."

7.3 HEADLIGHT SCREENING

There are no structural headlight screens in the Kundabung to Kempsey (K2K) Project, only planted headlight screening is proposed. Refer to Section 8.9.

7.4 REST AREAS

The northbound and southbound rest areas, virtually identical in terms of their layout, occur within the Ballengarra State Forest which is characterised by an enclosed forest setting. Views beyond the rest area are restricted by this forest setting.

The facilities areas include picnic shelters, toilets, paths and lighting. They are turfed with a Buffalo lawn and planted with local rainforest shade trees such as Blueberry Ash and Tuckeroo. The toilet block utilises a standard Roads and Maritime design.

For further rest area landscaping details refer to Section 8.11.

7.5 PEDESTRIAN AND CYCLIST NETWORK

For the full length of the main alignment, pedal cyclists will be accommodated within the 2.5 metres wide on-road nearside shoulders, including sign posted crossing points for entry and exit ramps at Kundabung Interchange, the rest areas and the heavy vehicle inspection bay. The existing Pacific Highway is hazardous for cyclists in many locations, as there is little or no shoulder. The upgrade will provide main carriageway nearside shoulder widths of 2.5 metres on the main carriageways including bridges (except at retained existing bridges). At Kundabung Road overbridge, cyclists will be accommodated within a two metre shoulder on the southern side and a 2.5 metres shared path on the northern side. Where the existing Pacific Highway becomes a local road, cyclists can use the 2.5 metres wide shoulder. On the upgraded section of Ravenswood Road, Rodeo Drive and Mingaletta Road a two metres shoulder is available for cyclists. In the rest areas pedestrians are provided with paths connecting the picnic shelters, amenities and driver-reviver to the car parking.

7.6 HEAVY VEHICLE INSPECTION BAY

A heavy vehicle inspection bay is proposed alongside the southbound carriageway and approximately midway between Pipers Creek and Maria River. It includes a small building to accommodate Roads and Maritime operators. The layout of the facility and proposed landscape treatment are shown on the landscape design drawings. Refer to Sections Figures 8.17.3 and 8.17.4, and Landscape Plan Figure 9.1.40.

The heavy vehicle inspection bay building is located between the heavy vehicle lanes within the facility and the southbound carriageway. The space available between the building and the carriageway is sufficient only for groundcovers and shrubs. Intermittent clusters of trees are located to the north and south of the building, providing visual screening in more distant views along the highway.

7.7 CUTTINGS AND EMBANKMENTS

Throughout the Kundabung to Kempsey (K2K) alignment there are a number of significant cuts and fills. Significant benched cuts occur at the northbound rest area and through the Maria River State Forest at approximate Station 35100. Significant fills occur at Kundabung interchange, and approx. Stations 32360, 33100, 33350, 35720 and 36400, although no fills require benches. Both the steepest cuts and fill are 2H:1V. Generally though cut and fill slopes are shallower which aids vegetation establishment because there is less chance of rilling and erosion and improved moisture-holding capacity than occurs on the usual 2H:1V slope used on roadside batters. Refer Figures 9.1.1-9.1.64.

All batter slopes will be topsoiled and revegetated with indigenous grasses or native shrub mix consistent with clear zone and sight line requirements. The higher batters are vegetated with tall shrub seed mixes. Where slopes are flatter than 3H:1V the topsoil depth is increased to 100-200mm. This depth of topsoil is suitable for the establishment of tree plantings especially at locations where mass planting is required for headlight screening.

Where slopes steeper than 3H:1V occur, a two-step hydraulic application of hydroseeding followed by strawmulching is applied for improved resistance to erosion.

Benches will be seeded with native grasses in order to maintain access for maintenance.

Where slopes transition to bridge abutments and steepen up to 1.5H:1V, organic fibre mesh is used in addition to the two-step application.

The tops and bottoms of batters will be rounded and feathered into the adjacent landform and the ends of cuttings will be rounded off and feathered into the adjacent landform. Generally the rounding is a two metre radius but is increased to three metre radius at the top of low shallow fills and decreased to one metre at the top of high fills.

Shotcrete may be required to stabilize some of the cuttings in the K2K Project. Refer to Section 7.8 for strategies to avoid and minimize its use. Refer to figure 8.17.5 illustrating the deep cut at Maria River State Forest.

7.8 SHOTCRETE AVOIDANCE AND MINIMISATION STRATEGY

7.8.1 Methodology to avoid and minimise use

In the Kundabung to Kempsey (K2K) Project, exposed areas of sprayed concrete (shotcrete) have been avoided as far as possible.

Where its use cannot be avoided:

- The extent of shotcrete will be minimised
- The edges of the shotcrete will be masked off to avoid overspray
- The colour and texture of the shotcrete will match the colour and texture of the adjacent rock batter (test panels will be provided) or be a dark recessive colour
- Areas of shotcrete along rock seams will be recessed to allow the exposed rock to visually dominate
- Shotcrete will have a wood float finish and a gun finish will be avoided
- Soil nails and rock bolts will also be recessed and any supporting shotcrete finished with a wood float finish
- Should areas of weak rock be exposed during construction, stone pitching using locally won rock will be considered to infill the weak areas.
- Shotcrete will be screened by plantings where possible.

7.8.2 Application of Shotcrete for Rock Seam Stabilisation

Figure 7.8.2.1 shows the use of stone pitching to stabilise slopes and Figure 7.8.2.2 illustrates the application of shotcrete for rock seam stabilisation.

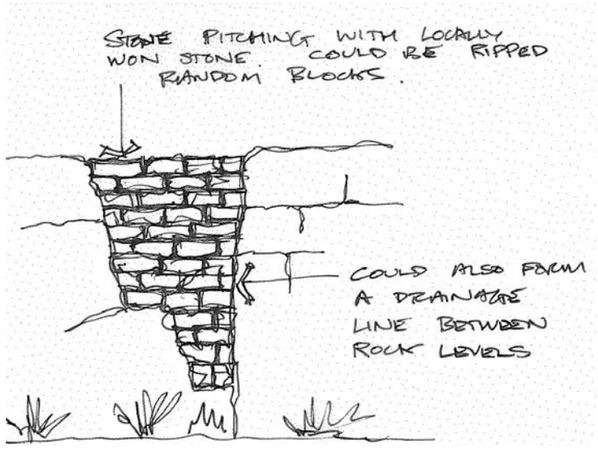

Figure 7.8.2.1 Stone Pitching

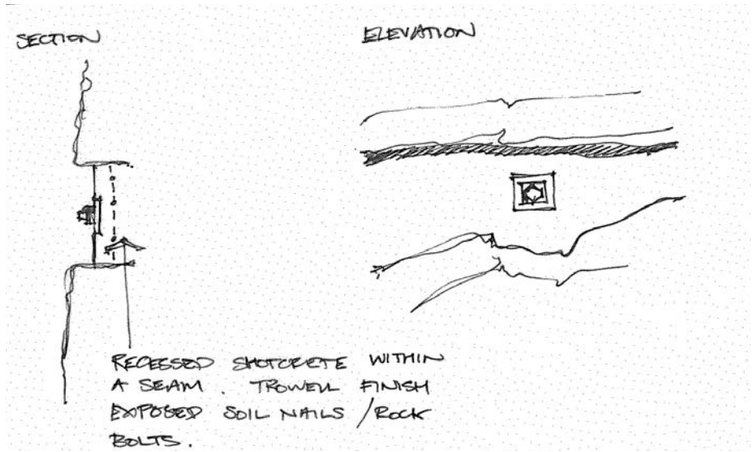

Figure 7.8.2.2 Rock Seam Stabilisation

7.9 CONCLUSION

The design of urban design elements complies with the Minister's Conditions of Approval numbers B20(a) and B20(c) and the Statement of Commitments numbers VAD1 and VAD5.

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8 LANDSCAPE DESIGN DESCRIPTION

8.1 APPLICATION OF THE PRINCIPLES

The Environmental Assessment (EA) Volume 1 Chapter 17 describes the treatments required to be implemented to meet the landscape and urban design objectives and principles which form the basis of the design.

A key component of the landscape revegetation described is the recognition that potential exists for considerable natural regeneration. This is particularly applicable in forested areas where seed banks will be present in the existing topsoil which will be stripped and re-spread. Trees and shrubs adjacent to the disturbed areas will also disperse seed into the corridor.

This key component has been adopted and developed in the preparation of the planting and seeding schedules proposed for the Kundabung to Kempsey (K2K) Project and is the key component in addressing Objective 2 and in matching the landscape context (and the following extant vegetation communities) through which the alignment passes.

8.2 VEGETATION COMMUNITIES.

Seven plant communities (both Endangered Ecological Communities (EEC) and Non-EEC) have been identified that are traversed by the Kundabung to Kempsey (K2K) highway alignment:

- Community 1 - Moist Floodplain Closed Forest with Rainforest Elements (EEC)
- Community 2 - Riparian Forest (EEC)
- Community 3 - Paperbark Swamp Forest (EEC)
- Community 4 - Moist Floodplain Forest (Non-EEC)
- Community 5 - Moist Gully Forest (Non-EEC)
- Community 6 - Moist Slopes Forest (Non-EEC)
- Community 7 - Dry Ridgetop Forest (Non-EEC)

While Freshwater Wetland on Coastal Floodplain (EEC) – does not specifically occur in the K2K Project area, it is apparent locally and species from this association are to be used in the planting and seeding mixes for water quality basins, swales and vegetated channels.

Vegetation communities are illustrated in Figures 8.2.1 and 8.2.2. The proposed planting scheme matches the location of these communities, and therefore the planting schedules are arranged by community. It is important to note that the extents of vegetation communities shown on the landscape plans, while generally conforming to those mapped in the environmental documents have been rationalised for the purposes of stripping and returning of topsoil to locations of the proposed formation.

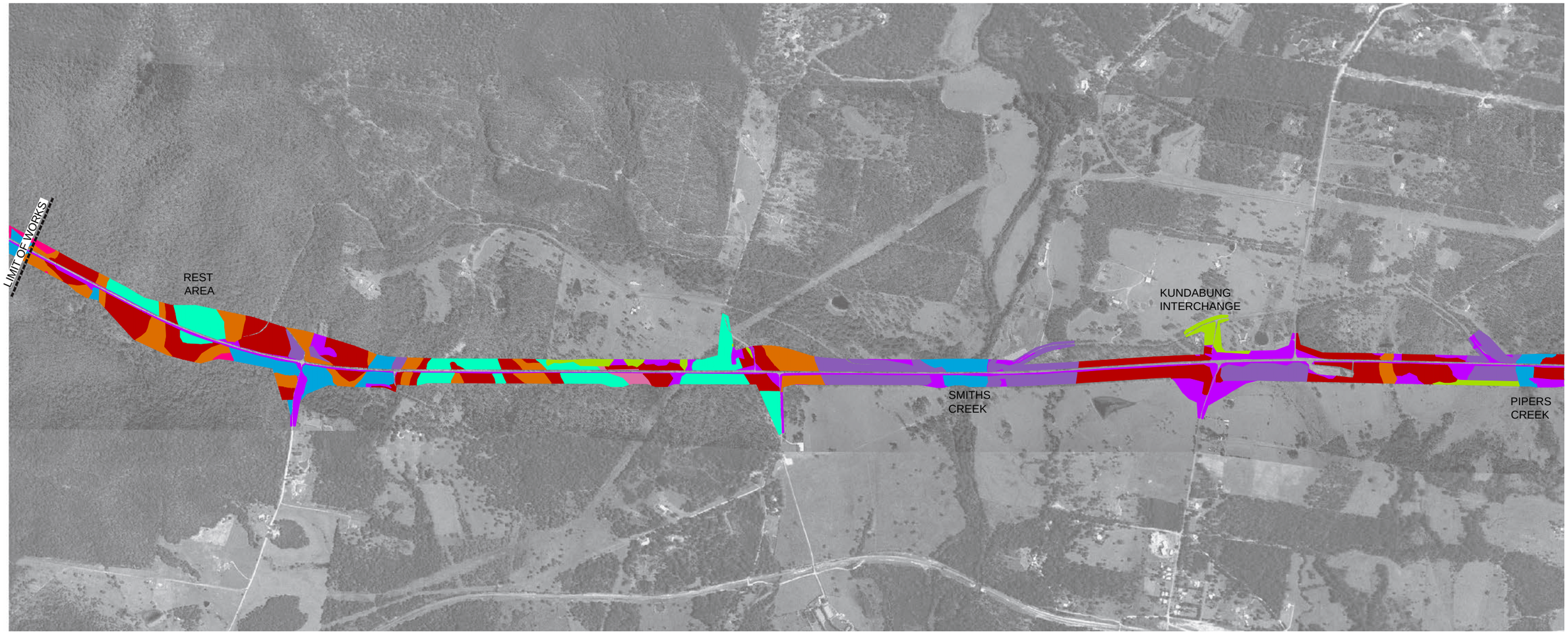
Seeding schedules are more generic and contain seed of species common to most or all of the extant vegetation communities due to the fact that:

- The embankments provide a different (and more generic) set of microclimatic factors than the surroundings
- The seed mixes must be calibrated to satisfy clearance requirements for safety (eg: frangible and non-frangible), maintenance requirements (eg: for mowing) and height requirements for safe sight clearance distances
- The seed mixes must contain seed of plants known to establish well from seed.

Cleared lands also occur as a landscape type along the alignment. Flat cleared lands are used for grazing or hobby farms with occasional remnants of regenerating vegetation and often (as clearings occur on floodplain areas) wetland vegetation.

The landscape treatment for cleared areas is generally to revegetate with pasture grasses or native grasses depending on context, with scattered tree planting where required to retain/frame views to floodplain. Tree species match the former vegetation community type that would have occurred prior to clearing as evidenced from vegetation remnants. Sedge planting for basins and channels are species from the Freshwater Wetland vegetation community.

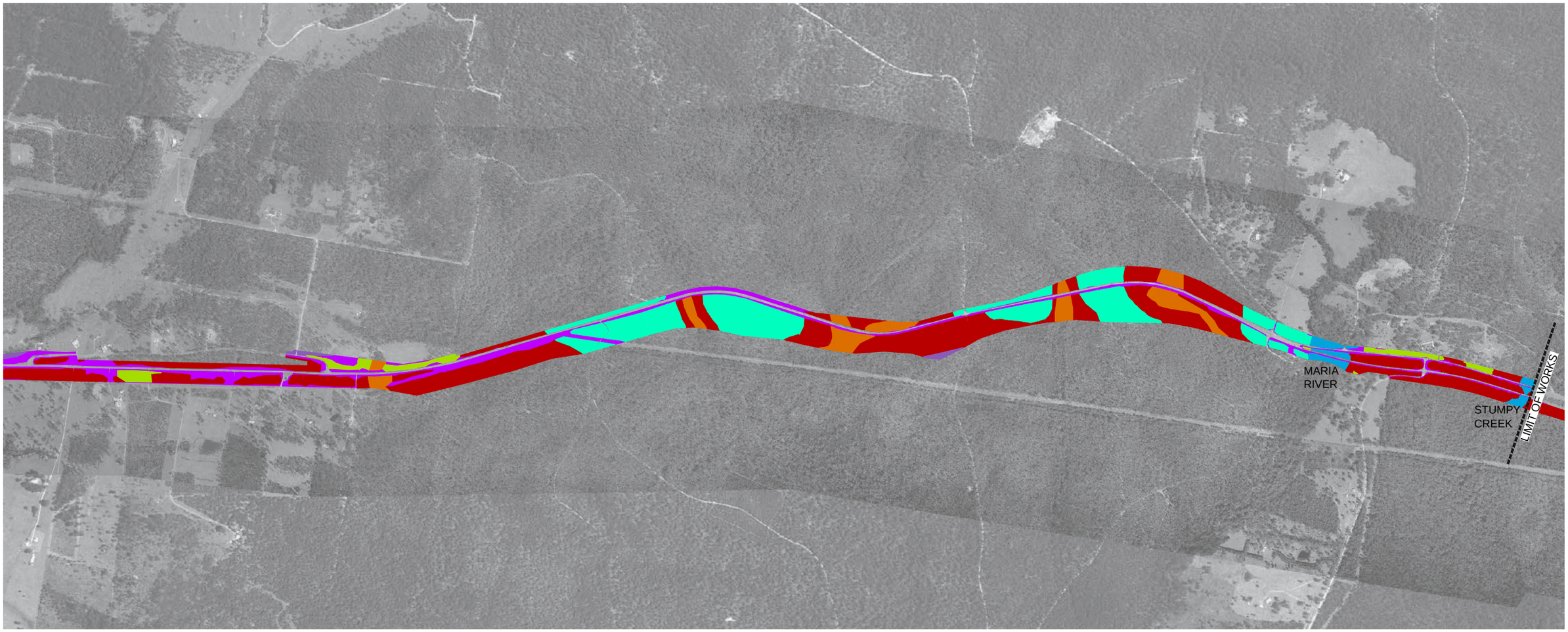
Mature *Elaeocarpus obovatus*. One of several species used as a feature tree for shade in the rest area.



Not to scale

- CLEARED SCATTERED TREES
- TOTALLY CLEARED OPEN PASTURE
- DRY RIDGETOP FOREST
- PAPERBARK SWAMP FOREST
- WETLAND
- MOIST FLOODPLAIN FOREST
- MOIST FLOODPLAIN CLOSED FOREST
- MOIST SLOPES FOREST
- MOIST GULLY FOREST
- RIPARIAN FOREST

Figure 8.2.1 Vegetation Communities: Sheet 1



Not to scale

- CLEARED SCATTERED TREES
- TOTALLY CLEARED OPEN PASTURE
- DRY RIDGETOP FOREST
- PAPERBARK SWAMP FOREST
- WETLAND
- MOIST FLOODPLAIN FOREST
- MOIST FLOODPLAIN CLOSED FOREST
- MOIST SLOPES FOREST
- MOIST GULLY FOREST
- RIPARIAN FOREST

Figure 8.2.2 Vegetation Communities: Sheet 2

8.3 TOPSOIL TREATMENTS

Topsoil treatments proposed must allow for various application methods dependent upon the existence of relatively undisturbed site topsoils, the complete removal of site topsoils or topsoils over new formation, the steepness of formation and the availability of site topsoils suitable for re-use.

Topsoil Treatment 1 has been developed as a measure to resist the erosion potential from sheet flow on fill batters where there is no gutter and also to improve establishment on cut batters where Potential Acid Sulfate Rock (PASR) occurs. The key feature of Topsoil Treatment 1 is the addition of composted mulch, the topsoil depth, and the two step application of hydroseeding followed by strawmulching.

In order to improve vegetation establishment across the Kundabung to Kempsey (K2K) Project, the two step application has been adopted for all slopes steeper than 3H:1V.

Topsoil Treatment 1

When site topsoil has been stripped or on new formation areas steeper than 3H:1V (for hydroseeding embankments):

- Prepare batter slopes by ripping to a depth of 100 millimetres using the tynes on a swivelling head excavator bucket, or by some other means to form a loosened or roughened surface suitable for the application of topsoil and/or seed. During ripping, mix in gypsum at a rate of five tonne/Ha and lime at a rate of 3 tonne/Ha or as indicated by the soil test results
- Provide ‘cleatmarks’, ‘dimples’ or horizontal scores to cut and fill batters prior to topsoil application
- Apply A1 horizon site topsoil mixed with up to 40 per cent composted site mulch (or as directed by the soil test results), to a minimum depth of 100 millimetres and a maximum depth of 150 millimetres. (Topsoil and mulch is to be ameliorated and any additional materials required by soil testing mixed at the stockpile)
- Spread out the soil mix to an even surface but do not otherwise smooth or compact the surface
- Apply appropriate hydroseed seed mix
- Apply (rice or sugar cane) strawmulching with binder over hydroseeding to a minimum thickness of 25 millimetres
- For slopes steeper than 2H:1V and up to 1.5H:1V (eg transitions from bridge abutments to 2:1 slopes) place topsoil as above and install organic fibre mesh as per the specification over final topsoil preparation and prior to hydroseeding.

Topsoil Treatment 2

When site topsoil has been stripped or on new formation areas flatter than 3H:1V (for planting, and/or seeding frangible shrubs and tall shrubs):

- Rip the subsoil. Avoid all cultivation within the dripline of existing trees. Do not smooth or compact the roughened subsoil surface prior to the application of topsoil
- During ripping, mix in amendments as directed by the soil test results
- Apply A1 horizon topsoil or soil mix as for Topsoil Treatment 1
- Spread the topsoil but do not otherwise smooth or compact the surface. Level and trim the surface flush with adjacent surfaces
- Apply appropriate hydromulch seed mix or plant
- For tubestock: prepare 200x200x200 millimetre deep hole
- For Advanced tree: prepare 400x400x400 millimetre deep hole
- For super-advanced tree: prepare 600x600x600 millimetre deep hole
- For Semi Mature tree: prepare 1000x1000x800 millimetre deep hole
- Apply fertiliser at the recommended rates (Specified in the relevant version of Roads and Maritime specifications R178 and R179 modified for this project)
- Install advanced trees/tubestock and backfill with topsoil to finish flush with ground level
- Apply hydromulching where seeded or site won woodchip mulch or imported woodchip mulch where planted.

Topsoil Treatment 3

For native grasses, pasture grasses and turf:

- Rip the subsoil to a depth of 100 millimetres. Avoid all cultivation within the dripline of existing trees. Do not smooth or compact the roughened subsoil surface prior to the application of topsoil
- During ripping, mix in amendments as directed by the soil test results
- Apply A1 or A2 horizon topsoil as for Topsoil Treatment 1 to a minimum depth of 50 – 100 millimetres
- Level and trim the surface flush with adjacent surfaces and roll to lightly compact
- Apply appropriate hydromulch seed mix.

Topsoil Treatment 4

For vegetated swales and channels and water quality basins:

- As for Topsoil Treatment 1 but with organic fibre mesh laid over the slope and berms following topsoil spreading and preceding hydroseeding and strawmulching to the extent of the topsoiling and/or to the top and bottom of the embankments.

Topsoil Treatment 5

For wastewater treatment irrigation areas:

- As for Topsoil Treatment 2 but 300 millimetres depth of A1 horizon topsoil over 700 millimetres “A2” horizon topsoil.

Topsoil Treatment 6

Where existing pavement is to be removed:

- Remove the pavement to the depth of the road formation or to a minimum depth of 400 millimetres
- Where A2 horizon is absent, apply A2 horizon to a minimum depth of 200 millimetres. Apply A1 horizon bushland topsoil to a minimum depth of 200 millimetres. Apply appropriate hydromulch seed mix or planting in accordance with the landscape plans.

8.3.1 Topsoil and mulch special considerations

- Straw mulch (rice or sugar cane) is to be used in place of site-won tub-ground mulch or imported woodchip mulch in the proximity of riparian zones to prevent tannins from leaching into the waterways
- Stripped topsoil from pasture grass areas must be quarantined from forest soils so that the weed seed contained in these soils is not returned to forest areas
- Site topsoil is to be mixed with 40 per cent composted site-won tub-ground mulch on all slopes steeper than 3:1 site mulch will be composted until a Nitrogen Drawdown Index (NDI) of 0.5 per cent is achieved with a pH range of 6.5 to 8.5 and for a minimum of six weeks with the following additions:
  - » Urea 600g/cu.m
  - » Sulphate of Iron 500g/cu.m
  - » Dolomite or Magrilime 500g/cu.m
  - » Sufficient water to dampen product.
- The actual proportion of topsoil / mulch to be mixed will be determined by testing as required by the landscape specifications.

Composted site mulch will be mixed with topsoil prior to application on landscaped areas.

8.4 PROGRESSIVE RE-VEGETATION

Several elements go together to make up the progressive establishment of re-vegetation across the Kundabung to Kempsey (K2K) Project. These are:

- Staged implementation of the landscape installation. As sections of the earthworks are prepared, the section is prepared as soon as practical for topsoiling followed by seeding
- In accordance with Roads and Maritime specifications all prepared areas flatter than 3H:1V requiring vegetation must be vegetated within 14 days and steeper than 3H:1V within seven days
- All topsoiled areas are to be seeded within two days of completion of soil preparation or, if delayed by the weather conditions, as soon as weather conditions permit
- Open drains are to be vegetated within seven days of excavation
- Use of cover crops for rapid stabilisation of bare soils. Cover crop may be applied separately or in conjunction with all other hydromulch mixes
- Planting is used where trees, shrubs and ground covers are required for early landscape and visual effect and for early landscape establishment in fauna movement corridors and adjacent to underpasses and below bridge structures and at creeksides
- Maintenance inspection of plantings must be carried out at least monthly and missing or dead plants must be replaced within 14 days of detection.

In addition to the above, the topsoil management procedures which are devised to maximise the retention and germination from the soil seedbank, will ensure that native seed is already contained in any topsoiled areas. Since disturbance favours germination of colonising plants we can expect that fast growing pioneer species will germinate rapidly from topsoiled areas.

Areas which receive erosive pressures such as vegetated channels, water quality basins and slopes steeper than 2H:1V, will have organic fibre mesh installed in order to improve the establishment of the re-vegetation.

8.5 SEED APPLICATION AND ESTABLISHMENT

Generally seed is applied through hydromulching. However due to the increased risk from erosion on fill batters where SO type gutters (concrete “dished” crossing gutters with increased capacity) are not used (and where stormwater sheet flow will increase the erosion risk), the seeding will be a two-step application comprising hydroseeding of native seed, followed by a hydromulching application of a minimum thickness of 25 millimetres of rice or sugar cane straw. Rice and sugar cane straw have superior binding characteristics and last longer than other mulches that are able to be applied hydraulically, and do not present a risk to receiving environments from tannins.

Other proposed measures to assist erosion resistance on embankments receiving sheet flow include:

- In many cases, sheet flow will occur in pasture/floodplain areas where Couch Grass is used in the pasture grass seed mix. Couch establishes rapidly and forms a thick sward of rhizomes which will effectively resist erosion and is tolerant of saline and acidic soils. Couch is regarded as a native and is prevalent in the adjoining paddocks, although it also occurs outside Australia. In addition, Carpet Grass is used in the pasture seed mix Carpet Grass is a naturalised species in the area and found in the adjacent pasture which establishes easily but is not aggressive
- Direct return and preservation of the soil seedbank which will re-introduce the diversity of species and contribute to the resilience and resistance of vegetation to erosion in forested areas.

8.6 MANAGEMENT OF EXISTING TOPSOIL – DIRECT RETURN, TOPSOIL MANAGEMENT AND TOPSOIL MANAGEMENT ZONES

The management of site soil is an essential component of ensuring the long term viability of the landscaping of the Kundabung to Kempsey (K2K) Project.

The direct return of topsoil, topsoil management and storage procedures and topsoil management zones will form an integral part of the revegetation strategy for the alignment in order to take full advantage of the existing seedbank contained in stripped topsoil.

The existing soil seedbank will contain close to the full complement of species from extant vegetation communities. Therefore soil will be returned to the same general vegetation community zone from which it was stripped.

The purpose of direct return and implementation of correct topsoil stockpile management procedures is to preserve the seedbank so that it remains viable until returned. This approach ensures that the highway landscape will most closely reflect the adjoining vegetation patterns and diversity identified in the environmental documents.

For the purposes of this Project, topsoil stripped from within existing pasture grass areas is known as “landscape topsoil” and topsoil stripped within mapped vegetation communities from which existing vegetation has been cleared is known as “bushland topsoil”. Bushland topsoil is to be managed to retain the environmental integrity of the material and preserve the soil seedbank. Stripped topsoil from pasture grass areas must be quarantined from bushland topsoils so that the weed seed contained in these soils is not returned to forest areas. Under no circumstances is landscape topsoil stripped from pasture areas to be replaced in areas intended for native grasses or native shrubs seeding, however it is permissible to use it in areas intended for pasture grass seeding.

Topsoils stripped within mapped vegetation communities which are Endangered Ecological Communities (EEC) must be stripped and stockpiled as bushland topsoil and identified for respreading within the areas from which it was stripped. Where feasible, EEC Topsoils should be stockpiled seperately.

Photo to the left illustrates the few species established via hydromulching, while the photo to the right illustrates the diversity achieved through direct return of topsoil containing a soil seedbank.
Pacific Highway Upgrade Glenugie.

The addition of up to 40 per cent component of composted site mulches will be added to topsoils to be placed on batters steeper than 3:1 due to their ability to improve the erosion resistance of topsoils on steep batters, and deliver other benefits such as improvement in organic matter (carbon) content.

Figure 8.6.1 describes the procedure for stripping and stockpiling of landscape topsoils.

Figure 8.6.2 describes the procedure for stripping and stockpiling of bushland topsoils.

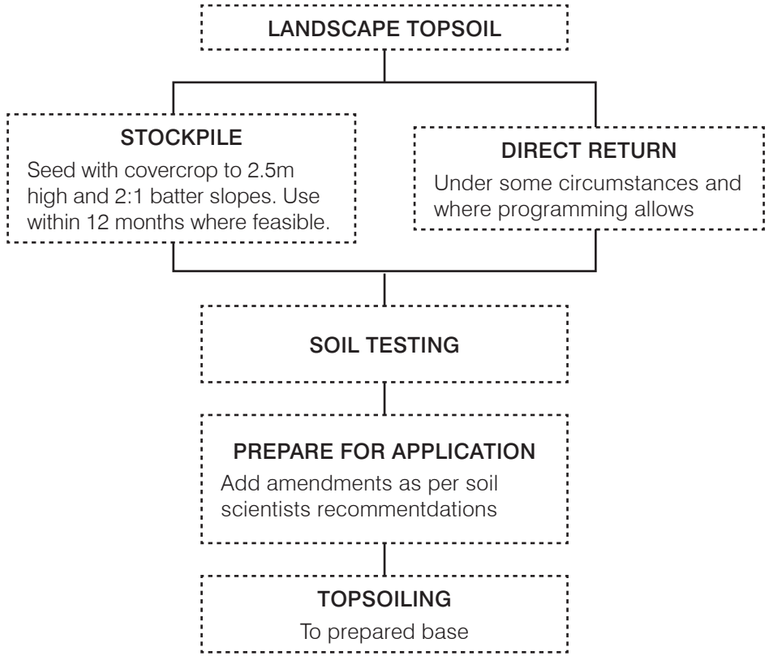


Figure 8.6.1 Landscape Topsoils

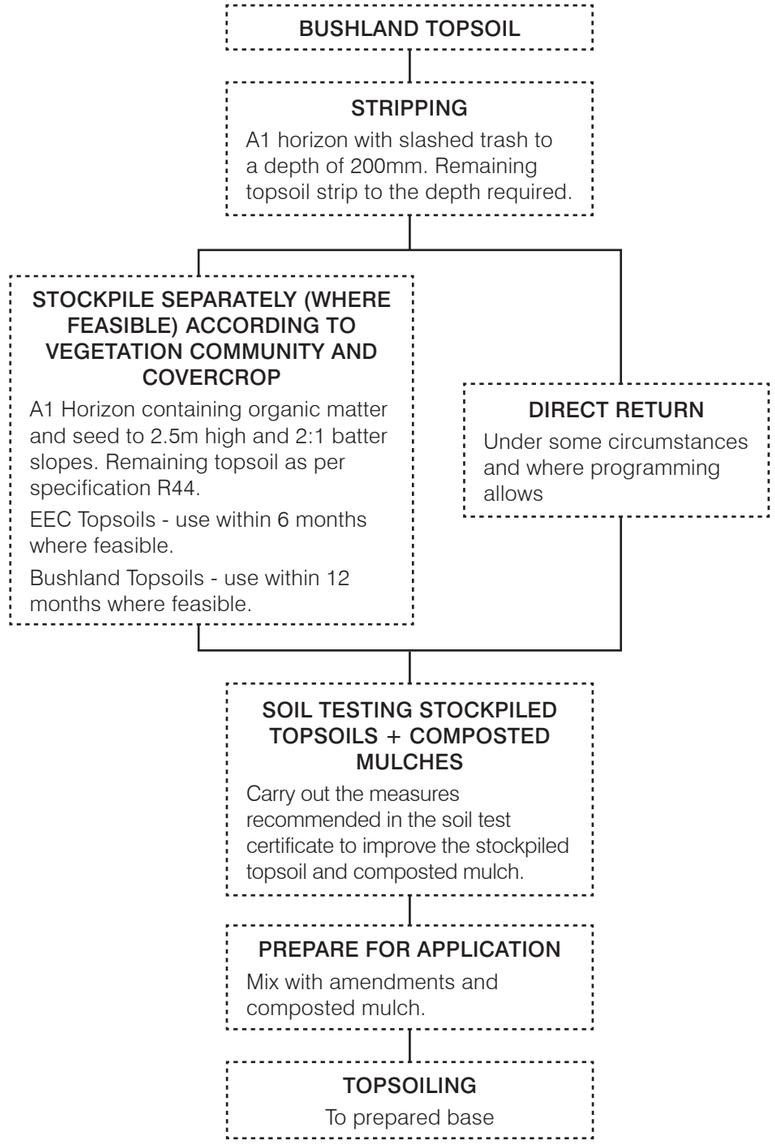


Figure 8.6.2 Bushland Topsoils

8.6.1 Material Reuse Sites

Surplus site topsoil won from stripping operations that is in excess of the requirements for revegetation works on the K2K Project will be used to topsoil excess fill material used for the formation of material reuse sites. Similarly, excess site-won mulch will be used to mulch material reuse sites. A small quantity of mulch will be stockpiled in discrete locations for use by the landscape maintenance crew in topping up plantings with mulch to the specified depths.

Under most circumstances the slope of mounds will be a maximum 1V:3H for improved planting and seeding establishment and natural appearance. The crest of the mounds are to be rounded to be twice the mound height. For example an embankment with a maximum height of five metres will have a minimum rounding of 10 metres.

The shape of material reuse sites will be informal and responds to local conditions. Where possible, margins of mounds will be graded to blend with existing adjoining landform. Material reuse sites will be revegetated by hydromulching with selected native grasses and shrubs supplemented at selected locations (and generally where in view from adjacent properties) with direct planting of containerised trees and shrubs.

Not all proposed material reuse sites will necessarily be installed, due to the unknown quantity of material remaining following construction of the main works.

The proposed locations, extents and landscape treatments for material reuse sites are shown in Appendix E.

8.6.2 Ancillary Facilities

Ancillary facilities are all temporary site infrastructure required to construct the upgrade and can include site compounds for offices, car parks, toilets sheds, hardstand and batch plants. There are also access tracks associated with these sites.

All proposed sites will go through an environmental approvals process in accordance with the requirements for ancillary facilities in Ministers Conditions of Approval (MCoA) C28. Such assessment(s) will be submitted to NSW Department of Planning and Environment separately or as part of the Construction Environmental Management Plan (CEMP) required under condition B30. Where ancillary facilities are located within Roads and Maritime owned land, the site is to be rehabilitated as required by the Roads and Maritime specification R178 Vegetation when no longer in use.

The procedures to be followed to protect and minimise the impact of ancillary facilities on the environment are to be contained in the contractor's CEMP. Where temporary ancillary facilities are located within private lands, the contractor will make arrangements/agreements with the landholder regarding the condition of the subject lands at handover.

8.6.3 Stockpile Sites

Stockpile sites may typically be required to store material including, but not limited to:

- Excavated material to be used in fill embankments and other design features
- Acid Sulphate Soils subject to treatment prior to reuse
- Excavated material unsuitable for reuse in the formation
- Excess concrete, pavement, rock, steel and other material stored for either future use in the K2K Project or prior to removal from site
- Topsoil, mulch, excess timber for landscaping and revegetation works.

The criteria used to determine the location of stockpiles and minimum mitigation measures are to be stated in the contractor's CEMP as required by MCoA B30.

At the de-commissioning of stockpile sites they are to be rehabilitated to a condition equal to the condition prior to disturbance as required by the Roads and Maritime specification G38 Soil and Water Management and R178 Vegetation.

8.7 SEED COLLECTION

The seed schedules include endemic plants which are hardy and fast growing species for use in revegetation. The priority for seed procurement is to collect indigenous seed from the Project area, and/or from other remnant bushland within a 10 kilometre radius of the site in accordance with Roads and Maritime Services (Roads and Maritime) *Specification R176 Seed Collection*.

Collection will commence throughout the clearing footprint prior to clearing in the first instance. The optimum time for collecting most useful species is late spring. No seed collection will be carried out of species protected under the National Parks and Wildlife Act Schedule 13.

The collection program will include storage and treatment of seeds to maximize germination rates. The proposed seed collection procedures must be included in the Construction Flora and Fauna Management Plan (CFFMP). It is possible that other plant material may be salvaged from the proposed development area as appropriate.

Seed collection, processing and storage would follow the Protocols contained in the *Florabank Guidelines* (Florabank Online) and Roads and Maritime *Specification R176 Seed Collection*.

Where seed cannot be collected from the Project area as above, it must be purchased from reputable seed merchants within Australia.

8.7.1 Seeding

Seeding mixes will not be specific to vegetation communities, however all seeding mixes will contain species which are common to vegetation communities comprising more than 80 per cent of the proposal footprint and are endemic to the proposal footprint. This is a valid approach for devising the seeding since many of the species from minority communities recorded along the proposal alignment (eg Riparian Forest at 2.8 per cent of the proposal footprint) will not be suited for revegetation purposes on embankments where the microclimate for establishment is difficult.

The species selected for seeding mixes are those occurring along the proposal footprint, which are known to be hardy, drought tolerant and to establish quickly from seed. For example Acacia species are represented in the seed mix but are not included in planting mixes. Species which are more difficult to establish from seed, and all tree species are included in planting only.

Single seed mixes have been developed for:

- **Native Grass seed mix** containing native grass and sedge species where mowing/maintenance may be required for medians, verges and fauna fence access, where sightlines must be maintained and to allow views
- **Pasture Grass seed mix** where adjacent to existing pasture
- **Frangible shrubs seed mix** containing native grasses, sedges and frangible shrub species for embankment areas within the safety clearance zone (up to 11 metres from the edge of carriageway), and where headlight glare screening is required in the median
- **Tall shrubs seed mix** for use on embankments beyond the safety clearance
- **Cover crop seeding mix** (All disturbed areas identified to be hydromulched except pasture grass areas which already contains cover crop) cover crop may be applied separately or in conjunction with all other hydromulch mixes.

Refer to Appendix A for complete Seeding Schedules.

Tree seed is not included in any of the seeding mixes. Trees are to be introduced by planting only, by return of topsoil containing a soil seedbank, and through the opportunistic seeding from trees in the fringing forest vegetation of the alignment. Such seeding can be anticipated to occur at the top and bottom of embankments away from the road edge within the first two years following preparation of embankments.

8.8 PLANTING

The planting mixes have been devised in accordance with extant vegetation communities crossed by the proposal in order to match the landscape context through which the alignment passes. Planting mixes contain predominantly trees because trees are the diagnostic species for each community. In addition all trees are to be planted (rather than seeded) in order to control their location in areas beyond clear zones and safety clearances as well as to prevent tall Eucalypts located in positions where they will overhang the corridor. A limited palette of shrubs and groundcover planting (limited due to the fact most are introduced via seeding) from each community is also included for specific purposes such as screening, fauna crossings, bank stabilization and basins and as ornamental planting at rest areas. Refer to Appendix A for complete Planting Schedules.

8.9 HEADLIGHT SCREENING

Planted trees and shrubs from advanced and super-advanced stock will be used to provide headlight screening between local roads and the highway in locations that have been identified as requiring headlight screening, and where space for vegetation permits. A palette of small bushy trees, shrubs and groundcovers selected from the extant vegetation communities will be planted for the specific purpose of intercepting headlight glare between the highway and local/service roads.

The proposal for temporary headlight screening (required where the vegetation is not expected to be effective at the time of opening) is to erect windbreak fabric on one side of the planting. Refer to figure 9.1.67.

This will also assist with the growth of the planting.

Headlight screening occurs between Pipers Creek Road and the highway, and between Ravenswood Road and the highway at locations which are shown in the landscape plans. Refer Figures 9.1.1 to 9.1.64.

Waterhousia floribunda. Pacific Highway North of Kempsey. Demonstrating dense screening habit suitable for headlight screening.

8.10 VISUAL SCREENING

The Environmental Assessment (EA) considered the overall visual impact to be low to moderate generally as a result of relatively few viewers being located in proximity to the Kundabung to Kempsey (K2K) Project. In addition, large sections of the K2K Project are visually enclosed within the heavily vegetated areas of Ballengarra State Forest and Maria River State Forest. The K2K Project would widen the existing cleared corridor but is primarily viewed by road users only.

Potential visual impacts are possible where the alignment passes through Kundabung. Kundabung occurs in the floodplain created by Smiths and Pipers Creek, Kundabung is dominated by an open agricultural landscape with small holdings.

Where it is identified that the proposed landscaping does not satisfy the visual screening requirements of adjacent residences and businesses, at-receptor landscaping will be considered in consultation with the relevant landowner and will be implemented during the construction of the K2K Project.

At receptor landscaping can be more effective than roadside landscaping at screening as illustrated in the sketch figure 8.10.1.

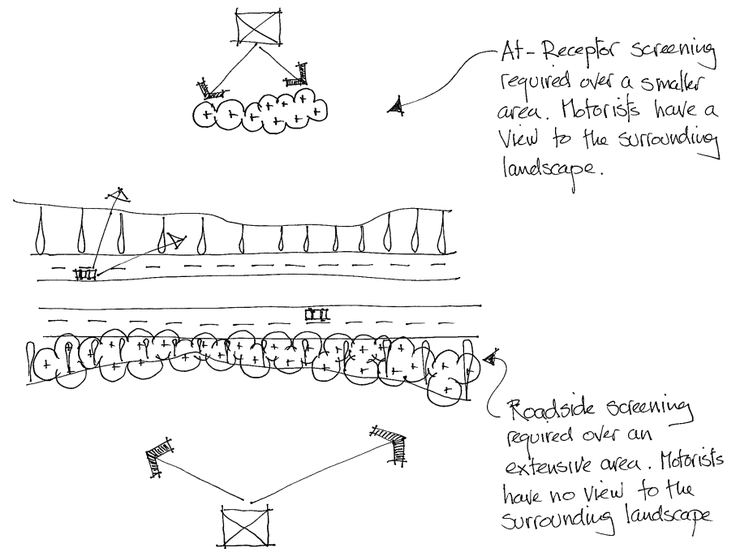


Figure 8.10.1 At receptor landscaping.

8.11 REST AREAS

The northbound and southbound rest areas, virtually identical in terms of their layout, occur within the Ballengarra State Forest which is characterised by an enclosed forest setting. A complex of vegetation communities with a generally high fauna habitat ranking intersect and surround the rest areas including:

- Dry Ridgetop Forest
- Moist Gully Forest
- Moist Floodplain Closed Forest
- Moist Slopes Forest
- Riparian Forest.

Views beyond the rest area are restricted by this forest setting. Therefore planting selected from adjacent communities is used to give the rest areas an attractive planting layout internally and a different character to the largely informal character of the rest of the alignment. Refer to Appendix A for these species.

Several of these species are proposed to be planted at super-advanced size in 35 litre and 75 litre pots or bags for early visual effect (see Planting Schedule).

The landscaped zone separating each main carriageway from its adjoining rest area is to be seeded with native grasses on the slopes, and to be planted with frangible shrubs (Callistemon and Hibiscus) on the slopes facing the carriageway. Frangible shrubs will be planted in groups that will allow some measure of visual surveillance of the rest areas from the carriageways.

Between the shrub groupings are planted swathes of Swamp Lily, Mat Rush and Tall Sedge.

Where space allows, super-advanced Cabbage Tree Palms will be used to provide significant landscape markers that will identify the rest areas for motorists.

The larger and more usefully proportioned facilities areas (than proposed in the Environmental Assessment (EA)) are turfed with a Buffalo lawn and planted with local rainforest shade trees such as Blueberry Ash and Tuckeroo. The perimeter embankments are to be planted with Eucalypts such as Spotted Gum and Forest Red Gum in an informal pattern over native grasses.

Within the rest areas themselves, shrub planting will be restricted to screening objects such as the wastewater treatment systems and partial screening of water tank lids in order to maximize opportunities for passive surveillance.

The requirement (Port Macquarie-Hastings Council's On-Site Sewage Management Code) that the waste water treatment system must not be closer than 15 metres from any underground water tank has been met by re-siting the wastewater treatment tanks by the required offset distance.

8.11.1 Footpaths

Both central picnic areas of the north and south rest areas have circular footpaths of 1200 millimetres wide connecting car parking, driver reviver, picnic shelters and amenities. All footpaths have a level grade and can be accessed by ramps from the disabled parking areas.

8.11.2 Swales and vegetated drainage channels

Swales have been proposed at both rest areas and have resulted in the reduction of other drainage infrastructure such as pits, kerbs and gutters. Swales also optimise surveillance from the carriageways and provide ideal growing conditions for Cabbage Tree Palms, Swamp Lily and sedges. Both swales and vegetated drainage channels are proposed to be seeded with a native grass seeding mix which contains endemic sedge species. The sedge species are expected to colonise the invert of the swales and channels while grasses are expected to colonise the drier side slopes.

8.11.3 Wastewater Irrigation Area

The wastewater irrigation area has been sized in anticipation of the volume of waste to be discharged. The area is proposed to be planted with native sedges as for water quality basins.

Harvesting of plants (which may include mowing or pruning) and removal from the site may be required to maintain the nutrient uptake rate and to remove excess biomass from the area. The soil profile of 1000 millimetres will consist of a 300 millimetres depth of "A1" horizon topsoil over 700 millimetres "A2" horizon topsoil.

8.11.4 Rest Area Basins

Basin floors and all of the inundated areas are to be planted with endemic sedge species at the planting densities shown in the planting schedule in Appendix A.

8.11.5 Rest Area Seating

Northbound and southbound rest areas are provided with six picnic shelters each. Each shelter is provided with a picnic setting of table and benches seating eight persons.

8.11.6 Rest Area Lighting

The rest area lighting is in two parts. Street lighting is used to fully delineate the entry and exit intersections from the main carriageways to the rest area, and path lighting is used to delineate the connection between parking and amenities.

8.11.7 Fencing

Floppy-top fauna fencing encompasses both the north and southbound rest areas at their perimeters. These are partially screened from view via shrub seeding and tree planting, but cannot be entirely screened from view due to the requirement to provide maintenance access (three metres on the away from highway side and one metre on the highway) side along its length. The maintenance access corridor alongside the fence is seeded with native grasses.

For further detail of the rest area design refer to the Landscape Design Drawings LS-0304, LS-0305, LS-0306, LS-0360, LS-0361 and LS-0404.

For a further description of materials used in the rest areas, refer to Appendix A Rest Area Schedules.

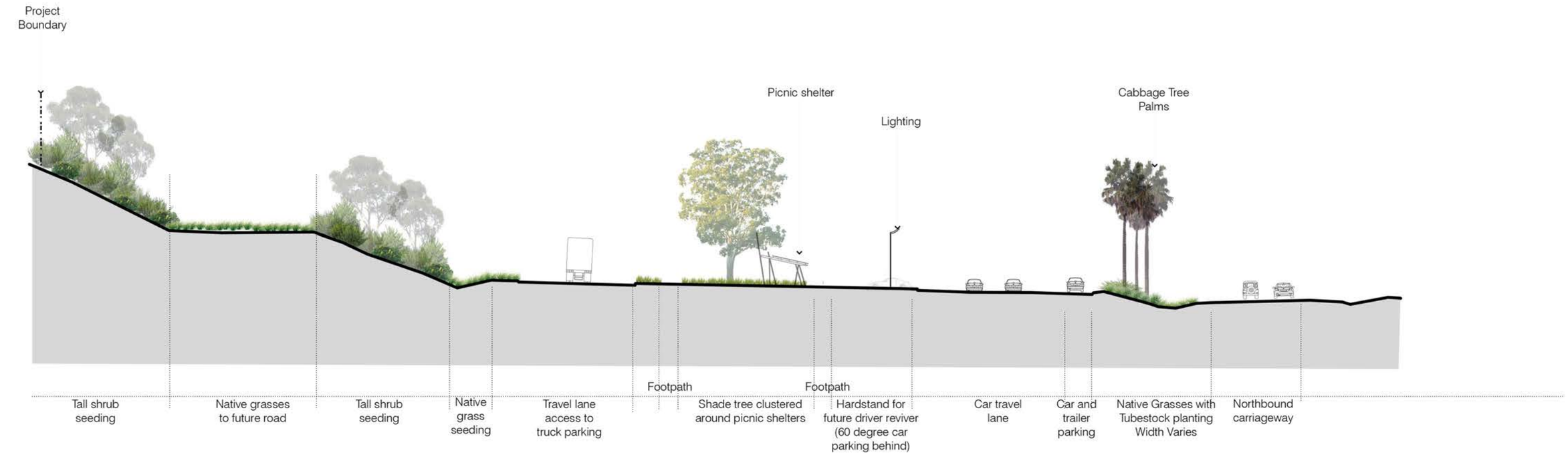


Figure 8.11.1 Northbound Rest Area Section through Station 24880

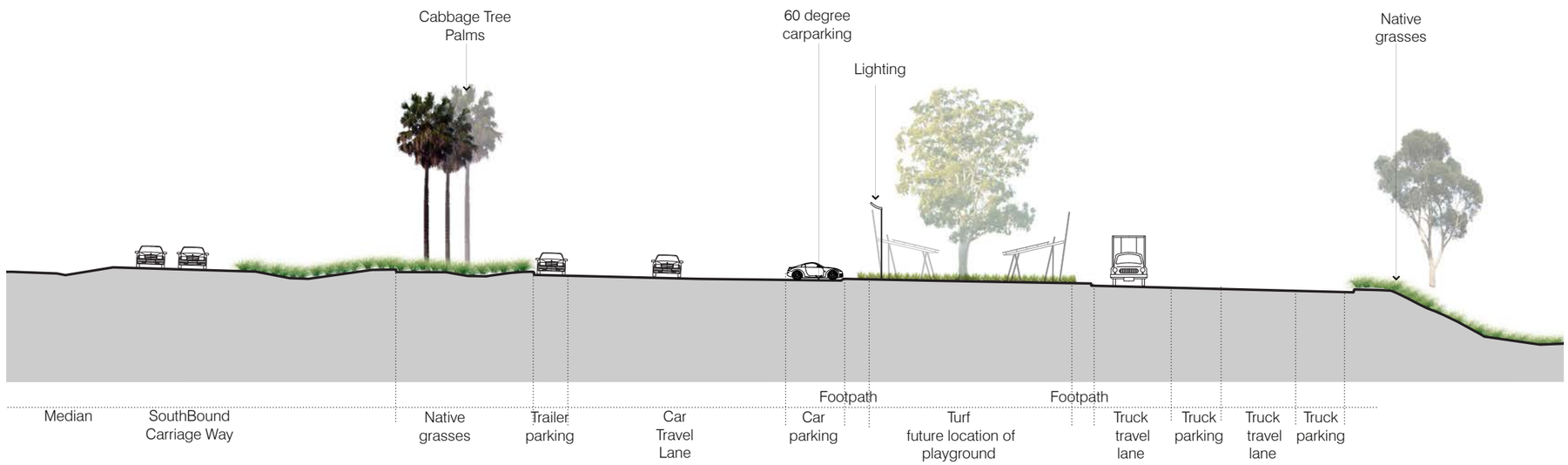


Figure 8.11.2 Southbound Rest Area Section through Station 24880

Figure 8.11.3 Aerial view of rest area looking north east

Figure 8.11.4 View of north bound rest area from Pacific Highway

Figure 8.11.5 View of south bound rest area from the trailer parking area

8.12 INTERCHANGES - KUNDABUNG

Kundabung is the only complete Interchange in the Kundabung to Kempsey (K2K) Project and there are tie-in works required at Kempsey Bypass interchange at the northern end of the K2K Project which will be coordinated with reference to the landscape design from the Kempsey Bypass Alliance.

Kundabung Interchange is set in an existing pastoral landscape of pasture with scattered trees and occasional homesteads. The interchange landscape will replicate the surroundings of scattered groups of trees and informal roadside avenue trees in order to match the surrounding landscape context. The trees will be planted in pasture grass except where adjacent residents would benefit from screening from the highway in which case they will be planted in mulched beds with screening shrubs. Feature tree planting of 35 litre super-advanced stock will be used to provide residents with a more instant landscape effect.

Note: Additional material reuse sites have been proposed at the interchange. Refer Appendix E.

8.13 WATER QUALITY BASINS

Water quality basins will be “wet” basins with a nominal permanent depth of 300 millimetres. On occasions they will be dry. The strategy for basins is to prepare them as for Topsoil Treatment 4 with the addition of organic fibre mesh to help control erosion on the side slopes. The basins are to be planted with wetland plants from the freshwater wetland community into the base and sides of the basin at a spacing of 1/m^2.

8.14 POTENTIAL ACID SULFATE ROCK ON BATTERS

At meetings held on 15 January and 12 February 2013 between geotechnical, landscape and Roads and Maritime representatives to discuss treatments for Potential Acid Sulfate Rock (PASR), a treatment hierarchy was developed for the occurrence of Acid Sulfate Rock (ASR) on cut batters across the Kundabung to Kempsey (K2K) Project. The treatments were in response to:

- The fact that PASR is probably more isolated than originally thought
- The fact that competent rock should be exposed wherever it is encountered
- A landscape solution to isolated “Hot Spots” being regarded as the best long term solution where there is acid rock leachate. A vegetated batter surface with topsoil, mulch and vegetation over fissures or seams with the addition of lime to the prepared batter slope prior to topsoil application, will support a shrub seeding mix containing endemic species which are tolerant of the acidic soils found on the North Coast and are anticipated to tolerate the growing conditions on the batter slope.

The treatment assumes that ASR leachate will occur where there are linear geological structures such as fissures and faults.

The treatment involves:

- The over-excavation of the identified geological structure from which the leachate emanates, to a depth of 250 millimetres to allow for 250 millimetres depth topsoil (topsoil will include the addition of 300 grams/metre lime)
- Installation of 300 millimetre diameter coir logs on the contour to provide a mechanism to prevent slumping
- Covering the topsoil with “Enkamat” or an equivalent erosion control measure and fixing both Enkamat and coir logs to rock face below
- Hydromulching the face of the soil-filled Enkamat with seed mix as per the landscape plans.

The treatment extends to the bench where a bench occurs.

Lime aggregate is to be placed into the gutter and concrete apron at the instruction of the geotechnical consultant.

Refer to Figure 9.1.74 for proposed landscape treatments at identified acid rock locations.

8.15 CREEK REHABILITATION AND FISH AND FAUNA CROSSINGS

Creeks affected by the alignment will be returned to a condition equal to or better than its current state.

Generally the creeks are to be restored with riparian species planted directly into the replaced creek bed material and on embankments which have been topsoiled. The full extent of the low-flow channel and riparian benches are to be lined with organic fibre mesh or mat.

Other requirements include plantings to attract fauna, allowing unobstructed views to, and through the underpass, and strategic tree plantings for fauna refuge. Many of the drainage lines and creeks crossed by the highway are intermittent and respond to seasonal rains.

Species used at creek crossing and fauna underpasses correspond to the vegetation community occurring at the location.

The typical landscape treatment for box culverts which combine drainage and fauna underpass and dedicated fauna crossings in forest areas is shown in Figure 8.15.1. Further detail is provided in Figure 9.1.69.

Measures to assist the landscape establishment at combined Fauna/Drainage crossings include:

- Organic fibre mesh pinned to embankments 2H:1V or steeper, over 50-100 millimetre depth of additional topsoil through which tubestock macrophytes and tussocks are planted. The mesh is to cover the embankment to the top of the channel or to the extent of disturbed ground
- Site rocks of various size from 500-1000 millimetres in natural formation to assist holding down mesh and for scour protection where the new work interfaces with the existing creek channel (This treatment is for zones beyond scour protection and only where rocks occur in the natural creek bed)
- Beyond the zone of normal high water begins the typical landscape zone of trees shrubs and groundcovers with 100-200 millimetres additional topsoil if required and 75 millimetres mulch if planted
- Rice or sugar cane straw mulch is used in place of site-won tub-ground mulch in the proximity of riparian zones to prevent tannins from leaching into the waterways
- Planting of riparian vegetation species including plants such as *Lomandra hystrix* and sedges known to bind embankments and resist erosion at creek crossings
- One fauna escape pole is to be located on the embankment out of the main channel and approximately two metres from the end of the headwall. A second pole is to be provided where existing trees are more than 10 metres from the first pole.

Additional mitigation measures to be implemented where the Kundabung to Kempsey (K2K) Project crosses Pipers Creek include:

- Vegetation and deep leaf litter to be maintained around the creek where possible
- Revegetation plan for Pipers Creek is to include specialist frog habitat management plan recommendations
- Exclusion fencing around identified frog habitat is to be installed prior to construction commencing
- Pre-construction survey for frogs and monitoring throughout the duration of construction is to be undertaken by qualified ecologists.

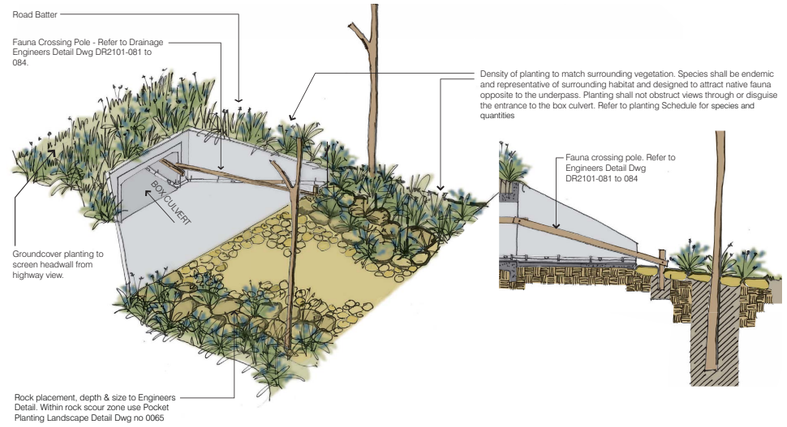


Figure 8.15.1 Typical landscape treatment for box culvert fauna crossing

8.16 FROG PONDS

Where frog breeding ponds are required, they will be constructed as shown in Figure 8.16.1.

Grasses and sedges from the Freshwater Wetland vegetation community (see plant schedules) will be planted to provide habitat and refuge from predators on the margins of the ponds.

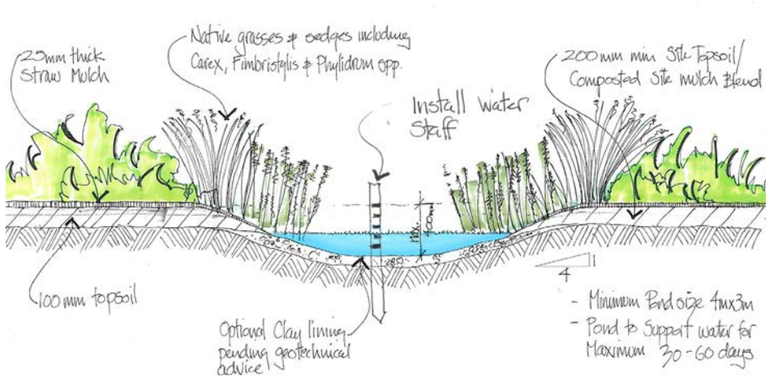


Figure 8.16.1 Typical Frog Breeding Pond

8.17 MANAGEMENT OF EXISTING VEGETATION

Due to the presence of Endangered Ecological Communities (EEC) and other intact vegetation communities of good quality, it is imperative to minimize the construction footprint in order to maximize the retention of existing vegetation and in addition, to provide a methodology for those carrying out the work to implement in order to protect existing vegetation.

The construction footprint beyond the toe of batters or top of cuts will be restricted where feasible to four metres. At drainage structures the footprint will be limited where feasible to 2.5 metres. Existing vegetation to be retained and protected within the works with temporary fencing is marked in the landscape plans.

The advantages of retaining the existing vegetation as close as possible to the carriageways are not only environmental. Retention of existing vegetation also provides better visual and economic outcomes.

The following summarises the procedures to protect and maximise retention of existing vegetation and is given as a guide only. Where any of the following recommendations are not consistent with the Construction Flora and Fauna Management Plan (CFFMP) requirements for this project, the CFFMP takes precedence:

- Pre clearing assessment is to be undertaken identifying the following: hollow bearing and /or habitat trees; threatened species or endangered ecological communities. Where identified the use of fencing around all threatened species or ecological protected communities including Moist Floodplain Closed Forest with Rainforest Elements, Riparian Forest, Paperbark Swamp Forest, Moist Floodplain Forest, Moist Gully Forest, Moist Slopes Forest, Dry Ridgetop Forest and Freshwater Wetlands, shall be undertaken to ensure construction activities do not encroach into threaten habitats or habitats containing threatened species where disturbance has not been approved
- Where feasible, collection of seed will be implemented prior to clearing
- All vegetation to be retained will be appropriately protected for the duration of construction works.
- Where significant stands of vegetation are to be retained, exclusion fencing will be erected to the dripline before the commencement of construction. Similarly, parking areas, storage sites, turning circles and access points will be fenced off
- Prior to demolition or construction work commencing, all trees to be retained will be marked with non-injurious, easily visible and removable means of identification. All such identification will be removed on completion of works. Individual trees to be retained will be tagged. Groups of trees or shrubs will be bounded or encircled by exclusion fencing
- Storage of materials, mixing of materials, vehicle parking or stockpiling of materials will not be carried out within the drip line of existing trees to be retained. No bulk materials and/or harmful materials will be placed under or near trees. Spoil, chemicals or construction waste from excavations will not be placed against tree trunks, even for short periods. All measures will be undertaken to prevent windblown materials from harming trees and plants
- Topsoil will not be added to or removed from within the drip line of existing trees without the approval of the Principal. Should it be necessary to excavate within the drip line, hand methods such that root systems are preserved intact and undamaged will be used
- No encroachments into adjacent nominated bushland or vegetation will be permitted for access of machinery, for traffic control or for the stockpiling of material required for construction.

Activities prohibited within existing fenced areas will include:

- Entry of machinery or people
- Storage of building materials
- Parking of any kind
- Erection or placement of site facilities
- Removal of stockpiling of soil or site debris
- Disposal of any liquid waste including paint and concrete wash
- Excavation or trenching of any kind, including for irrigation or electrical connections
- Attaching signs or any other objects to trees
- Placement of waste disposal or skip bins
- Pruning and removal of branches, except by a qualified arborist.

Where necessary a qualified arborist will be appointed to advise on specific aspects of tree protection prior to commencement of demolition or construction.

8.17.1 Sites of Biodiversity

In addition to the above, where clearing is undertaken adjacent to EECs, clearing will be undertaken so as to avoid trees falling into the protected vegetation. Where trees are entwined Roads and Maritime may request the tree to be removed by an arborist. Where vegetation is to be retained, and construction buffer zones are to be enforced to restrict the movement of plant and machinery outside the allowed area, and limit Project works, delineation and signage will be erected to serve this purpose, before clearing commences.

Control measures would be implemented to prevent and minimise construction impacts in riparian zones and to ensure that appropriate rehabilitation is undertaken.

Such measures may include:

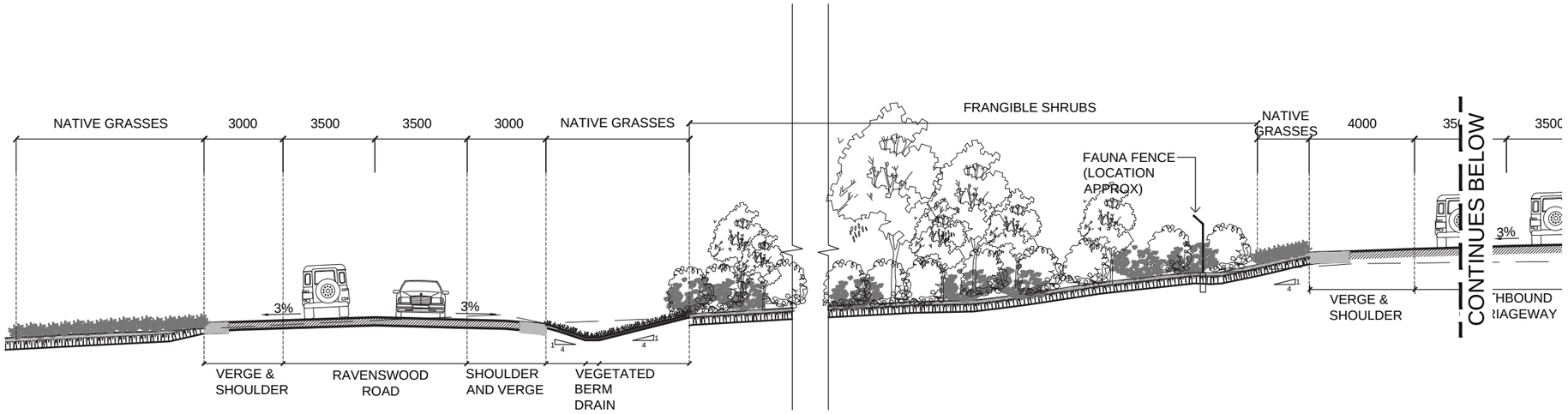
- Establishing a vegetated ‘buffer’ area along the waterway where possible; Existing trees, grasses and other ground cover will be retained as far as possible within 15 metres of rivers, creeks and watercourses and watercourses and in all drainage lines immediately before construction commences in an area
- Fencing off mature trees (especially those with hollows) and vegetation for protection
- Minimising the footprint of temporary works including crossings
- Ensuring that snags and other aquatic habitat features are not disturbed
- Clearly identifying stockpile and storage locations
- Providing erosion and sediment controls around stockpiles
- Restricting the entry of plant and persons to the banks of the waterway to prevent damage and instability
- Rehabilitating disturbed or degraded areas with appropriate native species
- Generally the use of heavy machinery will not be permitted within ten metres of the tree line or moist areas
- Trees within ten metres of the centreline of any bridges to be constructed and five metres of the bank of any stream or other waterway are to be cleanly cut off between 300 and 600 millimetres above the adjacent ground level to ensure stable vegetation is retained on the banks.

8.18 TYPICAL LANDSCAPE CROSS SECTIONS

Refer to Figures 8.17.1 to 8.17.5.

The typical landscape cross sections illustrate the adherence to safety clearance distances and where grasses, frangible shrubs and non-frangible shrubs are proposed to be used. Some of the standard clearances used are:

- Non-frangible vegetation at a minimum 11 metres from the edge of travel lane on the Pacific Highway
- Non-frangible vegetation at a minimum five metres from the edge of travel lane on local roads
- Frangible shrubs at a minimum of five metres from the edge of travel lane
- Two metre wide native or pasture grass strip at the carriageway edge of medians and all verges, except where behind concrete barrier
- Where frangible shrubs occur in the median (when in forested areas or where required to mitigate headlight glare) the width of the bed is generally six metres wide
- No shrubs within the 1.7 metre deflection zone behind wire rope barriers
- Native grasses only within three metres of the away-from-carriageway side of the fauna fence to allow for maintenance access, and one metre on the other.



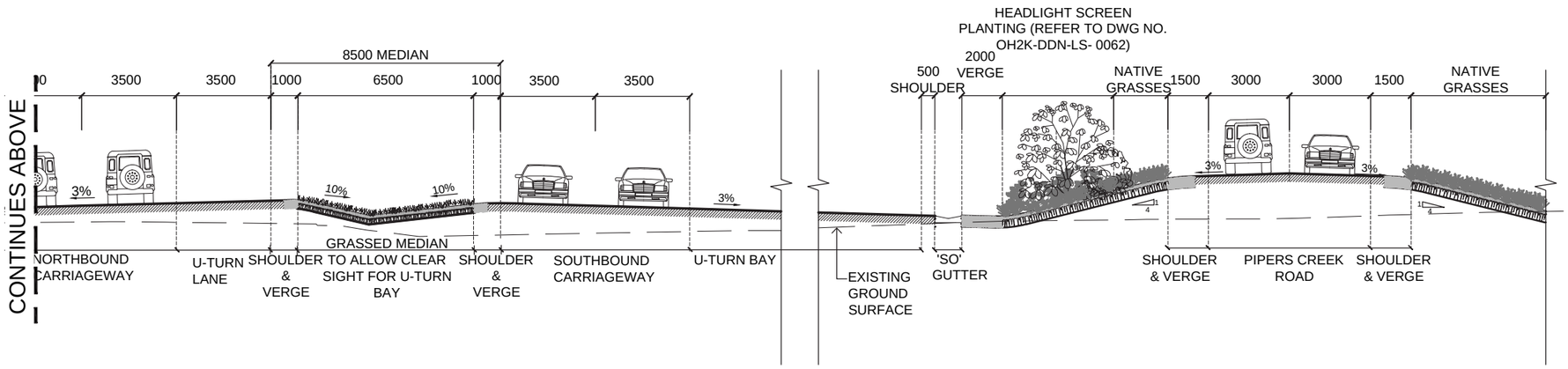


Figure 8.17.2 Typical Cross Section at Ravenswood Road and Pipers Creek Access Road and U-turn facility (Station 32460)

0 10m

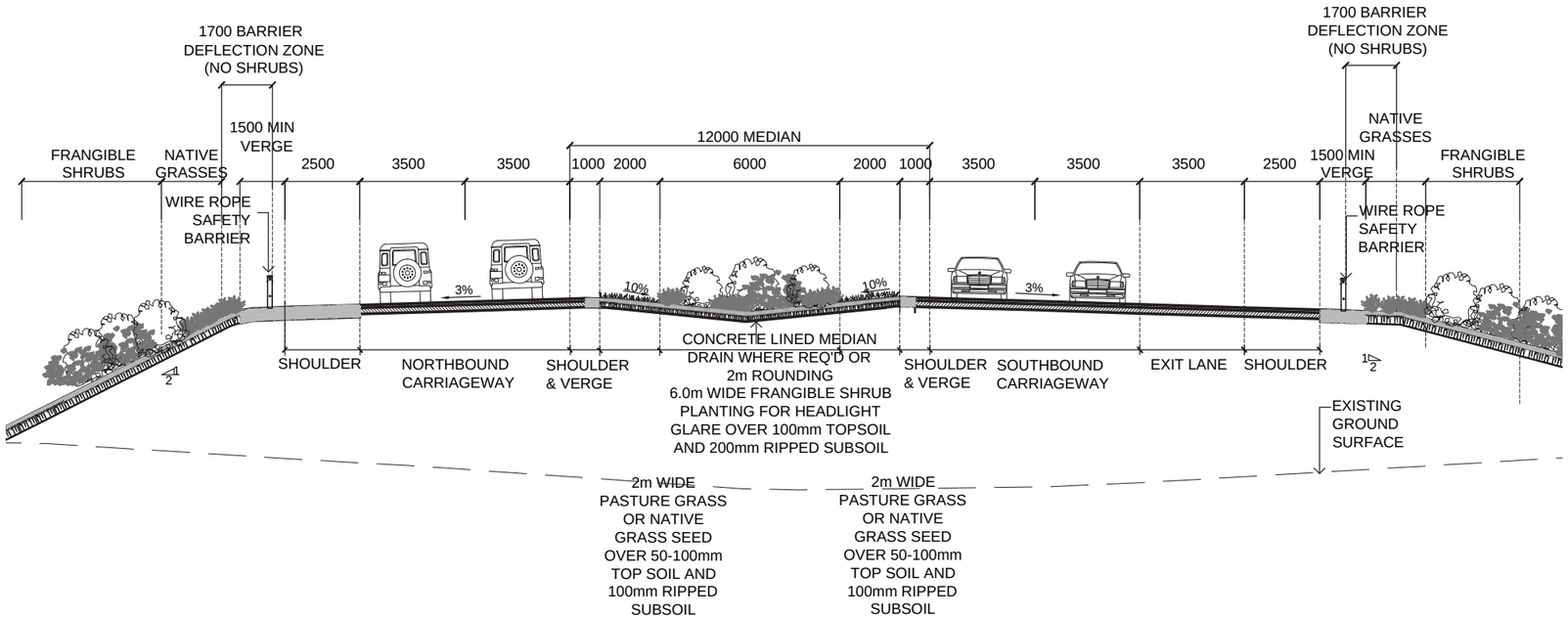


Figure 8.17.3 Typical Cross Section South of Heavy Vehicle Inspection Bay (Station 33400)

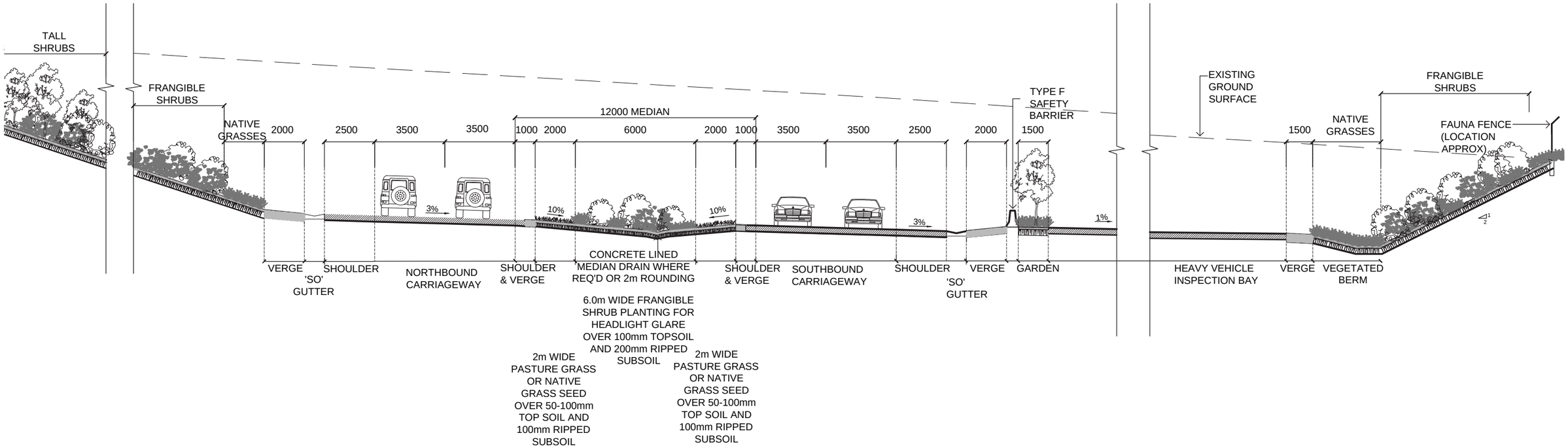


Figure 8.17.4 Typical Cross Section - Heavy Vehicle Inspection Bay (Station 33800)

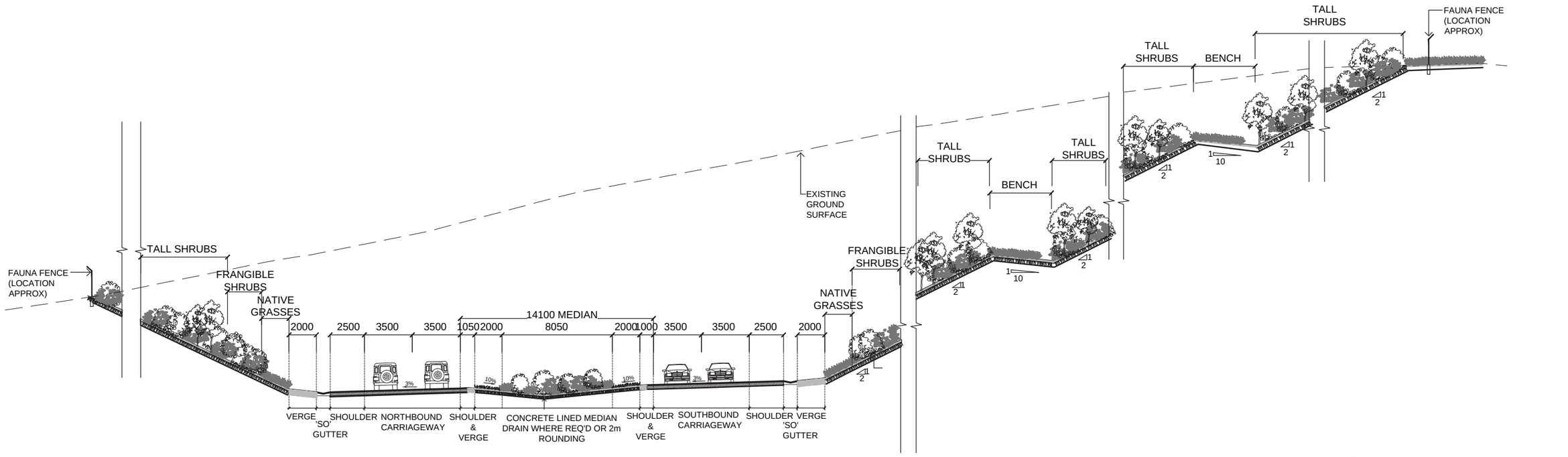


Figure 8.17.5 Typical Cross Section - Deep Cut at Maria River State Forest (Station 35100)

9 OVERALL URBAN AND LANDSCAPE DESIGN

9.1 URBAN DESIGN AND LANDSCAPE PLANS

Refer to Figure 9.1.1 - 9.1.14.

The following urban and landscape plans are based upon the principles outlined in the urban and landscape design strategy and proposed treatments. They illustrate the integrated urban design and landscape outcome for the Kundabung to Kempsey (K2K) Project. The plans show:

- Existing adjacent context
- Proposed landscape treatments along the route
- Proposed landscape treatments at key interchanges
- Wetland planting and detention ponds and associated screening where applicable
- Visual screening of residences where required
- Fauna underpasses
- Landscape treatments of cuttings and embankments
- Landscape treatment to reduce head light glare
- Key views to be retained
- Bridges
- Rest Areas
- Planting and seeding schedules
- Heavy Vehicle Inspection Station.

The landscape installation will be carried out progressively with topsoiling and seeding followed by planting of disturbed areas installed as work site becomes available. The implementation of topsoil management to preserve the soil seedbank will also aid in the progressive revegetation.

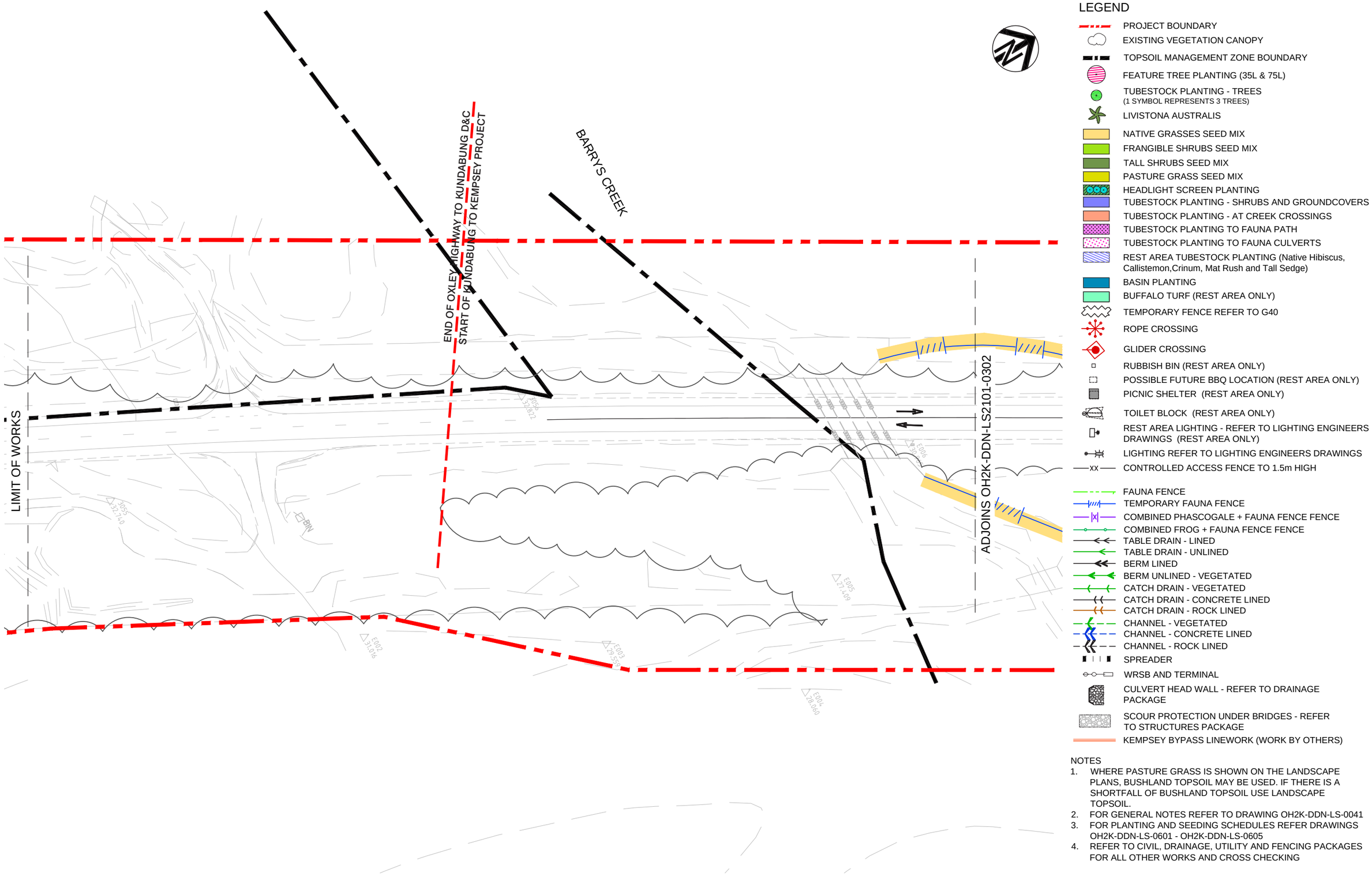
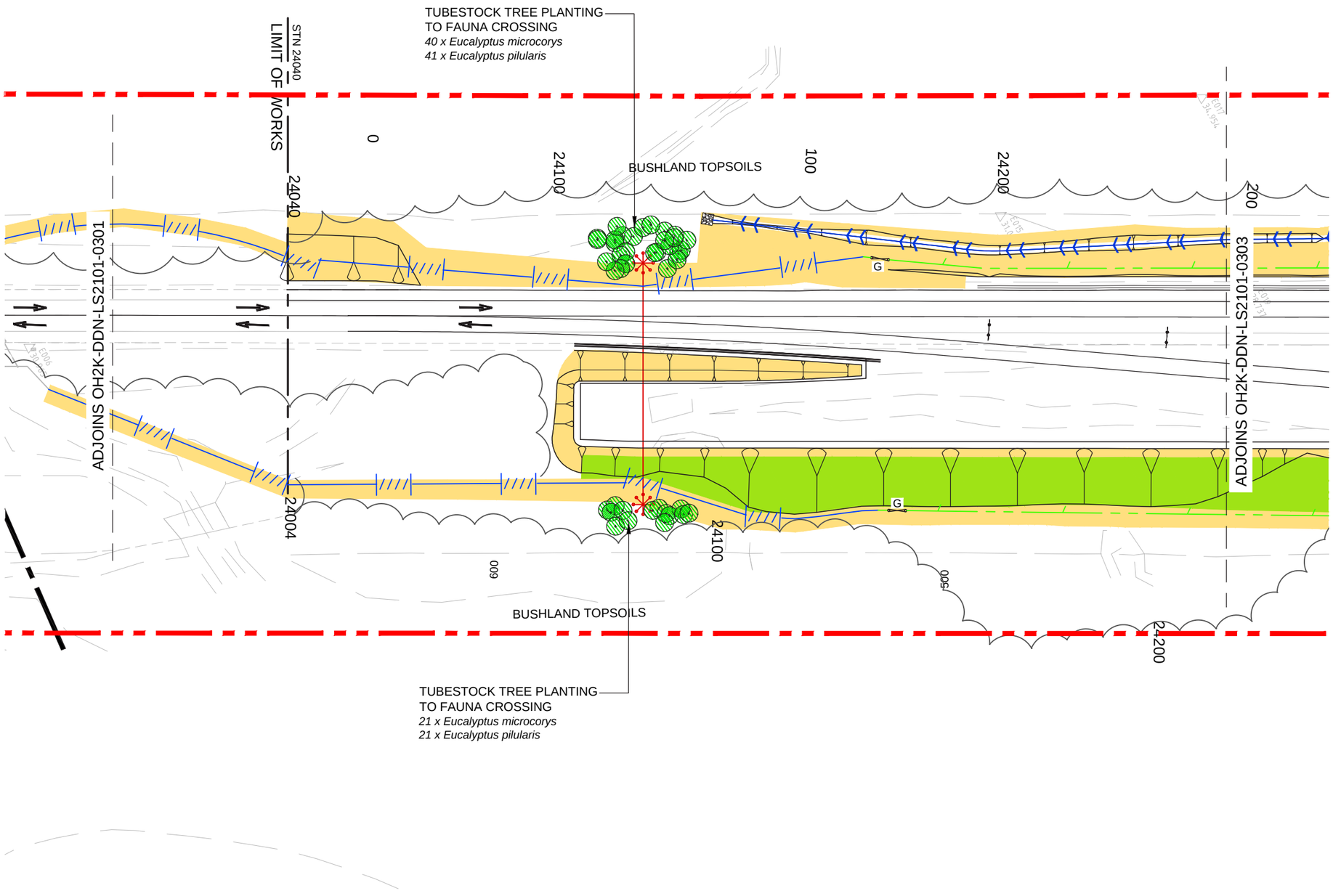


Figure 9.1.1 Landscape Concept Plan 1



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx — CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

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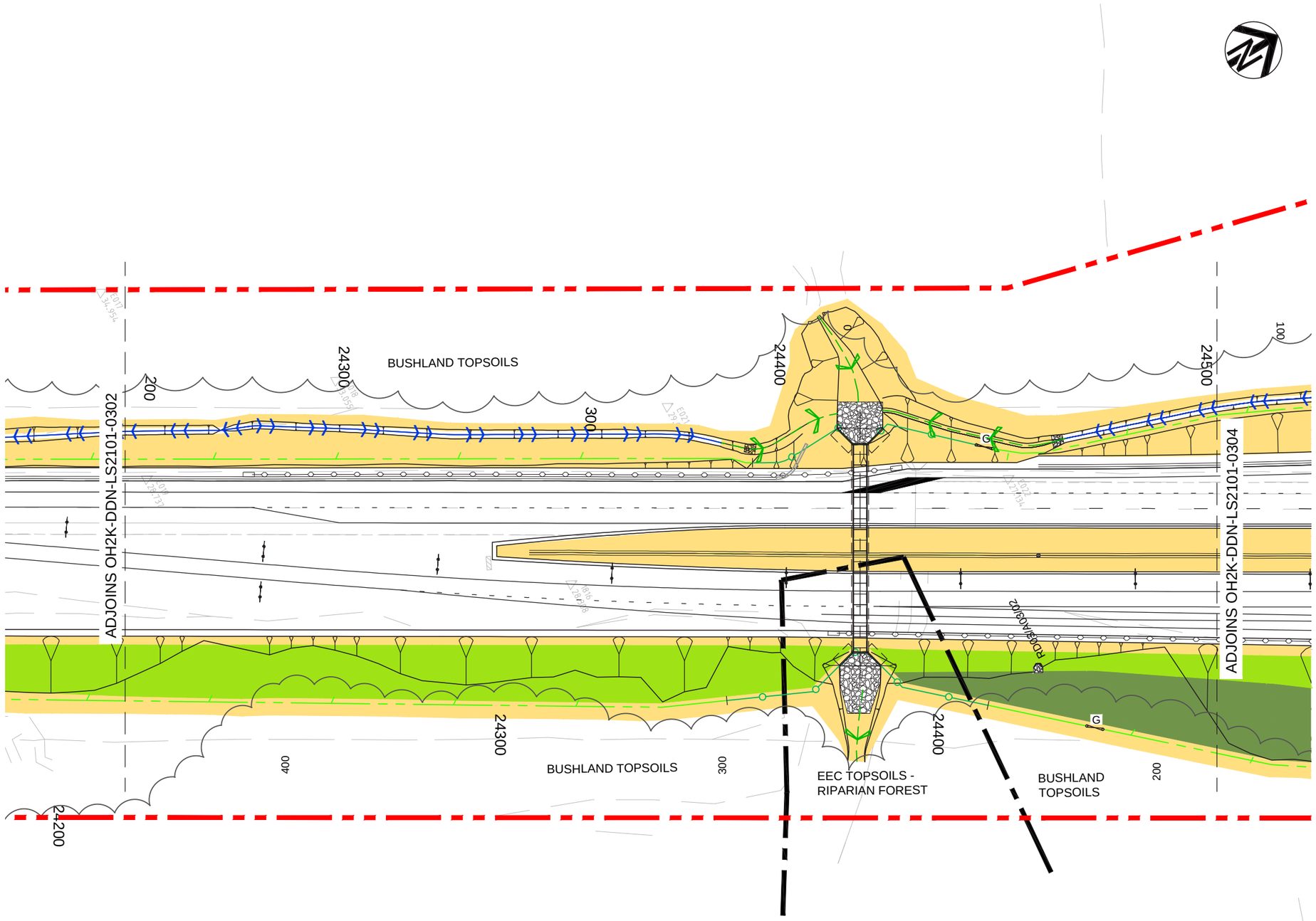
Figure 9.1.2 Landscape Concept Plan 2



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- TALL SHRUBS SEED MIX
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- CHANNEL - CONCRETE LINED
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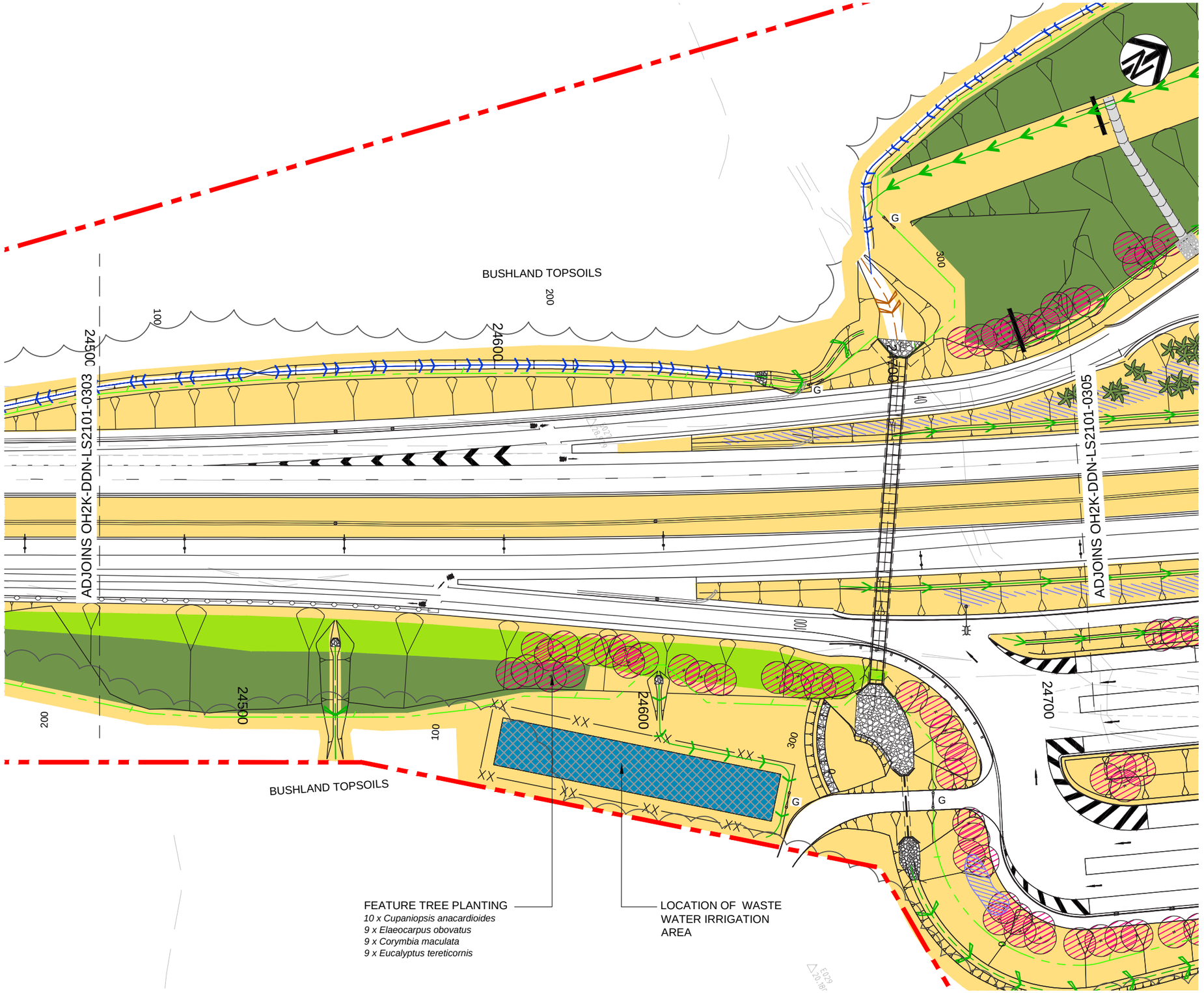
Figure 9.1.3 Landscape Concept Plan 3



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- GLIDER CROSSING
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- TEMPORARY FAUNA FENCE
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- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
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- CATCH DRAIN - ROCK LINED
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- CHANNEL - ROCK LINED
- SPREADER
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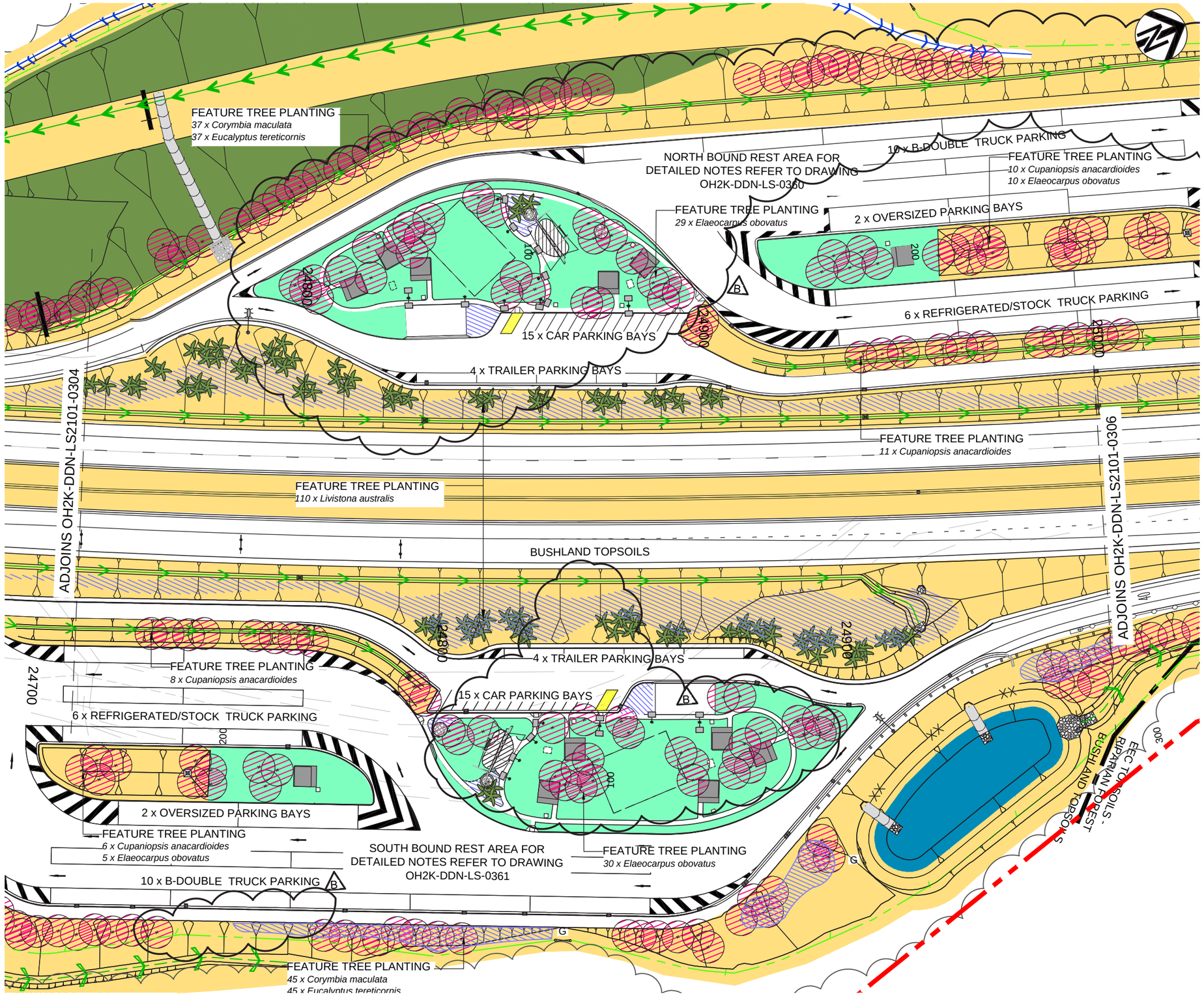
0 50m

Figure 9.1.4 Landscape Concept Plan 4



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES

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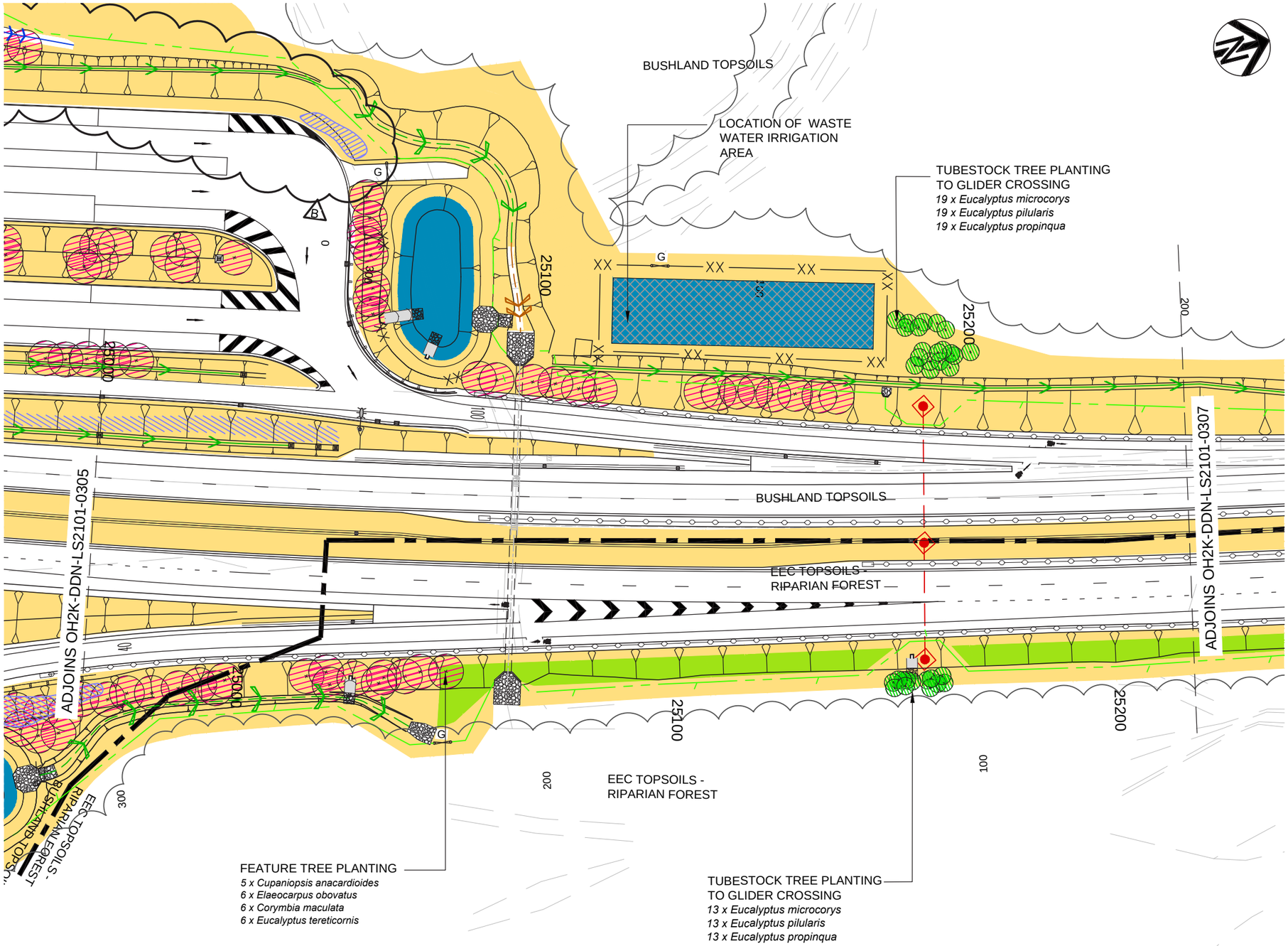
0 50m

Figure 9.1.5 Landscape Concept Plan 5



LEGEND

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- TOPSOIL MANAGEMENT ZONE BOUNDARY
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- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
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- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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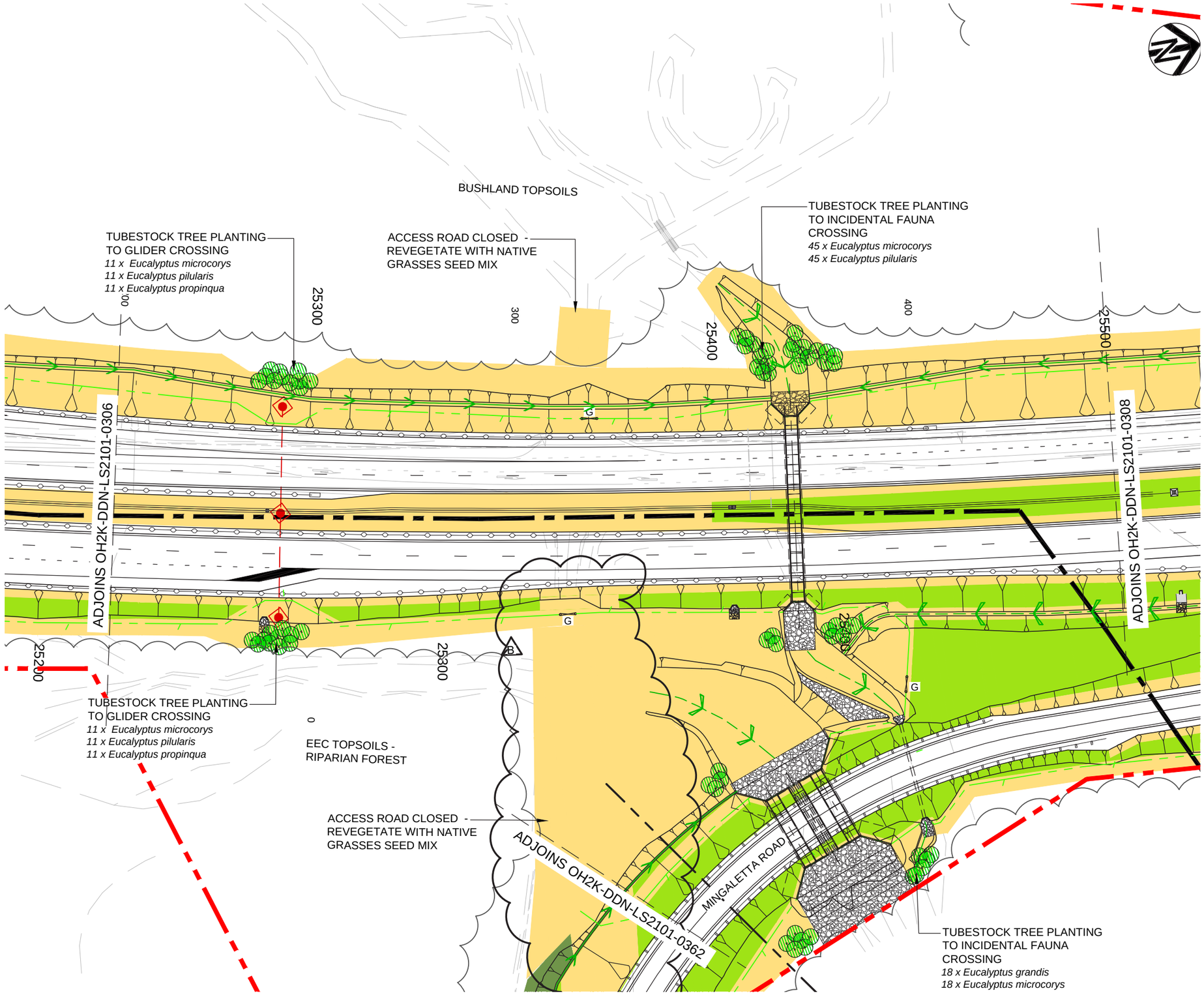
Figure 9.1.6 Landscape Concept Plan 6



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- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
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- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
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- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
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- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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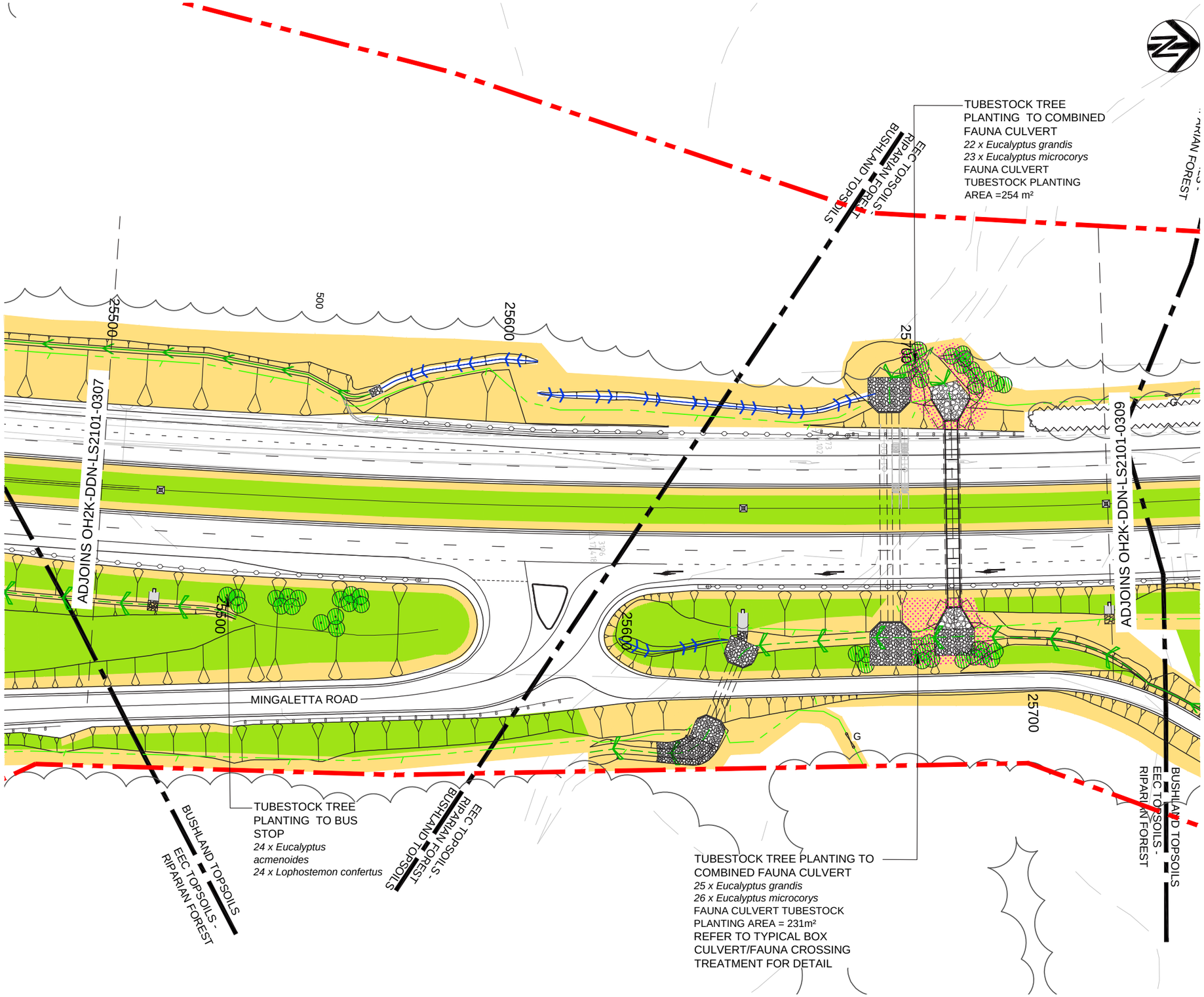
0 50m

Figure 9.1.7 Landscape Concept Plan 7



LEGEND

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- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
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- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
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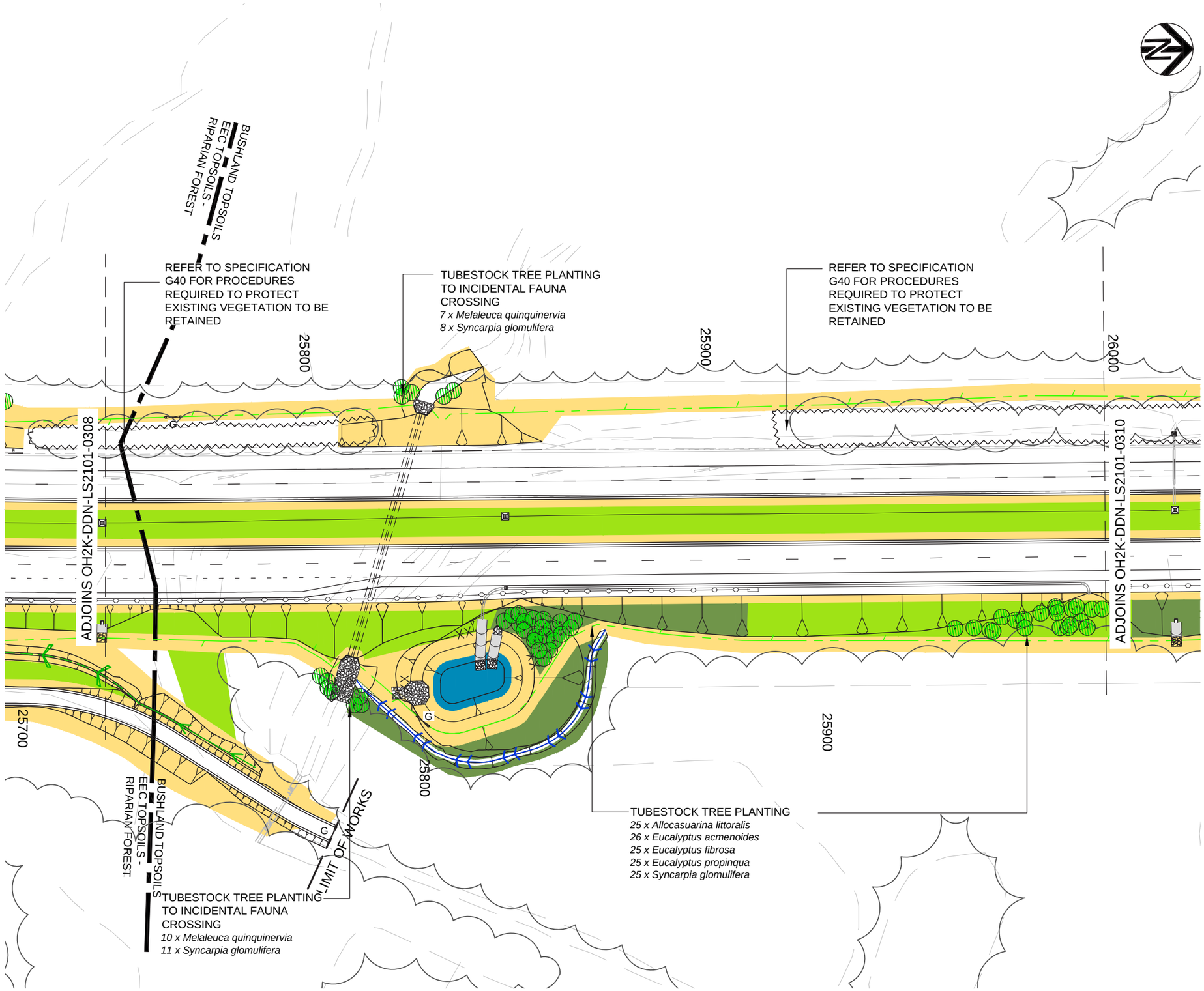
0 50m

Figure 9.1.8 Landscape Concept Plan 8



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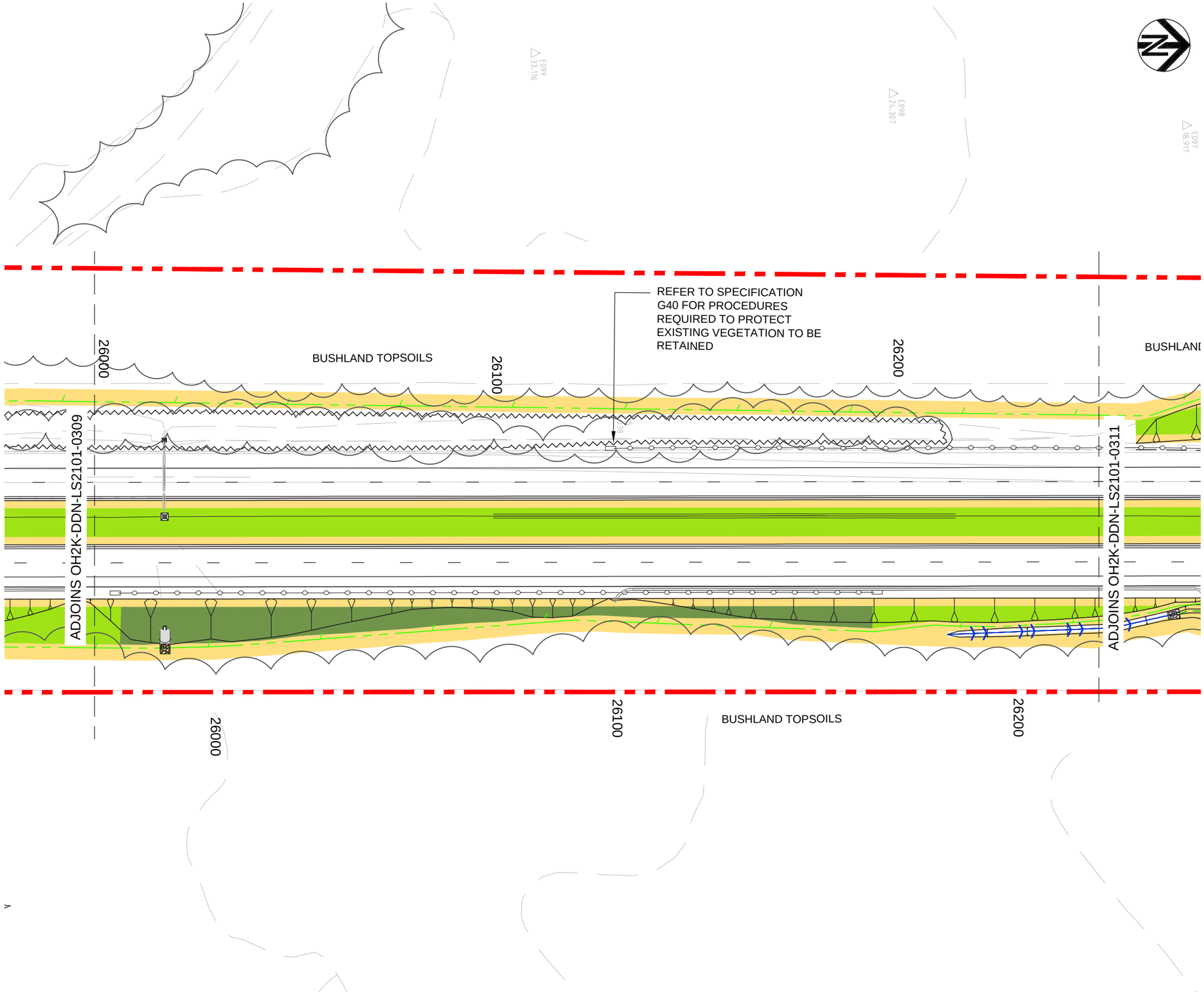
0 50M

Figure 9.1.9 Landscape Concept Plan 9



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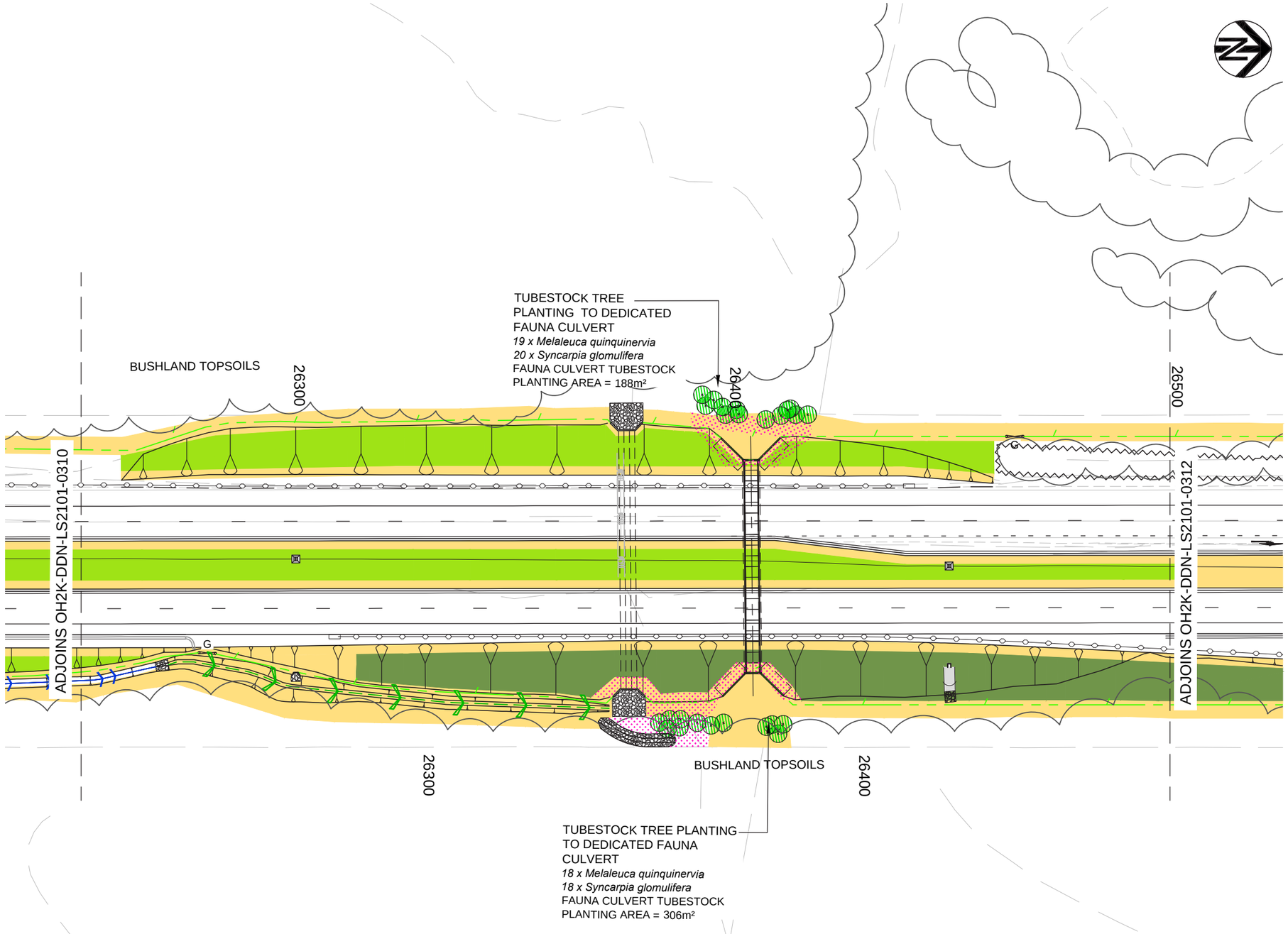
0 50m

Figure 9.1.10 Landscape Concept Plan 10



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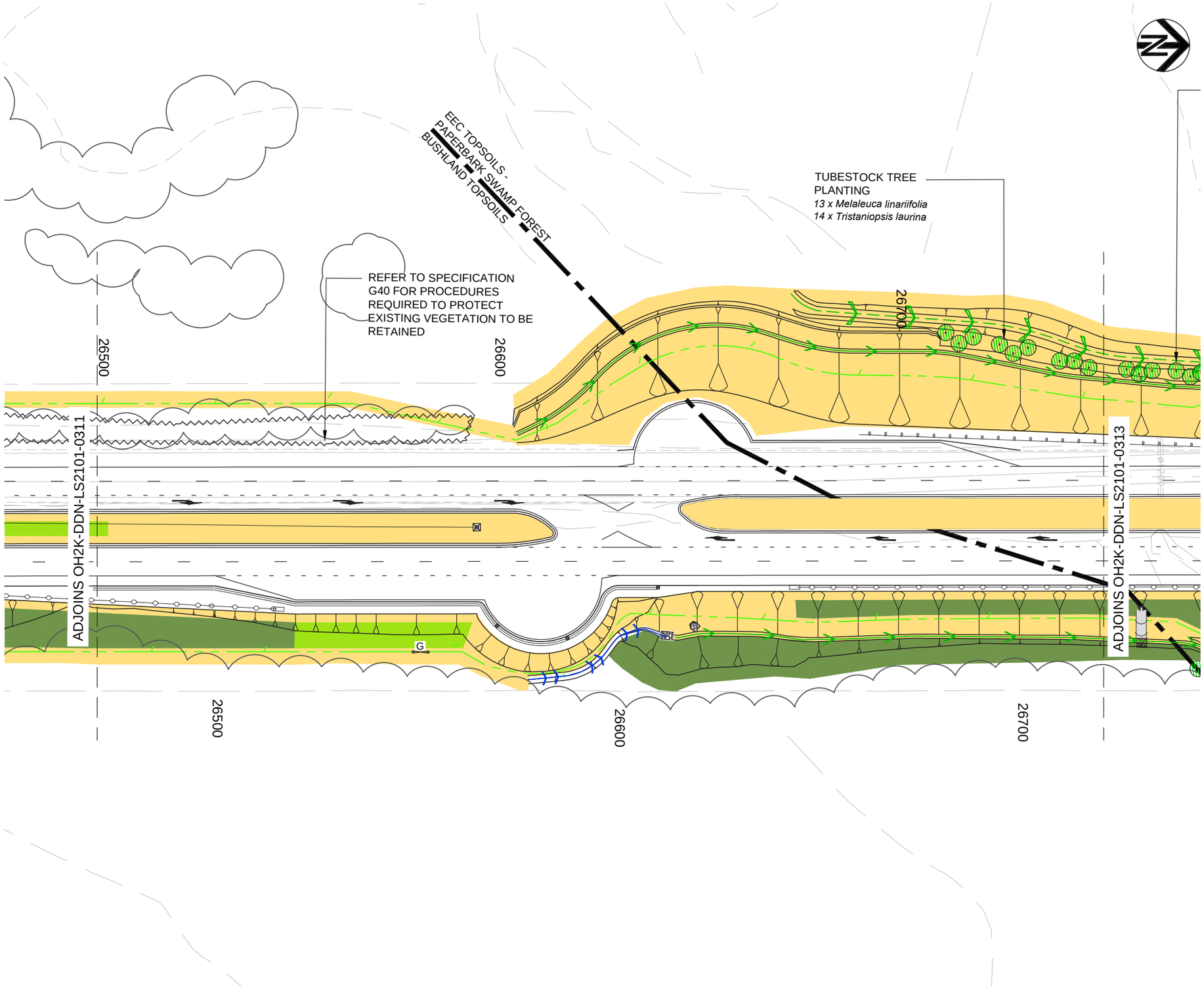
0 50m

Figure 9.1.11 Landscape Concept Plan 11



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0 50m

Figure 9.1.12 Landscape Concept Plan 12

TUBESTOCK TREE PLANTING INBETWEEN DRAINAGE CHANNELS
9 x Melaleuca linariifolia
9 x Tristaniopsis laurina

TUBESTOCK TREE PLANTING TO INCIDENTAL FAUNA CROSSING
18 x Melaleuca linariifolia
18 x Tristaniopsis laurina

TUBESTOCK TREE PLANTING AT EDGE OF DRAINAGE CHANNELS
18 x Melaleuca linariifolia
18 x Tristaniopsis laurina

REFER TO SPECIFICATION G40 FOR PROCEDURES REQUIRED TO PROTECT EXISTING VEGETATION TO BE RETAINED

TUBESTOCK TREE PLANTING AT EDGE OF DRAINAGE CHANNELS
35 x Melaleuca linariifolia
34 x Tristaniopsis laurina

26800

26900

27000

ADJOINS OH2K-DDN-LS2101-0312

ADJOINS OH2K-DDN-LS2101-0314

G

G

B

EEC TOPSOILS - PAPERBARK SWAMP FOREST BUSHLAND TOPSOILS

TUBESTOCK TREE PLANTING TO INCIDENTAL FAUNA CROSSING
12 x Melaleuca linariifolia
12 x Tristaniopsis laurina

EEC TOPSOILS - PAPERBARK SWAMP FOREST BUSHLAND TOPSOILS

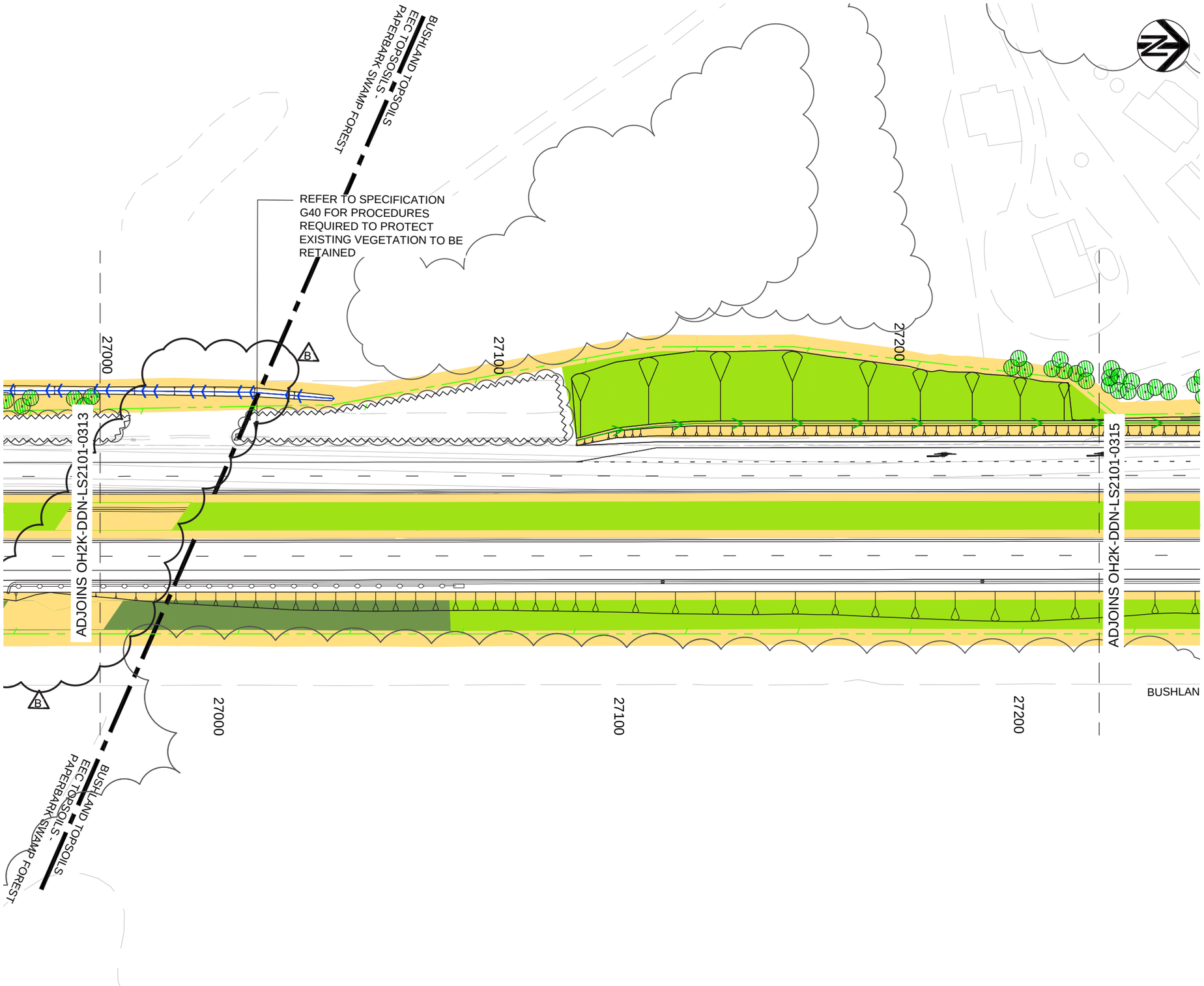
LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.13 Landscape Concept Plan 13



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES

1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
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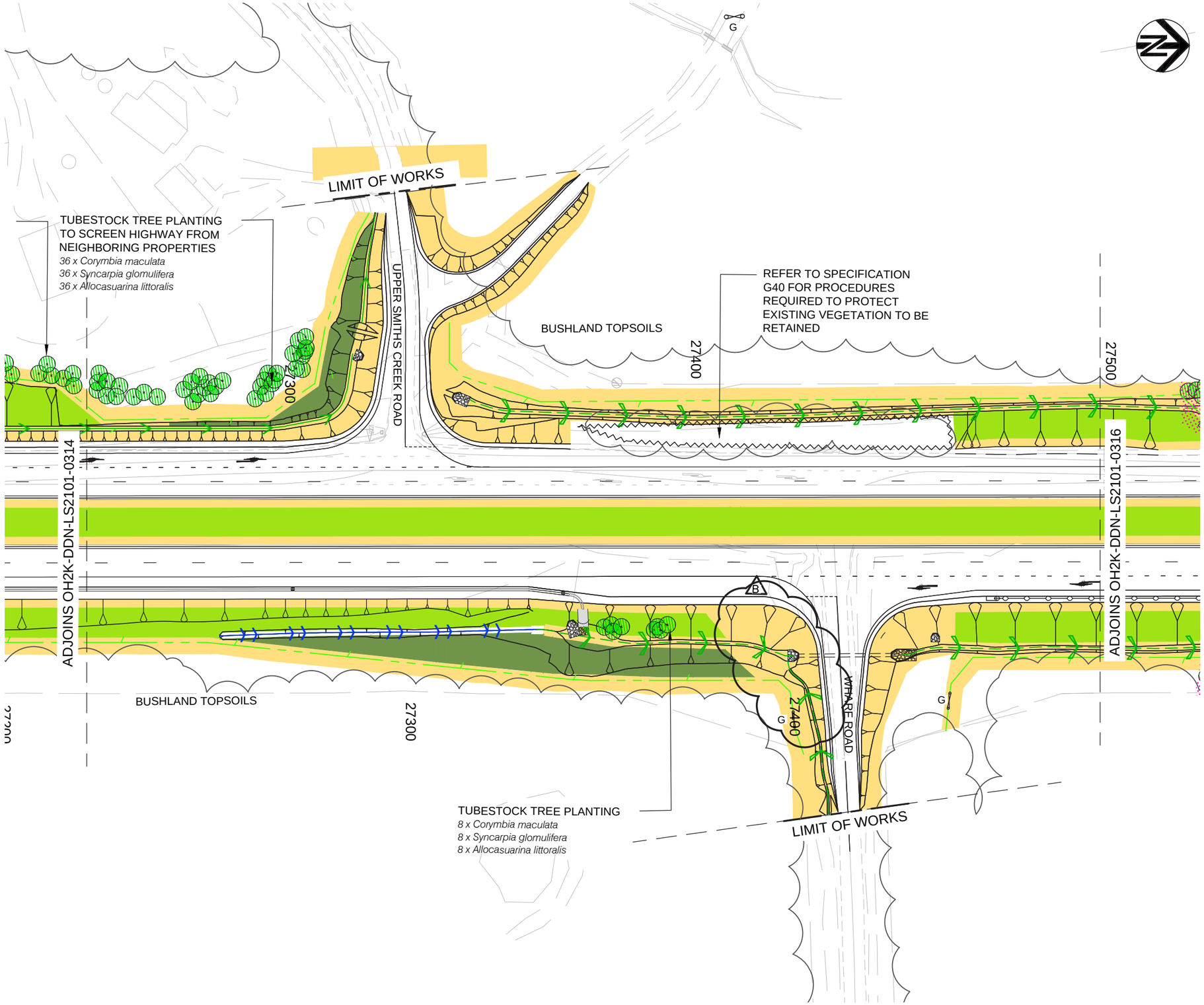
0 50m

Figure 9.1.14 Landscape Concept Plan 14



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
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- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
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- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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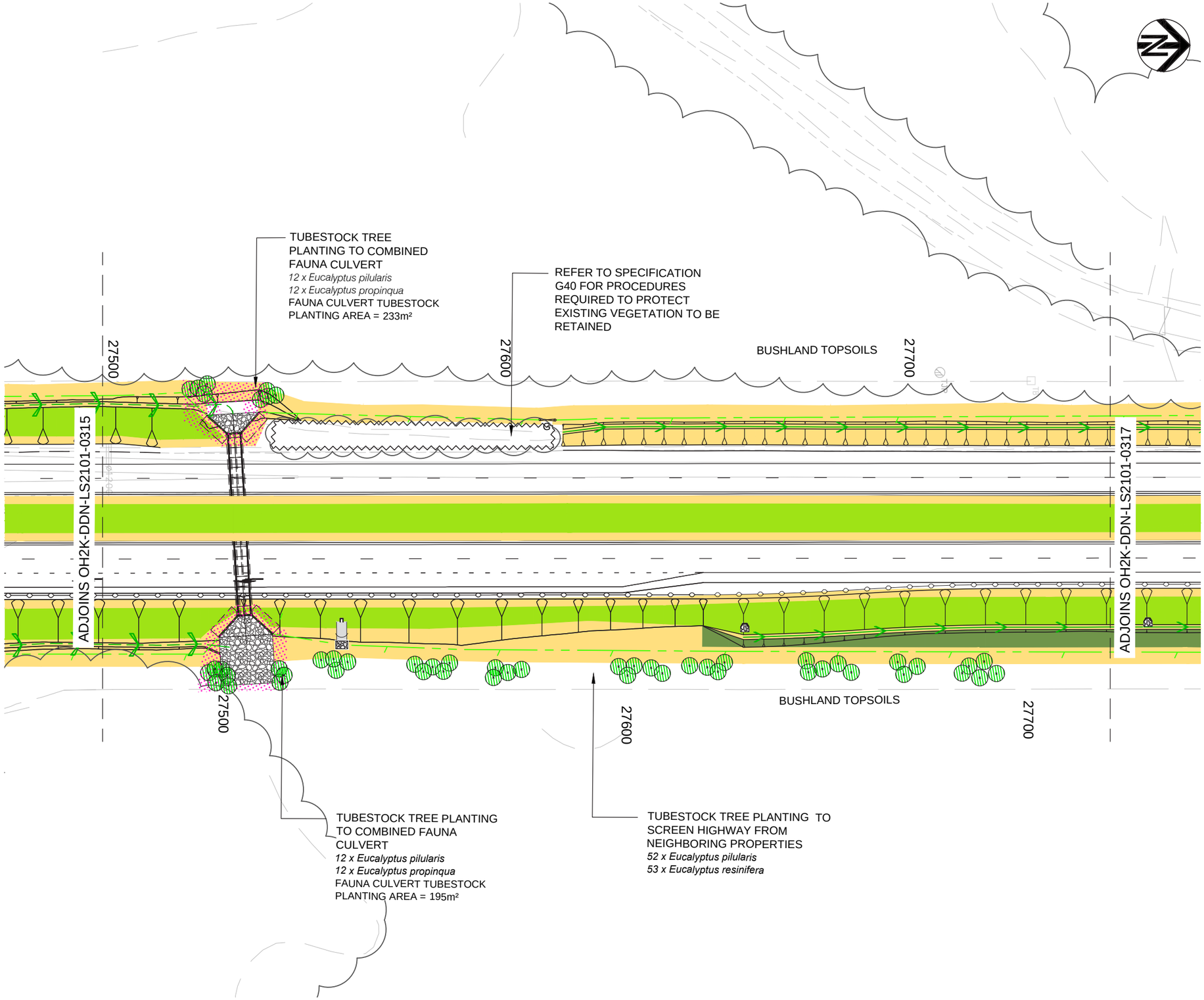
0 50m

Figure 9.1.15 Landscape Concept Plan 15



LEGEND

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Figure 9.1.16 Landscape Concept Plan 16

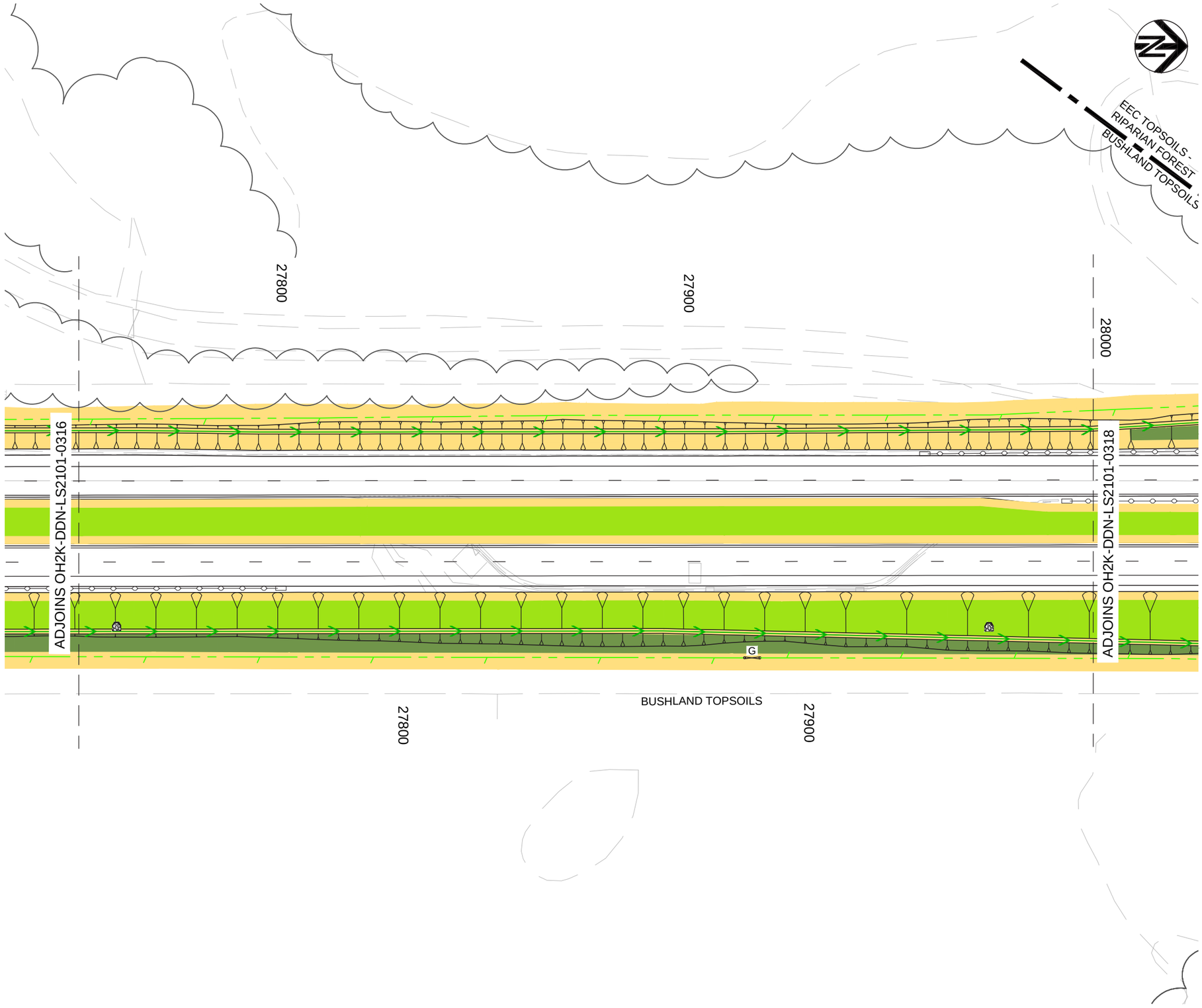

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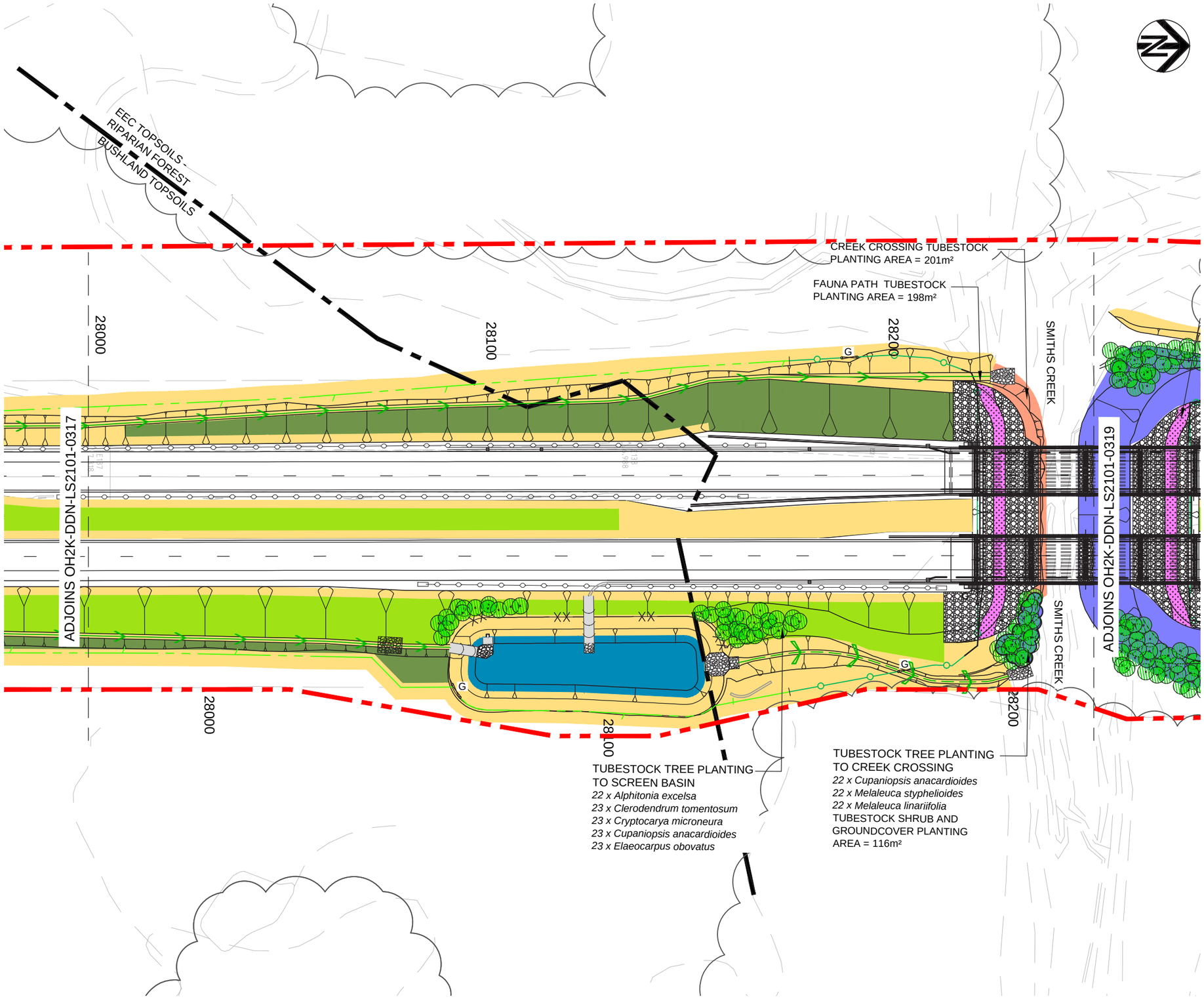
Figure 9.1.17 Landscape Concept Plan 17



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- CATCH DRAIN - ROCK LINED
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- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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Figure 9.1.18 Landscape Concept Plan 18

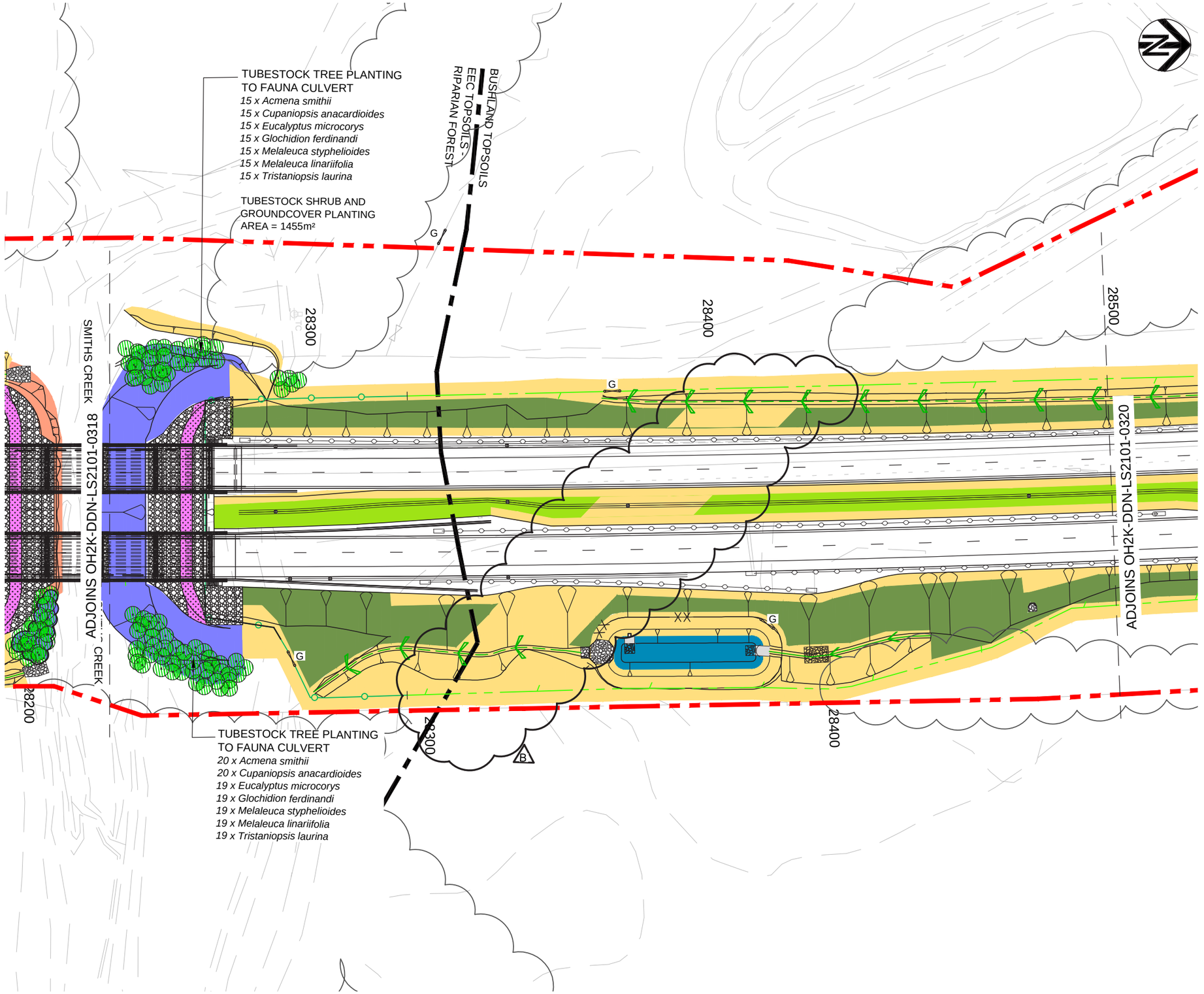

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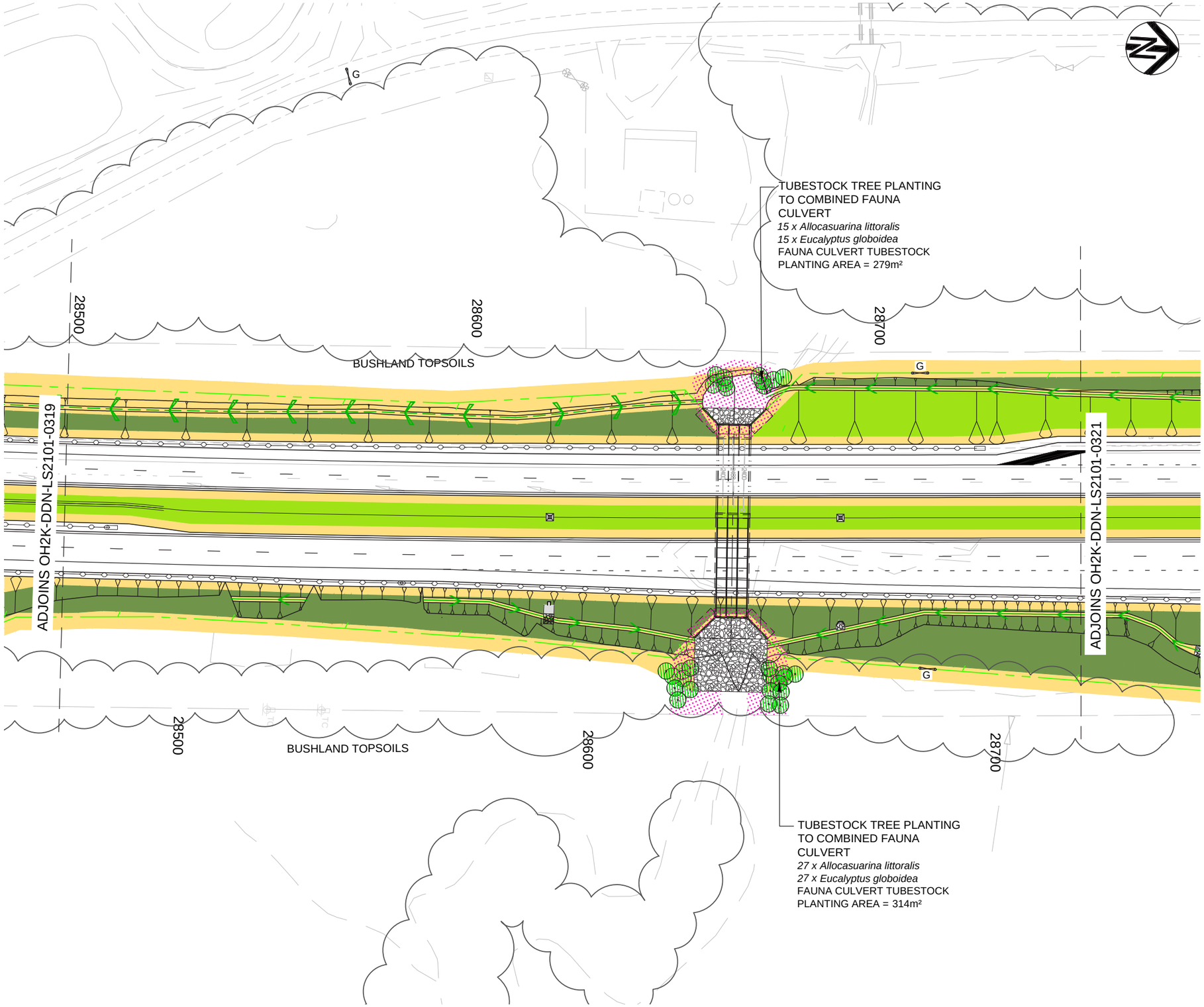
Figure 9.1.19 Landscape Concept Plan 19



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- ROPE CROSSING
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- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
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- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
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- TABLE DRAIN - LINED
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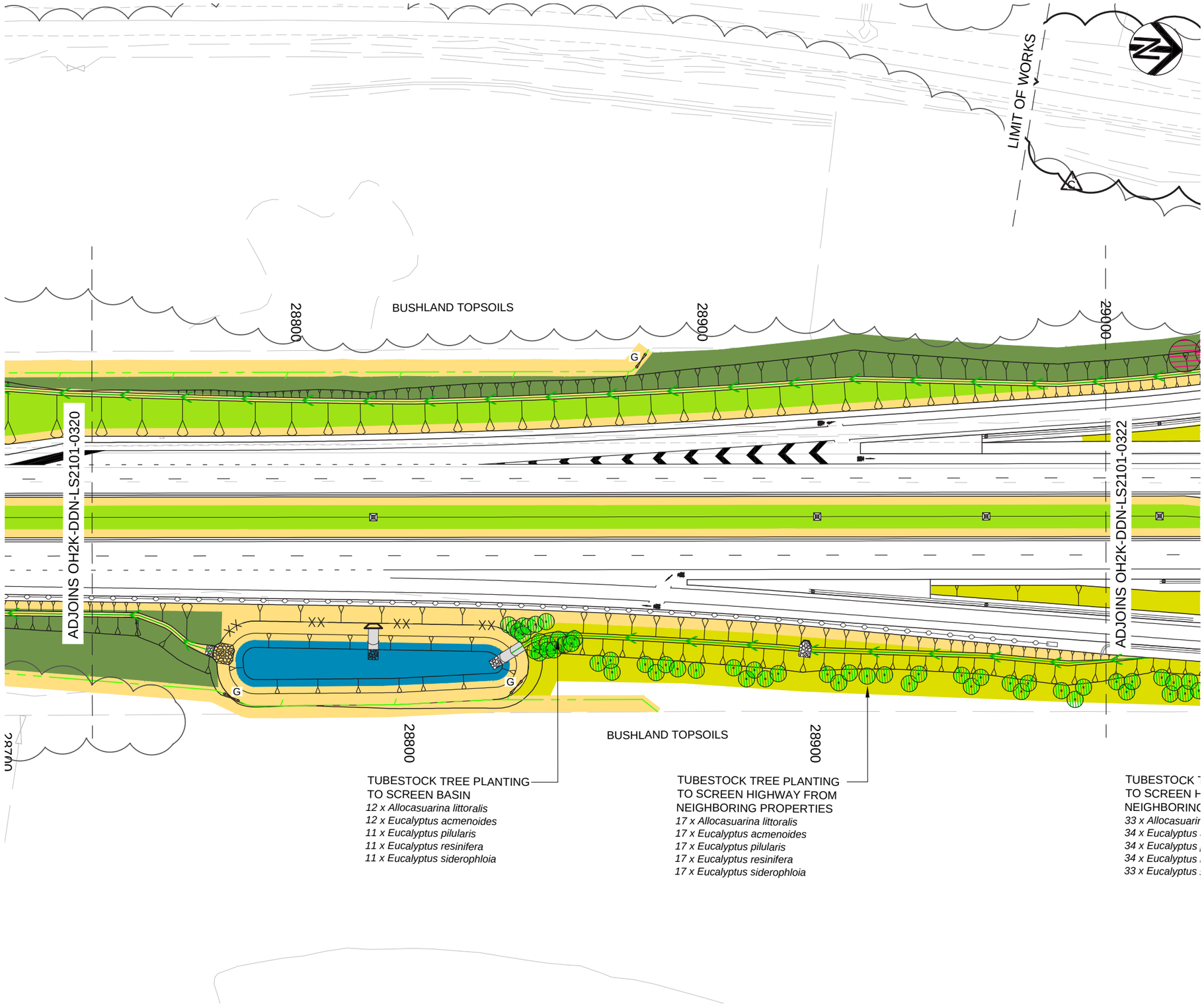
0 50m

Figure 9.1.20 Landscape Concept Plan 20



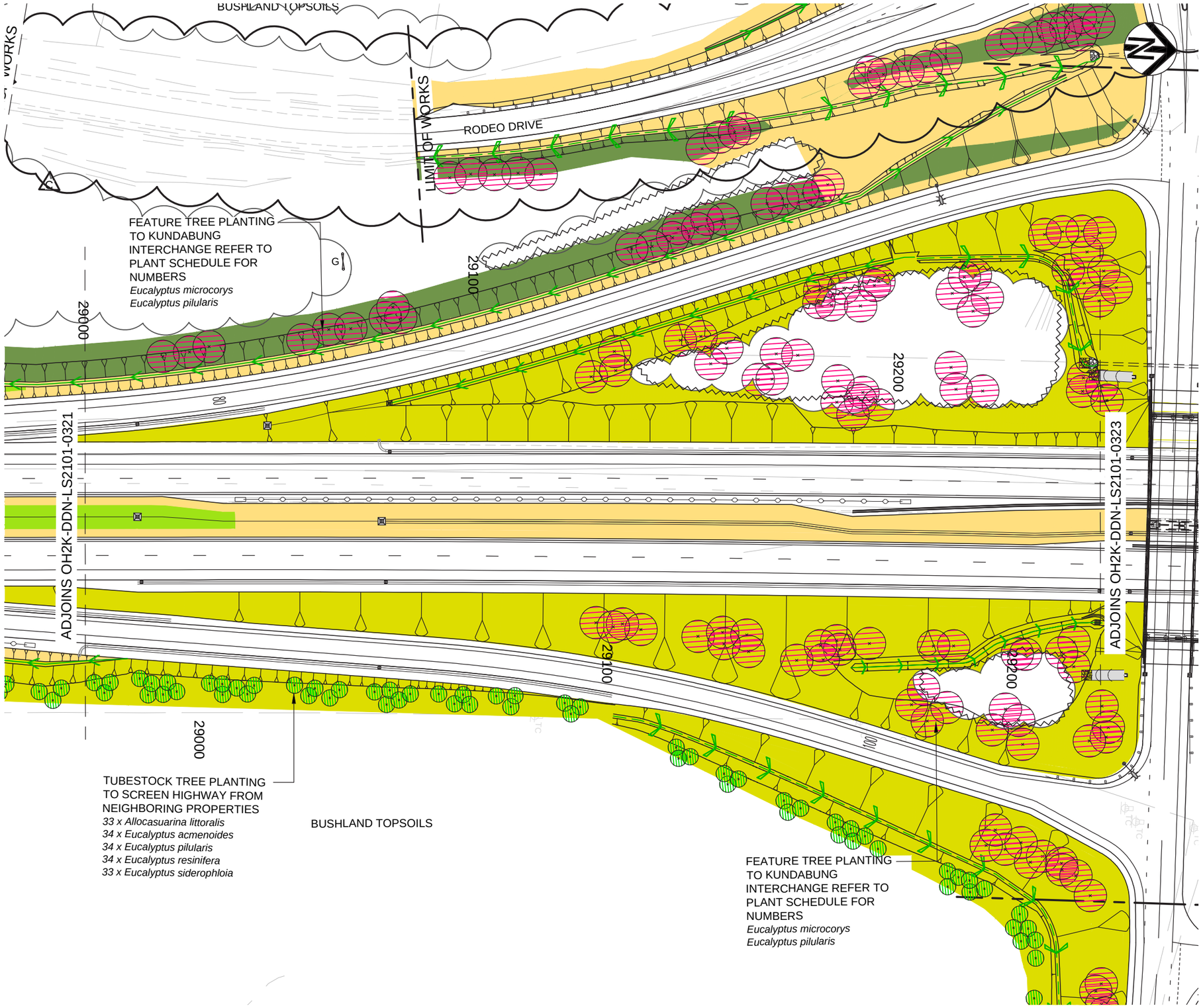
LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.21 Landscape Concept Plan 21



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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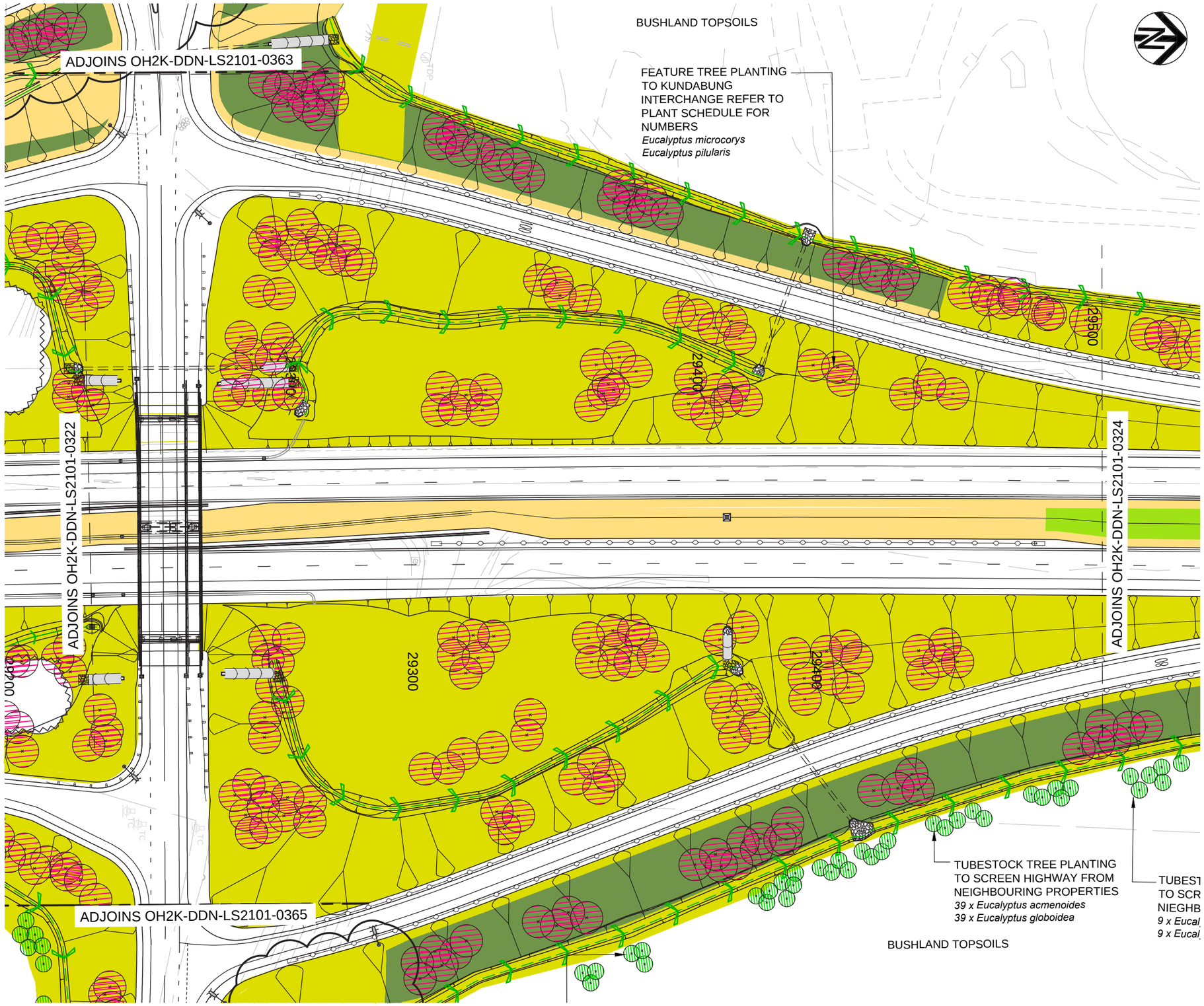
0 50m

Figure 9.1.22 Landscape Concept Plan 22



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

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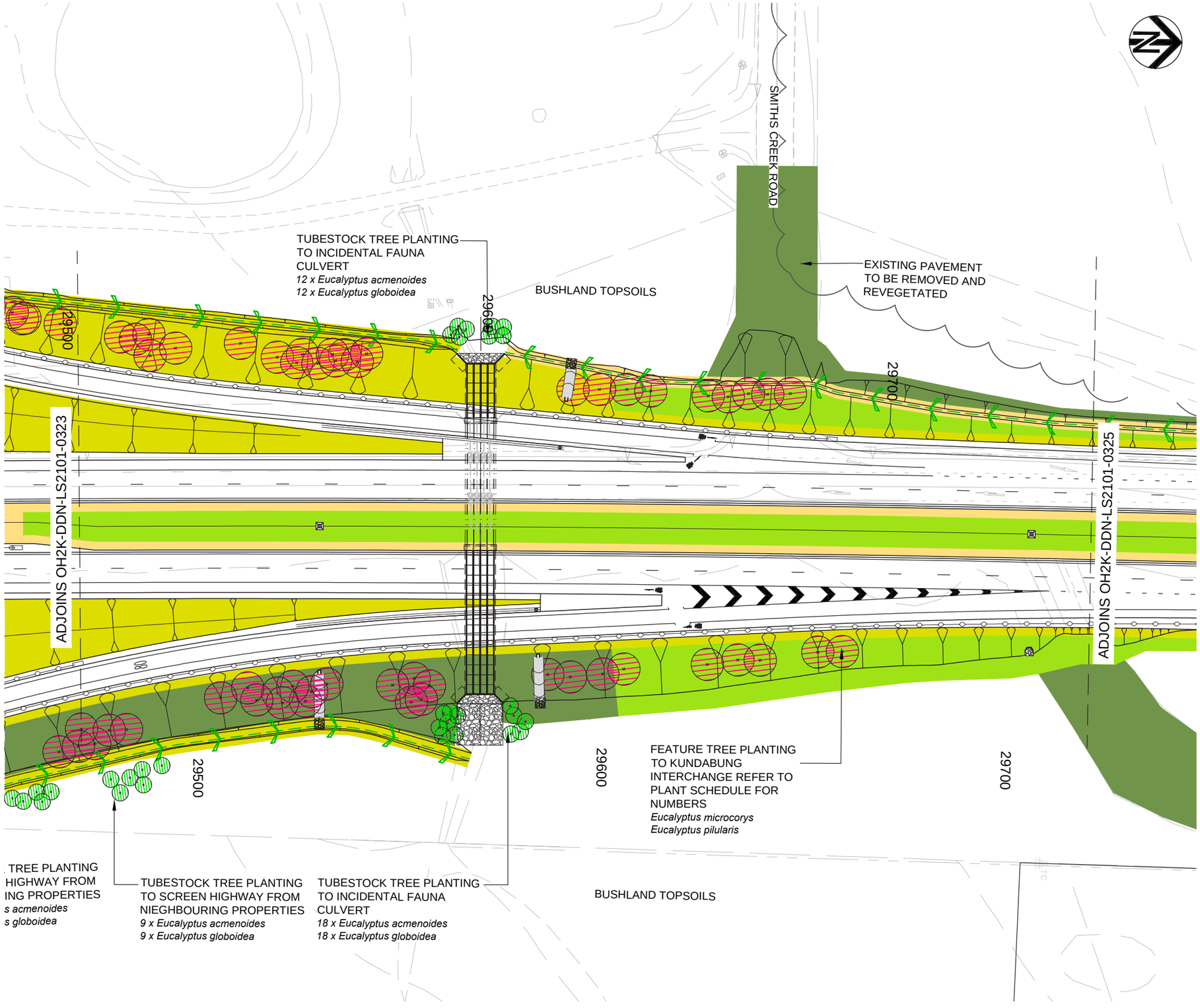
0 50m

Figure 9.1.23 Landscape Concept Plan 23



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
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- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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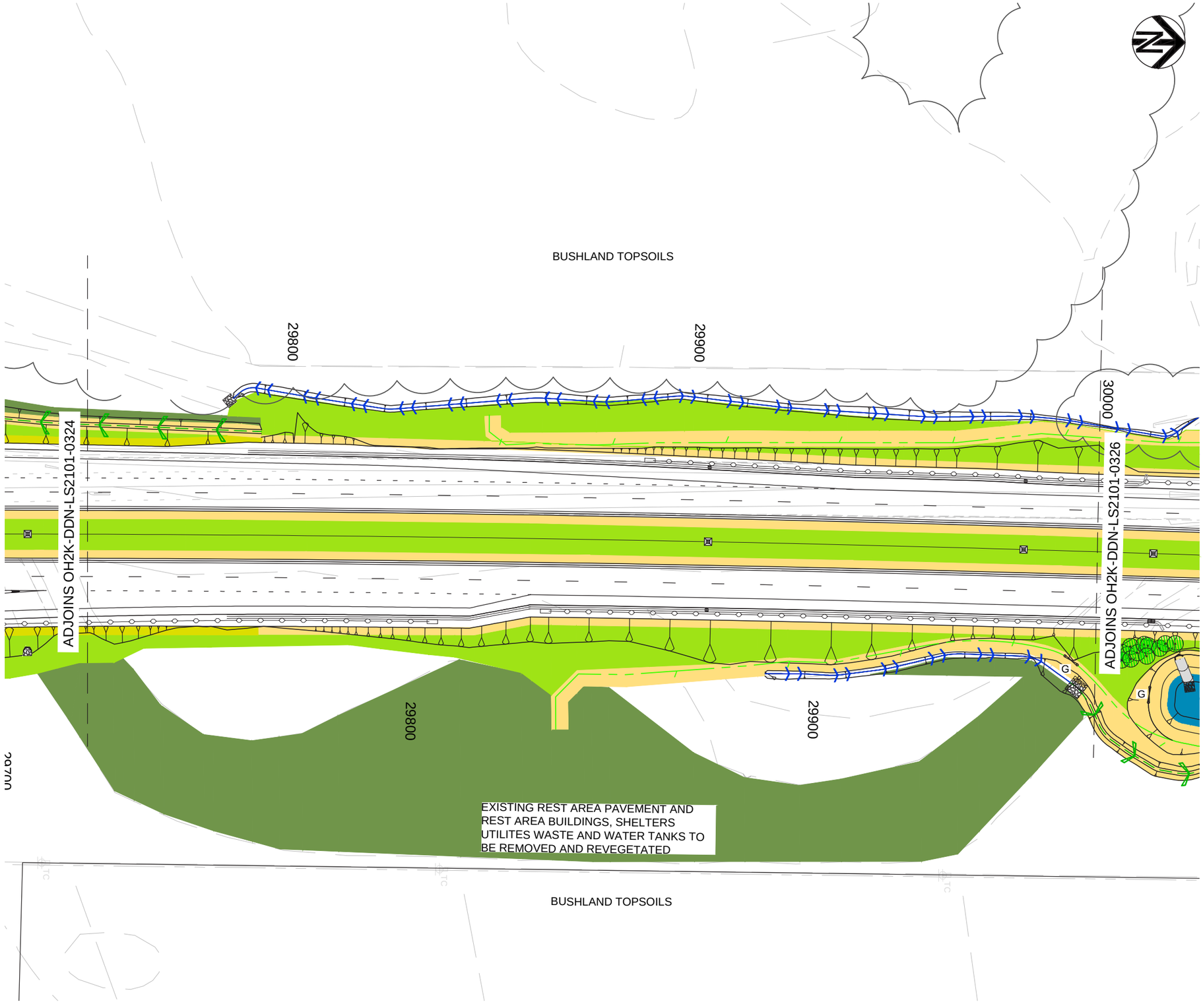
0 50m

Figure 9.1.24 Landscape Concept Plan 24



LEGEND

- PROJECT BOUNDARY
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- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
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- ROPE CROSSING
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- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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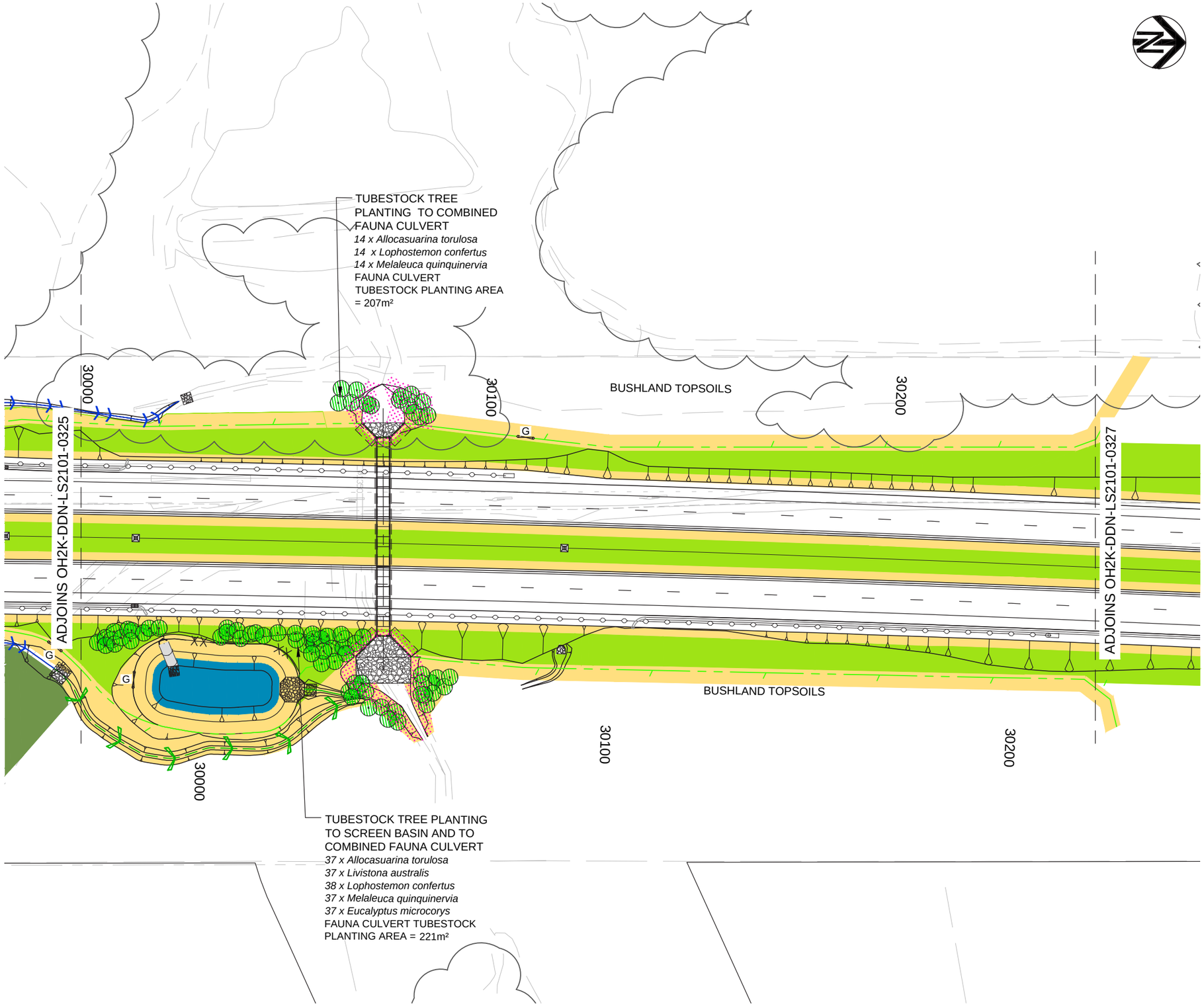
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.25 Landscape Concept Plan 25



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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0 50m

Figure 9.1.26 Landscape Concept Plan 26

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
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- BUFFALO TURF (REST AREA ONLY)
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- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
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- SPREADER
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- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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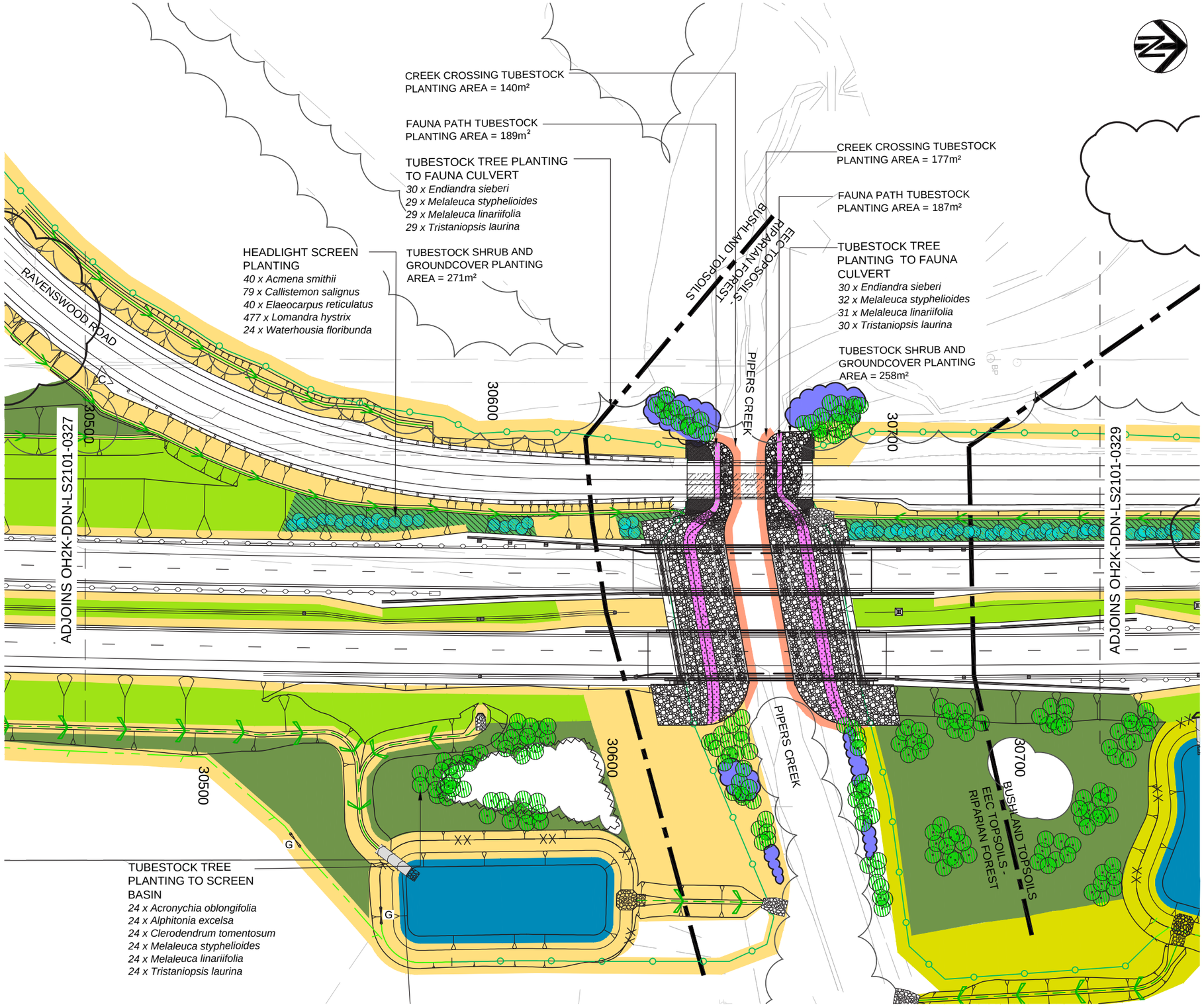
Figure 9.1.27 Landscape Concept Plan 27



LEGEND

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- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
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- TABLE DRAIN - UNLINED
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- BERM UNLINED - VEGETATED
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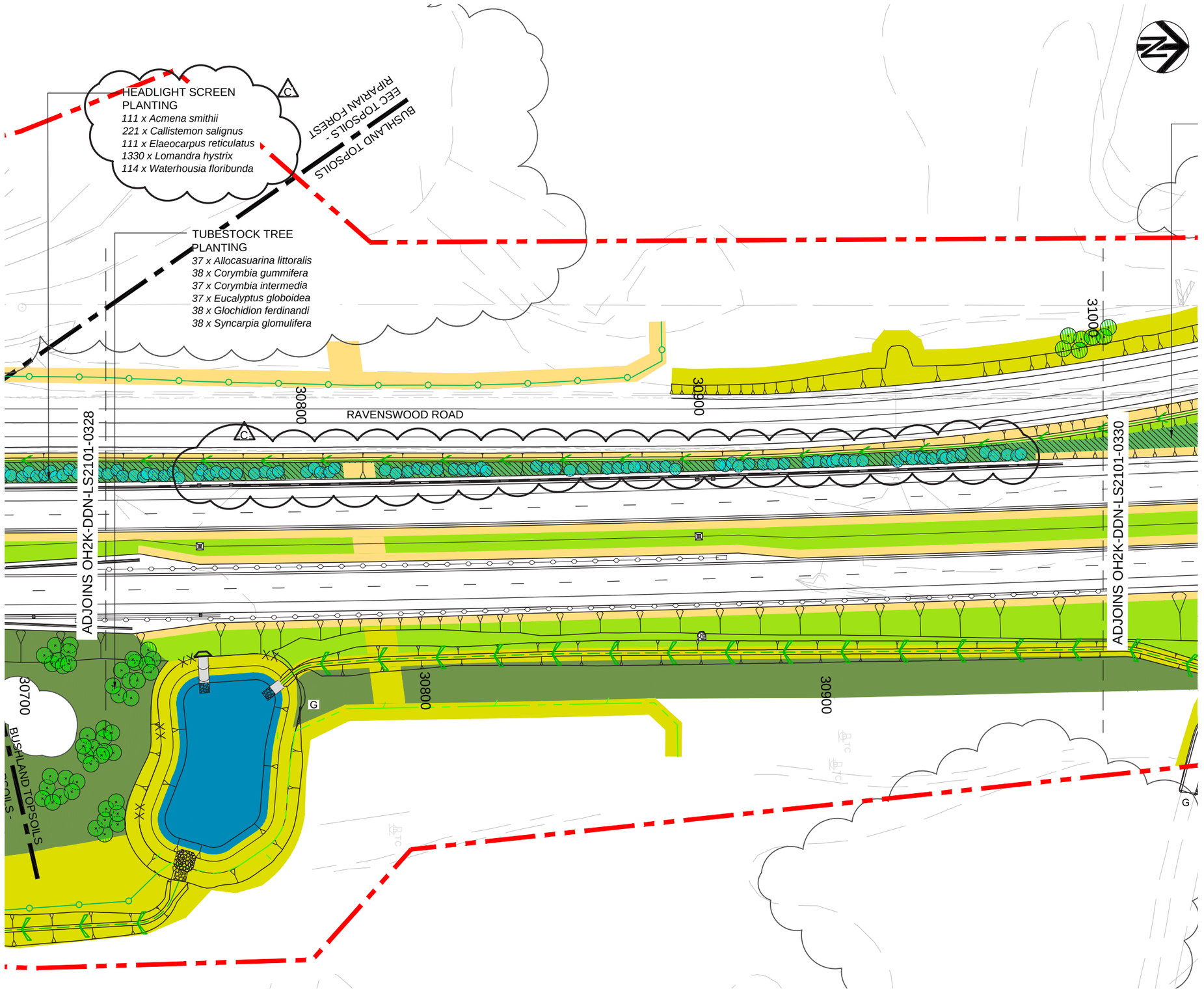
0 50m

Figure 9.1.28 Landscape Concept Plan 28



LEGEND

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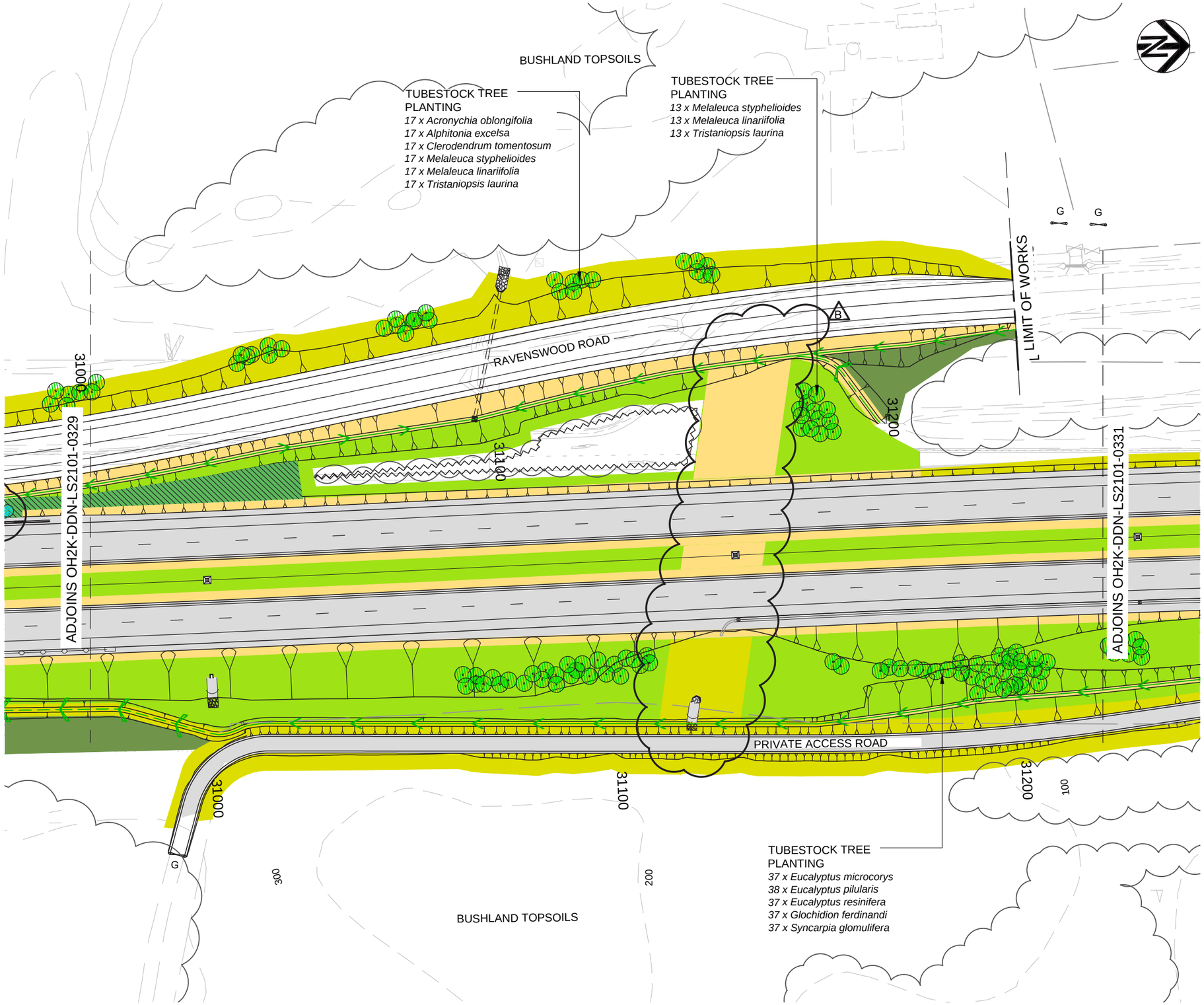
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.29 Landscape Concept Plan 29



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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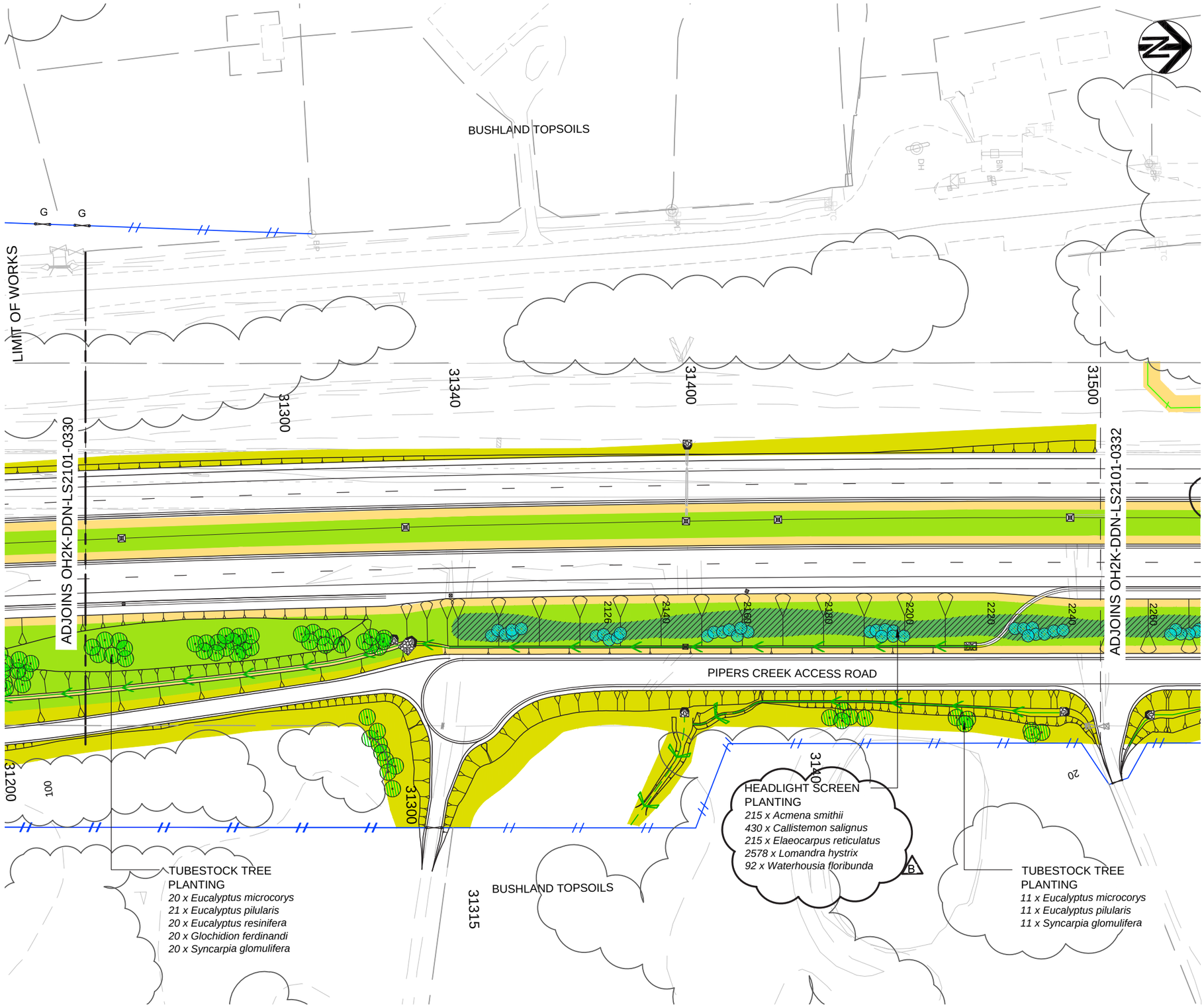
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.30 Landscape Concept Plan 30



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES

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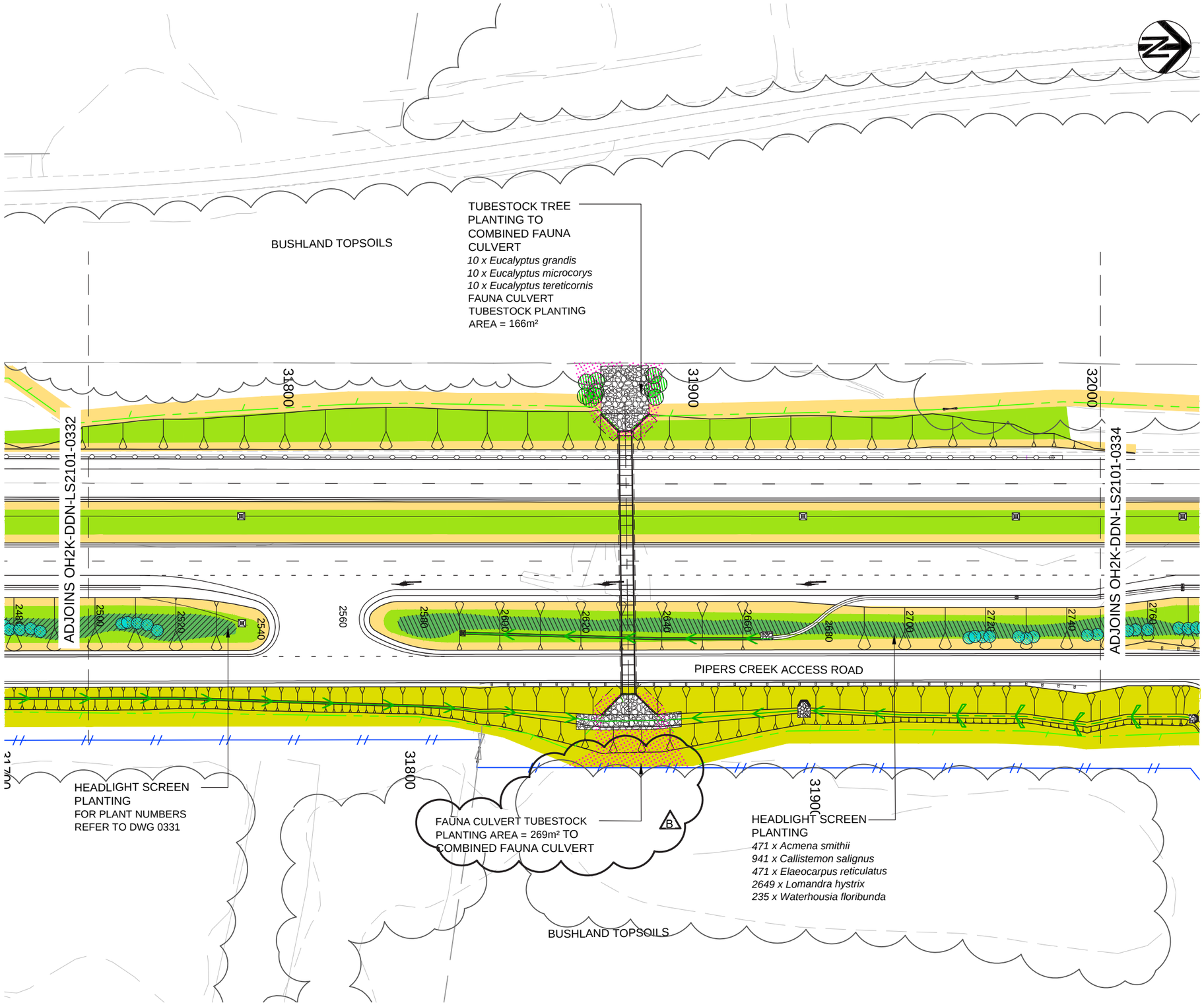
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.31 Landscape Concept Plan 31



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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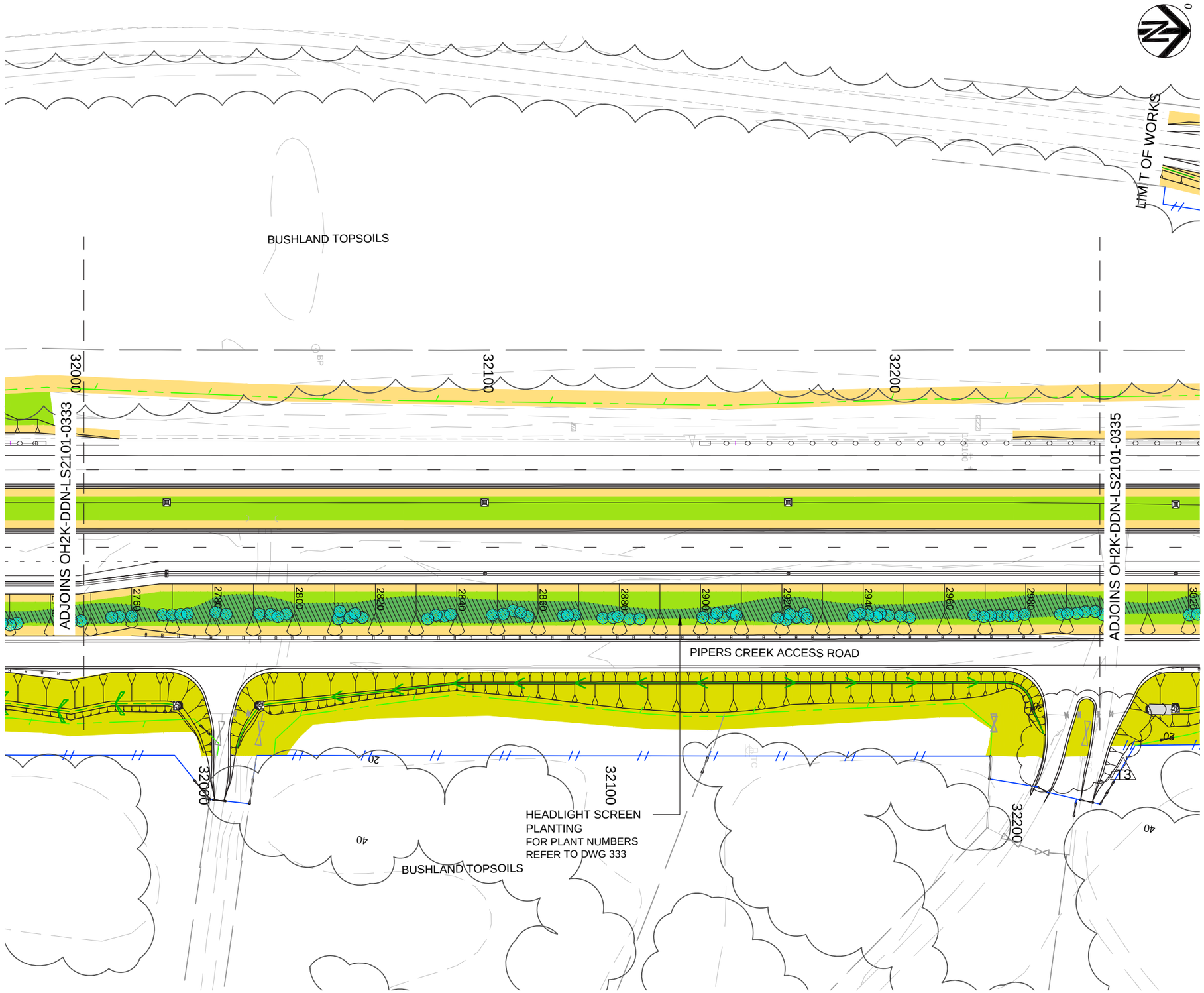
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.32 Landscape Concept Plan 32



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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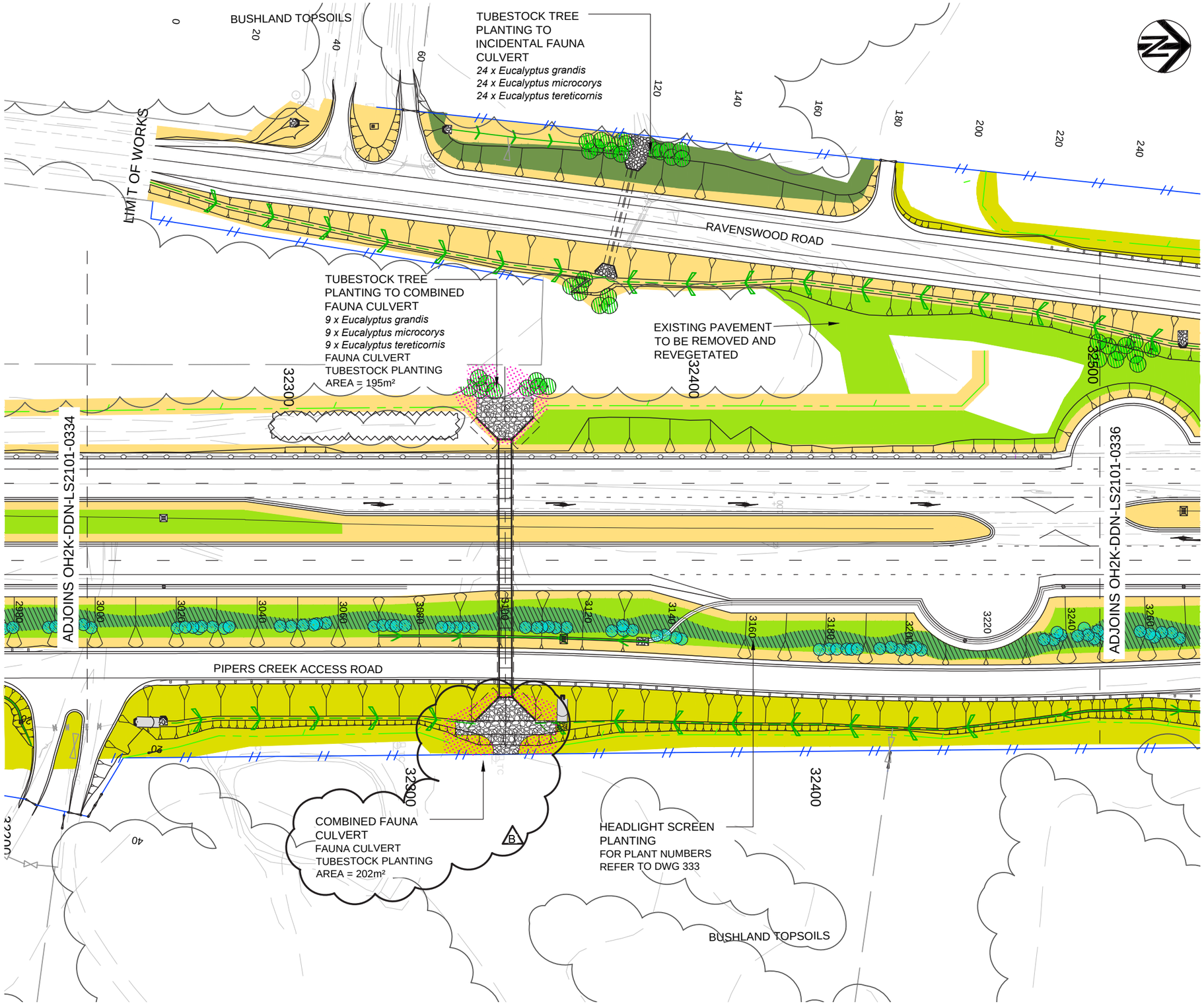
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.33 Landscape Concept Plan 33



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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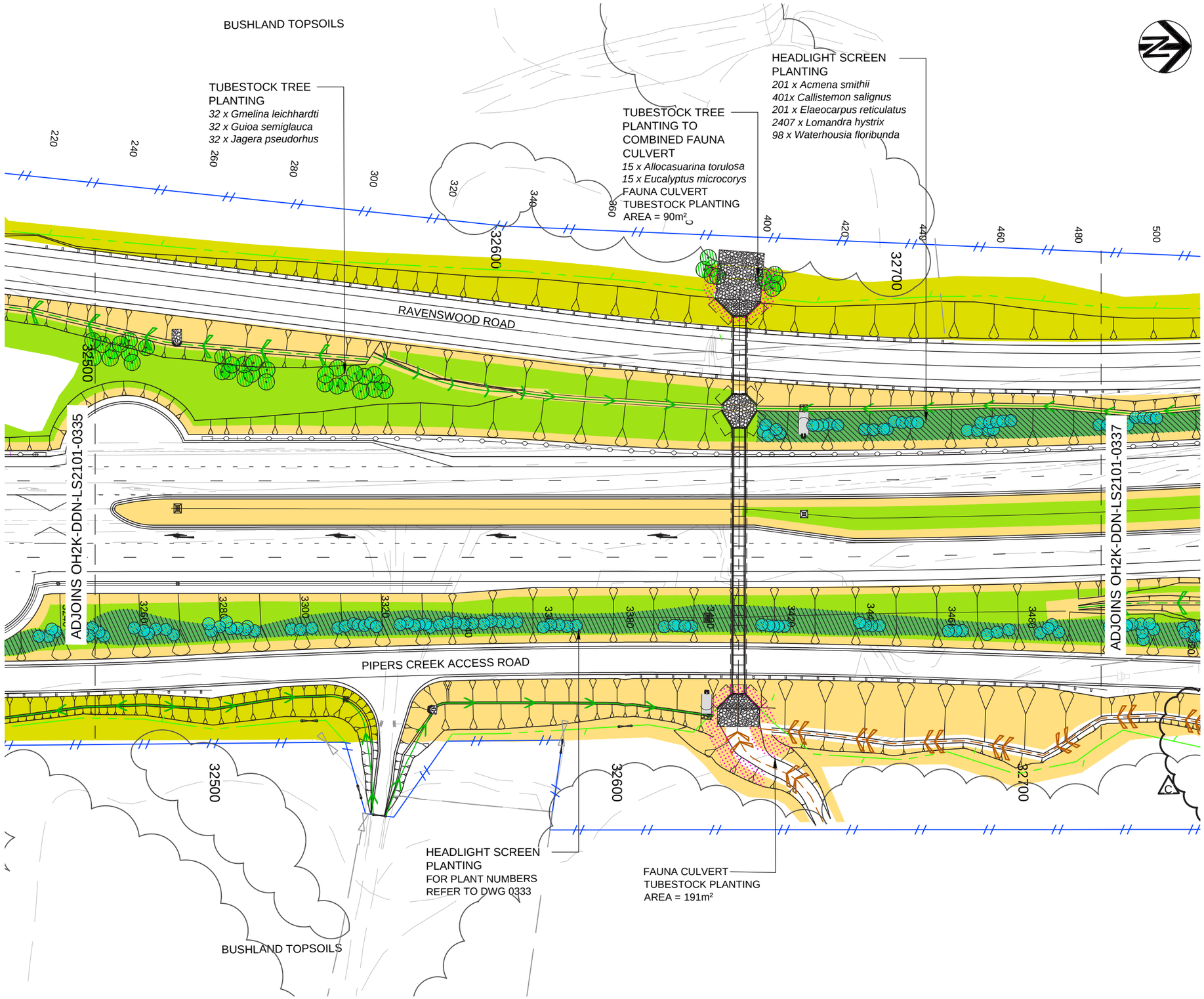
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.34 Landscape Concept Plan 34



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
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- TUBESTOCK PLANTING - AT CREEK CROSSINGS
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- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
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- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
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- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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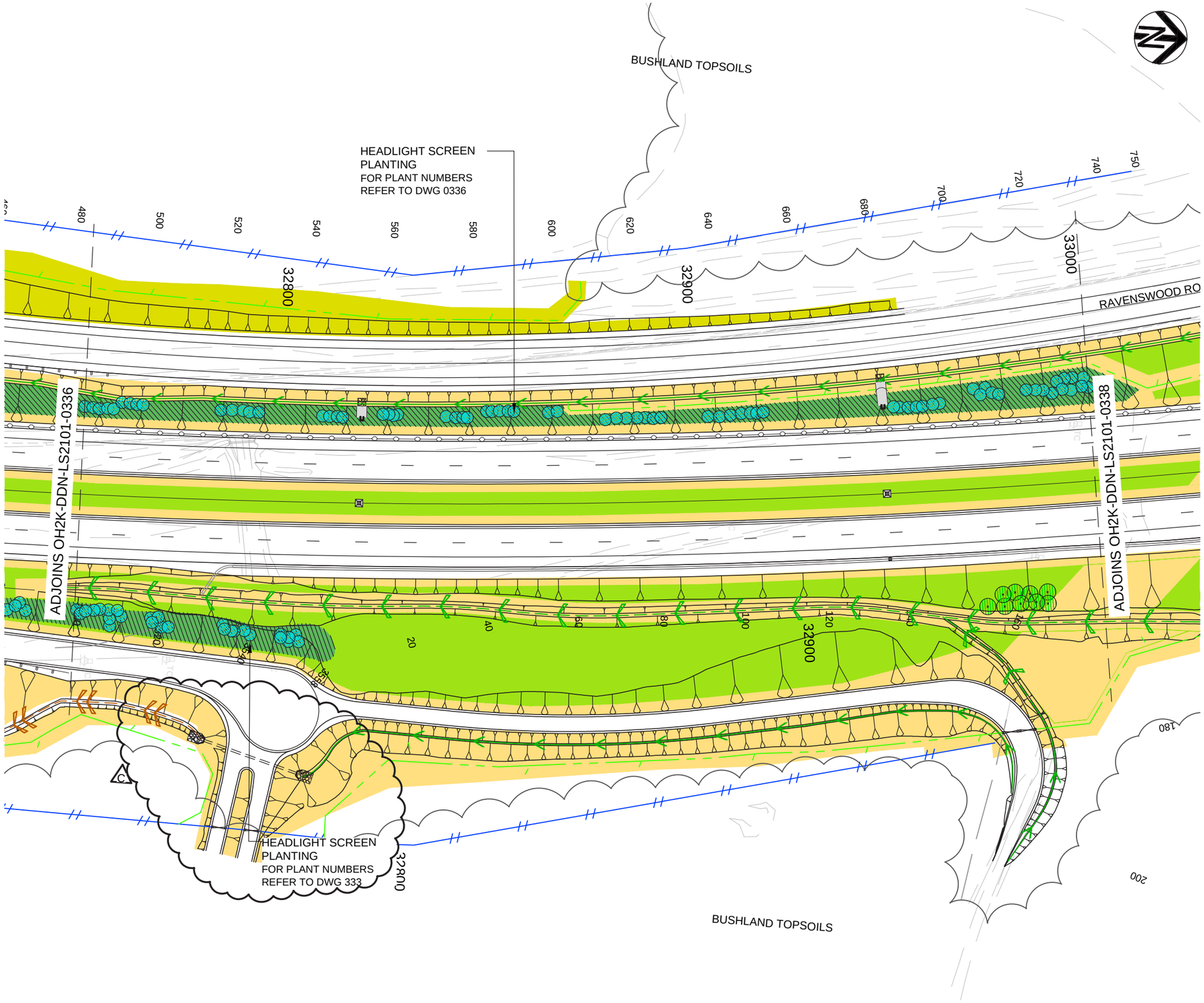
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.35 Landscape Concept Plan 35



LEGEND

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- PICNIC SHELTER (REST AREA ONLY)
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- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
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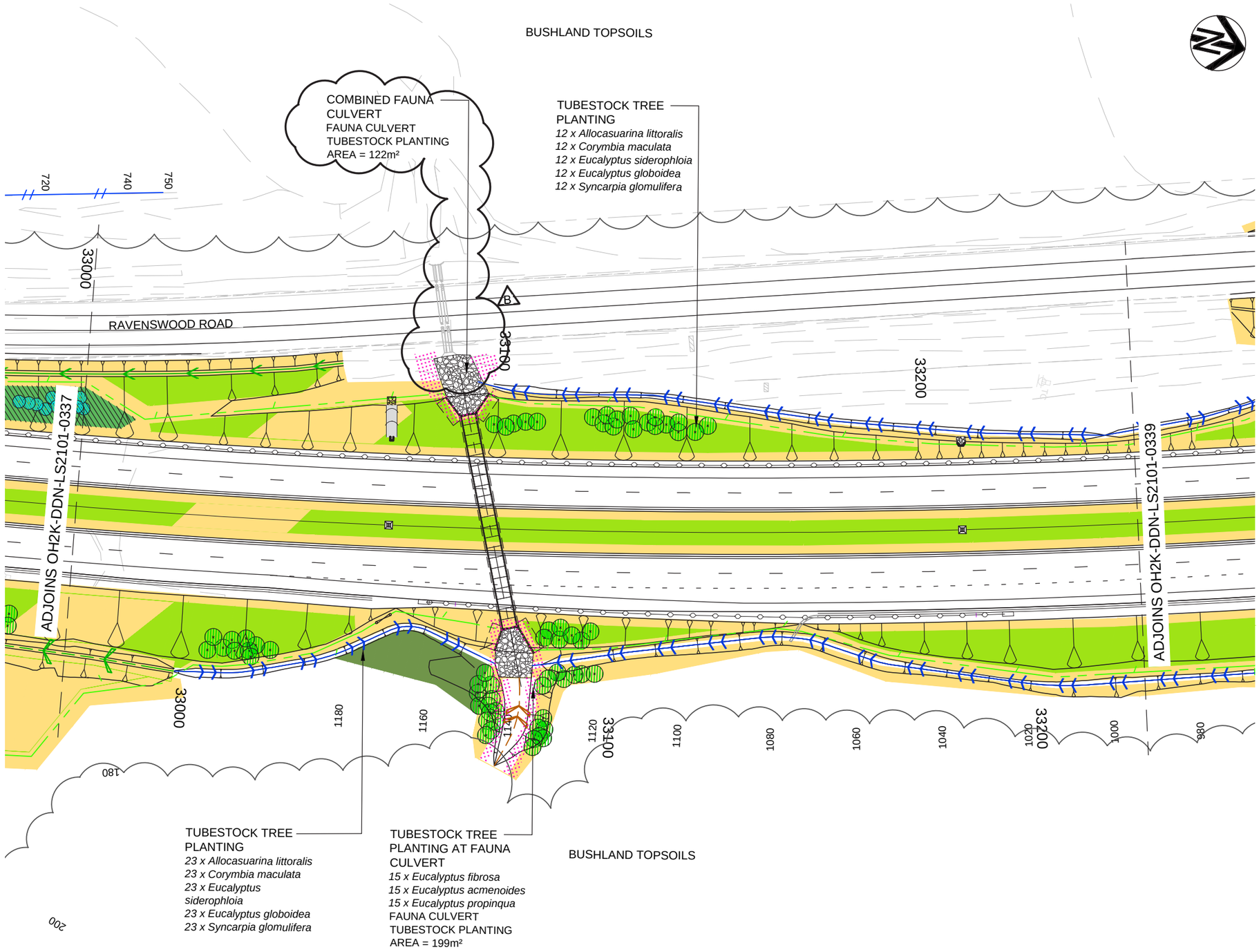
0 50m

Figure 9.1.36 Landscape Concept Plan 36



LEGEND

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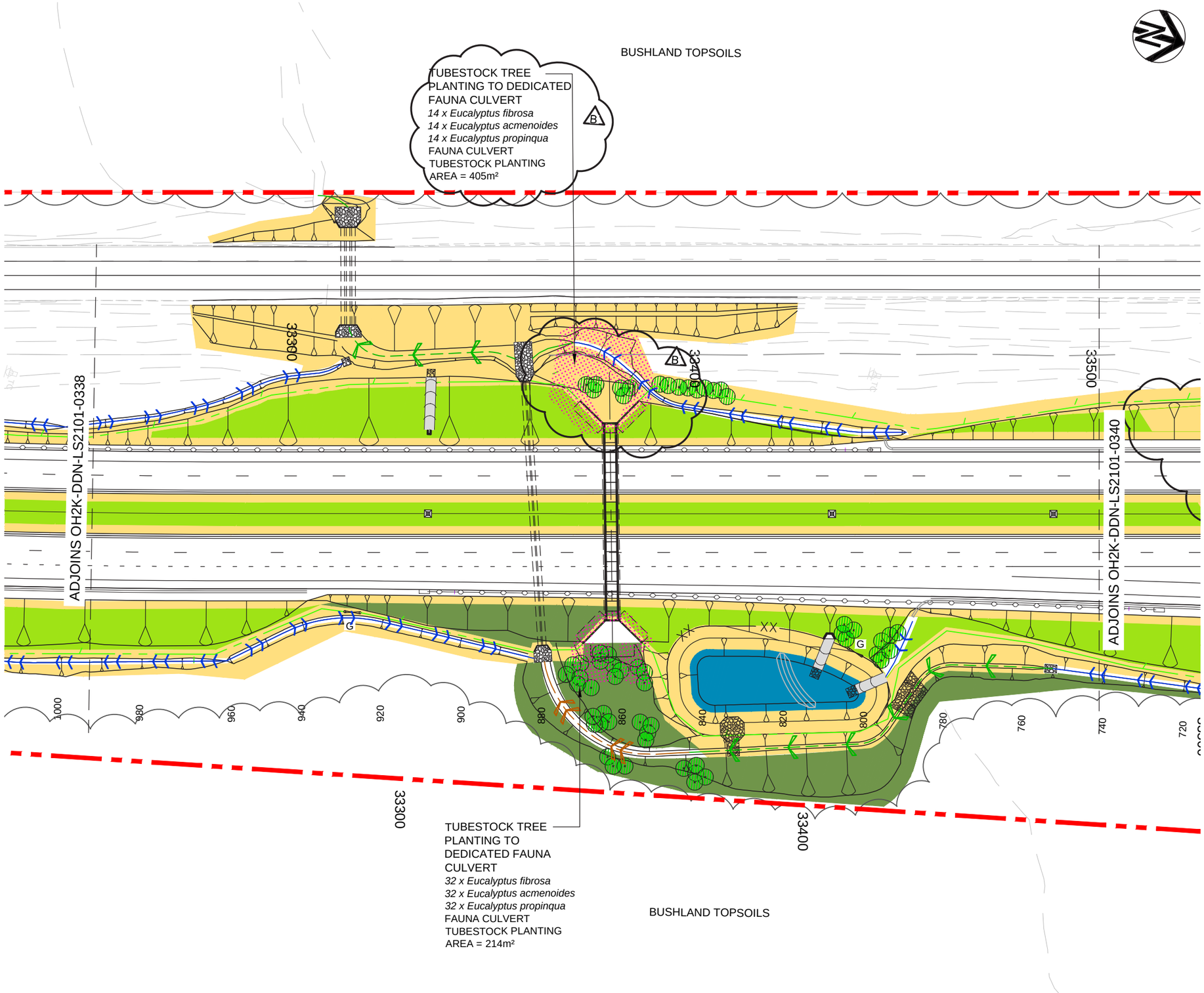
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.37 Landscape Concept Plan 37



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
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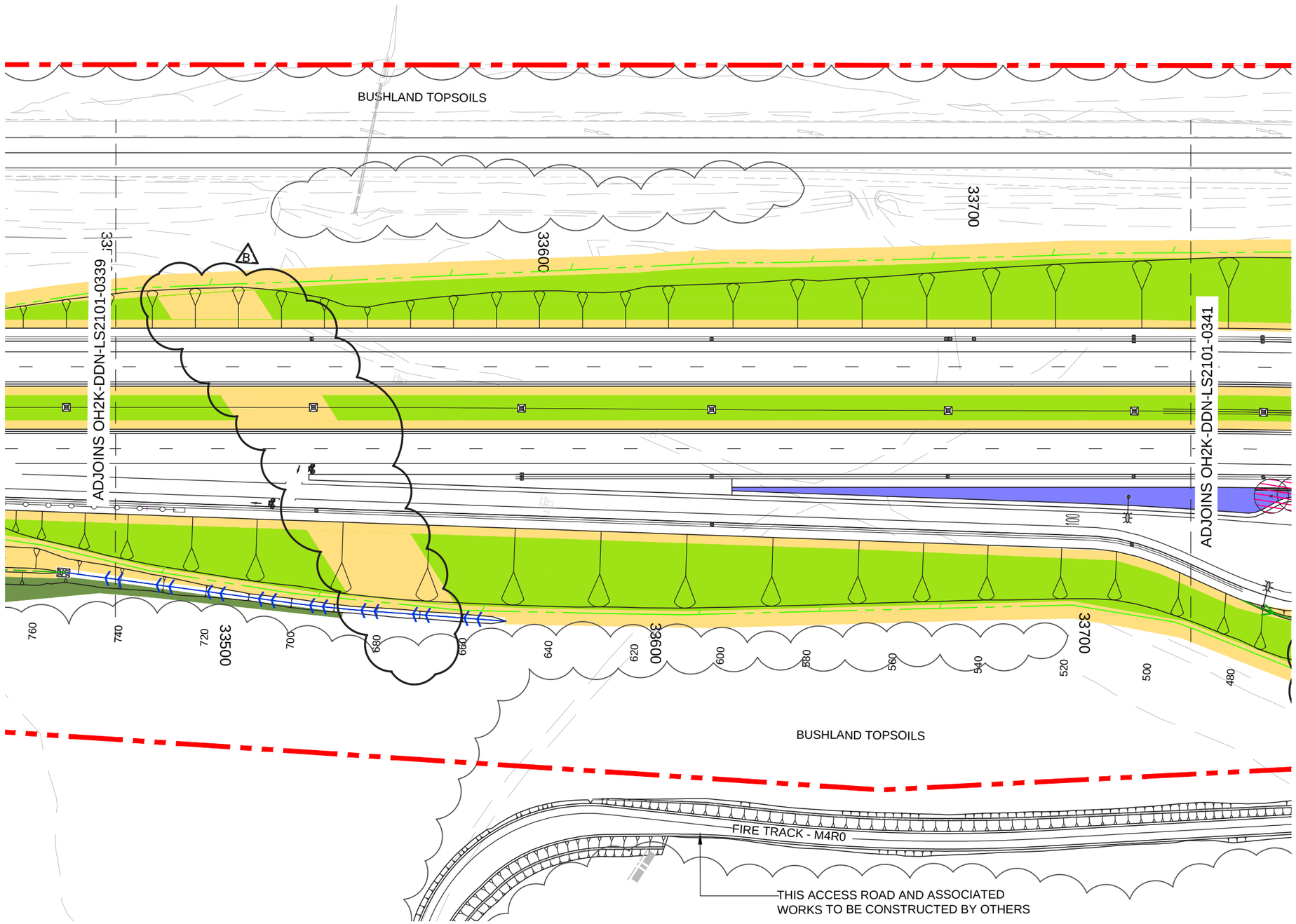
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.38 Landscape Concept Plan 38



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES

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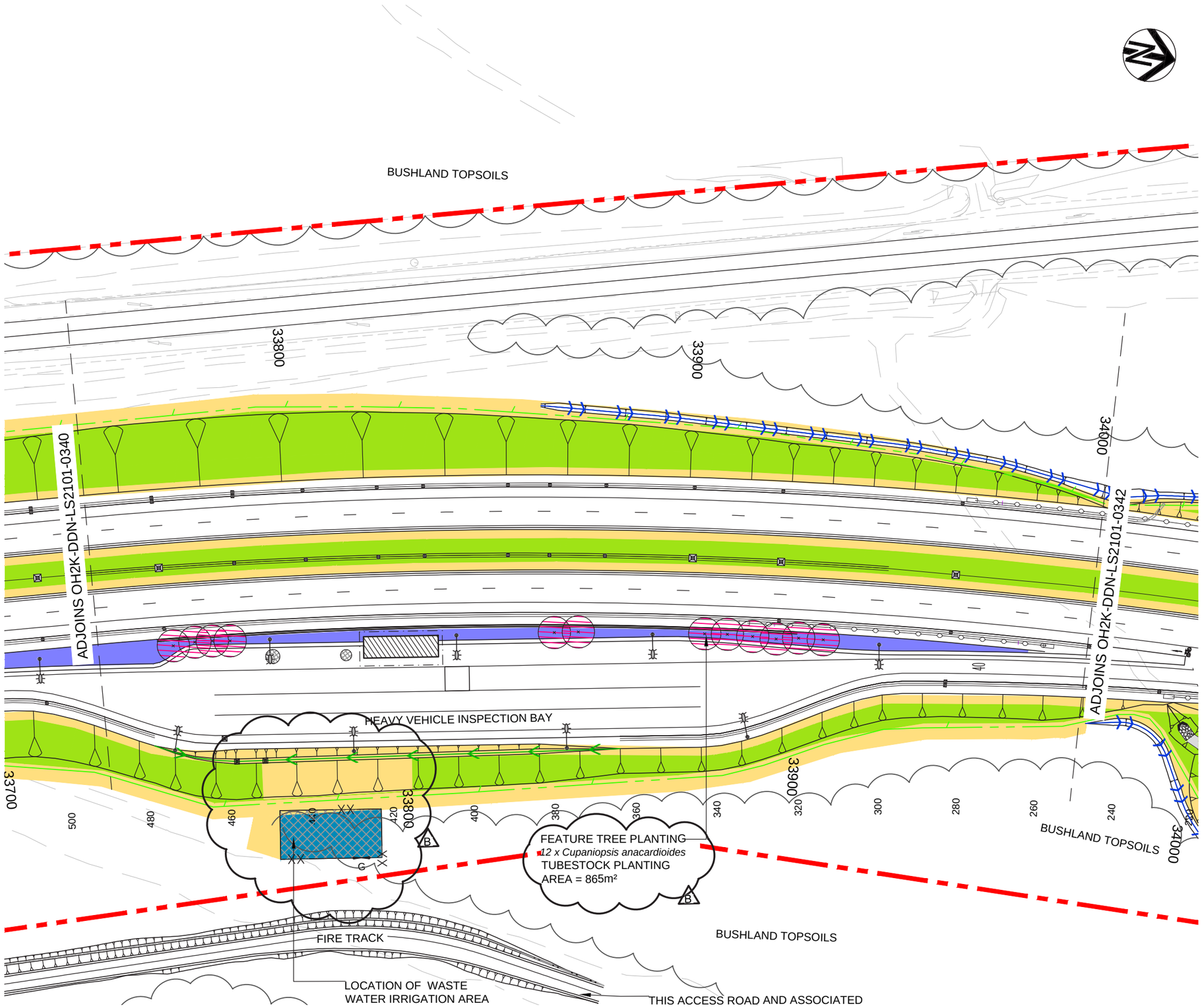
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.39 Landscape Concept Plan 39



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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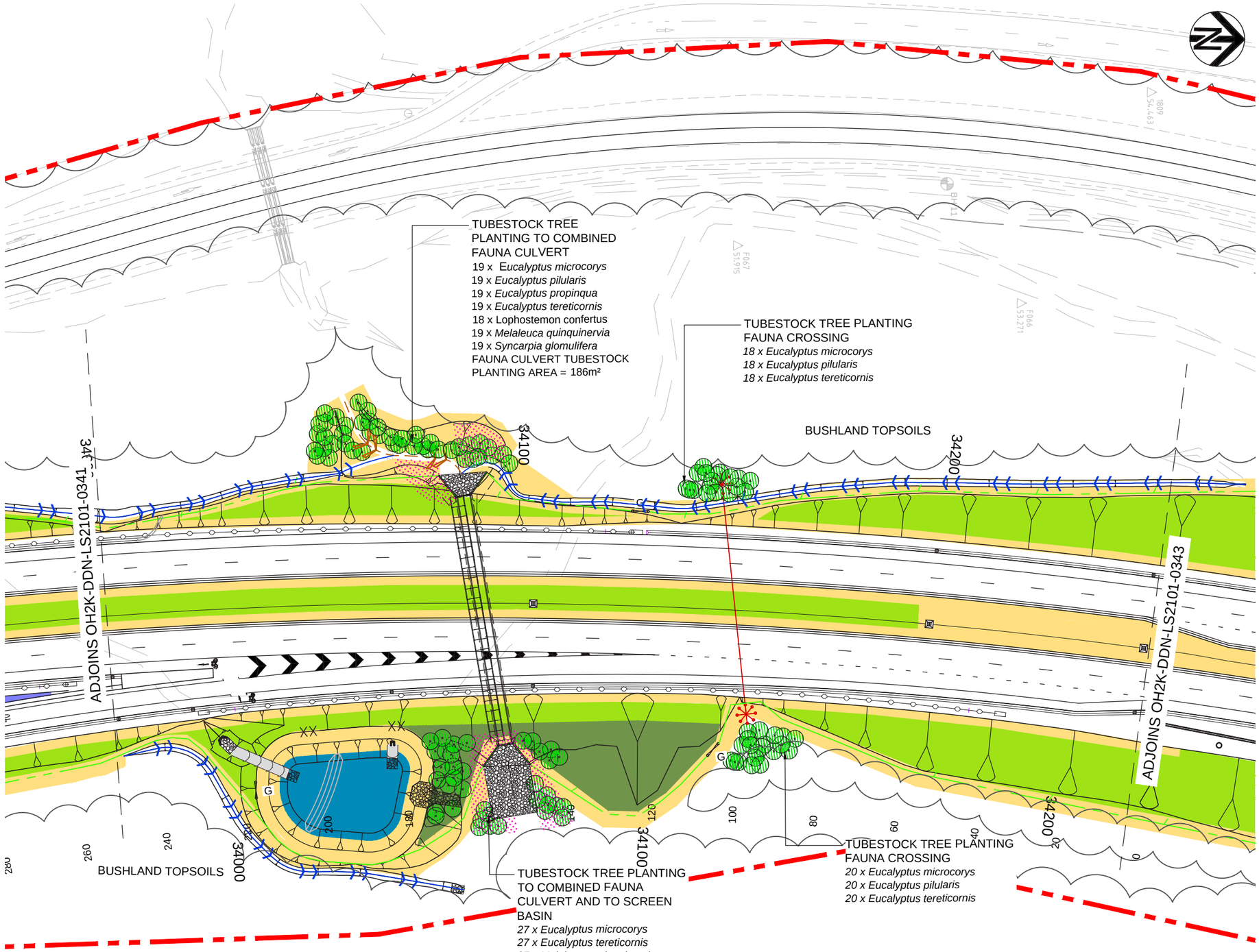
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.40 Landscape Concept Plan 40



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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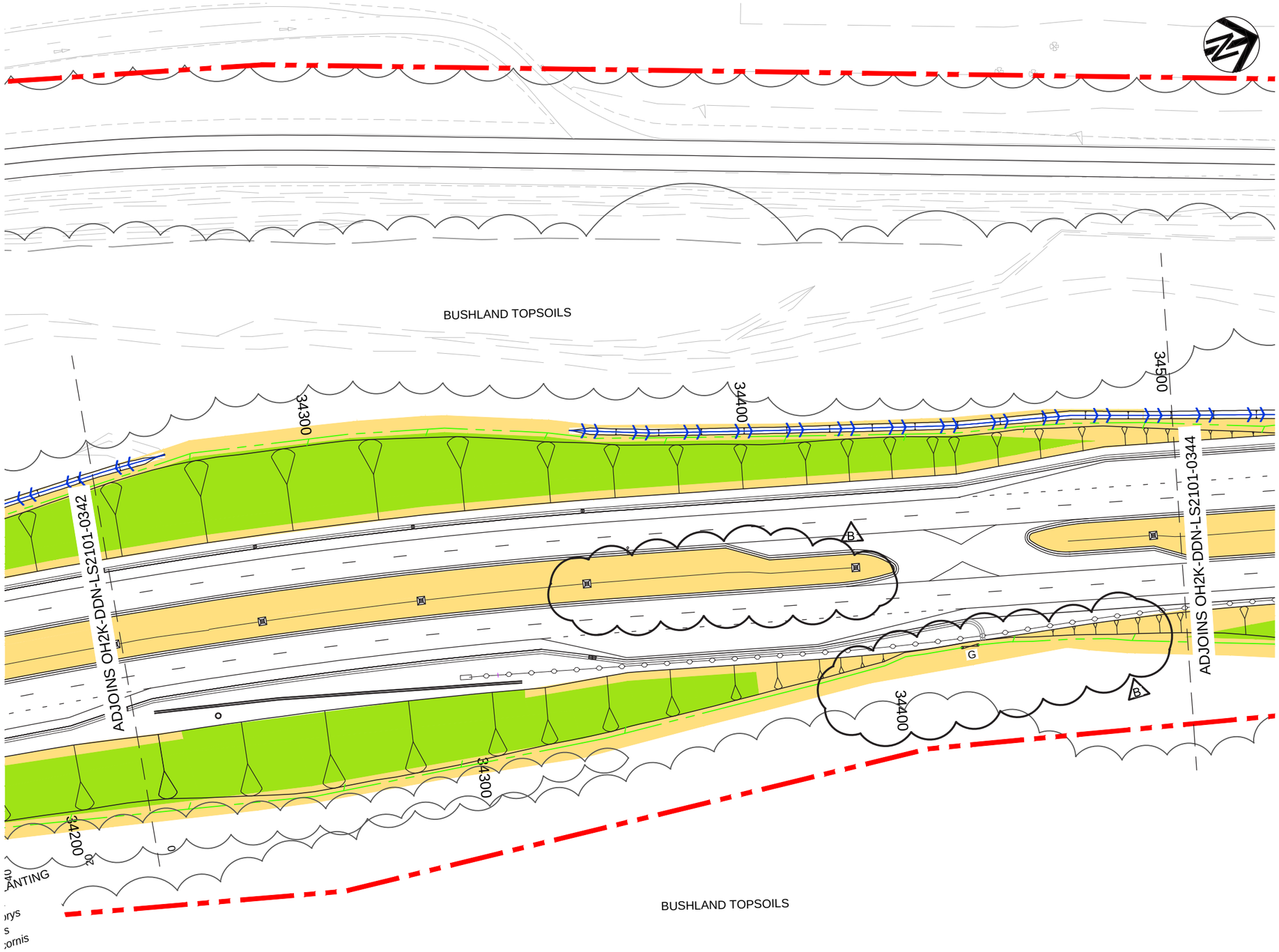
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.41 Landscape Concept Plan 41



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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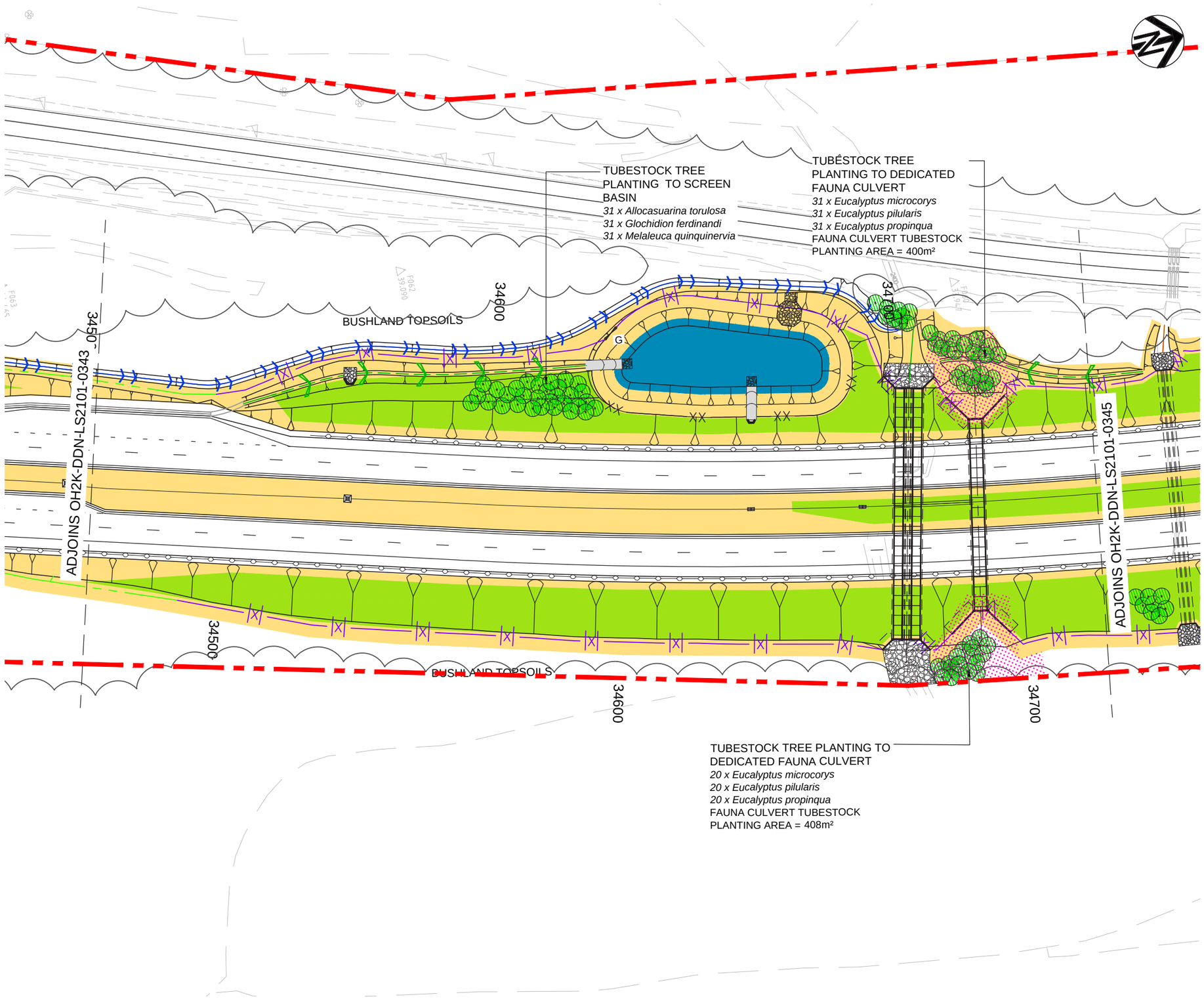
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.42 Landscape Concept Plan 42



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

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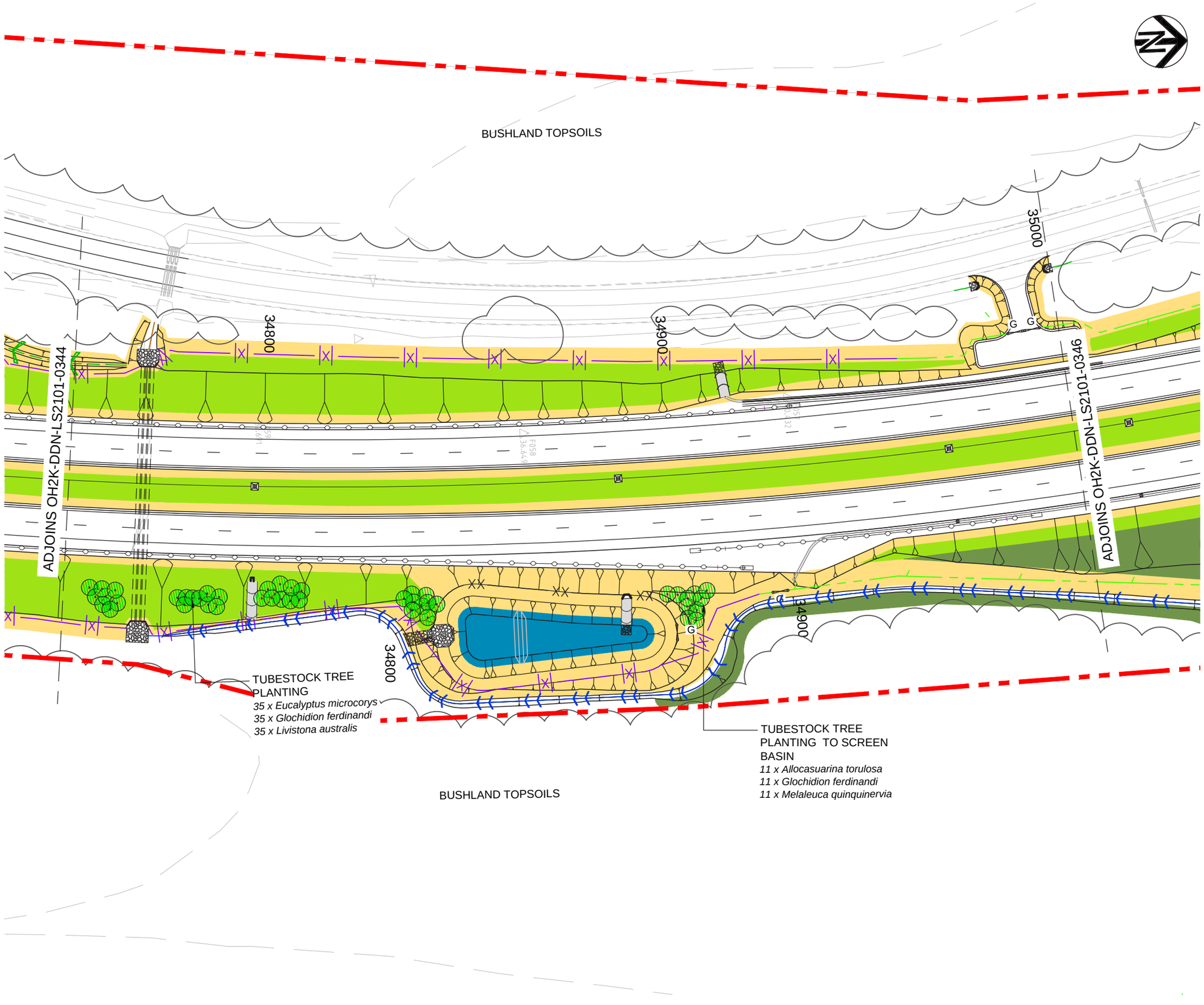
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.43 Landscape Concept Plan 43



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
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- FEATURE TREE PLANTING (35L & 75L)
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- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
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- TABLE DRAIN - LINED
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- BERM LINED
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- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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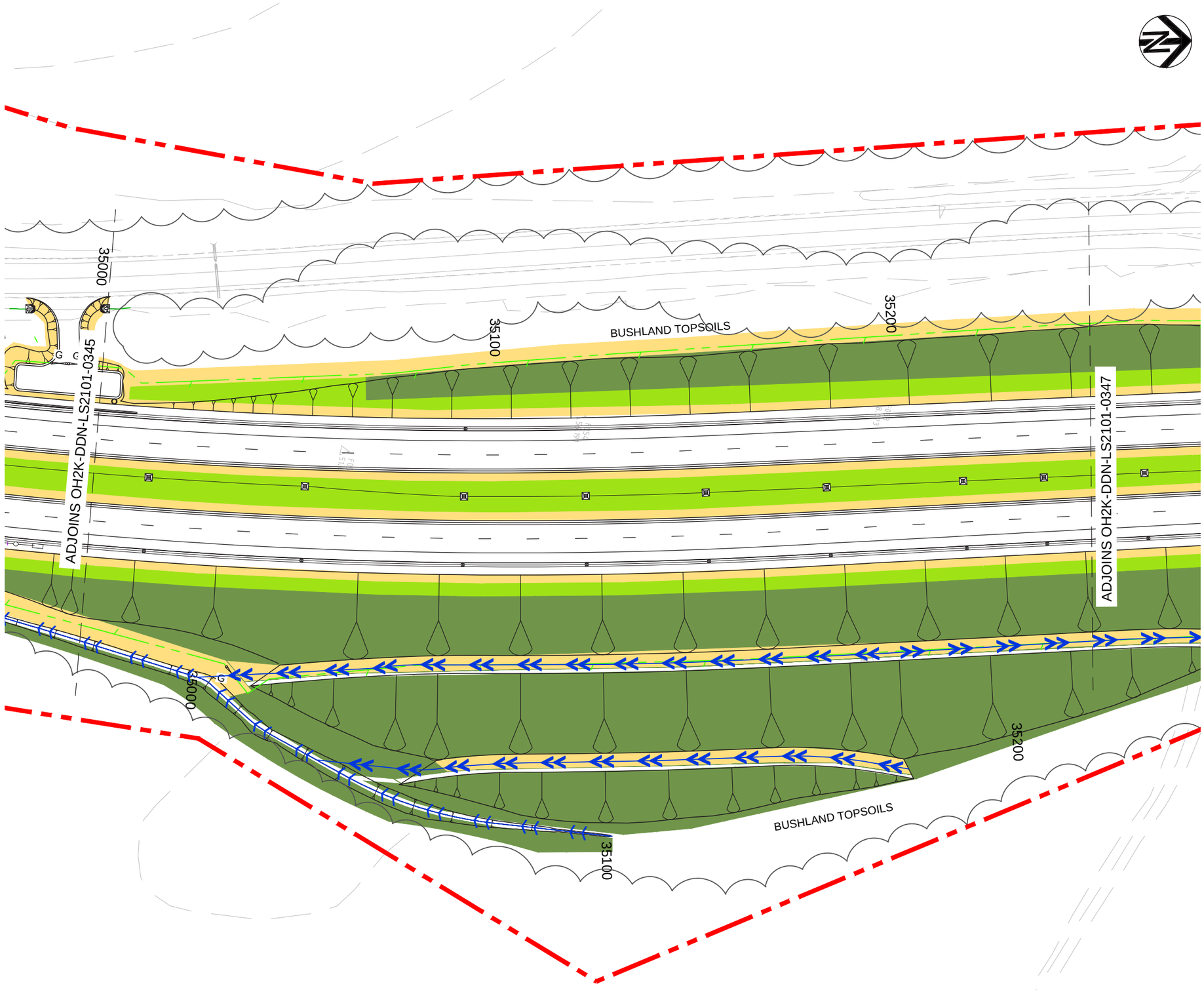
0 50m

Figure 9.1.44 Landscape Concept Plan 44



LEGEND

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- TOPSOIL MANAGEMENT ZONE BOUNDARY
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- TALL SHRUBS SEED MIX
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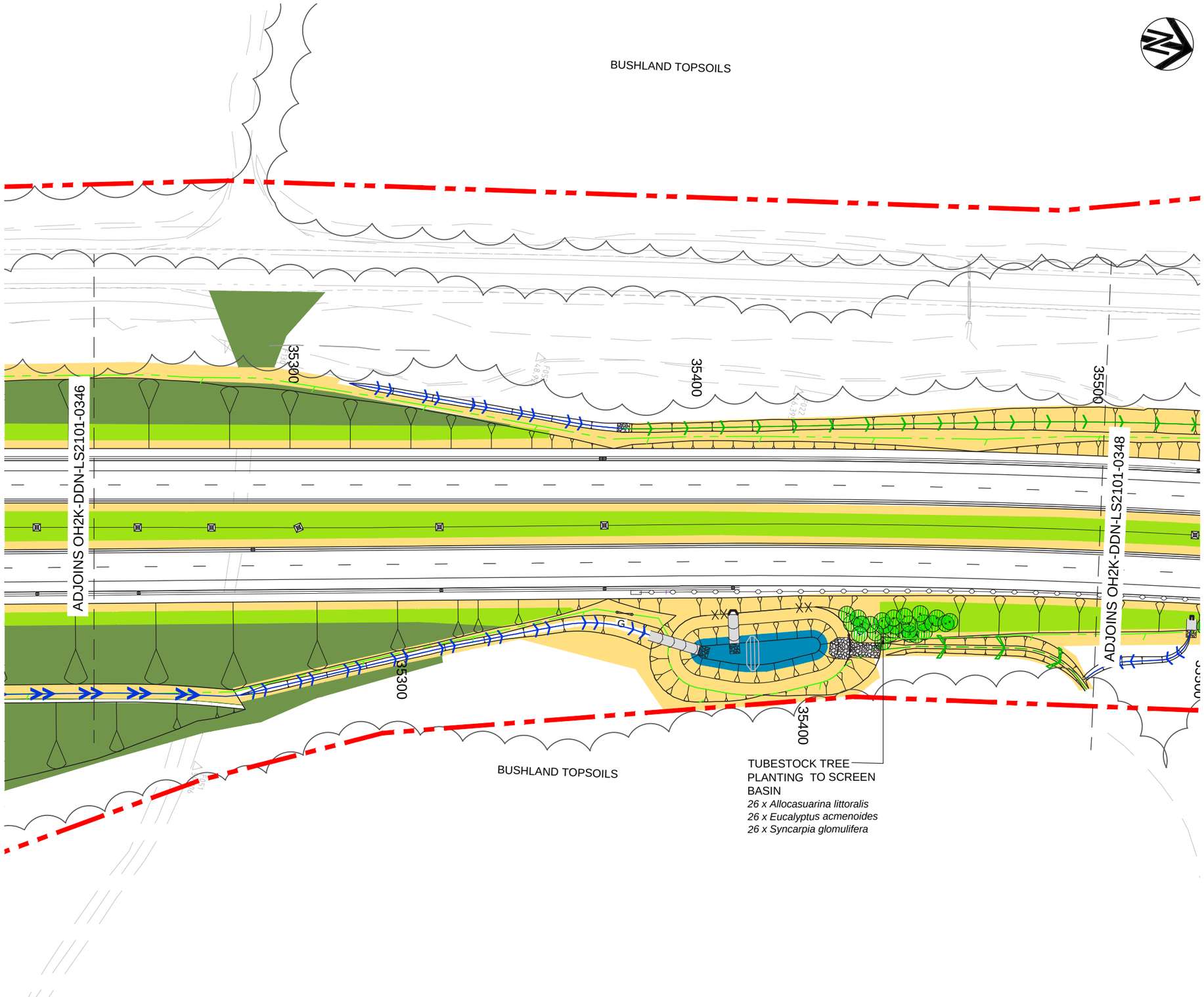
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES

1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.45 Landscape Concept Plan 45



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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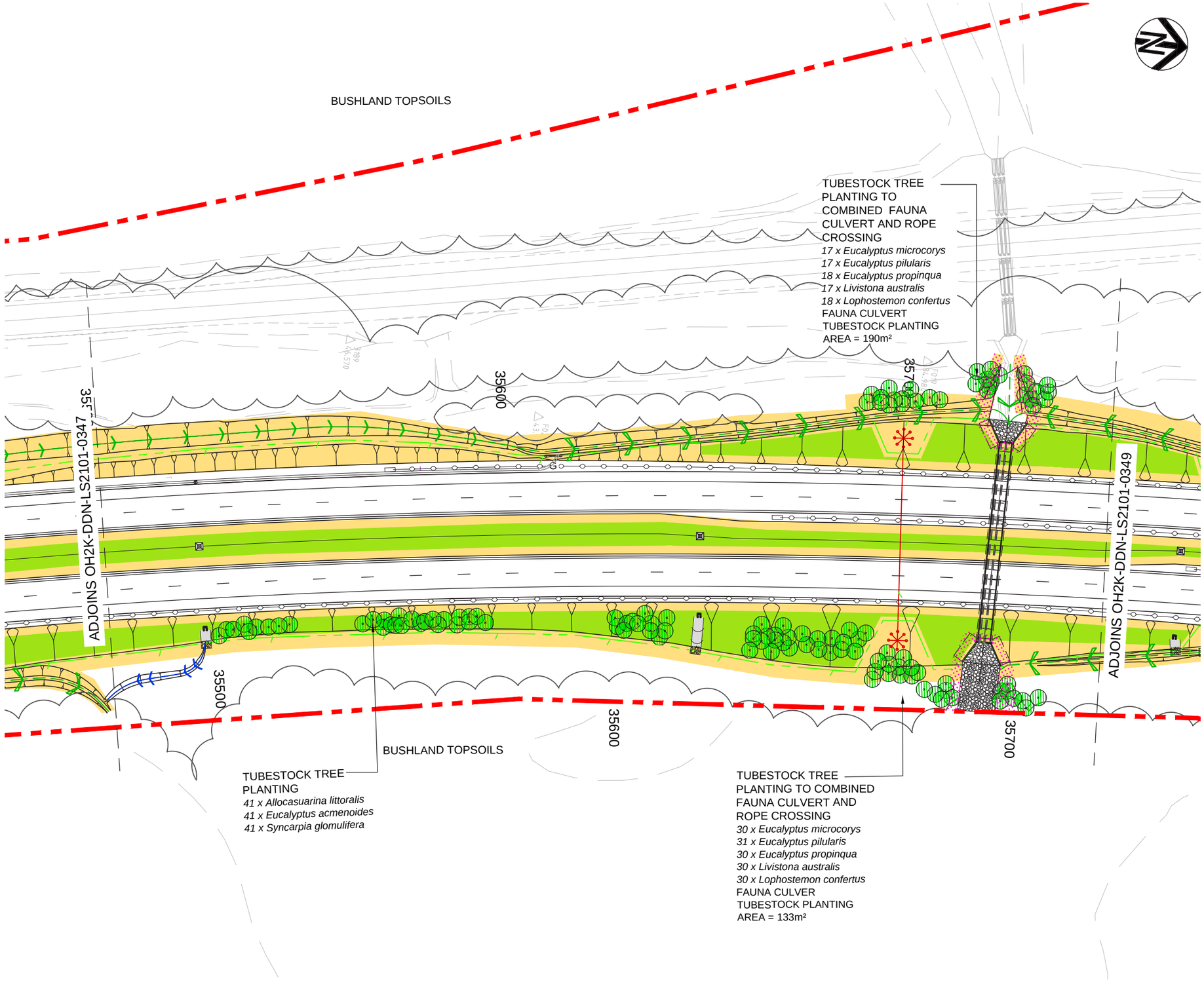
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.46 Landscape Concept Plan 46



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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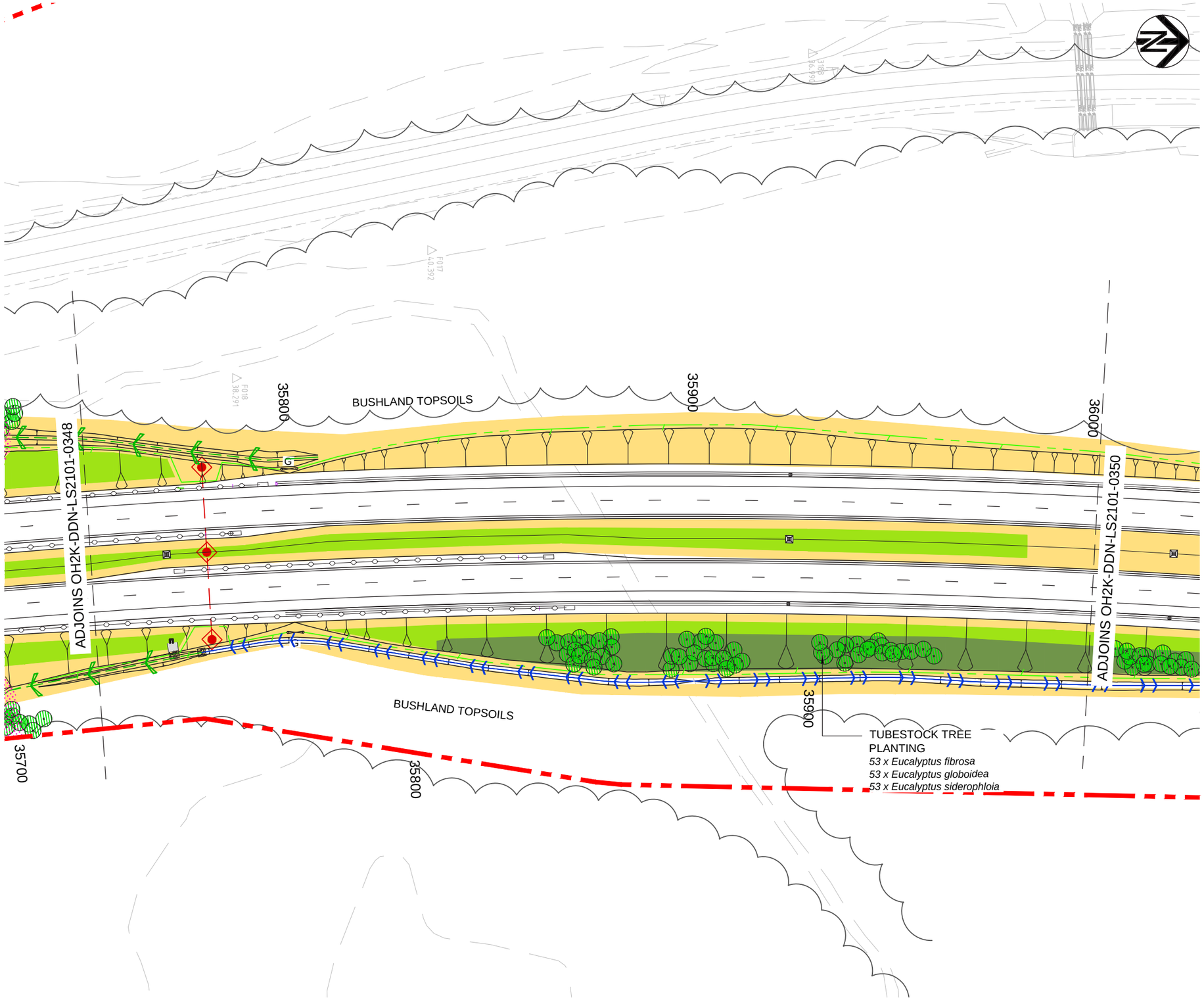
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.47 Landscape Concept Plan 47



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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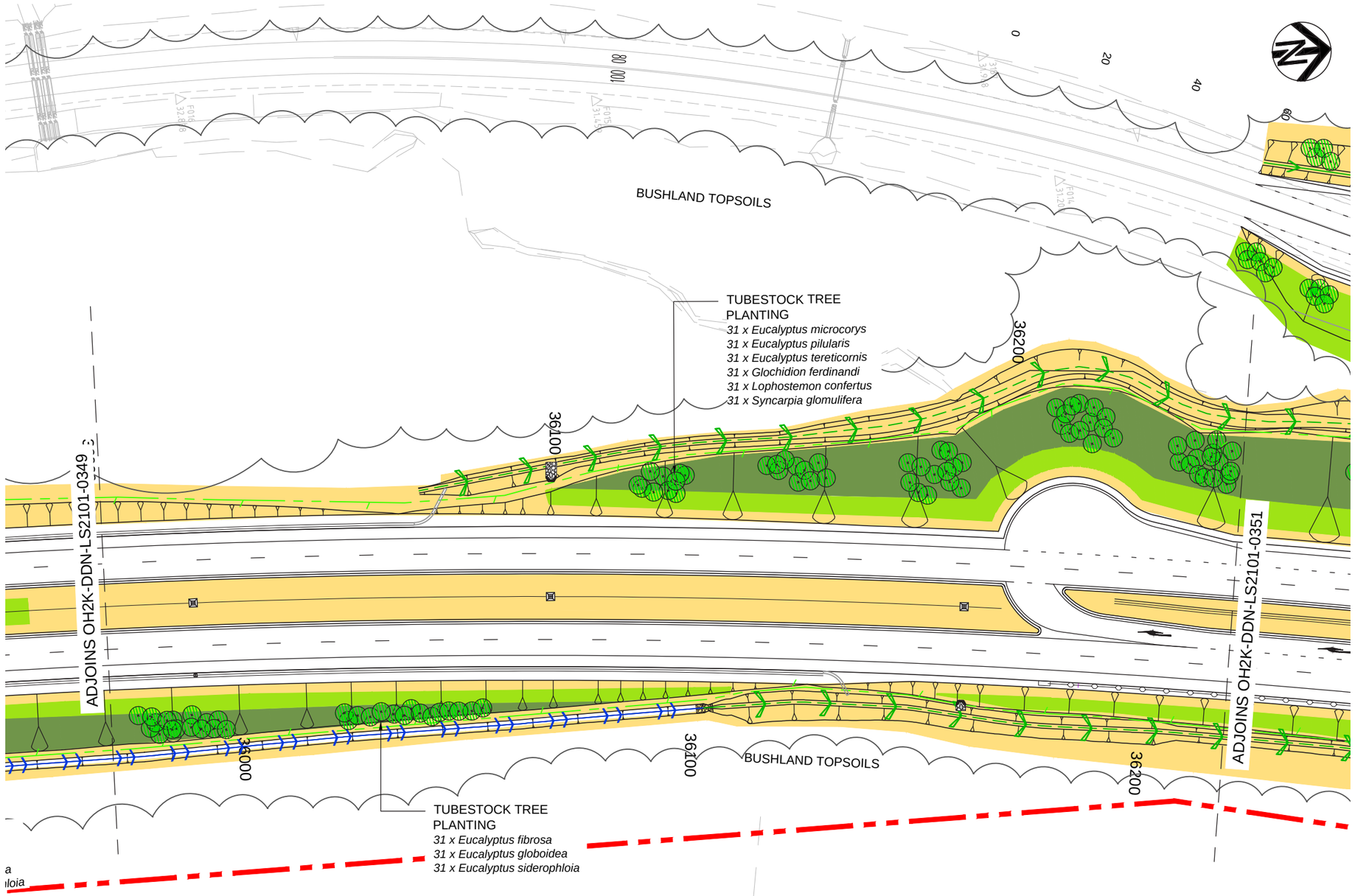
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.48 Landscape Concept Plan 48



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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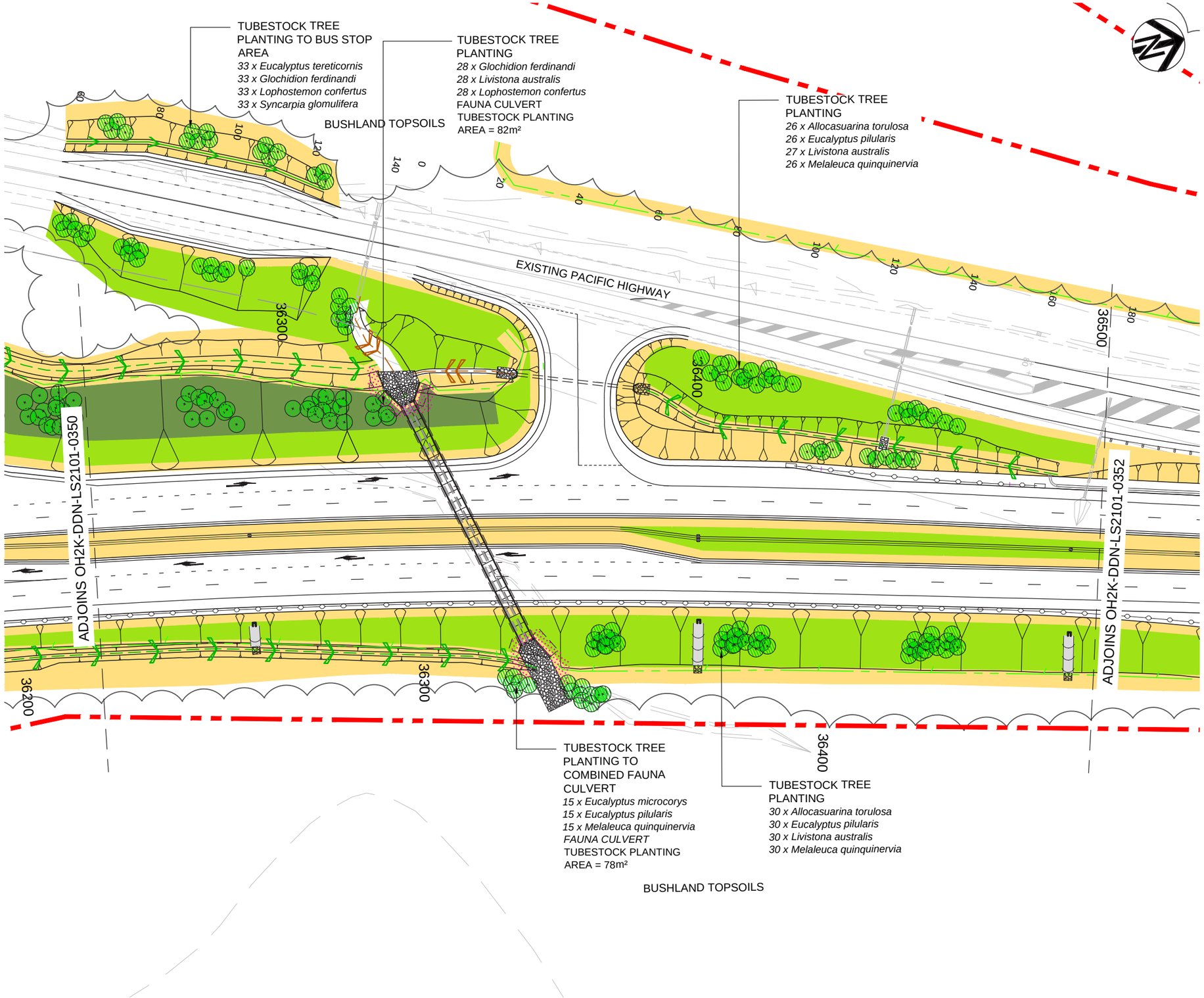
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.49 Landscape Concept Plan 49



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
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- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
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- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
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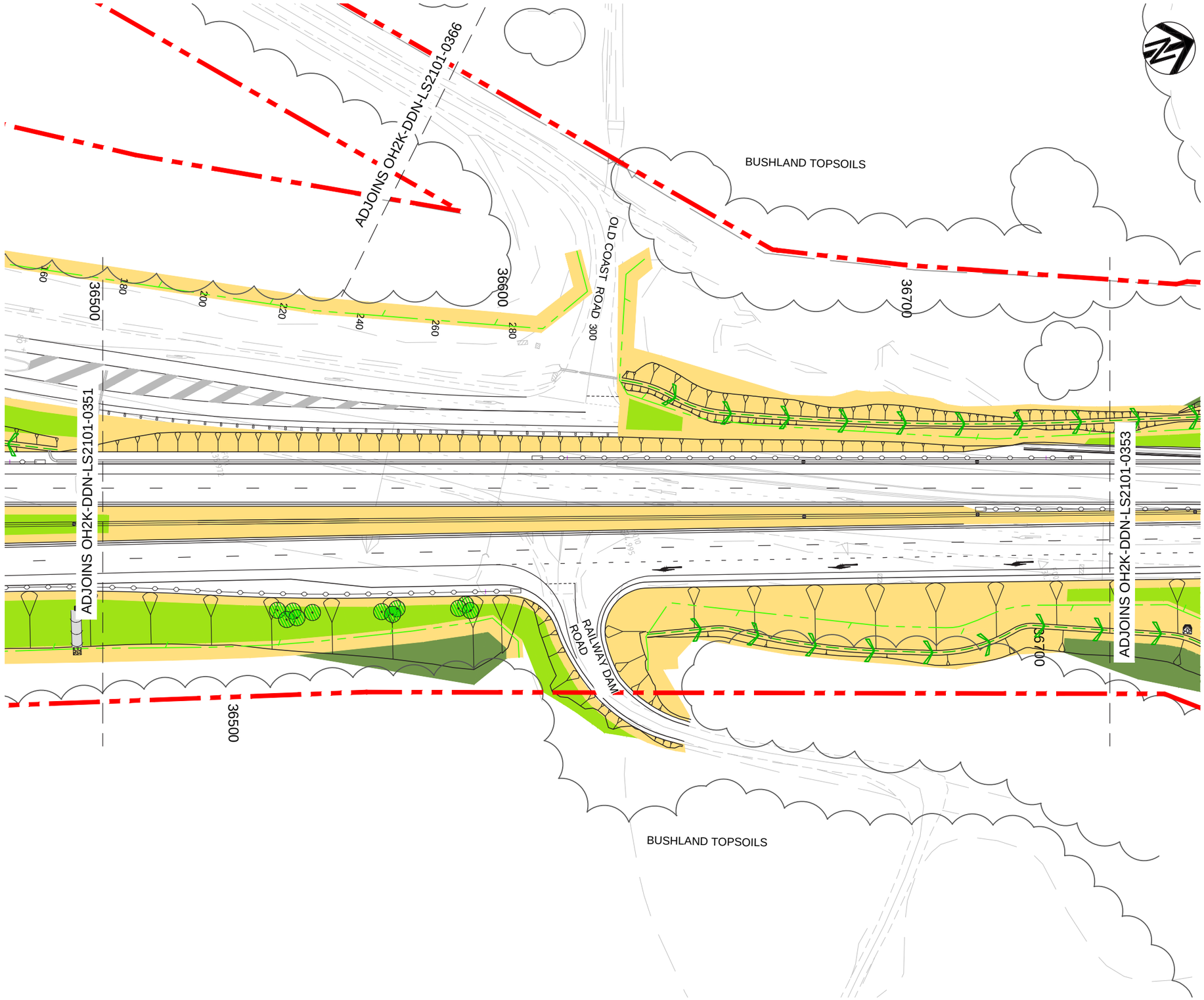
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.50 Landscape Concept Plan 50



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
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- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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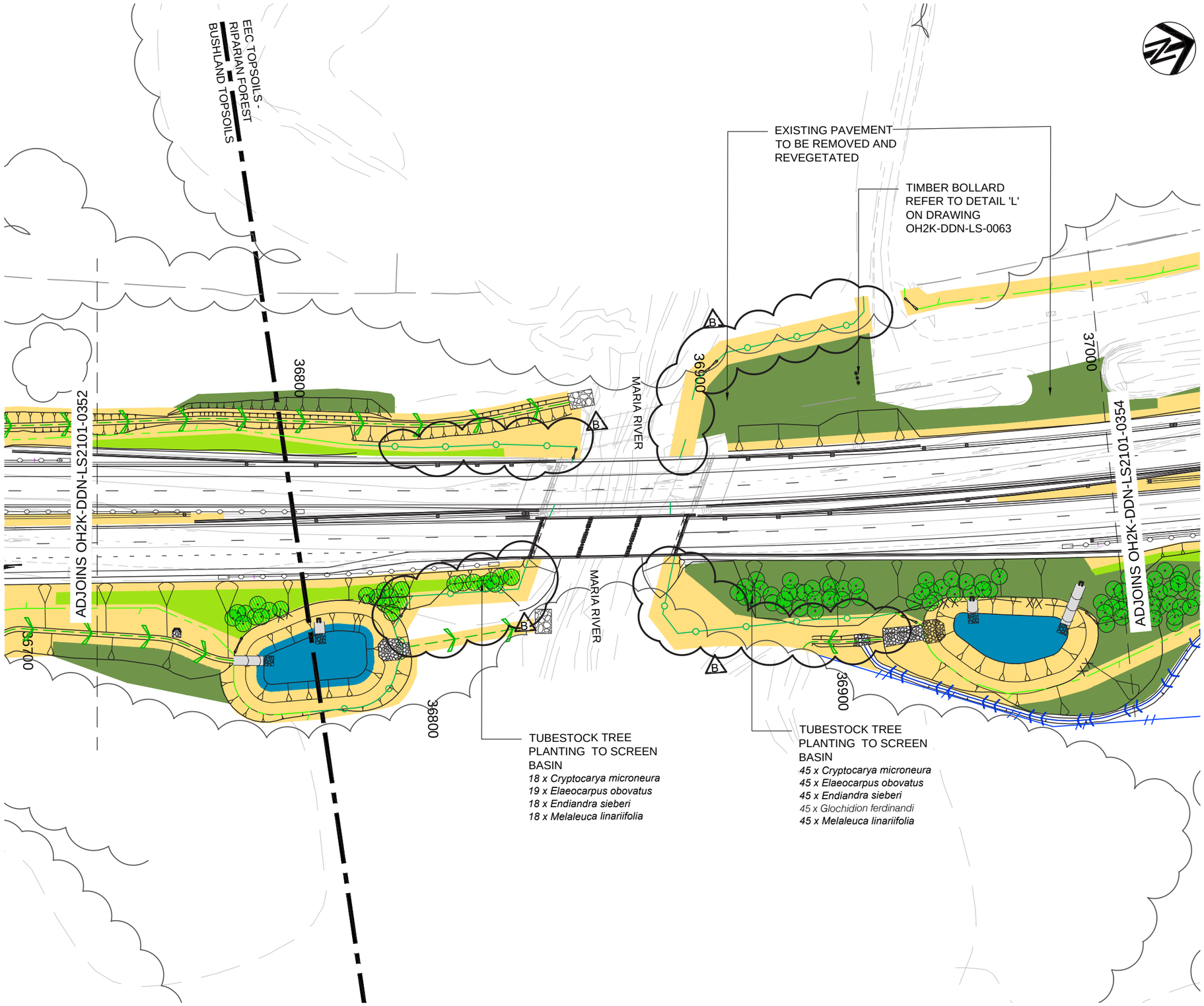
0 50m

Figure 9.1.51 Landscape Concept Plan 51



LEGEND

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- BUFFALO TURF (REST AREA ONLY)
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- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
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- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
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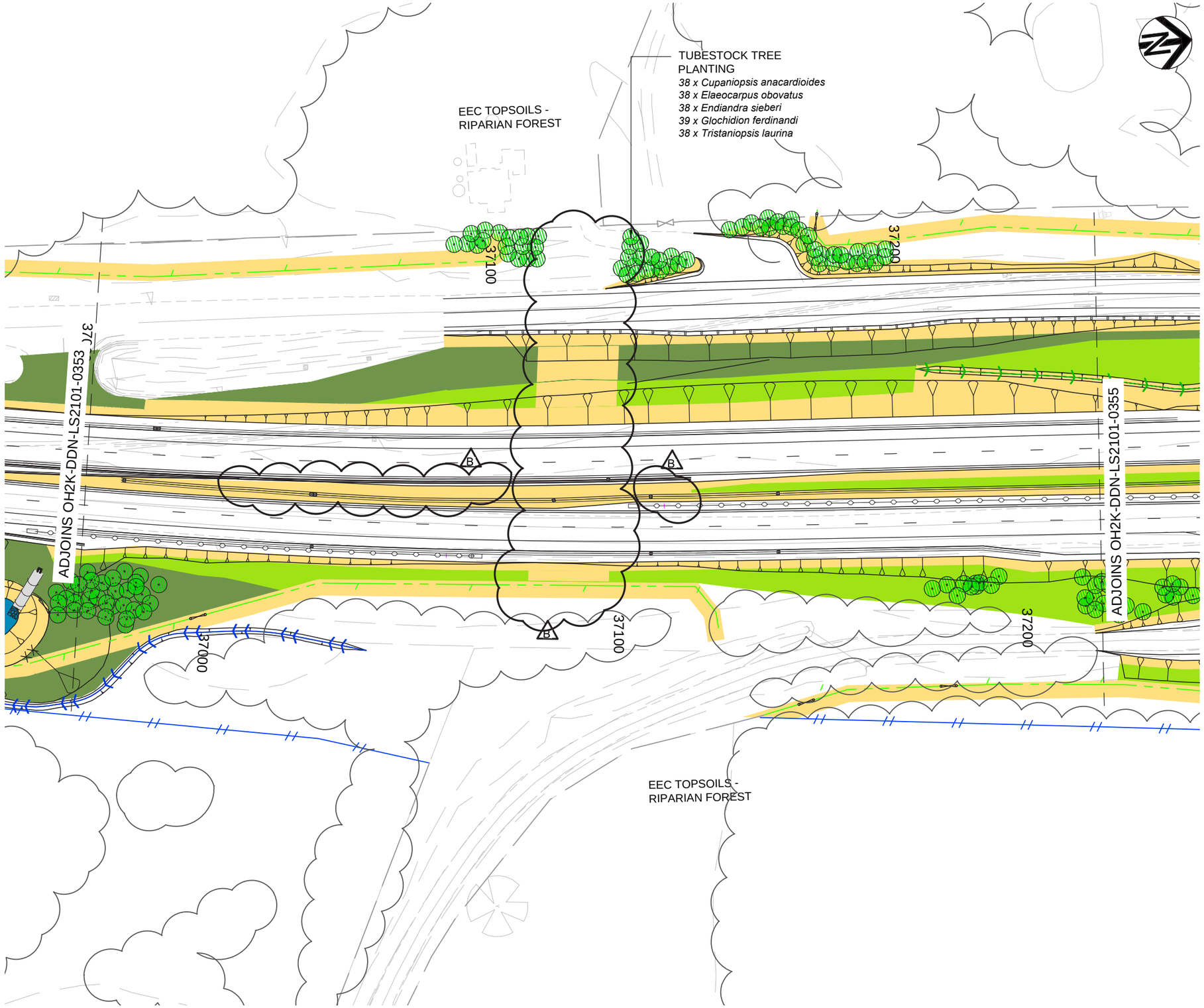
0 50m

Figure 9.1.52 Landscape Concept Plan 52



LEGEND

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- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
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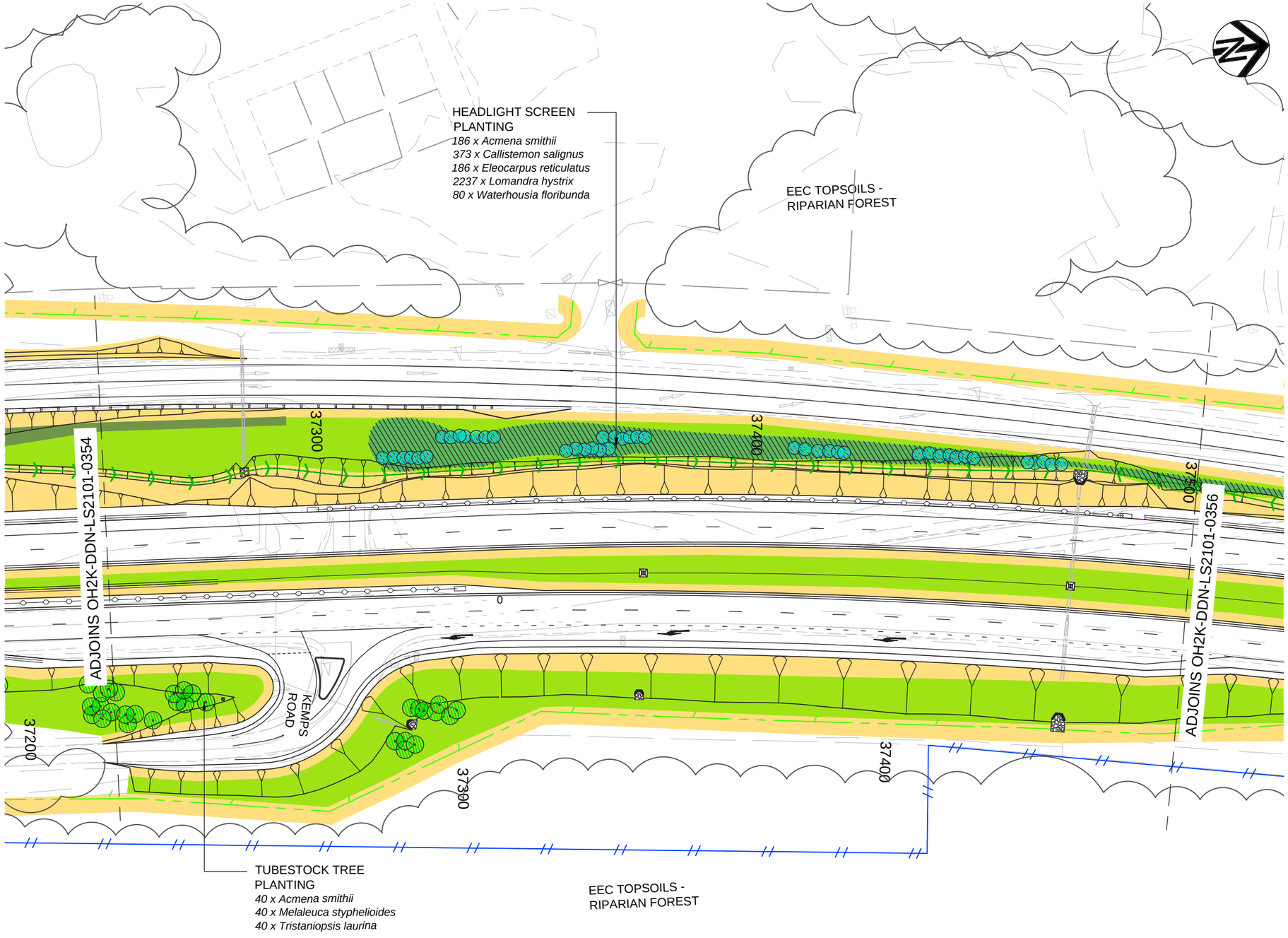
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.53 Landscape Concept Plan 53



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
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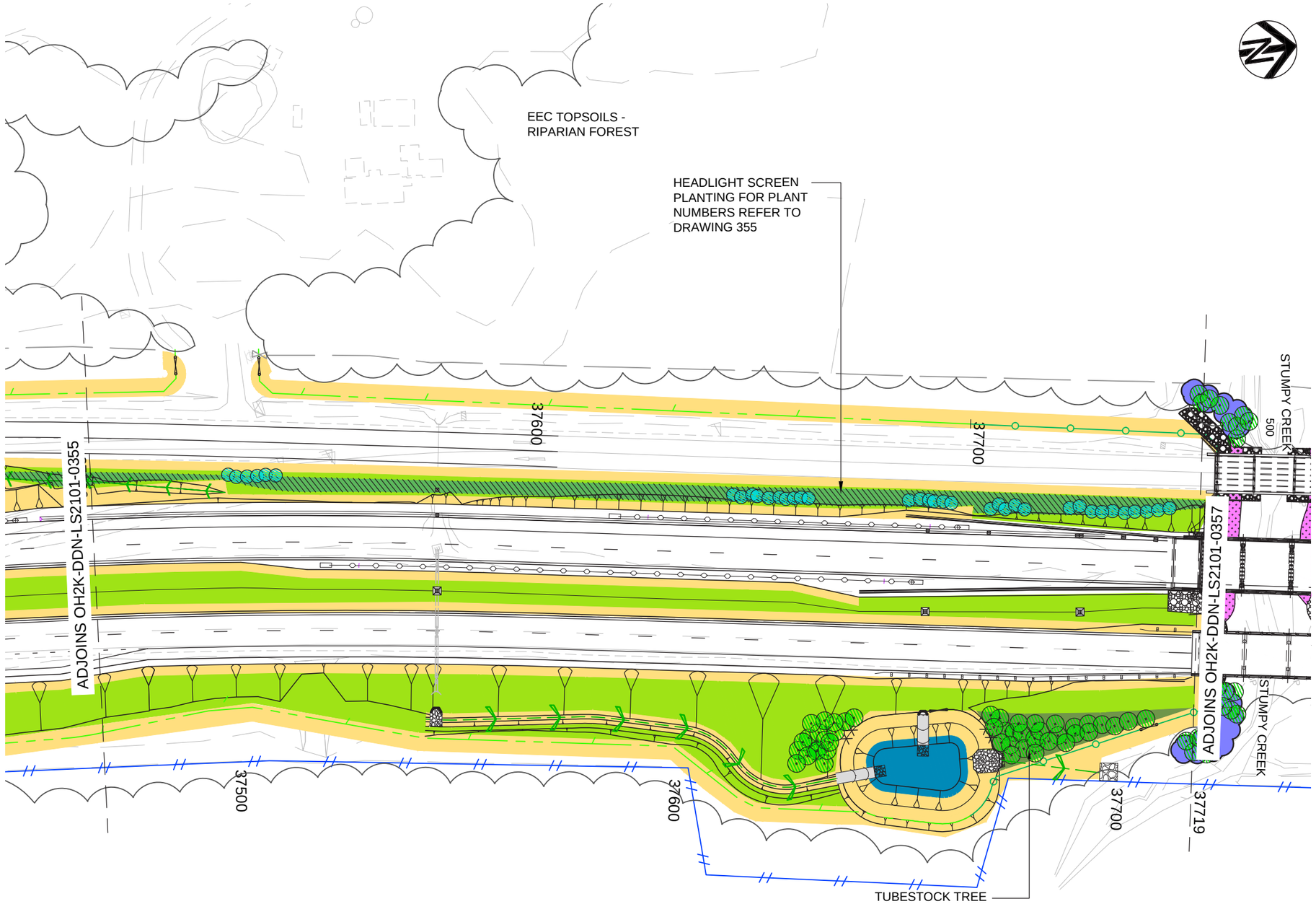
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.54 Landscape Concept Plan 54



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

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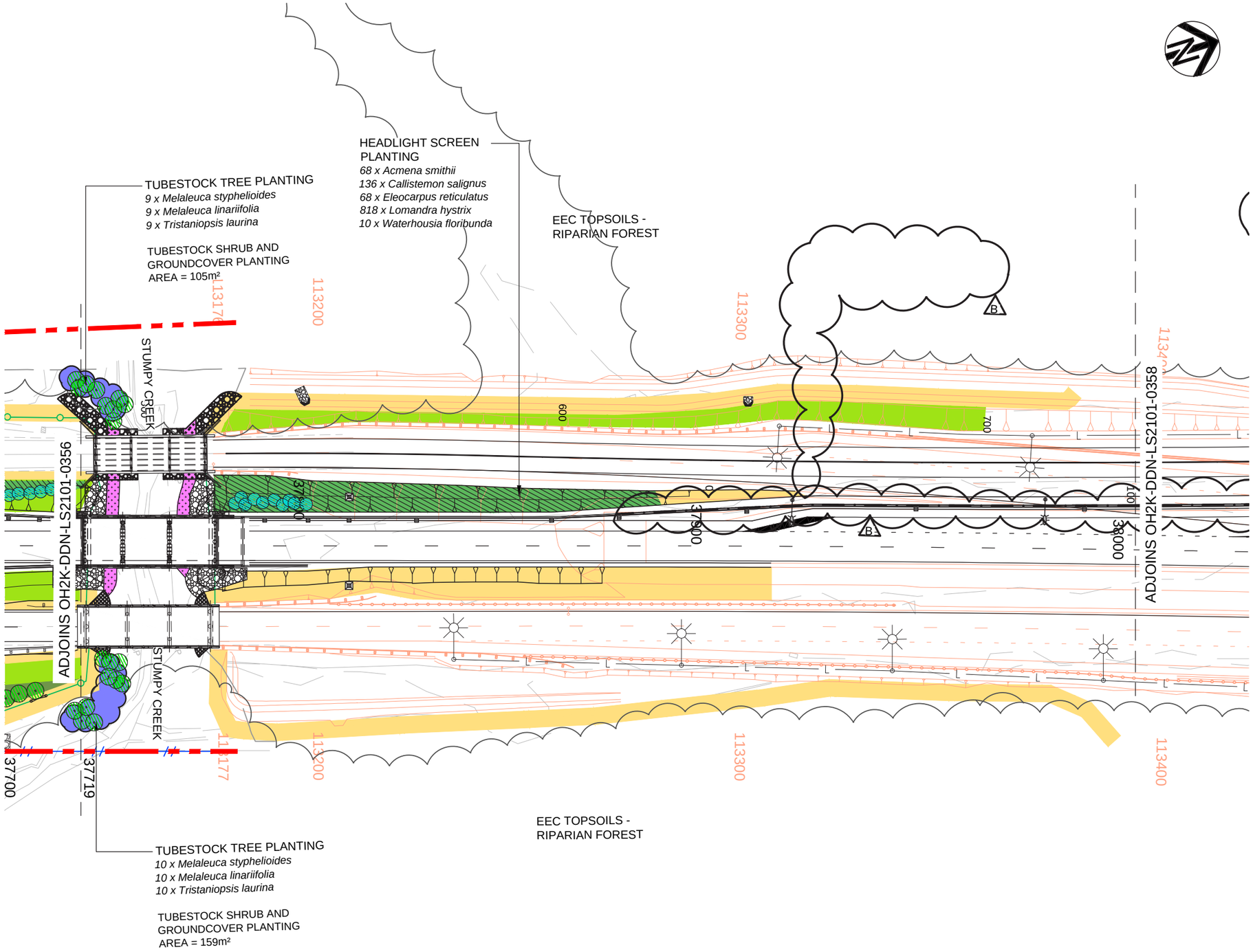
0 50m

Figure 9.1.55 Landscape Concept Plan 55



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

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0 50m

Figure 9.1.56 Landscape Concept Plan 56

EEC TOPSOILS -
RIPARIAN FOREST

ADJOINS OH2K-DDN-LS2101-0357

ADJOINS OH2K-DDN-LS2101-0359

113400

113500

113600

38100

38200

38245

B

NG

EEC TOPSOILS -
RIPARIAN FOREST

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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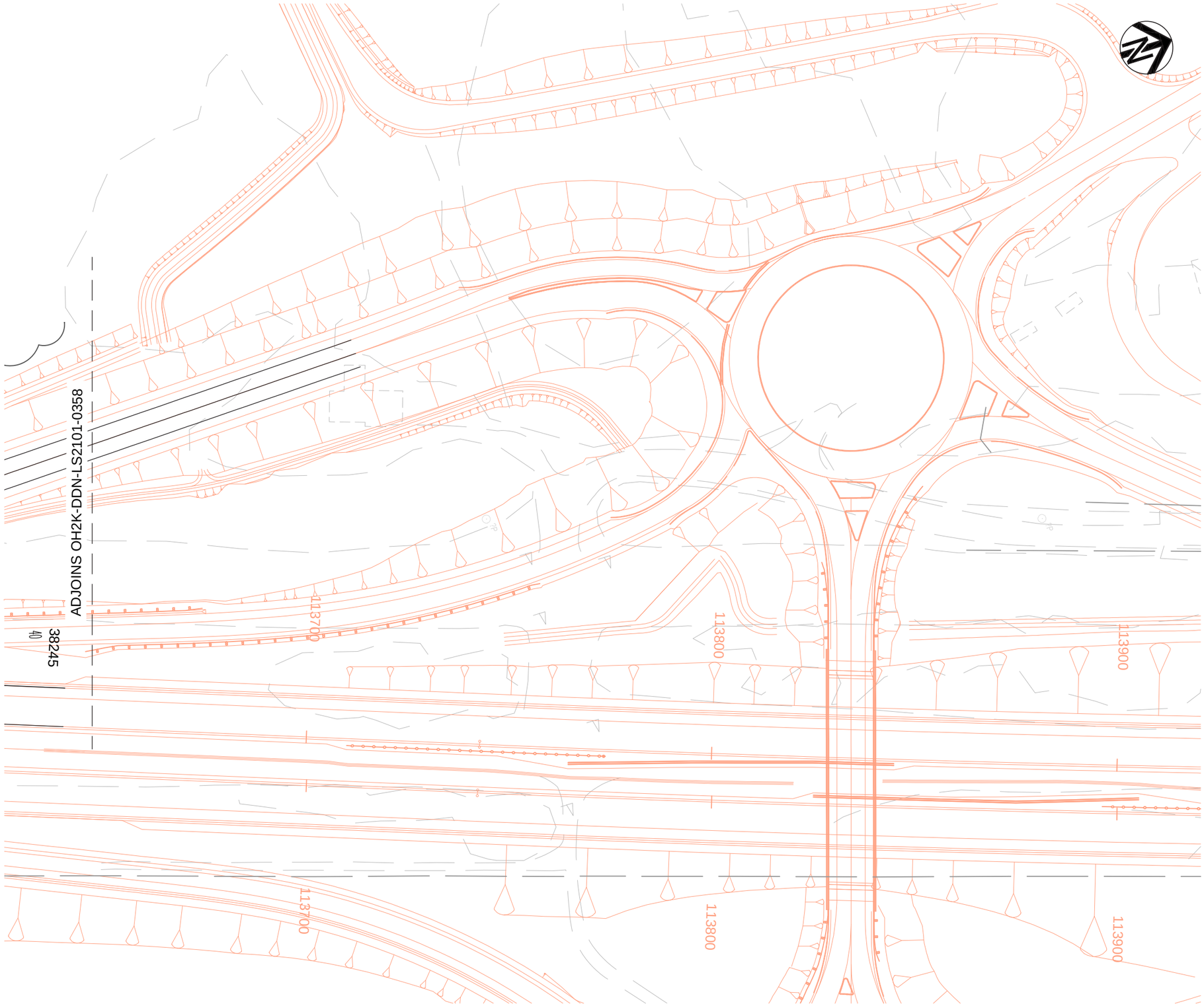
0 50m

Figure 9.1.57 Landscape Concept Plan 57



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
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- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
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- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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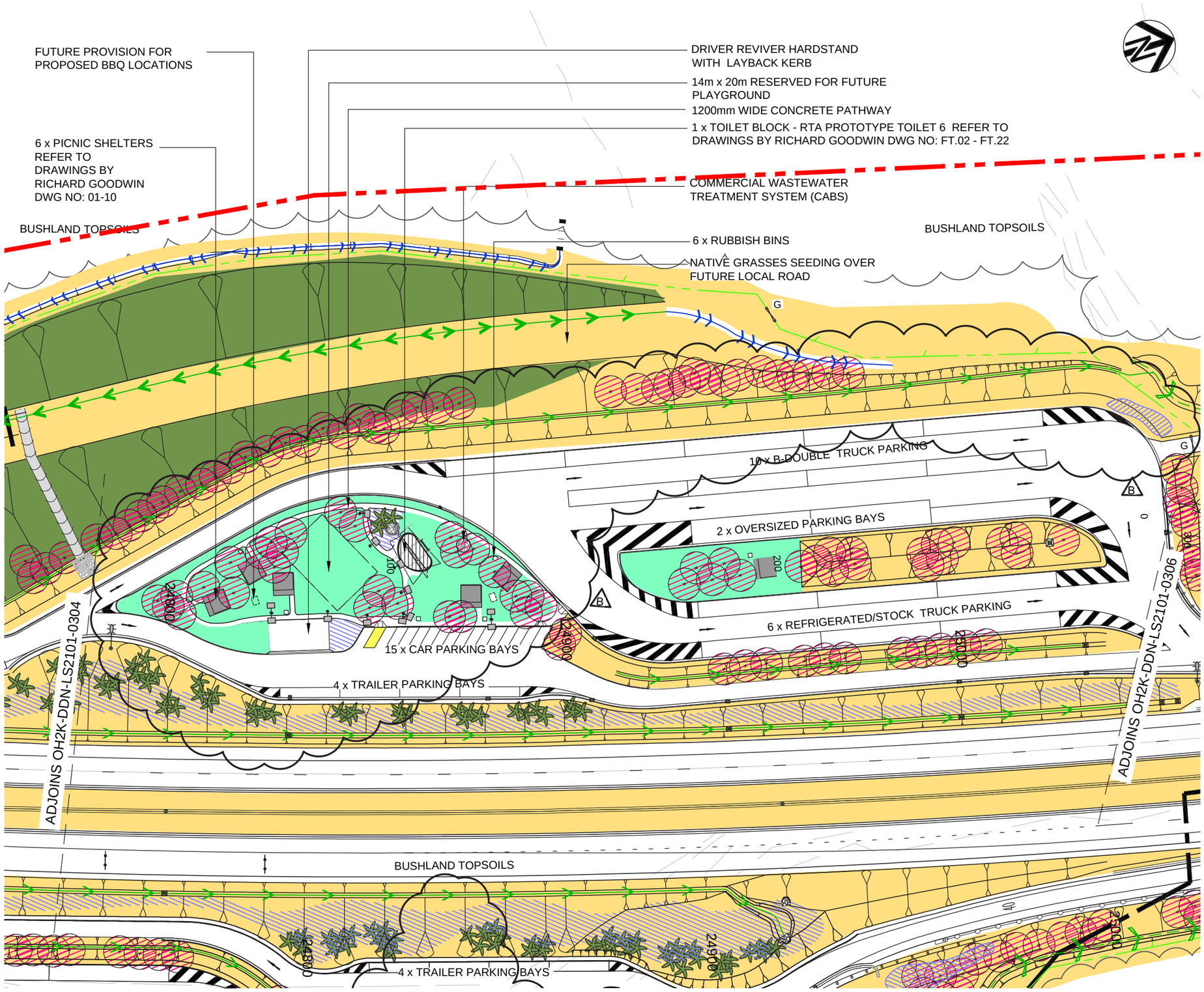
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.58 Landscape Concept Plan 58



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
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- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
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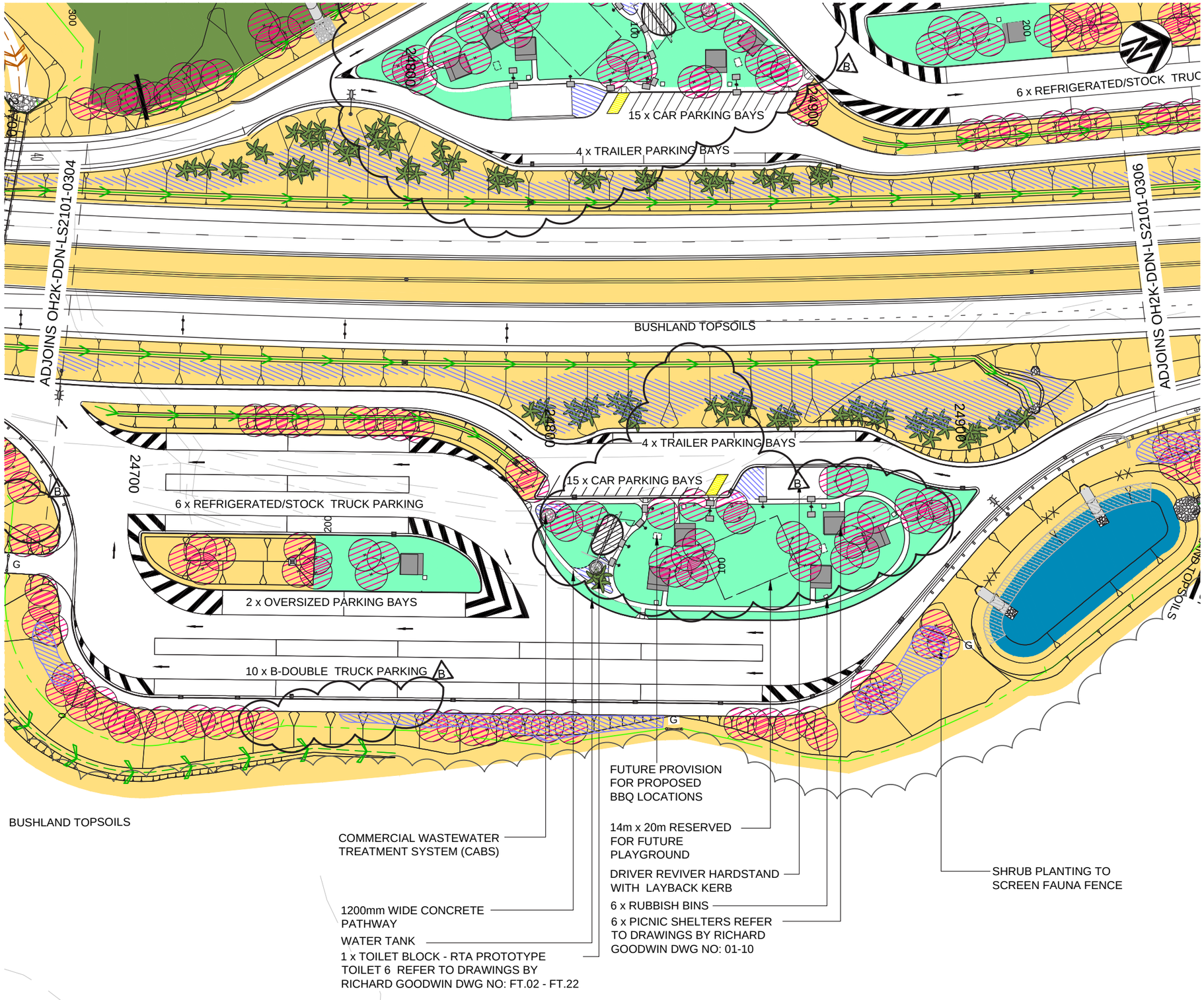
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.59 Landscape Concept Plan 59



LEGEND

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- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
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- COMBINED PHASCOGALE + FAUNA FENCE FENCE
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0 50m

Figure 9.1.60 Landscape Concept Plan 60

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
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- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
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- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
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- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
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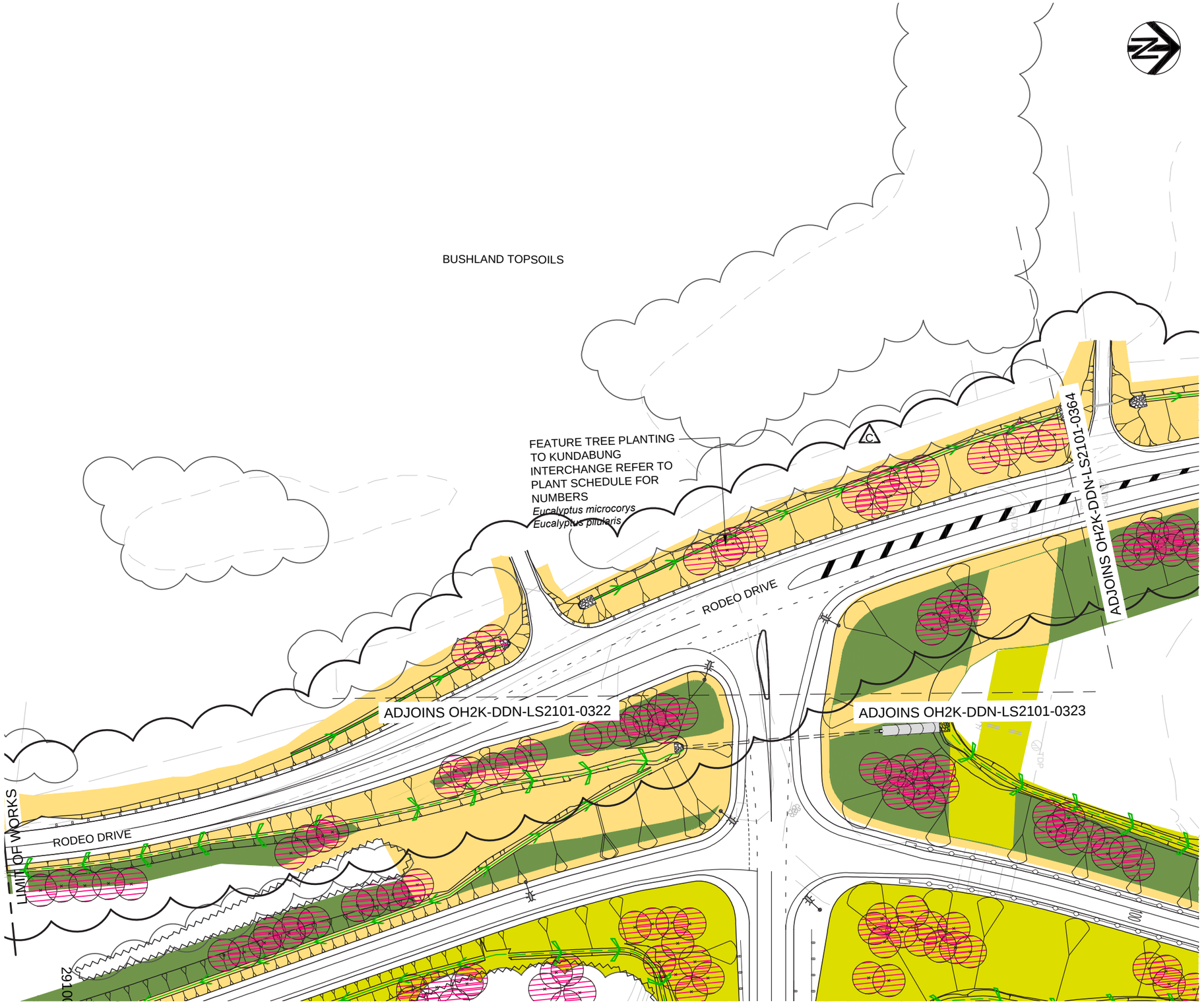
0 50m

Figure 9.1.61 Landscape Concept Plan 61



LEGEND

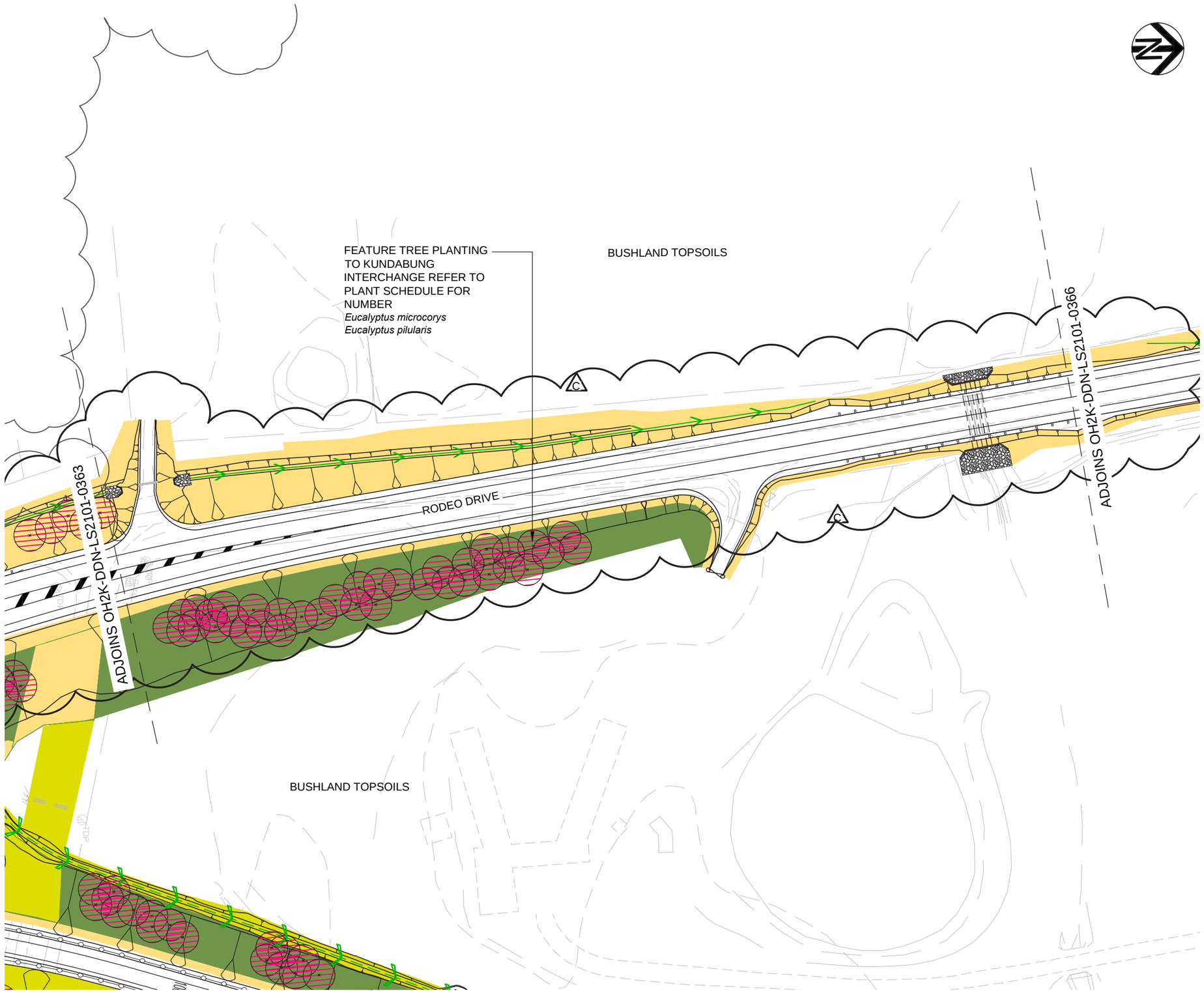
- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- HEADLIGHT SCREEN PLANTING
- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH

- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
1. WHERE PASTURE GRASS IS SHOWN ON THE LANDSCAPE PLANS, BUSHLAND TOPSOIL MAY BE USED. IF THERE IS A SHORTFALL OF BUSHLAND TOPSOIL USE LANDSCAPE TOPSOIL.
2. FOR GENERAL NOTES REFER TO DRAWING OH2K-DDN-LS-0041
3. FOR PLANTING AND SEEDING SCHEDULES REFER DRAWINGS OH2K-DDN-LS-0601 - OH2K-DDN-LS-0605
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

0 50m

Figure 9.1.62 Landscape Concept Plan 62



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
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- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
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- TUBESTOCK PLANTING - SHRUBS AND GROUNDCOVERS
- TUBESTOCK PLANTING - AT CREEK CROSSINGS
- TUBESTOCK PLANTING TO FAUNA PATH
- TUBESTOCK PLANTING TO FAUNA CULVERTS
- REST AREA TUBESTOCK PLANTING (Native Hibiscus, Callistemon,Crinum, Mat Rush and Tall Sedge)
- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- XX CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
- KEMPSEY BYPASS LINEWORK (WORK BY OTHERS)

NOTES
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0 50m

Figure 9.1.63 Landscape Concept Plan 63

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TOPSOIL MANAGEMENT ZONE BOUNDARY
- FEATURE TREE PLANTING (35L & 75L)
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- LIVISTONA AUSTRALIS
- NATIVE GRASSES SEED MIX
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- PASTURE GRASS SEED MIX
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- BASIN PLANTING
- BUFFALO TURF (REST AREA ONLY)
- TEMPORARY FENCE REFER TO G40
- ROPE CROSSING
- GLIDER CROSSING
- RUBBISH BIN (REST AREA ONLY)
- POSSIBLE FUTURE BBQ LOCATION (REST AREA ONLY)
- PICNIC SHELTER (REST AREA ONLY)
- TOILET BLOCK (REST AREA ONLY)
- REST AREA LIGHTING - REFER TO LIGHTING ENGINEERS DRAWINGS (REST AREA ONLY)
- LIGHTING REFER TO LIGHTING ENGINEERS DRAWINGS
- xx CONTROLLED ACCESS FENCE TO 1.5m HIGH
- FAUNA FENCE
- TEMPORARY FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- SPREADER
- WRSB AND TERMINAL
- CULVERT HEAD WALL - REFER TO DRAINAGE PACKAGE
- SCOUR PROTECTION UNDER BRIDGES - REFER TO STRUCTURES PACKAGE
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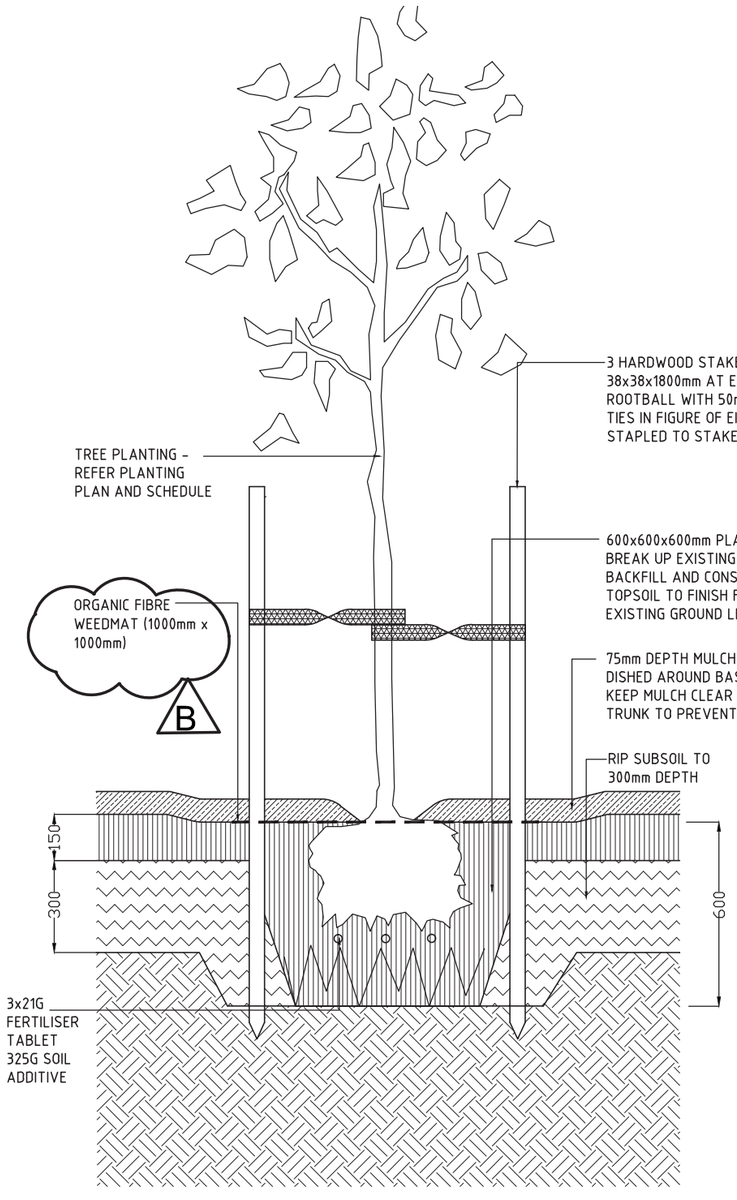
4. REFER TO CIVIL, DRAINAGE, UTILITY AND FENCING PACKAGES FOR ALL OTHER WORKS AND CROSS CHECKING

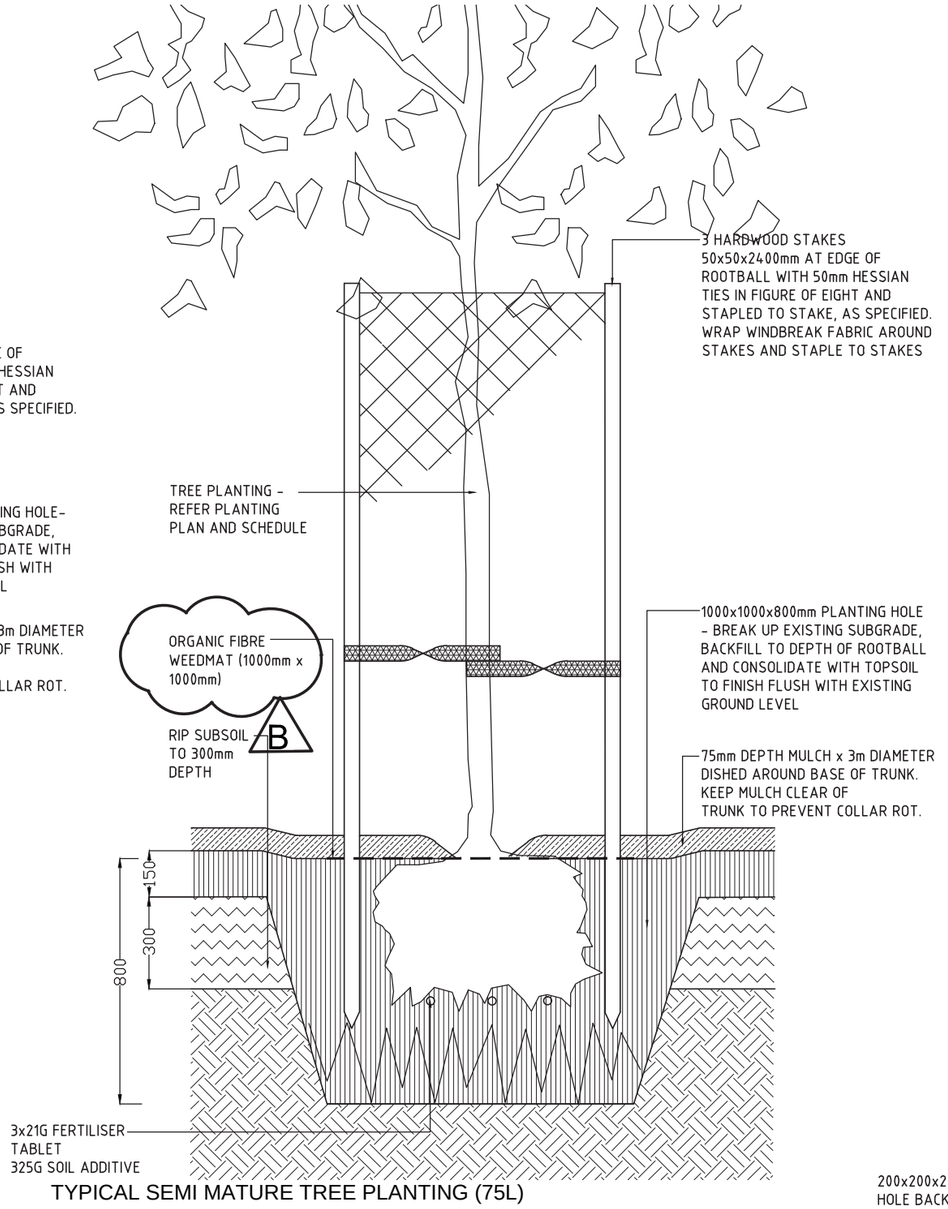
0 50m

Figure 9.1.64 Landscape Concept Plan 64



TYPICAL SUPER ADVANCED TREE PLANTING (25L AND 35L)

DETAIL A
SCALE 1:20 -

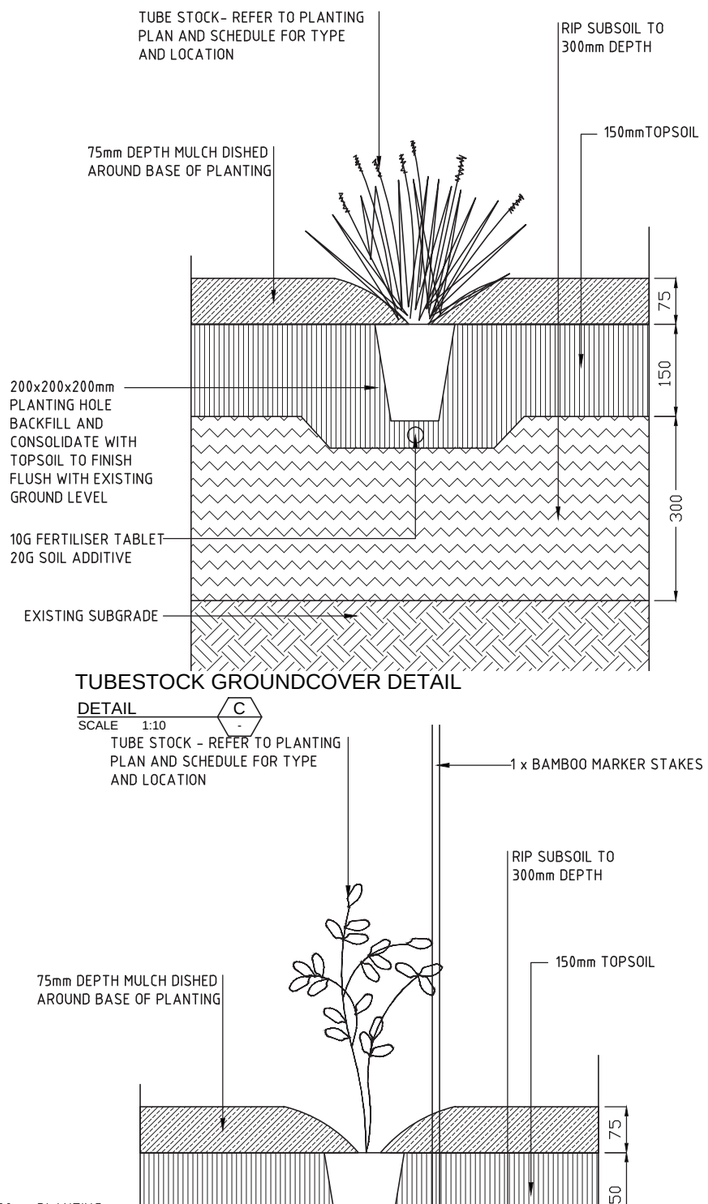


TYPICAL SEMI MATURE TREE PLANTING (75L)

DETAIL B
SCALE 1:20 -

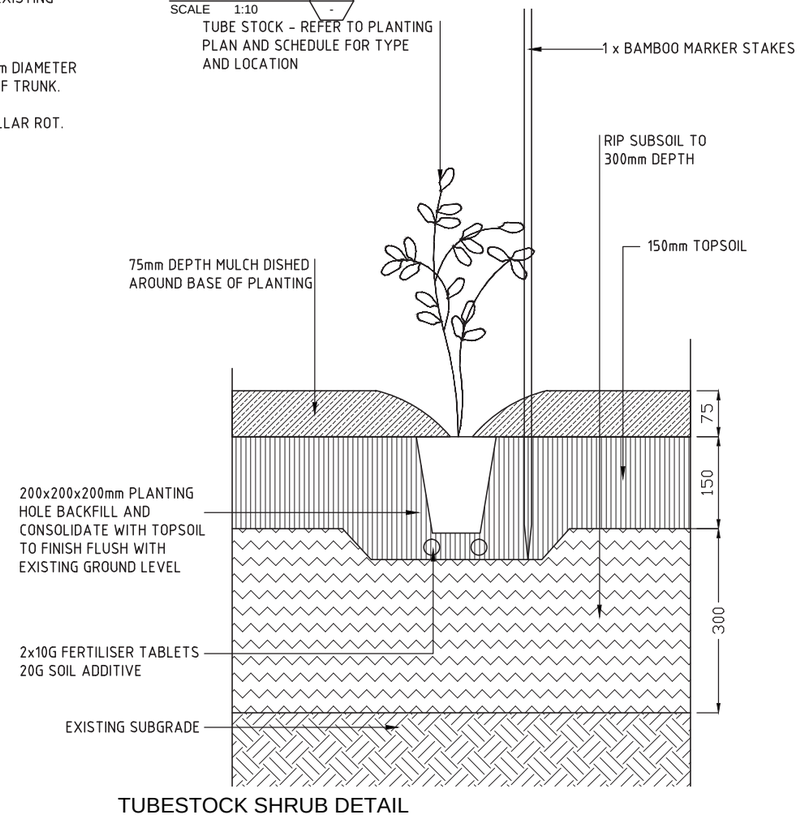
TYPICAL TURF DETAIL

DETAIL D
SCALE 1:20 -



TUBESTOCK GROUNDCOVER DETAIL

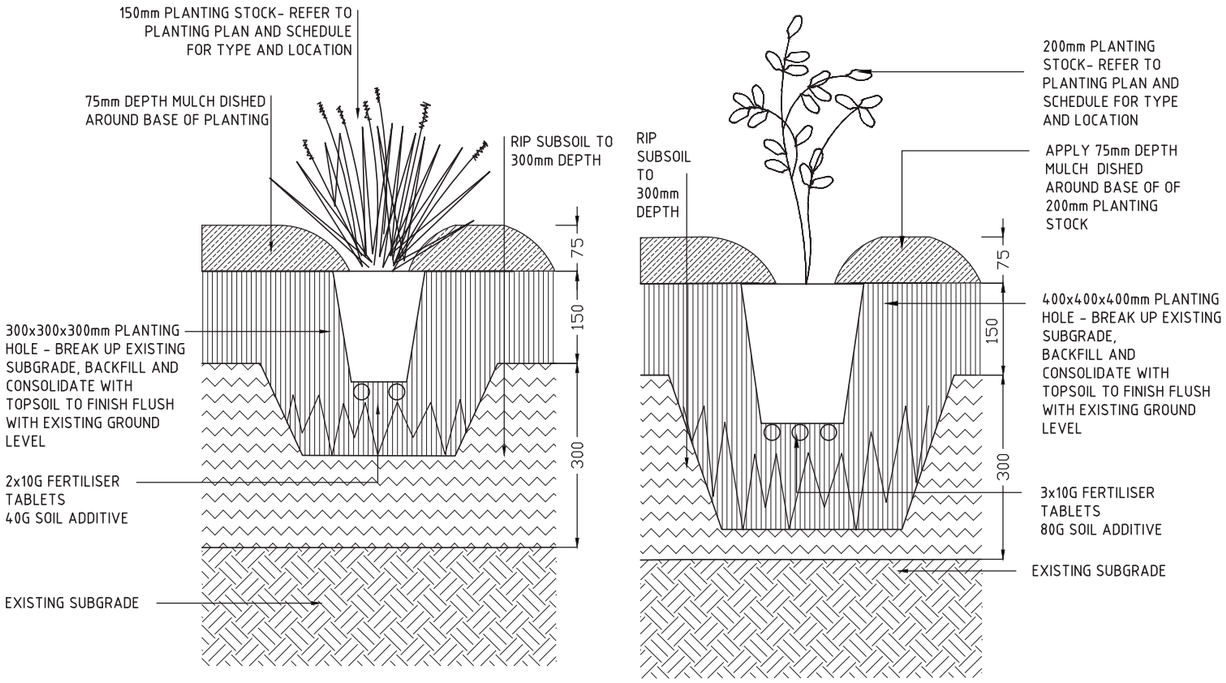
DETAIL C
SCALE 1:10



TUBESTOCK SHRUB DETAIL

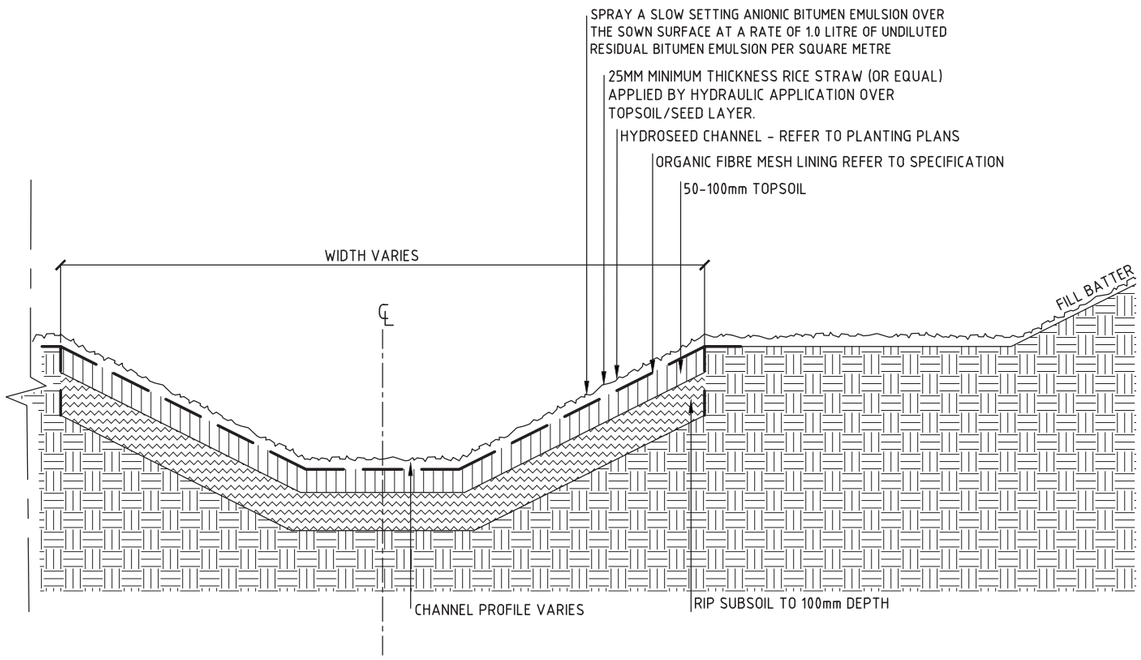
DETAIL E
SCALE 1:10 -

Figure 9.1.65 Detail Sheet 1



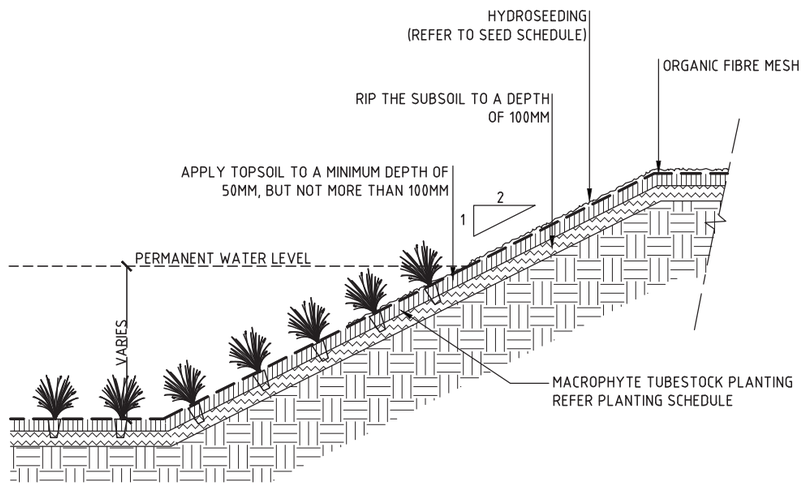
SEMI ADVANCED AND ADVANCED SHRUB PLANTING (150mm AND 200mm POT SIZE)

DETAIL F
SCALE 1:10



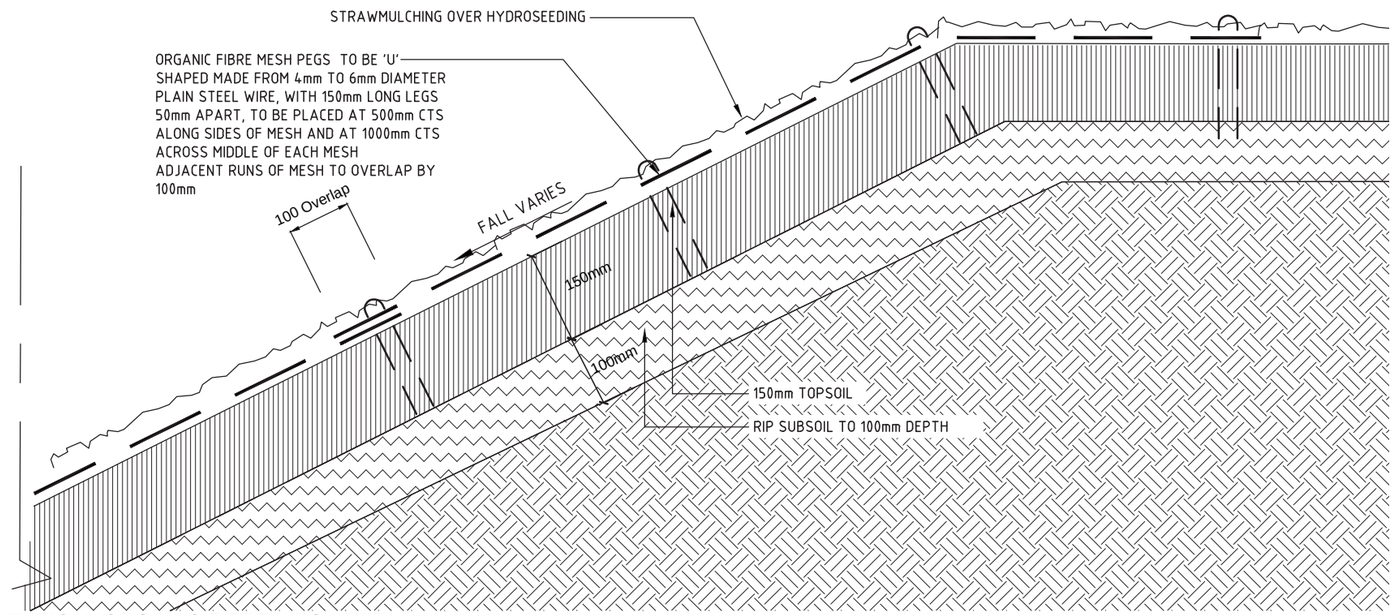
TYPICAL VEGETATED CHANNEL DETAIL

DETAIL G
SCALE 1:20



TYPICAL WATER QUALITY BASIN SECTION

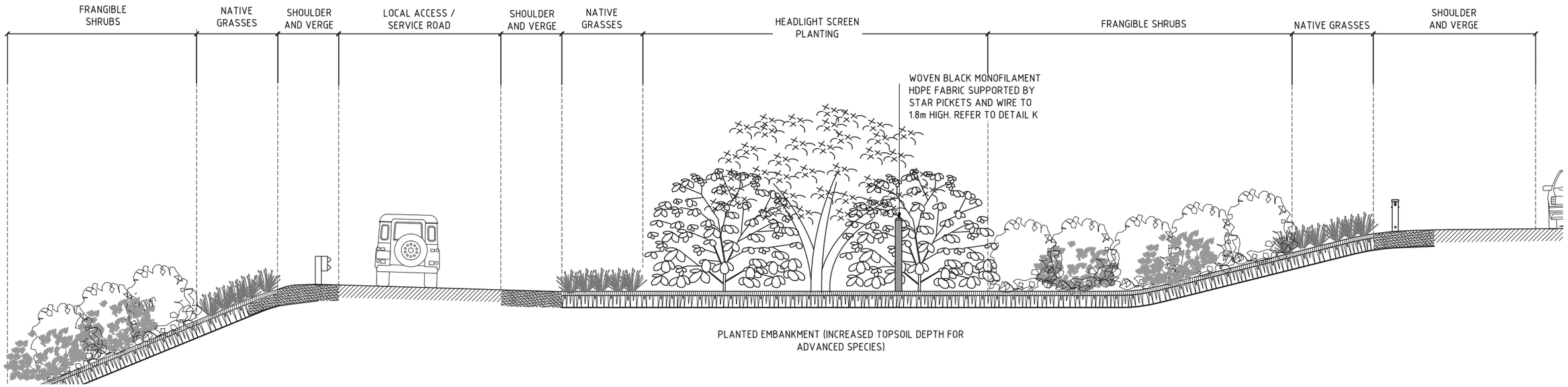
DETAIL H
SCALE 1:40



TYPICAL ORGANIC FIBRE MESH DETAIL

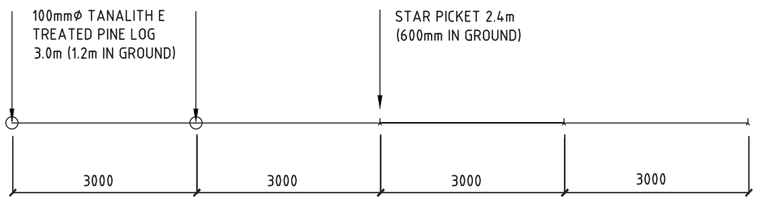
DETAIL I
SCALE 1:10

Figure 9.1.66 Detail Sheet 2

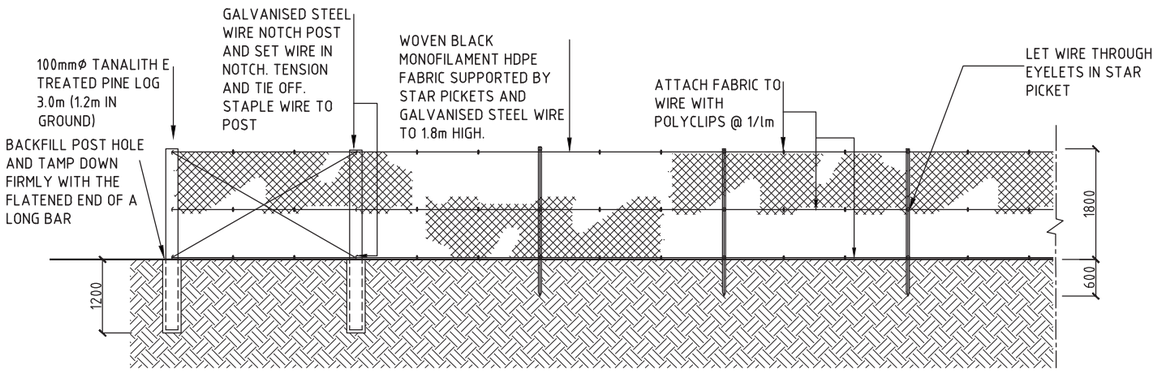


TYPICAL HEADLIGHT PLANTING DETAIL

DETAIL J
SCALE NTS -

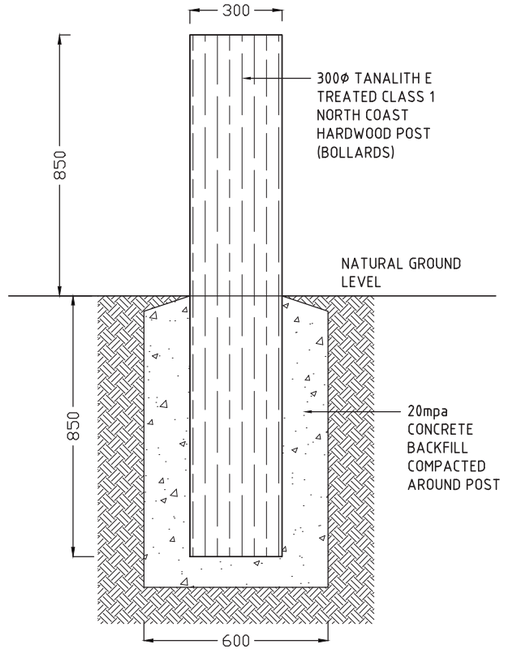


TEMPORARY HEADLIGHT SCREEN PLAN



TEMPORARY HEADLIGHT SCREEN ELEVATION SHOWING TERMINATION

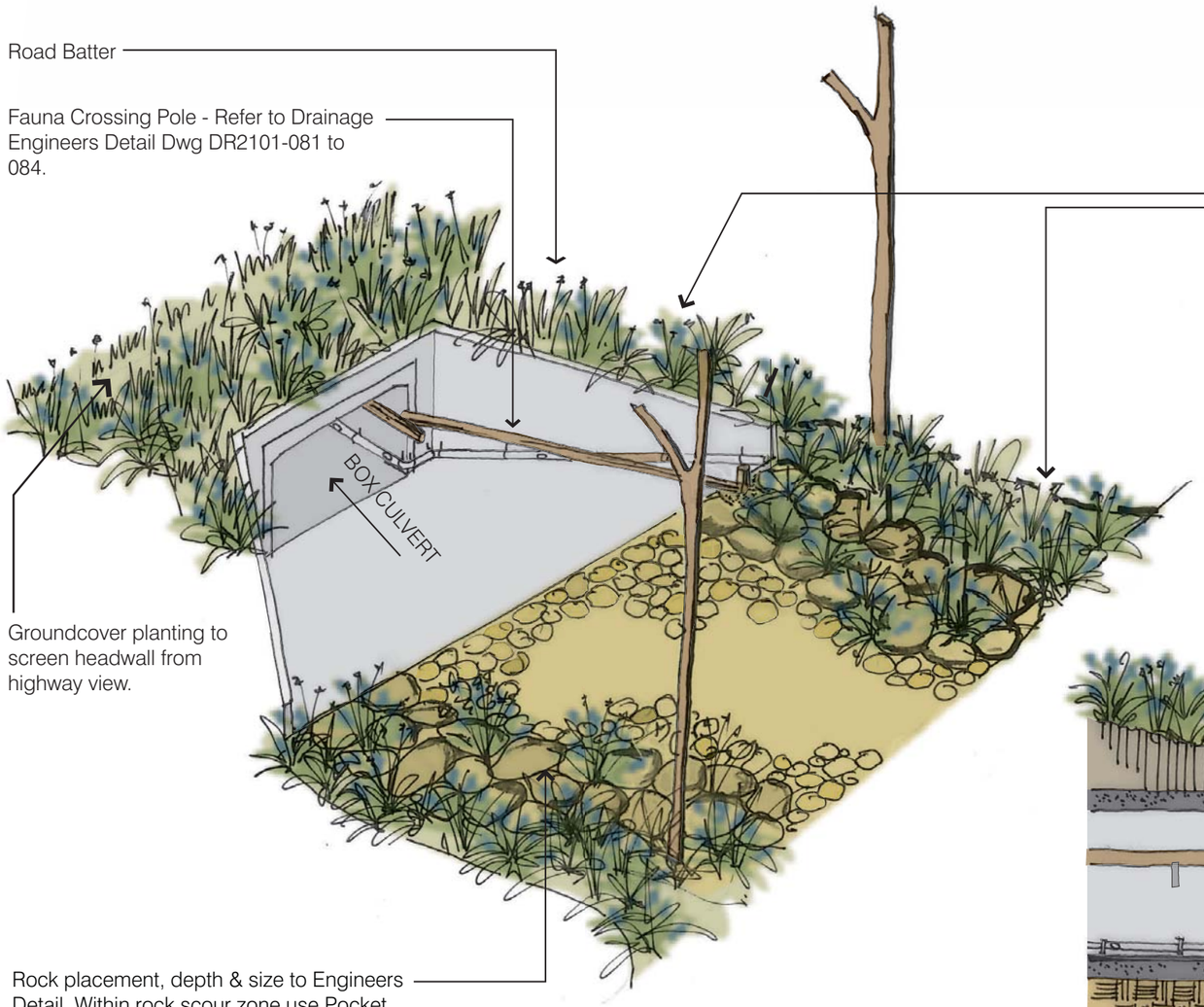
DETAIL K
SCALE 1:100 -



TYPICAL BOLLARD DETAIL

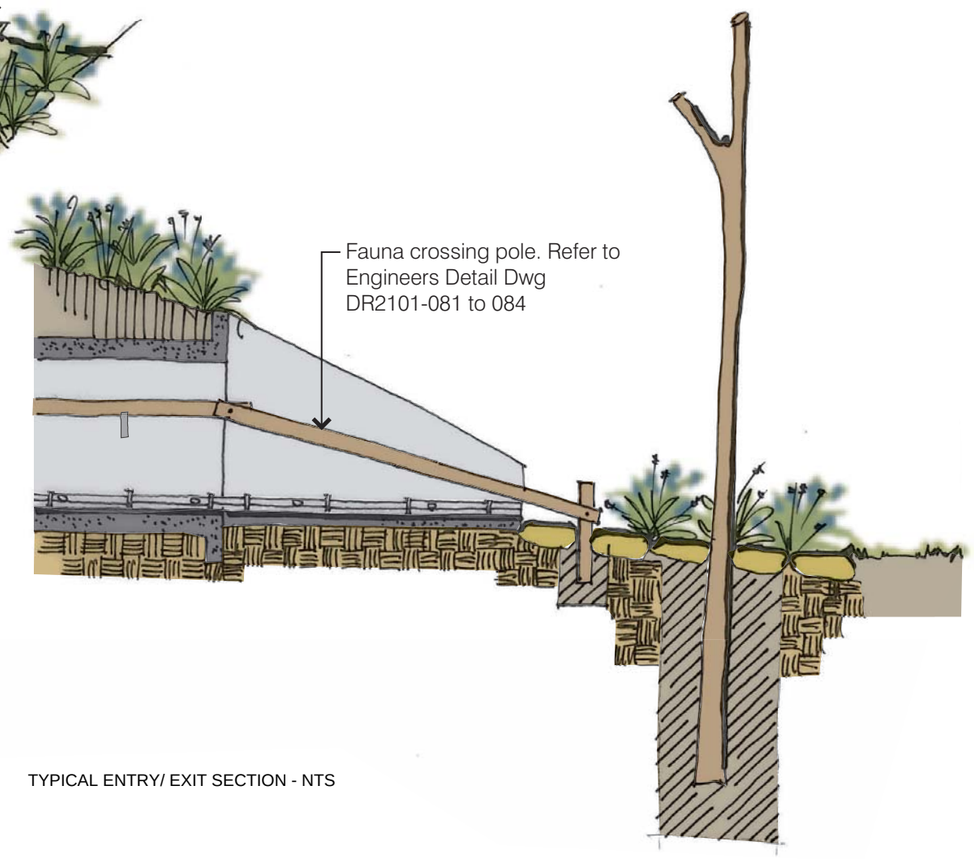
DETAIL L
SCALE 1:20 -

Figure 9.1.67 Detail Sheet 3



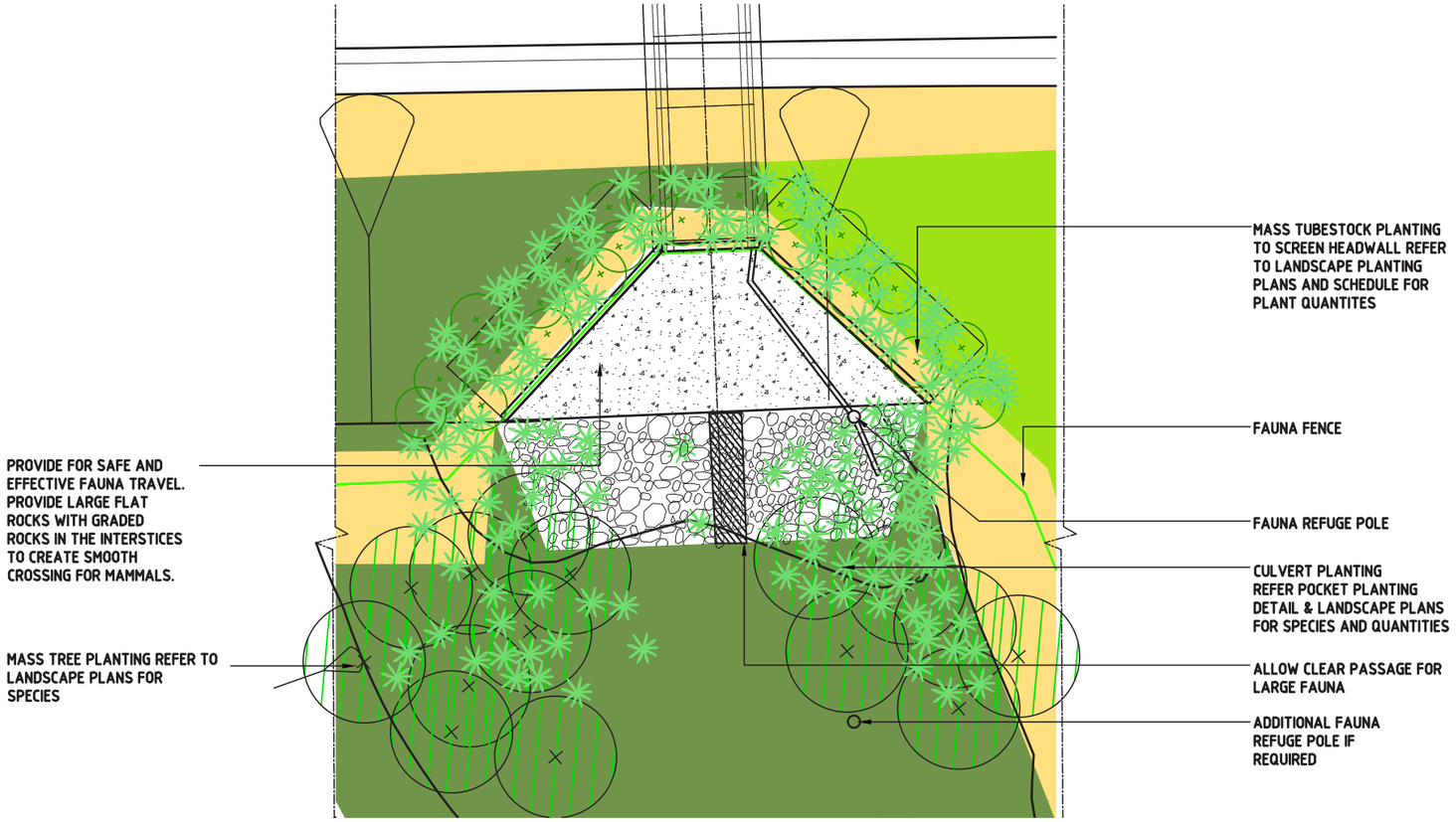
TYPICAL ENTRY/ EXIT TO DEDICATED FAUNA UNDERPASS AND COMBINED CULVERT - NTS

DETAIL M
SCALE NTS -



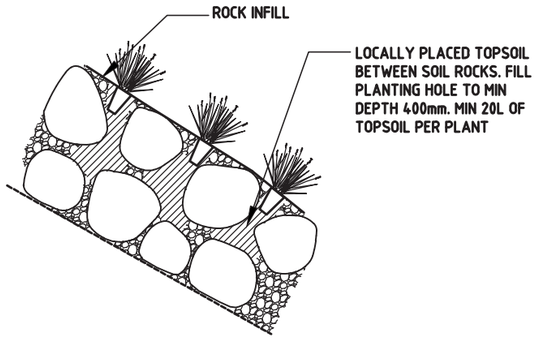
TYPICAL ENTRY/ EXIT SECTION - NTS

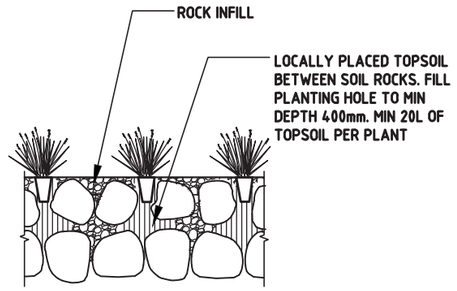
Figure 9.1.68 Detail Sheet 4



TYPICAL DEDICATED FAUNA UNDERPASS AND COMBINED CULVERTS

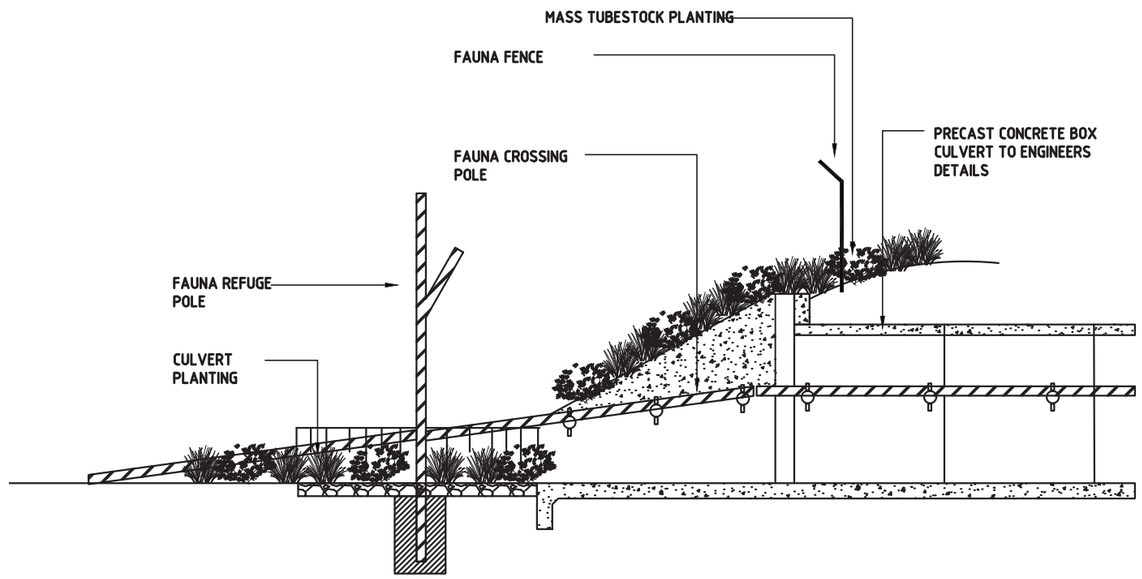
DETAIL N
SCALE : 1:200 -





TYPICAL POCKET PLANTING DETAIL

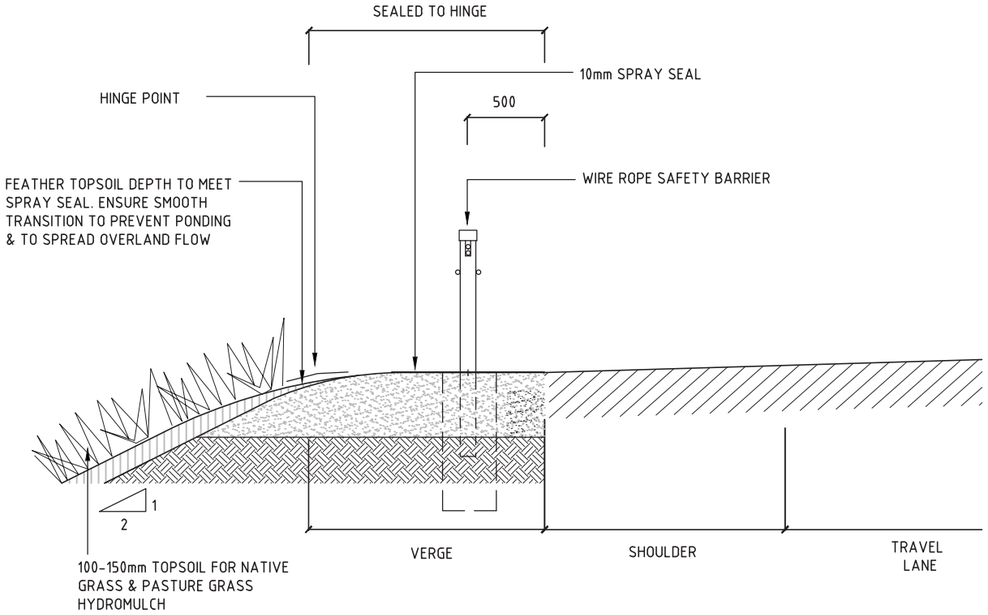
DETAIL O
SCALE : 1:30 -



TYPICAL CROSS SECTION THROUGH FAUNA UNDERPASS

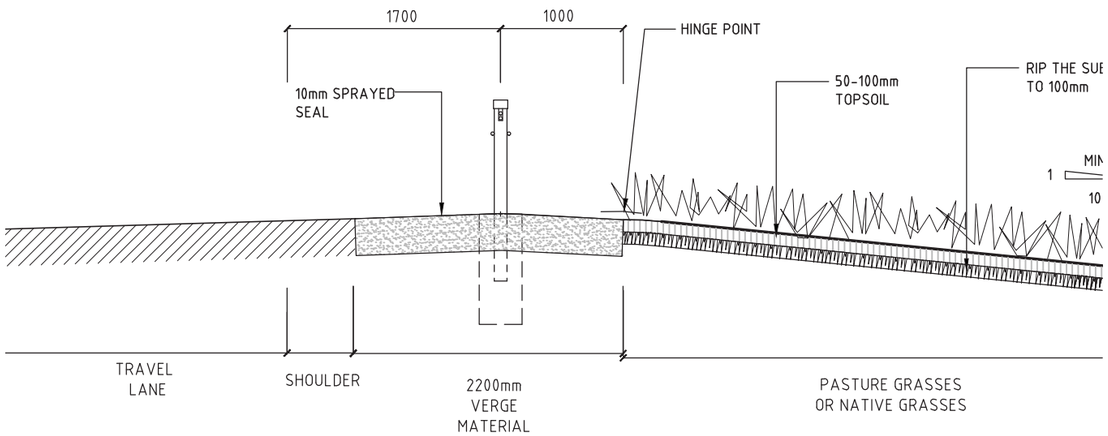
DETAIL P
SCALE : 1:100 -

Figure 9.1.69 Detail Sheet 5



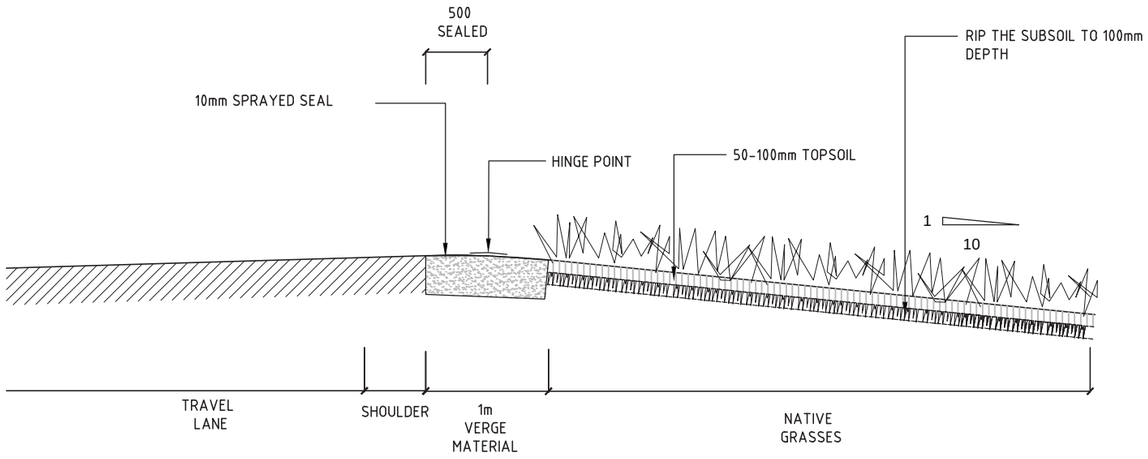
TYPICAL VERGE DETAIL - MAIN CARRIAGEWAY FILL - LOW NEARSIDE WITH WRSB

DETAIL Q
SCALE 1:40 -



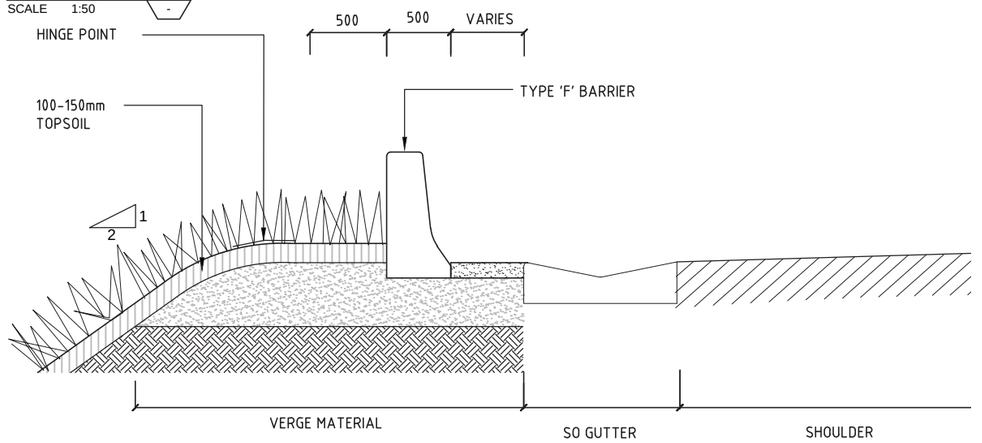
TYPICAL VERGE DETAIL - MEDIAN WITH WRSB

DETAIL R
SCALE 1:50 -



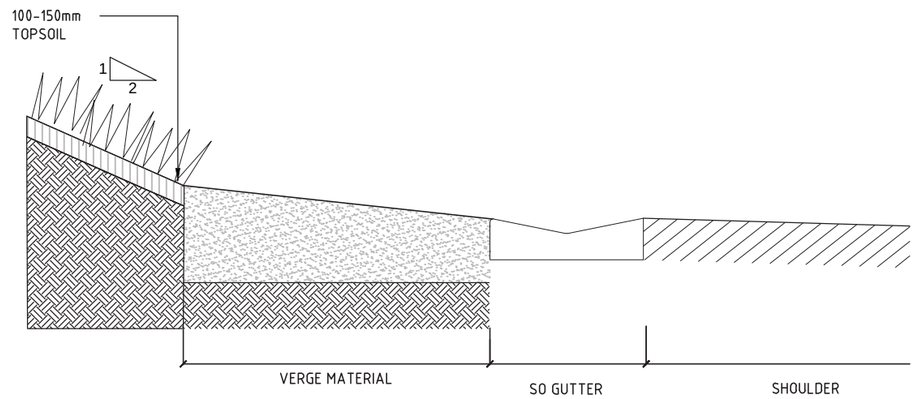
TYPICAL VERGE DETAIL - MEDIAN - NO BARRIER

DETAIL S
SCALE 1:50 -



TYPICAL VERGE DETAIL - MAIN CARRIAGEWAY FILL NEARSIDE WITH TYPE 'F' BARRIER

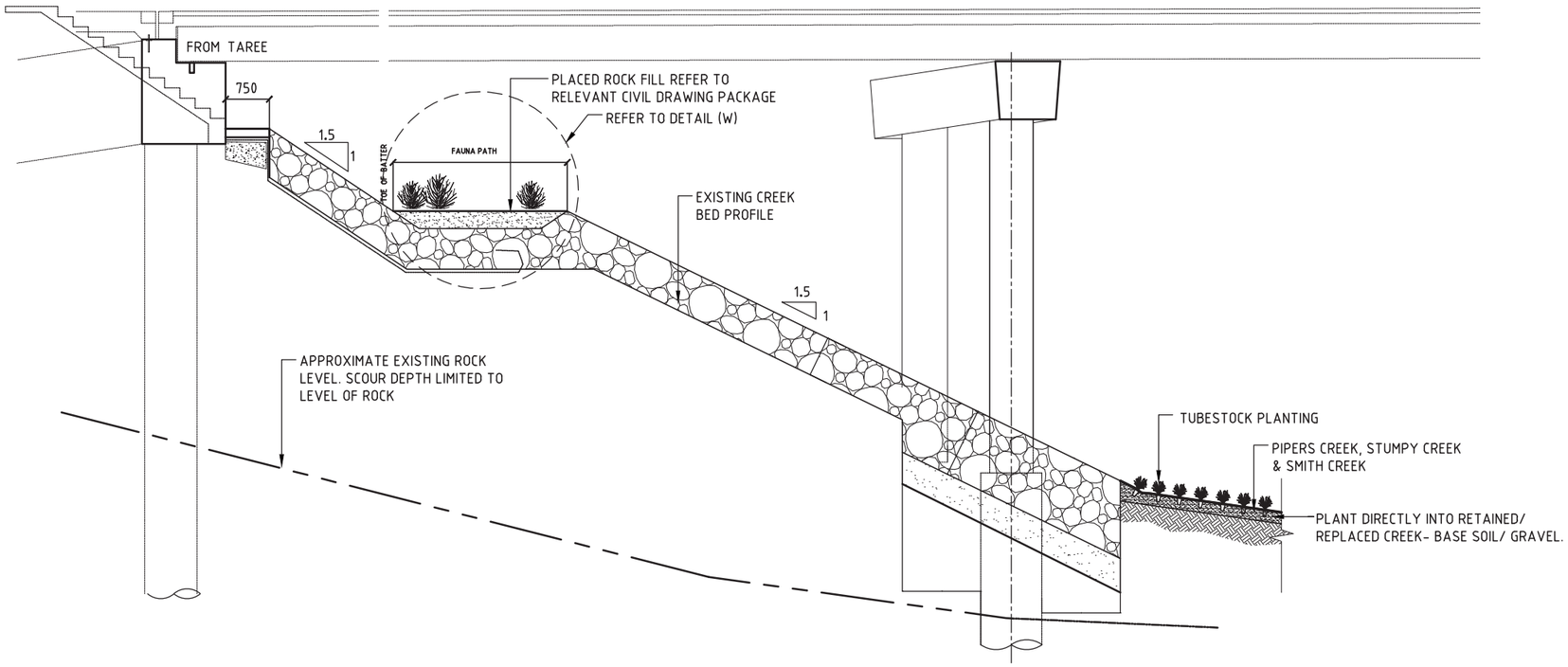
DETAIL T
SCALE 1:40 -



TYPICAL VERGE DETAIL - MAIN CARRIAGEWAY CUT NEARSIDE WITH 'SO' GUTTER

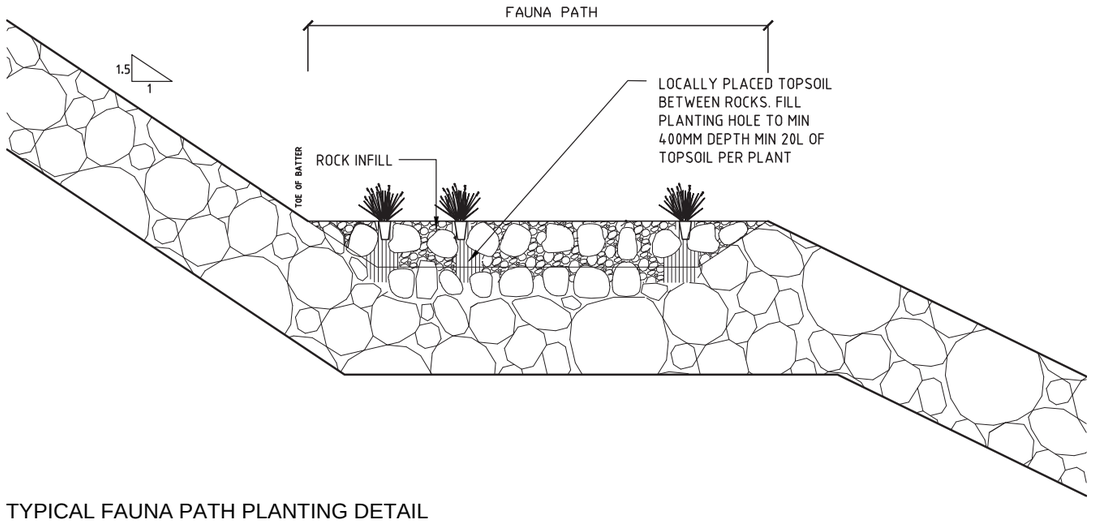
DETAIL U
SCALE 1:40 -

Figure 9.1.70 Detail Sheet 6



TYPICAL FAUNA PATH AND SCOUR PROTECTION DETAIL

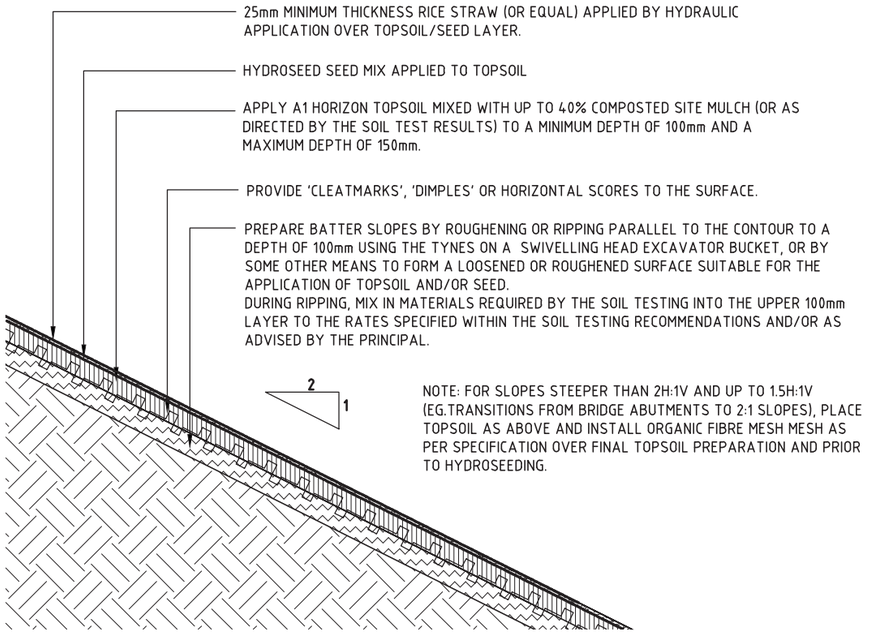
DETAIL V
SCALE 1:100 -



TYPICAL FAUNA PATH PLANTING DETAIL

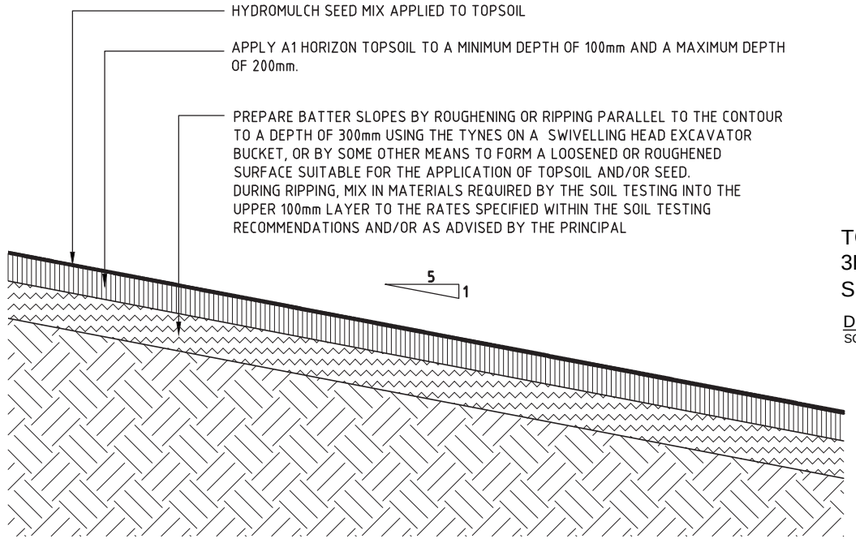
DETAIL W
SCALE 1:40 -

Figure 9.1.71 Detail Sheet 7



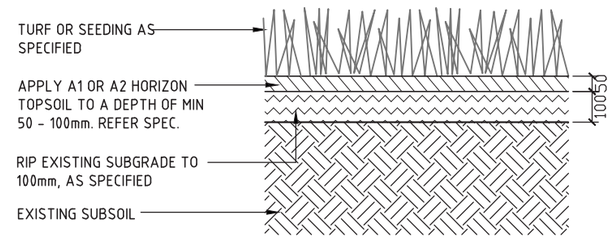
TOPSOIL TREATMENT 1 DETAIL - WHERE SITE TOPSOILS HAVE BEEN STRIPPED OR ON NEW FORMATIONS - AREAS STEEPER THAN 3H:1V (FOR HYDROSEEDING BATTERS

DETAIL X
SCALE 1:50 -



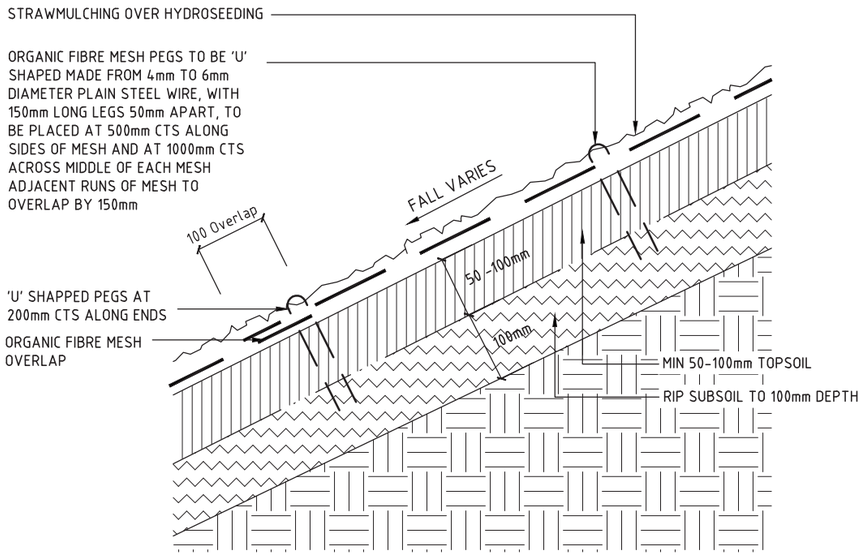
TOPSOIL TREATMENT 2 DETAIL - WHERE SITE TOPSOILS HAVE BEEN STRIPPED OR ON NEW FORMATIONS - AREAS FLATTER THAN 3H:1V (FOR PLANTING, SEEDING FRANGIBLE SHRUBS AND TALL SHRUBS

DETAIL Z
SCALE 1:50 -



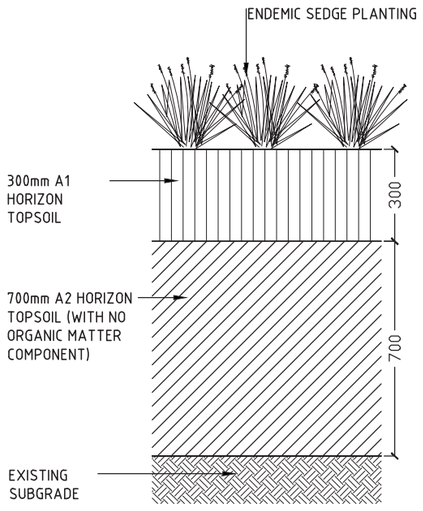
TOPSOIL TREATMENT 3 DETAIL - FOR AREAS FLATTER THAN 3H:1V FOR TURF, PASTURE GRASS AND NATIVE GRASS SEEDING MEDIANS AND VERGES

DETAIL AA
SCALE 20 -



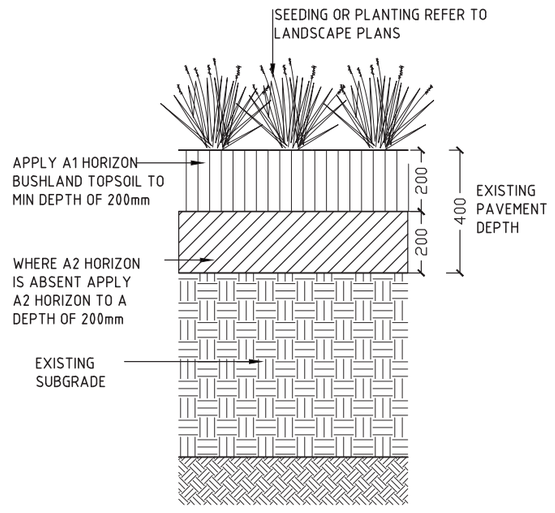
TOPSOIL TREATMENT 4 DETAIL - FOR VEGETATED SWALE, CHANNEL AND WATER QUALITY BASINS

DETAIL Y
SCALE 1:10 -



TOPSOIL TREATMENT 5 DETAIL - FOR WASTEWATER TREATMENT IRRIGATION AREA

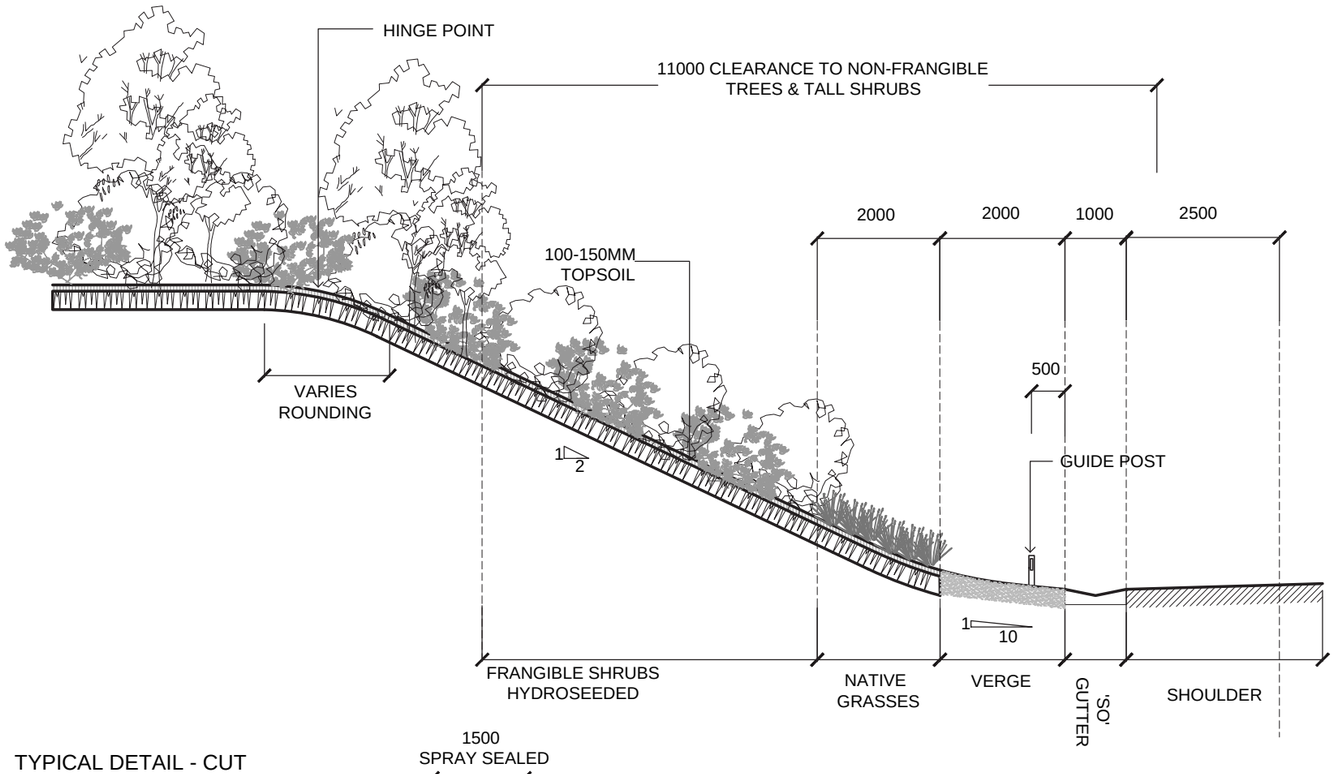
DETAIL BB
SCALE 1:20 -



TOPSOIL TREATMENT 6 DETAIL - WHERE EXISTING PAVEMENT IS TO BE REMOVED

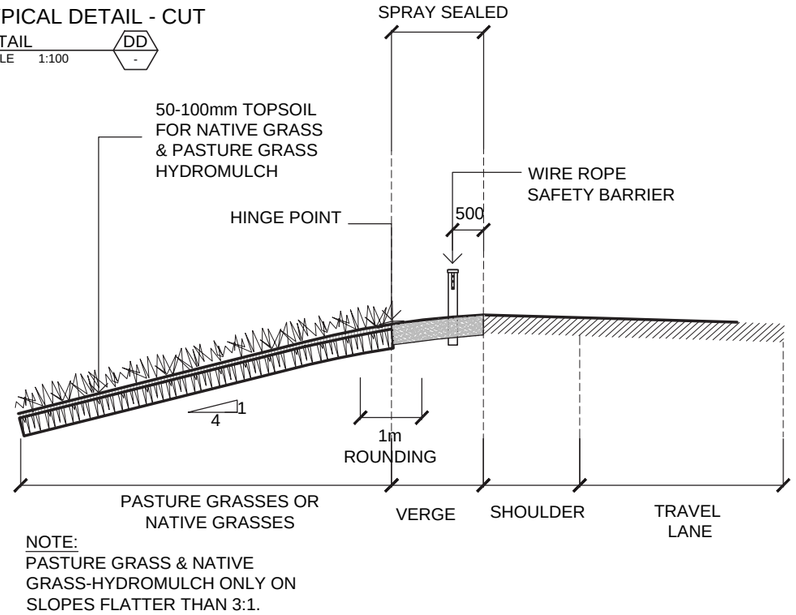
DETAIL CC
SCALE 1:20 -

Figure 9.1.72 Detail Sheet 8



TYPICAL DETAIL - CUT

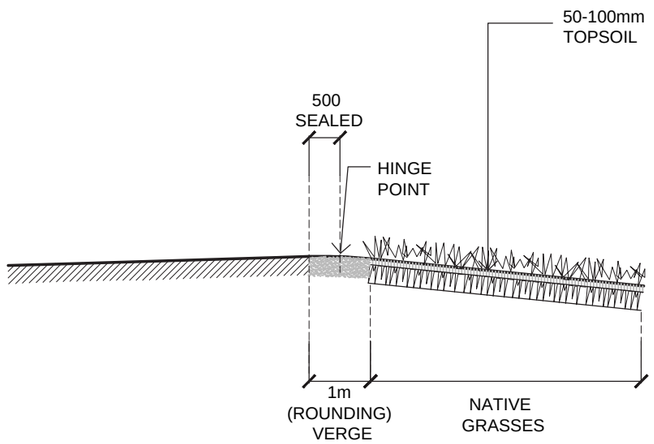
DETAIL DD
SCALE 1:100 -



NOTE:
PASTURE GRASS & NATIVE GRASS-HYDROMULCH ONLY ON SLOPES FLATTER THAN 3:1.

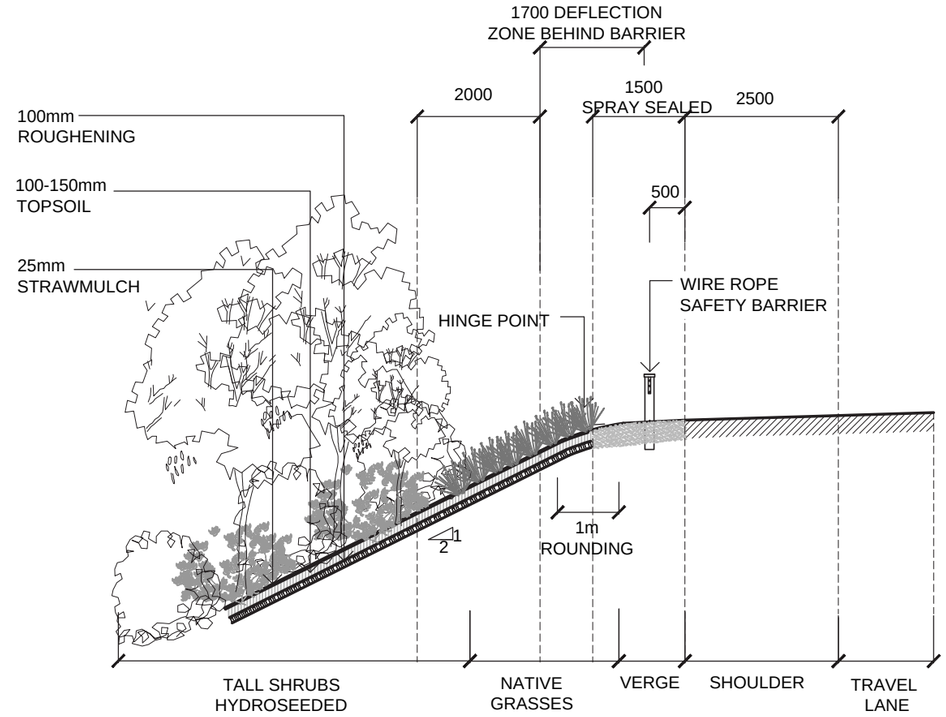
TYPICAL DETAIL - FILL WITH SAFETY BARRIER - CARRIAGEWAY SUPERELEVATED WITH 4:1 BATTER SLOPE

DETAIL FF
SCALE 1:100 -



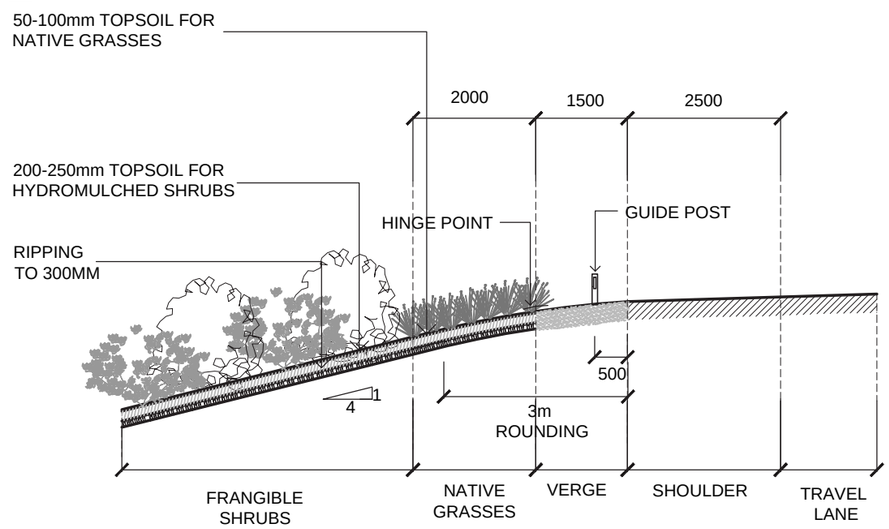
TYPICAL DETAIL - MEDIAN

DETAIL GG
SCALE 1:100 -



TYPICAL DETAIL - FILL WITH SAFETY BARRIER

DETAIL EE
SCALE 1:100 -



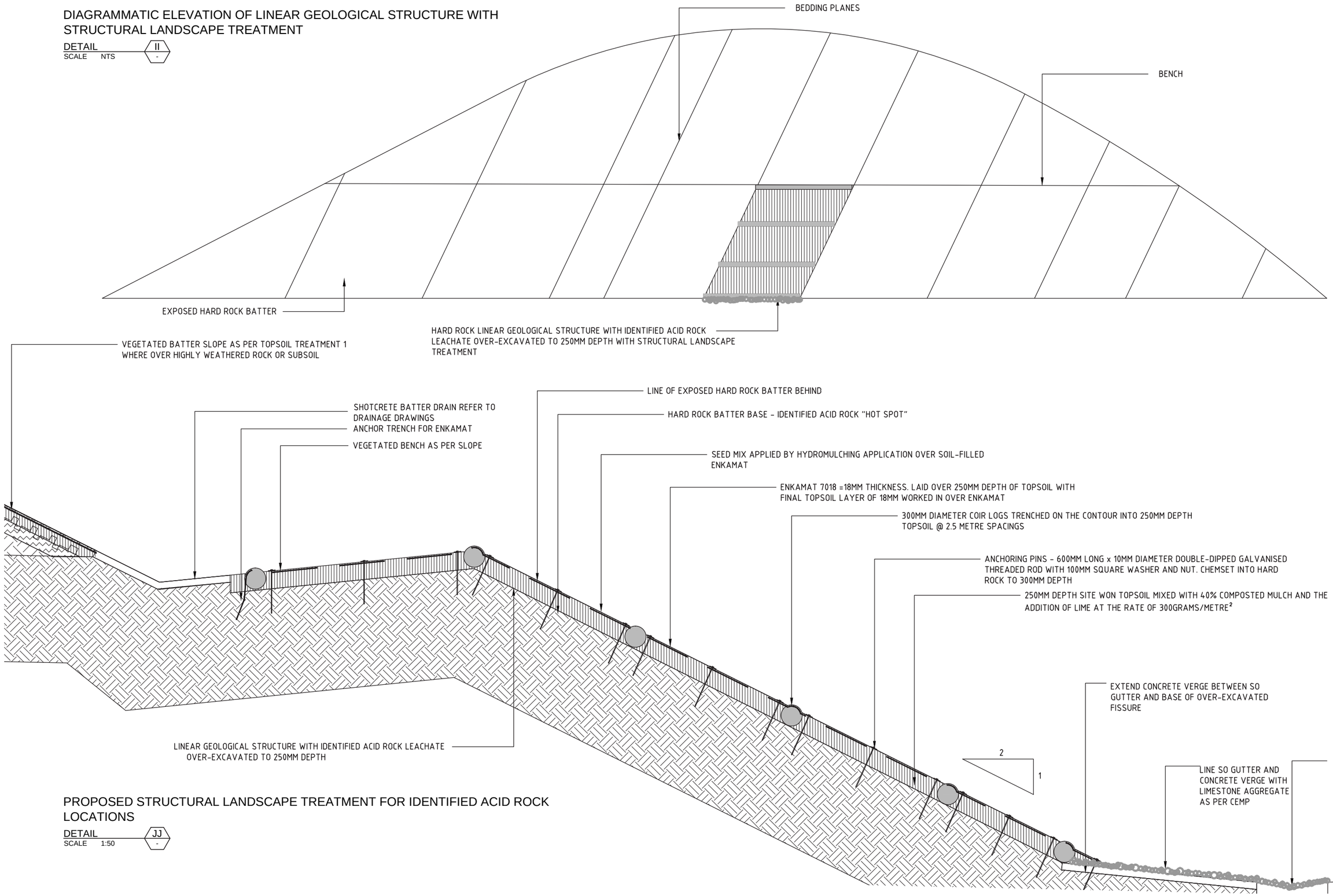
TYPICAL DETAIL - FILL NO SAFETY BARRIER - WITH 4:1 BATTER SLOPE

DETAIL HH
SCALE 1:100 -

Figure 9.1.73 Detail Sheet 9

DIAGRAMMATIC ELEVATION OF LINEAR GEOLOGICAL STRUCTURE WITH STRUCTURAL LANDSCAPE TREATMENT

DETAIL II
SCALE NTS -



PROPOSED STRUCTURAL LANDSCAPE TREATMENT FOR IDENTIFIED ACID ROCK LOCATIONS

DETAIL JJ
SCALE 1:50 -

Figure 9.1.74 Detail Sheet 10

9.2 LANDSCAPE MANAGEMENT

A Landscape Management Plan (LMP) has been prepared and is attached as Appendix B. The LMP details all landscape maintenance actions for the upgrade. The landscape maintenance works will be monitored and maintained by a suitably qualified landscape specialist for a period of three years.

Any required remediation measure(s) will be implemented to maintain landscaping works as required by the design documents.

The landscaping will be cost effective; minimise ongoing maintenance requirements and utilise native species, dense planting, bold simple planting designs and rapid planting establishment.

APPENDIX A PLANT SCHEDULES AND REST AREA SCHEDULES

Seeding Schedule

Botanical Name	Common Name	Kg/Ha
Verge seeding mix >2m width		
Austrodanthonia richardsonii	Wallaby Grass	0.5
Austrostipa pubescens	Speargrass	1
Capillipedium spicigerum	Scented Top Grass	1
Dichelachne micrantha	Shorthair Plumegrass	0.5
Echinopogon caespitosus	Hedgehog Grass	0.5
Entolasia stricta	Wiry Panic	0.5
Imperata cylindrica	Blady Grass	0.5
Juncus usitatus	Common Rush	1
Lepidosperma laterale	Variable Saw-sedge	1
Oplismenus aemulus	Basket Grass	0.5
Themeda triandra	Kangaroo Grass	1
Total		**8**
Median seeding mix		
Austrodanthonia sp.	Wallaby Grass	0.5
Austrostipa pubescens	Speargrass	1
Capillipedium spicigerum	Scented Top Grass	1
Dichelachne micrantha	Shorthair Plumegrass	0.5
Echinopogon caespitosus	Hedgehog Grass	0.5
Entolasia stricta	Wiry Panic	0.5
Imperata cylindrica	Blady Grass	0.5
Juncus usitatus	Common Rush	1
Lepidosperma laterale	Variable Saw-sedge	1
Oplismenus aemulus	Basket Grass	0.5
Themeda triandra	Kangaroo Grass	1
Total		**8**

Botanical Name	Common Name	Kg/Ha
Embankment seeding mix - frangible shrubs		
Austrodanthonia sp.	Wallaby Grass	0.2
Austrostipa pubescens	Speargrass	0.2
Capillipedium spicigerum	Scented Top Grass	0.2
Dichelachne micrantha	Shorthair Plumegrass	0.2
Echinopogon caespitosus	Hedgehog Grass	0.2
Entolasia stricta	Wiry Panic	0.1
Imperata cylindrica	Blady Grass	0.2
Juncus usitatus	Common Rush	0.2
Lepidosperma laterale	Variable Saw-sedge	0.2
Oplismenus aemulus	Basket Grass	0.2
Themeda triandra	Kangaroo Grass	0.2
Breynia oblongifolia	Coffee Bush	0.2
Daviesia ulicifolia	Gorse Bitter Pea	1
Dianella caerulea	Flax Lily	0.2
Gompholobium pinnatum	Pinnate Wedge Pea	0.2
Lomandra longifolia	Mar Rush	1
Ozothamnus diosmifolius	Rice Flower	0.2
Platylobium formosum	Handsome Flat Pea	0.2
Pultenaea villosa	Hairy Bush-Pea	0.2
Zieria smithii	Zieria	0.2
Pultenaea retusa	Notched Bush-Pea	0.2
Banksia spinulosa var. collina	Hairpin Banksia	0.2
Melaleuca nodosa	Prickly leaved Paperbark	0.1
Acacia falcata	Wattle	1
Acacia longissima	Long leaved Wattle	1
Total		**8**

Botanical Name	Common Name	Kg/Ha
Embankment seeding mix - tall shrubs		
Austrodanthonia sp.	Wallaby Grass	0.2
Austrostipa pubescens	Speargrass	0.2
Capillipedium spicigerum	Scented Top Grass	0.2
Dichelachne micrantha	Shorthair Plumegrass	0.1
Echinopogon caespitosus	Hedgehog Grass	0.2
Entolasia stricta	Wiry Panic	0.1
Imperata cylindrica	Blady Grass	0.1
Juncus usitatus	Common Rush	0.2
Lepidosperma laterale	Variable Saw-sedge	0.2
Oplismenus aemulus	Basket Grass	0.2
Themeda triandra	Kangaroo Grass	0.2
Breynia oblongifolia	Coffee Bush	0.2
Daviesia ulicifolia	Gorse Bitter Pea	0.2
Dianella caerulea	Flax Lily	0.2
Gompholobium pinnatum	Pinnate Wedge Pea	0.2
Lomandra longifolia	Mar Rush	0.5
Ozothamnus diosmifolius	Rice Flower	0.2
Platylobium formosum	Handsome Flat Pea	0.2
Pultenaea villosa	Hairy Bush-Pea	0.5
Zieria smithii	Zieria	0.2
Pultenaea retusa	Notched Bush-Pea	0.5
Banksia spinulosa var. collina	Hairpin Banksia	0.2
Melaleuca nodosa	Prickly leaved Paperbark	0.2
Acacia falcata	Wattle	0.5
Acacia longissima	Long leaved Wattle	0.5
Acacia longifolia	Sydney Golden Wattle	0.5
Leptospermum polygalifolium	Tantoon	0.2
Acacia fimbriata	Fringed Wattle	0.5
Melaleuca sieberi	Paperbark	0.2
Callistemon salignus	Willow Bottlebrush	0.2
Hibiscus splendens	Pink Hibiscus	0.2
Total		**8**
Pasture grasses seeding mix		
Axonopus fissifolius	Carpet Grass	5
Cynodon dactylon	Unhulled Couch	5
Echinochloa itilis (Sep-Mar) or Secale cereale (Apr-Aug)	Japanese Millet or Rye Corn	40
Lolium multiflorum	Eclipse Rye	20
Trifolium pratense	Red Clover	5
Total		**75**
Cover crop seeding mix (All disturbed areas identified to be hydromulched) cover crop may be applied separately or in conjunction with all other hydromulch mixes		
Echinochloa itilis (Sep-Mar) or Secale cereale (Apr-Aug)	Japanese Millet or Rye Corn	40
Lolium multiflorum (All Year)	Eclipse Rye	20
Total		**60**

PLANTING SCHEDULE

Botanical Name	Common Name	Spacing (m^2)	Pot Size
Community 1 - Moist Floodplain Closed Forest with Rainforest Elements (EEC)			
Trees			
Acmena smithii	Lilly Pilly	As Shown	NT
Acronychia oblongifolia	White Lilly Pilly	As Shown	NT
Cryptocarya microneura	Murrogun	As Shown	NT
Endiandra sieberi	Pink Walnut	As Shown	NT
Eucalyptus grandis	Flooded Gum	As Shown	NT
Eucalyptus pilularis	Blackbutt	As Shown	NT
Eucalyptus propinqua	Small-fruited Grey Gum	As Shown	NT
Eucalyptus resinifera	Red Mahogany	As Shown	NT
Ficus coronata	Sandpaper Fig	As Shown	NT
Glochidion ferdinandi	Cheese Tree	As Shown	NT
Guoia semiglauca	guioa	As Shown	NT
Lophostemon confertus	Brush Box	As Shown	NT
Melaleuca styphelioides	Prickly-leaved Tea Tree	As Shown	NT
Syncarpia glomulifera	Turpentine	As Shown	NT
Shrubs, groundcovers, tussocks, grasses and sedges			
Callistemon salignus	Willow Bottlebrush	2	NT
Cordyline stricta	Narrow-leaved Palm Lily	2	NT
Hibiscus splendens	Pink Hibiscus	2	NT
Pittosporum spinescens	Orange Thorn	3	NT
Tabernaemontana pandacaqui	Banana Bush	2	NT
Carex appressa	Tall Sedge	4	NT
Cissus hypoglauca	Water Vine	4	NT
Gahnia clarkei	Tall Saw-sedge	4	NT
Geitonoplesium cymosum	Scrambling Lily	4	NT
Lomandra longifolia	Mat Rush	4	NT
Oplismenus aemulus	Basket Grass	4	NT

Botanical Name	Common Name	Spacing (m^2)	Pot Size
Community 2 - Riparian Forest (EEC)			
Trees			
Cupaniopsis anacardioides	Tuckeroo	As Shown	75L
Elaeocarpus obovatus	Blueberry Ash	As Shown	75L
Acmena smithii	Lilly Pilly	As Shown	NT
Acronychia oblongifolia	White Lilly Pilly	As Shown	NT
Alphitonia excelsa	Red Ash	As Shown	NT
Clerodendrum tomentosum	Hairy Clerodenrum	As Shown	NT
Cryptocarya microneura	Murrogun	As Shown	NT
Cupaniopsis anacardioides	Tuckeroo	As Shown	NT
Elaeocarpus obovatus	Blueberry Ash	As Shown	NT
Endiandra sieberi	Pink Walnut	As Shown	NT
Eucalyptus grandis	Flooded Gum	As Shown	NT
Eucalyptus microcorys	Tallowood	As Shown	NT
Eucalyptus tereticornis	Forest Red Gum	As Shown	NT
Glochidion ferdinandi	Cheese Tree	As Shown	NT
Gmelina leichhardti	White Beech	As Shown	NT
Guioa semiglauca	guioa	As Shown	NT
Jagera pseudorhus	Foambark	As Shown	NT
Melaleuca styphelioides	Prickly-leaved Tea Tree	As Shown	NT
Melaleuca linariifolia	Flax-leaved Paperbark	As Shown	NT
Tristaniopsis laurina	Water Gum	As Shown	NT
Shrubs, groundcovers, tussocks, grasses and sedges			
Backhousia myrtifolia	Grey Myrtyle	2	NT
Cordyline stricta	Narrow-leaved Palm Lily	2	NT
Hibiscus splendens	Pink Hibiscus	2	NT
Rubus hillii	Native Rasberry	2	NT
Carex appressa	Tall Sedge	4	NT
Geitonoplesium cymosum	Scrambling Lily	4	NT
Gymnostachys anceps	Settlers Flax	4	NT
Lomandra hystrix	Mat Rush	4	NT
Oplismenus aemulus	Basket Grass	4	NT
Community 3 - Paperbark Swamp Forest (EEC)			
Trees			
Melaleuca linariifolia	Flax-leaved Paperbark	As Shown	NT
Tristaniopsis laurina	Water Gum	As Shown	NT

Botanical Name	Common Name	Spacing (m^2)	Pot Size
Community 4 - Moist Floodplain Forest (Non-EEC)			
Trees			
Eucalyptus microcorys	Tallowood	As Shown	35 L
Eucalyptus pilularis	Blackbutt	As Shown	35 L
Allocasuarina littoralis	Black She Oak	As Shown	NT
Corymbia gummifera	Red Bloodwood	As Shown	NT
Corymbia intermedia	Pink Bloodwood	As Shown	NT
Eucalyptus acmenoides	Cabbage Gum	As Shown	NT
Eucalyptus globoidea	White Stringybark	As Shown	NT
Eucalyptus microcorys	Tallowood	As Shown	NT
Eucalyptus pilularis	Blackbutt	As Shown	NT
Eucalyptus resinifera	Red Mahogany	As Shown	NT
Eucalyptus siderophloia	Grey Ironbark	As Shown	NT
Glochidion ferdinandi	Cheese tree	As Shown	NT
Syncarpia glomulifera	Turpentine	As Shown	NT
Community 5 - Moist Gully Forest (Non-EEC)			
Trees			
Livistona australis	Cabbage Tree Palm	As Shown	75 L
Eucalyptus tereticornis	Forest Red Gum	As Shown	35 L
Allocasuarina torulosa	Forest She Oak	As Shown	NT
Eucalyptus microcorys	Tallowwood	As Shown	NT
Eucalyptus pilularis	Blackbutt	As Shown	NT
Eucalyptus propinqua	Small-fruited Grey Gum	As Shown	NT
Eucalyptus tereticornis	Forest Red Gum	As Shown	NT
Glochidion ferdinandi	Cheese Tree	As Shown	NT
Livistona australis	Cabbage Tree Palm	As Shown	NT
Lophostemon confertus	Brush Box	As Shown	NT
Melaleuca quinquinervia	Broad-leaved Paperbark	As Shown	NT
Syncarpia glomulifera	Turpentine	As Shown	NT
Community 6 - Moist Slopes Forest (Non-EEC)			
Trees			
Eucalyptus acmenoides	Cabbage Gum	As Shown	NT
Eucalyptus microcorys	Tallowood	As Shown	NT
Eucalyptus pilularis	Blackbutt	As Shown	NT
Eucalyptus propinqua	Small-fruited Grey Gum	As Shown	NT
Lophostemon confertus	Brush Box	As Shown	NT

Botanical Name	Common Name	Spacing (m^2)	Pot Size
Community 7 - Dry Ridgetop Forest (Non-EEC)			
Trees			
Corymbia maculata	Spotted Gum	As Shown	35 L
Cupaniopsis anacardioides	Tuckeroo	As Shown	35 L
Allocasuarina littoralis	Black She Oak	As Shown	NT
Corymbia maculata	Spotted Gum	As Shown	NT
Eucalyptus acmenoides	Cabbage Gum	As Shown	NT
Eucalyptus fibrosa	Red Ironbark	As Shown	NT
Eucalyptus globoidea	White Stringybark	As Shown	NT
Eucalyptus propinqua	Small-fruited Grey Gum	As Shown	NT
Eucalyptus siderophloia	Grey Ironbark	As Shown	NT
Syncarpia glomulifera	Turpentine	As Shown	NT
Shrubs, groundcovers, tussocks, grasses and sedges			
Pultenaea villosa	Hairy Bush-pea	2	NT
Daviesia ulicifolia	Gorse Bitter Pea	2	NT
Dianella caerulea	Blue Flax Lily	6	NT
Gompholobium pinnatum	Pinnate Wedge Pea	2	NT
Carex appressa	Tall Sedge	4	NT
Gahnia sieberiana	Red-fruited Saw-sedge	4	NT
Lomandra multiflora	Many-flowered Mat Rush	4	NT
Themeda australis	Kangaroo Grass	6	NT
Community 8 - Water Quality Basin Planting (from Freshwater Wetland on Coastal Floodplain (EEC)			
Shrubs, groundcovers, tussocks, grasses and sedges			
Carex appressa	Tall Sedge	1	NT
Gahnia sieberiana	Red-fruited Saw-sedge	1	NT
Isolepis inundata	Swamp Club-rush	1	NT
Juncus kraussii	Sea Rush	1	NT
Philydrum lanuginosum	Frogmouth	1	NT

Botanical Name	Common Name	Spacing (m^2)	Pot Size
Headlight Screen Planting			
Acmena smithii	Lilly Pilly	0.5	200 mm
Callistemon salignus	Willow Bottlebrush	1	200 mm
Elaeocarpus reticulatus	Blueberry Ash	0.5	200 mm
Lomandra hystrix	Mat Rush	3	200 mm
Waterhousia floribunda	Weeping Lilly Pilly	As Shown	25 L
Creek Crossing Planting - Smiths Creek and Pipers Creek			
Carex appressa	Tall Sedge	4	NT
Lomandra hystrix	Mat Rush	4	150 mm
Fauna Path under Bridges and Fauna Culverts Planting			
Carex appressa	Tall Sedge	1	NT
Lomandra hystrix	Mat Rush	1	150 mm
Rest Area Planting			
Callistemon salignus	Willow Bottlebrush	2	150 mm
Carex appressa	Tall Sedge	4	NT
Crinum pedunculatum	Swamp Lilly	4	150 mm
Hibiscus splendens	Pink Hibiscus	1	150 mm
Lomandra hystrix	Mat Rush	4	150 mm
Rest Area Turf			
Stenotaphrum secundatum	Buffalo turf		

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REST AREA FURNITURE SCHEDULE

ITEM	DESCRIPTION	QTY
Rubbish Bin (240lt) 	S203 -HUB Street Equipment P/L All panels and trim to be stainless steel and shall be 316 grade unless otherwise specified. Rubbish bin can accept a standard 240lt wheelie bin.. Litter Bins to have warning signs 'identifying the possible consequential impacts of leaving rubbish lying around the rest area and not placing it in the bins' attached to the rubbish bins. Sign to be 500x200mm to be UV stabilised	6 bins - South Bound 6 bins - North Bound
Lesage Post Luminaire 	Versalux Lighting Systems 1 x 52w LED Lesasge Versalux fitting or approved equivalent complet with 7.5m pole and foundation. Both luminare and pole to be matching poder coated black. 1 luminar only shown. Provide multiple luminare on pole where shown in design 2 x 36w Fluorescent IP54 vandal proof, Surface mounted to back of toilet block 250w Sylvania Roadster 12m Pole	**REFER TO ELECTRICAL LIGHTING PACKAGE** 11 x North bound, 9 x Southbound 1 x Northbound, 1 x Southbound 2 x Northbound, 2 x Southbound
Picnic Shelters + Picnic Settings	As specified in accordance with Dwg No's 01.A, 02 - 04 inclusive 05.A, 06-10 inclusive. Drawings by Richard Goodwin	**REFER TO REST AREA PACKAGE** 6 units South Bound 6 units North Bound
4 Cubicle Unisex Toilet Block	As specified in accordance with RTA Toilet No.6 Dwgs: FT.02 - FT.22 inclusive, 1GT.01A - 1GT 03.A Drawings by Richard Goodwin Flushing toilets to be provided in accordance with RMS prototype toilet - flushing toilet system toilet 6 specification. Warning Sign 'water is not suitable for drinking'	**REFER TO REST AREA PACKAGE** 1 unit South Bound 1 unit North Bound
Commercial Wastewater Treatment System	5000L in ground concrete CABS AWTS Tank or Equivalent	**REFER TO REST AREA PACKAGE** 1 x South Bound 1 x North Bound
Water Tank	15000L Inground concrete water tank to be selected by contractor and approved by RMS. For set out and details refer to drawing IGT.01.A to IGT.03.A	**REFER TO REST AREA PACKAGE** 1 x South Bound 1 x North Bound
Pathways	Concrete: 1200 mm wide suitable for wheelchair access Refer to pavement drawings	**REFER TO PAVEMENT DRAWINGS**
24hr Driver Reviver	Rectangular concrete hard stand area with layback kerb (15x 8m Min) Refer to pavement drawings	1 x South Bound 1 x North Bound **REFER TO PAVEMENT DRAWINGS**
Signage 	"Reclaimed water DO NOT DRINK" - Rigid Sign - Aluminium -300x255mm To be hung on wall above or nearby washbasins in toilets "Reclaimed water DO NOT DRINK" - Rigid Sign - Aluminium -300x255mm To be hung above tap to water tank "Effluent water - Avoid contact - do not drink" Rigid Sign - to be placed at gate of Effluent treatment area	**REFER TO SIGNAGE PACKAGE** 4 signs per toilet block (1 per cubicle) 1 sign per tap 1 sign per Effluent treatment area

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APPENDIX B KUNDABUNG TO KEMPSEY LANDSCAPE MANAGEMENT PLAN

SMEC + Hyder Joint Venture

CONTENTS

APPENDICES

1 BACKGROUND

1.1 PURPOSE OF THIS REPORT

This Landscape Management Plan (LMP) has been requested by the Roads and Maritime to promote the cost effective and consistent management of roadside landscape vegetation established for the Oxley Highway to Kempsey – Kundabung to Kempsey Project.

This LMP promotes a standard approach to the maintenance of landscape plantings, both in technique and frequency.

The following table lists the Description of Services criteria regarding the landscape maintenance;

A Landscape Management Plan (LMP) must be prepared as a part of the Design Documentation;
The LMP must comply with the requirements described in the document titled "RTA Landscape Guideline April 2008"and must detail all landscape maintenance actions for the upgrade; and
The landscape works must: (i) be cost effective; (ii) minimise ongoing maintenance requirements; and (iii) utilise native species, dense planting, bold simple planting designs and rapid planting establishment.

To avoid duplication and to highlight the specific maintenance requirements of some landscape types, the LMP details the required maintenance actions in two categories:

- *All Areas:*

  Those landscape maintenance actions that apply to every section of the K2K Project.

- *Specific Landscape Types:*

  Those maintenance actions specific to the different landscape types present along the route, including:

  - Grassed Areas (Mown);
  - Vegetation (Hydroseed/Hydromulch);
  - Planting (Tubestock);
  - Landscape Planting Beds; and
  - Areas of Special Consideration.

1.2 WHERE THIS PLAN APPLIES

This LMP applies to the Oxley Highway to Kempsey – Kundabung to Kempsey project.

The Highway is divided into two landscape management sections:

1. Detailed Design North (known as DDN) between, St 31,340 to St 37,770

2. Detailed Design South (known as DDS) between, St 24,040 to St 31,340

The approximate locations of these sections are illustrated in Figure 1.

1.3 LANDSCAPE MAINTENANCE RESPONSIBILITY

Three agencies are responsible for the maintenance of roadside landscapes within this LMP:

Agency	Extent of responsibility on Pacific Highway - Kundabung to Kempsey
Council	Local service roads, roundabouts and intersections and public areas immediately outside of highway corridor
Roads and Maritime	Pacific Highway corridor for the life of the highway
Contractor	All – from the commencement of construction until the date of construction completion and post-construction completion for the contract maintenance period - 3 years The Principal will award a separate contract to maintain the landscape planting works after Completion concurrent with the award of the landscape subcontract.

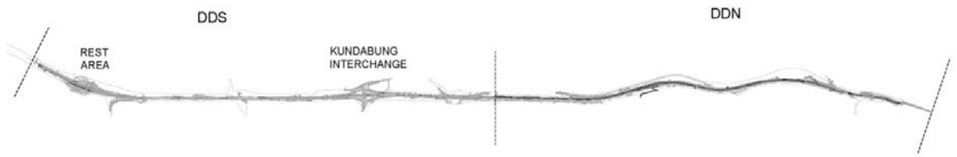


Figure 1 Extent of Landscape Maintenance Plan (LMP)

1.4 LANDSCAPE TYPES TO BE MAINTAINED

Five main landscape types are present. These are:

1. Grass Areas (Mown);
2. Vegetation (Hydroseed/Hydromulch);
3. Planting (tubestock);
4. Landscape Planting Beds (which include 35L and 75L plantings); and
5. Areas of Special Consideration (refer Section 3.8).

The exact extent of these landscape types is illustrated on the landscape plans.

Grass Areas (Mown) - *Refers to exotic grasses only (see Areas of Special Consideration for Native Grasses)*

- Road edge mowing strip
- Medians
- Rest Areas
- Interchange areas
- Clear zones.

(The Contractor is required to mow grass during construction, establishment and maintenance period. Thereafter mowing is by others)

Vegetation (Hydroseeding with Strawmulching and Hydromulch)

Shrubs and groundcovers are seeded using hydroseeding with strawmulching or with the hydromulching method alone. Species mix varies according to location and plant community.

This allows an easy, quick and repeatable method of establishing vegetation cover and aids with soil stability. Where a vegetated area fails (ie; scouring, land slippage) the soil profile is reconstructed and re-hydromulched to re-establish vegetation cover.

At specific locations the hydromulch vegetation is over planted with tubestock tree species.

Hydromulch areas have the following variations, based on the plant species used in specific areas:

- Pasture grasses (non-native species)
- Native grasses
- Groundcovers
- Frangible shrubs
- Tall shrubs.

Planting (Tubestock)

Mass planting using tubestock of tree/tall shrub, frangible shrubs and groundcover species.

Planting of tubestock has the following variations, based on location, function and plant species used in individual areas:

- Massed tubestock planted in hydromulched areas
- Massed tubestock in basins and creek corridors and fauna underpasses
- Massed tubestock feature planting in roundabouts, medians, at bridges and sightline zones.

Landscape Planting Beds

Landscape planted beds. These vary in appearance from mass plantings of single species (eg. *Lomandra sp*; *Dianella sp*) to more complex beds containing advanced trees, low and tall shrubs and ground covers.

Planting size includes tubestock - 150mm, 200mm, 25, 35 and 75 litres.

.

Areas of Special Consideration

These areas may vary in appearance and function and have specific maintenance requirements in addition to other landscape types listed.

- Batter revegetation management strategy
- Potential Acid Sulfate Rock batters
- Native Grasses
- Fauna underpasses
- Fauna fence
- Water quality basins and vegetated channels
- Threatened Species
- Rest Areas
- Riparian zones
- Myrtle Rust.

1.5 SUMMARY TABLE OF MAINTENANCE REQUIRED

Maintenance Actions	Tasks	Timeframes / Frequency							
		Wkly	Mthly	Seasonal				As Required	As Specified Below
				Su	Au	Wi	Sp		
All Areas	*(Summarised from Section 3 of this LMP)*								
1. Pruning of Vegetation for Safety	Maintaining driver and pedestrian sightlines		■						Monitored Monthly, actioned as required
	Vegetation in intersection traffic islands		■						
	Pruning trees over carriageways, roads, paths and cycle ways.							■	
2. Management of Non Frangible Vegetation	Remove woody “non-frangible” vegetation in setbacks							■	As Required
3. Noxious Weed Control	Treat noxious weeds according to control category		■						
4. Rubbish Removal	Remove all roadside litter and debris.		■						And prior to Mowing
5. Auditing and Reporting	Audit and report on maintenance and additional works								Every three months
Grass Areas (Mown) Only	*(Summarised from Section 3 of this LMP)*								
1. Mowing	Mow grass to a minimum height of 50mm and a maximum height of 100mm.			■	`				Every 6 weeks
	Mow grass to a minimum height of 50mm and a maximum height of 100mm.				■		■		Every 8 weeks

Maintenance Actions	Tasks	Timeframes / Frequency							
		Wkly	Mthly	Seasonal				As Required	As Specified Below
				Su	Au	Wi	Sp		
	Mow grass to a minimum height of 50mm and a maximum height of 100mm.					■			Every 12 weeks
2. Replacement of Damaged Grass	Re-establish damaged turf.							■	
3. Weed Control in Grass	Control weeds in turf areas using selective biodegradable herbicide [1].		■						
Vegetation (Hydromulch) areas	*(Summarised from Section 3 of this LMP)*								
1. Weeding	Weed garden beds (manual or biodegradable herbicide) before weed seed set [1].		Bi-monthly						Use biodegradable herbicide only
	Replace landscape plants damaged or killed by herbicide.							■	Should this happen it suggests improper use. Review manufactures instructions and application method
2. Remove Dead/Dying Vegetation	Cut back and remove dead or dying planting material. Do not pull root out. Replace topsoil as required. Prepare topsoil by loosening surface. Ensure topsoil depth is even across affected area and has a smooth transition into the existing vegetation.							■	
3. Replacement Hydromulch	Reapply hydromulch as per specification. Hydromulch seed mix as per vegetation plans and equal to what has been applied previously. Apply sufficient hydromulch to achieve consistent vegetation cover over affected area							■	When possible, apply hydromulch during optimum seasonal conditions
Planting (Tubestock) areas	*(Summarised from Section 3 of this LMP)*								

Maintenance Actions	Tasks	Timeframes / Frequency							
		Wkly	Mthly	Seasonal				As Required	As Specified Below
				Su	Au	Wi	Sp		
1. Weeding	Weed planting area (manual or biodegradable herbicide) before plant flowers [1].		Bi-monthly						Use biodegradable herbicide only
	Replace landscape plants damaged or killed by herbicide.							■	Should this happen it suggests improper use. Review manufactures instructions and application method
2. Mulching	Reapply mulch to replaced plantings (tubestock) to a depth of 75 mm min Do not apply mulch in areas within water zone ie ponds and creek lines							■	
3. Removal of Dead / Dying Plant Material	Remove dead or dying planting material							■	
4. Replacement Plantings	Replace failed plantings with specified species and densities.							■	
	Irrigate replacement plantings for 12 weeks.	■							
5. Stakes	Check and repair damaged stakes during establishment.							■	
	Replace damaged stakes during establishment.								■
	Remove stakes.								12 months after planting or as required
6. Fertilising and Pruning	Fertilise all plantings at specified rates.							■	At time of planting

Maintenance Actions	Tasks	Timeframes / Frequency							
		Wkly	Mthly	Seasonal				As Required	As Specified Below
				Su	Au	Wi	Sp		
	Prune all plantings in specified manner:								Refer All Areas, Point 1
Landscape Planting Beds Only	*(Summarised from Section 3 of this LMP)*								
1. Weeding	Weed garden beds (manual or biodegradable herbicide) before planting flowers [1].		■						Use biodegradable herbicide only
	Replace landscape plants damaged or killed by herbicide.							■	Should this happen it suggests improper use. Review manufactures instructions and application method
2. Mulching	Reapply mulch to replaced plantings to a depth of 75 mm min							■	
3. Removal of Dead / Dying Plant Material	Remove dead or dying planting material and replace.							■	
4. Replacement Plantings	Replace failed plantings with specified species and densities.							■	
	Irrigate replacement plantings for 12 weeks.	■							
5. Stakes	Replace damaged stakes during establishment.							■	
	Remove stakes.								18 months after planting or as required

Maintenance Actions	Tasks	Timeframes / Frequency												
		Wkly	Mthly	Seasonal				As Required	As Specified Below					
				Su	Au	Wi	Sp							
6. Fertilising and Pruning	Fertilise all plantings at specified rates.								Or as required					
	Prune all plantings in specified manner:													
	▪ Trees								refer All Areas Point 1					
	▪ Tall / Medium / Low Shrubs								After Flowering. Allow to grow to full potential					
	▪ Climbers								Once per year following completion of the maintenance period. Allow to grow to full potential					
	▪ Groundcover / Tussocks								After Flowering. Allow to grow to full potential Every 4 years					
Areas of Special Consideration														
1. Refer Section 3.8														

1 *"The RMS Pesticide Use Notification Plan must be followed prior to herbicide application"*
The Plan is available on the RMS Website at: http://www.RMS.nsw.gov.au/environment/downloads/RMS_pesticide_plan_040107.pdf

2 MAINTENANCE ACTIONS

Maintenance actions to be undertaken under this LMP are divided into two categories based on which landscape type is being maintained:

1. ***Actions for All Areas*;**

   Actions that apply to ALL landscape types / areas.

2. ***Specific Actions for Different Landscape Types*.**

   In addition to actions that apply to all landscape types / areas, these actions are applied to a specific landscape type.

2.1 ALL AREAS

The following maintenance actions are to be implemented by all maintenance authorities (with reference to the Table of Responsibilities Section 1.3) across all areas of this LMP.

2.1.1 PRUNING OF VEGETATION FOR SAFETY

- Pruning to maintain driver sight lines; pruning to remove dead wood from over hanging paths, cycle-ways and roads.
- Prune to an extent where driver sightlines will not re-occur as a problem in the period to next routine maintenance without compromising overall form and growth potential of plant.

Actions Required	Frequency
Maintaining driver sight lines	
Within the sightline zone, prune all roadside vegetation, to a height of 300mm, when:	
Vegetation obscures any part of horizontal railing of safety barriers, when viewed from approaching traffic within 300 m of all intersections and access roads.	Monthly
Pruning trees over carriageways, roads, paths and cycle ways	
Prune all roadside vegetation over carriageways, roads, paths and cycle ways when it is:	
Carriageways / Roads:	Lower than 5.5 m above carriageway
Paths and Cycle ways:	Lower than 3.3 m above path or cycleway
All areas:	Overhanging dead / diseased/ badly damaged trees or limbs.

2.1.2 MANAGEMENT OF NON FRANGIBLE VEGETATION

To ensure that non frangible vegetation is removed in dangerous areas in accordance with Roads and Maritime safety standards:

Actions Required		Frequency
Remove woody regeneration / woody weeds (ie. where trunk diameter exceeds 150 mm measured at 300 mm from the ground) in setback area by manual removal if present in the following areas:		Annual
Set backs from edge of travel lane:		
With safety rail present:	6 m	
With no safety rail present, setback varies as follows:		
▪ <70 km/h speed zones	4 m	
▪ 70-90 km/h speed zones	5 m	
▪ >90 km/h speed zones:	11 m	

2.1.3 NOXIOUS WEED CONTROL

Noxious weeds continuously controlled as per legal requirements:

Actions Required	Frequency
Continuously suppress and destroy, in accordance with their control category, the growth of all declared noxious weeds where present or where they establish. Of particular concern are: • The areas planted with Pasture Grass. These areas must remain free of noxious weeds, in particular Giant Parramatta Grass; • All areas where site topsoil has been re-spread. Site topsoil has been noted to contain Lantana seed.	Monthly
Declared noxious weed species within the area are listed in Appendix B – Noxious Weed Species and Control Categories of this LMP.	

2.1.4 RUBBISH REMOVAL

Litter and roadside debris removal:

.

Actions Required	Frequency
Remove all roadside litter and debris.	Monthly and prior to mowing.

2.1.5 AUDITING AND REPORTING

Regular auditing and reporting on maintenance works undertaken and additional works required:

Actions Required	Frequency
Inspection of entire site to report on LMP maintenance compliance, report and enact remedial works.	Every 1 month
An auditing and reporting form is provided in Appendix 3 – Three Monthly Maintenance Audit of this LMP.	

3 SPECIFIC LANDSCAPE TYPES

3.1 GRASS AREAS (MOWN)

The following maintenance actions are to be implemented by all maintenance authorities in grassed areas (mown).

The extent of grassed areas (mown) are illustrated on the Landscape Plans (refer *Appendix A*)

3.1.1 MOWING

Maintain grassed areas for neat appearance and to maintain groundcover:

Actions Required	Frequency
Remove litter prior to mowing. Mow grass at road side and rest areas to a min height of 50 mm and max height of 100 mm. Do not scalp grass. Clippings to remain where they fall except that: road surfaces, drains, footpaths, picnic areas shall be swept or raked clear of clippings and these clippings shall be removed from site.	Spring – Every 8 weeks Summer – Every 6 weeks Autumn – Every 8 weeks Winter – Every 12 weeks

3.1.2 REPLACEMENT OF DAMAGED GRASS

Replacement of grass damaged by vehicles or other disturbances:

Actions Required	Frequency
Re-establish grass cover immediately after damage / death / removal. Use originally specified species.	As Required

3.1.3 WEED CONTROL IN GRASS

Ensure that grass remains weed free:

Actions Required	Frequency
Control, through the use of selective herbicides, the establishment and growth of weed species in turf. Herbicide use to be in accordance with regulation rates and manufacturers recommendations. Dye (colour: red) is to be added to herbicides to show extent of treated area.	Monthly

3.2 VEGETATION AREAS (SEEDING)

The following maintenance issues and actions are to be implemented by all maintenance authorities in vegetation seeded areas.

The extent of vegetation seeded areas is illustrated on the Landscape Plans (refer *Appendix A*).

3.2.1 WEEDING

To ensure that environmental weeds do not reproduce within vegetation seeded areas and compete with vegetation:

Weeding and weed control is considered to be a critical maintenance action.

Actions Required	Frequency
Prevent reproduction of weeds by destroying seedlings and established weeds before seed set or other propagules form. Weeds to not exceed 10% cover in any 50m2 area. • Herbicide application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. • Herbicide use to be in accordance with regulation rates and manufacturers recommendations. • Dye is to be added to herbicides to show extent of treated area. • Use of bio-degradable herbicide is encouraged	Monthly

3.2.2 REMOVAL OF DEAD / DYING PLANT MATERIAL

To remove dead or dying plant material from landscapes:

This action may be required as plantings mature, after damage, during adverse environmental conditions or to facilitate the re-application of hydromulch.

Actions Required	Frequency
Remove dead or dying plant material only if contact between re-applied hydromulch and ground will not occur. Preference is to slash and leave existing dead or dying plant material to act as additional mulch material if there is no danger of material falling onto the carriageway	As required.
Replacement of plantings in accordance with actions listed in 3.2.3 Re-application of Hydromulching (below)	

3.2.3 RE-APPLICATION OF HYDROMULCHING/HYDROSEEDING AND STRAWMULCHING

To ensure density and species of vegetation is maintained:

Actions Required	Frequency
See 3.8.1 Batter Revegetation Management Strategy	
The species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Plans – refer Appendix A.	

3.3 PLANTING AREAS (TUBESTOCK)

The following maintenance issues and actions are to be implemented by all maintenance authorities in Planting Areas (Tubestock). The extent of Planting Areas (Tubestock) are illustrated on the Landscape Plans (refer *Appendix A*).

3.3.1 WEEDING

To ensure that environmental weeds do not reproduce within planted beds and compete with plantings:

Weeding and weed control is considered to be a critical maintenance action.

Actions Required	Frequency
Prevent reproduction of weeds by destroying seedlings and established weeds before seed set or other propagules form. Weeds to not exceed 10% cover in any 50m2 area. • Herbicide application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. • Herbicide use to be in accordance with regulation rates and manufacturers recommendations. • Dye is to be added to herbicides to show extent of treated area. • Use of bio-degradable herbicide is encouraged	Monthly

3.3.2 REMOVAL OF DEAD / DYING PLANT MATERIAL

To remove dead or dying plant material from landscapes:

This action may be required as plantings mature, after damage, during adverse environmental conditions.

Actions Required	Frequency
Remove dead or dying plant material.	As required.
Replacement of plantings in accordance with actions listed in 3.3.3 Replacement Plantings (below)	

3.3.3 REPLACEMENT PLANTINGS

To ensure that the density and species of established plant material is maintained:

Actions Required	Frequency
Replace failed, senescent or damaged plantings. Densities, sizes and species used are to be in accordance with those specified in the original landscape plans.	As Required
Irrigate replacement plantings for a minimum of 12 weeks after planting.	Weekly.
The species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Plans – refer Appendix A.	

3.3.4 STAKES

To replace stakes when damaged and to remove when no longer required:

Actions Required	Frequency
Replace stakes if damaged or removed prior to plant establishment. Replace with same or equivalent stake.	As required.
Remove stakes.	As required , no more than18 months after planting

3.4 LANDSCAPE PLANTING BEDS

The following maintenance issues and actions are to be implemented by all maintenance authorities in landscape planting beds.

The extent of landscape planting beds, are illustrated on the Landscape Plans (refer *Appendix A*).

3.4.1 WEEDING

To ensure that environmental weeds do not reproduce within planted beds and compete with plantings:

Weeding and weed control is considered to be a critical maintenance action.

Actions Required	Frequency
Prevent reproduction of weeds by destroying seedlings and established weeds before seed set or other propagules form. Weeds to not exceed 10% cover in any 50m2 area. • Herbicide application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. • Herbicide use to be in accordance with regulation rates and manufacturers recommendations.	Monthly
Dye (colour: red) is to be added to herbicides to show extent of treated area.	

3.4.2 REMOVAL OF DEAD / DYING PLANT MATERIAL

To remove dead or dying plant material from landscapes:

This action may be required as plantings mature, after damage, during adverse environmental conditions.

Actions Required	Frequency
Remove dead or dying plant material.	As required.
Replacement of plantings in accordance with actions listed in 3.4.3 Replacement Plantings (below)	

3.4.3 REPLACEMENT PLANTINGS

To ensure that the density and species of established plant material is maintained:

Actions Required	Frequency
Replace failed, senescent or damaged plantings. Densities, sizes and species used are to be in accordance with those specified in the landscape plans.	As Required
Irrigate replacement plantings for a minimum of 12 weeks after planting.	Weekly.
The species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Plans – refer Appendix A.	

3.4.4 STAKES

To replace stakes when damaged, and to remove when no longer required:

Actions Required	Frequency
Replace stakes if damaged or removed prior to plant establishment. Replace with same or equivalent stake.	As required.
Remove stakes.	As required, not more than18 months after planting.

3.4.5 HORTICULTURAL MAINTENANCE OF PLANTINGS

Horticultural maintenance of advanced plantings will ensure the long life and maintenance of form.

Section 3.5 outlines the standards required for pruning and fertilising all Landscape Planted Beds or Feature Plantings.

3.5 TREES - FEATURE PLANTING

Botanic Name	Common Name	Pruning Type
Waterhousia floribunda	Weeping Lilly Pilly	B (Species for headlight screening – Maintain branching to ground)
Corymbia maculata	Spotted Gum	A
Eucalyptus microcorys	Tallowood	A
Eucalyptus pilularis	Blackbutt	A
Eucalyptus tereticornis	Forest Red Gum	A
Cupaniopsis anacardioides	Tuckeroo	A
Elaeocarpus obovatus	Blueberry Ash	A
Livistona australis	Cabbage Tree Palm	N/A

For all tree species, the following fertilising and pruning is required:

Apply the following fertiliser to all species:

Fertilising	Frequency
60 grams slow release fertiliser per plant. N:P:K ratio– 20:4:8 (The above fertiliser rates are in addition to those specified in the landscape details required at time of planting)	Annually or as required Applied Late Spring.

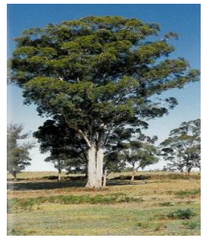
Pruning Type		Frequency
A	Prune to remove split leaders, remove dead limbs, and remove heavily damaged limbs. As maturity permits prune lower branches to collar to 5.5 m above ground level where these overhang carriageways and roads. In other areas, prune lower branches to 3.3m above ground level.	As required.
B	Prune to remove split leaders, remove dead limbs, and remove heavily damaged limbs. As maturity permits prune lower branches to 1 m above ground level	As required.

Corymbia maculata

Cupaniopsis anarcardioides

Elaeocarpus obovatus

Eucalyptus microcorys



Eucalyptus pilularis

Eucalyptus tereticornis

Livistona australis

Waterhousia floribunda

3.6 FEATURE PLANTING-SHRUBS

Botanic Name	Common Name	Pruning Type	Max. Height.(m)
Acmena smithii	*Lilly Pilly*	C	6-8
Callistemon salignus	Willow Bottlebrush	C	6
Elaeocarpus reticulatus	*Blueberry Ash*	A	N/A
Hibiscus splendens	Pink Hibiscus	C	6

For all shrub species, the following fertilising and pruning is required:

	Apply the following fertiliser to all species:	
Fertilising		**Frequency**
	30 grams slow release fertiliser per plant. N:P:K ratio– 20:4:8	Annually or as required Applied Late Spring.
	Prune species as per appropriate type:	
Pruning		**Frequency**
A	Prune to remove split leaders, remove dead limbs, and remove heavily damaged limbs. As maturity permits prune lower branches to collar to 5.5 m above ground level where these overhang carriageways and roads. In other areas, prune lower branches to 3.3m above ground level.	As required.
C	Prune evenly to promote compact shape (to specified max. height). Remove 200 to 300mm (depending on vigour of previous plant growth) length of branches all around the plant.	Only as directed by a suitably qualified Landscape Representative

Acmena smithii

Elaeocarpus reticulatus

Hibiscus splendens

Callistemon salignus

3.7 FEATURE PLANTING-GROUND COVERS / LOW TUSSOCKS

Botanic Name	Common Name	Pruning Type
Carex appressa	Tall Sedge	None
Dianella caerulea	Blue Flax Lily	None
Gahnia sieberiana	Red-fruited Saw-sedge	None
Isolepis inundata	Swamp Club-rush	None
Lomandra hystrix	Mat Rush	None
Lomandra multiflora	Many-flowered Mat Rush	None
Oplismenus aemulus	Basket Grass	None
Philydrum lanuginosum	Frogmouth	None
Themeda australis	Kangaroo Grass	None
Crinum pedunculatum	Swamp Lily	None

For all groundcover and low tussock species, the following fertilising is required: (pruning not required)

Apply the following fertiliser to all species:

Fertilising	Frequency
20 grams slow release fertiliser per plant. N:P:K ratio– 20:4:8 (The above fertiliser rates are in addition to those specified in the landscape details required at time of planting)	Annually or as required Applied Late Spring.

Lomandra multiflora subsp. multiflora

Dianella caerulea

Lomandra hystrix

Lomandra longifolia

Carex appressa

Crinum pedunculatum

Gahnia sieberiana

Isolepis inundata

Oplismenus aemulus

Philydrum lanuginosum

Themeda australis

3.8 AREAS OF SPECIAL CONSIDERATION

The following maintenance issues and actions are to be implemented by all maintenance authorities in areas of special consideration.

The extent of special areas is illustrated generally on the Landscape Plans (refer *Appendix A*).

3.8.1 BATTER RE-VEGETATION MANAGEMENT STRATEGY

A batter management strategy is recommended as part of the long-term management of the road to ensure batter stability through the successful establishment of vegetation. The strategy will be audited and revised as required.

Activity	Intervention	Repair Standards
1. Topsoil and hydroseed followed by strawmulching or hydromulching only	At areas where rilling only occurs	After initial growing season or next failure. Vegetation is established and binds soil within first growing season, halting rilling.
2. Topsoil and hydroseed followed by strawmulching or hydromulching only	Where areas larger than rilling occur After previous option fails	Reapply topsoil as specified in Landscape Plans and ensure an even finish and matches existing ground levels. Vegetation is established and binds soil within first growing season.
3. Engineered solutions may include anchor mat, or meshes	At slopes of 2:1 or steeper After previous options fail	Apply topsoil type to ensure successful vegetation growth. Topsoil depth as per the 'Enkamat' or equivalent manufactures recommendations. Vegetation is established and binds soil within first growing season.
4. One of the previous treatments plus Tubestock planting	After previous options fail and only in those areas where tree planting is permitted ie not interfering with sight-lines or within a setback zone	Vegetation is established and binds soil within first growing season.
5. Lastly shotcrete (although shotcrete is not preferred and would require urban design treatments to be visually acceptable	After previous options fail	

- The cause of rilling should be identified and rectified before reapplication of topsoil etc.
- All plant species, hydroseeding and tubestock to be as per the Landscape Plans.

- Geo-technical advice is recommended for each situation to identify potential variations in the physical properties of the underlying geology which may impact on the practicality of planting vegetation community type on a single cut batter. Final plant selection was varied to match the final exposed geological properties without variation to the design intent as best as possible.
- Final plant selection for use at these locations should be as per the Landscape Plans to match those species in the existing adjacent vegetation community and that tolerate drier conditions due to potentially lower or non-existent water table.

3.8.2 ACID SULFATE ROCK

ASR leachate will occur where there are linear geological structures such as fissures and faults in rock cuttings. The batter revegetation management strategy activities 1, 2 and 3 at section 3.8.1 are to be implemented by all maintenance authorities where the landscape remediation for Acid Sulfate leachate occurs.

In addition, ensure re-applied topsoil is worked into the Enkamat or equivalent profile prior to application of hydromulch.

3.8.3 NATIVE GRASSES

To ensure that native grasses are maintained in a way that supports their survival and persistence in the landscape:

Actions Required	Frequency
Mow all areas of native grasses flatter than 3H:1V. Do not mow during flowering and seeding. Where mowing is required at this time, mow in a pattern that allows sections of at least 50% of any given area to persist with flowering seed heads. Maintain length not less than 200mm.	Minimum of once per year to a maximum of two times per year
Native Grass Areas steeper than 3H:1V (and including all other areas where burning may replace mowing as a management tool) may be maintained by controlled / planned fire according to ecological and catchment requirements; in some communities, no planned fire will be applied, but in other areas fire will be applied within a defined fire frequency range and prescription. The action must be co-ordinated with Roads and Maritime, Rural Fire Service and Local Council.	As required
The species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Plans – refer Appendix A.	

3.8.4 FAUNA UNDERPASSES

To ensure integrity of the fauna underpasses is maintained:

Actions Required	Frequency
Remove all plant growth from fence ie; vine growth	As required
Remove all fallen branches and tree limbs that are leaning or resting on or against the fence or fauna crossing paths	As required
Maintain the grassed access path across the underpass to maintain height to 300mm max.	As required
Provide surveillance for evidence of predators such as foxes, cats and wild dogs and report to the Office of Environment and Heritage if suspected.	Monthly
Maintain fauna refuge poles in good condition and repair where necessary	As required

3.8.5 FAUNA FENCE

To ensure integrity of the fauna fence is maintained.

Actions Required	Frequency
Remove all plant growth from fence i.e. vine growth	As required
Remove all fallen branches and tree limbs that are leaning or resting on or against the fence	As required
Maintain height of planting to maximum 300mm in height within 2 metres and remove all naturally occurring tree species within 3 metres of the non-road side of the fence.	As required
Maintain height of planting to maximum 300mm in height within 1m and remove all naturally occurring tree species within 2 metres on the road side of the fence except where shown on the landscape plans.	As required

3.8.6 WATER QUALITY BASINS AND VEGETATED CHANNELS

To ensure integrity of the Water Quality Basins and vegetated channels is maintained.

Actions Required	Frequency
Maintain grass species as per section 3.8.3 Native Grasses where native grass is specified or section 3.1 Grassed Areas (mown) where Pasture Grass is specified.	Refer Sections 1.5. and 3.8.3.
Weed macrophyte zones and embankments	As required but only during dry periods when no water is present
Macrophyte Zones should require no special attention except through periods of prolonged drought when local tree species may colonise the basins. These are to be removed.	As required
If spills occur or when silt build-up requires removal, macrophytes may require total replacement as per the landscape plans	As required
The species density and species selections specified for basins (margin zone planting) zones covered by this LMP are provided in the Landscape Plans – refer Appendix A.	

3.8.7 THREATENED SPECIES

Actions Required	Frequency
Care is to be taken not to harm threatened species (listed below) and endangered ecological communities EEC's within the road corridor. The location of all the threatened species is to be documented along with a monitoring report as per the CEMP and Sub-plans prepared for this project.	Location of all known threatened species within the corridor to be mapped prior to opening. There is an ongoing requirement to avoid damage to threatened species during maintenance activities.

Acronychia littoralis	Scented acronychia
Arthraxon hispidus	Hairy-joint Grass
Maundia triglochinoides	Maundia
Melaleuca biconvexa	Biconvex Paperbark
Parsonsia dorrigoensis	Milky Silkpod
Phaius australis	Southern Swamp Orchid
Phaius tankervilleae	Swamp Orchid

EEC's - Moist Floodplain Closed Forest with Rainforest Elements
- Riprian Forest
- Paperbark Swamp Forest

3.8.8 ANCILLARY SITE WORKS

There are a number of areas on the landscape plans that state “Extent of Works to be confirmed on site”. The actual extent of disturbance to be restored on these sites is to be confirmed on site with the Roads and Maritime representative at the completion of works. This work is documented below.

Actions Required	Frequency
1. Batch Plants 2. Compounds 3. Stockpiles 4. Other areas	
Adjust extent of landscape works on site to suit. These yards will be in place during the maintenance period, after which the yard will be the subject of further landscape remediation.	Completion of works

3.8.9 REST AREAS NORTHBOUND AND SOUTHBOUND

To ensure that the integrity and standard of the rest area is maintained for public amenity.

Actions Required	Frequency
Remove all rubbish to prevent the blocking of castellated kerb. Remove rubbish from vegetated swales.	As required
Remove all fallen branches and tree limbs that are leaning or resting on or against water quality pond fences	As required
Maintain grassed areas as per “mowing”	As per “mowing”
Maintain grassed septic absorption area as per mowing to maintain grass and removing clippings	As per “mowing”
Visually inspect amenities and alert Roads and Maritime to any actions (such as vandalism or inoperable equipment) required outside the scope of the landscape maintenance	As required
The species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Plans	

3.8.10 RIPARIAN ZONES AND CREEK CROSSINGS

To ensure that integrity of riparian zones is maintained for resilience to flooding.

Actions Required	Frequency
Remove all rubbish and fallen branches to prevent the blocking of bridges or culverts. Remove rubbish from vegetated zones.	As required
Inspection following abnormal rainfall events to assess any damage caused by increased flows. Take remedial action as for All Areas, replacement plantings, horticultural maintenance of plantings and batter re-vegetation management strategy.	As required
Repair organic fibre Mesh where damage or lifting has occurred.	As required
The species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Plans – refer Appendix A.	

3.8.11 MYRTLE RUST

To ensure that Myrtle Rust is not spread due to activity within the corridor.

Myrtle rust (Puccinia psidii s.l.) is a newly described fungus that is closely related to the Eucalyptus/Guava rusts. These rusts are serious pathogens which affect plants belonging to the family Myrtaceae including Australian natives like bottle brush (Callistemon spp.), tea tree (Melaleuca spp.) and eucalypts (Eucalyptus spp.) and is widespread on the eastern seaboard.

Myrtle rust is distinctive in that it produces masses of powdery bright yellow or orange-yellow spores on infected plant parts. It infects leaves of susceptible plants producing spore-filled lesions on young actively growing leaves, shoots, flower buds and fruits. Leaves may become buckled or twisted and may die as a result of infection. Sometimes these infected spots are surrounded by a purple ring. Older lesions may contain dark brown spores. Infection on highly susceptible plants may result in plant death.

Myrtle Rust is regarded as being widely distributed throughout the Kundabung to Kempsey section of the Pacific Highway therefore landscape managers of the highway have a responsibility to report occurrences, control and prevent the spread of Myrtle Rust.

The NSW Office of Environment and Heritage have prepared a plan outlining how myrtle rust will be managed on the national park estate in NSW, including the potential impacts of myrtle rust on threatened species. The plan also provides guidance to managers of other bushland and threatened species sites including the K2K section of the Pacific Highway. The plan is available at;

http://www.environment.nsw.gov.au/resources/pestsweeds/110683myrtlerustmp.pdf

More information on myrtle rust and guidance for managing myrtle rust in other environments can be found on the NSW Department of Primary Industries website at;

www.dpi.nsw.gov.au/biosecurity/plant/myrtle-rust

LANDSCAPE PLANS

To be provided during the contract period

NOXIOUS WEED SPECIES

The link below contains a list of the Noxious Weed species that have been declared for the land covered by this LMP.

Maintenance staff should be familiarised with the identification of these species as their control (in accordance with the control category) is a legal requirement under the NSW Noxious Weeds Act.

Control techniques for these species are to be consistent the standards / practices outlined in the Noxious and Environmental Weed Control Handbook 2011. Copies of this handbook can be downloaded for free from:
http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/123317/Noxious-and-environmental-weed-control-handbook.pdf

Where control standards have not been clearly defined for a species, control is to utilise chemicals (where required) that are registered for use on the species or control techniques that minimise environmental impacts.

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APPENDIX C WEED SPECIES LIST

Table 2.1 MID NORTH COAST REGION DECLARED NOXIOUS WEEDS

The following table details the noxious weeds declared within the Mid North Coast Weeds Advisory Committee area.

Plants Declared Noxious (per *Noxious Weeds Act 1993* as Gazetted) **Class 1** - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – State prohibited) **Class 2** - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – Regionally prohibited) **Class 3** - The plant must be fully and continuously suppressed and destroyed (Regionally controlled) **Class 4** - The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority (Locally controlled) **Class 5** - Requirements in the *Noxious Weeds Act 1993* for a notifiable weed must be complied with (Notifiable – Sale restricted) *(WoNS)* = Weed of National Significance - Denotes no Declaration * Denotes sale restricted Correct as at 06/10/2006		**Local weed control authorities**				
		Great Lakes	**Gloucester**	**Greater Taree**	**Port Macquarie - Hastings**	**Kempsey**
Common Name	**Botanical Name**	**Class of weed**				
African Boxthorn	*Lycium ferocissimum*	4	4	-	-	-
African Feather Grass *	*Pennisetum macrourum*	5	5	5	5	5
African Turnip Weed *	*Sisymbrium runcinatum*	5	5	5	5	5
African Turnip Weed *	*Sisymbrium thellungii*	5	5	5	5	5
Alligator Weed *(WoNS)* *	*Alternanthera philoxeroides*	2	2	2	2	2
Anchored Water Hyacinth *	*Eichhornia azurea*	1	1	1	1	1
Annual Ragweed *	*Ambrosia artemisiifolia*	5	5	5	5	5
Arrowhead *	*Sagittaria montevidensis*	5	5	5	5	5
Artichoke Thistle *	*Cynara cardunculus*	5	5	5	5	5
Athel Tree/Athel Pine *(WoNS)* *	*Tamarix aphylla*	5	5	5	5	5
Bathurst/Noogoora/Californian/ Cockle Burrs	*Xanthium spp*	4	4	4	4	4
Bear-skin Fescue	*Festuca gautieri*	5	5	5	5	5
Bitou Bush *(WoNS)* *	*Chrysanthemoides monilifera ssp rotundata*	4	-	4	4	4
Black Knapweed *	*Centaurea nigra*	1	1	1	1	1
Blackberry *(WoNS)* *	*Rubus fruticosus agg spp*	4	4	4	4	4
Boneseed *	*Chrysanthemoides monilifera ssp monilifera*	4	-	4	4	4
Bridal Creeper *(WoNS)* *	*Myrsiphyllum asparagoides*	5	5	5	5	5
Broadleaf Pepper Tree *	*Schinus terebinthifolius*	3	3	3	3	3
Broomrapes *	*Orobanche spp* except the native spp *O. cernua* var *australiana* & *O. minor*	1	1	1	1	1
Burr Ragweed *	*Ambrosia confertiflora*	5	5	5	5	5
Cabomba *(WoNS)* *	*Cabomba caroliniana*	5	5	5	5	5
Cayenne Snakeweed *	*Stachytarpheta cayennensis* *Stachytarpheta urticifolia*	5	5	5	5	5
Chilean Needle Grass *(WoNS)* *	*Nassella neesiana*	4	4	4	4	4
Chinese Celtis *	*Celtis sinensis*	3	3	3	3	3
Chinese Violet *	*Asystasia gangetica ssp micrantha*	1	1	1	1	1
Clockweed *	*Gaura lindheimeri*	5	5	5	5	5
Clockweed *	*Gaura parviflora*	5	5	5	5	5
Columbus Grass	*Sorghum x almum*	4	4	4	4	4
Corn Sowthistle *	*Sonchus arvensis*	5	5	5	5	5
Crofton Weed	*Ageratina adenophora*	4	4	4	4	4
Dodder *	*Cuscuta spp* except the native spp *C.australis*, *C. Tasmania* & *C. victoriana*	5	5	5	5	5

Plants Declared Noxious (per *Noxious Weeds Act 1993* as Gazetted) **Class 1** - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – State prohibited) **Class 2** - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – Regionally prohibited) **Class 3** - The plant must be fully and continuously suppressed and destroyed (Regionally controlled) **Class 4** - The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority (Locally controlled) **Class 5** - Requirements in the *Noxious Weeds Act 1993* for a notifiable weed must be complied with (Notifiable – Sale restricted) *(WoNS)* = Weed of National Significance - Denotes no Declaration * Denotes sale restricted Correct as at 06/10/2006		**Local weed control authorities**				
		Great Lakes	**Gloucester**	**Greater Taree**	**Port Macquarie - Hastings**	**Kempsey**
Common Name	**Botanical Name**	**Class of weed**				
East Indian Hygrophila *	*Hygrophila polysperma*	1	1	1	1	1
Egeria	*Egeria densa*	5	5	5	5	5
Espartillo *	*Achnatherum brachychaetum*	5	5	5	5	5
Eurasian Water Milfoil *	*Myriophyllum spicatum*	1	1	1	1	1
Fine-Bristled Burr Grass *	*Cenchrus brownii*	5	5	5	5	5
Fountain Grass *	*Pennisetum setaceum*	5	5	5	5	5
Gallon's Curse *	*Cenchrus biflorus*	5	5	5	5	5
Giant Parramatta Grass	*Sporobolus fertilis*	4	3	4	4	4
Giant Rats Tail Grass	*Sporobolus pyramidalis*	3	3	3	3	3
Glaucous Starthistle *	*Carthamus glaucus*	5	5	5	5	5
Golden Dodder	*Cuscuta campestris*	4	4	4	4	-
Golden Thistle *	*Scolymus hispanicus*	5	5	5	5	5
Green Cestrum *	*Cestrum parqui*	3	3	3	3	3
Groundsel Bush *	*Baccharis halimifolia*	3	3	3	3	3
Harrisia Cactus *	*Eriocereus spp*	4	4	4	4	4
Hawkweed *	*Hieracium spp*	1	1	1	1	1
Horsetail *	*Equisetum* species	1	1	1	1	1
Hygrophila *	*Hygrophila costata*	2	-	2	2	2
Hymenachne *(WoNS)* *	*Hymenachne amplexicaulis*	1	1	1	1	1
Johnson Grass	*Sorghum halepense*	4	4	4	4	4
Karoo Thorn *	*Acacia karroo*	1	1	1	1	1
Kochia *	*Bassia scoparia / Kochia scoparia*	1	1	1	1	1
Lagarosiphon *	*Lagarosiphon major*	1	1	1	1	1
Lantana (All) *(WoNS)* *	*Lantana spp*	5	5	5	5	5
Lantana (Red Flowering) *(WoNS)* *	*Lantana camara*	4	4	4	4	4
Long-Leaf Willow Primrose *	*Ludwigia longifolia*	4	4	4	4	4
Mexican Feather Grass *	*Nassella tenuissima*	1	1	1	1	1
Mexican Poppy *	*Argemone mexicana*	5	5	5	5	5
Miconia *	*Miconia spp*	1	1	1	1	1
Mimosa *(WoNS)* *	*Mimosa pigra*	1	1	1	1	1
Mintweed	*Salvia reflexa*	4	-	-	-	-
Mossman River Grass *	*Cenchrus echinatus*	5	5	5	5	5
Mother Of Millions *	*Bryophyllum spp*	3	3	3	3	3
Nodding Thistle	*Carduus nutans*	-	4	4	4	-
Onion Grass *	*Romulea spp & vars* except *R. rosea* var. *australis*	5	5	5	5	5
Oxalis *	All *Oxalis* spp and vars except the natives *O. chnoodes*, *O. exilis*, *O. perennans*, *O. radicosa*, *O. rubens*, & *O. thompsoniae*	5	5	5	5	5
Pampas Grass *	*Cortaderia spp*	4	4	4	4	4
Parthenium Weed *(WoNS)* *	*Parthenium hysterophorus*	1	1	1	1	1

Plants Declared Noxious (per *Noxious Weeds Act 1993* as Gazetted)		**Local weed control authorities**				
Class 1 - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – State prohibited) **Class 2** - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – Regionally prohibited) **Class 3** - The plant must be fully and continuously suppressed and destroyed (Regionally controlled) **Class 4** - The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority (Locally controlled) **Class 5** - Requirements in the *Noxious Weeds Act 1993* for a notifiable weed must be complied with (Notifiable – Sale restricted) *(WoNS)* = Weed of National Significance - Denotes no Declaration * Denotes sale restricted Correct as at 06/10/2006		**Great Lakes**	**Gloucester**	**Greater Taree**	**Port Macquarie - Hastings**	**Kempsey**
Common Name	**Botanical Name**	**Class of weed**				
East Indian Hygrophila *	*Hygrophila polysperma*	1	1	1	1	1
Egeria	*Egeria densa*	5	5	5	5	5
Espartillo *	*Achnatherum brachychaetum*	5	5	5	5	5
Eurasian Water Milfoil *	*Myriophyllum spicatum*	1	1	1	1	1
Fine-Bristled Burr Grass *	*Cenchrus brownii*	5	5	5	5	5
Fountain Grass *	*Pennisetum setaceum*	5	5	5	5	5
Gallon's Curse *	*Cenchrus biflorus*	5	5	5	5	5
Giant Parramatta Grass	*Sporobolus fertilis*	4	3	4	4	4
Giant Rats Tail Grass	*Sporobolus pyramidalis*	3	3	3	3	3
Glaucous Starthistle *	*Carthamus glaucus*	5	5	5	5	5
Golden Dodder	*Cuscuta campestris*	4	4	4	4	-
Golden Thistle *	*Scolymus hispanicus*	5	5	5	5	5
Green Cestrum *	*Cestrum parqui*	3	3	3	3	3
Groundsel Bush *	*Baccharis halimifolia*	3	3	3	3	3
Harrisia Cactus *	*Eriocereus spp*	4	4	4	4	4
Hawkweed *	*Hieracium spp*	1	1	1	1	1
Horsetail *	*Equisetum* species	1	1	1	1	1
Hygrophila *	*Hygrophila costata*	2	-	2	2	2
Hymenachne *(WoNS)* *	*Hymenachne amplexicaulis*	1	1	1	1	1
Johnson Grass	*Sorghum halepense*	4	4	4	4	4
Karoo Thorn *	*Acacia karroo*	1	1	1	1	1
Kochia *	*Bassia scoparia / Kochia scoparia*	1	1	1	1	1
Lagarosiphon *	*Lagarosiphon major*	1	1	1	1	1
Lantana (All) *(WoNS)* *	*Lantana spp*	5	5	5	5	5
Lantana (Red Flowering) *(WoNS)* *	*Lantana camara*	4	4	4	4	4
Long-Leaf Willow Primrose *	*Ludwigia longifolia*	4	4	4	4	4
Mexican Feather Grass *	*Nassella tenuissima*	1	1	1	1	1
Mexican Poppy *	*Argemone mexicana*	5	5	5	5	5
Miconia *	*Miconia spp*	1	1	1	1	1
Mimosa *(WoNS)* *	*Mimosa pigra*	1	1	1	1	1
Mintweed	*Salvia reflexa*	4	-	-	-	-
Mossman River Grass *	*Cenchrus echinatus*	5	5	5	5	5
Mother Of Millions *	*Bryophyllum spp*	3	3	3	3	3
Nodding Thistle	*Carduus nutans*	-	4	4	4	-
Onion Grass *	*Romulea spp & vars* except *R. rosea* var. *australis*	5	5	5	5	5
Oxalis *	All *Oxalis* spp and vars except the natives *O. chnoodes*, *O. exilis*, *O. perennans*, *O. radicosa*, *O. rubens*, & *O. thompsoniae*	5	5	5	5	5
Pampas Grass *	*Cortaderia spp*	4	4	4	4	4
Parthenium Weed *(WoNS)* *	*Parthenium hysterophorus*	1	1	1	1	1

Plants Declared Noxious (per *Noxious Weeds Act 1993* as Gazetted)		**Local weed control authorities**				
Class 1 - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – State prohibited) **Class 2** - The plant must be eradicated from the land and the land must be kept free of the plant (Notifiable – Regionally prohibited) **Class 3** - The plant must be fully and continuously suppressed and destroyed (Regionally controlled) **Class 4** - The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority (Locally controlled) **Class 5** - Requirements in the *Noxious Weeds Act 1993* for a notifiable weed must be complied with (Notifiable – Sale restricted) *(WoNS)* = Weed of National Significance - Denotes no Declaration * Denotes sale restricted Correct as at 06/10/2006		**Great Lakes**	**Gloucester**	**Greater Taree**	**Port Macquarie - Hastings**	**Kempsey**
Common Name	**Botanical Name**	**Class of weed**				
Paterson's Curse, Vipers Bugloss, Italian Bugloss	*Echium spp*	4	4	4	4	4
Pond Apple *(WoNS)* *	*Annona glabra*	1	1	1	1	1
Prickly Acacia *(WoNS)* *	*Acacia nilotica*	1	1	1	1	1
Prickly Pear *	*Cylindropuntia* species	4	4	4	4	4
Prickly Pear *	*Opuntia* spp except *O. ficus-indica*	4	4	4	4	4
Red Rice *	*Oryza rufipogon*	5	5	5	5	5
Rhus Tree *	*Toxicodendron succedanea*	4	4	4	4	4
Rubbervine *(WoNS)* *	*Cryptostegia grandiflora*	1	1	1	1	1
Sagittaria *	*Sagittaria platyphylla* *Sagittaria graminea*	5	5	5	5	5
Salvinia *(WoNS)* *	*Salvinia molesta*	3	3	3	3	3
Sand Oat *	*Avena strigosa*	5	5	5	5	5
Scotch Broom	*Cytisus scoparius*	-	4	-	-	-
Senegal Tea Plant *	*Gymnocoronis spilanthoides*	1	1	1	1	1
Serrated Tussock *(WoNS)* *	*Nassella trichotoma*	4	4	4	4	4
Siam Weed *	*Chromolaena odorata*	1	1	1	1	1
Smooth-Stemmed Turnip *	*Brassica barrelieri ssp oxyrrhina* *Brassica oxyrrhina*	5	5	5	5	5
Soldier Thistle *	*Picnomon acarna*	5	5	5	5	5
Spiny Burrgrass *	*Cenchrus incertus*	4	4	4	4	4
Spiny Burrgrass *	*Cenchrus longispinus*	4	4	4	4	4
Spotted Knapweed *	*Centaurea maculosa*	1	1	1	1	1
St. John's Wort	*Hypericum perforatum*	3	3	3	3	-
Texas Blueweed *	*Helianthus ciliaris*	5	5	5	5	5
Water Caltrop *	*Trapa Spp*	1	1	1	1	1
Water Hyacinth *	*Eichhornia crassipes*	3	3	3	3	3
Water Lettuce *	*Pistia stratiotes*	1	1	1	1	1
Water Soldier *	*Stratiotes aloides*	1	1	1	1	1
Willows *(WoNS)* *	*Salix spp* except *S. babylonica*, *S.* x *reichardtii*, *S.* x *calodendron*	5	5	5	5	5
Witchweed *	*Striga species*	1	1	1	1	1
Yellow Burrhead *	*Limnocharis flava*	1	1	1	1	1
Yellow Nutgrass *	*Cyperus esculentus*	5	5	5	5	5

Table 2.2 Prioritisation of Weeds in Coastal Landscapes.

WEED		Catchment Category			
Common Name	**Scientific Name**	**Macleay**	**Hastings Camden Haven**	**Manning**	**Great Lakes**
Class 1 & 2 Noxious Weeds	(See Noxious Weeds List – Refer Table 2.1)	A	A	A	A
Telegraph Weed	Heterotheca grandiflora	A	A	A	A
Cats Claw Creeper	Macfadyena unguis-cati	A	A	A	A
Singapore Daisy	Wedilia trilobata	A	A	A	A
Madeira Vine	Anredera cordifolia	B	B	B	B
Glory Lily	Gloriosa superba	B	B	B	B
Broad Leaf Pepper	Schinus terebinthifolius	B	B	B	B
Groundsel Bush	Baccharis halimifolia	B	B	B	B
Umbrella Tree	Schefflera actinophylla	B	B	B	B
Mysore Thorn	Caesalpinia decapetala	B	B	B	B
Indian Hawthorn	Rhapiolepis indica	B	B	B	B
African Boxthorn	Lycium ferocissimum	B	B	B	B
Norfolk Island Hibiscus	Hibiscus insularis	B	B	B	B
Acacia Saligna	Acacia saligna	B	B	B	B
Spiny Burrgrass	Cenchrus incertus longispinus	B	B	B	B
Fish Bone Fern	Nephrolepis cordifolia	C	C	C	C
Prickly Pear spp	Opuntia stricta, vulgaris, Tomentosa, aurantiaca	C	C	C	C
Mother of Millions	Bryophyllum spp	C	C	C	C
German Ivy	Senecio macroglossus	C	C	C	C
Cape Ivy	Delairea odorata	C	C	C	C
Pampas Grass	Cortaderia spp	C	C	C	C
Formosan Lily	Lilium formosanum	C	C	C	C
Bitou Bush	Chrysanthemoides monilifera	D	D	D	D
Asparagus Spp	Asparagus africanus, plumosus, aethiopicus	D	D	D	D
Morning Glory	Ipomoea cairica, indica, alba	D	D	D	D
Winter Senna and Smooth Senna	Senna pendula var.glabrata	D	D	D	D
Lantana spp	Lantana camara	D	D	D	D

Others: Polygala, Rubber Tree, Coolatai Grass, Giant Parramatta Grass, Giant Rats Tail Grass, Moth Vine, Wild Tobacco, Pterospermum rhombifolium, Ochna, Passiflora spp, Cape Honeysuckle.

A – Weeds not currently present in the MNCWAC area
B – Weeds present with limited distribution, several small infestations
C – Weeds present with moderate distribution in the MNCWAC area, numerous to large partially dispersed areas
D – Weeds that are widespread throughout the region

Table 2.3 Prioritisation of Weeds in Riparian Landscapes.

WEED		Catchment Category			
Common Name	**Scientific Name**	**Macleay**	**Hastings Camden Haven**	**Manning**	**Great Lakes**
Class 1 & 2 Noxious Weeds	(See Noxious Weeds List – Refer Table 2.1)	A	A	A	A
Athel Pine	Tamarix aphylla	A	A	A	A
Chinese Tallow	Triadica sebifera	A	A	A	A
Longleaf Willow Primrose	Ludwigia longifolia	A	A	B	B
Angels Trumpet	Brugmansia candida	A	A	A	A
Cats Claw Creeper	Macfadyena unguis cati	C	B	B	B
Madeira Vine	Anredera cordifolia	C	B	B	B
Willows	Salix spp.	B	B	B	B
Honey Locust	Gleditsia trianthos	B	B	B	B
Broad Leaf Pepper	Schinus terebinthifolius	B	B	B	B
Chinese Celtis	Celtis sinensis	A	B	B	B
African Olive	Olea europaea ssp cuspidata	B	B	B	B
Cockspur Coral Tree	Erythrina crista-galli	B	B	B	B
Salvinia	Salvinia molesta	B	B	B	B
Cabomba	Cabomba caroliniana	B	B	B	B
Water Hyacinth	Eichhornia crassipes	C	B	B	B
Rhizomatous Bamboo	Phyllostachys spp.	B	B	B	B
Balloon Vine	Cardiospermum grandiflorum	B	B	C	C
Groundsel Bush	Baccharis halimifolia	C	B	B	B
Prickly Pear	Opuntia spp.	C	C	C	C
Pampus Grass	Cortaderia spp.	B	B	B	C
Coolatai Grass	Hyparrhenia hirta	C	C	C	C
Golden Dodder	Cascuta campestris	C	C	C	C
Giant Reed	Arundo donax	C	B	C	C
Cape Ivy	Delairea odorata	C	C	C	C
Green Cestrum	Cestrium parqui	B	B	C	C
Mysore Thorn	Caesalpinia decapetala	B	B	B	B
Mother of Millions	Bryophyllum spp	C	C	C	C

Others: Noogoora Burr, Bathurst Burr, Camphor Laurel, Privet spp., Wild Tobacco, Castor Oil, Lantana, Wandering Dew, Johnson Grass, Blackberry, Crofton Weed, Mistflower, Morning Glory, Senna spp., Cestrum Nocturnum.

A – Weeds not currently present in the MNCWAC area
B – Weeds present with limited distribution, several small infestations
C – Weeds present with moderate distribution in the MNCWAC area, numerous to large partially dispersed areas
D – Weeds that are widespread throughout the region

Table 2.4 Prioritisation of Weeds in Forest Landscapes.

WEED		Catchment Category			
Common Name	**Scientific Name**	**Macleay**	**Hastings Camden Haven**	**Manning**	**Great Lakes**
Class 1 & 2 Noxious Weeds	(See Noxious Weeds List –Refer Table 2.1)	A	A	A	A
Chilean Needle Grass	Nassella neesiana	A	A	A	A
Serrated Tussock	Nassella trichotoma	A	A	A	A
Scotch/English Broom	Cytisus scoparius	A	A	B	A
African Olive	Olea europaea spp cuspidata	A	A	A	B
St Johns Wort	Hypericum perforatum	A	A	B	B
Cats Claw Creeper	Macfadyena unguis cati	B	B	B	B
Pampas Grass	Cortaderia spp	B	B	B	B
Murraya	Murraya paniculata	B	B	B	B
Mysore Thorn	Caesalpinia decapetala	B	B	B	B
Duranta	Duranta repens	B	B	B	B
Green Cestrum	Cestrum parqui	B	B	C	B
Groundsel Bush	Baccharis halimifolia	C	B	B	B
Madeira Vine	Anredera cordifolia	C	B	B	B
Balloon Vine	Cardiospermum grandiflorum	B	B	C	C
Mother of Millions	Bryophyllium spp.	B	B	C	C
Privet	Liguetrum spp.	B	C	C	C
Asparagus species	Asparagus spp.	C	C	C	C
Giant Parramatta Grass	Sporobolus fertilis	C	C	C	C
Blackberry	Rubus fruticosus agg spp.	C	C	C	C
Lantana	Lantana camara	D	D	D	D
Crofton Weed	Ageratina adenophora	D	D	D	D
Mist Flower	Ageratina riparia	D	D	D	D

Others: Moth Vine, Cape Ivy and Formosa Lily.

Note: Pinus species have shown weedy characteristics when not managed. They are a commercial crop for Forests NSW and while they are not desired in all forest areas they are not considered particularly invasive, taking at least seven years to produce seed, they are killed by fire and their impact on forested areas is not high.

A – Weeds not currently present in the MNCWAC area
B – Weeds present with limited distribution, several small infestations
C – Weeds present with moderate distribution in the MNCWAC area, numerous to large partially dispersed areas
D – Weeds that are widespread throughout the region

Table 2.5 Prioritisation of Weeds in Agricultural Landscapes.

WEED		Catchment Category			
Common Name	**Scientific Name**	**Macleay**	**Hastings Camden Haven**	**Manning**	**Great Lakes**
Class 1 & 2 Noxious Weeds	(See Noxious Weeds List – Refer Table 2.1)	A	A	A	A
Serrated Tussock	Nassella trichotuma	A	A	A	A
Chilean Needle Grass	Nassella neesiana	A	A	A	A
St Johns Wort	Hypericum perforatum	A	A	B	B
Groundsel Bush	Baccharis halimifolia	B	B	B	B
Coolatai Grass	Hyparrhenia hirta	B	B	B	B
Prickly Pear	Opuntia spp.	B	B	B	B
Coral Trees	Erythrina crista-galli	B	B	B	B
Mother of Millions	Bryophyllum spp.	B	B	B	B
Cat Heads	Emex australis	B	B	B	B
Green Cestrum	Cestrum parqui	B	B	C	C
Golden Dodder	Cascutta spp.	B	B	B	B
Blackberry	Rubus fruticosis agg spp	C	C	C	C
Giant Rats Tail Grass	Sporobolus pyramidalis	C	C	C	C
Giant Parramatta Grass	Sporobolus fertilis	C	C	C	C
Noogoora Burr	Xanthium occidentale	C	C	C	C
Bathurst Burr	Xanthium spinosum	C	C	C	C
Lantana	Lantana camara	D	D	D	D
Crofton Weed	Ageratina adenophora	C	D	D	D
Johnson Grass	Sorghum halepense	D	C	C	C
Wild Tobacco Tree	Solanum murit	D	D	D	D
Narrow Leaf Cotton Bush	Gomphocarpus fruticosus	D	D	D	D
Bracken Fern	Pteridium esculentum	D	D	D	D
Fire Weed	Senecio madagascariensis	D	D	D	D
Thistles	(Various)	D	D	D	D

A – Weeds not currently present in the MNCWAC area
B – Weeds present with limited distribution, several small infestations
C – Weeds present with moderate distribution in the MNCWAC area, numerous to large partially dispersed areas
D – Weeds that are widespread throughout the region

Table 2.6 Prioritisation of Weeds in Urban Landscapes.

WEED		Catchment Category			
Common Name	**Scientific Name**	**Macleay**	**Hastings Camden Haven**	**Manning**	**Great Lakes**
Class 1 & 2 Noxious Weeds	(See Noxious Weeds List – Refer Table 2.1)	A	A	A	A
Groundsel Bush	Baccharis halimifolia	A	A	A	A
Lippia	Phyla spp.	A	A	A	A
Chinese Celtis	Celtis sinensis	B	B	B	B
Broad Leaf Pepper	Schinus terebinthifolius	B	B	B	B
Glory Lily	Gloriosa supberba	B	B	B	B
Cats Claw Creeper	Macfadyena unuis-cati	B	B	B	B
Rhus Tree	Toxicondendron succedaneum	B	B	B	B
Taro	Colocasia esculenta	B	B	B	B
Pampas Grass	Cortaderia spp.	B	B	B	B
Murraya	Murraya paniculata	B	B	B	B
Salvinia	Salvinia molesta	B	B	B	B
Water Hyacinth	Eichhornia crassipes	B	B	B	B
Cabomba	Pistia stratiotes	B	B	B	B
Angels Trumpet	Brugmansia candida	B	B	B	B
Chinese Tallow	Triadica subifera	C	C	C	C
Black Locust	Robinia pseudoacacia	C	C	C	C
Coral Tree	Erythrina crista-galli	C	C	C	C
Madeira Vine	Anredera cordifolia	C	C	C	C
Honey Locust	Gleditsia triacanthos	C	C	C	C
Green Cestrum	Cestrum parqui	C	C	C	C
Yellow Bells	Tecoma stans	C	C	C	C
Golden Rain Tree	Koelreuteria elegans	C	C	C	C
African Tulip Tree	Spathodea campanulata	C	C	C	C
Bamboo (Rhizomatous)	Phyllostachys spp.	C	C	C	C
Willows	Salix spp.	C	C	C	C

Others: Fish Bone Fern, Canna Lily, Pyracantha, Cotoneaster, Oleander, Arum Lily, Gaura, Duranta, Canada Golden Rod, Ochna, Morning Glory, Cocos Palm, Indian Hawthorn, Asparagus spp, Feathergrass, China Doll, Camphor Laurel, Passiflora spp.

A – Weeds not currently present in the MNCWAC area
B – Weeds present with limited distribution, several small infestations
C – Weeds present with moderate distribution in the MNCWAC area, numerous to large partially dispersed areas
D – Weeds that are widespread throughout the region

Table 2.7 Prioritisation of Weeds in Tablelands Landscapes.

WEED		Catchment Category			
Common Name	**Scientific Name**	**Macleay**	**Hastings Camden Haven**	**Manning**	**Great Lakes**
Class 1 & 2 Noxious Weeds	(See Noxious Weeds List –Refer Table 2.1)	A	A	A	A
Chilean Needle Grass	Nassella neesiana	A	A	A	A
Groundsel Bush	Baccharis halimifolia	A	A	A	A
Serrated Tussock	Nassella trichotoma	B	A	B	A
St Johns Wort	Hypericum perforatum	B	A	B	A
Sweet Briar	Rosa rubiginosa	B	A	B	A
Honey Locust	Gleditsia triacanthos	B	B	B	B
African Love Grass	Eragrostis curvula	C	B	C	B
African Box Thorn	Lycium ferocissium	C	B	C	B
Giant Parramatta Grass	Sporobolus fertilis	B	B	B	B
Coolatai Grass	Hyparrhenia hirta	C	C	C	C
Nodding Thistle	Carduus nutans	C	B	C	B
Scotch/English Broom	Cytisus scoparius	C	B	C	B
Black Locust	Robinia pseudoacacia	C	C	C	C
Pyracantha	Pyracantha spp.	C	C	C	C
Pattersons Curse	Echium plantagineum	D	C	D	C
Blackberry	Rubus fruticosus agg. spp.	D	D	D	D
Feral Fruit Trees	Prunus spp	D	D	D	D
Rhizomatous Bamboo	Phyllostachys spp	D	C	D	C
Privet	Ligustrum spp	D	D	D	D

A – Weeds not currently present in the MNCWAC area
B – Weeds present with limited distribution, several small infestations
C – Weeds present with moderate distribution in the MNCWAC area, numerous to large partially dispersed areas
D – Weeds that are widespread throughout the region

Scotch Broom flower

Blackberry flower

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APPENDIX D EVIDENCE OF CONSULTATION

Correspondence from Kempsey and Port Macquarie/Hastings Shire Council confirming receipt of and no comments on the Kundabung to Kempsey Urban Design and Landscape Plan.

Minutes and Actions of meetings with Port Macquarie/Hastings Shire Council

Minutes of meeting with Roads and Maritime Port Macquarie maintenance staff

Minutes of meeting with Kempsey Council staff

Drawing list: Kempsey Bypass Alliance

Kempsey
Shire Council

www.kempsey.nsw.gov.au
ksc@kempsey.nsw.gov.au
ABN: 70 705 618 663

Your council Our community

Ref: 140926/K2K
BP:bp

26 September 2014

Mr Irwin Perring
Project Development Manager
Roads and Maritime Services
PO BOX 546
GRAFTON NSW 2460

Dear Sir

OXLEY HIGHWAY TO KEMPSEY PACIFIC HIGHWAY UPGRADE - KUNDABUNG TO KEMPSEY URBAN DESIGN AND LANDSCAPE PLAN (K2K UDLP)

Thank you for forwarding a copy of the Kundabung to Kempsey Urban Design and Landscape Plan requesting Councils comments on the document.

On review of the document Council is satisfied that the process being undertaken with regard to the K2K UDLP by Roads and Maritime Services NSW and the Principal Contractor for the project, is in accordance with the Conditions of Approval granted by the Minister for Planning and Infrastructure.

If you require any further information regarding this matter please call the undersigned on 6566 3374 during business hours.

Yours faithfully

Bruce Potts
STRATEGIC PROJECTS COORDINATOR

22 Tozer Street
West Kempsey

PO Box 3078
West Kempsey NSW 2440

Customer Service Tel: 02 6566 3200
Fax: 02 6566 3205

Library Tel: 02 6566 3210
Fax: 02 6566 3215

**PORT MACQUARIE-
HASTINGS COUNCIL**

PO Box 84
Port Macquarie
NSW Australia 2444
DX 7415

council@pmhc.nsw.gov.au
www.pmhc.nsw.gov.au

ABN 11 236 901 601

PORT MACQUARIE
HASTINGS

22 September 2014

Mr Irwin Perring
Project Development Manager - Pacific Highway
Irwin.PERRING@rms.nsw.gov.au

Dear Mr Perring

Draft Kundabung to Kempsey Urban Design & Landscape Plan

I refer to our meeting on Friday 19 September 2014 & your email of 22 September 2014 regarding the Kundabung to Kempsey Urban Design & Landscape Plan.

I can confirm that Council is now in receipt of the Draft Urban & Landscape Design Plan for the Kundabung to Kempsey Upgrade of the Pacific Highway and advise that Council has no comment to provide with respect to these plans.

If you require any further information please do not hesitate to contact me Ph: 6581 8111.

Yours sincerely

Duncan Clarke
Group Manager Transport & Stormwater Network

PORT MACQUARIE OFFICE
Corner Lord & Burrawan Streets
Telephone (02) 6581 8111
Facsimile (02) 6581 8123

WAUCHOPE OFFICE
High Street
Telephone (02) 6589 6500

LAURIETON OFFICE
9 Laurie Street
Telephone (02) 6559 9958

SMEC + Hyder Joint Venture

MINUTES & ACTIONS

Issue date	Monday 17th December 2012	
Subject	PMHC Meeting on Community Display	
Reference	ABL0001-OH2K-M-01 PMHC Meeting on Community Display	
Client	Roads and Maritime Services	
Attendees	Shane Higgins (SH) – SHJV	Peter Cameron (PC) – PMHC
	Peter Wood (PW) – RMS	Cliff Toms (CT) - PMHC
	Jessica Hedge (JH) - SHJV	
Apologies		

Minutes arising from the meeting with Port Macquarie Hastings Council (PMHC) that was held at PMHC on Friday 14th December at 10am to discuss the updates to the OH2K project that was discussed and on display with the community.

Ref #	Discussion	By Whom	By When
1	Staging: Kempsey Bypass; construction to be completed April 2013 Kundabung to Kempsey (K2K): constructed to begin early 2014 Oxley Highway to Kundabung (D&C section): construction to begin mid 2014	Noted	Noted
2	The D&C section allows for risk to be shared between the contractor and RMS. The northern section is expected to be relatively straight forward, hence a construct only contract.	Noted	Noted
3	There is public misconception as to what is being constructed, as the staging was only explained in text and not on the sketches in the EA public display.	Noted	Noted
4	The revised Blackmans Point Interchange provides a Gateway into Port Macquarie from the north. The service road design tie in could be looked at to encourage vehicles to slow down.	Noted	Noted
5	RMS are currently finalising State Forest land acquisition, however State Forest have had no objection to the widened median.	Noted	Noted
6	The increase in flood immunity factors looks at Climate Change through the pavement lifecycle (approximately 40 years). If in 2050 climate change is an impact, then the pavement may require maintenance treatments.	Noted	Noted

7	Haulage of the project's material could cause impact to the local roads. An audit report before construction should take place to assess the existing highway and road condition, to assist in the handover of roads to council.	Noted	Noted
8	PMHC and Kempsey council boundaries confirmed at Mingaletta Road.	Noted	Noted
9	After consultation with the community, it is likely that the u-turns may need to be refined.	Noted	Noted
10	PMHC General Manager to have received a letter in the mailout for community display	Noted	Noted
11	Council to provide RMS with the Flood report, so that the SHJV can capture any issues with the re-zoing near the Birdon and Marine industrial area.	CT	21/12/12
12	SHJV to confirm which culverts at Sancrox are to provide fauna connectivity.	SH	21/12/12
13	If highway is to be closed, the alternative route at the south of the project would be through Bushlands Drive.	Noted	Noted
14	Investigate the opportunities for PMHC to have information and tourist signage in the Rest Areas. PW to discuss with Wes options.	PW	21/12/12

SMEC + Hyder Joint Venture

MINUTES

Issue date 23rd August 2012
Issued by David Robertson
Subject OH2K Discussion with RMS Port Macquarie Maintenance Staff
Reference ABC0002-OH2K-N-02
Client RMS
Meeting date 15th August 2012
Time 10am
Location RMS Port Macquarie
Present

RMS

Peter Wood	Steve Dalley	Brad Hartley
Steven Mitchell-Hill	Greg Pollard	

SHJV

Michael Corrigan	David Robertson	

Copies

SHJV

Paul Hunter	Craig Sutton	Sue Taylor
Anthony de Jongh	Arthur Yeung	Irene Scott
Mike Freeman (MIE)	Lisa Samways	Tim Jennings
HBO+EMTB		

Item	Description	Action
1	**Construction**	
	• BH noted that contract documents should include provision/consideration for access for maintenance during construction.	MF
	• Contract documents need to capture who is responsible for maintenance of what infrastructure during construction (ie what will RMS be maintaining and what will the contractor be maintaining.	MF
2	**Sedimentation basins:**	
	• BH advised that sedimentation basins are cleaned very rarely. More attention is paid to them if a property owner is using them as a source of water and they get silted up and lose capacity. SHJV to review maintenance free elements.	MC/DR
	• The design vehicle for access to basins is a 12.5 single unit truck.	Note
	• The design vehicle needs to be able to get down to the basin and turn around, and also needs to be able to get into a position where a backhoe can load sediment into the truck. SHJV to review turning areas.	MC/DR
	• The access track should be gravel/all-weather with a suitable grade.	Note
	• DR/MC advised that the basins do not have bio-filtration or any other special lining at this stage.	Note
	• BH's understanding is that basins do not require fauna fencing in relevant areas, but a later check of the project brief reveals that they are in fact required.	Note
	• BH agreed that vehicles requiring access to the basins could park in the shoulder and use traffic control if necessary. Given the low frequency of maintenance this seems appropriate.	Note
	• BH advised that it is not practical to partially dismantle and lower wire rope barriers to	

Item	Description	Action
	gain access to the basins, and therefore has a preference for gaps in the barriers.	Note
	• Man proof fencing of basins is to be assessed on a risk basis – i.e. how likely public access is to any particular basin.	MC/DR
	• BH commented that it is not uncommon for a basin to need to be clean within the first few years after construction. This is due to erosion occurring until the vegetation takes hold. SD suggested that the tender documents be reviewed to ensure basins are handed over at completion having just been cleaned. G38 has some words on this, but perhaps something more definitive could be included.	MF
3	**Fauna fencing**	
	• BH pointed out that several different details have been used where open drains pass underneath fauna fences, with varying degrees of success. The solution needs to be something simple that will last. SHJV to investigate.	MC/DR
	• BH also pointed out that open drains and fauna fences should be located knowing that vegetation will accumulate along the base of the fauna fence, and may affect the ability of water to get to the open drains. This has apparently caused scour in the past.	Note
	• BH also noted that there are different types of fauna fences used, depending on what species exist in the area. SHJV to investigate	MC/DR
	• SMH requested that gates be provided in fauna fencing to allow access to structures.	MC/DR
	• BH explained that there is generally 3m clearing on either side of the fauna fences.	Note
4	**Culverts**	
	• SMH advised that the following items go onto the bridge inventory: - Fauna underpasses no matter what size. - Banks of box culverts that are more than 6m wide (i.e. 6m long in the direction of the carriageway they cross under. - Banks of pipes that are more than 6m wide (although these are not designed and documented as bridge structures).	Note
	• Bridge inventory numbers go on guideposts adjacent to the structures (white text on green background).	IS
	• SMH requested widening the shoulder adjacent to culverts for parking of a standard service vehicle. This should be located at the cut fill line if possible.	MC/DR
	• Items on the bridge inventory are inspected/maintained every 2 years.	Note
5	**Bridges**	
	• SMH requested that gates be provided in fauna fencing to allow access to structures.	MC/DR
	• SMH explained that good access is necessary at bridge abutments, with tiered areas, and handrails and steps used to allow safe and easy access for maintenance. He also explained that these features were often initially included, then later omitted at the request of the urban designers based on looks. SHJV to investigate.	IS
	• SMH explained that RMS Bridge Technical Direction 2008/002 gave good guidance to requirements for access to bridge abutments.	Note
	• SMH/BH advised that the existing bridge abutments at Smiths Creek have been grouted with between 4 and 7m^3 of concrete at each of the abutments due to problems with scouring behind the abutments.	Note
	• BH explained that were there was not provision for pedestrians or wide shoulders, maintenance inspections on bridge may require traffic control.	Note
	• BH explained that 0.5m shoulders on the median side of carriageways were a problem where a contra flow was necessary during maintenance. SD suggested that this is a typical problem and is dealt with as per the requirements of Traffic Control at Work Sites.	Note

Item	Description	Action
6	**Safety barriers**	
	• SD advised that at this stage we do not expect to have wire rope safety barriers in the median for the full length of the project.	Note
	• BH advised that a spray and seal surface at the base of WRSB's is preferred to alleviate the need for access for maintenance of grass at the base.	Note
	• BH requested that one WRSB system be used the whole way through the project to assist with maintenance and repairs. A lot of 'Sentryline' brand WRSB is being used presently, along with the Brifen and Flexfence systems. As the project is being divided into multiple contracts this may not be possible, however the documents can be written to require that only one type of WRSB is used per section.	MC/DR/MF
7	**Signage and linemarking**	
	• SMH explained that RMS often use the signage and linemarking drawings to define RMS and Council assets upon handover of the project.	Note
8	**Street lighting**	
	• Street lighting to be maintained by RMS and street lighting to be maintained by local councils do not need to be on separate circuits, because they are not metered. Council may want their own types of lights to suit spares etc. for maintenance. A comparison of the requirements of RMS, Council and Essential Energy is required to make a decision on types of lights.	MC/DR/LS
9	**Pavements**	
	• MC advised the areas of potential pavement re-use on the existing Pacific Highway for the mainline carriageways.	Note
10	**Heavy vehicle inspection bay**	
	• BH advised that there have been a number of occasions where vehicles have mistaken the Bonville HVIB for the main carriageway and smashed through the gate. It needs to be clear that this is not part of the main carriageway or an exit ramp.	DR
	• RMS will be able to provide input to HVIB designs. A meeting or phone hook up is required.	SD
11	**Landscaping**	
	• RMS advised that grassed areas need to be able to be mowed with a tractor.	HBO
	• BH currently has a preference for bottle brushes as low shrubs for planting, due to their hardiness.	HBO
	• BH mentioned the requirement to keep median planting to a minimum height of 3m – low shrubs and grasses.	HBO
12	**ITS**	
	• BH advised that control panel on VMS's needs to be facing away from the carriageway, as do the access ladders, and out of the deflection zone of any guardrails adjacent.	TJ/DR
	• Todd Hayman from RMS will be able to provide input to VMS designs.	Note
	• RMS queried whether there is any requirement for traffic counters and CCTV's. SD advised that arrangements have not yet been agreed. (Post meeting note – no traffic counters or CCTV's in DDS or DDN).	Note

MINUTES

Issue date	23rd August 2012
Issued by	David Robertson
Subject	OH2K Discussion with Kempsey Council Staff
Reference	ABD0002-OH2K-N-02
Client	RMS
Meeting date	15th August 2012
Time	2pm
Location	Kempsey Council
Present	**RMS**
	Peter Wood, Steve Dalley, Greg Pollard
	SHJV
	Michael Corrigan, David Robertson
	Kempsey Council
	Trevor Dickson (Manager Technical Services), Bruce Potts (Bypass Strategy Coordinator)
Copies	**SHJV**
	Paul Hunter, Craig Sutton, Sue Taylor
	Anthony de Jongh, Arthur Yeung, Andrew Pettig

Item	Description	Action
1	Everyone introduced themselves and explained their role on the OH2K project.	Note
2	DR and MC started proceedings by giving an overview of DDS and DDN respectively in a reasonable amount of detail, highlighting key issues along the way for discussion. SD advised that a number of the design options being evaluated and developed differed from the original EA and were not yet in the public domain. Council confirmed that they understood the situation and would treat discussions as confidential.	Note
3	MC explained the situation with Kundabung Road and the options available with regards to design speed of various parts of the road in the vicinity of the interchange and Kundabung village. TD explained that RMS make decisions on posted speeds on all roads in the area, although they do consult with Kempsey Council. Kempsey Council currently have an issue with their ratepayers with regards to a long straight section of country road which is posted at 80km/hr. The default speed in country areas is 100km/hr where no speed sign is shown. TD also explained that there is a possible land release in the Kundabung area and this may significantly increase traffic to the area. MC to consult with RMS and agree a strategy for the project on Kundabung Road that will be agreeable to RMS.	MC
4	TD explained that Kempsey Council would require dilapidation surveys of existing roads to be used during construction of the works. TD explained that even where local roads were in relatively poor condition, the addition of construction traffic can mean that they deteriorate at an accelerated rate under construction traffic – i.e. they become unserviceable quicker and this is an issue for Council.	

Item	Description	Action
	Kempsey Council would like an indication of which roads are to be used as haul routes and which quarries are likely to be used as part of the construction phase.	Andrew Pettig
5	TD discussed the possibility of the motel located on Rodeo Drive being converted into a service centre. A service centre proposal is also on the table for South Kempsey.	Note
6	Kempsey Council have a master plan for landscaping proposals between South Kempsey and Eungai, available from their website. (Post meeting note – the website was checked and the document they referred to is actually an urban master plan for South Kempsey as far as we could see).	Note
7	The existing rest area on the northbound carriageway (Bloodwood) will be located on a service road after the OH2K project is complete – there was discussion of what Council may want to do with it. Council do not want to continue to operate it as it currently stands, but may consider using it as a setdown area for materials. The existing rest area on the southbound carriageway will be taken out by the new southbound carriageway.	Note
8	TD named himself as the principal contact at Council.	Note
9	TD raised concerns over the existing Stumpy Creek Bridge and its reuse as a council maintained service road as it contains timber piers. (Post meeting note – SHJV have completed an assessment of the existing bridge, and this can be forwarded to Kempsey Council by RMS for information)	SD
10	TD raised concerns over the use of existing Pacific Highway as a service road. The current road may be well in excess (cross section) of what is required under a service road configuration. DR to consider treatment of this road during detailed design.	DR
11	TD requested that if possible, it would be good to have some signage in the rest areas to encourage passing traffic to visit Kempsey. SD to look into what is allowed under RMS provision for signage at rest areas.	SD
12	RMS to provide design package (when ready) to council for their comment.	SD

Kempsey Bypass

Drawings received from Kempsey Bypass Alliance 22-08-12

Drawing Title	Drawing No.	Revision
Geotechnical – General - Cut and Embankment Batter Design		
Cover Sheet	KBA-DRG-2G00-GT0011	03
Drawing Index	KBA-DRG-2G00-GT0015	03
General Notes	KBA-DRG-2G00-GT0021	03
Typical Section Cut	KBA-DRG-2G00-GT0051	03
Typical Cross Section Side Cut/Fill	KBA-DRG-2G00-GT0061	03
Noise Mound Details STN 117,775 – 117,950	KBA-DRG-2G00-GT0071	01
Geotechnical – General - Geotechnical Investigation Report		
Plan Sheet 1	KBA-DRG-2G00-GT2101	02
Plan Sheet 2	KBA-DRG-2G00-GT2102	02
Longitudinal Section Sheet 1	KBA-DRG-2G00-GT2201	02
Longitudinal Section Sheet 2	KBA-DRG-2G00-GT2202	02
Cross Section – STN 113580 and STN 113780	KBA-DRG-2G00-GT2301	02
Cross Section – STN 113940 and STN 114040	KBA-DRG-2G00-GT2302	02
Pavement Typical Details General		
Pavement Profiles Sheet 1	KBA-DRG-2G00-PV0111	B
Pavement Profiles Sheet 2	KBA-DRG-2G00-PV0112	A
Pavement Profiles Sheet 3	KBA-DRG-2G00-PV0113	B
Longitudinal Drainage South Pacific Highway (MC11 & MC21)		
Drainage Plan - Sheet 1	KBA-DRG-2S00-DL1001	C
Drainage Plan - Sheet 2	KBA-DRG-2S00-DL1002	C
Drainage Plan - Sheet 3	KBA-DRG-2S00-DL1003	B
Drainage Plan - Sheet 4	KBA-DRG-2S00-DL1004	B
Drainage Plan - Sheet 5	KBA-DRG-2S00-DL1005	B
Transverse Drainage – South Pacific Highway (MC11 & MC21)		
Drainage Plan – Sheet 1	KBA-DRG-2S00-DT1001	A
Drainage Plan – Sheet 2	KBA-DRG-2S00-DT1002	A
Drainage Plan – Sheet 3	KBA-DRG-2S00-DT1003	B
Drainage Plan – Sheet 4	KBA-DRG-2S00-DT1004	D
Drainage Plan – Sheet 5	KBA-DRG-2S00-DT1005	B
Fencing South		
Plan – Sheet 1	KBA-DRG-2S00-GE2101	D
Plan – Sheet 2	KBA-DRG-2S00-GE2102	C
Southern Section STN 113200-120600 Landscape Construction Plan		
Sheet 1	KBA-DRG-2S00-LD1001	A
Sheet 2	KBA-DRG-2S00-LD1002	A
Sheet 3	KBA-DRG-2S00-LD1003	B
Sheet 4	KBA-DRG-2S00-LD1004	B
Sheet 5	KBA-DRG-2S00-LD1005	C
Line marking & Signage – South Pacific Highway (MC11 & MC21)		
Plan Sheet 1	KBA-DRG-2S00-LS1001	B
Plan Sheet 2	KBA-DRG-2S00-LS1002	A
Plan Sheet 3	KBA-DRG-2S00-LS1003	B
Plan Sheet 4	KBA-DRG-2S00-LS1004	A
Plan Sheet 5	KBA-DRG-2S00-LS1005	A

Drawing Title	Drawing No.	Revision
Pavement – South Pacific Highway		
Pavement Plan – Sheet 1	KBA-DRG-2S00-PV1001	A
Pavement Plan – Sheet 2	KBA-DRG-2S00-PV1002	A
Pavement Plan – Sheet 3	KBA-DRG-2S00-PV1003	A
Pavement Plan – Sheet 4	KBA-DRG-2S00-PV1004	A
Pavement Plan – Sheet 5	KBA-DRG-2S00-PV1005	B
Road Geometry – South Pacific Highway (MC11 & MC21)		
Alignment Plan Sheet 1	KBA-DRG-2S00-RD1001	D
Alignment Plan Sheet 2	KBA-DRG-2S00-RD1002	D
Alignment Plan Sheet 3	KBA-DRG-2S00-RD1003	D
Alignment Plan Sheet 4	KBA-DRG-2S00-RD1004	F
Alignment Plan Sheet 5	KBA-DRG-2S00-RD1005	E
Road Furniture – South		
Kerb Schedule Sheet 1	KBA-DRG-2S00-RF0122	B
Kerb Schedule Sheet 2	KBA-DRG-2S00-RF0123	B
Safety Barrier Schedule Sheet 1	KBA-DRG-2S00-RF0124	B
Safety Barrier Schedule Sheet 2	KBA-DRG-2S00-RF0125	B
Pedestrian and Cyclist Ramp Schedules	KBA-DRG-2S00-RF0126	A
Alignment Plan Pacific Highway (MC11 & MC21) Sheet 1	KBA-DRG-2S00-RF1001	B
Alignment Plan Pacific Highway (MC11 & MC21) Sheet 2	KBA-DRG-2S00-RF1002	B
Alignment Plan Pacific Highway (MC11 & MC21) Sheet 3	KBA-DRG-2S00-RF1003	B
Alignment Plan Pacific Highway (MC11 & MC21) Sheet 4	KBA-DRG-2S00-RF1004	B
Alignment Plan Pacific Highway (MC11 & MC21) Sheet 5	KBA-DRG-2S00-RF1005	B
Street Lighting – South South Kempsey Interchange		
Layout Plan Sheet 1	KBA-DRG-2S00-SL1001	A
Layout Plan Sheet 2	KBA-DRG-2S00-SL1002	A
Layout Plan Sheet 3	KBA-DRG-2S00-SL1003	A
Layout Plan Sheet 4	KBA-DRG-2S00-SL1004	A
Layout Plan Sheet 5	KBA-DRG-2S00-SL1005	A
Essential Energy Plans		
Essential Energy 11kV/LV relocation plans 1/3	KBA-DRG-2S00-UT174A-FC-A[1]	
Essential Energy 11kV/LV relocation plans 1/3	KBA-DRG-2S00-UT174A-FC-A[1]	
Essential Energy 11kV/LV relocation plans 1/3	KBA-DRG-2S00-UT174A-FC-A[1]	

APPENDIX E MATERIAL RE-USE SITES - LANDSCAPE DESIGN

HIGHWAY No. 10 - PACIFIC HIGHWAY UPGRADE - OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH AND NORTH
MATERIAL REUSE SITES - LANDSCAPE DESIGN
DRAWING INDEX

PLOT DATE 07 May 2014 TIME 15:04:46
DRAWING FILE LOCATION \\NAME V:\SYU\Projects\syu-002909-000 oxley highway to kempsey\9 documentation\9_3 plot files\material reuse sites\002-DRAWING INDEX.dwg

MATERIAL REUSE SITES GENERAL (SOUTH AND NORTH)

OH2K-DDN-SS2102-001	DRAWING INDEX
OH2K-DDN-SS2102-002	SEEDING SCHEDULE - SHEET 1
OH2K-DDN-SS2102-003	SEEDING SCHEDULE - SHEET 2
OH2K-DDN-SS2102-004	PLANTING SCHEDULE AND TYPICAL CROSS SECTION OF MATERIAL REUSE SITE

MATERIAL REUSE SITES PLANS (SOUTH)

OH2K-DDS-SS2102-301	NOT USED
OH2K-DDS-SS2102-302	NOT USED
OH2K-DDS-SS2102-303	NOT USED
OH2K-DDS-SS2102-304	NOT USED
OH2K-DDS-SS2102-305	NOT USED
OH2K-DDS-SS2102-306	NOT USED
OH2K-DDS-SS2102-307	MATERIAL REUSE SITES 11 AND 12 MAIN ALIGNMENT PLAN - SHEET 7
OH2K-DDS-SS2102-308	MATERIAL REUSE SITE 12 MAIN ALIGNMENT PLAN - SHEET 8
OH2K-DDS-SS2102-309	NOT USED
OH2K-DDS-SS2102-310	NOT USED
OH2K-DDS-SS2102-311	DRAWING DELETED
OH2K-DDS-SS2102-312	MATERIAL REUSE SITE 13 MAIN ALIGNMENT PLAN - SHEET 12
OH2K-DDS-SS2102-313	MATERIAL REUSE SITE 14 MAIN ALIGNMENT PLAN - SHEET 13
OH2K-DDS-SS2102-314	MATERIAL REUSE SITE 14 MAIN ALIGNMENT PLAN - SHEET 14
OH2K-DDS-SS2102-315	NOT USED
OH2K-DDS-SS2102-316	NOT USED
OH2K-DDS-SS2102-317	NOT USED
OH2K-DDS-SS2102-318	NOT USED
OH2K-DDS-SS2102-319	NOT USED
OH2K-DDS-SS2102-320	NOT USED
OH2K-DDS-SS2102-321	MATERIAL REUSE SITE 25B MAIN ALIGNMENT PLAN - SHEET 21
OH2K-DDS-SS2102-322	MATERIAL REUSE SITES 25B AND 16 MAIN ALIGNMENT PLAN - SHEET 22
OH2K-DDS-SS2102-323	MATERIAL REUSE SITES 2, 3 AND 21 MAIN ALIGNMENT PLAN - SHEET 23
OH2K-DDS-SS2102-324	NOT USED
OH2K-DDS-SS2102-325	MATERIAL REUSE SITE 10 MAIN ALIGNMENT PLAN - SHEET 25
OH2K-DDS-SS2102-326	MATERIAL REUSE SITE 5B MAIN ALIGNMENT PLAN - SHEET 26
OH2K-DDS-SS2102-327	NOT USED
OH2K-DDS-SS2102-328	NOT USED
OH2K-DDS-SS2102-329	MATERIAL REUSE SITE 22 MAIN ALIGNMENT PLAN - SHEET 29
OH2K-DDS-SS2102-330	MATERIAL REUSE SITE 22 MAIN ALIGNMENT PLAN - SHEET 30
OH2K-DDS-SS2102-341	NOT USED
OH2K-DDS-SS2102-356	NOT USED
OH2K-DDS-SS2102-361	MATERIAL REUSE SITES 25B AND 2 RODEO DRIVE PLAN - SHEET 1
OH2K-DDS-SS2102-362	NOT USED
OH2K-DDS-SS2102-363	NOT USED
OH2K-DDS-SS2102-366	MATERIAL REUSE SITES 16 AND 21 KUNDABUNG ROAD PLAN
OH2K-DDS-SS2102-369	NOT USED
OH2K-DDS-SS2102-370	NOT USED
OH2K-DDS-SS2102-371	NOT USED

MATERIAL REUSE SITES PLANS (NORTH)

OH2K-DDN-SS2102-301	NOT USED
OH2K-DDN-SS2102-302	NOT USED
OH2K-DDN-SS2102-303	MATERIAL REUSE SITE 8 MAIN ALIGNMENT PLAN - SHEET 3
OH2K-DDN-SS2102-304	NOT USED
OH2K-DDN-SS2102-305	NOT USED
OH2K-DDN-SS2102-306	NOT USED
OH2K-DDN-SS2102-307	MATERIAL REUSE SITES 18A AND 18B MAIN ALIGNMENT PLAN - SHEET 7
OH2K-DDN-SS2102-308	MATERIAL REUSE SITES 18A, 18B AND 24 MAIN ALIGNMENT PLAN - SHEET 8
OH2K-DDN-SS2102-309	MATERIAL REUSE SITE 24 MAIN ALIGNMENT PLAN - SHEET 9
OH2K-DDN-SS2102-310	NOT USED
OH2K-DDN-SS2102-311	NOT USED
OH2K-DDN-SS2102-312	NOT USED
OH2K-DDN-SS2102-313	NOT USED
OH2K-DDN-SS2102-314	NOT USED
OH2K-DDN-SS2102-315	NOT USED
OH2K-DDN-SS2102-316	NOT USED
OH2K-DDN-SS2102-317	NOT USED
OH2K-DDN-SS2102-318	NOT USED
OH2K-DDN-SS2102-319	NOT USED
OH2K-DDN-SS2102-320	NOT USED
OH2K-DDN-SS2102-321	NOT USED
OH2K-DDN-SS2102-322	NOT USED
OH2K-DDN-SS2102-323	NOT USED
OH2K-DDN-SS2102-324	NOT USED
OH2K-DDN-SS2102-325	NOT USED
OH2K-DDN-SS2102-326	MATERIAL REUSE SITES 19 AND 20 MAIN ALIGNMENT PLAN - SHEET 26
OH2K-DDN-SS2102-327	NOT USED
OH2K-DDN-SS2102-328	NOT USED
OH2K-DDN-SS2102-329	NOT USED
OH2K-DDN-SS2102-330	NOT USED
OH2K-DDN-SS2102-331	NOT USED

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FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
.	.	.	.
C	ISSUE FOR CONSTRUCTION	AP	09/05/14
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

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SCALES

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT

SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY
SOUTH AND NORTH
MATERIAL REUSE SITES - LANDSCAPE DESIGN
DRAWING INDEX

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-001	04/04/14	1

REGISTRATION NUMBER
DS2012 000916

Pacific Highway Upgrade - OH2K Material Reuse Sites - Seeding Schedule

B

Native Grasses				Area (Ha) 0.6
Botanical Name	Common Name	Application Rate of Seed Kg/Ha	Fertilizer: Organic slow release for natives (low p)	Total (Kg)
Austrodanthonia richardsonii	Wallaby Grass	0.5	250Kg/Ha	0.3
Austrostipa pubescens	Speargrass	1	250Kg/Ha	0.6
Capillipedium spicigerum	Scented Top Grass	1	250Kg/Ha	0.6
Cymbopogon refractus	Barbed Wire Grass	0.5	250Kg/Ha	0.3
Echinopogon caespitosus	Hedgehog Grass	0.5	250Kg/Ha	0.3
Poa labillardieri	Tussock Grass	0.5	250Kg/Ha	0.3
Imperata cylindrica	Blady Grass	0.5	250Kg/Ha	0.3
Juncus usitatus	Common Rush	1	250Kg/Ha	0.6
Lepidosperma laterale	Variable Saw-sedge	1	250Kg/Ha	0.6
Microlaena stipoides	Weeping Grass	0.5	250Kg/Ha	0.3
Themeda triandra	Kangaroo Grass	1	250Kg/Ha	0.6
	Total	8		5.1

Frangible shrubs				Area (Ha) 0.9
Austrodanthonia sp.	Wallaby Grass	0.2	250Kg/Ha	0.2
Austrostipa pubescens	Speargrass	0.2	250Kg/Ha	0.2
Capillipedium spicigerum	Scented Top Grass	0.2	250Kg/Ha	0.2
Cymbopogon refractus	Barbed Wire Grass	0.2	250Kg/Ha	0.2
Echinopogon caespitosus	Hedgehog Grass	0.2	250Kg/Ha	0.2
Poa labillardieri	Tussock Grass	0.1	250Kg/Ha	0.1
Imperata cylindrica	Blady Grass	0.2	250Kg/Ha	0.2
Juncus usitatus	Common Rush	0.2	250Kg/Ha	0.2
Lepidosperma laterale	Variable Saw-sedge	0.2	250Kg/Ha	0.2
Microlaena stipoides	Weeping Grass	0.2	250Kg/Ha	0.2
Themeda triandra	Kangaroo Grass	0.2	250Kg/Ha	0.2
Breynia oblongifolia	Coffee Bush	0.2	250Kg/Ha	0.2
Daviesia ulicifolia *	Gorse Bitter Pea	1	250Kg/Ha	0.9
Dianella caerulea	Flax Lily	0.2	250Kg/Ha	0.2
Gompholobium pinnatum *	Pinnate Wedge Pea	0.2	250Kg/Ha	0.2
Lomandra longifolia	Mar Rush	1	250Kg/Ha	0.9
Ozothamnus diosmifolius	Rice Flower	0.2	250Kg/Ha	0.2
Platylobium formosum *	Handsome Flat Pea	0.2	250Kg/Ha	0.2
Pultenaea villosa *	Hairy Bush-Pea	0.2	250Kg/Ha	0.2
Zieria smithii	Zieria	0.2	250Kg/Ha	0.2
Pultenaea retusa	Notched Bush-Pea	0.2	250Kg/Ha	0.2
Banksia spinulosa var. collina	Hairpin Banksia	0.2	250Kg/Ha	0.2
Melaleuca nodosa	Prickly leaved Paperbark	0.1	250Kg/Ha	0.1
Acacia falcata *	Wattle	1	250Kg/Ha	0.9
Acacia longissima *	Long leaved Wattle	1	250Kg/Ha	0.9
	Total	8		7.3

* Pre treatment to assist germination by immerging seeds contained in a bag in hot water (90ºc) for 60 minutes

	Material Reuse Site 11	Material Reuse Site 12	Material Reuse Site 13	Material Reuse Site 14	Material Reuse Site 25b	Material Reuse Site 16	Material Reuse Site 2	Material Reuse Site 3	Material Reuse Site 21	Material Reuse Site 10	Material Reuse Site 5b	Material Reuse Site 22	Material Reuse Site 8	Material Reuse Site 18a	Material Reuse Site 18b	Material Reuse Site 24	Material Reuse Site 19	Material Reuse Site 20	TOAL AREA (M²)
Area (M²)	877	1103		1157						307	176	231		779			1177	552	6359.1

B

Area (M²)										706		4107		4280					9094

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
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SCALES

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT: SMEC + Hyder Joint Venture HBO+EMTB

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY
SOUTH AND NORTH
MATERIAL REUSE SITES
SEEDING SCHEDULE - SHEET 1

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-003	04/04/14	2

REGISTRATION NUMBER: DS2012 000916

PLOT DATE 10 Apr 2014 TIME 09:12:07

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Material Reuse Site 11	Material Reuse Site 12	Material Reuse Site 13	Material Reuse Site 14	Material Reuse Site 25b	Material Reuse Site 16	Material Reuse Site 2	Material Reuse Site 3	Material Reuse Site 21	Material Reuse Site 10	Material Reuse Site 5b	Material Reuse Site 22	Material Reuse Site 8	Material Reuse Site 18a	Material Reuse Site 18b	Material Reuse Site 24	Material Reuse Site 19	Material Reuse Site 20	TOAL AREA (M²)
Area (M²)	5816	2198	4036	4549	5918			3781	5102	4253						1432	3138	40222

Tall shrubs			Area (Ha)	4.0
Botanical Name	Common Name	Application Rate of Seed Kg/Ha	Fertilizer Organic slow release for natives (low p)	Total (Kg)
Austrodanthonia sp.	Wallaby Grass	0.2	250Kg/Ha	0.80
Austrostipa pubescens	Speargrass	0.2	250Kg/Ha	0.80
Capillipedium spicigerum	Scented Top Grass	0.2	250Kg/Ha	0.80
Cymbopogon refractus	Barbed Wire Grass	0.1	250Kg/Ha	0.40
Echinopogon caespitosus	Hedgehog Grass	0.2	250Kg/Ha	0.80
Poa labillardieri	Tussock Grass	0.1	250Kg/Ha	0.40
Imperata cylindrica	Blady Grass	0.1	250Kg/Ha	0.40
Juncus usitatus	Common Rush	0.2	250Kg/Ha	0.80
Lepidosperma laterale	Variable Saw-sedge	0.2	250Kg/Ha	0.80
Microlaena stipoides	Weeping Grass	0.2	250Kg/Ha	0.80
Themeda triandra	Kangaroo Grass	0.2	250Kg/Ha	0.80
Breynia oblongifolia	Coffee Bush	0.2	250Kg/Ha	0.80
*Daviesia ulicifolia**	Gorse Bitter Pea	0.2	250Kg/Ha	0.80
Dianella caerulea	Flax Lily	0.2	250Kg/Ha	0.80
*Gompholobium pinnatum**	Pinnate Wedge Pea	0.2	250Kg/Ha	0.80
Lomandra longifolia	Mar Rush	0.5	250Kg/Ha	2.01
Ozothamnus diosmifolius	Rice Flower	0.2	250Kg/Ha	0.80
*Platylobium formosum**	Handsome Flat Pea	0.2	250Kg/Ha	0.80
*Pultenaea villosa**	Hairy Bush-Pea	0.5	250Kg/Ha	2.01
Zieria smithii	Zieria	0.2	250Kg/Ha	0.80
Pultenaea retusa	Notched Bush-Pea	0.5	250Kg/Ha	2.01
Banksia spinulosa var. collina	Hairpin Banksia	0.2	250Kg/Ha	0.80
Melaleuca nodosa	Prickly leaved Paperbark	0.2	250Kg/Ha	0.80
*Acacia falcata**	Wattle	0.5	250Kg/Ha	2.01
*Acacia longissima**	Long leaved Wattle	0.5	250Kg/Ha	2.01
*Acacia longifolia**	Sydney Golden Wattle	0.5	250Kg/Ha	2.01
Leptospermum polygalifolium	Tantoon	0.2	250Kg/Ha	0.80
*Acacia fimbriata**	Fringed Wattle	0.5	250Kg/Ha	2.01
Melaleuca sieberi	Paperbark	0.2	250Kg/Ha	0.80
Callistemon salignus	Willow Bottlebrush	0.2	250Kg/Ha	0.80
Hibiscus splendens	Pink Hibiscus	0.2	250Kg/Ha	0.80
	Total	8		32.2

* Pre treatment to assist germination by immerging seeds contained in a bag in hot water (90ºc) for 60 minutes

Pasture grasses seeding mix			Area (Ha)	2.7
Axonopus fissifolius	Carpet Grass	5	250Kg/Ha	13.7
Cynodon dactylon	Unhulled Couch	5	250Kg/Ha	13.7
Echinochloa itilis (Sep-Mar) or Secale cereale (Apr-Aug)	Japanese Millet or Rye Co	40	250Kg/Ha	109.2
Lolium multiflorum	Eclipse Rye	20	250Kg/Ha	54.6
Trifolium pratense	Red Clover	5	250Kg/Ha	13.7
	Total	75		204.8

Cover crop seeding mix (All disturbed areas identified to be hydromulched except Pasture grass areas which already contains cover crop) cover crop may be applied separately or in conjunction with all other hydromulch mixes			Area (Ha)	5.6
Echinochloa itilis (Sep-Mar) or Secale cereale (Apr-Aug)	Japanese Millet or Rye Co	20	250Kg/Ha	111.4
Lolium multiflorum (All Year)	Eclipse Rye	10	250Kg/Ha	55.7
	Total	30		167.0

Area (M²)						1139	6394	8792	3808			934	1491		2129	2620			27307

Area (M²)	877	6919	2198	5193	4549	5918	0	0	3781	6115	4429	4338	0	5059	0	0	2609	3690	55675

PLOT DATE 10 Apr 2014 TIME 09:12:12

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No	Amendment Description	Initials	Date
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

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SCALES

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT

SMEC + Hyder Joint Venture

HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY
SOUTH AND NORTH
MATERIAL REUSE SITES
SEEDING SCHEDULE - SHEET 2

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-004	04/04/14	3

REGISTRATION NUMBER DS2012 000916

Pacific Highway Upgrade - OH2K -Material Reuse Site - Planting schedule

Botanical Name	Common Name	% of Species per Area	Spacing (m²)	Pot Size	Qty.
Trees					
Corymbia maculata	Spotted Gum	As Shown	As Shown	NT	31
Eucalyptus acmenoides	Cabbage Gum	As Shown	As Shown	NT	32
Eucalyptus grandis	Flooded Gum	As Shown	As Shown	NT	21
Eucalyptus microcorys	Tallowood	As Shown	As Shown	NT	97
Eucalyptus pilularis	Blackbutt	As Shown	As Shown	NT	41
Glochidion ferdinandi	Cheese tree	As Shown	As Shown	NT	36
Melaleuca linariifolia	Flax-leaved Paperbark	As Shown	As Shown	NT	66
Syncarpia glomulifera	Turpentine	As Shown	As Shown	NT	36
Tristaniopsis laurina	Water Gum	As Shown	As Shown	NT	66

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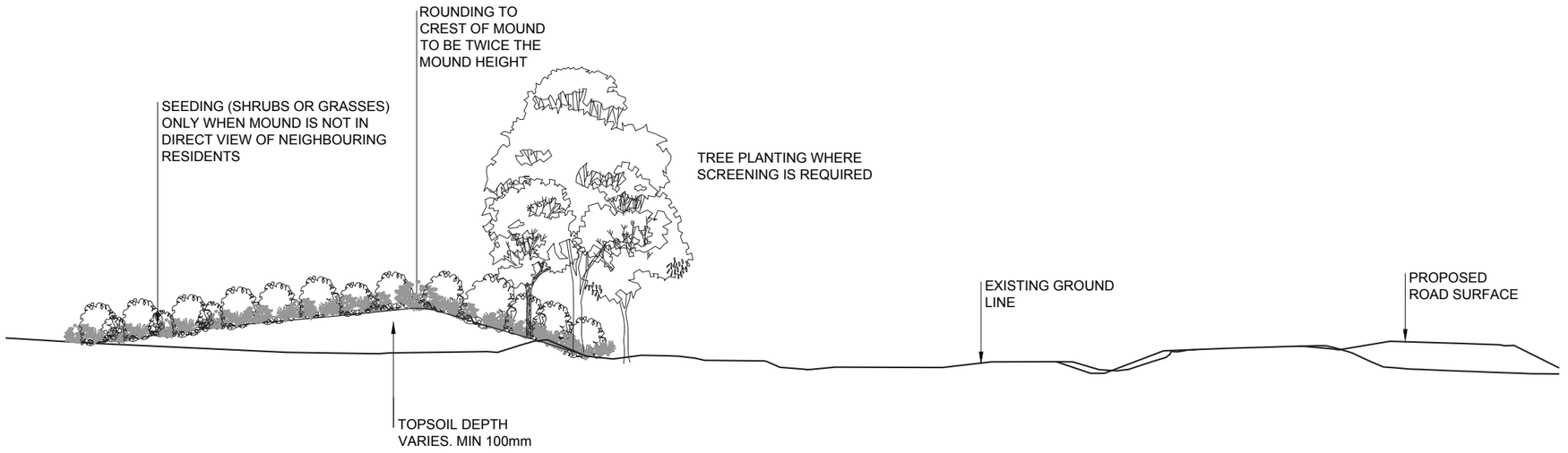

TYPICAL MATERIAL REUSE SITE DETAIL
DETAIL A
SCALE NTS -

B

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
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Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
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ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY
SOUTH AND NORTH
MATERIAL REUSE SITES
PLANTING SCHEDULE AND TYPICAL STOCKPILE DETAIL

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-005	04/04/14	4

REGISTRATION NUMBER
DS2012 000916

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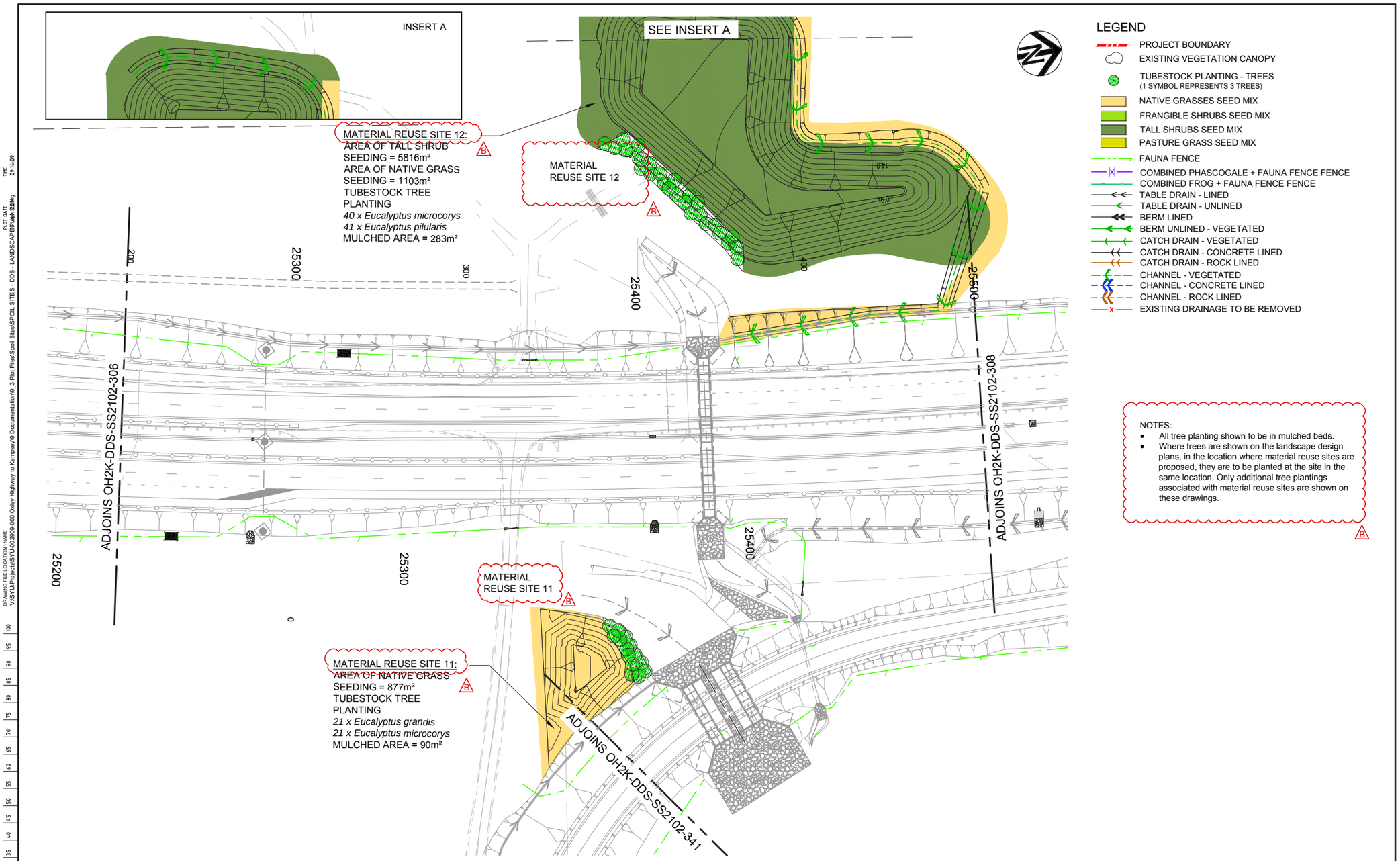

NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

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PLOT DATE 09/4/14
TIME

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A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date
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SCALES
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scale 1:1000
Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
SMEC + Hyder
Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

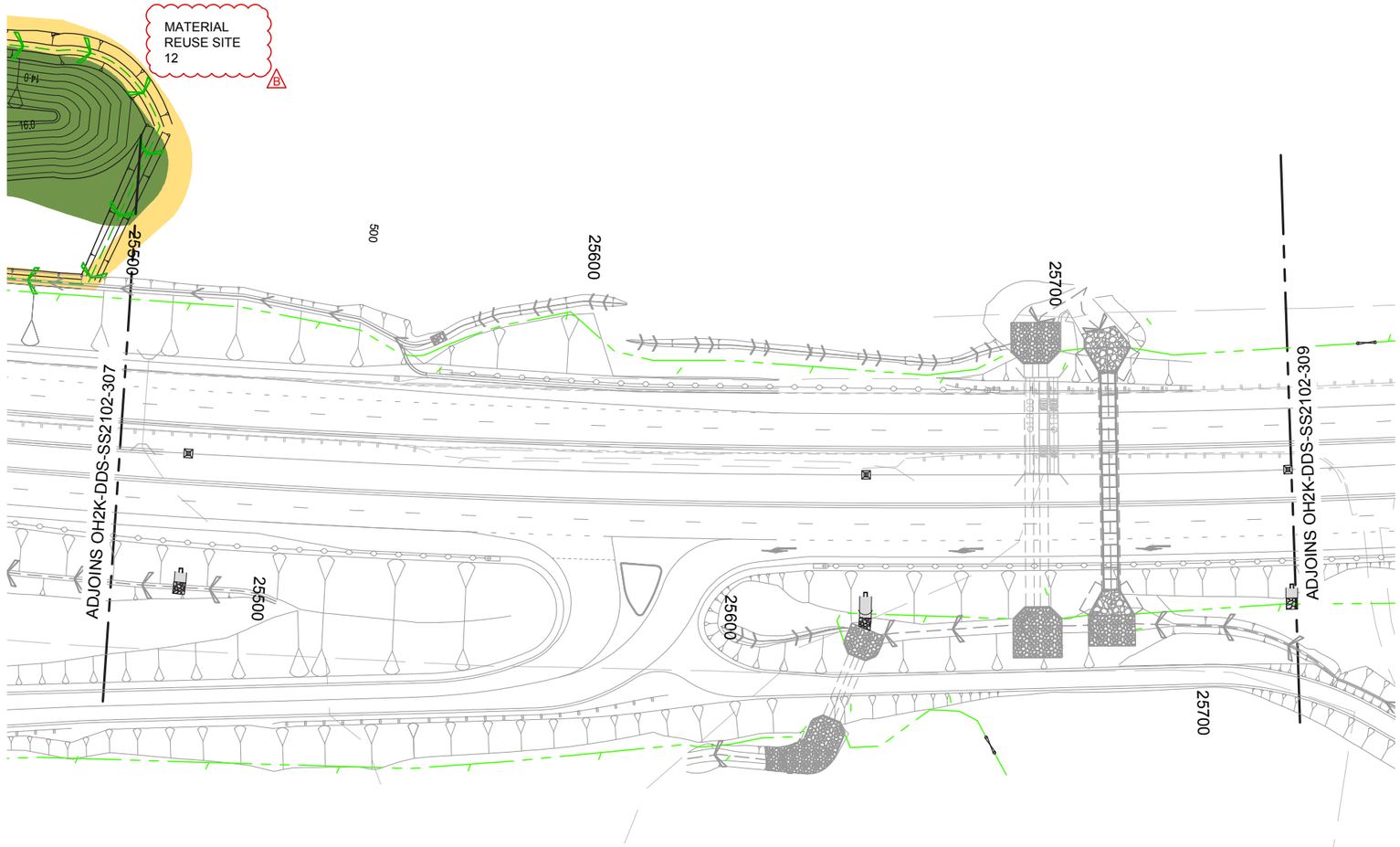
HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITES 11 AND 12
MAIN ALIGNMENT PLAN - SHEET 7

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-307	04/04/14	5

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

DRAWING FILE LOCATION \\NAME V:\SYU\Projects\SYU-002909-000 Oxley Highway to Kempsey\9 Documentation\9_3 Plot Files\Spoil Sites\SPOIL SITES - DDS - LANDSCAPE.dwg PLOT DATE 04/04/2014 TIME 09:14:59

100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

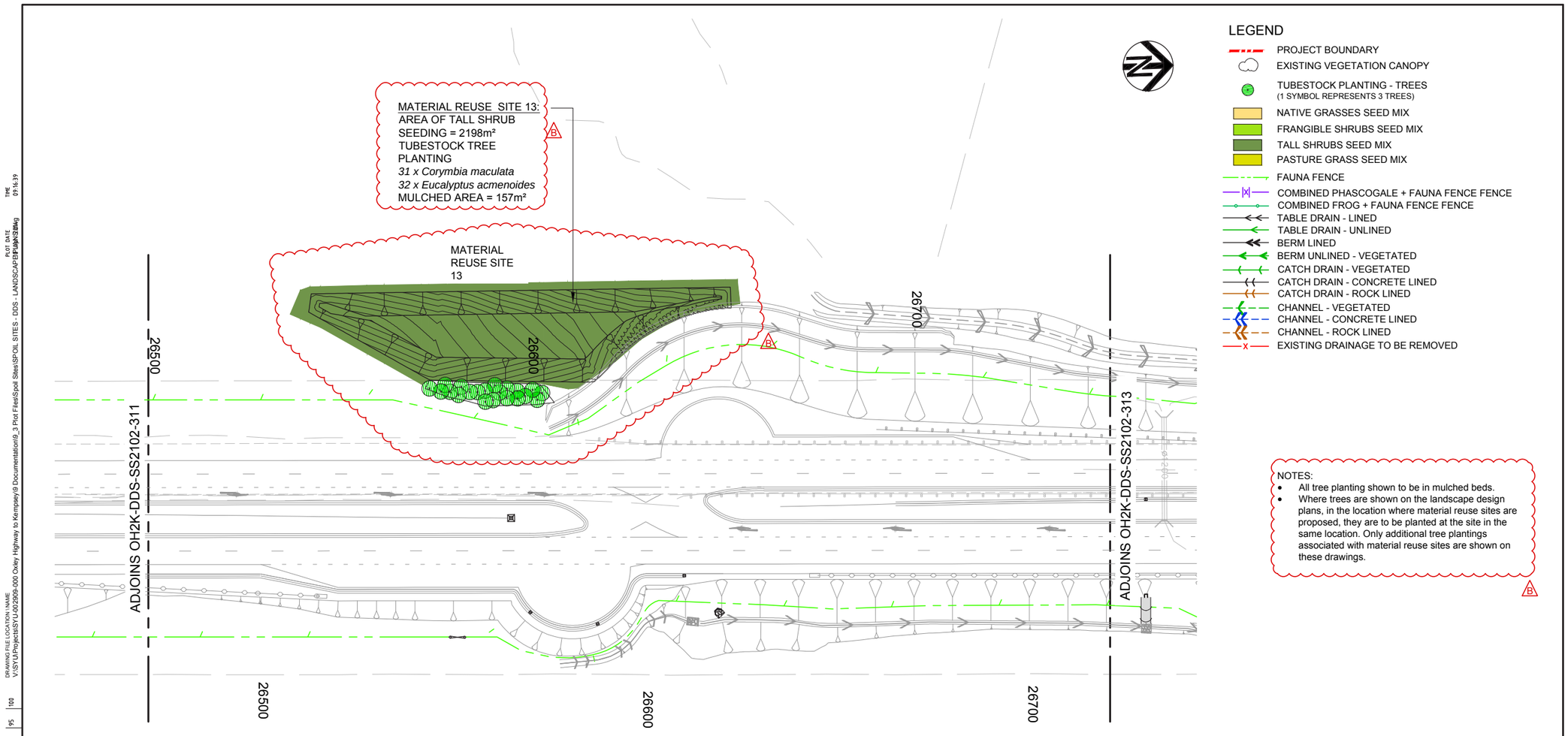
CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITES 12
MAIN ALIGNMENT PLAN - SHEET 8

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-308	04/04/14	6

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

PLOT DATE 16/12/2013 TIME 09:16:39
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

FOR CONSTRUCTION

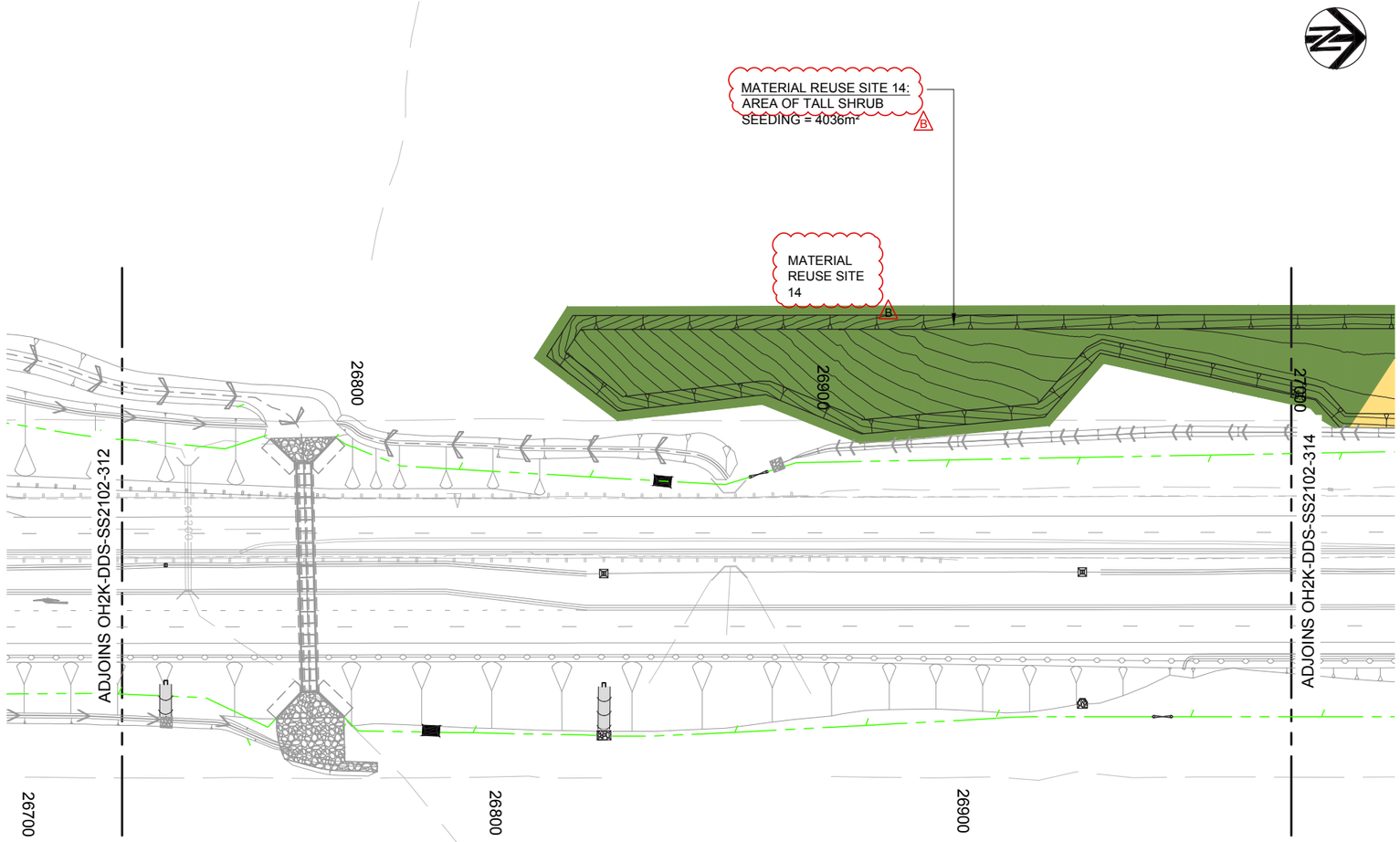
OH2K DESIGN LOT DDNUDL

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 13
MAIN ALIGNMENT PLAN - SHEET 12

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-312	04/04/14	8

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
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B

PLOT DATE 04/04/2014 TIME 09:17:29
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100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

A3 original — This sheet may be prepared using colour and may be incomplete if copied

SCALES
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scale 1:1000

Co-ordinate System: MGA Zone 56 Height Datum: AHD

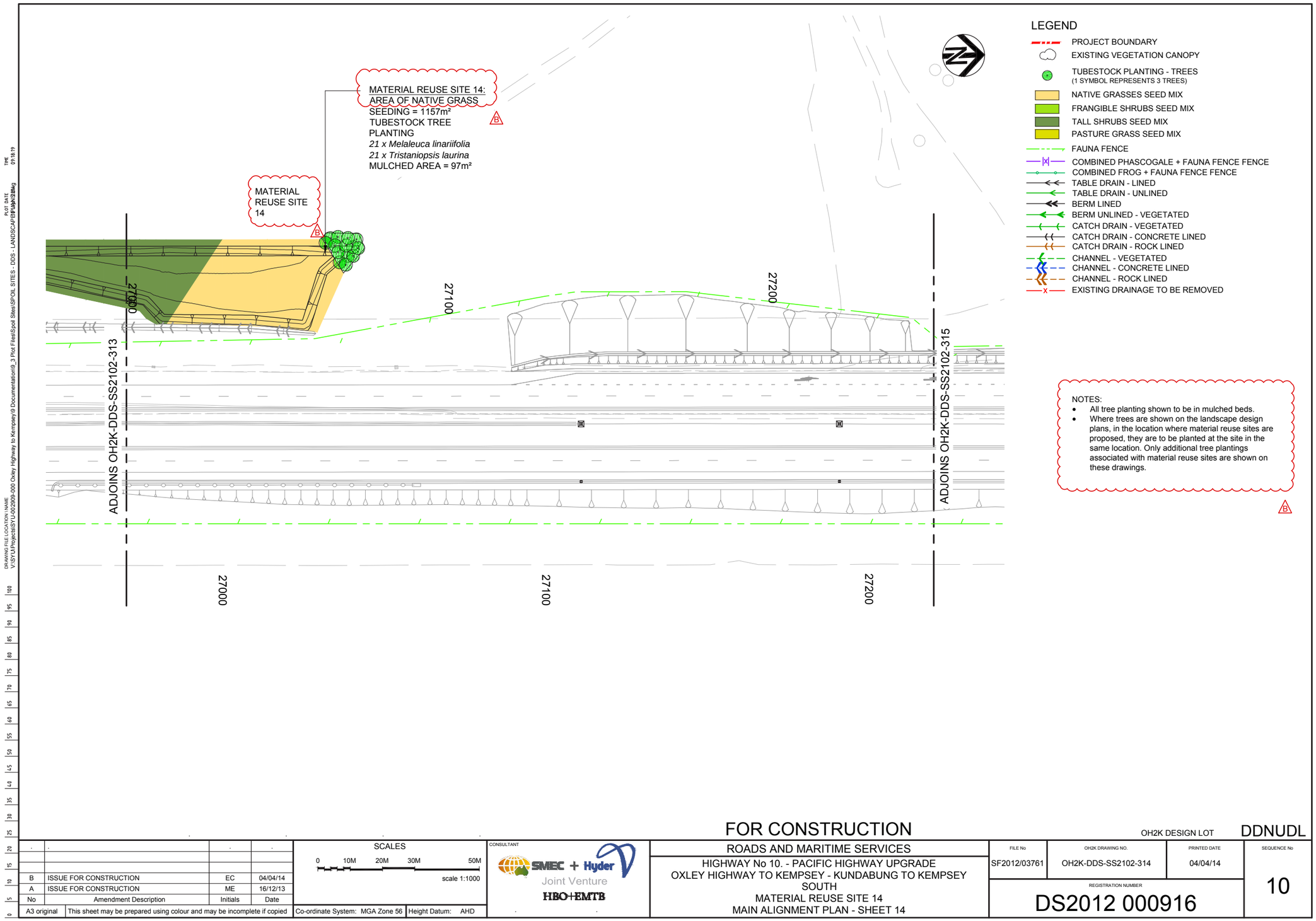
CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 14
MAIN ALIGNMENT PLAN - SHEET 13

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-313	04/04/14	9

REGISTRATION NUMBER
DS2012 000916



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100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

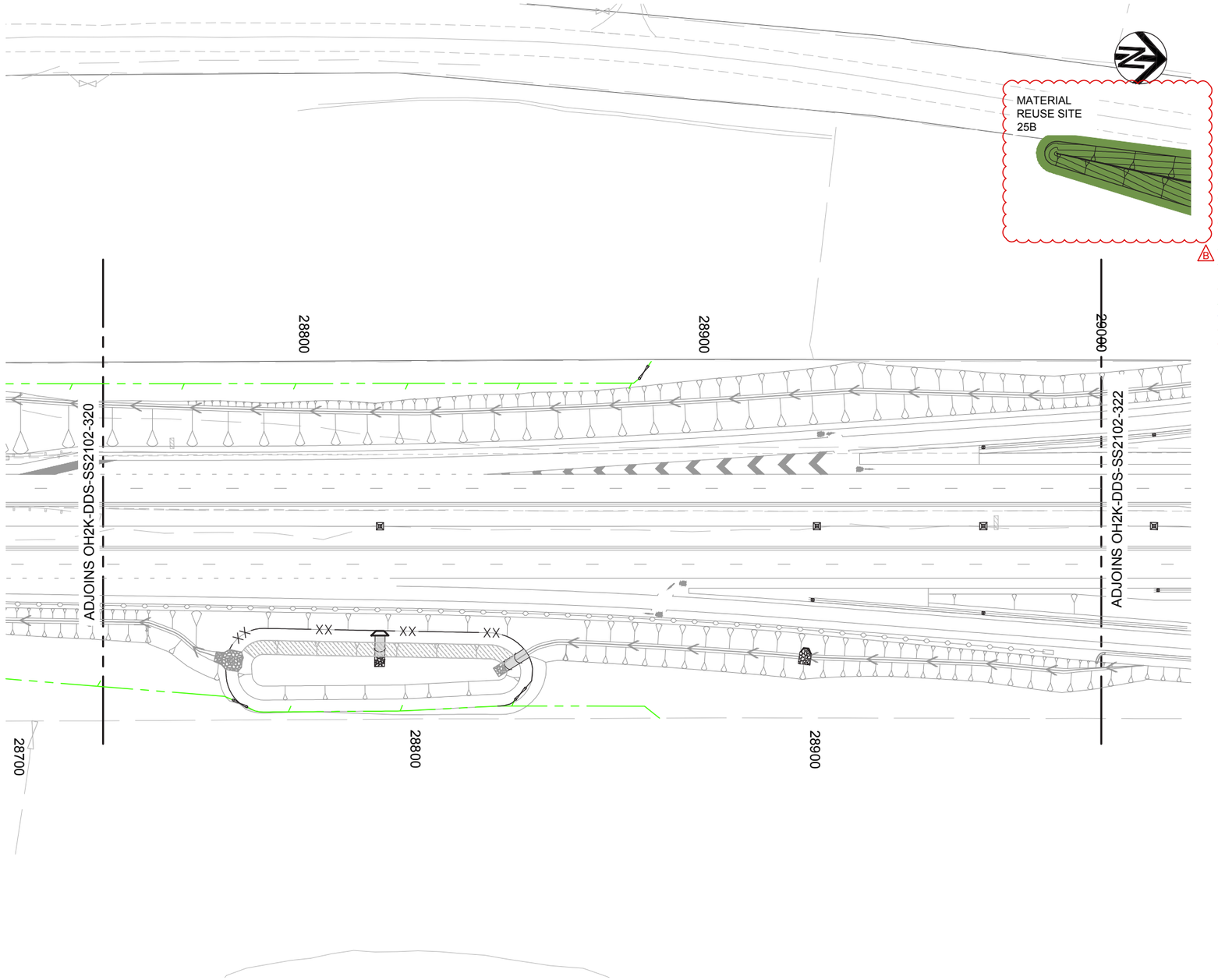
CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 14
MAIN ALIGNMENT PLAN - SHEET 14

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-314	04/04/14	10

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:

- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

PLOT DATE 09/12/2014 TIME 09:19:09
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100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

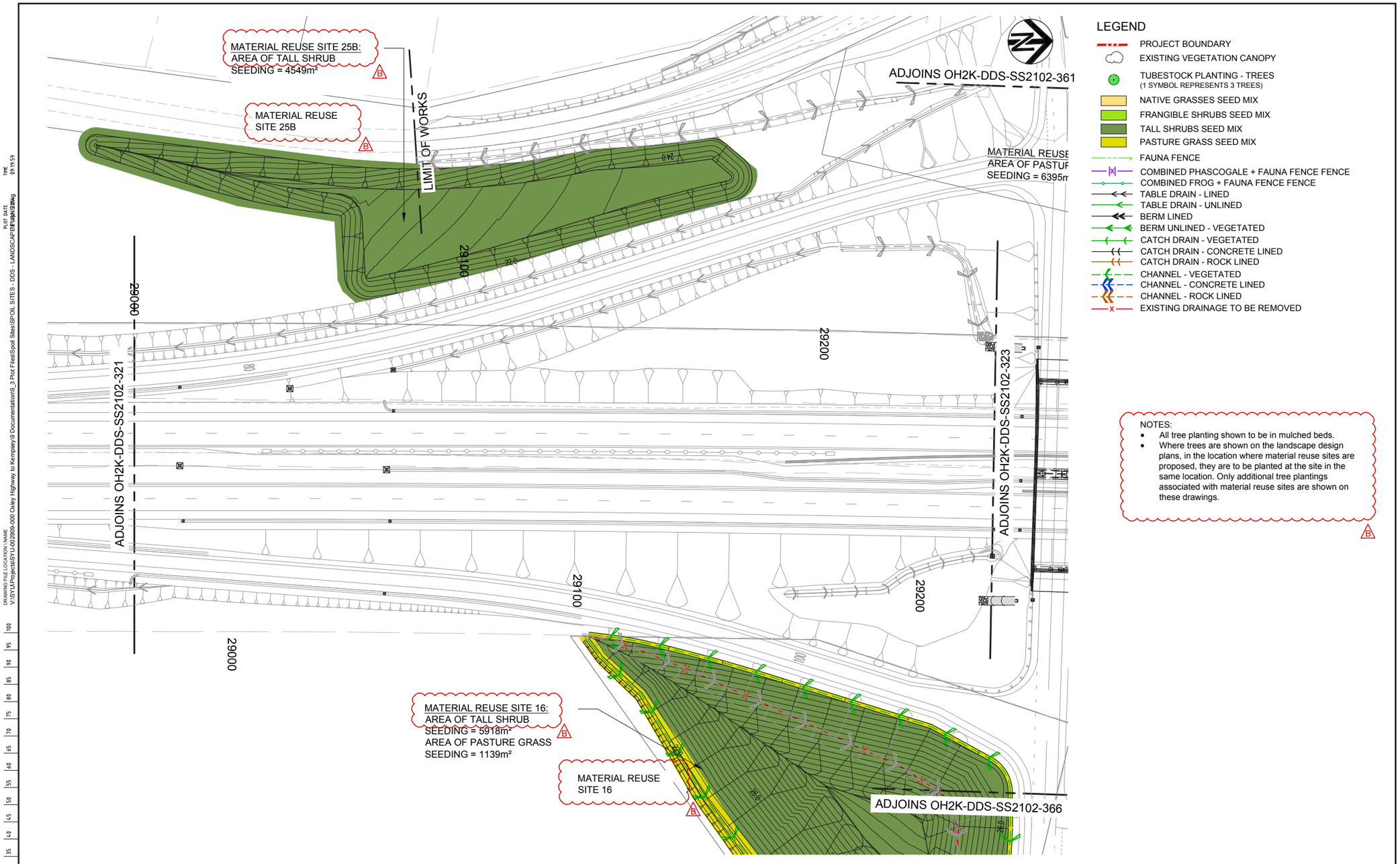
CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 25B
MAIN ALIGNMENT PLAN - SHEET 21

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-321	04/04/14	11

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
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- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

DRAWING FILE LOCATION \\NAME V:\SYU\Projects\SYU-002909-000 Oxley Highway to Kempsey\9 Documentation\9_3 Plot Files\Spoil Sites\SPOIL SITES - DDS - LANDSCAPE PLAN.dwg
PLOT DATE 04/04/2014 TIME 09:19:59
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

FOR CONSTRUCTION

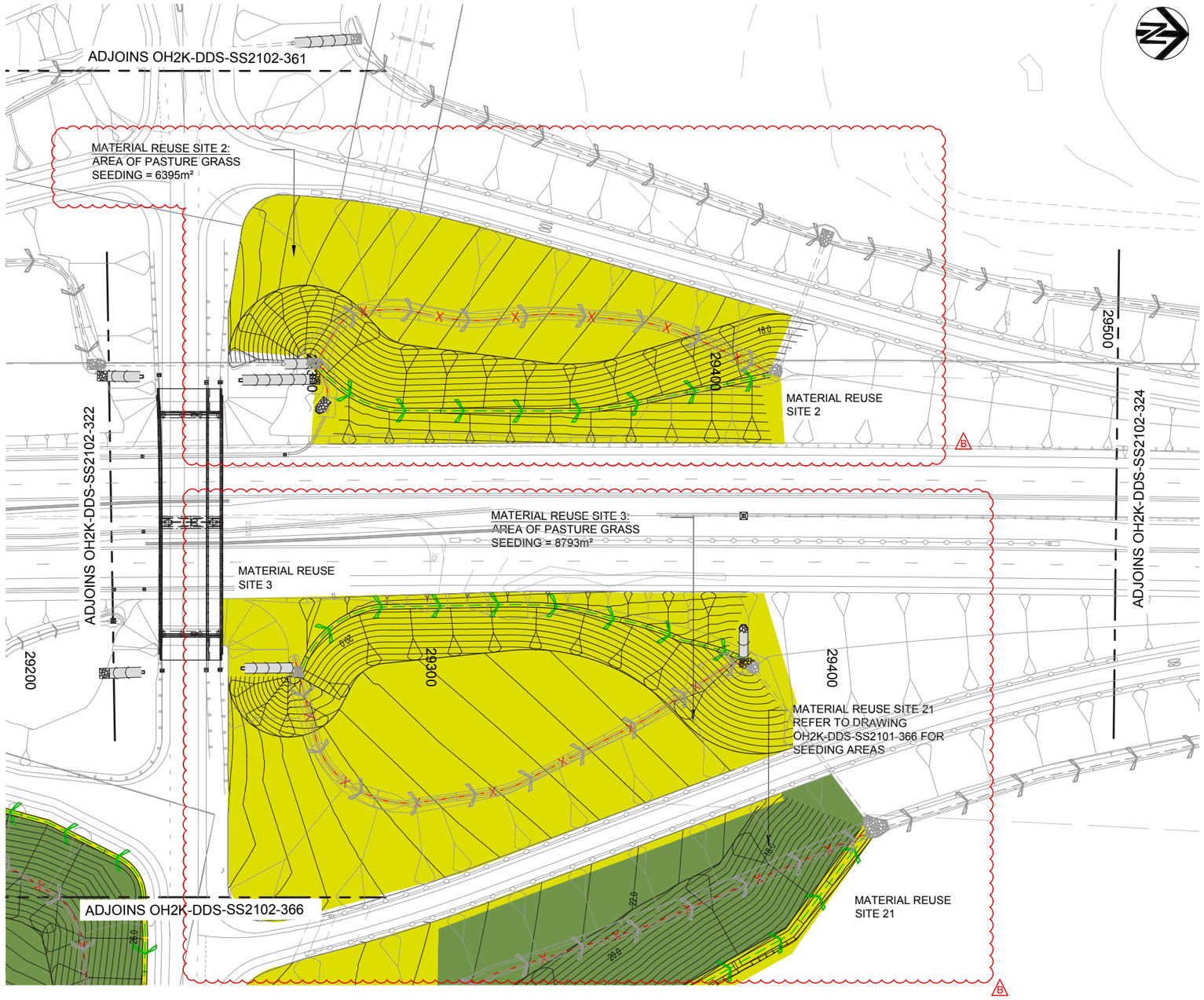
ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITES 25B AND 16
MAIN ALIGNMENT PLAN - SHEET 22

OH2K DESIGN LOT DDNUDL

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-322	04/04/14	12

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

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B

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PLOT DATE 04/04/2014
TIME 09:20:49
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date

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SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT
SMEC + Hyder
Joint Venture
HBO+EMTB

FOR CONSTRUCTION

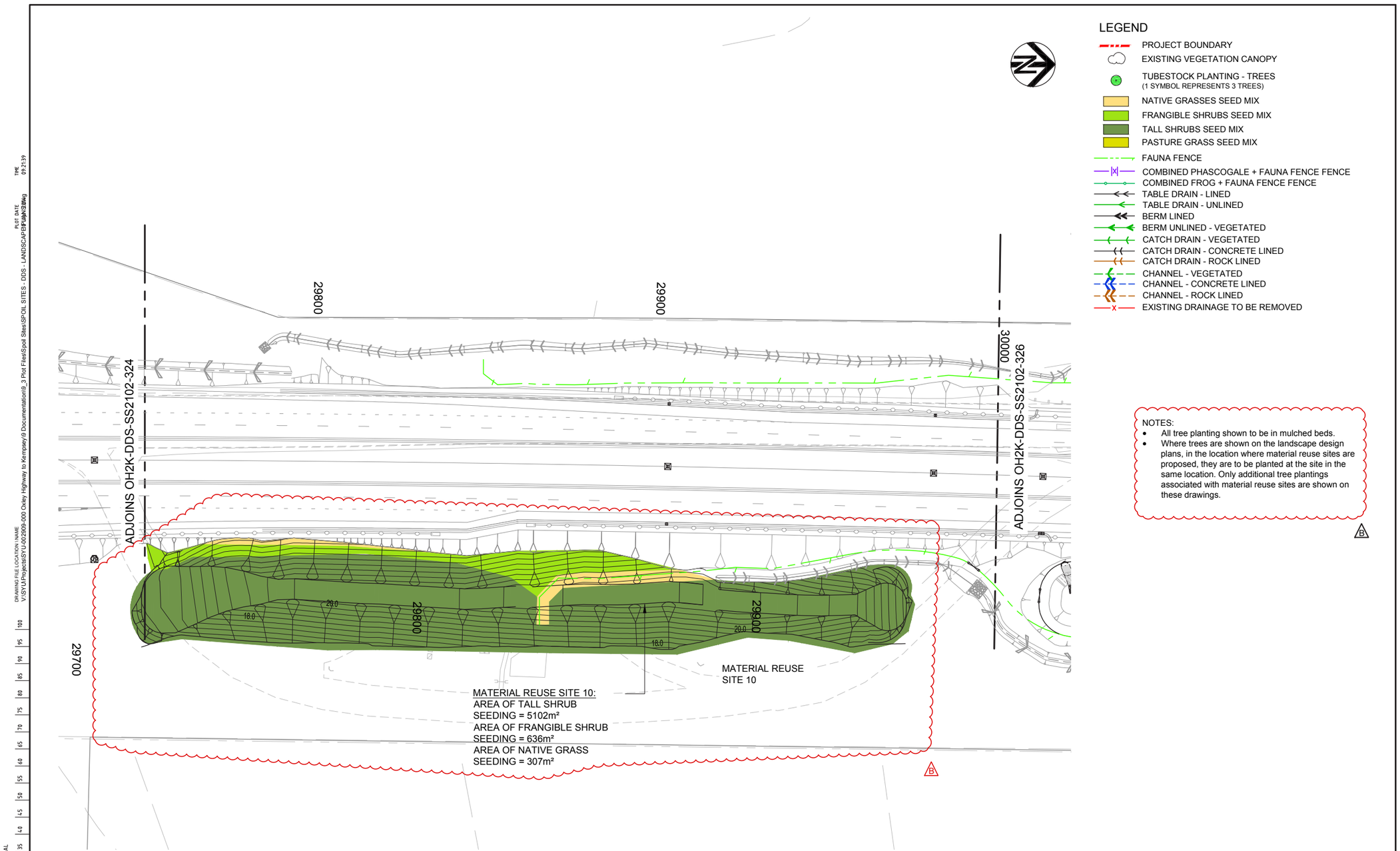
OH2K DESIGN LOT DDNUDL

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITES 2, 3 AND 21
MAIN ALIGNMENT PLAN - SHEET 23

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-323	04/04/14	13

REGISTRATION NUMBER
DS2012 000916



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100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

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SCALES
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scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

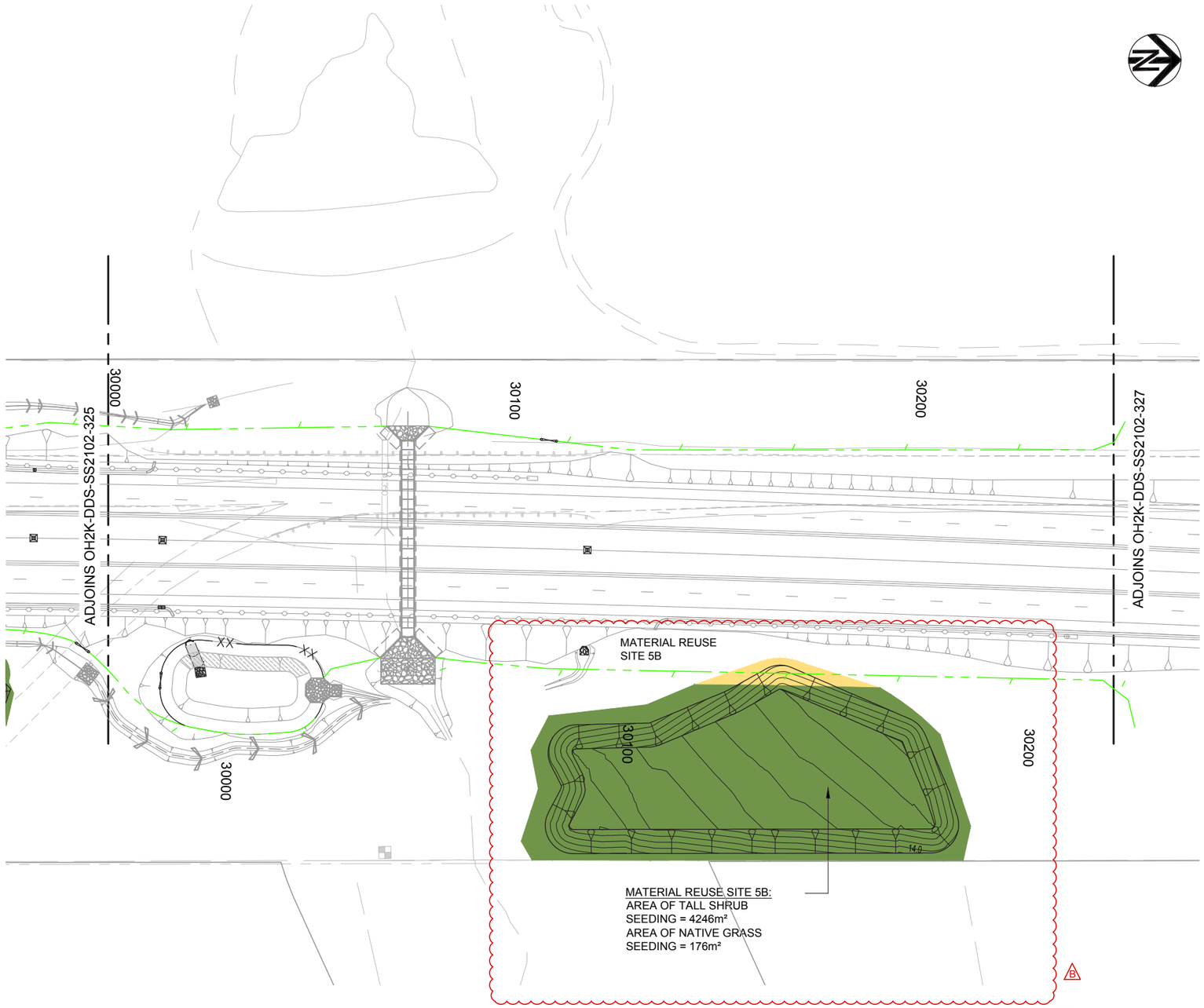
CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 10
MAIN ALIGNMENT PLAN - SHEET 25

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-325	04/04/14	14

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

B

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

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SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 5B
MAIN ALIGNMENT PLAN - SHEET 25

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-326	04/04/14	15

REGISTRATION NUMBER
DS2012 000916

PLOT DATE 04/04/2014 TIME 09:22:29
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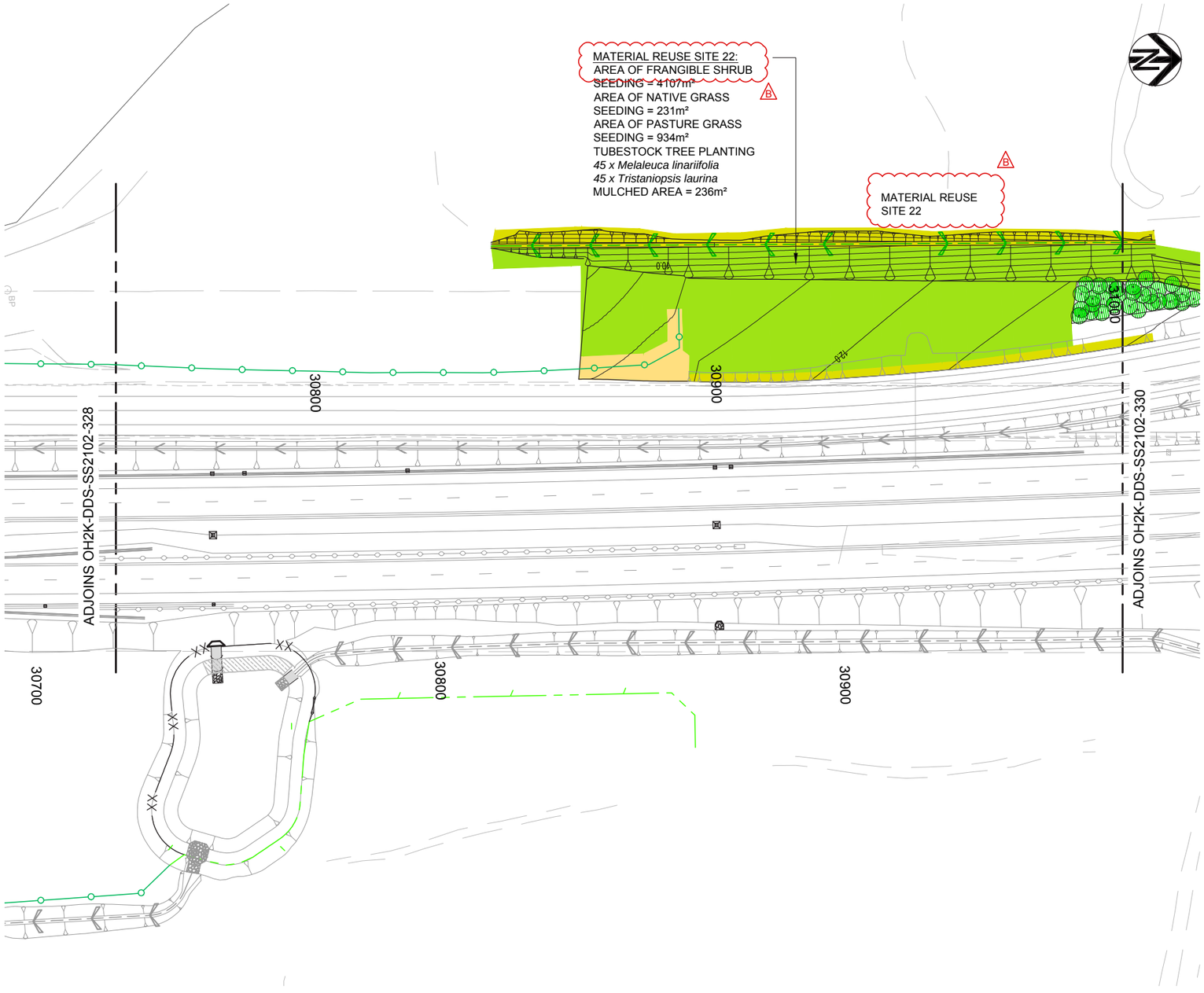

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

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B

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PLOT DATE 04/04/2014
TIME 09:23:19
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
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scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

FOR CONSTRUCTION

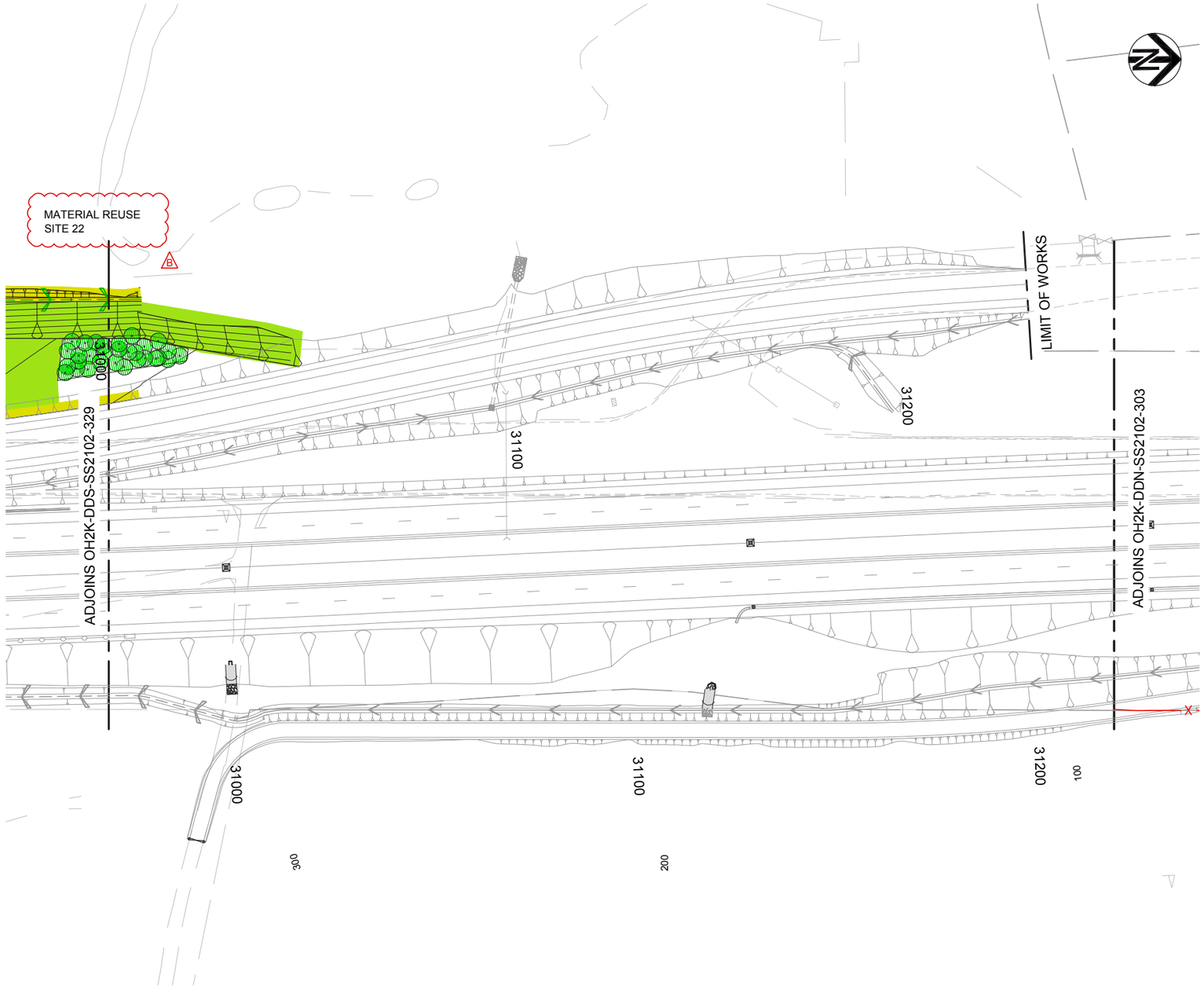
ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 22
MAIN ALIGNMENT PLAN - SHEET 29

OH2K DESIGN LOT DDNUDL

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-329	04/04/14	16

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

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B

DRAWING FILE LOCATION \ NAME
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PLOT DATE 04/04/2014
TIME 09:24:09

100 mm ON ORIGINAL

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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITE 22
MAIN ALIGNMENT PLAN - SHEET 30

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-330	04/04/14	17

REGISTRATION NUMBER
DS2012 000916

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

PLOT DATE 09/04/14
TIME 09:24:59
DRAWING FILE LOCATION \ NAME V:\SYU\Projects\SYU-002909-000 Oxley Highway to Kempsey\9 Documentation\9_3 Plot Files\Spoil Sites\SPOIL SITES - DDS - LANDSCAPE PLAN.dwg
100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
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scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

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ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITES 25B AND 2
RODEO DRIVE PLAN - SHEET 1

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-361	04/04/14	18

REGISTRATION NUMBER
DS2012 000916

LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
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- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

PLOT DATE 04/04/2014 TIME 09:25:49
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100 mm ON ORIGINAL

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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
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scale 1:1000

Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
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FOR CONSTRUCTION

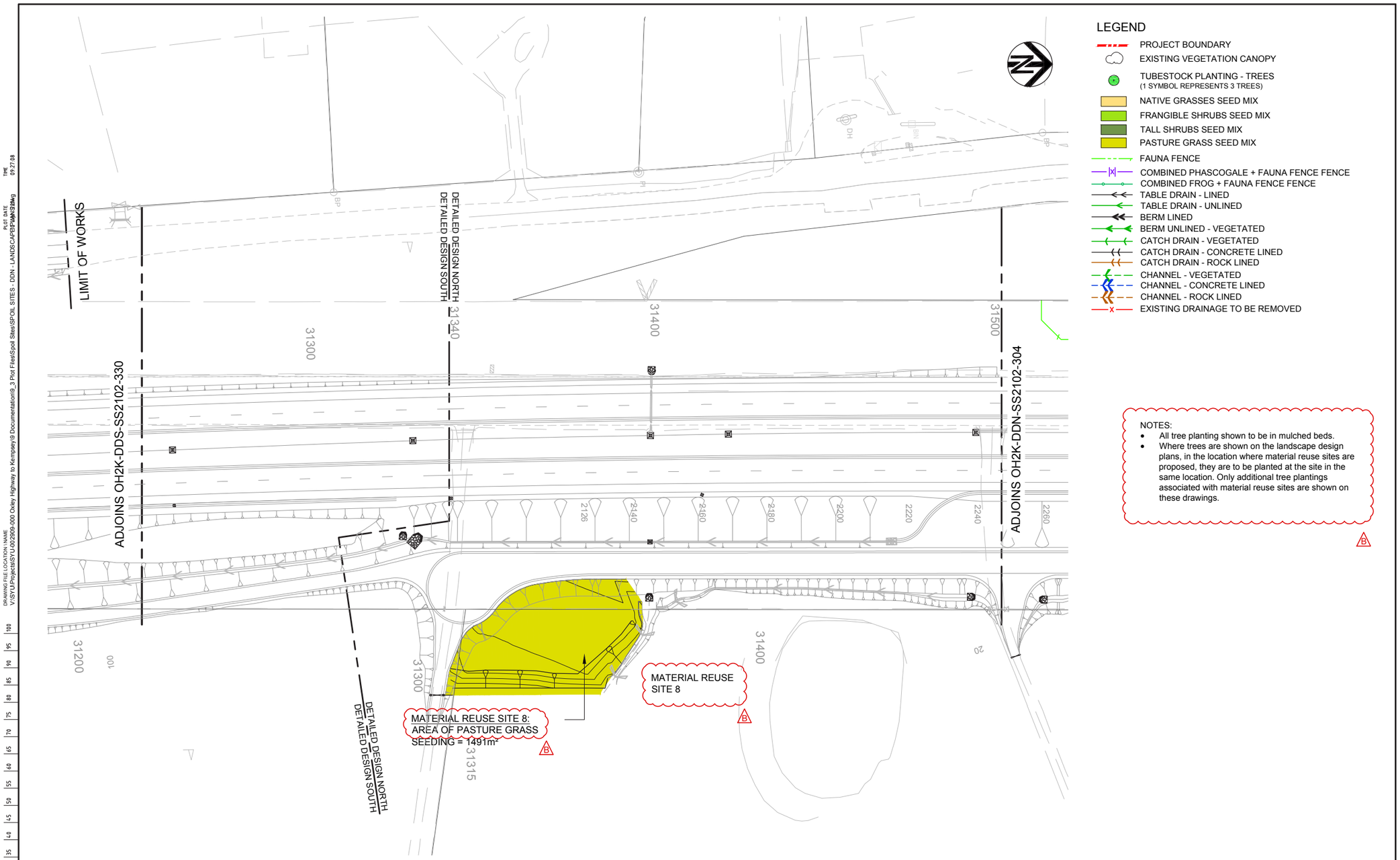
OH2K DESIGN LOT DDNUDL

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY SOUTH
MATERIAL REUSE SITES 16 AND 21
KUNDABUNG ROAD PLAN

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDS-SS2102-366	04/04/14	19

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
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- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

DRAWING FILE LOCATION \ NAME
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PLOT DATE 04/04/2014
TIME 09:27:58

100 mm ON ORIGINAL

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
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FOR CONSTRUCTION

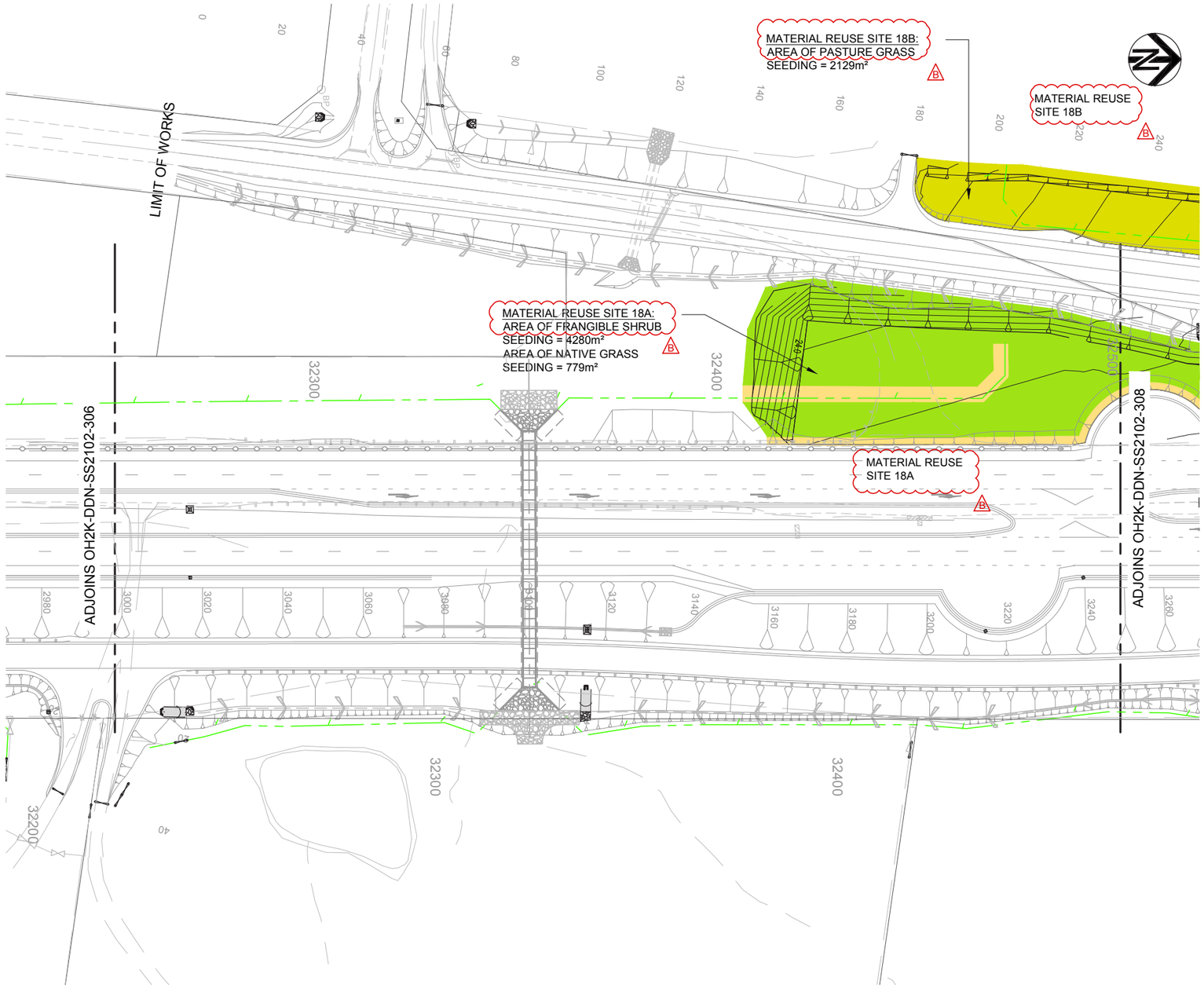
ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY NORTH
MATERIAL REUSE SITES 17 AND 8
MAIN ALIGNMENT PLAN - SHEET 3

OH2K DESIGN LOT DDNUDL

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-303	04/04/14	20

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

PLOT DATE 09/04/2014 TIME 09:27:55
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100 mm ON ORIGINAL

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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
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HBO+EMTB

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY NORTH
MATERIAL REUSE SITES 18A AND 18B
MAIN ALIGNMENT PLAN - SHEET 7

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-307	04/04/14	21

REGISTRATION NUMBER
DS2012 000916

PLOT DATE 09:28:40
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100 mm ON ORIGINAL

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
A3 original	This sheet may be prepared using colour and may be incomplete if copied		

SCALES
0 10M 20M 30M 50M
scale 1:1000
Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
SMEC + Hyder
Joint Venture
HBO+EMTB

FOR CONSTRUCTION

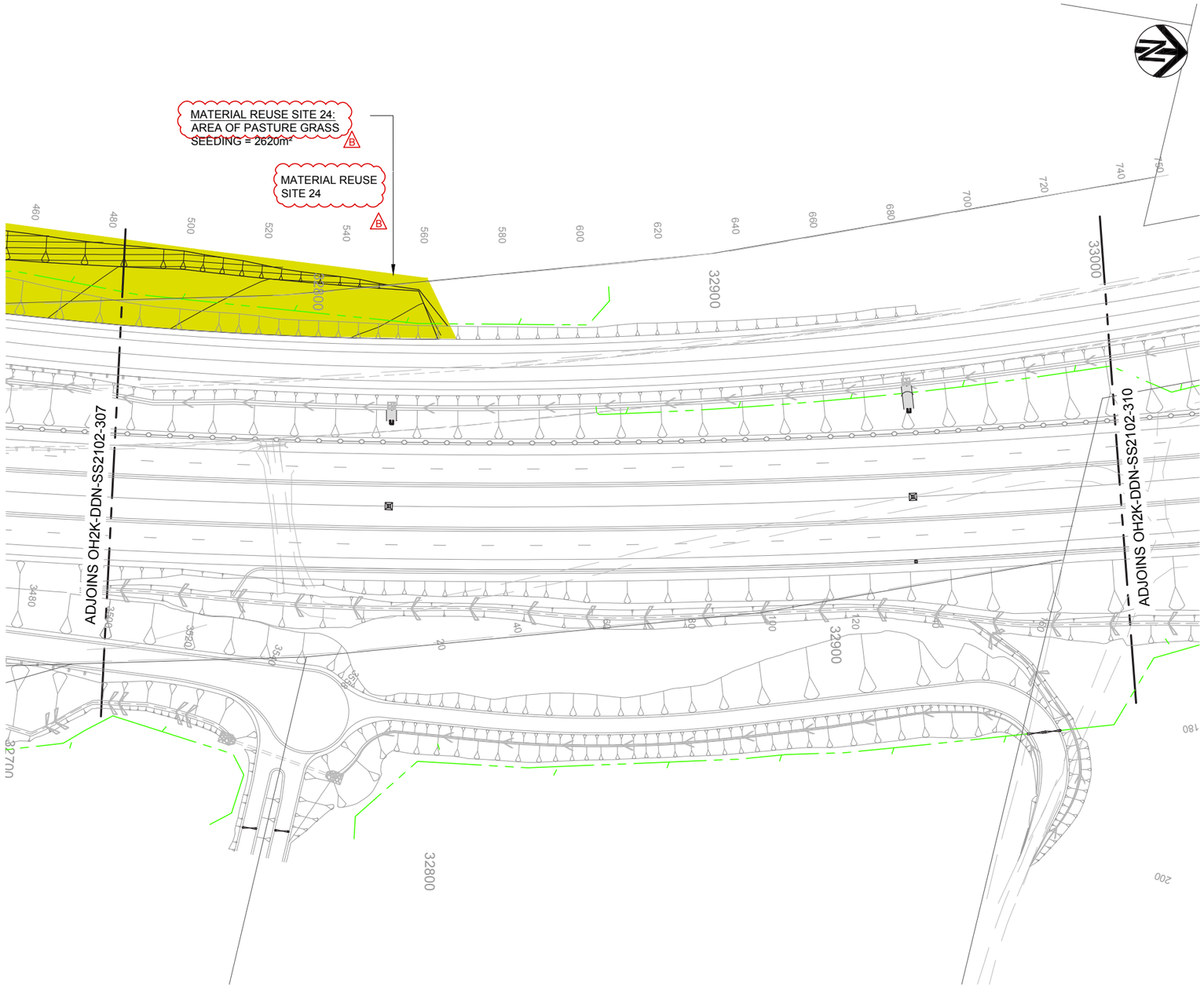
ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY NORTH
MATERIAL REUSE SITES 18A AND 18B
MAIN ALIGNMENT PLAN - SHEET 8

OH2K DESIGN LOT DDNUDL

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-308	04/04/14	22

REGISTRATION NUMBER
DS2012 000916



LEGEND

- PROJECT BOUNDARY
- EXISTING VEGETATION CANOPY
- TUBESTOCK PLANTING - TREES (1 SYMBOL REPRESENTS 3 TREES)
- NATIVE GRASSES SEED MIX
- FRANGIBLE SHRUBS SEED MIX
- TALL SHRUBS SEED MIX
- PASTURE GRASS SEED MIX
- FAUNA FENCE
- COMBINED PHASCOGALE + FAUNA FENCE FENCE
- COMBINED FROG + FAUNA FENCE FENCE
- TABLE DRAIN - LINED
- TABLE DRAIN - UNLINED
- BERM LINED
- BERM UNLINED - VEGETATED
- CATCH DRAIN - VEGETATED
- CATCH DRAIN - CONCRETE LINED
- CATCH DRAIN - ROCK LINED
- CHANNEL - VEGETATED
- CHANNEL - CONCRETE LINED
- CHANNEL - ROCK LINED
- EXISTING DRAINAGE TO BE REMOVED

NOTES:
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- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

DRAWING FILE LOCATION \\NAME V:\SYU\Projects\SYU-002909-000 Oxley Highway to Kempsey\9 Documentation\9_3 Plot Files\Spoil Sites\SPOIL SITES - DDN - LANDSCAPE.pltPLOT DATE 04/04/2014 TIME 09:29:25

100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No			
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B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13
No	Amendment Description	Initials	Date

A3 original | This sheet may be prepared using colour and may be incomplete if copied

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 | Height Datum: AHD

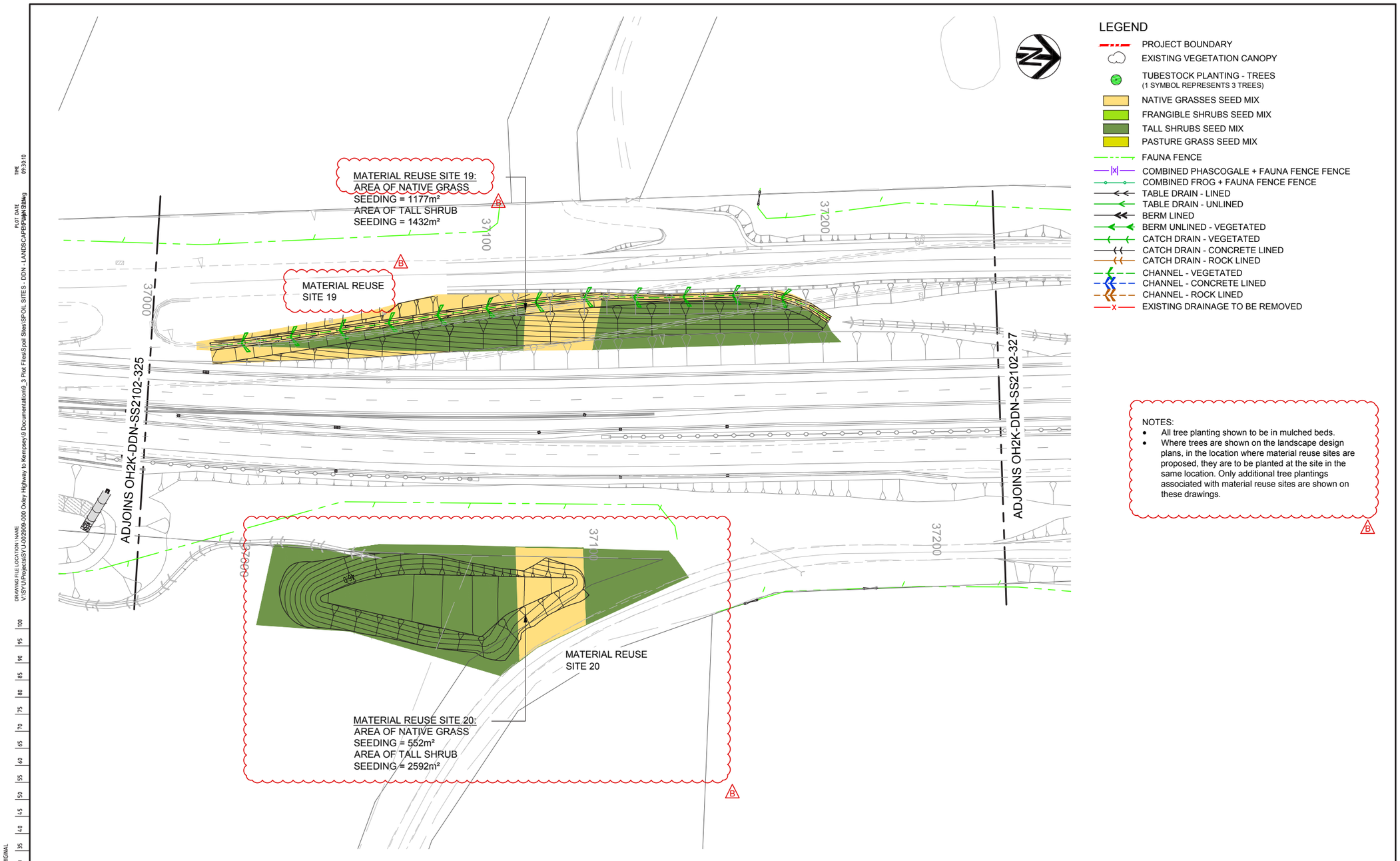
CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY NORTH
MATERIAL REUSE SITE 24
MAIN ALIGNMENT PLAN - SHEET 9

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-309	04/04/14	23

REGISTRATION NUMBER
DS2012 000916



NOTES:
- All tree planting shown to be in mulched beds.
- Where trees are shown on the landscape design plans, in the location where material reuse sites are proposed, they are to be planted at the site in the same location. Only additional tree plantings associated with material reuse sites are shown on these drawings.

B

PLOT DATE 04/04/2014 TIME 09:30:10
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100 mm ON ORIGINAL

FOR CONSTRUCTION

OH2K DESIGN LOT DDNUDL

No	Amendment Description	Initials	Date
B	ISSUE FOR CONSTRUCTION	EC	04/04/14
A	ISSUE FOR CONSTRUCTION	ME	16/12/13

A3 original — This sheet may be prepared using colour and may be incomplete if copied

SCALES
0 10M 20M 30M 50M
scale 1:1000

Co-ordinate System: MGA Zone 56 Height Datum: AHD

CONSULTANT
SMEC + Hyder Joint Venture
HBO+EMTB

ROADS AND MARITIME SERVICES

HIGHWAY No 10. - PACIFIC HIGHWAY UPGRADE
OXLEY HIGHWAY TO KEMPSEY - KUNDABUNG TO KEMPSEY NORTH
MATERIAL REUSE SITES 19 AND 20
MAIN ALIGNMENT PLAN - SHEET 26

FILE No	OH2K DRAWING NO.	PRINTED DATE	SEQUENCE No
SF2012/03761	OH2K-DDN-SS2102-326	04/04/14	24

REGISTRATION NUMBER
DS2012 000916