

# PEACOCKES STRATEGIC TRANSPORT PROJECT



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# PART ONE

## 1 INTRODUCTION

### 1.1 Purpose of the Report

A Landscape Management Plan (LMP) has been developed by Adrian Morton Landscape Architects Ltd (AMLA) and Bloxam Burnett & Olliver Ltd (BBO) on behalf of Hamilton City Council as supporting documentation for the detail design stage of the Peacockes PST project (Project).

The objective of the LMP is to outline the Project deliverables and how they contribute to the urban fabric of the area while maintaining and enhancing the landscape, amenity and ecological values within the Project locality. The LMP has been developed in line with the initial Peacockes Concept Landscape Management Plan (CLMP) and incorporates requirements from the consultation of key stakeholders.

The LMP provides supporting documentation in relation to the detailed urban, environmental and landscape design elements associated with the Project for Local Authority approval.

### 1.2 Requirements of the Landscape Management Plan

The LMP is the development of the overarching Peacockes CLMP and is a requirement of Condition 6.0 and 14.0 of the Southern Links Project (Refer to Fig 1.2) and is required to be submitted prior to the construction commencement. The LMP is a technical document that aims at removing any ambiguity within the detailed design package that has been developed for the Project. The LMP provides information in relation to landscape, ecological and urban design elements of the project, while incorporating the requirements of NZTA's Bridging the Gap and Landscape Guidelines plus incorporates feedback from consultation with key stakeholders.

Condition 14.0 of the Southern Links Designation, requires the LMP to include at minimum the following:

- The proposed landscape and urban design theme to be adopted for the entire length of the Project, including for overbridges, underbridges and noise barriers;
- Landscape plans that identify any vegetation to be retained, areas of landscape mitigation and ecological enhancement planting (taking into account the requirements of the Ecological Management and Monitoring Plan required by Condition 15), and the type and density of planting to be undertaken;
- Provision where practicable for the use of earth bunding with gently undulating forms for noise barriers and measures to integrate the design of noise mitigation measures;
- Integration of the landscape design with the design of noise mitigation measures so that the combined measures can be implemented in a co-ordinated manner;
- Measures to minimise clearing work to conserve soil and protect any existing vegetation to be retained;
- Measures to ensure the appropriate disposal of any invasive or noxious weeds cleared from the site;

- Measures to integrate cut and fill batters with the existing topography;
- Measures to be undertaken for topsoil and subsoil management so as to provide a viable growing medium for the areas to be planted with trees, shrubs and grass;
- The nature, programme and methods of rehabilitation to be implemented within borrow and spoil disposal areas and any areas identified as being required for the treatment of otherwise unsuitable earth material;
- A schedule of the species to be planted including botanical name, average plant height at time of planting and at maturity, and planting density;
- A planting specification, including planting and mulching techniques;
- Planting maintenance requirements over a five-year period following planting and reinstatement of road verges and gullies;
- An implementation programme for all remedial and mitigation measures;
- Post-construction monitoring measures;
- Site specific planting and screening measures developed after consultation with directly affected property owners;
- Planting and screening measures developed after consultation with landowners of Riley Place and Montgomery Crescent adjoining the designation; and
- All plant species used in the Landscape Management Plan shall be selected to ensure that at their full maturity they do not protrude through the Hamilton Airport Obstacle Limitation Surface height restrictions as set out in the Hamilton City District Plan.

The LMP will be in general accordance with the indicative landscape and mitigation measures and urban design proposals outlined within the Southern Links Urban Design and Landscape Framework prepared by Opus, dated 5th August 2013.

The condition specifically requires consultation with the Tangata Whenua Working Group (TWWG) and NZTA, which has been undertaken throughout the design development.

### 1.3 Project Scope

The Project is proposed to connect into the Wairere and Cobham Drive Interchange with the provision of a new bridge connection across the Waikato River with road infrastructure to support future residential development within the Peacockes Structure Plan Area (refer to Figures 1.2 and 3.0). The provision of providing the road infrastructure is in response to the rapid growth Hamilton is experiencing and will provide the initial connection to allow progress development of the Peacockes area.

The proposed design accords with the originally designated route developed as part of the Southern Links Project and will

form part of a strategic road linking the southern aspect of Hamilton to Wairere Drive Ring Road and Cobham Drive/SH1.

The Project will incorporate the following features:

- Waikato River Bridge
- Gateway footbridge
- Major north/south arterial
- Upgrade of Peacockes Road to a Minor Arterial with a controlled intersection at Peacockes Road and Weston Lea Drive East
- Upgrade to Weston Lea Drive (West and East)
- Bus priority lanes
- Cycle and pedestrian facilities
- Stormwater attenuation systems including swale, rain gardens and outlet structures
- Open Space and Pocket Parks with recreational and play facilities
- Street furniture including lighting, barriers and safety features
- Landscape and ecological Interventions
- Urban design interventions to bridges and other structures
- Incorporation of cultural aspects associated with the Project area

The detail design stage of the Project has incorporated a number of key stakeholders including the TWWG, Hamilton City Council Parks and Open Space, Hamilton City maintenance operatives plus HCC Transportation Department.



Fig 1.0 SOUTHERN LINKS - ULDF



## 1.4 Principles and Guiding Documentation

The Project's landscape and urban design approach aims at achieving quality urban and environmental outcomes and will utilise guidance documentation that includes the following:

- Bridging the Gap, NZ Transport Agency Urban Design Guidelines, 2013
- NZTA Landscape Guidelines, 2014
- NZTA's Urban Design and Landscaping Principles
- Waikato Local Authority Shared Services Regional Infrastructure Specifications (RITS)
- The Southern Links Environmental Management and Monitoring Plan April 2019 (EMMP)
- HCC Sign Brand Manual
- Waikato-Tainui Environmental Plan
- Waikato River Plan
- HCC Open Spaces Plan and Play Strategy
- Waikato Regional Policy Statement
- Peacockes Infrastructure Project Concept Landscape Management Plan, April 2019 (Peacockes CLMP), and the
- Southern Links Urban and Landscape Design Framework (ULDF), 2013.

## 1.5 Southern Links ULDF Guidance

The Southern Links ULDF provided the initial guidance for the development of the Project area within the Southern Links project. It recognised that the Project area is located in a dense urban environment located on the fringe of residential area with extensive open space to south, with the bridge being visible from the surrounding residential areas to the north and east. It will be a dominant feature within the landscape and in close proximity to the proposed Waikato River Bridge.

The ULDF provides specific guidance and design principles for the Southern Links project, which are relevant to the PST Project project as follows:

- Ensuring that urban dwellers have access to open spaces and recreational opportunities
- Use of a green edge to contain the boundary of Hamilton City
- Design is environmentally sensitive and reinforces the local landscape character
- Protecting the unique character of the rural communities that might otherwise be absorbed by expanding suburbs
- Good urban design outcomes, utilising creative and innovative solutions to integrate sustainable design measures including structures, noise controls, drainage

and ecology

- Vegetation clear zones and/or frangible plant species giving a high degree of visibility while maximising safety
- Design is context sensitive, in terms of acknowledging local Maori the Waikato River and associated landforms, the rural landscape and land use, gully and stream environments and the urban environment
- Planting to frame views and responds to local topography including:
  - Ridgetop views over Waikato basin maintained
  - Views into gully systems and rolling hill land, river systems and peat lakes, and
  - Distance views to hills and surrounding ranges.
- Protecting and enhancing natural or semi-natural environments

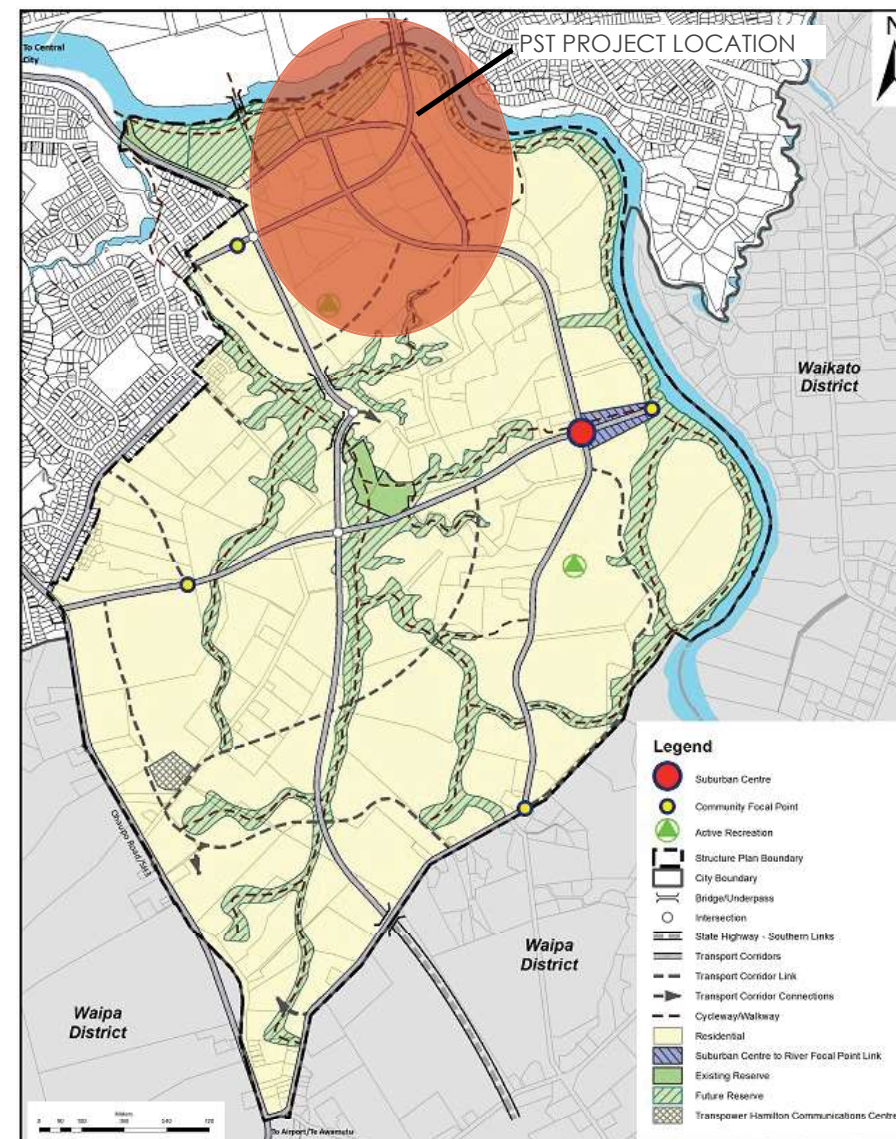


Fig 1.2 SOUTHERN LINKS - Peacocke Structure Plan Area

- Creating a contiguous or linked habitat network for fauna and flora
- Ensuring wetland ponds create habitats and biodiversity
- Linkages to existing habitats - Waikato River, Gullies and Streams, Peat Lakes, Residential Gardens and remnant bush stands
- Specific tree/plant species for food sourcing
- Use of exotic and indigenous trees for long term bat habitat, and
- Cultural planting to reflect past land uses - Maori and European.

## 1.6 Peacocke CLMP

The Peacocke's CLMP is a guidance document that provides a platform for the integrated urban and landscape design requirements for the Peacockes Structure Plan area. It focuses on principles and outcomes sought with information on potential design responses (but avoids quantifying specific designs) for the subsequent detail design stages.

In addition, the Peacocke CLMP overview includes a cultural theme/narrative that has been developed in conjunction with TWWG, which helps define the landscape and urban design interventions, which has been carried forward with the Project.

The document provides clear directives in terms of the design outcomes sought for the various Project components, including cycleway and pedestrian requirements, bridge design elements, landscape and ecological interventions and stormwater management. These requirements have been integrated into the Peacockes PST project.



Fig 1.3 PEACOCKE CONCEPT LANDSCAPE MANAGEMENT PLAN



A broad range of stakeholders have been identified and consulted with during the detail design stages of the Project. Extensive stakeholder consultation has ensured knowledge sharing, identifying concerns and issues while enabling stakeholder aspirations and inputs to be incorporated into the Project where appropriate.

The following provides a summary of consultation discussion and outcomes with key stakeholders:



### 2.1 Consultation with Hamilton City Open Spaces and Facilities / Community Planning and Policy

Consultation and design discussion has been undertaken with various HCC departments to assist in ensuring the design approach meets their various requirements. The majority of feedback points have been responded to by either adjusting the design or providing clarification on the design approach.

Discussion and feedback from the HCC Open Spaces focused on ensuring safe quality pedestrian and cycle facilities and connections, the integration and development of open space areas with appropriate play and recreational facilities.

Other feedback included the appropriate selection and positioning of shrub and tree species within open spaces, pedestrian and cycle facilities and streetscape environments. Design features that have been developed in conjunction with HCC include the integration of walk and play activities, plus the incorporation of a table top area at the intersection of Peacockes Road and Weston Lea Drive West to improve and provide safer pedestrian connections and priority to open space recreation and play facilities. Work on the Weston Lea Drive West cul-de-sac/Bridge park interface is currently ongoing.

### 2.2 Hamilton City Operations Department and Street Landscapes

Further discussion since the development of the CLMP has been undertaken with the HCC City Parks and Infrastructure Alliance to refine the selection of plant material and ensure a robust and appropriate palette of plants are utilised. Consideration to ensure that plants are selected for ease of maintenance and to allow accessibility to planted areas can be achieved with minimal traffic control. Plant schedules have been adjusted within the detail design stage to incorporate feedback that was received.



### 2.3 Mana Whenua Liaisons, Tangata Whenua Working Group (TWWG)

During the detail design phase of the Project, a number of consultation hui were undertaken to set the context of the Project and build upon the cultural themes (as outlined in the Peacockes CLMP), and present design approaches and opportunities. The identified cultural design opportunities will be further developed in partnership with TWWG assigned professional artists during the construction stage.

The specific landscape and urban design features that have been incorporated and developed through our close working partnership within the detailed design phase include:

- Development of a cultural theme that incorporates the idea of movement networks and trading points with reference to gardening activities. Garden activities are seen as a site-specific activity and may include/reference aspects such as kumara, tools and rongaa plants medicine and food
- Inclusion of the above cultural themes into the bridge designs with the footbridge incorporating a waka design approach to reflect the traditional use of the river of trade and transport. The Waikato River bridge incorporates a weave form to the central pier that symbolizes a kete, with further weave motifs incorporated into the bridge abutment.
- The inclusion of the national flax weaving collection into the Bridge Park area
- Development of cultural symbols within pathways and opportunities for naming and development of information for interpretive signage
- The inclusion of opportunities for cultural murals within the pedestrian and cycle underpasses
- The selection of suitable plant material for stormwater wetlands and swales to support water quality and habitat biodiversity
- Appropriate selection of plant material that is culturally representative,
- Site monitoring involvement during construction, and
- Road and bridge naming



### 2.4 Consultation with NZ Transport Agency

The Project has embraced Waka Kotahi's various design guidelines to ensure high quality design outcomes are achieved. In addition, The Transport Agency has been involved during the various stakeholder meetings and have included inputs into technical aspects of the Project, particularly in relation to the bridge structure, design and protection requirements.

The Agency's Urban Designer has had the opportunity to review the LMP to allow an opportunity for further feedback, particularly in relationship to cycling and pedestrian facilities. Inputs that have been incorporated into the Project include 'best practices in relation to pedestrian/cycleway' and via the use of 'Bridging the Gap'; design guidelines and Urban Design and Landscape principles. Discussions will remain ongoing with the Agency throughout the construction phase of the Project.



### 3 VISION AND PRINCIPLES

#### 3.1 The Vision

The vision for the Peacockes PST infrastructure is to ensure a high-quality urban approach to the river crossing bridge(s) with streetscapes that achieves exemplary pedestrian and cycle facilities, high quality open spaces that embraces ecological linkages and enhancements, and the incorporation of cultural sensitive design solutions.

#### 3.2 Project Principles

The following principles have been developed to align with Hamilton City Council (HCC) the NZ Transport Agency (NZTA) requirements, which are consistent with the Southern Links project objectives:

- Ensure an integrated road network, linking the Peacockes PST into the Wairere/Cobham Drive Interchange that achieves access and safety for all road users
- Integrate adjacent land uses and anticipated future development with particular focus on providing future access points, integrating existing housing and ensuring the development potential of 'active' street frontages.
- Reduce congestion and improve vehicle journey time reliability and provide efficient traffic flows in and around Hamilton
- Support high quality transport choices through the provision of safe and user-friendly and easily accessible cycle and pedestrian facilities, plus the inclusion of designated bus lanes
- Ensure integration with future project stages
- Incorporate significant cultural aspects of the area into the Project
- Incorporate design treatments that moderate the scale of the Project while providing quality aesthetic design outcomes that contribute and reinforces the character of the area
- Uphold the requirements of the EMMP to ensure suitable ecological mitigation and enhancement contributes to maintaining and increasing wildlife habitat and improved water quality

#### 3.3 Landscape and Urban Design Objectives

To support the vision and design principles a set of objectives has been developed for the Project. The Project area (Refer to Fig 3.0) has its own specific context and features, however the design strategies and objectives remain consistent with the Southern Links ULDF requirements and are consistent with the Peacockes CLMP.

Objectives include:

- Ensure high design quality of the streetscapes in terms of amenity, aesthetics of the experience, accessibility, safety and landscape context

- Create a hierarchy of streetscapes that integrates with the surrounding environment and land uses and avoids severance
- Integrate separated cyclist and pedestrian networks that provide direct and safe linkages
- Provide a distinct and high-quality Waikato Bridge design that contributes to the variety of bridges associated with Hamilton, which utilises the footbridge link to and further celebrate the location and river environment
- Design earthworks and structures to complement the surrounding landform
- Relate to the future development proposals within the area
- Connect, retain and improve access between the existing built environment, open spaces and future development
- Integrate storm water design and ecological planting in an informal/'natural' manner
- Incorporate a variety of ecological interventions that maintain the and improves wildlife habitat to support the EMMP requirements
- Provide quality open spaces that incorporate informal play and recreation opportunities
- Provide a robust and integrated planting design that is attractive, coherent, durable and innovative, and

integrated design.

#### 3.4 Landscape and Urban Design Elements

The specific environmental and urban design elements that are specific to the Project include:

- Urban design treatments of the bridges and abutment structures
- Integration of engineered elements, including landform and slope management
- Incorporation of cycling and pedestrian facilities and linkage to existing and proposed facilities
- Integration of surrounding land uses and open space
- Landscape and ecological planting treatments
- Local community, cultural and heritage consideration and integration
- The treatment of highway and open space furniture, for example street lights, seating and signage
- Storm water treatment including wetland pond, and stream diversion

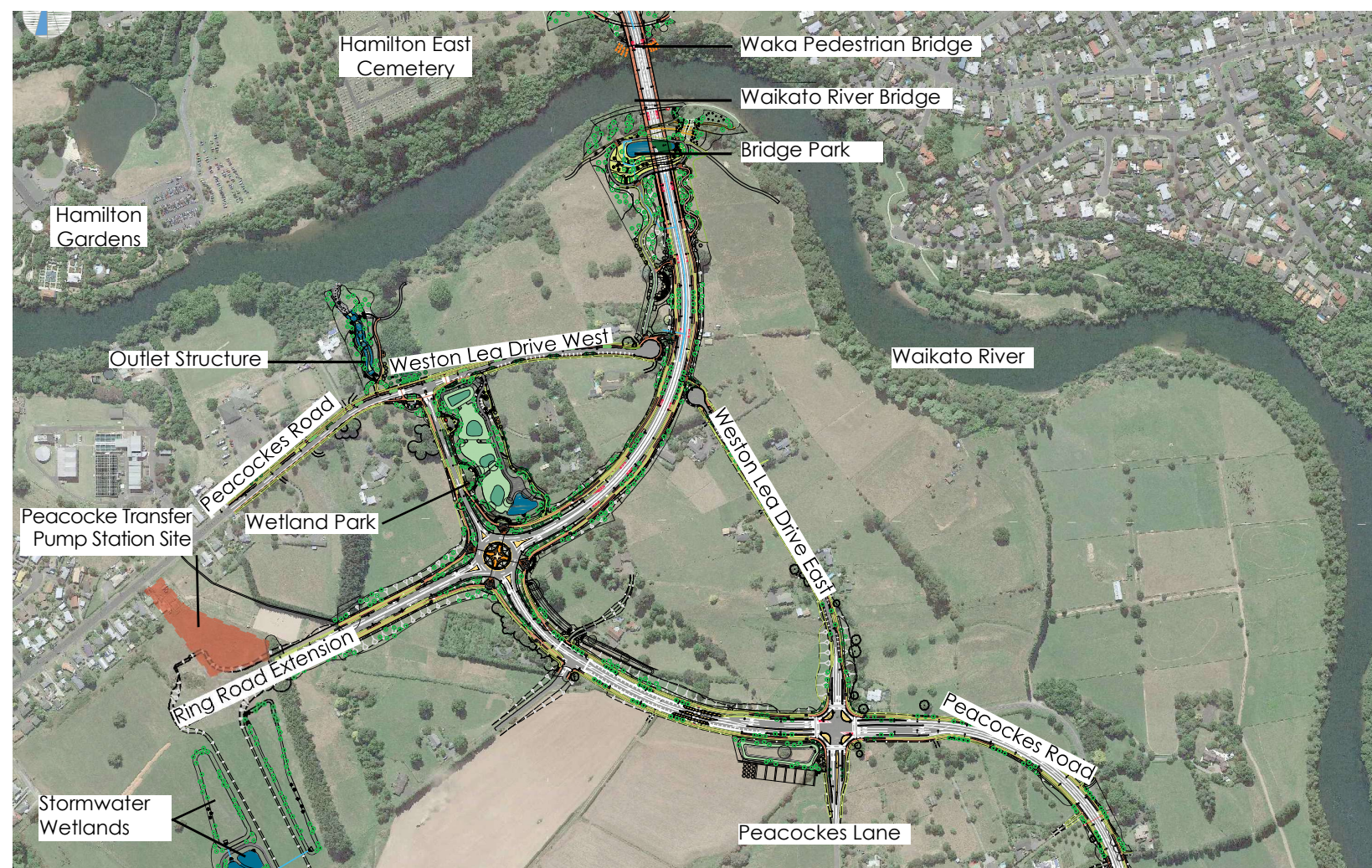


Fig 3.0 PST PROJECT AREA



PART FOUR

- Consideration to both short and long-term maintenance requirements

4 Developed Urban & Landscape Design

4.1 Design Context

The Project area includes a number of site-specific features and activities that have been important in terms of developing the landscape, urban and ecological design response. The following sections provide a brief analysis of the area and identifies constraints and opportunities in relation to the Project.

4.2 Character Areas

The Project is currently located in a peri-urban environment on the southern outskirts of Hamilton. The area can be characterised by the Waikato River terraces, the undulating topography and the inclusion of a variety of residential lifestyle properties blocks with large exotic trees scattered across the landscape.

The character areas are further defined by the landform, vegetation types and current land use, which have been used to inform the design proposals to ensure the Project physically and visually sits within the landscape. The character areas associated with the Project include the following:

- The Waikato River which is stepped in cultural and heritage features, including trade routes, gardening activities and the nearby redoubt
- Open spaces associated with the Hamilton Gardens, Hamilton East Cemetery and Redoubt Park that include open space and views
- Protected oak trees adjacent to Peacockes Road
- Landform
- Vegetation patterns, and
- Residential properties that are scattered across the landscape

4.3 Constraints and Opportunities

The existing physical, environmental and cultural context leads to constraints as well as providing opportunities to be considered for the urban and landscape design approach and is captured in Figure 4.3.0 with description as follows:

- 1 The Waikato River provides access and open space opportunities along the southern river bank with a focus on native planting to improve and connect ecological habitat within the area
- 2 Hamilton Gardens, Hamilton East Cemetery Redoubt Park – Respect the historic places setting, maintain the open park like environment and views across the landscape and Waikato River. Provide pedestrian and cyclist connections between spaces and improve ecological environments.
- 3 The protected oak tree grove provides an opportunity to achieve long term protection and integrate the area as

- open space to provide connectivity to the Waikato River environs
- 4 Landforms provide opportunities for the integration of stormwater facilities, but provides challenges to ensure accessible gradients for all users
  - 5 The existing vegetation plays an important role in terms of providing a variety of wildlife habitat and linkages. The Project will aim at retaining as many trees as possible with further planting to strengthen the ecological corridors and habitat potential
  - 6 Residential properties will be integrated into the project
  - 7 Storm water wetland, rain gardens and swales to treat and manage runoff and provide potential for a variety of plant species and habitat creation
  - 8 Future Riverside cycleway facility
  - 9 Provide a distinctive Waikato River Bridge crossing to allow road, cycle and pedestrian links across the River that ties in with the Wairere/Cobham Drive Interchange
  - 10 Dedicated, safe and efficient cycle and pedestrian facilities



Fig 4.3.0 CONSTRAINTS AND OPPORTUNITIES MAP



4.4 Cultural Design Theme Strategy

The Waikato area has a long and rich heritage of both Maaori and European settlement and associated activities. Movement across the land and by river has changed from tracks to rail and road. The use of the land has changed from hunting to gardens and cropping, from the flax industry to agriculture and mineral extraction, and to an ever-increasing built environment.

As identified in the Peacocks CLMP, there are physical and spiritual marks on the land which needs to be carefully read and managed as part of the Project. To this extent it is proposed to re-establish this heritage and connection where these threads can be drawn to the surface through liaison and collaboration with stakeholders. Therefore, the cultural narrative developed for the Peacock's area has been continued throughout the Project area to provide a consistent narrative and design approach.

The overarching vision is to 'celebrate the cultural habitation, trade and movement that has occurred across the Hamilton area'. The theme has been developed at workshop presentations with TWWG and recognises the importance of the area based on the food gardening activities and the associated movement and trade routes that would have traversed the landscape. This concept theme is complementary to other transport networks located in and around Hamilton, which have also been developed in conjunction with TWWG.

The diagram in Figure 4.4.1 illustrates settlement and the patterns on the landscape that have been derived from trade movement networks, convergence points and associated activities within the landscape. These patterns provide a prompt in being able to create and reinforce these patterns within the urban design elements of the Project. In terms of the historical landscape context, much of the area to the south of Hamilton was formerly covered in extensive and dense wetland vegetation including kahikatea podocarp forest with remnant stands of kahikatea and totara vegetation remaining as reference points in the landscape acting as wayfaring markers. In addition to the traditional pathways current development are forging new networks across the landscape, which provides opportunities to enhance these patterns.

To support the Peacocks cultural vision, the following narrative aims at capturing components of these processes and cultural influences within the Project with intervention locations shown in Figure 4.4.2.

Trade and Transport

The recognition of traditional path networks and confluence points provide the overarching cultural story that celebrates the connectivity of places, landmarks and settlement. To express this narrative the incorporation of wayfaring markers in the forms of mass native tree planting (reflecting remnant tree stands), nodes along transport routes that utilise paving patterns and interpretive signage and standalone art work will be integrated to 'tell' the area's story of paths and networks.

Gardening and Settlement Patterns

The pathways and trade routes were means of supporting settlement and gardening activities that have occurred across the Hamilton area with subsequent European settlement adding further layers of cultivation patterns. To reflect these aspects particularly of Maori settlement, opportunities to add an additional layer of narrative into the Project (and Southern Links) can be undertaken in relation to these garden activities and may include aspects of the following:

- The incorporation of plants that are important as rongaa medicine
- The incorporation of the national flax weaving collection within public accessible spaces
- Paved nodal areas that utilise paving patterns to emulate weaving, kete (food carrying) and other relevant activities
- The development of street furniture that supports the cultural and natural themes, and
- Naming of roads, bridges and parks

Guardians of the Land

Maori symbolism and traditions are rich and important parts of the Waikato area and provide additional opportunities to add further cultural layers to the area. The inclusion of art work, particularly around carving and Pou forms to represent Maori deities that are associated with cultivation (Rongo Maa Taane), sky father (Ranginui), earth mother (Papatuuuanuku) etc provide the opportunity to 'weave' a complete cultural narrative into the landscape.

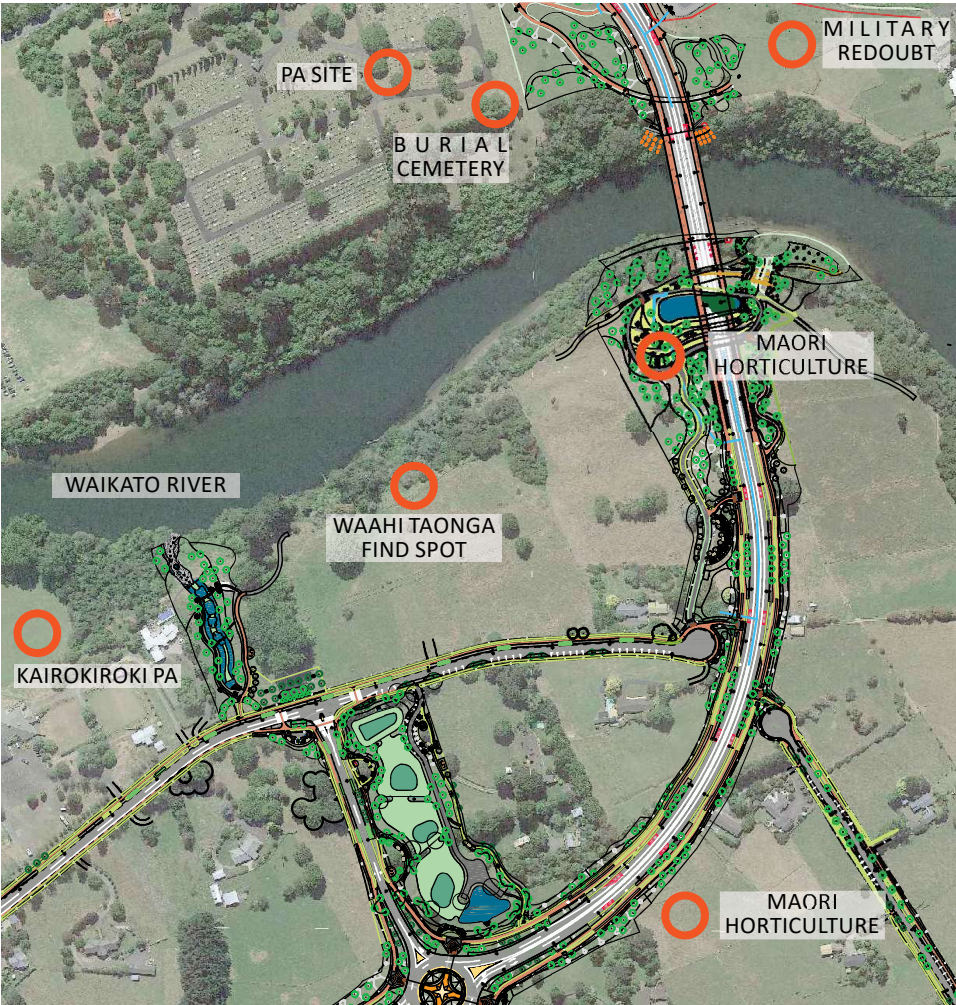
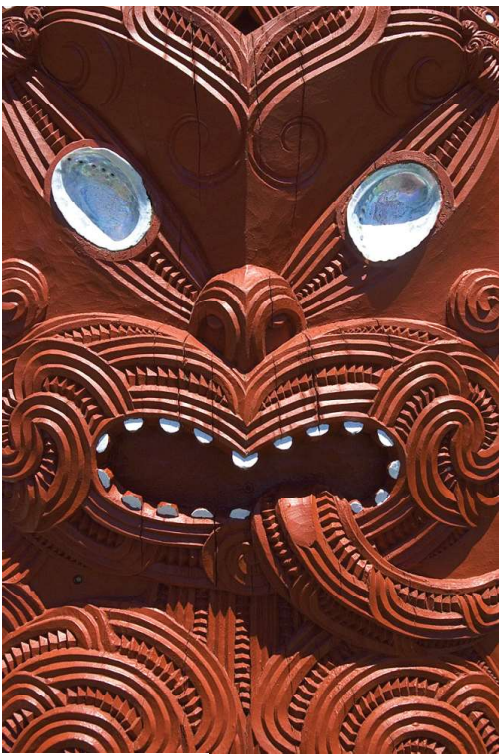


Fig 4.4.1 ILLUSTRATION OF HISTORIC LANDSCAPE USE AND PATTERNS

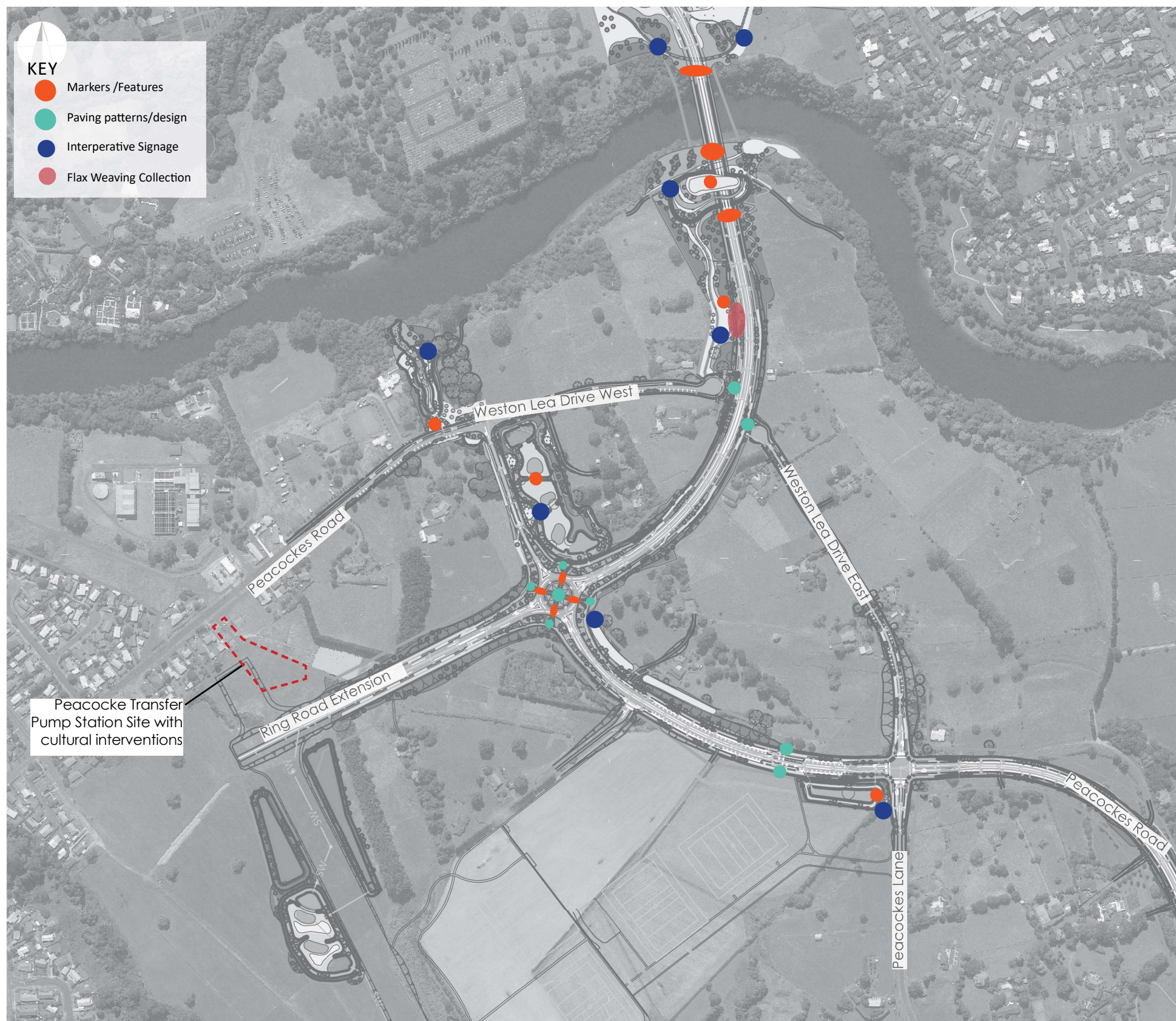


Tuumatauenga



Kete

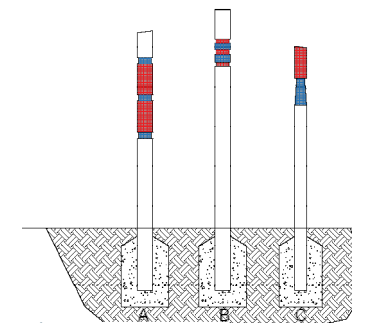




**Fig 4.4.2 ILLUSTRATION OF CULTURAL INTERVENTION LOCATIONS ACROSS THE PROJECT**



**Markers**



**Bird song posts**



**Waka Bridge Column Features**



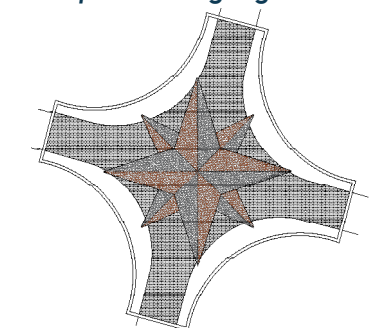
**Waikato River Bridge Kete Pier and Bridge Abutment Design**



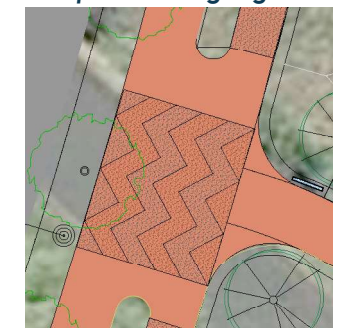
**Interpretation Signage**



**Interpretation Signage**



**Matariki Paving Pattern**



**Paving Patterns**



## 4.5 Infrastructure Component Design and Form

### 4.5.1 Design Principles

Hamilton City Council (HCC) is focused on setting a high level of service for public transport operations in the Peacocks Development area.

Therefore a strong focus and design outcome of the project is to ensure the following:

- Adopting Vision Zero: A transportation system with features to minimise the risk of deaths and serious injuries
- Promotion of public transport and encouraging active modes, if necessary, at the expense of reduced performance of the network from the point of view of private car users
- A strong focus on cycling and pedestrian networks with safe and efficient links
- Maximising the people moving capacity of the road, by enabling efficient use of the network by buses and high occupancy vehicles.
- Providing flexibility in the design to cater for evolutionary and step changes in the transportation system.
- Maintaining good neighborhood linkages and connectivity

### 4.5.2 Ring Road Extension

The Ring Road Extension (extension of Wairere Drive) provides a median divided urban arterial road with four continuous lanes. This is made up of (in each direction) one lane for general traffic and one lane for public transport (and potentially HOV vehicles).

The Ring Road Extension will include a dedicated traffic lane to serve public transport vehicles, although use by other High-Occupancy Vehicles (HOV) may be an option that HCC will consider in the future.

Active modes will be accommodated by separate paths on each side of the road for pedestrians (2.0m width) and cyclists (2.5m width). In addition, the kerb side lane (bus lane) will be 4.2m wide to provide road space for cyclists that choose to use the vehicle carriageway. Landscape and paving interventions will be part of the urban fabric of this road to enhance the user experience as illustrated in Figures 4.5.0 and 4.5.1.



Fig 4.5.0 ILLUSTRATION OF THE RING ROAD EXTENSION

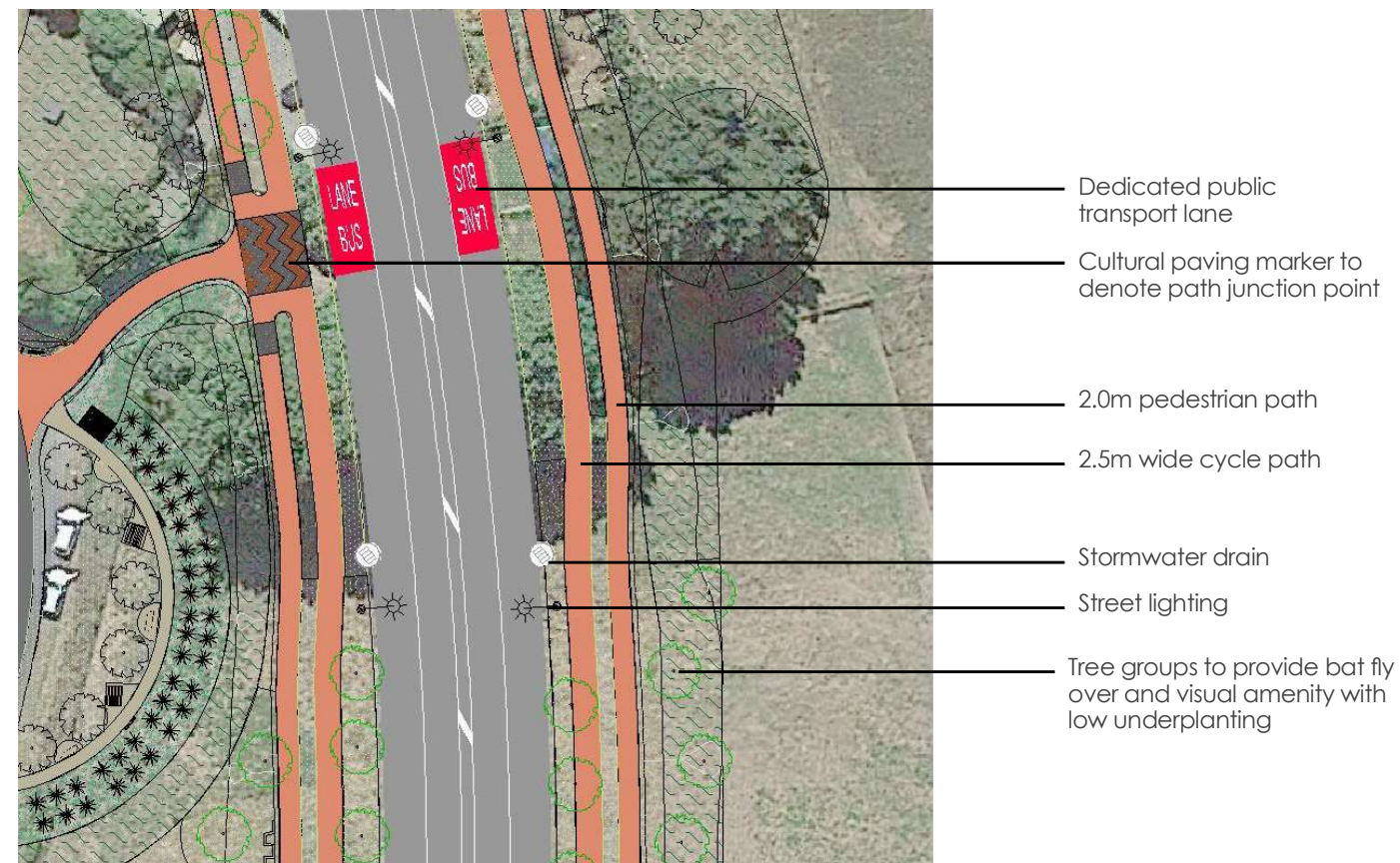


Fig 4.5.1 PLAN VIEW EXTRACT OF THE RING ROAD EXTENSION



4.5.3 Peacocks Road

The Peacocks Road will have a similar traffic flow rate of the Urban Arterial Ring Road (Wairere Drive), but with a Minor Arterial status. It will have a reduced level of service as a result of side friction from adjoining access points, local road intersections, parking, bus stops and pedestrian crossings.

Peacocks Road will have a separated cycle lane and one traffic lane in each direction, with the traffic lane shared by cars and public transport vehicles. To improve safety and efficiency for public transport vehicles, bus stops will not be indented into the roadside. Instead, buses will stop within the lane while setting down and picking up passengers. Operational levels of service for cars on this carriageway will be reduced, but the advantage is that public transport vehicles can operate more efficiently and safely as they do not have to enter and leave the traffic stream at each stop and overall the safety and people moving capacity of the road corridor will be increased.

Active modes will be accommodated by a 2.0m wide off-road path on each side, and 2.3m wide on-road cycle lanes that are separated from the vehicle lane with raised “zebra/armadillo” separators (Refer to Figures 4.5.2 and 4.5.3).

4.5.4 Weston Lea Drive East and West

Low volume (<5,000vpd) local road cross sections will have a single lane in each direction and no median. Footpaths will be provided on both sides with bicycles using the vehicle carriageway. Landscape planting will contribute to the streetscape and will allow for access to future residential development (Refer to Figures 4.5.2 and 4.5.4).



Fig 4.5.2 ILLUSTRATION OF PEACOCKES ROAD AND WESTON LEA DRIVE EAST

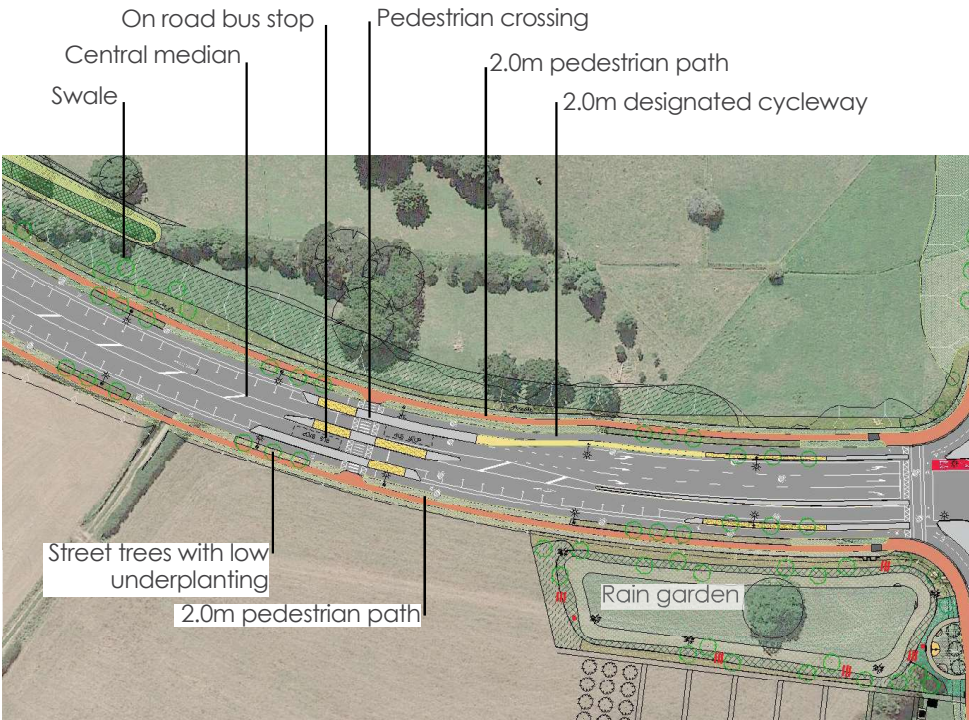


Fig 4.5.3 PLAN VIEW EXTRACT OF PEACOCKES ROAD

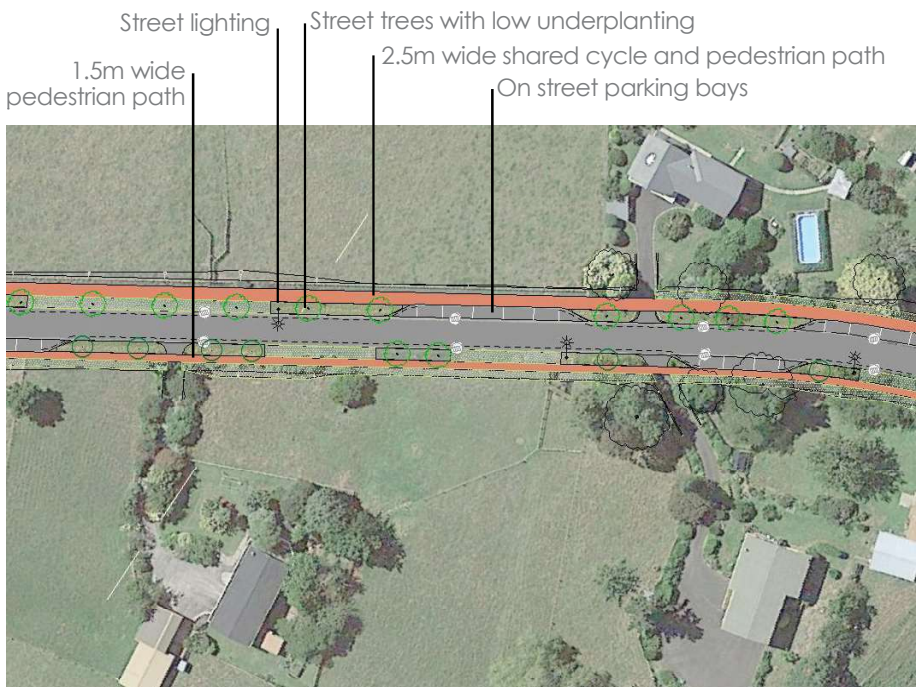


Fig 4.5.4 PLAN VIEW EXTRACT OF WESTON LEA DRIVE EAST



4.5.5 Intersection Principles

The Project contains one roundabout at the junction of the Ring Road Extension and Peacocks Road, a controlled intersection at Peacocks Road and Peacocks Lane/Weston Lea Drive East and a new T intersection at Peacocks Road and Weston Lea Drive West.

The intersection designs have included the following key factors:

- Context sensitive approach where factors such as location, safety, urban setting, visibility, proximity to housing, vegetation, open space and pedestrian and cycling user requirements are considered
- Cost efficiency, which considers whole of life cost
- Aesthetics and visual effects, and
- Durability and maintenance

Ring Road Extension and Peacocks Road Roundabout

The roundabout will regulate traffic between the Ring Road Extension and Peacocks Road, which incorporates cycle and pedestrian facilities with a four-way underpass system to provide a safe and efficient transport network.

The roundabout includes the following:

- Design standards that meet safe road requirements with sight lines, visibility splays and barriers
- The integration of both street and pedestrian lighting (also includes recessed lighting within underpasses) with signage to achieve a well lit and safe environment
- Underpass and keystone retaining walls will incorporate cultural design patterns, textures and colours that add to the visual amenity and character of the area
- Accessible grades with a maximum of 1:12 have been incorporated into all pedestrian and cyclist facilities with underpass structures to provide seamless connections in and around the roundabout
- Cycle paths incorporate cultural design paving patterns, which also indicate to users a change in the path environment
- CPTED guidelines have been applied to ensure safety for cyclists and pedestrians, utilising low growing plant mixes to maintain surveillance from adjacent areas while maintaining forward visibility with denser tall planting set well back from paths
- Maintenance considerations have been incorporated into the design using durable materials and finishes that will not degrade in appearance over time. A clear anti-graffiti coating will be applied to the full extent of walls, particularly within the underpasses, and
- The selection of robust planting types that require minimum maintenance and will also ensure sight lines and visibility is maintained, while contributing to the overall visual amenity of the roundabout.

Figure 4.5.5 illustrates the approach to the roundabout, which integrates abutment walls, cycle path ramps that incorporates cultural aspects to contribute to the overall character of the area plus planting.

Intersection at Peacocks Road and Peacocks Lane/Weston Lea Drive East

A new controlled intersection will be formed at Peacocks Road, Peacocks Lane and Weston Lea Drive East to meet future development demand (Refer to Figure 4.5.6). Peacocks Road increases from a single lane to three lanes at the intersection with dedicated left and right turning lanes. Cycle facilities are separated from the carriageway with a divider median and islands to establish priority turning and crossing points with the aim of providing a safe environment for cyclists. A bus zone is incorporated into the intersection to ensure efficiency of the public transport network, which combine with on street stopping zone to ensure the bus has maximum priority.

Planting in and around the intersection utilises low growing material to ensure sight lines and visibility splays are maintained. A combination of exotic and native trees help to provide visual markers of a change in road environment.

'T' intersection at Peacocks Road and Weston Lea Drive West

The current alignment of the junction of Peacocks Road and Weston Lea Drive West will be changed to provide a 'T' intersection that will include three raised pedestrian crossing points to provide a safe and well-connected walking and cycling network. The approaches to the intersection include street side rain gardens, low level planting and street trees to provide a visual reference to drivers, while maintaining visibility splays and providing an attractive environment. Lighting columns in and around the intersection provides light levels to meet standards requirements.



Fig 4.5.5 ILLUSTRATION OF THE RING ROAD EXTENSION AND PEACOCKS ROAD ROUND ABOUT



Fig 4.5.6 ILLUSTRATION OF PEACOCKS ROAD AND WESTON LEA DRIVE EAST INTERSECTION



## 4.6 Bridge Designs

The Project incorporates two structures that includes a two-span bridge forming a new crossing of the Waikato River and second pedestrian/cycle bridge to connect existing facilities and the Te Awa Riverside Trail. The bridge designs complement each other with the 'waka' form footbridge creating a 'gateway' to the Waikato River bridge area. The bridge designs embrace a consistent design approach that utilises a family of materials, which combines with a cultural narrative to create a strong character and new bridge feature within Hamilton.

### 4.6.1 Design Philosophy

The bridge design philosophy has embraced the following aspects:

#### Experience / Memorable

The bridge can become a place that people want to visit and through its quality will encourage visitation. Its public spaces, ecological focus, connection to open and landscape spaces, play and cultural opportunities make this area a destination in itself.

#### Flexibility / Versatility

Flexibility / versatility for a wider use of the bridge and surrounds, for more than just travel/ transportation. Therefore, the bridge encompasses recreational use, tourist attraction/extension to Hamilton Gardens and community accessibility. It also embraces multi-modal transport (mass transit, cycle and pedestrian) with full safe pedestrian accessibility (i.e. people with prams, wheelchairs, mobility scooters etc).

#### Kaitiaki

The word tiaki is the basis of the longer word kaitiakitanga. Tiaki means to guard and also means to preserve, foster, protect and shelter. Therefore, the design approach embraces notions of care and protection by considering minimising effects on the river, vegetation and conserving and protecting wildlife.

#### Landmark / Memorable

The bridge designs will become an object or feature of the landscape or town that is easily seen and recognized from a distance, especially one that enables someone to establish their location. To this extent the bridge(s) become memorable or easily remembered, especially as it special or unusual.

#### Connection

Connection has been a guiding approach for the bridge designs. By concentrating and responding to the surrounding context including open spaces, amenities and opportunities along and around the bridge area people are better connected; not only between and across, but to other people, to nature, and ultimately, to this place. The bridge will also be the link in and out of the city with important tourist and community destinations and facilities.

### 4.6.2 Design Principles

The detail design of the Waikato River Bridge structure has applied the following design principles and objectives to achieve quality design outcomes:

- Development of landmark bridge design that has a distinct character that contributes to the variety of Hamilton Waikato River bridges
- A consistent design approach has been applied to ensure the bridge structure(s) utilise common form, materials and design features where possible
- Central pier that avoids placement within the main river channel
- Utilise a simple bold design that is efficient to construct and allows maximum flexibility to the long term deck use
- Full accessibility for pedestrian and cyclist facilities with generous facilities to both sides of the bridge that link into existing and proposed facilities
- Incorporation of open space environment to take advantage of the Waikato River edge to provide access and to ensure the visual amenity and views are considered within the design (further planting information is outlined in Section 4.23)
- Drainage and/or lighting has been integrated into the bridge with no drainage pipes or services located on the outer faces
- Lighting and structure embraces the EMMP requirements to minimise light spill and to mitigate effects on bat flight paths

- The integration of services (water, telecom, sewerage and water mains) within the steel beams
- The abutment walls will incorporate cultural details, textures or color schemes that add to the visual amenity and character of the area. Professional iwi artists have been identified and are providing inputs into theming and art across the Peacocke area. It is intended that they will provide cultural design interventions, which will be an ongoing process during construction.
- CPTED guidelines have been applied to ensure safety for pedestrians, with a quality environment that utilises for passive surveillance, a legible clear layout of spaces and paths good sightlines, and a mix of activities use for users plus good lighting.
- Maintenance considerations have been considered during the bridge optioneering stage with the final design incorporating durable materials and finishes that will not degrade in appearance over time. A clear anti-graffiti coating has been specified and will be applied to the full extent of the pier base and abutment walls to provide graffiti protection
- Planting has been designed with suitable species utilised on the embankments and areas beneath the bridge either maintain the vegetated integrity of the northern embankment or to contribute to the open space environment to the southern embankment of the bridge.



Fig 4.6.0 ILLUSTRATION OF THE WAIKATO RIVER BRIDGE



## 4.7 Waikato Bridge Design

The Waikato River Bridge provides a simple solution to the two-span structure that launches from the elevated northern embankment and slopes to meet the southern embankment with a total length of approximately 180m. The bridge form has been selected to balance cost, long term maintenance requirements but still maintains a high aesthetic appearance.

The design focuses on a simple bridge form with a single pier arrangement and steel bridge beams with a wide span deck that will allow for maximum flexibility in the deck space use to allow future changes in layout/use if desired. The design incorporates a unique corten steel bridge pier that utilises a 'basket' weave cultural design form to support the steel bridge beams. The pier is anchored onto a large concrete plinth that sits outside the main flow of the Waikato River and incorporates a zone of below ground riprap to avoid scour and undermining of the pier base. The planting approach is outline in Section 4.10.3 and Appendices A and C.

### Pedestrian and Cycle Facilities

The bridge deck is arranged with pedestrian and cycle facilities to both sides of the bridge that will tie in seamlessly at either end of the bridge to the path network. The western side of the bridge has a 4.5m shared pedestrian and cycle path with the eastern side providing a 3.5m wide sheared path. Both paths utilise a precast concrete 'paving' unit that utilises exposed aggregate and rough sawn timber imprint to the surfaces, which have been arranged to subtly denote the walking and cycling zones. On the western shared path, precast seating and planters providing further separation between cycle and pedestrians, but at the same time maintains a degree of openness.

### Barrier Components

The outer bridge barrier utilises an architectural detail edge treatment that includes internally sloped corten steel angle 75x50mm profiles that are mounted to the outer edge of the bridge deck with mounting brackets. A profile cut and folded weathering steel hand rail has been included that runs the length of the railing, which will also provide stability to the railing arrangement. The hand rail incorporates led lighting to provide a wash across the path to aid way-faring, but ensures minimal light spill to minimise effects on bat habitat.

The overall railing design varies in height and arrangement (on the outer edge) to provide an elegant profile to the bridge with railing height and spacing meeting NZ Building Code requirements. In addition, the inward sloping arrangement of the balustrades will make it difficult to climb, which is a measure incorporated from discussion with suicide prevention advocates.

Precast concrete barriers will be utilised to separate the pedestrian/cycle facilities from the carriageway and will incorporate a galvanized steel top rail to provide a degree of openness and minimise the height of the concrete barrier.



Fig 4.7.0 ILLUSTRATION OF THE WAIKATO RIVER BRIDGE

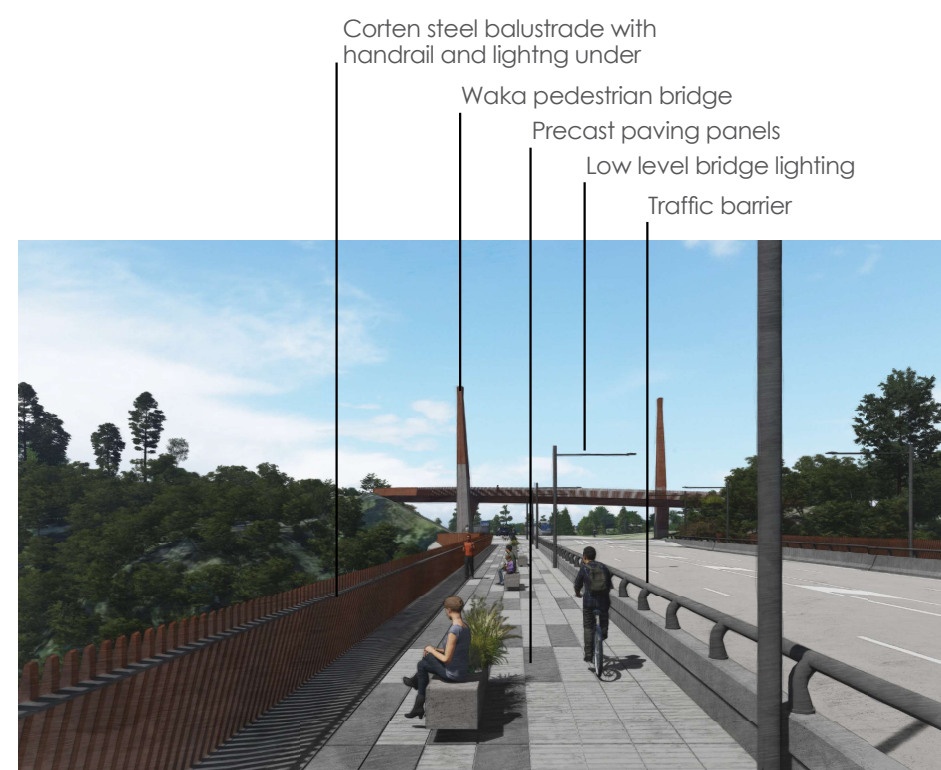


Fig 4.7.1 ILLUSTRATION OF THE PEDESTRIAN AND CYCLE FACILITIES

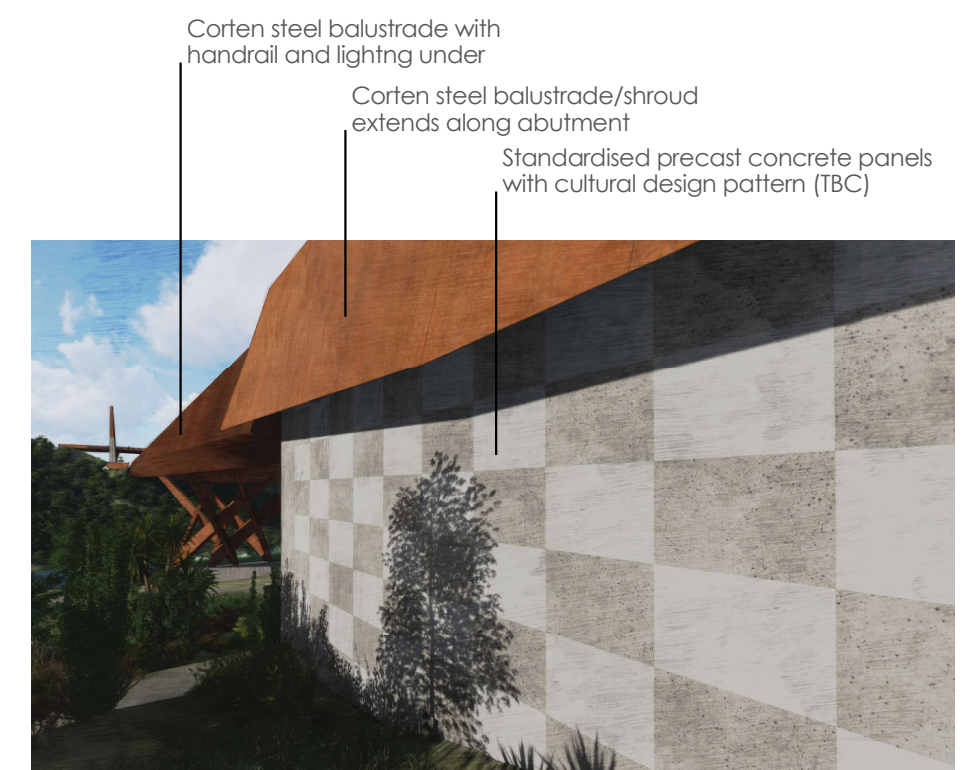


Fig 4.7.2 ILLUSTRATION OF SOUTHERN BRIDGE ABUTMENT



### Abutment Design

The bridge abutment will integrate vertical concrete (precast) panels with a recessed cultural pattern incorporated. Figure 4.7.2 provides an artist impression of the bridge form, abutments and planting that forms the detail design. The southern bridge abutment design has been developed in conjunction with the TWWG to achieve specific cultural detailing, that contributes to the overall 'bridge narrative'.

The following features have been incorporated into the detailed design:

- The use of a standardize precast concrete block panel with textured surfacing
- The incorporation of cultural patterns and forms to reflect the cultural narrative being utilised within the Project
- The use of return vertical abutment walls to maximise the adjacent open space area
- Application of anti-graffiti coatings will be applied 1.2m from all accessible top edges and areas accessible up to 2.7m from base or adjacent ground level. Anti-graffiti coating will be applied the road barrier, but no application will occur to the weathering steel balustrade.
- The extension of the (fall) railing detail above the abutment that ties in seamlessly with the bridge railings

The northern abutment is benched into the existing upper river slope and will include soil nailing to stabilise the slope in and around the abutment. Soil nailing will minimise the removal of vegetation, particularly trees (potential bat habitat) with reinstatement planting and punga logs anchored to the slope to replace removed vegetation.

The southern abutment utilises the upper terrace as a 'landing' zone to ensure the bridge gradient achieves suitable gradients and incorporates a vertical abutment to transition into the adjacent landform. The use of the return walls to the abutment minimises the land requirement and helps to maximise space for access paths and open space to either side of the bridge abutment.

### Services

The bridge accommodates the services, which are concealed within the bridge beams, and will be accessible for inspection and maintenance. Transition joints at each end of the bridge have been incorporated to allow for movement and inspection/maintenance.

## 4.8 Waka Pedestrian/Cyclist Bridge

The opportunity to include a pedestrian bridge will not only provide a seamless and direct pedestrian and cycle access across the Ring Road Extension, but it will also complement the Waikato Bridge Design with a family of materials, but also by creating a 'gateway/waharoa' marker or focal point at the crossing point of the river. It also denotes the iwi 'boundaries' and attunes to the Project's cultural narrative as the bridge symbolizes a waka that relates to the traditional means of transport and implies connectivity and trade.

### Footbridge Design

The design utilises a three span truss unit that is supported by two columns positioned either side of the carriageway to provide support to the 4.0m wide bridge. The piers utilise a concrete base with weathering steel extensions that extend vertically to symbolise the ends of a waka that will incorporate a cultural design pattern.

The bridge has a gentle curvature in plan form with the truss unit being sheathed in weathering steel to conceal and protect the beam to achieve an elegant and simple structure. Vertical railings similar to the Waikato River Bridge complements the overall form and elegance of the structure and will allow users to appreciate views up and down the Waikato River while taking advantage of the extensive broader views across the landscape.

Concrete abutments are located at each end of the bridge and seamlessly tie into the existing landform. Planting will be utilised to soften and conceal the abutment and anti-graffiti paint will be applied to the concrete to aid protection. Lighting along the bridge will be limited to concealed lighting within the hand rail, which will provide a wash across the bridge deck to aid wayfaring. Lighting may be included within the vertical columns depending on the final cultural designs that will be developed in conjunction with TWWG during the construction stage.

Figure 4.8.1 illustrates the pedestrian bridge and the elegant structure that provides a seamless link across the Ring Road Extension, while providing views across the Waikato River and landscape beyond.

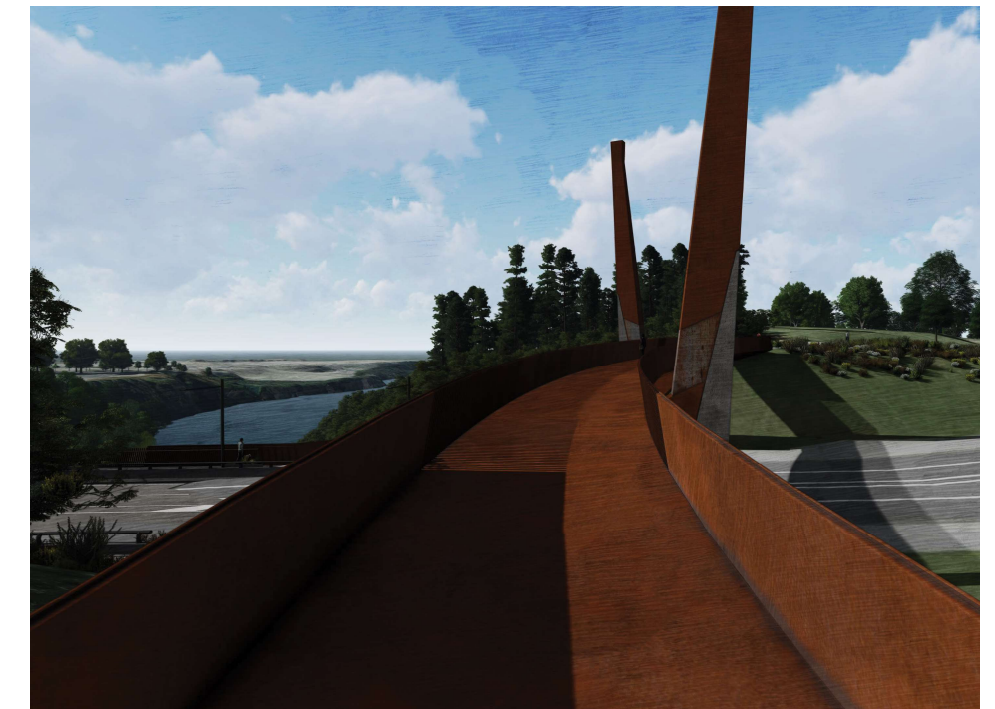


Fig 4.8.0 ILLUSTRATION OF THE VIEWS FROM THE WAKA BRIDGE



Fig 4.8.1 ILLUSTRATION OF THE WAKA PEDESTRIAN AND CYCLE BRIDGE

4.5m wide shared pedestrian and cycle path

Concrete base with steel outrigger to support bridge truss



## 4.9 Pedestrian and Cycle Facilities

The HCC Transport Strategy, aims to get “more people cycling more often”, plus aims at encouraging other forms of transport. To support this, the Project has developed a hierarchy of pedestrian and cycle paths while linking with existing facilities and neighborhoods to improve linkages and connectivity.

The Project fully embraces Hamilton City’s current cycling and pedestrian approach to provide a well-designed network that is an efficient, safe and desirable alternative to vehicle-based transport. The cycle and pedestrian network sets the standard and provides a hierarchy of facilities to meet the future requirements of residential development that will occur in the area. Other considerations include the whole of life expectancy and maintenance requirements of the facilities.

### 4.9.1 The Design Approach

Figure 4.9.0 provides a diagrammatic illustration of the extensive pedestrian/cycle paths and linkages that connect to adjacent neighborhoods and existing facilities. The cycleway plan allows for future connections that will occur once other planned facilities are developed such as Te Awa River Ride and additional stages of the Peacocks Structure Plan area and the Southern Links project. The design approach locates facilities away from the road where possible, or provides safe facilities that utilises open spaces to improve the rider experience.

### 4.9.2 Design Principles

- Develop a hierarchy of paths to provide an attractive and well-connected network that provides an efficient, fun, healthy alternative to vehicle-based transport
- Ties in with the River Plan path network and other existing cycle and pedestrian paths
- Long lasting and suitable for high pedestrian and cyclist volumes with good slip resistance
- Suitable gradients for ease of use with cross falls to ensure good drainage
- Ensure safety for users through wide unimpeded paths with low edge planting or grassed edge zones with maintaining forward views
- Future proofing facilities to enable easy connection with future development.

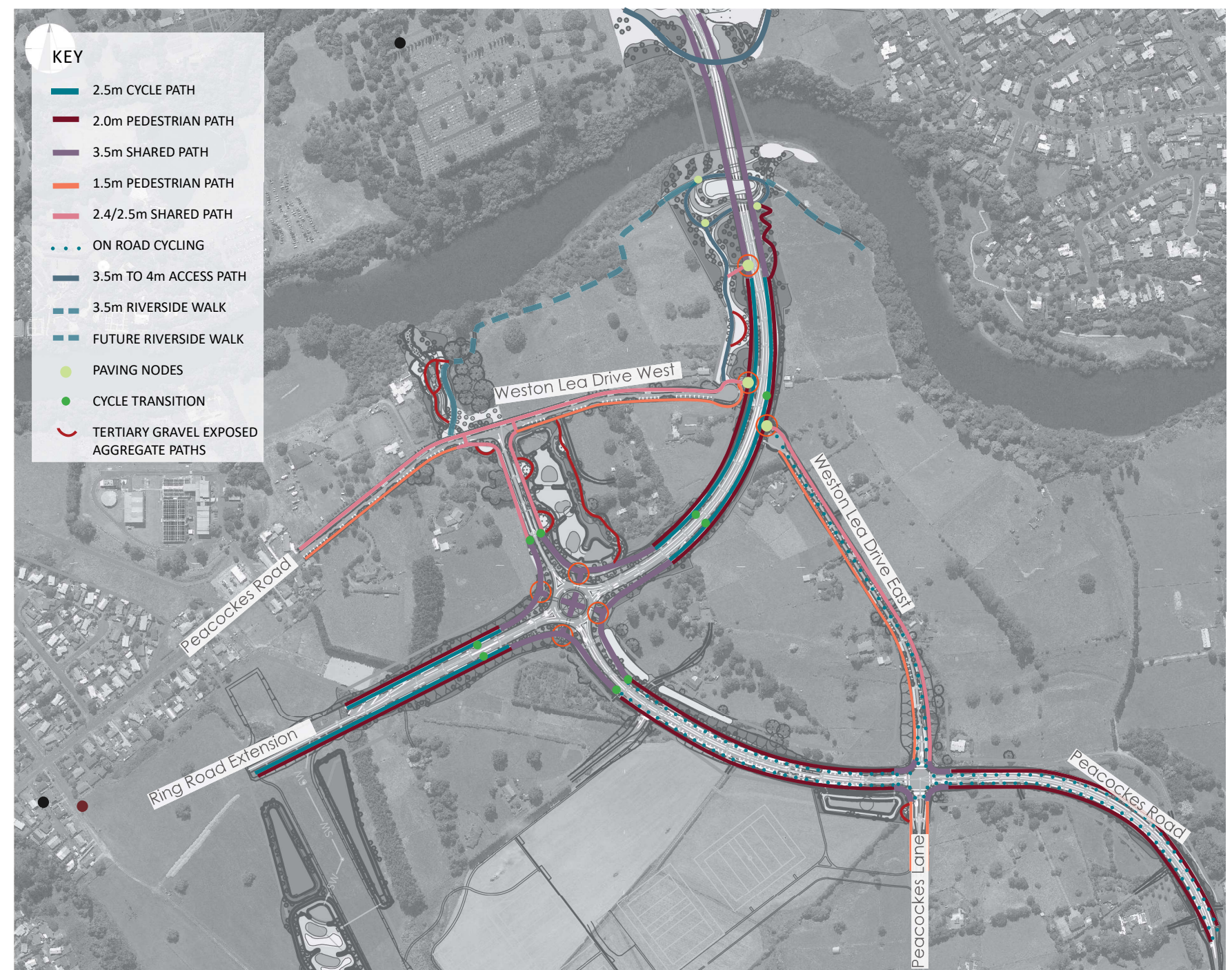
### 4.9.3 Design Objectives

Design outcomes for cycle and pedestrian facilities incorporate the following aspects:

- Gradients along the shared off-road facility that meet NZ accessibility standards
- Continuous linkage with existing and planned open space and pedestrian/cycle network
- Good connections with surrounding roads and open space

- Provision of nodes and stopping to create quality cycling/ pedestrian facility and help with orientation/wayfinding while incorporating cultural aspects
- Cycle facilities provide regular connections from road to paths
- Cycle and pedestrian paths are generally separated by planting from the roadway (Refer to Fig 4.9.5)
- Provision of adequate space for landscape treatment around transitions
- Positive drainage of surfaces to avoid puddling and deviation from path

- Provisions for safe crossings in and around the road network
- CPTED principles will be applied, which will encompass informal surveillance by road users and from other adjoining residential and adjacent public open spaces, plus the use of low growing species or grass adjacent to the cycleway, and
- Path alignment and appropriate planting treatment to enable forward visibility and minimising potential for pedestrian-cyclist conflicts



**Fig 4.9.0 ILLUSTRATION OF THE WALKING AND CYCLING NETWORK**



#### 4.9.4 Street Pedestrian and Cycle Approaches

##### Ring Road Extension - Separated Off Road Cycle and Pedestrian Facilities

The Ring Road Extension includes on road cycling (public transport lane) and integrates separated off road cycling and pedestrian facilities that are direct/efficient and well connected with facilities along both sides. These facilities tie into the Wairere/Cobham Drive Interchange network and include on and off points for cyclists to move from carriageway to cycling path. Weston Lea Drive (West and East) and the Peacockes Road pedestrian and cycle facilities feed into the Ring Road Extension network, which will take people across the Waikato River towards Hamilton CBD.

Path widths

- Cycle Path: 2.5m
- Pedestrian Path: 2.0m
- Planted/grassed Median: typically, 1.5m
- Feature points along route to denote change in environment, exist points or merge of facilities

Material: Brushed concrete with black oxide to reduce glare

##### On Road Facilities (Peacockes Road)

Peacockes Road seamlessly transitions from the off-road facilities to the dedicated 2.0m wide kerb-side cycle facility with on street carparking beyond. The footpath is set back from the back of kerb by 1.8m, which allows a combination of low level planting and trees to provide a safe and interesting environment.

##### Weston Lea Drive West and East

The Weston Lea Drive (West and East) incorporates a shared cycle and pedestrian path with a 2.4m wide concrete path along the northern side of the road. A 1.5m wide path is provided on the opposite side of the road (to allow access from on street parking), which continues along Peacockes Road. At the 'T' intersection of Peacockes Road and Weston Lea Drive West, raised crossing areas are provided to connect the 2.5m wide paths either side of Peacockes Road achieving a safe connection for pedestrians to connection with the Outlet Park area and future riverside walk.

##### Tertiary Informal Paths

Tertiary paths have been integrated into the open space areas to provide informal paths, that typically are located in planted areas for people to explore and appreciate the natural environment. These paths are between 1000mm to 1200mm wide and are constructed from either gravel with timber edging or exposed aggregate. Where paths cross stormwater channels simple stepping stones set within the channels will allow users to crossing at these points.

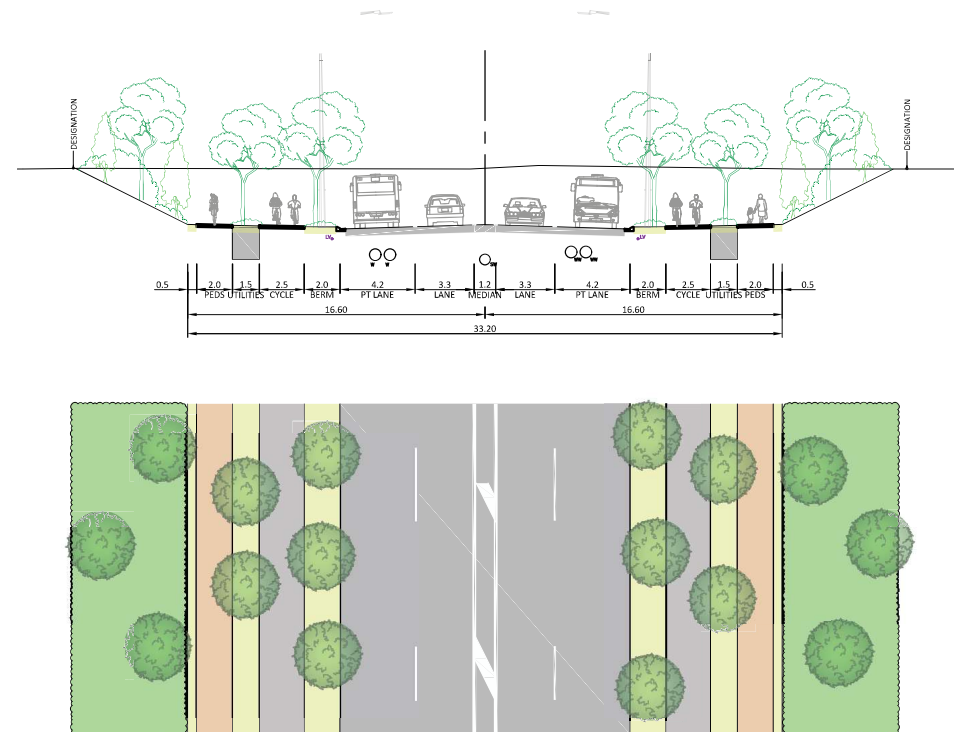


Fig 4.9.1 TYPICAL RING ROAD EXTENSION LAYOUT

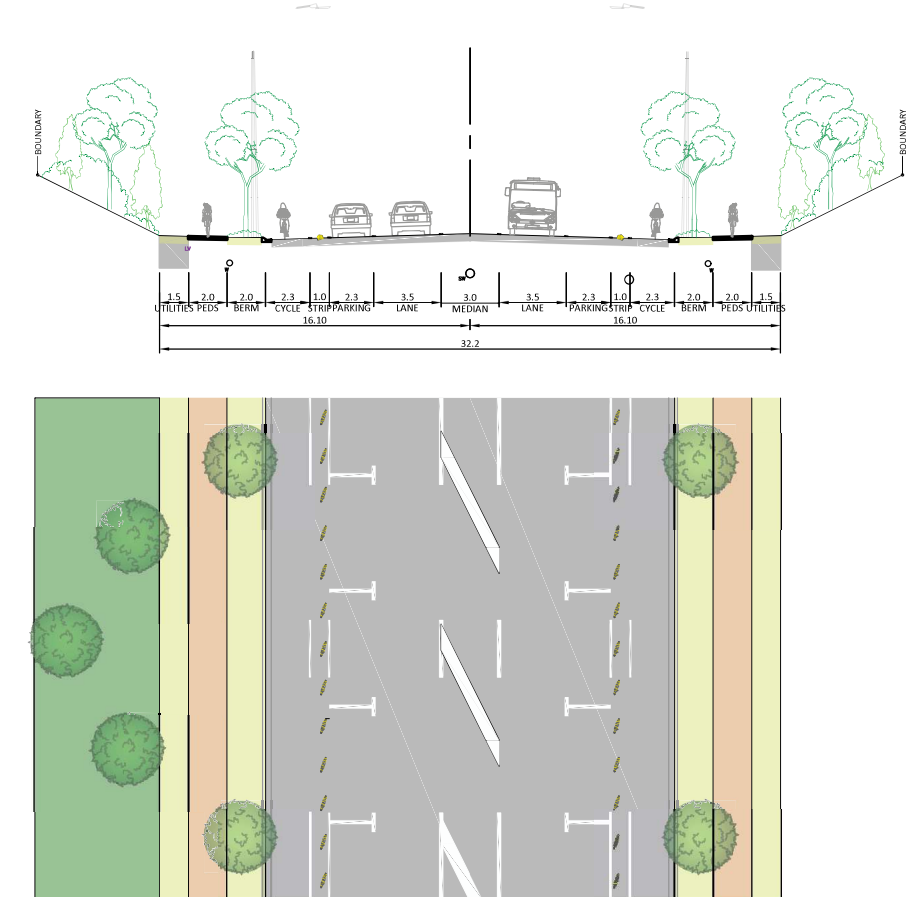


Fig 4.9.2 TYPICAL PEACOCKES ROAD LAYOUT

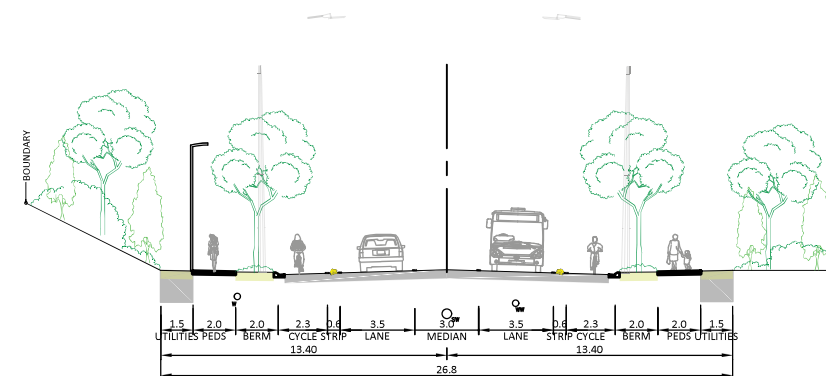


Fig 4.9.3 TYPICAL PEACOCKES ROAD LAYOUT

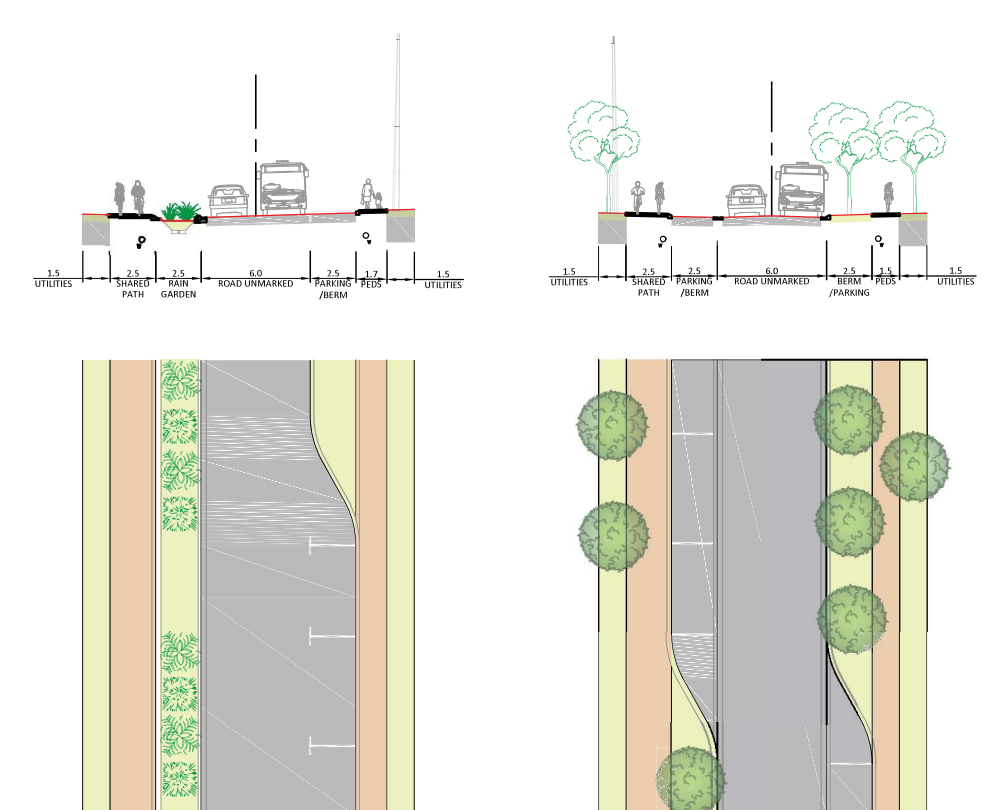


Fig 4.9.4 TYPICAL WESTON LEA DRIVE (WEST AND EAST)



4.9.5 Pathway Parameters

A hierarchy of paths has been developed for the Project and is illustrated in Figure 4.9.0. Path width design are as follows:

- Primary Off Road Separated Path: 2.5m cycle path and 2.0m pedestrian path with 1.5m median between paths
- Secondary on road cycling and shared path areas: 2.0m to 3.5m
- Pedestrian paths 1.5m to 2.5m
- Tertiary/Trail path: 1000mm to 1200mm, either in gravel or exposed aggregate

Gradients - Long Falls and Cross Falls

Gradients will be less than the maximum gradient of 1:14 along the length of paths. Where steeper gradients are required, switch back paths have been provided and gradients adjusted to a maximum of 1:12, which complies with HCC/RITS requirements.

The cross fall of paths should be as flat as practical while allowing ensuring rainwater drains off the surface.

- Cross falls applied for impervious surfaces is 1:50
- Cross falls for permeable surfaces is 1:60

Safety from Falling

Risk from fall has largely been design out of the Project, however, several locations have provisions incorporated to eliminate the risk of falling from the paths. The following has been employed to minimise fall risk:

- Balustrade - to be provided for all falls over 900mm – Balustrades to the Waikato River Bridge plus abutment and Waka pedestrian bridge.
- Vegetated Barrier - utilising low edge mix adjacent to steeper slopes (slopes of 1:2).

Surface Design

The predominant material for the Project path network is brushed concrete with feature areas of exposed aggregate (utilising river pebbles to reflect the river environment) with black and red oxides to reduce glare and denote paving patterns. This material ties in with the river path material used for HCC's River Path projects.

Feature areas have been designed into the Project to denote stopping points or change in cycling environment or designated pedestrian paths. These areas use exposed aggregate to provide a change in texture to denote the change of environment.

Informal pedestrian trail paths utilise either exposed aggregate or gravel to communicate a more informal environment and to denote to users that the path is not for all modes with a focus on walking.

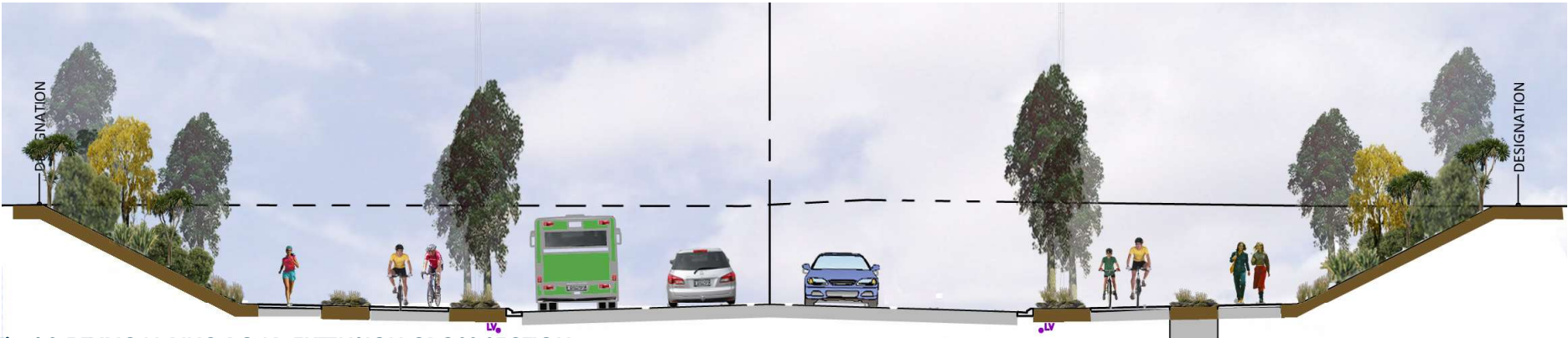


Fig 4.9.5 TYPICAL RING ROAD EXTENSION CROSS SECTION

UNDERPASS SURFACE FINISHES



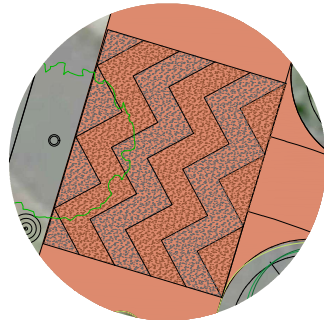
Each underpass tunnel will receive a mural/graphic design to one side of the tunnel to provide an attractive cultural design that aligns with the overall theming. The final design is to be coordinated with the TWWG to ensure a culturally sensitive design is achieved. The adjacent wall and ceiling will be painted off grey colour with all surfaces to have a clear graffiti proof paint application

ON-ROAD MARKINGS



Evergreen painted surface is proposed for all road markings with appropriate with slip resistance and flush thresholds.

PATH MARKINGS - CULTURAL



The path surface provides an opportunity for creative cultural expression. In situ concrete pavement patterns will be utilised at entrance / exit points and intersections to contrast with primary surface treatment and provide visual cue to help alert users of the change of environment.

EXPOSED AGGREGATE



In situ exposed aggregate concrete pavement to be used for bands / patterns and tertiary paths in open space areas.

In situ concrete pavement to be utilised at entrance / exit points and intersections to contrast with primary surface treatment and provide visual cue to help alert users of the path of a potential upcoming hazard.

BRUSHED CONCRETE



In situ concrete pavement with 10% black oxide forms the majority of the path surface.

BOLLARDS



Removable hardwood bollards to be used at access points used for maintenance to prevent general public vehicle access.



## 4.10 Open Space Park Areas

The Project has incorporated opportunities to include a variety of open spaces to provide a unique community environment. Typically, the spaces are associated with stormwater wetlands and outlet structures, which provide opportunities for informal open space and a connection with nature. The spaces include either informal tertiary paths, recreational or play installations (structured equipment and informal play items), seating with pergolas to provide shade and where appropriate fruiting trees.

### 4.10.1 Redoubt Park Area

The Redoubt Park is located on the northern side of the Waikato River (true right) and interfaces with the Wairere/Cobham Drive Interchange project (Refer to Fig 4.10.0). The provision of the 'Waka' foot bridge connects the Redoubt Park with the Hamilton East Cemetery area and will maintain its open grassland amenity appearance. Additional planting will occur along the slopes of the embankments in and around the pedestrian bridge connecting with the existing vegetation that occurs along the Waikato River banks.

Cyclist and pedestrians will be able to traverse the park landscape and enjoy views that are defined by clumps of tree planting and native bush. Seating areas have been included along the path, which will also include low level lighting to provide a safe environment for users.

### 4.10.2 Stormwater Outlet Park

The stormwater outlet is located off Peacocks Road adjacent to the protected grove of mature oak trees (Refer to Fig 4.10.1). The area provides the opportunity to link habitat from the Waikato River with areas of vegetation in and around the Project area. It also provides an opportunity to provide path access to the future riverside walk and incorporates informal gravel paths that meander adjacent to the stormwater outlet structure with crossing points to allow exploration of the environment.

To the street side of the park, a fruit and nut tree grove has been incorporated to provide seasonal fruit to future residents. In addition, and to further support wildlife habitat, a special bee planting mix has been incorporated into the space, which will provide a variety of flowering species to provide bees and insects with a food source.

Signage, seating, picnic tables and an informal trunk climb has been incorporated into the space to allow visitors and future residents to enjoy the destination.



Fig 4.10.0 ILLUSTRATION OF THE WAIKATO RIVER BRIDGE/REDOUBT PARK

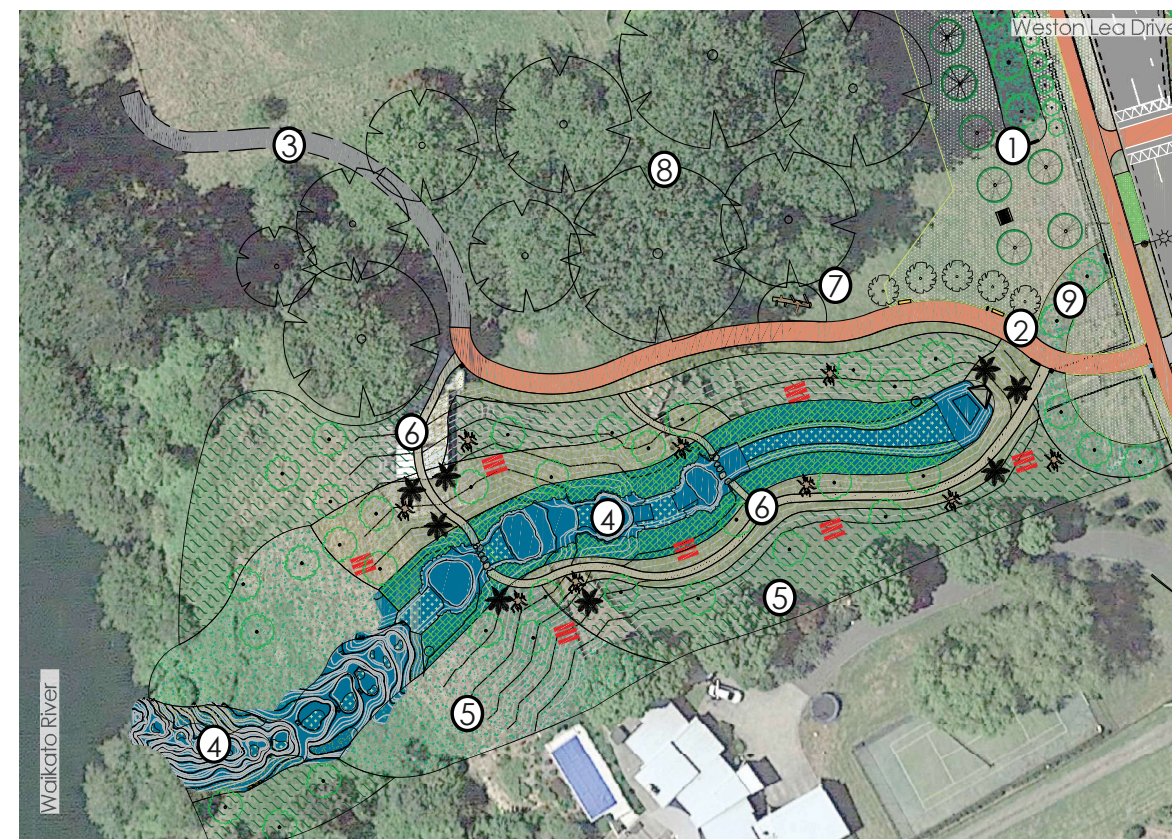


Fig 4.10.1 STORMWATER OUTLET PARK

- LEGEND
- ① Waka pedestrian cycle bridge
  - ② Shared pedestrian & cycle path
  - ③ Open grassed parkland
  - ④ Stormwater wetland
  - ⑤ Native embankment planting

- LEGEND
- ① Fruit and nut orchard
  - ② Shared pedestrian & cycle path
  - ③ Future riverside walk
  - ④ Planted stormwater outlet channel
  - ⑤ Low native ecological planting
  - ⑥ Informal gravel paths with stepping stone crossing points to channel
  - ⑦ Play and seating
  - ⑧ Protected oak grove
  - ⑨ Bee and insect planting mix



### 4.10.3 Waikato Bridge Park

The Waikato Bridge Park is located beneath the southern side of the Waikato River Bridge (Refer to Figures 4.10.3 and 4.10.4). The open space area utilises terracing to form an amphitheater environment that will be planted with low level planting mixes, which will allow bat flight paths to be maintained while also allowing the aesthetic quality of the bridge to be seen from the surrounding areas.

The park is connected with pedestrian and cycle paths that lead from both sides of the Waikato River Bridge with grades that meet HCC gradient requirements allowing ease of public access. A further path provides access from Weston Lea Drive West and leads down below the bridge and will connect to the future Riverside Walk. At the lower area of the park, the construction access track will be re-purposed to allow public access to the river edge, where a natural 'beach' environment occurs.

At the lower elevation of the amphitheater is a stormwater rain garden has been integrated into the space, which will be planted with plant species tolerant of wet and dry conditions. A grass access track around the perimeter allows maintenance as well as public access. Integrated into the terraces are informal grassed paths that contain seating and are linked with concrete steps.

At the upper section of the bridge park, an exposed aggregate path provides access to a dedicated grove of the national flax weaving species. Tables and seating have been integrated into the space to allow ease of public to utilise the area and for weavers to collect flax for weaving. To future proof the area for additional public facilities power water and waste pipe work will be provided, which will allow future implementation of toilet facilities to meet future demand.

Planting on the upper embankments of the park aims at supporting wildlife habitat and will help to create a link from the river edge to other areas of vegetation in and around the Project area.

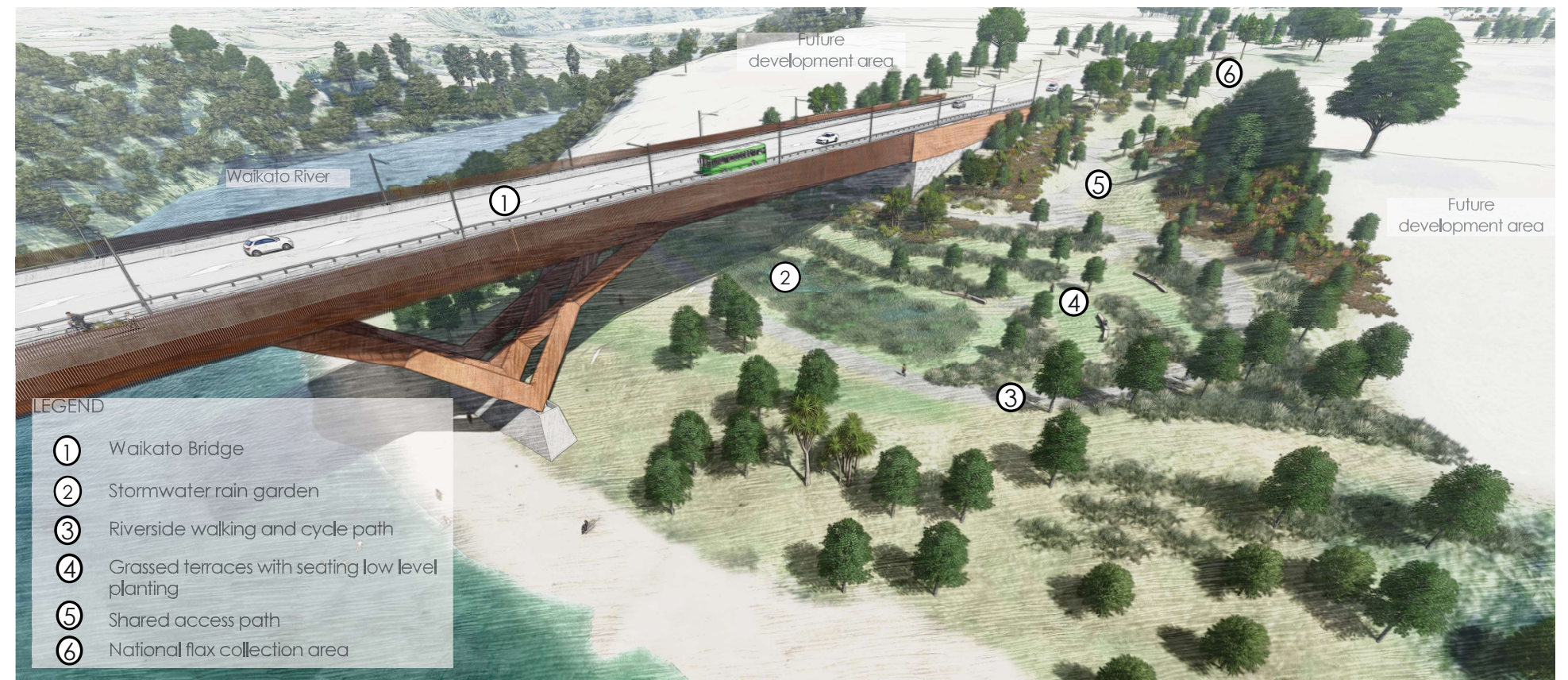


Fig 4.10.3 ILLUSTRATION OF THE WAIKATO RIVER BRIDGE PARK



Fig 4.10.4 ILLUSTRATION OF THE WAIKATO RIVER BRIDGE PARK



4.10.4 Wetland Pond Park

The Wetland Pond Park is located on the corner of Peacocks Road and Weston Lea Drive West and provide attenuation and treatment of stormwater runoff Refer to Fig 4.10.5). The area will provide a strong character and visual amenity to the road network and for future communities. Therefore, focus has been made on developing the incendiary spaces to incorporate informal tracks, seating areas, structured and informal play features and an exercise loop trail (refer to play and exercise sections).

Planting will utilise a variety of plant mixes to suit the growing conditions within the ponds. Additional planting will utilise ecological mixes to further enhance wildlife habitat with low grow edge mixes to minimise hiding places and to ensure a safe environment for users to meet CPTED requirements.

4.10.5 Peacocks Road Rain Garden Pocket Park and Community Gardens

The area on the corner of Peacocks Road and Peacocks Lane incorporates a stormwater rain garden and sits adjacent to the proposed Open Space Sports Facility area. The sundry space surrounding the rain garden provides an opportunity to provide the community with a mini pocket park at the eastern end. This space will include a path, seating and rubbish bin plus a basket swing for childrens play.

The rain garden planting includes a variety of wet and dry tolerant plant species associated with the rain garden. Additional ecological enhancement includes food plant species to support bees and insects, which in turn will provide an attractive park environment. Fruit trees are situated away from the main pedestrian path and will provide seasonal fruit suited to growing in the Waikato area.

Additional facilities in this area incorporate area area for community gardens, which will provide a meeting point for future residents while promoting community resilience with food and fruit production. A small fruit orchard has been included and an implement shed has been specified with concrete paths to allow access to gorwing gardens.



Fig 4.10.5 ILLUSTRATION OF THE WETLAND POND PARK OPEN SPACE



Fig 4.10.6 ILLUSTRATION OF THE RAIN GARDEN POCKET PARK



4.11 Open Space Play Equipment

To develop a sense of community, the open space areas have incorporated a number of structured and unstructured play areas. These are focused within the Wetland Park and Outlet Structure Park with additional play units located in the small pocket park areas.

Wetland Park

The Wetland Park incorporates a play circuit, which includes a mix of structured and informal play items. The informal play equipment, which aims at more 'free' play includes items such as upright log climbs, stepping logs and climbing trunks, which will include a 100mm depth of bark mulch to provide a safety surface.

The structured items include swings, spider net climb, post climbs and a play combination 'spiders cottage'. These items will include a poured rubber safety surface material to provide fall protection. Appendix B detail drawing information provides additional detail information on the layout and exact types of equipment that will be installed.

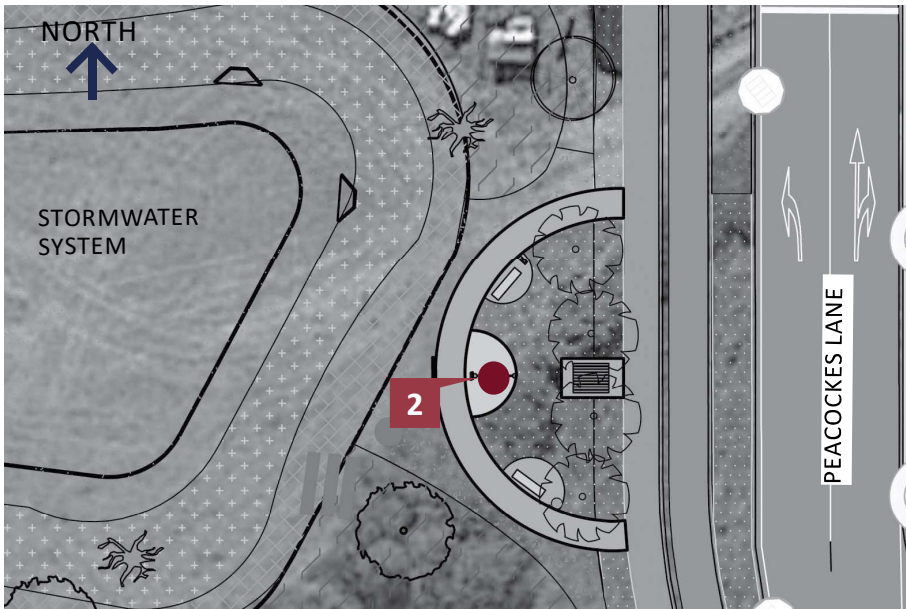


Fig 4.11.1 PEACOCKES LANE RAINGARDEN POCKET PARK

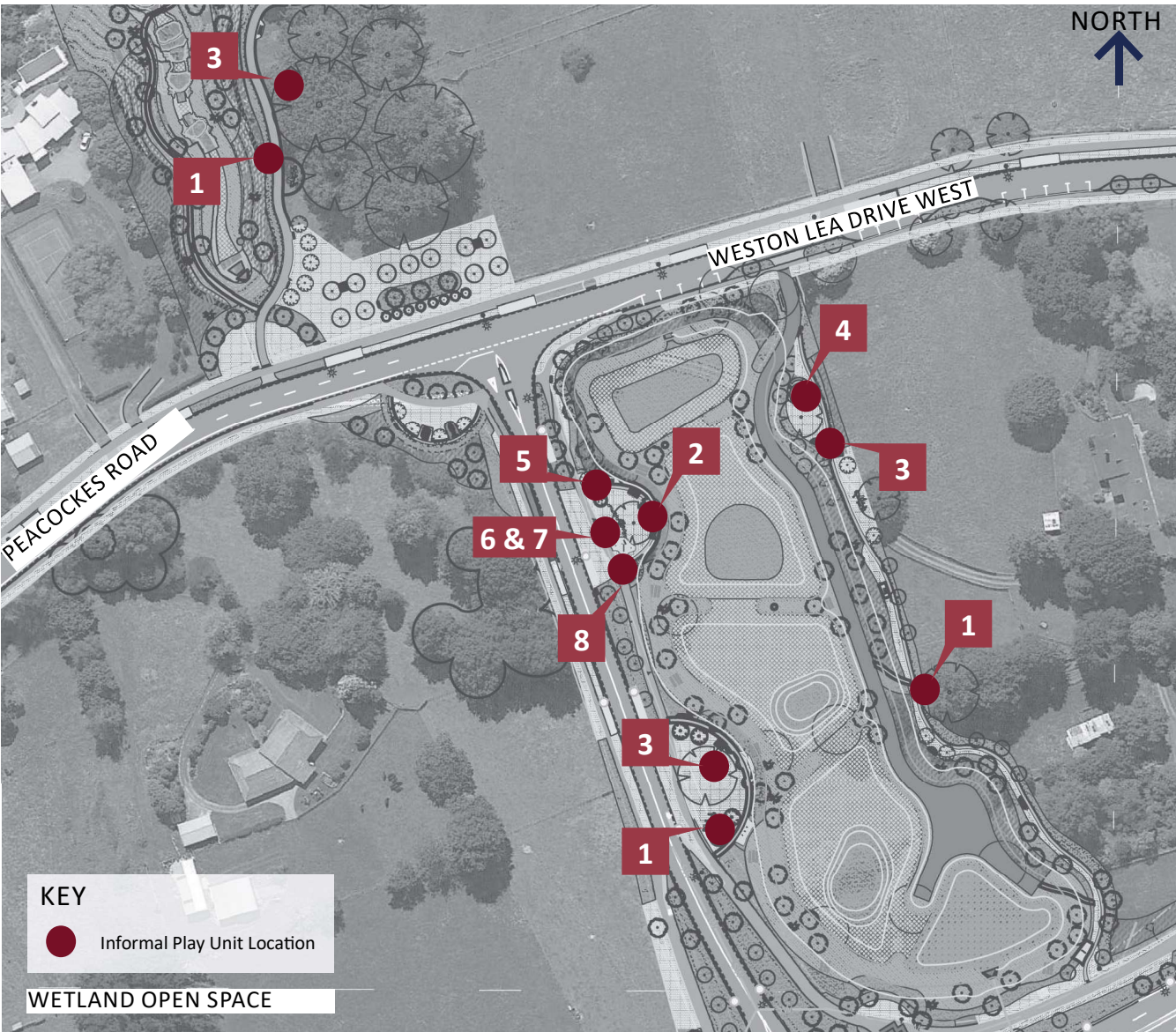


Fig 4.11.0 WETLAND PARK AND STORMWATER OUTLET PARK PLAY INSTALLATIONS



4 SPIDER NET



5 POST CLIMB (RE-PURPOSED FELLED TREES)



6 WOODEN STEPPING LOGS



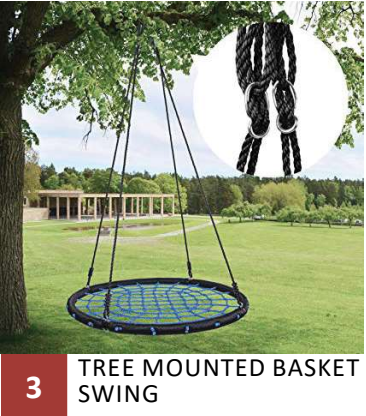
7 TREE LOG CLIMBING SET (RE-PURPOSED FELLED TREES TRUNKS)



1 INFORMAL LOG CLIMB WITH FALL SAFETY SUFACE



2 BASKET SWING



3 TREE MOUNTED BASKET SWING



Play on the way utilises a number of informal and unstructured features integrated adjacent to the foot path. The intent is to make the journey interesting for children to walk and explore enroute to the destination and aim at removing them from vehicle-based transport. Simple features include timber stepping logs, stepping stones balance beams and walls, which will also improve children's balance and confidence skills (Refer to Appendix B for additional information).





4.12 Open Space Exercise Equipment

In consultation with HCC Open Space Unit, a strategy for an exercise circuit has been included within the Wetland Park. These are structured exercise units that are spread out around the wetland area and are located adjacent to paths and tracks. The units will incorporate an artificial grass surface over a base course with timber edging to provide a durable surface beneath the facilities (Refer to Appendix B for additional information).

Based on discussions with HCC Parks and Open Space play and recreation equipment will be implemented within the Bridge Park area at a later stage in consultation with future communities.

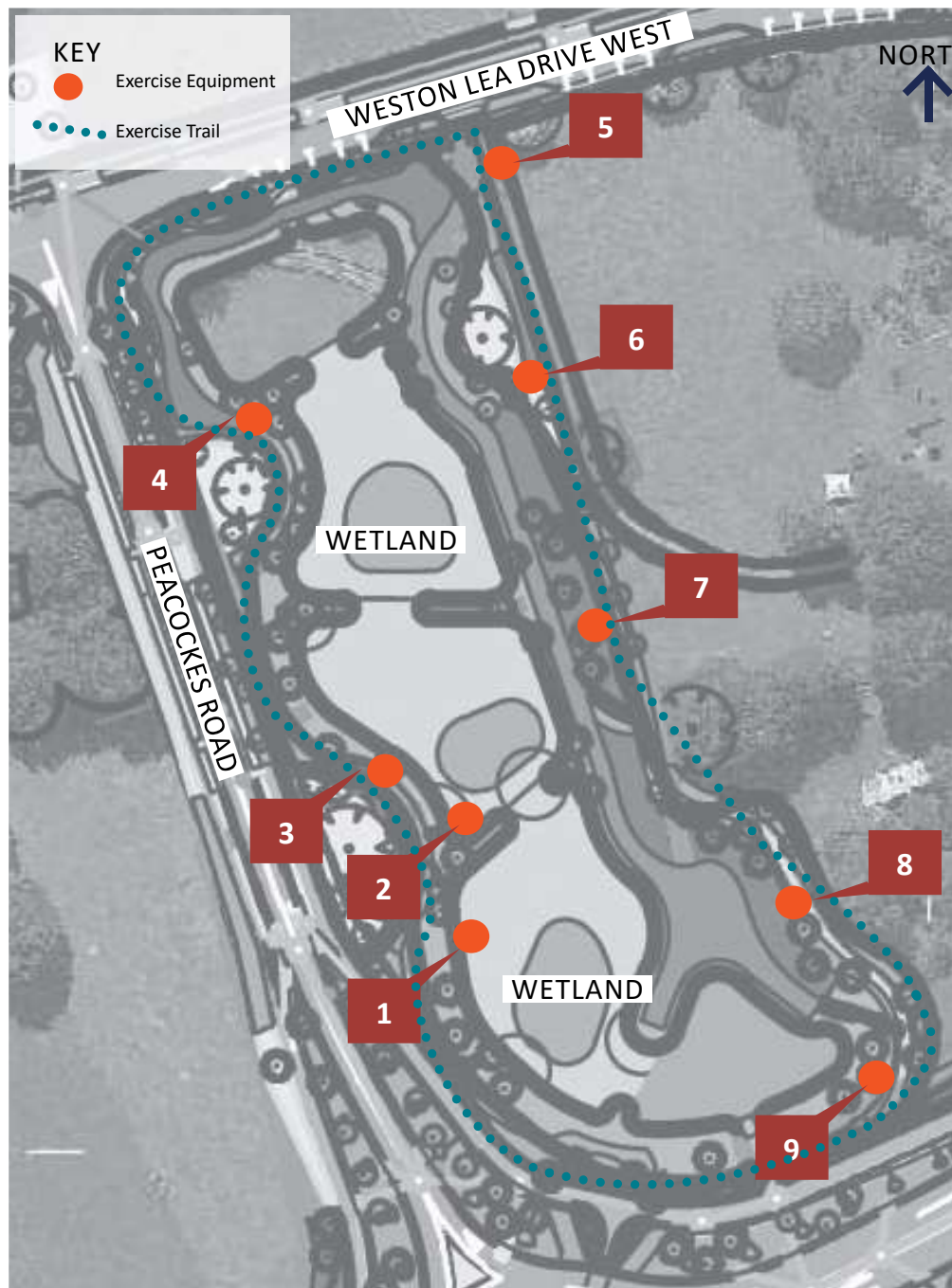
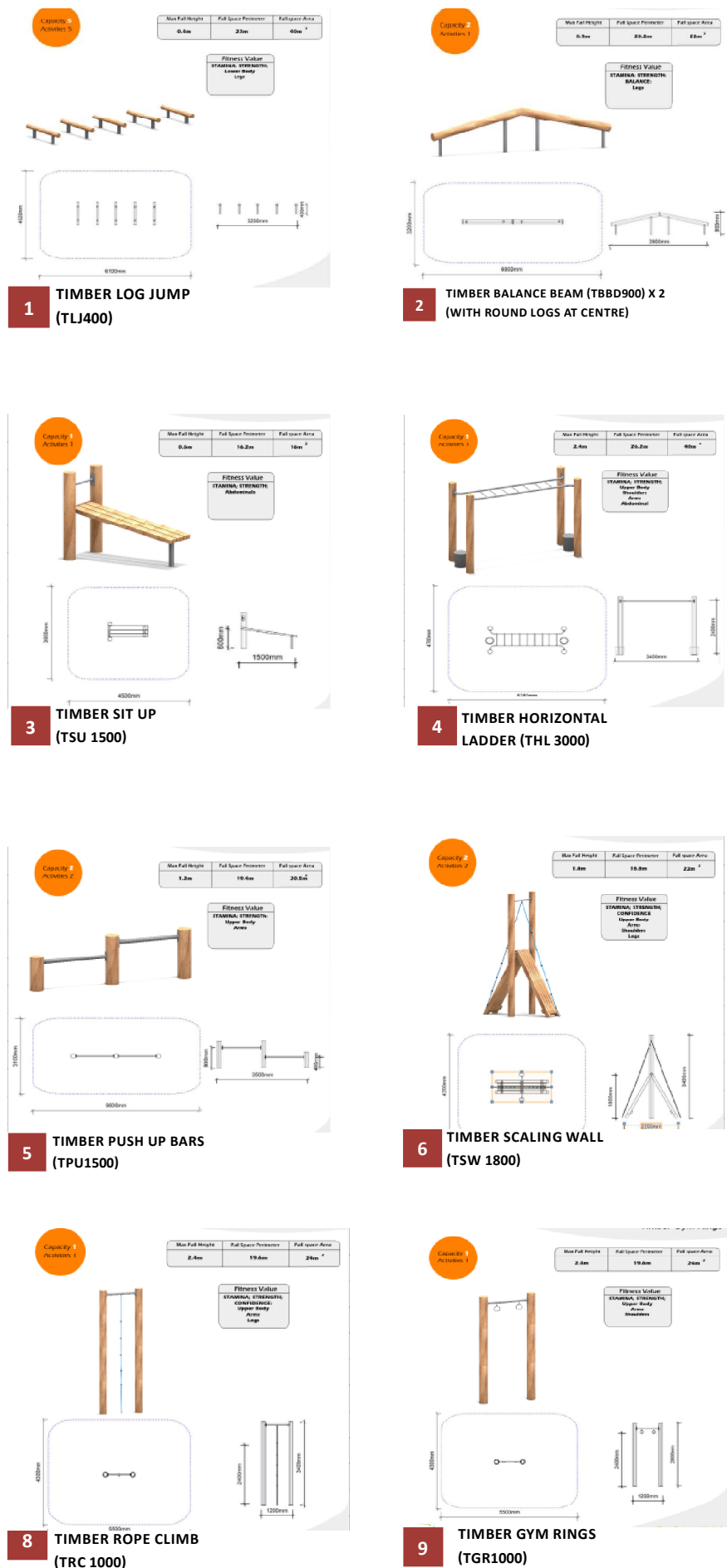


Fig 4.11.3 WETLAND PARK EXERCISE CICUIT AND EQUIPMENT



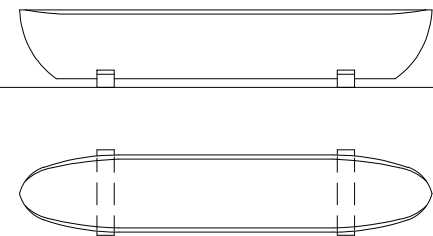


4.13 Open Space Park Furniture

A variety of park and street furniture will be provided across the Project and includes standard seats, benches, picnic tables, water fountains, bike racks and bins. These products have been selected in consultation with HCC, as these units are robust and have been widely used across Hamilton. Components are readily available for repair and maintenance. A mix of bench seats and seats that includes backs and arm rests have been included to ensure units can be used by a wide range of people with varying abilities.

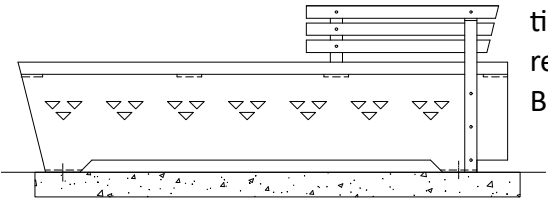
Two bespoke seating types have been developed for the open space areas that aim at complementing the standard seating types. One unit will re-purpose existing tree trunks and will be mounted on treated blocks to keep the log above ground. The second unit has been designed with a 'waka' form that utilises weathered steel and includes a partial backing and arm rest and complements the riverside location and bridge materials.

SEATING - TIMBER LOG SEAT



Timber seat formed from felled trees set on treated timber base

SEATING - CORTEN STEEL AND TIMBER WAKA SEAT



Corten steel seat with timber back and steel arm rest. To be used in the Bridge Park area

SEATING - BENCH SEAT UNIT



Waihi bench seat (limited to 30% of seating) with balance utilising seat unit

SEATING - PICNIC SET



Waihi seat with back rest and arm rests

RUBBISH BINS



Refer to River Plan furniture Suite.

SEATING - PICNIC SET



Timber picnic set anchored to exposed aggregate concrete base

BIKIE STANDS



'D' shaped bike stands set onto exposed aggregate base. Located in open space areas near seats and tables

DRINKING FOUNTAINS



Drink fountain with dog water bowl at base located in open space areas.



#### 4.14 Street Furniture

Street furniture including barriers, signage and lighting will be located in accordance with NZTA and HCC guideline requirements. Street furniture will utilise standardised items that are readily available to ensure ease of maintenance and replacement.

Secondary signage for open spaces, cyclist and pedestrian paths will utilise HCC Brand Manual to provide wayfinding and interpretation signage to be incorporated into the Project. Open space seating, play and exercise equipment will also be provided as part of the development of features and facilities for future communities.

#### 4.15 Lighting

All road infrastructure including the roundabout, intersections and streets will be lit to provide suitable standards of lighting. The Ring Road Extension will utilise 10m columns with 2.0m outreach arms with the Minor Arterial and feeder roads utilising 8.0m columns with 1.0m outreach arms with suitable lenses to provide a consistent level of lighting to the carriageway and foot/cycle paths.

Specific lighting consideration has been given to the pedestrian bridge and the Waikato River Bridge to ensure the requirements of the EMMP in relation to bat flight paths is upheld. Therefore, the Waikato River Bridge will incorporate 8.0m column lights set back from the bridge edge and located between the pedestrian path and carriageway. The bridge street lights are lower in height and incorporate lenses that ensure minimal light spill. The pedestrian bridge and main bridge paths include a concealed LED strip light within the handrail, which will wash light down and across the path to minimise potential light spill.

Lighting will be provided to pedestrian and cycle underpasses with recessed light units located within the soffit of the underpasses to ensure well lit and safe environments.

#### 4.16 Signage

Street signage across the Project is consistent with NZTA's State Highway requirements and will accord with HCC guidelines. Planting adjacent to and in front of signage will include low grow edge mix to prevent signs being obscured and minimise ongoing maintenance requirements.

The HCC Brand Manual for signage types (REFER TO FIGURES 14.16.0 and 14.16.1), uses and technical specifications has been utilised for open spaces, pedestrian and cycle signs to ensure consistency and reinforcement of visual identity. In addition, interpretative signage will be developed based on the HCC Brand Manual to deliver topics on natural and cultural heritage. Final designs and information will be developed with inputs from HCC graphics department and TWWG where appropriate.

#### 4.17 Barriers

Road safety barriers are to be installed where there is a need to protect a vehicle from a significant hazard. Concrete barriers are proposed across the Waikato River Bridge and adjacent to the abutment retaining walls with appropriate transitions and terminations through steel barrier. Steel W-section barriers are proposed at the Ring Road Extension/ Peacockes Road roundabout (Refer to Fig 14.17) to protect errant vehicles from the height difference between the road surface and the pedestrian/ cycle underpasses.

All road safety barriers comply with NZTA M23, the various NZTA Technical Memorandum, Technical Advice Notes and RSB standard drawings and the interim acceptance notices listed on the NZTA M23 web page. TL-5 concrete barriers are proposed for the river bridge and transitions terminations through steel barrier.

Barriers are not provided to protect point hazards such as specimen trees, road signs or light columns as the likelihood of an errant vehicle striking the barrier is much greater than the point hazard itself.

#### 4.18 Fencing

The urban design approach is to avoid the use of noise walls or hard boundary fencing, which aims at encouraging future development to have open housing frontages to contribute

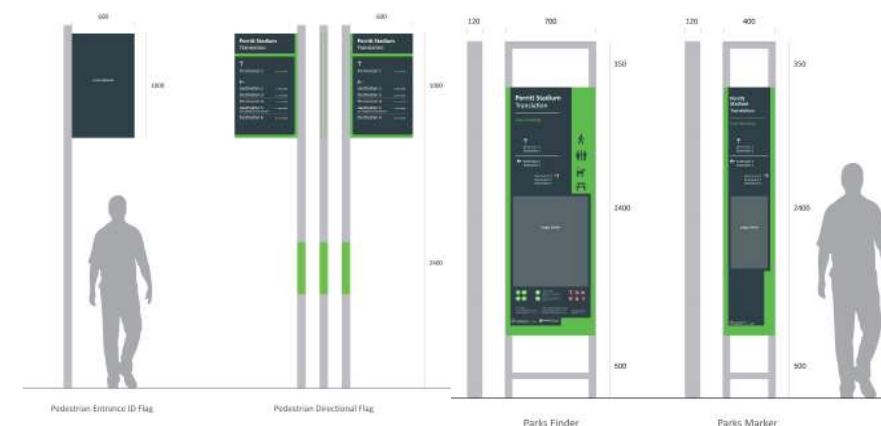


Fig 14.16.0 HAMILTON CITY COUNCIL WAYFARING SIGNAGE



Fig 14.17 EXAMPLE SHOWING BARRIER AND ROUNDABOUT SIGNAGE

visually to the streetscape. Therefore, the Project will avoid utilising closed board fencing and will reinstate boundaries utilising a simple post and wire where required.

#### 4.19 Ecological Features

##### Bird song posts

The bird song posts have been developed to be included within the wetland and rain garden areas. The design and final form of these features will be developed in conjunction with the TWWG to provide an additional layer of cultural theming. The bird posts provide opportunities for a variety of birds to mark territory and provides a safe location for birds to survey the environment. In addition, it will provide people the opportunity to connect with nature and observe local bird life.

##### Insect Hotels and Stumps

A number of insect hotels and stumps have been incorporated across the Project and are typically situated within the stormwater wetlands, outlet structure and in the ecological planting areas. The 'hotels' utilise trunks and branches of felled trees and are secured in stacks with posts to ensure stability and are aimed at providing insect refuge and habitat (refer to Fig 14.19). The 'stumps' will be retained on site to minimise disposal costs and the carbon footprint, while providing habitat for insects and reptiles.



Fig 14.16.1 HAMILTON CITY COUNCIL INTERPRETATIVE SIGNAGE



Fig 14.19 EXAMPLE SHOWING LOG STACK INSECT HOTEL



## 4.20 Peacocke Transfer Pump Station

The PST Project includes the construction of a transfer pump station (as part of a wider set of works), which will unlock the Peacocke growth cell for residential development by providing essential wastewater infrastructure to support the growth of Hamilton City. The Station will be located on the corner of the Ring Road Extension and the future North-South Arterial (Refer to Fig 14.20.0 and Appendix D for further information)

Wastewater from the growth cell will arrive at the Pump Station through a network of gravity and pressure mains. It will then be pumped from the Transfer Pump Station east along the Ring Road Extension in a rising main pipeline across the Waikato River Bridge, any carry on north through the East Town Belt/ Wairere Drive and Tramway Road for treatment at the City's northern facility.

The transfer pump station consists of:

- An above and below ground transfer pump station building including dry well pumps, control room, valve chamber, plant room, truck parking.
- The Transfer Pump Station building will have a maximum height of 9m, which includes an architectural and cultural design feature on the façade of the building. The overall building bulk is approximately 9m high x 20m long x 16m wide, with a gross floor area of approximately 200m<sup>2</sup>. (Refer to Figures 14.20.1 and 14.20.2)
- An above ground 1500m<sup>3</sup> steel storage tank with an overall bulk of approximately 6m high x 20m diameter that will include an exterior finish with a cultural pattern developed in conjunction with TWWG
- Ancillary buildings including a separate chemical dosing facility, valve chamber; transformer, generator housing building (genset) and biofilter area, plus
- Landscape proposals in and around the site to soften and screen the hard standing areas and to integrate the building into the landscape.

### Landscape Planting Proposals

The planting proposals includes planting that promotes ecological enhancement and biodiversity of the area, which builds upon the key design principles set out in the Peacocke's CLMP document.

The plant mixes are made up of low growing verge and amenity mixes to the public realm spaces within the site. This will provide passive surveillance for users and also frame the building and feature the facade as a sculpture on this future intersection. The backdrop of the building will include dense revegetation mixes which aims to enhance and link ecological habitats across the PST Project.

The landscaping plan has been developed in consultation with mana whenua and have incorporated feedback from the group during a series of building and landscaping design hui.



Fig 14.20.0 PEACOCKE TRANSFER PUMP SITE PLAN AND LANDSCAPE PLANTING PROPOSALS



Fig 14.20.1 PROPOSED PEACOCKE TRANSFER PUMP STATION



Fig 14.20.2 PROPOSED PEACOCKE TRANSFER PUMP STATION



#### 4.21 Stormwater Wetlands, Rain Gardens and Swales

Stormwater treatment wetlands, rain gardens and swales have been designed by hydraulic engineers, in co-ordination with landscape architects to provide treatment of stormwater runoff prior to being released into the Waikato River or gully stream. The wetlands have a 'semi-natural' form that incorporates shelving for a variety of plant mixes to maximise the biological uptake of dissolved pollutants and settlement of suspended solids to help manage water quality (refer to Figures 14.21.0 to 14.21.3).

The stormwater treatment wetlands have been designed in general conformance with the Hamilton City Council RITS. The design criteria applied to the detailed design of the wetland includes the following:

- A minimum dry weather water depth of 0.5m for open water areas
- An outlet structure that allows local rainfall events to be routed through in less than 24 hours, with a maximum velocity of less than 0.25m/s during events that exceed the water quality design event.
- A natural form that includes shelving/benches to allow for wetland planting
- The wetland design will achieve an approximate ratio of open water to riparian margin to forest planted area of 45:20:35
- The inclusion of an access track to allow for future maintenance

#### 4.22 Landform and Earthworks

The proposed earthworks follow the Southern Links ULDF and Peacockes CLMP guidance in that the earthworks will tie in with the undulating local landform that occurs within the area. Earthwork formations and gradients have been considered to ensure overland and storm water flows efficiently, with run off being captured and treated in an environmentally sensitive manner.

Batter slopes are typically no more than 2.5h:1v with rounded profiles that will be graded out to integrate with the surrounding topography. All slopes will be planted and will received 300mm of quality topsoil to ensure a suitable growing medium is provided for plant material to establish and thrive. For flatter grassed areas these will receive 100mm of topsoil, which will be graded to tie into the existing open space areas prior to grass/hydro-seeding.

Both topsoil and structural soils will be stripped and stored on site in separate piles for re-use where possible. Topsoil strip will be undertaken to minimise damage to soil health and structure by minimising top soil handling and timing of soil movement (avoiding wet and water-logged soils) and avoid overrun by heavy machinery. Topsoil stock piles be between 1.5 to 2.5m maximum to maintain quality and health and shall be treated with herbicide prior to re-spread.

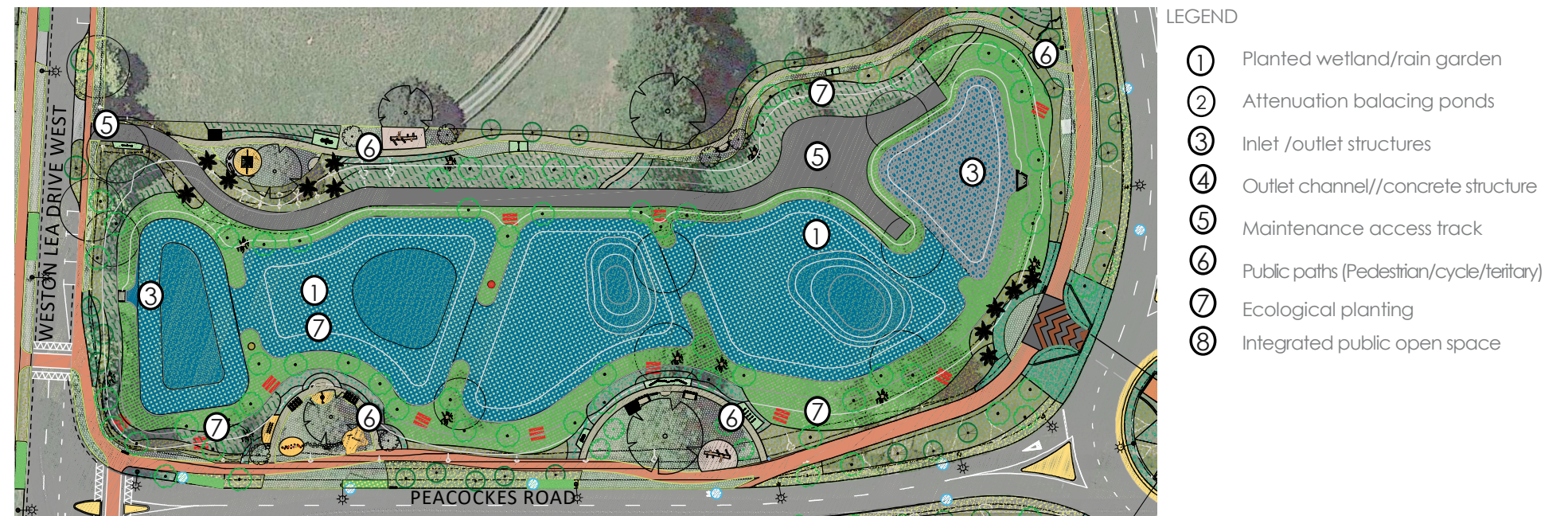


Fig 14.21.0 PEACOCKES ROAD STORMWATER WETLAND (SWD02)

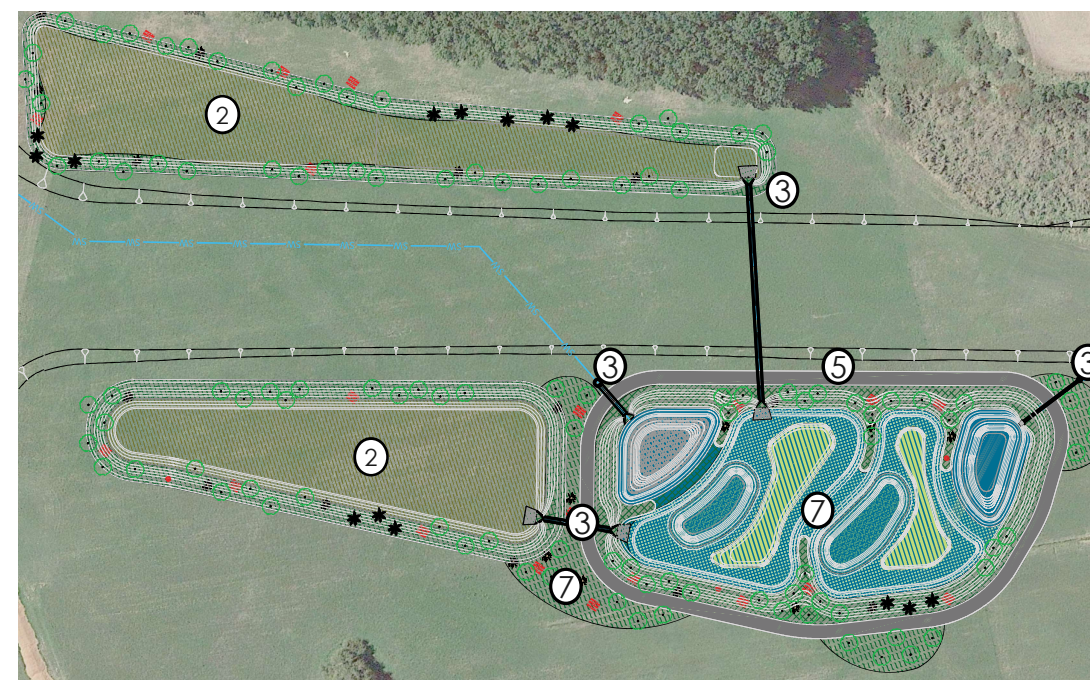


Fig 14.21.1 MANGAKOTUKUTUKU TRIBUTARY OUTFALL STRUCTURE

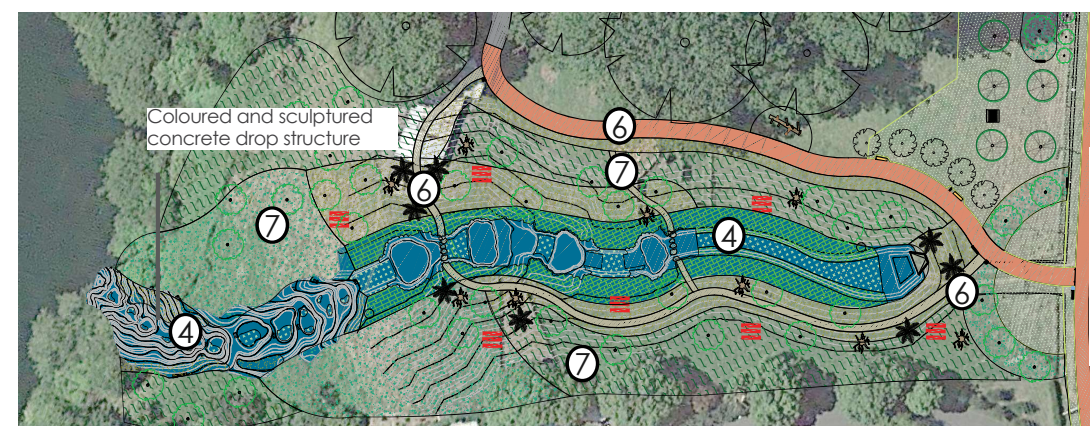


Fig 14.21.2 STORMWATER OUTLET STRUCTURE



Fig 14.21.3 BRIDGE RAIN GARDEN STRUCTURE



### 4.23 Planting Design Principles

The planting design theme(s) are integral to achieving a cohesive experience for road users including pedestrians and cyclist and adjacent residential properties. Key planting principles include:

- Context sensitive plant selection, utilising naturally occurring native plant material, which are distinctive and reinforce the local vegetation character and growing conditions
- Use of clusters of native trees within the streetscapes to provide strong visual streetscapes while supporting/ providing habitat linkages and bat hop overs
- The use of large-scale trees to maintain the Peacocks area's character and identify paths and junctions to aid wayfaring, plus for long term bat habitat (cavities)
- Utilise planting to help integrate the road form (cut and batter formations) and structures into the landscape
- Reflect character and ecological areas with a focus on native species
- Utilise planting to define locations and help wayfinding
- Improve biodiversity, wildlife habit and ecology to support the EMMP
- Eco source native plants where practicable
- Ensure planting does not affect or impede on safety
- Minimise the whole of life costs with a selection of robust plant material and mixes to minimise maintenance requirements
- Following recommendations of CPTED, and
- Reflect local cultural aspects (iwi) including rongoa

The methodology for the implementation will utilise a practical approach to ground preparation, planting, mulching and weed management, which will be based on the RITS and The Transport Agency's P39 specification requirements. Plant material with plant grades and spacings will be consistent with the planting schedules (refer to Appendix C for planting plans).

#### 4.23.1 Planting Design Approach

Appendix C contains the detailed landscape plans that illustrates the specific locations, planting types and also contains the plant schedules.

The design process has been undertaken with co-ordination between design disciplines and in consultation with key stakeholders to ensure a comprehensive and robust design approach has been achieved. The supporting details and cross sections have been produced to ensure the intent of the design is followed through during the implementation stage, particularly in relation to safety, planting layout and maintenance.

The planting approach (Refer to Fig 14.23.0) follows the general approach that was developed within the Southern Links ULDF designation landscape plans. The planting types can be divided into the following types:

### Landscape and Ecological Restoration

1. River embankment planting
2. Stormwater planting including wetlands, swales and rain gardens
3. Bat habitat and fly over planting
4. Bee habitat planting

### Amenity and Visual Mitigation Planting

5. Streetscape planting
6. Footpath and Cycle facilities

### Open Space Planting

7. Native and exotic tree planting
8. Use of fruit trees in open space areas
9. National flax collection planting
10. Community Gardens

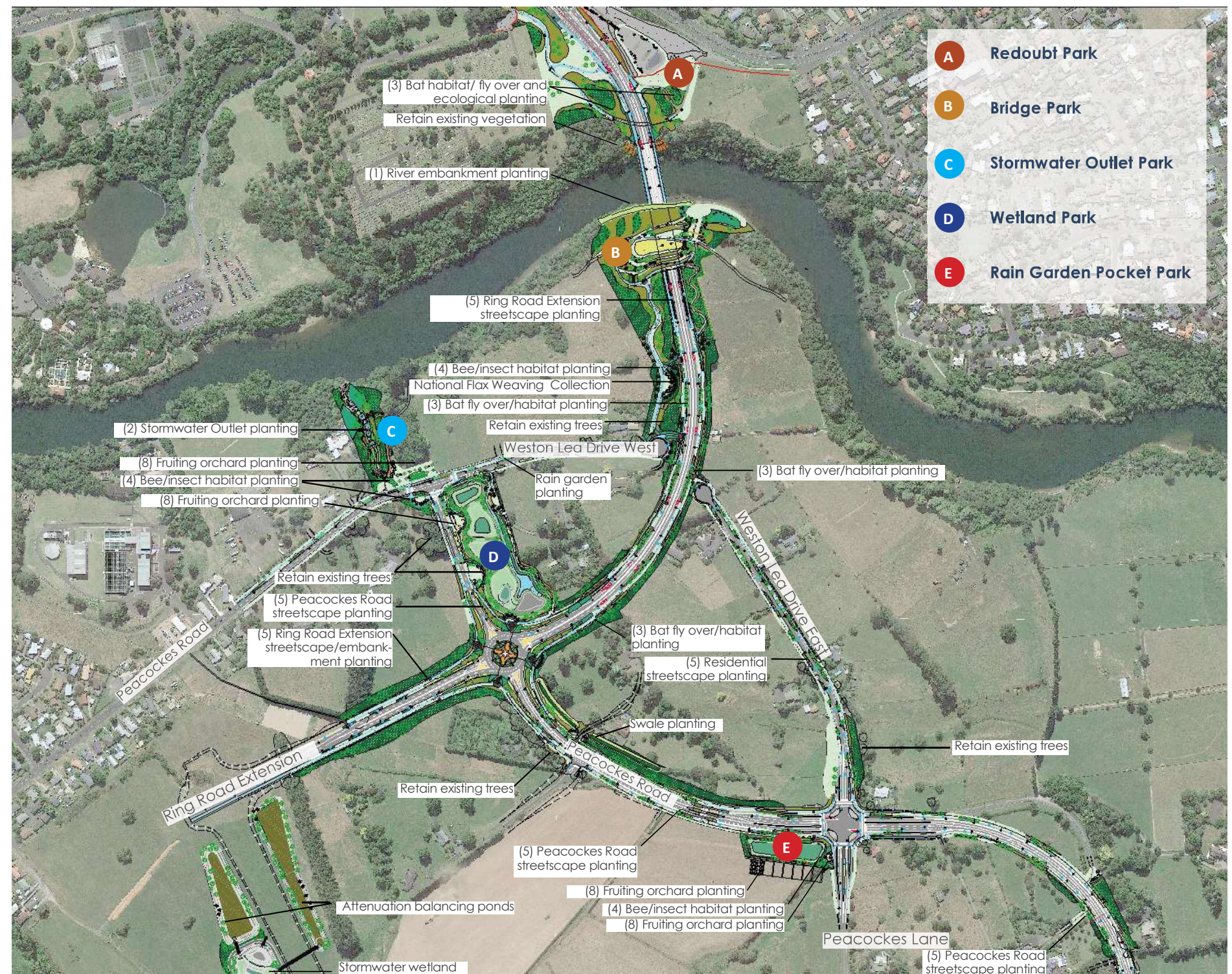


Fig 14.23.0 GENERAL ARRANGEMENT OF PLANTING TYPES AND AREAS



#### 4.23.2 Landscape and Ecological Revegetation

##### River Embankment Planting / Revegetation

The use of a variety of native mixes have been utilised along the river embankments to both sides of the Waikato River Bridge crossing. On the northern bank, planting extends up over the embankment into the open space to increase the connectivity of wildlife habitat, especially for bats. Further restoration work to the northern embankment will utilise punga logs and soil bags with planting to restore areas where areas have been cleared for soil nailing/ slope stabilization.

The southern side will utilise a combination of low growing species and clumps of taller ecological planting along the river embankment, which will maintain views of the river but also contribute to diversity. Overall plant material has been selected for its appropriateness of location, habitat potential and growing conditions. Additional ecological initiatives have included the installation of stumps and log stacks to provide insect and invertebrate habitat.

##### Stormwater Planting including Wetlands, Swales and Rain Gardens

A number of stormwater management systems have been integrated into the Project to provide attenuation and treatment prior to water being released into the Waikato River or gully system. The stormwater systems include the use of rain gardens, conveyance swales and wetland ponds to treat run off water.

##### Wetland Ponds

Wetland ponds have been located to benefit the local amenity and open space environment and contribute to the urban fabric. Therefore, to enhance the public experience, pedestrian paths encompass the wetland to enable people to appreciate the diversity of planting, while providing opportunities for play and recreation facilities.

The wetlands will contain a permanent water body with profiled sides to allow a variety of planting types to be incorporated. Planting types include wetland species suitable to long periods of submersion, which in turn will aid water filtration and treatment. Riparian species have been specified to withstand variable water level conditions and to enhance wildlife habitat. Large growing trees have been positioned in and around the pond to provide shading while contributing to wildlife habitat. Tree positioning has considered the location of access tracks that avoids conflict during future maintenance activities.

##### Rain Garden

A large rain garden has been located beneath the Waikato River Bridge, and has been designed to attenuate stormwater runoff from the bridge. The stormwater will be collected and piped into the shallow raingarden and will be released back into the Waikato River via an outlet structure. The outlet structure will utilise sculptured and colored concrete, which will contain zones for establishing planting to soften and integrate the structure into the surrounding landscape.

The raingarden has been integrated into the bridge park area, and sits at the base of the terraced open space that leads down to the river edge. The rain garden is shallow with a maximum depth of 200mm, which incorporates appropriate plant species that will withstand the periodic inundation. A grassed access track around the outer perimeter provides maintenance access, while allowing for public access within the open space area.

Further rain gardens have been integrated within the streetscape along Weston Lea Drive West that will collect and treat water prior to being released into the outlet structure, which will convey water to the Waikato River. These will be planted to aid water treatment and provide a 'soft' green verge along the side of Peacockes Road and Weston Lea Road West.

##### Swales

The Project has limited the use of swales with the inclusion of a swale along Peacockes Road, which connects with the existing open drainage channel and maintains existing flows. The swale has been designed to collect and treat water prior to being piped to the outlet structure that will deliver water cleaned back into the Waikato River. Appropriate swale species have been included, which will assist in treating runoff water.



*Platanus x acerfolia* (London Plane)



*Podocarpus totara*



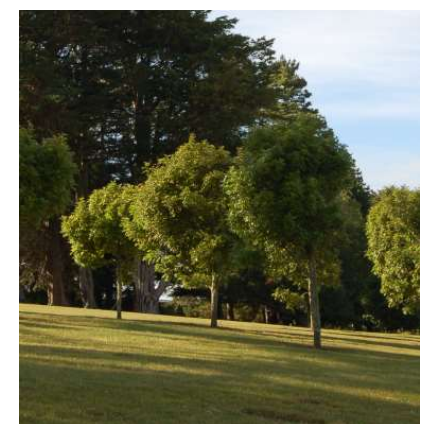
*Knightia excelsa*



*Quercus robur* (oak)



*Kahikatea* street tree planting clumps



Titoki street tree planting



Ecological mix



Mass planting



Low edge mix



**Bat habitat and fly over planting**

Long term tree planting responds to the EMMP requirement for ‘bat fly’ over and connectivity of wildlife habitats. To achieve bat fly overs the strategy of using clumps of street trees has been utilised predominantly along the main north-south arterial.

Specific areas where bat fly over planting occurs include either side of the Ring Road Extension and on the northern embankment of the proposed Waikato River Bridge. The alignment is in cut, but the use of trees in this area will provide additional height to ensure a safe flight passage for bats. Additional areas occur between the cul-de-sac locations of Weston Lea Drive (East and West) and to the north and south of the Ring Road Extension roundabout, which provides opportunities to connect habitat severed by the road (Refer to Fig 14.23.1 for linkages). In addition, potential cavity forming trees have been selected to contribute to long term bat roosting environments.

**Bee habitat planting**

Within open spaces across the Project, a number of mass planting areas of bee and insect mixes have been integrated to promote biodiversity and provide food source (Refer to Fig 14.23.1). These mixes include species that are either self-propagating annuals, perennials or flowering shrubs that are beneficial to a variety of insects and bees. It is envisaged that these areas will remain largely ‘natural’ with little maintenance other than occasional replacement of the wood shrubs.

**4.23.3 Amenity and Visual Mitigation Planting**

A hierarchy of planting types and forms have been utilised to distinguish between the major arterial, minor roads and collector/residential roads. In addition, plant material and trees have been selected to support the EMMP requirement for habitat creation and connectivity between existing vegetation areas, plus visual amenity and mitigation.

**Ring Road Extension**

The Ring Road Extension planting incorporates a ‘naturalistic’ approach where broad clumps of trees with underplanting will contribute to the streetscape and visual amenity. The planting strategy also incorporates taller growing ecological mixes that will provide screening to existing and future housing, but will also create wildlife habitat and maintain connectivity between existing habitat within the area.

**Peacockes Road**

Peacockes Road streetscape planting incorporates lineal groups of trees that are underplanted with low growing native shrubs and grasses. The grouping of trees will provide a strong visual form to the street, but will also provide safe bird and bat fly over opportunities. The streetscape integrates with the wetland planting/open space and also incorporates the swale and the taller growing ecological mix along the northwestern side of Peacockes Road. The road frontage of the proposed school and open space play area has been left open, so future buildings and facilities can respond to the streetscape. Similarly, the streetscape to the south of Peacockes





Lane/Weston Lea Drive East intersection minimises the use of planting to allow future development to front the street to provide a reinforce the street character and to provide passive surveillance.

Tree clusters are typically underplanted for ease of maintenance, with the selection of planting typically low level and compact to prevent spill over onto paths and cycleways. Beyond the street and pathways, the low edge mixes give way to taller growing ecological mixes, which will contain future housing development and therefore will maintain the visual amenity of the area. However, some clusters of taller ecological planting has been incorporated to provide a continuity of wildlife habitat while providing visual screening of existing houses.

### Footpath and Cycle Facilities

The separation of pedestrian and cycle facilities aligns with the 'Vision Zero' objectives and serves to provide an improved level of service for both users. The separation of facilities is typically between 1.5m to 2.0m wide, which allows sufficient space to plant a suitable mix of low growing compact plant species and grass.

The low and compact mixes and grass have been utilised to maintain open and clear views for users, which also supports CPTED principles by providing a safe environment for users. Areas of grass have also been utilised to allow for overspill or escape routes if required. Where taller ecological plant species have been integrated into the streetscapes, these have been set back from paths and utilise a low grow edge mix to avoid encroachment of planting onto paths and to minimise maintenance.

The selection of plant material also aims at minimising long term maintenance issues once established, plus allows sufficient space for mowers and maintenance vehicles to access the planting and work 'off road'.

### Open Space Planting

The development of open spaces is focused on the areas in and around wetlands and along the river environment including the bridge park, which will provide 'naturalistic' planting within these public areas.

Extensive ecological restoration, wetland and raingarden planting zones combined with streetscapes will contain a diverse range of native and exotic shrubs and trees. The planting will provide an attractive community orientated environment, while contributing significantly to biodiversity and linked up wildlife habitat.

### Native and exotic tree planting

The Project predominantly utilises native trees across the project, but a selection of exotic trees has been selected from HCC preferred tree list to complement the existing tree types that are scattered across the landscape.

The use of exotics will help maintain the existing character of the area, while providing long term interest, visual amenity and potential wildlife habitat. The strategy for using exotic trees includes locating them in open space areas or to denote features in the landscape, such as path or road intersections to assist in way-faring.

### Fruit Trees in Open Space Areas

To develop community identity and neighborhood resilience a number of the open space areas have integrated fruit and nut trees. Trees have been set back from paths and are located in grassed areas to prevent issues with falling fruit on pathways.

### National flax collection planting

In consultation and working with local Peacockes Road Weaver, Mrs Penny Cameron, some of the National Weaving Flax Collection (Paa Harakeke) is being propagated for inclusion into the Project (Refer to Fig 14.23.3). A designated area has been allowed for within the Bridge Park area to allow a number of weaving varieties to be planted with the aim of providing public access and use of the flax for weaving purposes. Flaxes will be set out with 2.5m spacing with bark mulch beneath to minimise weed growth and allow ease of access for weavers to harvest flax.

### Community Gardens

At this stage, allocation for pathways, a community storage shed and fruit orchard has been integrated into the design to the south of the rain garden near the intersection of Peacockes Road and Lane (Refer to Fig 14.23.2 and 14.23.4 as an examples).. The location will provide opportunities for future residents to grow vegetables in a designated community area. The community garden area could readily be expanded should future demand require additional growing space.



Fig 14.23.2 COMMUNITY GARDENS



Fig 14.23.3 NATIONAL FLAX WEAVING COLLECTION



Fig 14.23.4 FRUIT TREES IN PUBLIC SPACES



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#### 4.24 Landscape Specification

The landscape specification for vegetation clearance, subsoil preparation works, top soiling, eco-sourcing of plant material, planting preparation, planting, installation of grass, pest control and maintenance utilises the RITS specification with additional reference to the Agency's P39 Specification, where a more robust requirement is deemed necessary. Where appropriate supplementary pages/appendices will provide exclusions or further information, particularly in relation to the HCC design manual requirements to achieve a high level of industry stand is achieved.

#### 4.25 Crime Prevention Through Environmental Design (CPTED)

The Project has been CPTED reviewed and encompasses the CPTED principles to provide a safe environment and minimise the incidence and fear of crime. The key areas where CPTED principles have been applied relate to public paths and cycling facilities and open spaces where users are most vulnerable.

CPTED principles that include access, surveillance and sightlines, layout, activity mix, sense of ownership, quality environments and physical protection have been incorporated into the Project. The following provides a brief description on how these have been incorporated:

##### 1. Access:

Wayfaring markers at key entrance points to paths have been incorporated into the final design and will utilise HCC signage

##### 2. Surveillance and Sightlines:

Where possible areas which are deemed more remote have vegetation arranged to provide views/passive surveillance from the road network and adjacent residential properties. Paths have been designed with forward views and low growing plant species to minimise concealment opportunities

##### 3. Layout:

Path layouts and open space are intrinsically linked to ensure long views, alternate 'escape' points and clear route options. Wayfaring signage is also integrated at key locations.

##### 4. Activity Mix:

Where ever possible, paths and adjacent facilities/properties have been considered to provide a mix of activities and provide visual links where possible to provide a sense of security.

#### 5. Sense of Ownership:

The incorporation of Hamilton City suite of furniture has been utilised throughout the area to ensure robustness plus ease of maintenance/replacement. Key areas such as the pocket park is located near the carriageway with multiple path routes coming through the space. The incorporation of cultural themes in and around the project aims at creating a distinct place that people can connect with.

#### 6. Quality environments:

Well considered plant selection has been incorporated into the scheme to create a quality environment. Furniture locations are located in visible locations providing good surveillance from the road. Paths have been developed in conjunction with HCC to enable maintenance vehicle access for maintenance and upkeep.

#### 7. Physical Protection:

Key cycle and pedestrian routes (main linking/commuter routes) will be lit with areas near the carriageway benefiting from light spill from street lighting. At this stage CCTV has not been included with the aim of good design avoiding the requirement. The bridge structure and abutments will have anti-graffiti coatings to enable ease of maintenance/removal of graffiti.

#### 4.26 Implementation Program

The implementation program for landscape features will be related to the completion of key arts of infrastructure:

- The completion of the Major and Minor Arterials/streets
- The implementation of wetlands, raingardens and the outlet structure
- The Waikato River Bridge

The program for the landscape works will follow the completion of sections of work. It is anticipated that stormwater devices will be constructed early in the program and will be planted within the next available planting season. Street planting will be undertaken as each street is completed to avoid damage to street planting, with large cut areas being plated as soon as practicable. The last section of landscape implementation will be the Waikato River Bridge area, with construction likely to run the duration off the Project. Access tracks and reinstatement earthworks will be undertaken prior to planting.

Typically, planting will be undertaken at the completion of earthworks and construction activities to avoid jeopardising new planting. Planting will be undertaken during the planting season between April and September to help achieve the best outcomes in relation to plant establishment and growth.

Maintenance will occur for a period of 5 years from the end of practical completion prior to being handed over to HCC. The maintenance activities will include weed maintenance and plant replacement where failures occur. It is anticipated that the weed management and plant replacement will be more intensive in the initial two years during the establishment period. However, as planting establishes and canopy closure starts to occur the level of weed and plant maintenance will diminish, as weed control will to a degree occur naturally once plants form a canopy.

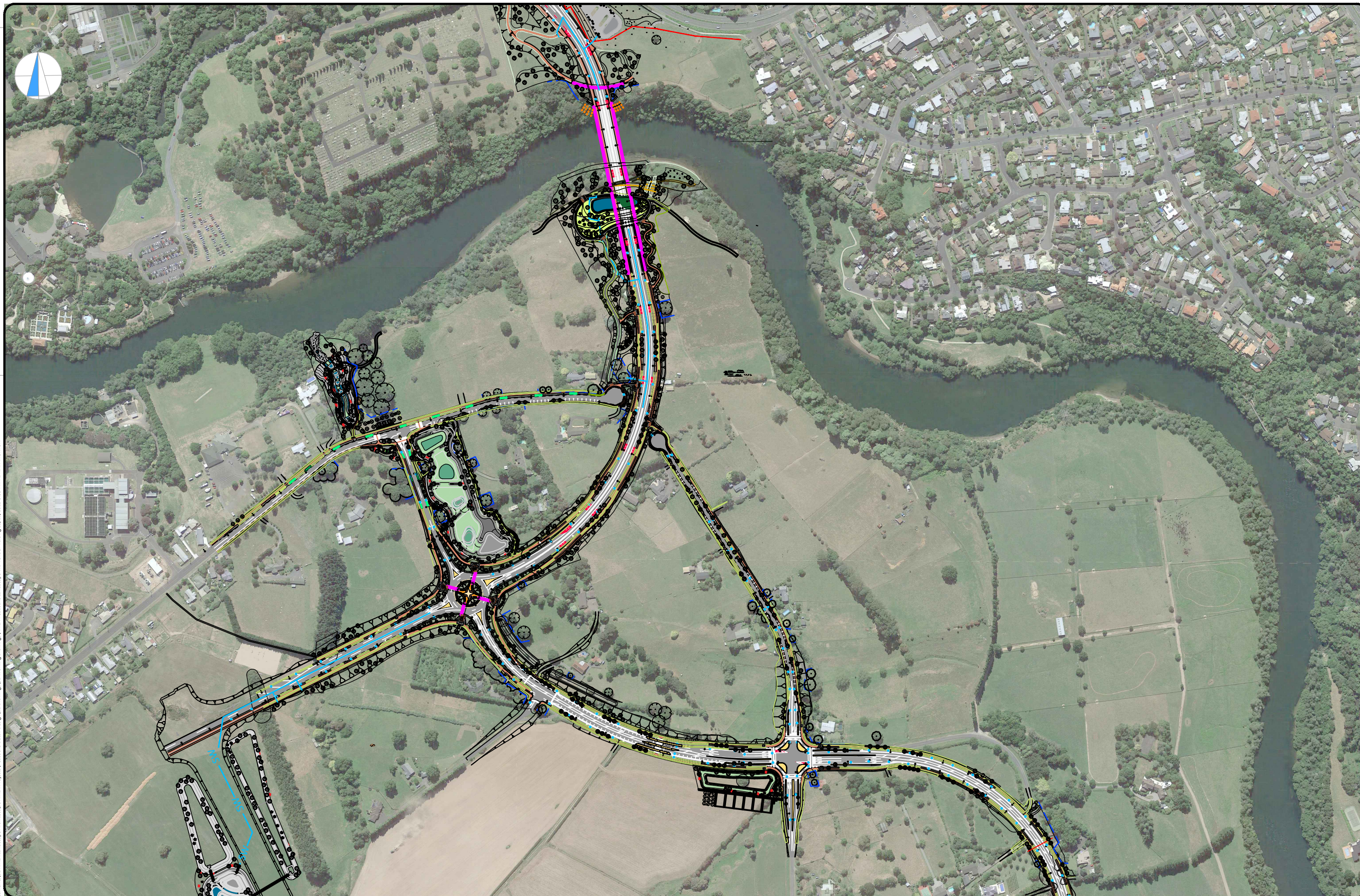


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# APPENDIX A

LANDSCAPE GENRAL LAYOUT PLANS



[illegible]

DESIGNED	CHECKED
AM	JG
DRAWN	APPROVED
AM	JG

mx model version:



Adrian Morton **Landscape Architects Ltd**  
Landscape Architecture :: Urban Design :: Environmental Planning



# PROJECT PEACOCKE STRATEGIC TRANSPORT PROJECT

DRAWING

GENERAL OVERVIEW PLAN  
LANDSCAPE PROPOSALS

STATUS		TENDER	
DATE	20.03.2020		
DRAWING NUMBER		REVISION	
145900-001A-6000		A	



## Planting Schedule

MASS INDIVIDUAL PLANT SPECIES					
Common name	Botanical name	Code	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Oioi	Apodasmia similis	Apo sim	1l	2.05/m <sup>2</sup>	1,968
Rengarenga	Arthropodium cirratum	Art cir	1l	1.25/m <sup>2</sup>	454
Bottlebrush	Callistemon viminalis 'Little John'	Cal LJ	1l	0.64/m <sup>2</sup>	81
Sedge	Carex testacea	Car tes	1l	1.8/m <sup>2</sup>	277
Coprosma var	Coprosma 'Kirkii'	Cop kir	1l	1.25/m <sup>2</sup>	684
Coprosma var	Coprosma acerosa	Cop ace	1l	1/m <sup>2</sup>	0
Coprosma var	Coprosma 'Mangitangi'	Cop man	1l	1.55/m <sup>2</sup>	378
Taupata	Coprosma repens 'Poor Knights'	Cop PK	1l	1/m <sup>2</sup>	445
Turutu	Dianella nigra	Dia nig	1l	2/m <sup>2</sup>	178
Iris	Dietes grandiflora	Die gra	1l	1.8/m <sup>2</sup>	92
Akeake	Dodonea viscosa	Cop PK	1l	1/m <sup>2</sup>	0
Hebe	Hebe 'Inspiration'	Heb ins	1l	1/m <sup>2</sup>	342
Day lily	Hemerocallis 'Cade Stewart'	Hem CS	1l	1.55/m <sup>2</sup>	0
Manuka	Leptospermum 'Nanum Kiwi'	Lep mus	1l	1.25/m <sup>2</sup>	387
Nz Iris	Leptospermum 'Wiri Donna'	Lep wd	1l	0.64/m <sup>2</sup>	75
Nz Iris	Libertia grandiflora	Lib gra	1l	1.8/m <sup>2</sup>	355
Lily turf	Libertia peregrinans	Lib per	1l	2.8/m <sup>2</sup>	64
Lomandra grass	Liriope muscari	Lir mus	1l	2.8/m <sup>2</sup>	179
Muhlenbeckia	Lomandra tankii	Lom tan	1l	1/m <sup>2</sup>	142
Harakeke/Flax	Muhlenbeckia astonii	Mul ast	1l	1.25/m <sup>2</sup>	272
Harakeke/Flax	Phormium cookianum 'Emerald Gem'	Pho eg	1l	1.25/m <sup>2</sup>	170
Harakeke/Flax	Phormium tenax	Pho ten	1l	0.64/m <sup>2</sup>	895
Golf ball pittosporum	Pittosporum 'Golf Ball'	Pit glk	1l	0.64/m <sup>2</sup>	148
Pittosporum	Pittosporum 'Little Kiwi'	Pit LK	1l	1/m <sup>2</sup>	171
Houpara	Pseudopanax lessoni	Pse les	1l	0.64/m <sup>2</sup>	0
Carpet rose	Rosa 'Flower Carpet Red'	Ros fcr	1l	1.25/m <sup>2</sup>	140
Grey box	Westringia 'Grey Box'	Wes GB	1l	1.25/m <sup>2</sup>	217
Total					8,114

## (OIP) ORNAMENTAL INFILL MIX (equal spacing)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Harakeke/Flax	Phormium cookianum 'Emerald Gem'	50	1l	1.55/m <sup>2</sup>	1,304
Lomandra grass	Lomandra tankii	50	1l	1/m <sup>2</sup>	1,304
Total					2,607

## (CPP) CYCLE PATH PLANTING (plant in equally spaced blocks)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Compact pittosporum	Pittosporum 'Little kiwi'	20	1l	1.55/m <sup>2</sup>	531
Lily turf	Liriope muscari	20	1l	1.55/m <sup>2</sup>	531
Coprosma var	Coprosma 'Mangitangi'	20	1l	1.55/m <sup>2</sup>	531
Turutu	Dianella nigra	20	1l	1.55/m <sup>2</sup>	531
Grey box	Westringia 'Grey Box'	20	1l	1.55/m <sup>2</sup>	531
Total					2,654

## (BPM) BEE PLANTING MIX (in blocks)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Echinacea	Echinacea angustifolia	10	1l	1.8/m <sup>2</sup>	128
Calendula officinalis	Calendula officinalis	5	1l	1.8/m <sup>2</sup>	64
Rosemary	Rosmarinus officinalis	15	1l	1.8/m <sup>2</sup>	191
Lavender	Lawandula angustifolia 'Hidcote'	20	1l	1.8/m <sup>2</sup>	255
Thyme	Thymus vulgaris	10	1l	1.8/m <sup>2</sup>	128
Bottlebrush	Callistemon splendens	10	1l	1.8/m <sup>2</sup>	128
Grevillea	Grevillea spp (Clearview or Victoria)	10	1l	1.8/m <sup>2</sup>	128
Hebe	Hebe species	20	1l	1.8/m <sup>2</sup>	255
Total					1,275

## LGE(A) - LOW GROWING EDGE MIX A (plant in groups of 7 to 11 with blended edges)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Oioi	Apodasmia similis	10	1l	1/m <sup>2</sup>	539
Coprosma	Coprosma acerosa 'Kirkii'	30	1l	1/m <sup>2</sup>	1,616
Pohuhue	Muehlenbeckia astonii	25	1l	1/m <sup>2</sup>	1,346
Harakeke/Flax	Phormium cookianum 'Emerald Gem'	20	1l	1/m <sup>2</sup>	1,077
Pittosporum sps	Pittosporum 'Little Burger'	15	1l	1/m <sup>2</sup>	808
Total					5,385

## LGE(B) - LOW GROWING EDGE MIX B (plant in groups of 7 to 11 with blended edges)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Coprosma	Coprosma repens 'Poor Knights'	10	1l	1/m <sup>2</sup>	829
Sand coprosma	Coprosma acerosa	10	1l	1/m <sup>2</sup>	829
Turutu	Dianella nigra	10	1l	1/m <sup>2</sup>	829
Iris	Dietes grandiflora	10	1l	1/m <sup>2</sup>	829
Hebe	Hebe 'Wiri Charm'	10	1l	1/m <sup>2</sup>	829
Compact Manuka sps	Leptospermum 'Wiri Kerry'	15	1l	1/m <sup>2</sup>	1,244
Lomandra grass	Lomandra tankii	15	1l	1/m <sup>2</sup>	1,244
Flax	Phormium 'Emerald Green'	15	1l	1/m <sup>2</sup>	1,244
Dwarf Kowhai	Sophora 'Dragons Gold'	5	1l	1/m <sup>2</sup>	415
Total					8,290

## LGE(C) - LOW GROWING EDGE MIX C (plant in groups of 7 to 11 with blended edges)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Coprosma	Coprosma 'Mangitangi'	25	1l	1/m <sup>2</sup>	1,625
Rangiora variety	Brayglottis 'Otari Cloud'	15	1l	1/m <sup>2</sup>	975
Hebe	Hebe 'Wiri Mist'	5	1l	1/m <sup>2</sup>	325
Pohuhue	Muehlenbeckia astonii	25	1l	1/m <sup>2</sup>	1,625
Harakeke/Flax	Phormium cookianum 'Emerald Gem'	10	1l	1/m <sup>2</sup>	650
Carex grass	Carex flagellifera 'Bronze'	20	1l	1/m <sup>2</sup>	1,300
Total					6,500

## (RVM) - ROAD VERGE MIX (plant in groups of 11 to 15)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Coprosma	Coprosma acerosa 'Hawera'	30	1l	1.55/m <sup>2</sup>	1192
Coprosma Taiko	Coprosma Taiko	30	1l	1.55/m <sup>2</sup>	1788
Turutu	Dianella nigra	15	1l	1.55/m <sup>2</sup>	894
Prostrate Manuka sps	Leptospermum 'Mercury Island'	25	1l	1.55/m <sup>2</sup>	1490
Pohuhue	Muehlenbeckia astonii	10	1l	1.55/m <sup>2</sup>	596
Total					5,961

## ERMS- ECOLOGICAL REVEGETATION SHADE MIX (planted in groups of 7 to 11)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Toetoe	Austroderia fulvida	5	1l	1/m <sup>2</sup>	200
Crown fern	Blechnum discolor	2	1l	1/m <sup>2</sup>	80
Kiokio	Blechnum novae-zelandiae	3	1l	1/m <sup>2</sup>	120
Akeake	Carpodetus serratus	10	1l	1/m <sup>2</sup>	401
Karamu	Coprosma robusta	5	1l	1/m <sup>2</sup>	200
Cabbage tree	Cordylina australis	5	1l	1/m <sup>2</sup>	200
Black ponga (spread though mix)	Cyathea medullaris	1	1l	1/m <sup>2</sup>	40
Putaputaweta	Dicksonia squarrosa	4	1l	1/m <sup>2</sup>	160
Koromiko	Hebe stricta	8	1l	1/m <sup>2</sup>	320
Manuka	Leptospermum 'Electric Red'	10	1l	1/m <sup>2</sup>	401
Red Matipo	Myrsine australis	10	1l	1/m <sup>2</sup>	401
Flax	Phormium tenax	10	1l	1/m <sup>2</sup>	401
Koraro	Pittosporum crasifolium	5	1l	1/m <sup>2</sup>	200
Totara	Podocarpus totara	5	1l	1/m <sup>2</sup>	200
Miro	Prumnopitys ferruginea	2	1l	1/m <sup>2</sup>	80
Puahou/five finger	Pseudopanax arboreus	10	1l	1/m <sup>2</sup>	401
Kowhai	Sophora microphylla	5	1l	1/m <sup>2</sup>	200
Total					4,005

## ERMD 01 - ECOLOGICAL REVEGETATION DRY MIX 1 (planted in groups of 7 to 11)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Toetoe	Austroderia fulvida	5	1l	1/m <sup>2</sup>	852
Cabbage tree	Cordylina australis	5	1l	1/m <sup>2</sup>	852
Wheki-ponga (spread though mix)	Dicksonia fibrosa	2	1l	1/m <sup>2</sup>	341
Akeake	Dodonea viscosa	10	1l	1/m <sup>2</sup>	1,705
Koromiko	Hebe stricta	10	1l	1/m <sup>2</sup>	1,705
Rewarewa	Kightia excelsa	5	1l	1/m <sup>2</sup>	852
Manuka	Leptospermum 'Electric Red'	10	1l	1/m <sup>2</sup>	1,705
Pohuhue	Muehlenbeckia axillaris	5	1l	1/m <sup>2</sup>	852
Red Matipo	Myrsine australis	10	1l	1/m <sup>2</sup>	1,705
Flax	Phormium tenax	10	1l	1/m <sup>2</sup>	1,705
Karo	Pittosporum crasifolium	5	1l	1/m <sup>2</sup>	852
Miro	Prumnopitys ferruginea	3	1l	1/m <sup>2</sup>	511
Puahou/five finger	Pseudopanax arboreus	10	1l	1/m <sup>2</sup>	1,705
Kowhai	Sophora microphylla	10	1l	1/m <sup>2</sup>	1,705
Total					17,045

## ERMD 02 - ECOLOGICAL REVEGETATION DRY MIX 2 (planted in groups of 7 to 11)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Kiokio	Blechnum novae-zelandiae	3	1l	1/m <sup>2</sup>	325
Rangiora	Brachyglottis repanda	10	1l	1/m <sup>2</sup>	1,084
Putaputaweta	Carpodetus serratus	5	1l	1/m <sup>2</sup>	542
Mingimingi	Coprosma propinqua	5	1l	1/m <sup>2</sup>	542
Corokia	Corokia x virgata 'Geenty's Green'	10	1l	1/m <sup>2</sup>	1,084
Black ponga (spread though mix)	Cyathea medullaris	2	1l	1/m <sup>2</sup>	217
Kapuka	Girselina littoralis	5	1l	1/m <sup>2</sup>	542
Napuka	Hebe speciosa	10	1l	1/m <sup>2</sup>	1,084
Lacebark	Hohenia populnea	5	1l	1/m <sup>2</sup>	542
Rewarewa	Kightia excelsa	5	1l	1/m <sup>2</sup>	542
Ramarama	Lophomyrtus bullata	5	1l	1/m <sup>2</sup>	542
Kaikomako	Pennatia corymbosa	5	1l	1/m <sup>2</sup>	542
Wharariki	Phormium cookianum	5	1l	1/m <sup>2</sup>	542
Kohuhu	Pittosporum tenuifolium	15	1l	1/m <sup>2</sup>	1,626
Puahou/five finger	Pseudopanax arboreus	10	1l	1/m <sup>2</sup>	1,084
Total					10,840

## WETLAND PLANTING

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
(WPM) Wetland Pond Mix (Deep zone 0.6 to 1.0m planting depth)					
Jointed twig rush	Baumea articulata / Machaerina juncea	40	0.5l	2.8/m <sup>2</sup>	3,818
Sedge spike	Eleocharis sphacelata	25	0.5l	2.8/m <sup>2</sup>	2,386
Raupe / Bullrush	Typha orientalis	10	0.5l	2.8/m <sup>2</sup>	955
Kuawa / Lake club rush	Schoenoplectus tabernaemontani	25	0.5l	2.8/m <sup>2</sup>	2,386
Total					9,545

## (WSE) Wetland Pond Mix (0.3 to 0.6m planting depth)

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Jointed twig rush	Baumea / Machaerina juncea	25	0.5l	2.8/m <sup>2</sup>	5,413
Purua grass	Bolboschoenus fluviatilis	10	0.5l	2.8/m <sup>2</sup>	2,165
Sharp spike sedge	Eleocharis acuta	20	0.5l	2.8/m <sup>2</sup>	4,330
Purei	Carex secta	15	0.5l	2.8/m <sup>2</sup>	3,248
Giant rush	Juncus pallidus	10	0.5l	2.8/m <sup>2</sup>	2,165
Wiwi, Edgar's rush	Juncus gregiffiorus	20	0.5l	2.8/m <sup>2</sup>	4,330
Total					21,650

## (RM) Riparian Mix (0 to 0.3m planting depth)

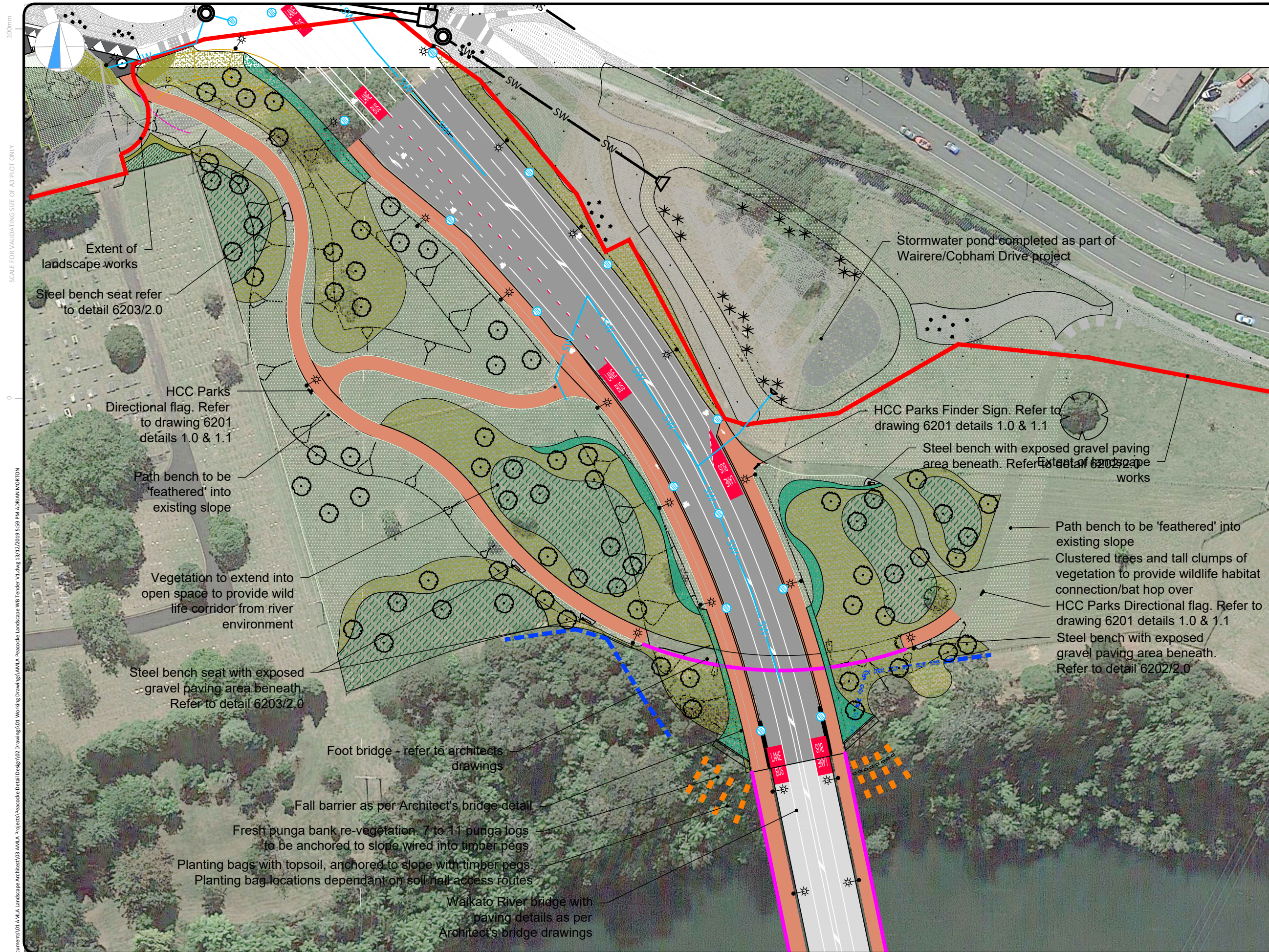
Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Kiokio	Blechnum novae-zelandiae	5	1l	1.8/m <sup>2</sup>	114
Sedge	Carex virgata	20	1l	1.8/m <sup>2</sup>	454
Purei	Carex secta	25	1l	1.8/m <sup>2</sup>	568
Sharp spike sedge	Eleocharis acuta	15	1l	1.8/m <sup>2</sup>	341
Baumea	Machaerina rubiginosa	15	1l	1.8/m <sup>2</sup>	341
Harakeke	Phormium tenax	20	1l	1.8/m <sup>2</sup>	454
Total					2,270

## (PEM) Pond Edge Mix

Common name	Botanical name	% age	Min. size	Min. Density (plants/m <sup>2</sup> )	Plant Quantities
Toetoe	Austroderia fulvida	5	1l	1/m <sup>2</sup>	711
Sedge	Carex virgata	10	1l	1/m <sup>2</sup>	1,422
Putaputaweta	Carpodetus serratus	10	1l	1/m <sup>2</sup>	1,422
Sedge	Hebe stricta	10	1l	1/m <sup>2</sup>	1,422
Pukatea	Laurelia novae-zelandiae	4	1l	1/m <sup>2</sup>	569
Manuka	Leptospermum scoparium	15	1l	1/m <sup>2</sup>	2,133
Kahikatea	Dacrycarpus dacrydioides	6	1l	1/m <sup>2</sup>	853
Mahoe	Meliclytus ramiflorus	4	1l	1/m <sup>2</sup>	569
Cabbage tree	Cordylina australia	6	1l	1/m <sup>2</sup>	853
Karamu	Coprosma robusta	10	1l	1/m <sup>2</sup>	1,422
Harakeke	Phormium tenax	20	1l	1/m <sup>2</sup>	2,844
Total					14,220

(LSZ) Live Storage Zone Mix					
Kiokio	Blechnum novae-zelandiae	5	1l	1.55/m <sup>2</sup>	610
Swamp sedge	Carex virgata	10	1l	1.55/m <sup>2</sup>	1,221
Rautahi	Carex lessioniana	5	1l	1.55/m <sup>2</sup>	610
Giant umbrella sedge	Cyperus ustulatus	10	1l	1.55/m <sup>2</sup>	1,221
Swamp sedge	Carex secta	15	1l	1.55/m <sup>2</sup>	1,831
Baumea	Machaerina rubiginosa	15	1l	1.55/m <sup>2</sup>	1,831
Giant rush	Juncus pallidus	10	1l	1.55/m <sup>2</sup>	1,221
Harakeke	Phormium tenax	20	1l	1.55/m <sup>2</sup>	2,441
Swamp coprosma	Coprosma tenuiculis	10	1l	1.55/m <sup>2</sup>	1,221
Total					12,295





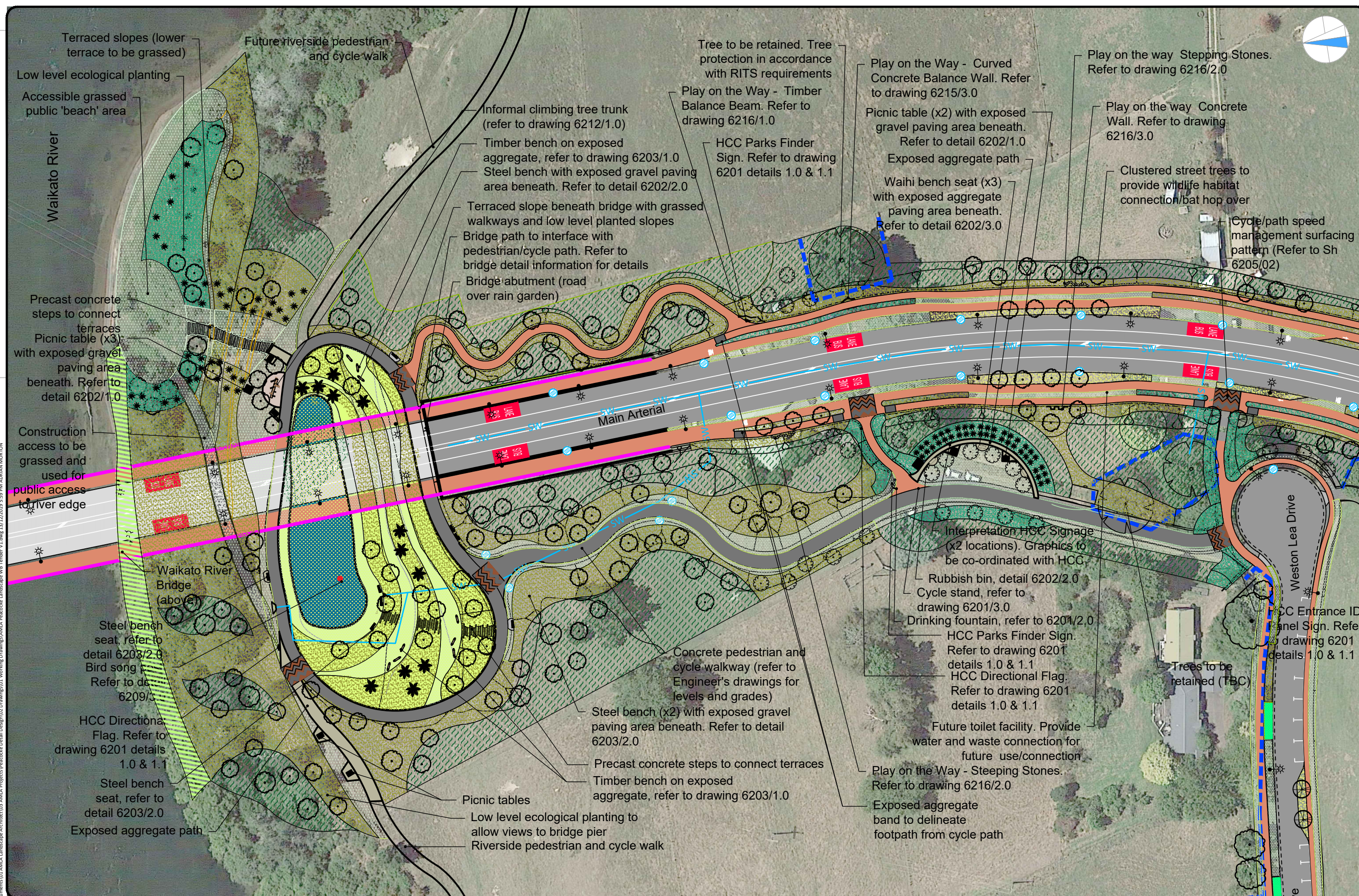
### LEGEND

	Open Space Grassland
	(WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)
	(WSE) Wetland Mix (shallow zone 0.3 to 0.6m)
	(RM) Riparian Mix (Wet margin 0-0.3m)
	(LSZ) Live Storage Zone Mix (Periodically inundated)
	(PEM) Pond Edge Mix (Predominantly dry)
	(RGP) Rain Garden Planting Mix
	(SBM) Swale Base Mix
	(SEM) Swale Edge Mix
	(LGE) Low Grow Edge Mix (A & B)
	(RVM) Road Verge Mix
	(ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht)
	Single Plant Species
	Future Landscape Ecological Planting (medium tall height)
	Native Specimen Tree
	Exotic Specimen Tree or Fruit Tree
	Trees to be Retained
	Trees to be Removed
	Contours
	Cut and Fill Profiles
	Drainage Outlet and Terrace Pools
	Concrete Cycle and Pedestrian Paths
	1.5m wide gravel or exposed aggregate path
	Future Cycle and Pedestrian Paths
	Insect and Lizard Log Stack
	Stump Insect 'Hotel'
	Wetland pond
	Cycle speed restriction bars and bollard
	Drainage grates and covers
	Light column and lamp unit
	Seating with bin over exposed aggregate base
	Recreation circuit equipment over safety surface
	Tree protection fence
	Designation

### GENERAL NOTES

- All vegetation/tree removal to be approved and instructed by Engineer (consent condition).
- Stumps to be either removed (for reuse) or stump ground
- For Exercise Equipment information refer to Drawing 6210
- For Play Equipment information refer to Drawing 6211 to 6213



[illegible]





Tree to have protective fencing in place for the duration of construction

[illegible]

DESIGNED AM	CHECKED JG
DRAWN AM	APPROVED JG

mx model version:



Adrian Morton **Landscape Architects Ltd**  
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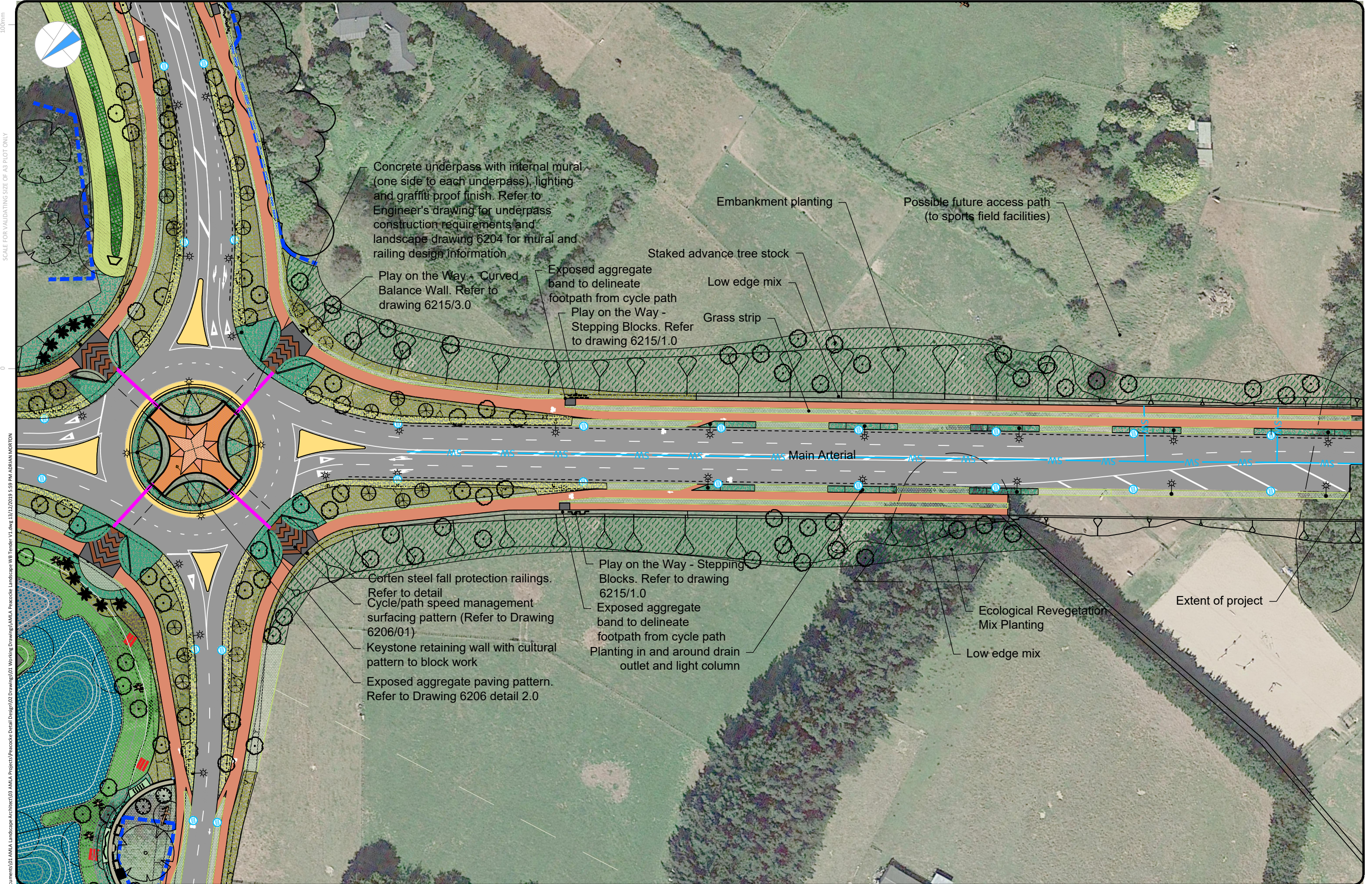


PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Main Arterial

STATUS		TENDER	
DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:1000	
DRAWING NUMBER 145900-001A-6102		REVISION A	





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		DATE	ISSUE/REVISION DETAIL	BY	CHK	APPR

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AM	JG



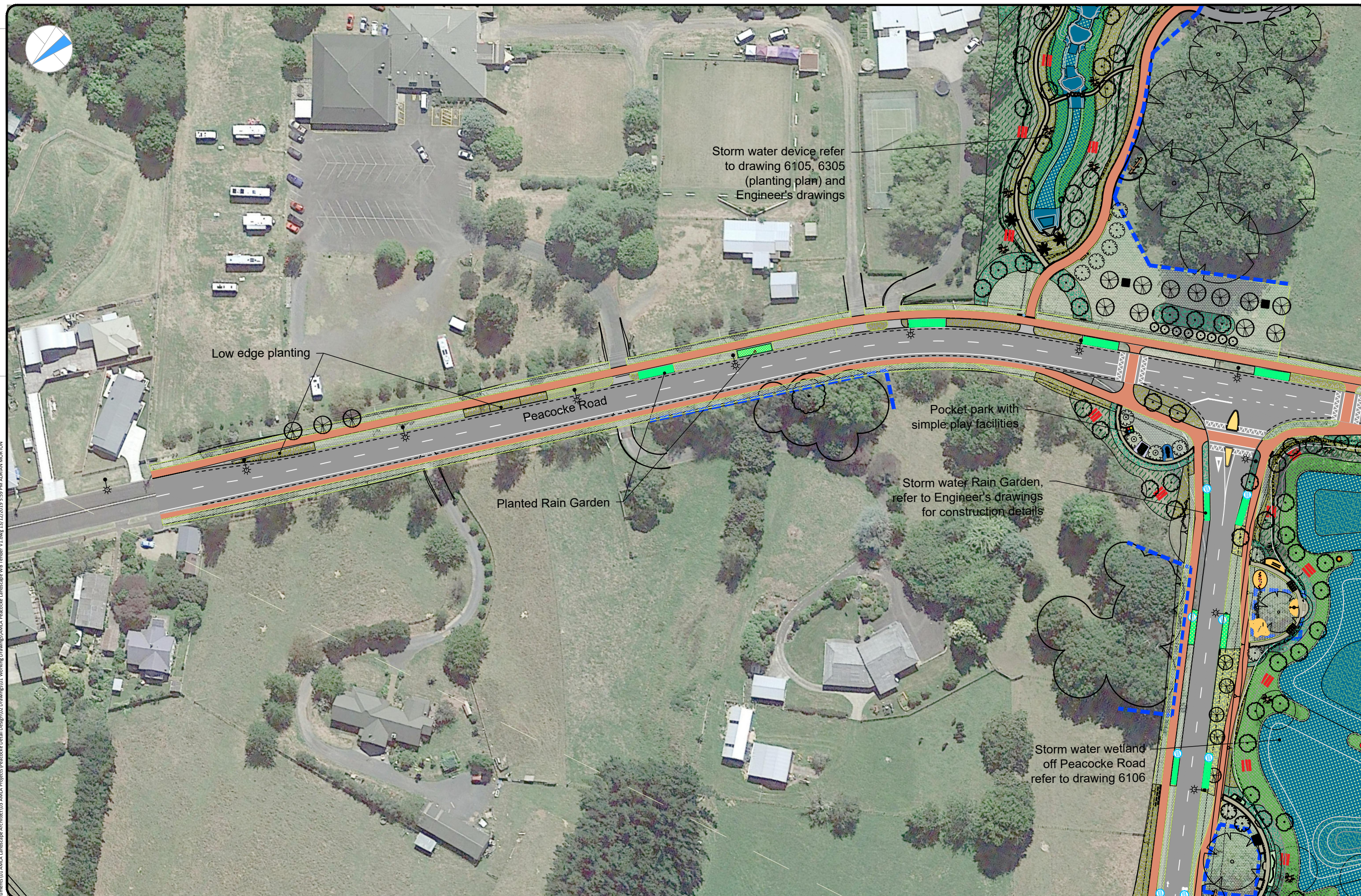
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PROJECT  
**PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT**

DRAWING  
**LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Main Arterial**

STATUS <b>TENDER</b>	
DATE 20/03/2020	SCALE (ORIGINAL SIZE A3) 1:1000
DRAWING NUMBER 145900-001A-6103	REVISION A



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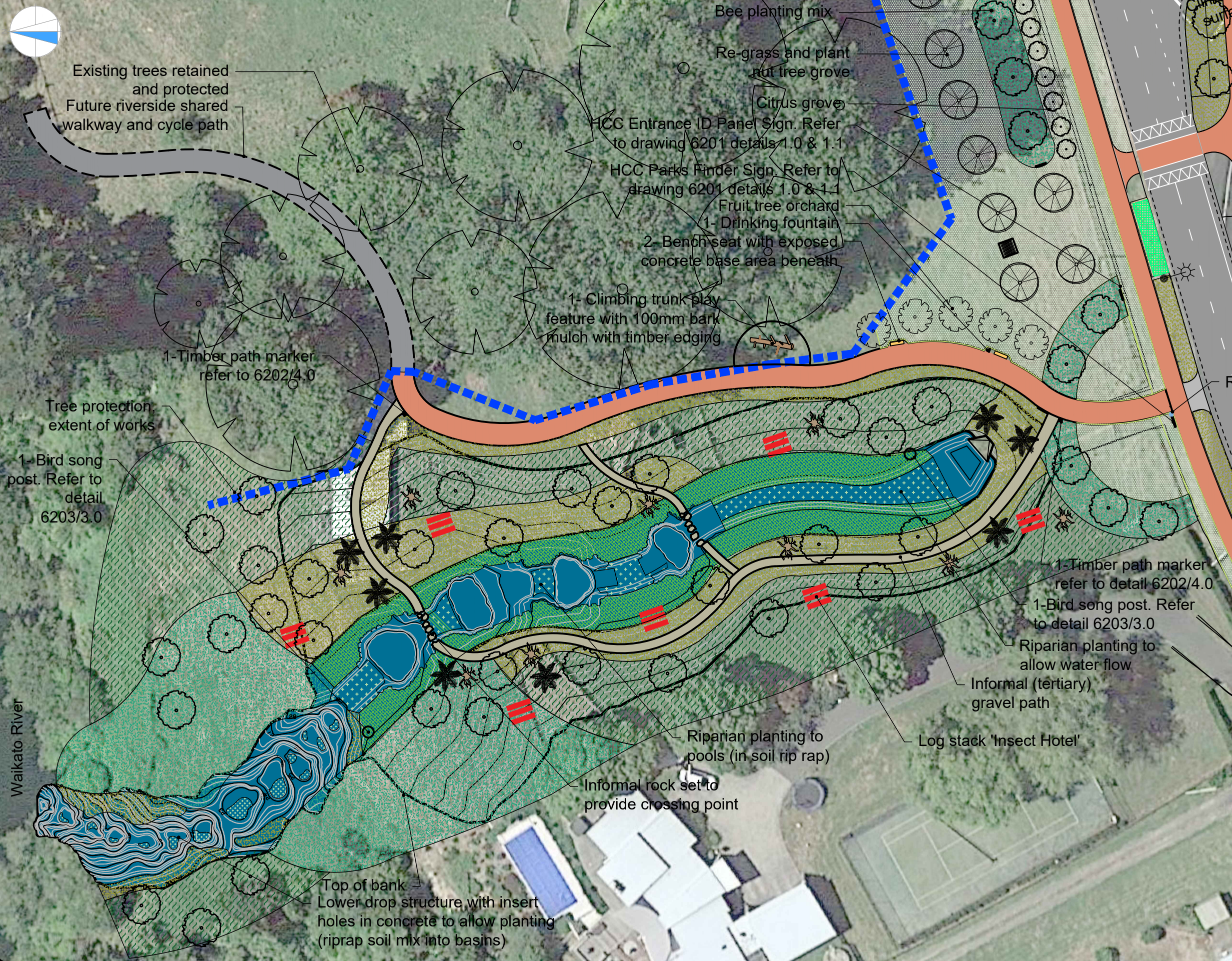
 **Hamilton City Council**  
To Inspire a Kidikid

PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Peacocke Road

STATUS		TENDER	
DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:1000	
DRAWING NUMBER 145900-001A-6104		REVISION A	





## LEGEND

- |  |   |
|--|---|
|  | Open Space Grassland  |
|  | (WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)                |
|  | (WSE) Wetland Mix (shallow zone 0.3 to 0.6m)                  |
|  | (RM) Riparian Mix (Wet margin 0-0.3m)                         |
|  | (LSZ) Live Storage Zone Mix (Periodically inundated)          |
|  | (PEM) Pond Edge Mix (Predominately dry)                       |
|  | (RGP) Rain Garden Planting Mix                                |
|  | (SBM) Swale Base Mix  |
|  | (SEM) Swale Edge Mix  |
|  | (LGE) Low Grow Edge Mix (A & B)                               |
|  | (RVM) Road Verge Mix  |
|  | (ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht) |
|  | Single Plant Species  |
|  | Future Landscape Ecological Planting (medium tall height)     |
|  | Native Specimen Tree  |
|  | Exotic Specimen Tree or Fruit Tree                            |
|  | Trees to be Retained  |
|  | Trees to be Removed   |
|  | Contours  |
|  | Cut and Fill Profiles   |
|  | Drainage Outlet and Terrace Pools                             |
|  | Concrete Cycle and Pedestrian Paths                           |
|  | 1.0 to 1.8m wide gravel paths                                 |
|  | Future Cycle and Pedestrian Paths                             |
|  | Insect and Lizard Log Stack                                   |
|  | Stump Insect 'Hotel'  |
|  | Wetland pond  |
|  | Cycle speed restriction bars and bollards                     |
|  | Drainage grates and covers                                    |
|  | Light column and lamp unit                                    |
|  | Seating with bin over exposed aggregate base                  |
|  | Recreation circuit equipment over safety surface              |

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PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING

LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Peacocke Road Outfall Structure

STATUS		TENDER	
DATE			
20/03/2020		SCALE (ORIGINAL SIZE A3)	1:500
DRAWING NUMBER			REVISION
145900-001A-6105			A





## LEGEND

- |  |   |
|--|---|
|  | Open Space Grassland  |
|  | (WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)                |
|  | (WSE) Wetland Mix (shallow zone 0.3 to 0.6m)                  |
|  | (RM) Riparian Mix (Wet margin 0-0.3m)                         |
|  | (LSZ) Live Storage Zone Mix (Periodically inundated)          |
|  | (PEM) Pond Edge Mix (Predominantly dry)                       |
|  | (RGP) Rain Garden Planting Mix                                |
|  | (SBM) Swale Base Mix  |
|  | (SEM) Swale Edge Mix  |
|  | (LGE) Low Grow Edge Mix (A & B)                               |
|  | (RVM) Road Verge Mix  |
|  | (ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht) |
|  | Single Plant Species  |
|  | Future Landscape Ecological Planting (medium tall height)     |
|  | Native Specimen Tree  |
|  | Exotic Specimen Tree or Fruit Tree                            |
|  | Trees to be Retained  |
|  | Trees to be Removed   |
|  | Contours  |
|  | Cut and Fill Profiles   |
|  | Drainage Outlet and Terrace Pools                             |
|  | Concrete Cycle and Pedestrian Paths                           |
|  | 1.5m wide gravel or exposed aggregate path                    |
|  | Future Cycle and Pedestrian Paths                             |
|  | Insect and Lizard Log Stack                                   |
|  | Stump Insect 'Hotel'  |
|  | Wetland pond  |
|  | Cycle speed restriction bars and bollard                      |
|  | Drainage grates and covers                                    |
|  | Light column and lamp unit                                    |
|  | Seating with bin over exposed aggregate base                  |
|  | Recreation circuit equipment over safety surface              |
|  | Tree protection fence   |
|  | Designation   |

## GENERAL NOTES

- All vegetation/tree removal to be approved and instructed by Engineer (consent condition).
- Stumps to be either removed (for reuse) or stump ground
- For Exercise Equipment information refer to Drawing 6210
- For Play Equipment information refer to Drawing 6211 to 6213

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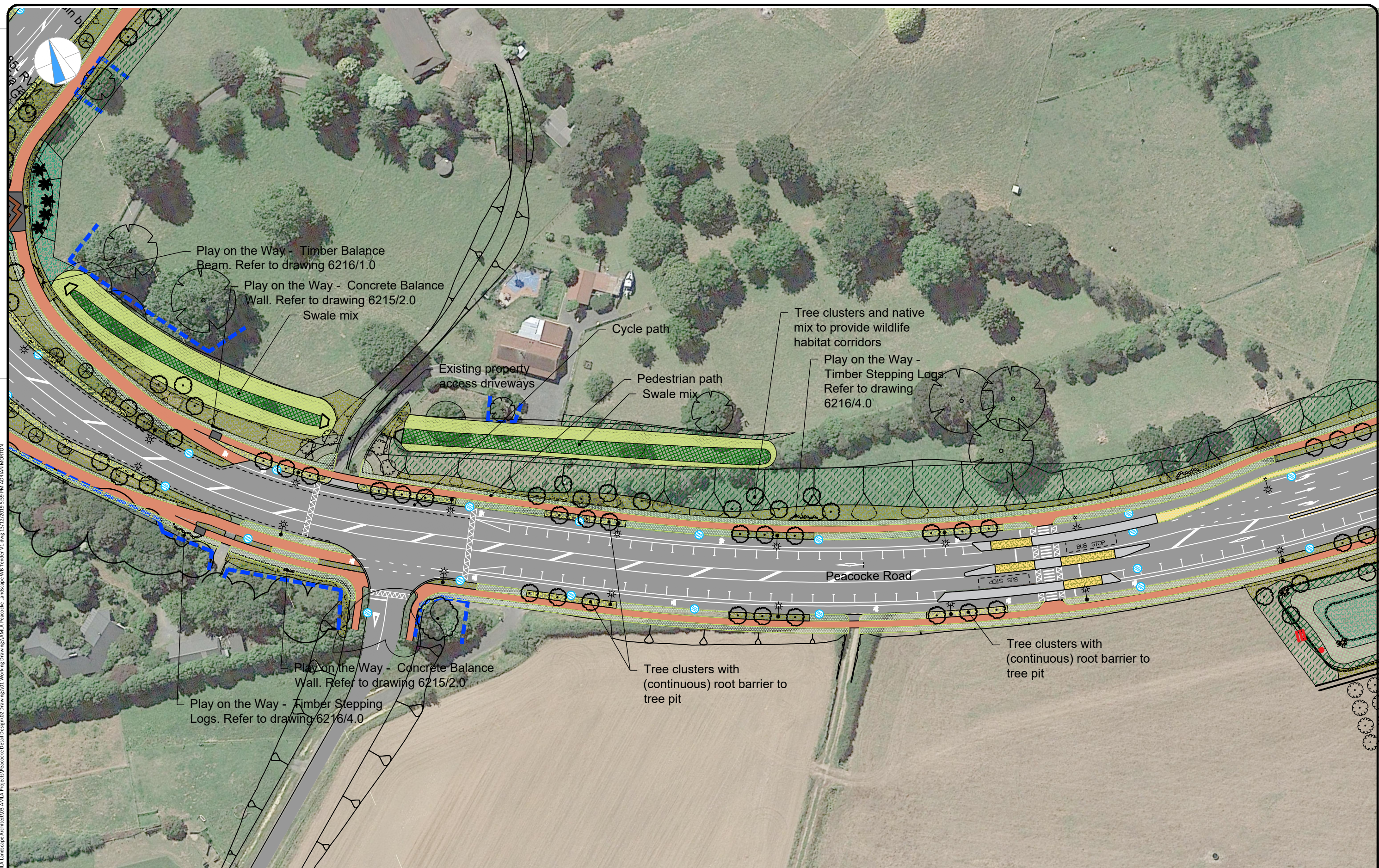


PROJECT  
g PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Peacocke Road Wetland (SWD02)

STATUS		TENDER	
DATE	SCALE (ORIGINAL SIZE A3)		
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DRAWING NUMBER			
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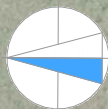


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	Open Space Grassland
	(WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)
	(WSE) Wetland Mix (shallow zone 0.3 to 0.6m)
	(RM) Riparian Mix (Wet margin 0-0.3m)
	(LSZ) Live Storage Zone Mix (Periodically inundated)
	(PEM) Pond Edge Mix (Predominantly dry)
	(RGP) Rain Garden Planting Mix
	(SBM) Swale Base Mix
	(SEM) Swale Edge Mix
	(LGE) Low Grow Edge Mix (A & B)
	(RVM) Road Verge Mix
	(ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht)
	Single Plant Species
	Future Landscape Ecological Planting (medium tall height)
	Native Specimen Tree
	Exotic Specimen Tree or Fruit Tree
	Trees to be Retained
	Trees to be Removed
	Contours
	Cut and Fill Profiles
	Drainage Outlet and Terrace Pools
	Concrete Cycle and Pedestrian Paths
	1.5m wide gravel or exposed aggregate path
	Future Cycle and Pedestrian Paths
	Insect and Lizard Log Stack
	Stump Insect 'Hotel'
	Wetland pond
	Cycle speed restriction bars and bollard
	Drainage grates and covers
	Light column and lamp unit
	Seating with bin over exposed aggregate base
	Recreation circuit equipment over safety surface
	Tree protection fence
	Designation

- All vegetation/tree removal to be approved and instructed by Engineer (consent condition).
- Stumps to be either removed (for reuse) or stump ground
- For Exercise Equipment information refer to Drawing 6210
- For Play Equipment information refer to Drawing 6211 to 6213

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DRAWN	APPROVED
AM	JG

mx model version:



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PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Peacocke Road

STATUS		TENDER	
DATE	SCALE (ORIGINAL SIZE A3)		
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PROJECT

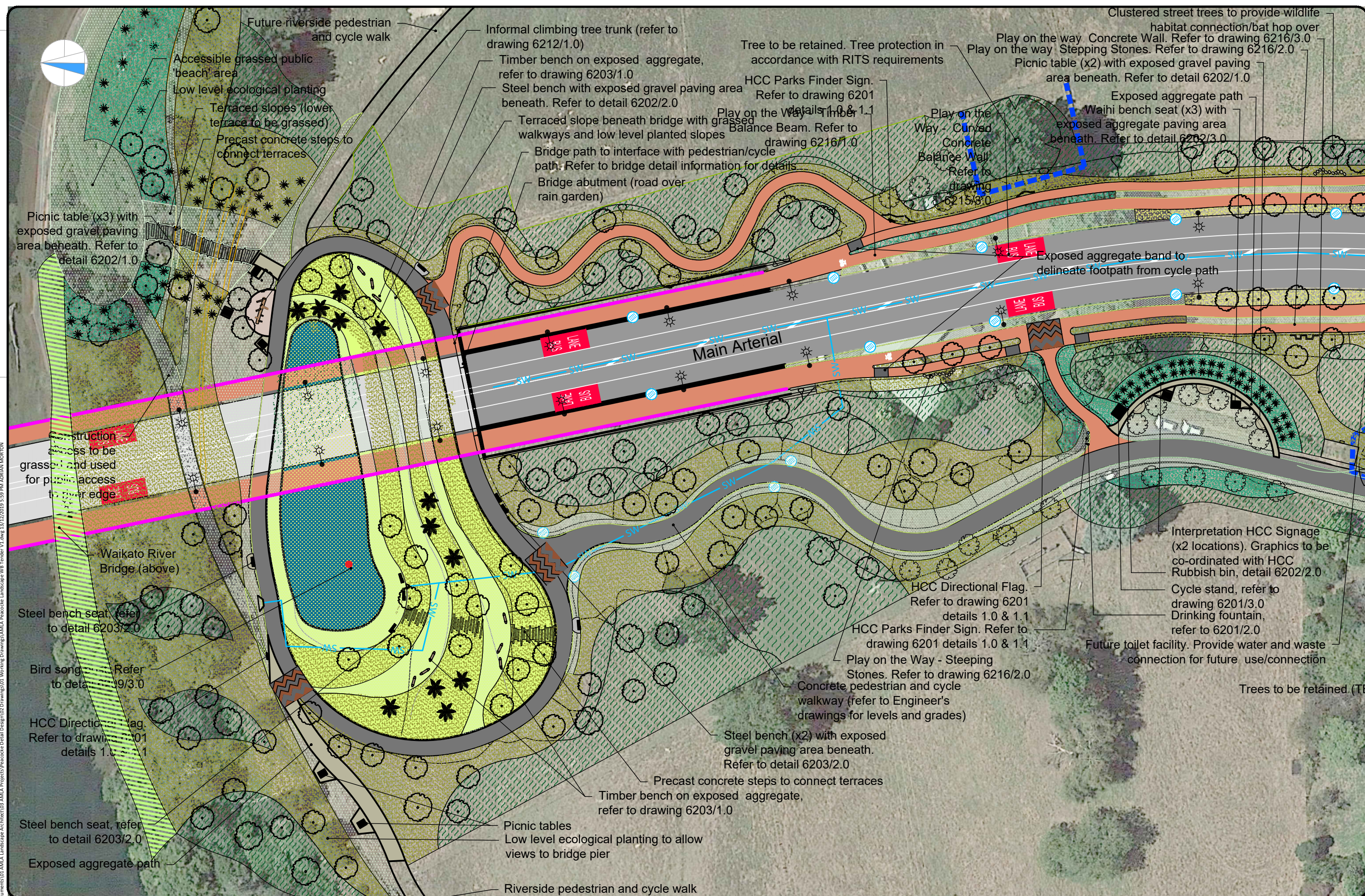
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DETAIL DESIGN  
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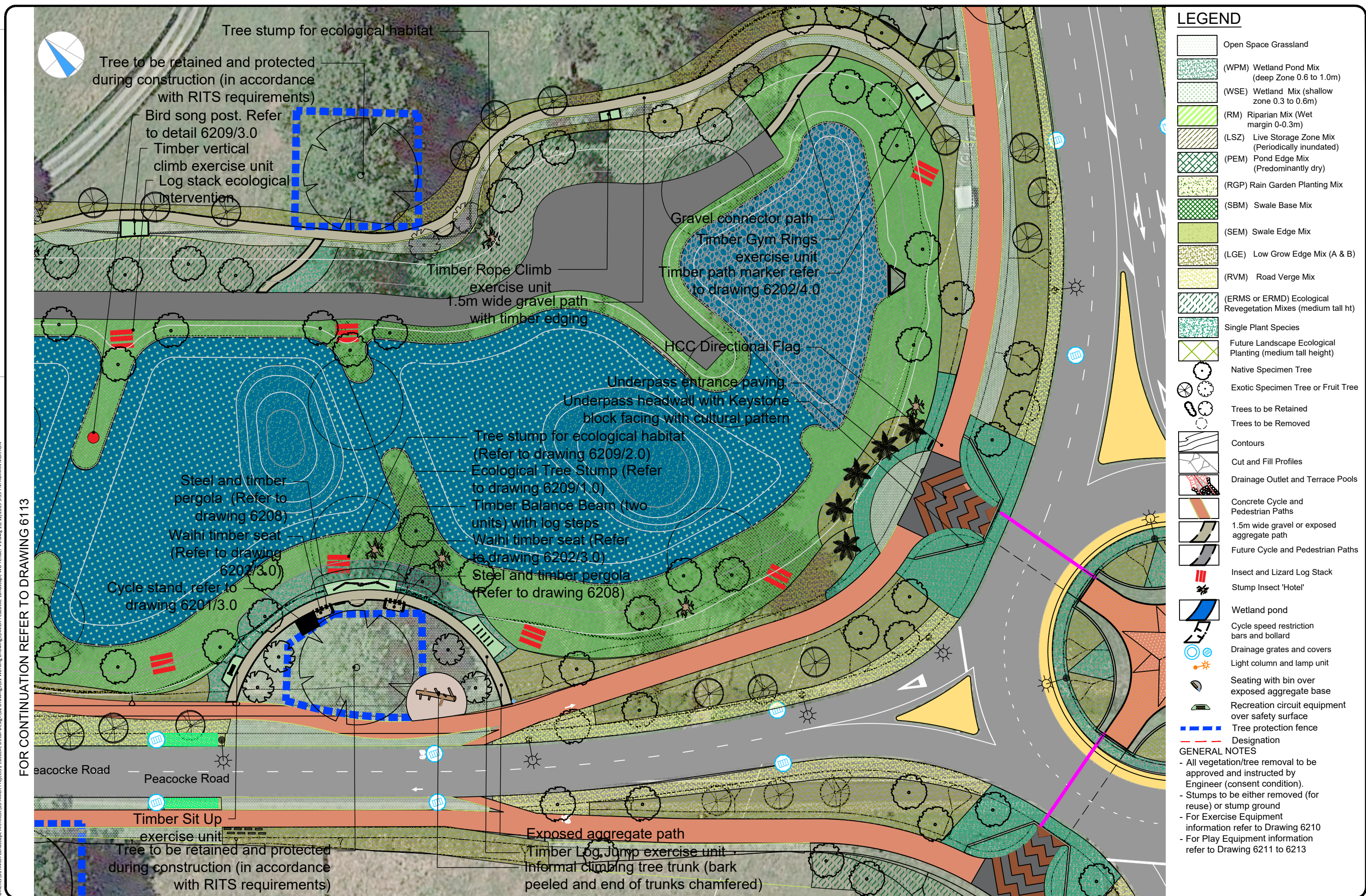


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PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

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LANDSCAPE PROPOSALS  
DETAIL DESIGN  
Peacocke Road Wetland (SWD02)

STATUS		TENDER	
DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:500	
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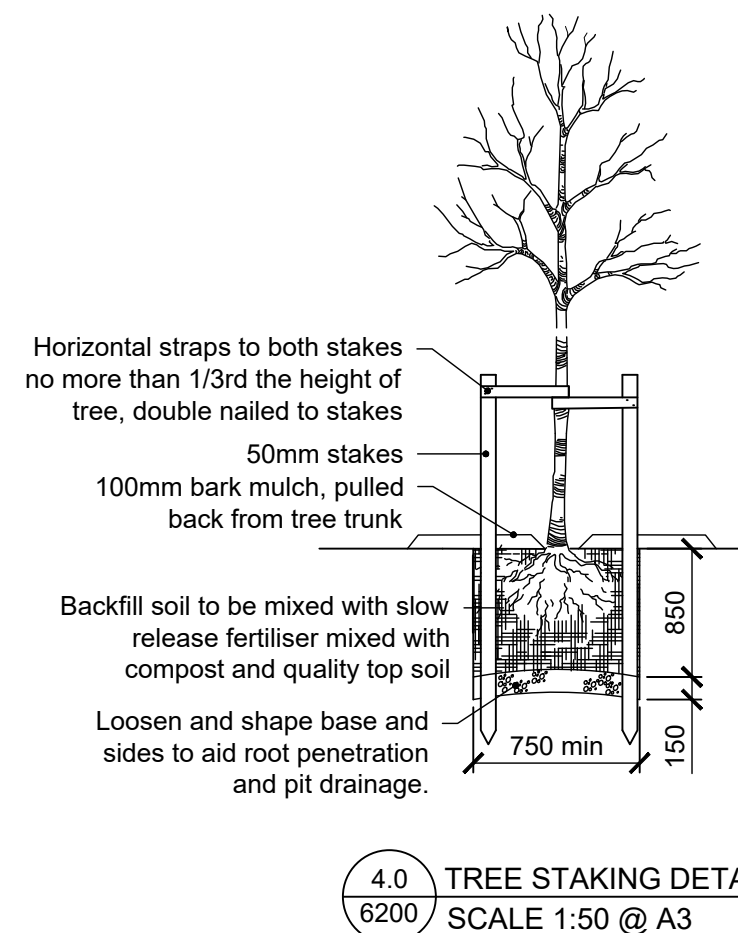
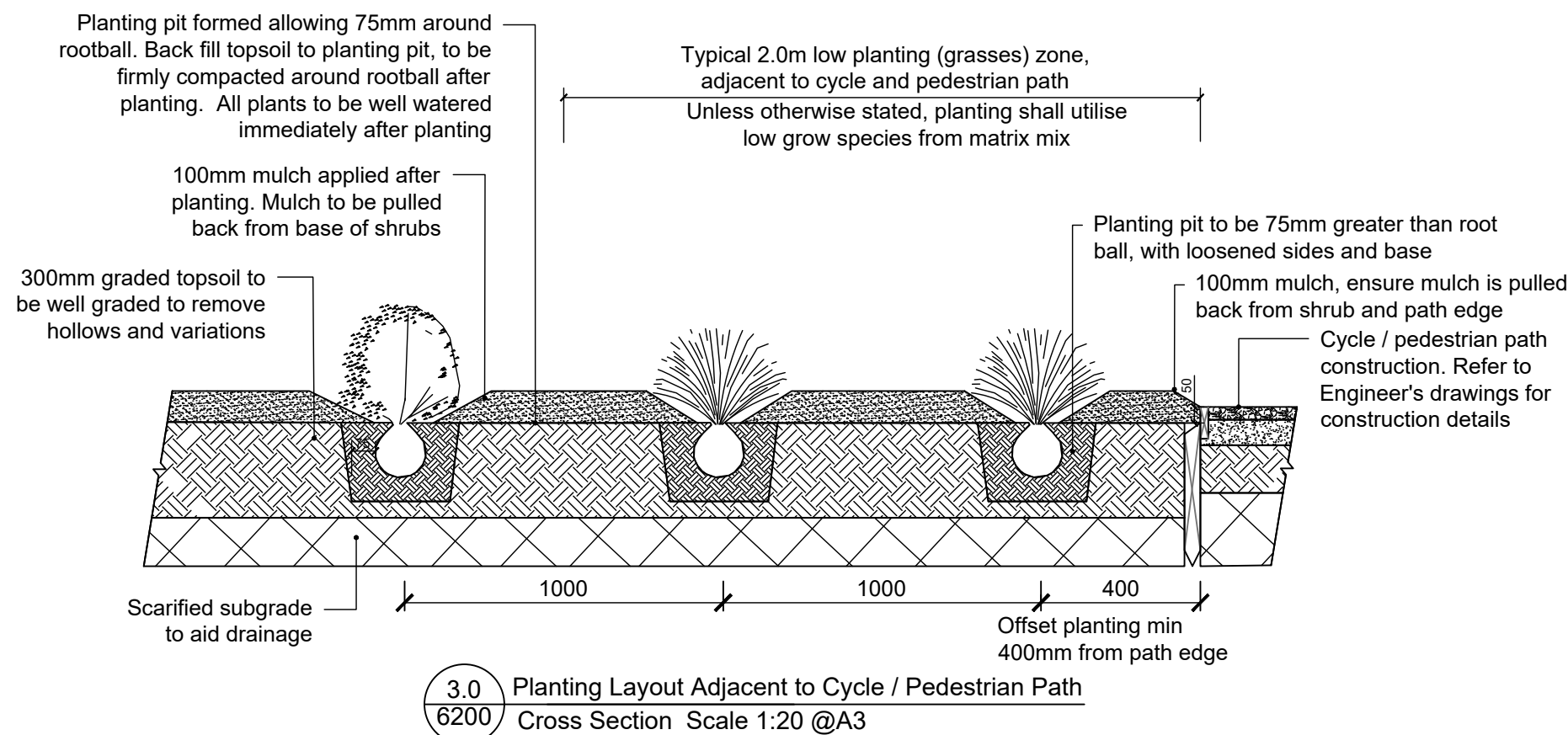
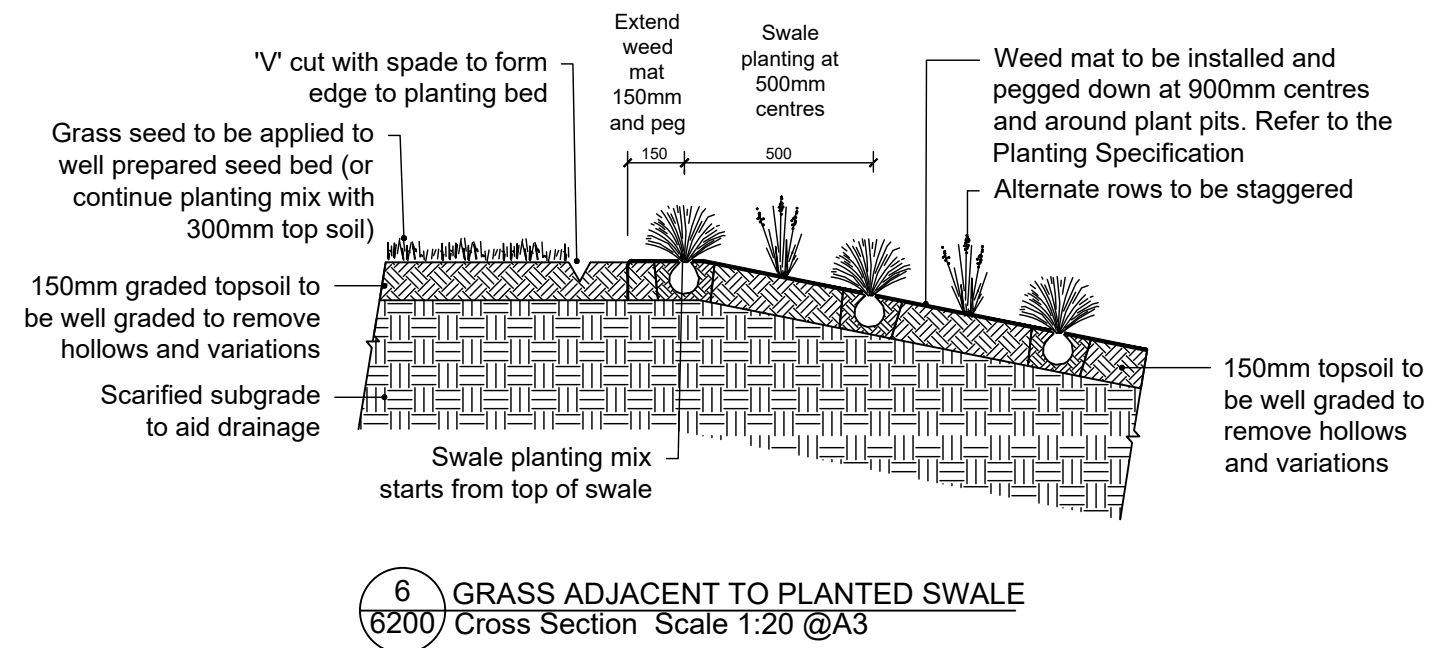
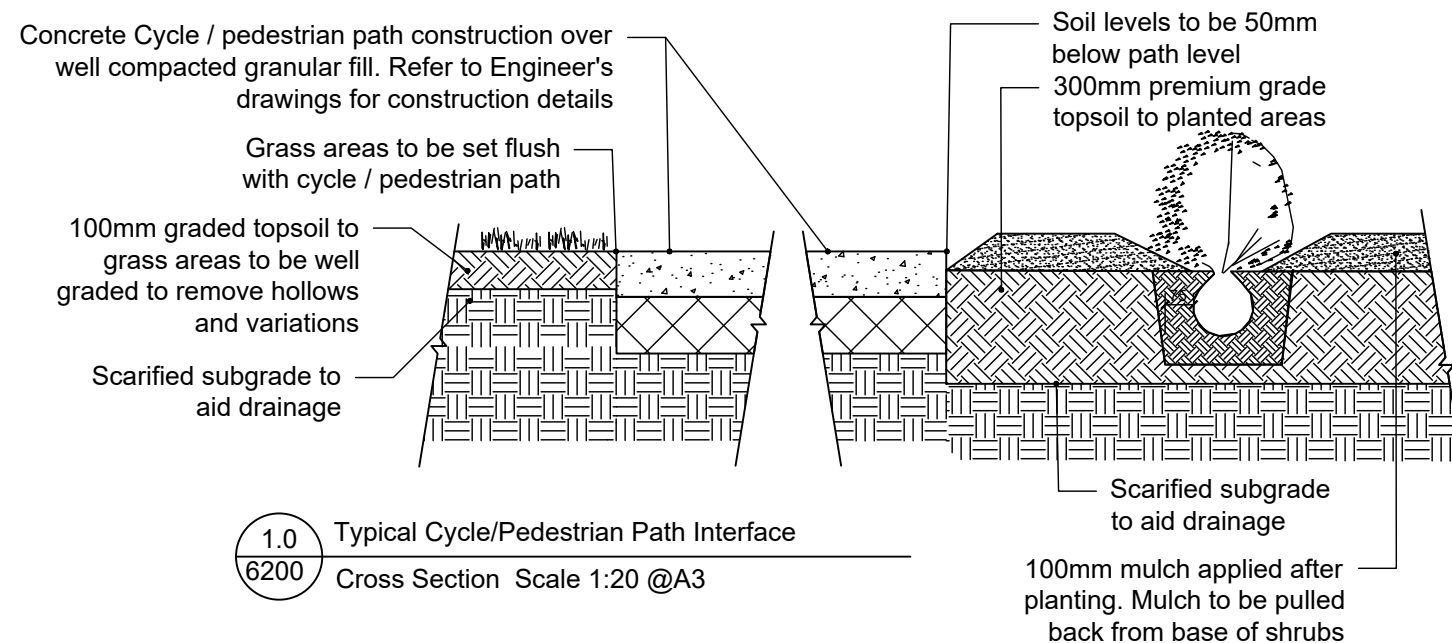
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## **APPENDIX B**

### LANDSCAPE DETAIL DRAWINGS



100mm  
SCALE FOR VALIDATING SIZE OF A3 PLOT ONLY



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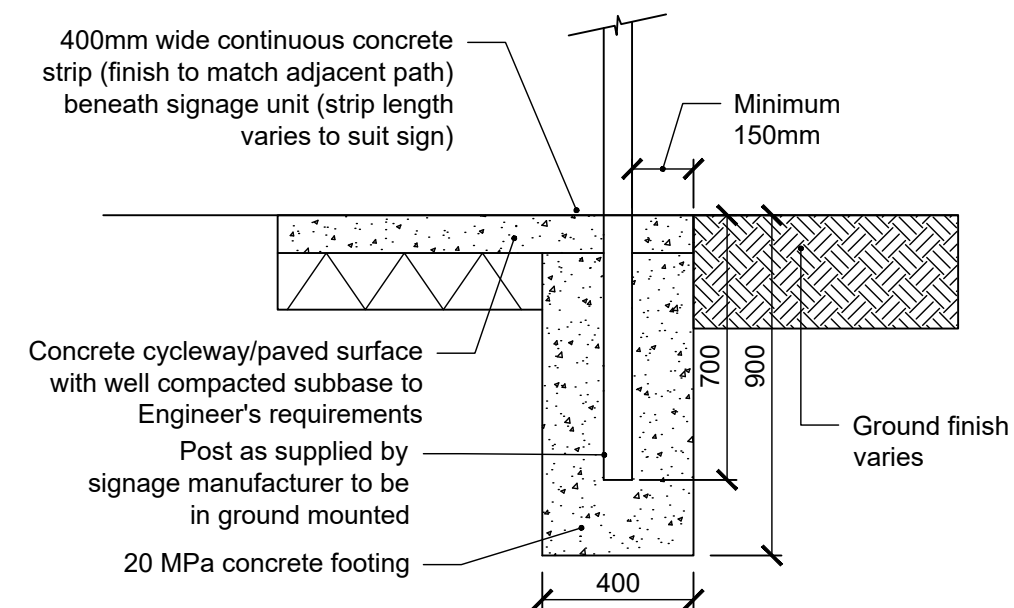


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STRATEGIC TRANSPORT  
PROJECT

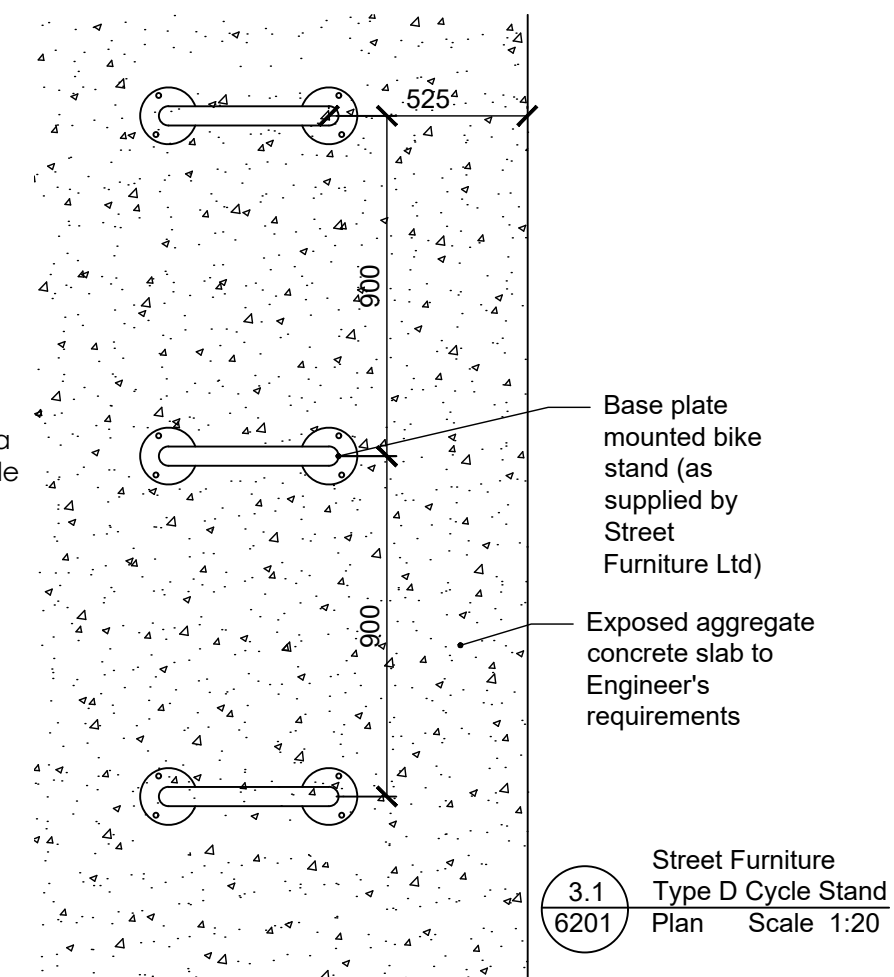
DRAWING  
LANDSCAPE DETAILS  
CONSTRUCTION DETAILS

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DATE 20/03/2020	SCALE (ORIGINAL SIZE A3) AS SHOWN
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NOTE: Wording and graphic layout to be co-ordinated with HCC Parks and Open Space



3.1  
6201

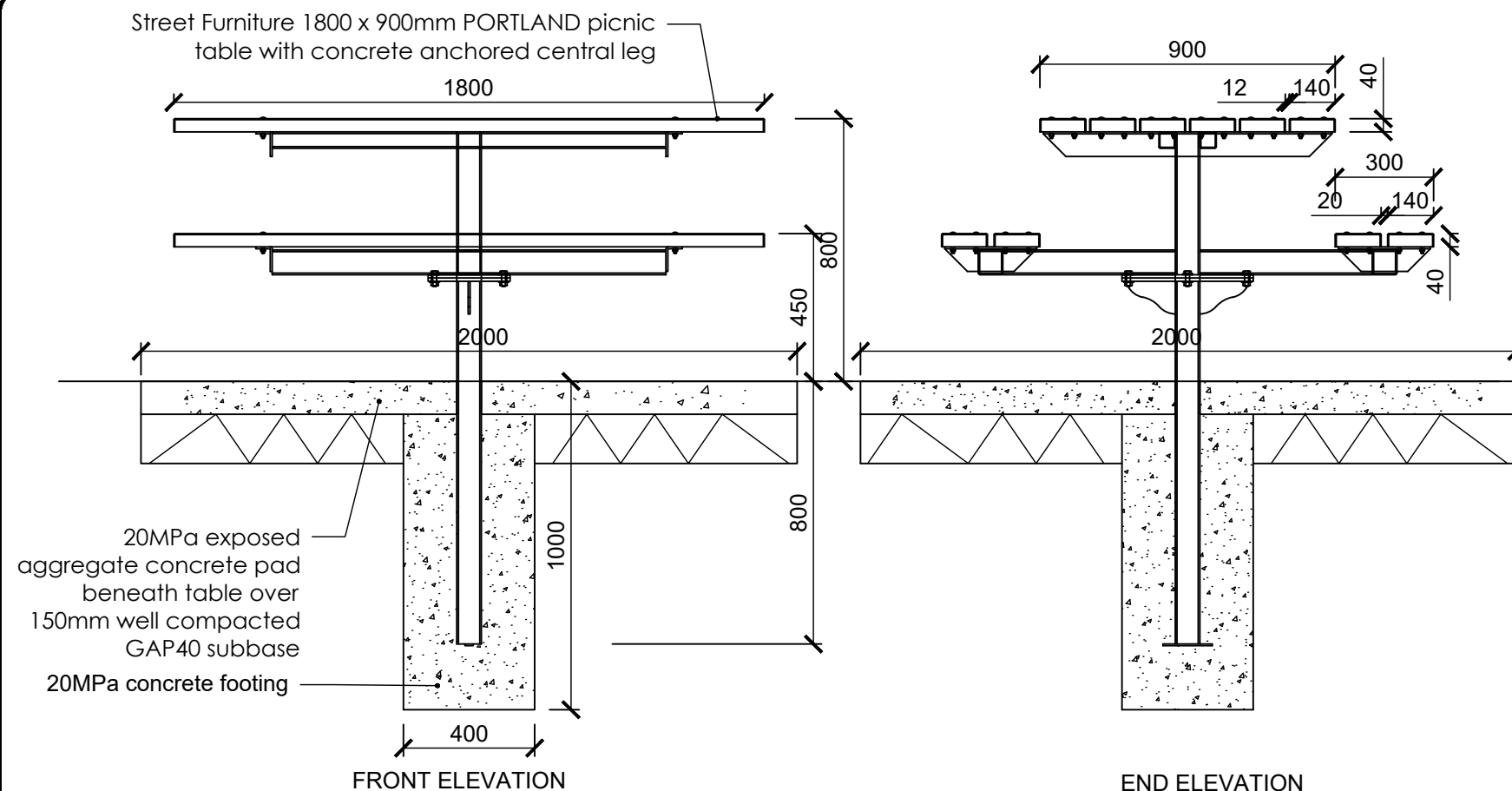
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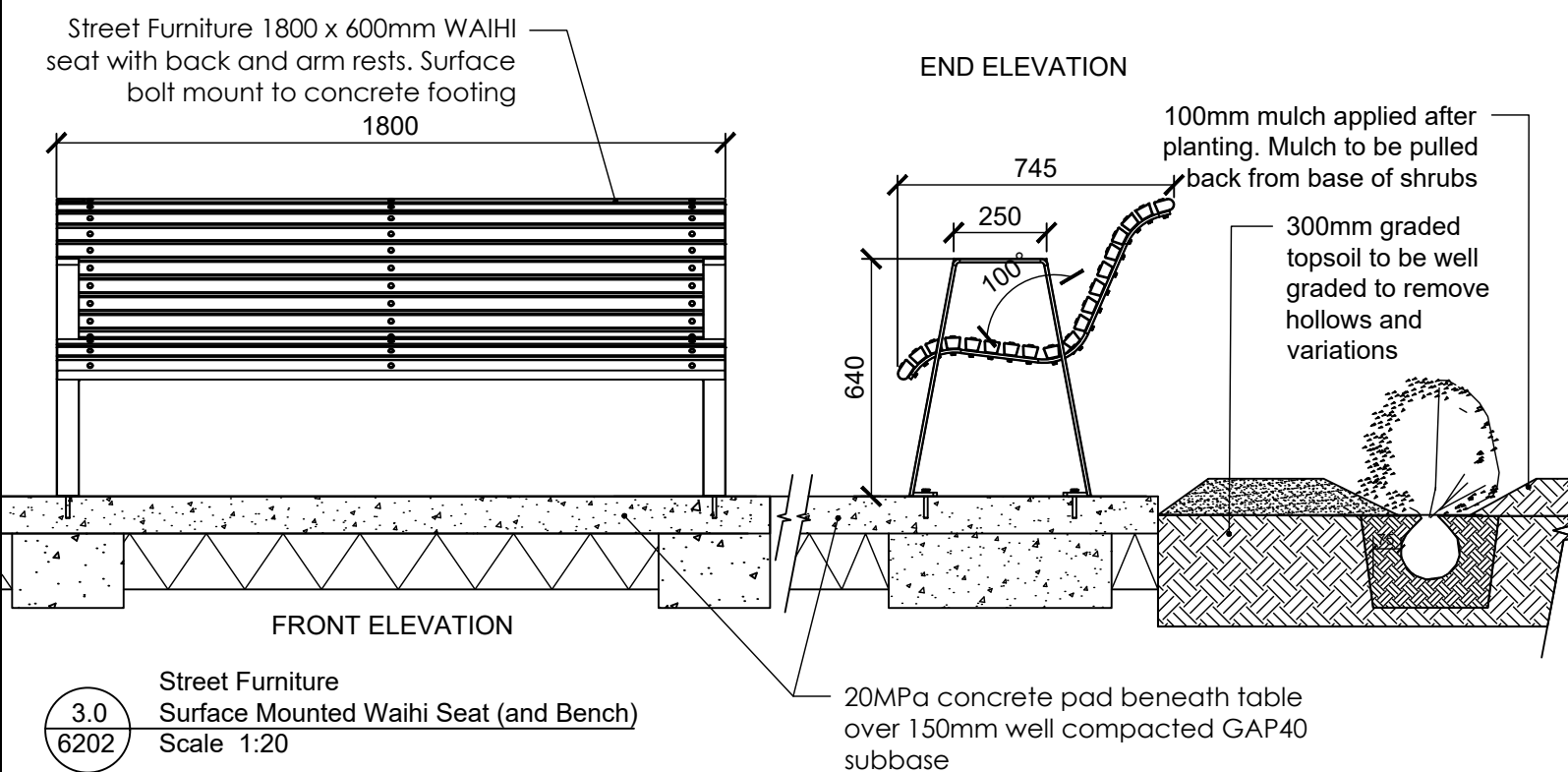
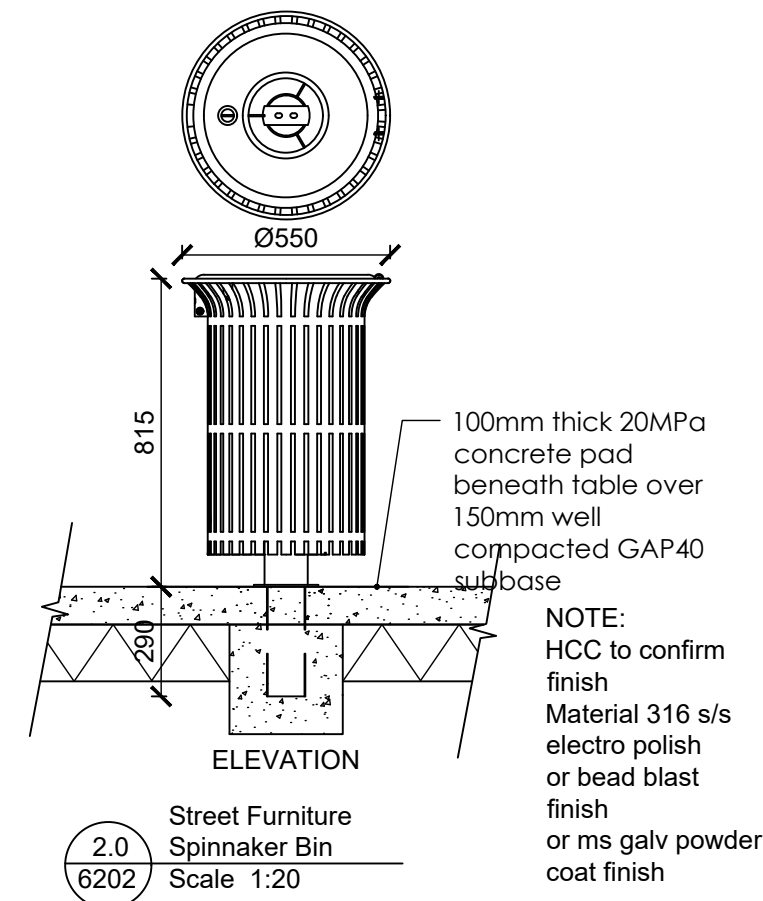
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SCALE FOR VALIDATING SIZE OF A3 PLOT ONLY

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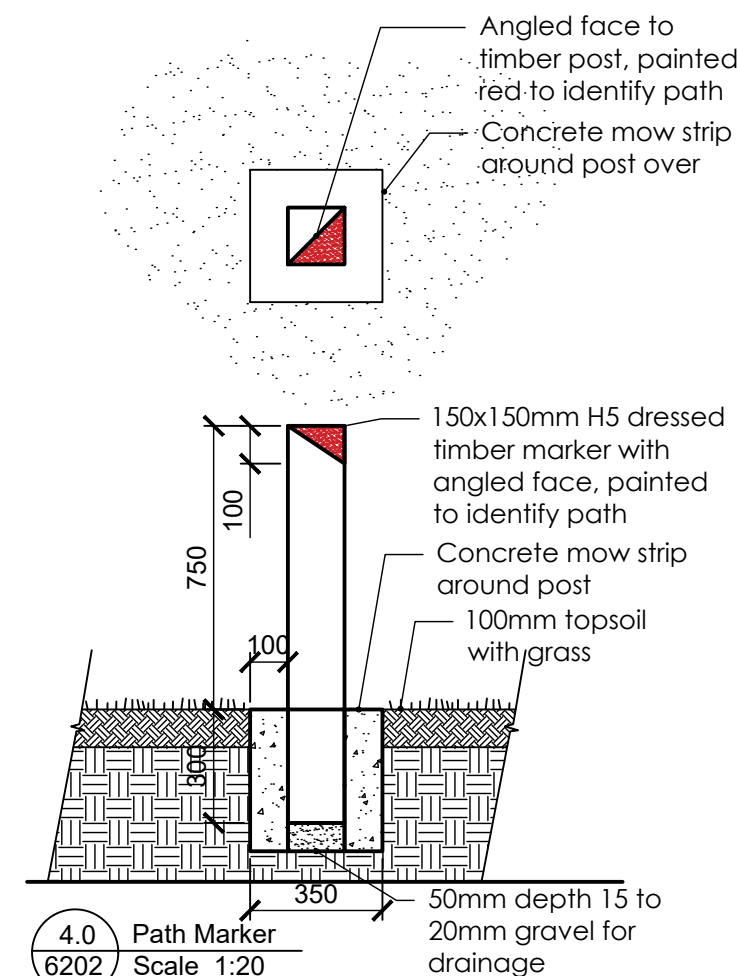
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1.0 Street Furniture Portland Picnic Set with Central Leg  
6202 Scale 1:20



NOTES:  
STANDARD STEELWORK HOT DIP GALVANISED AFTER FABRICATION - POWDER COAT IN DULUX MATT CHARCOAL 09/17  
- ALL FASTENERS STAINLESS STEEL  
- STANDARD HARDWOOD EUCALYPTUS SALIGNA - NATURAL FINISH  
- WAIHI BENCH UNIT TO BE USED IN LOCATIONS AS SHOWN ON GA's. USE SAME FIXING DETAILS



4.0 Path Marker  
6202 Scale 1:20

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CONSTRUCTION DETAILS

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2.1 Corten & Timber Seat  
6203 Scale 1:10 - End Elevation

2.0 Corten & Timber Seat  
6203 Scale 1:10 - Plan

2.2  
6203

[illegible]

DESIGNED	CHECKED
AM	JG
DRAWN	APPROVED
AM	JG

mx model version:



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PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

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LANDSCAPE DETAILS

CONSTRUCTION DETAILS

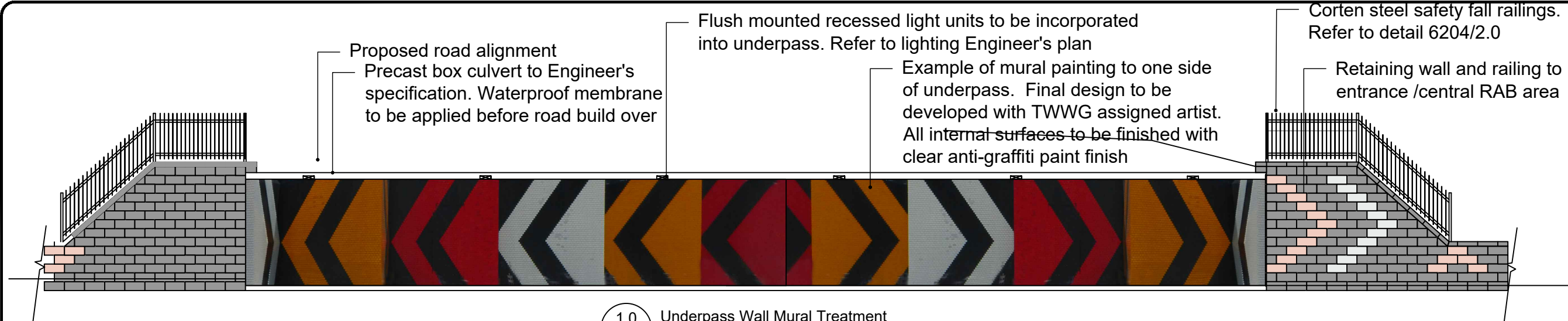
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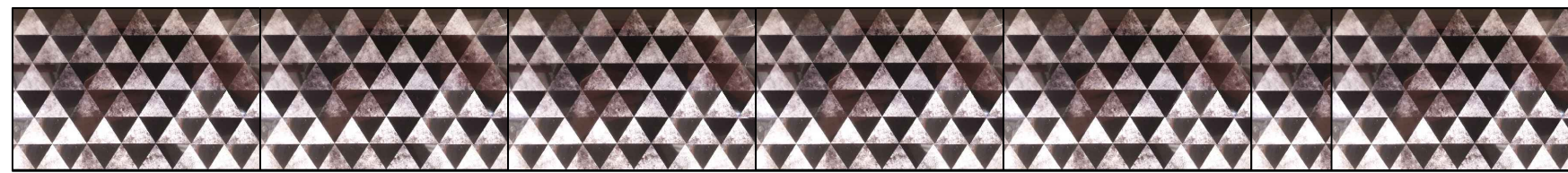
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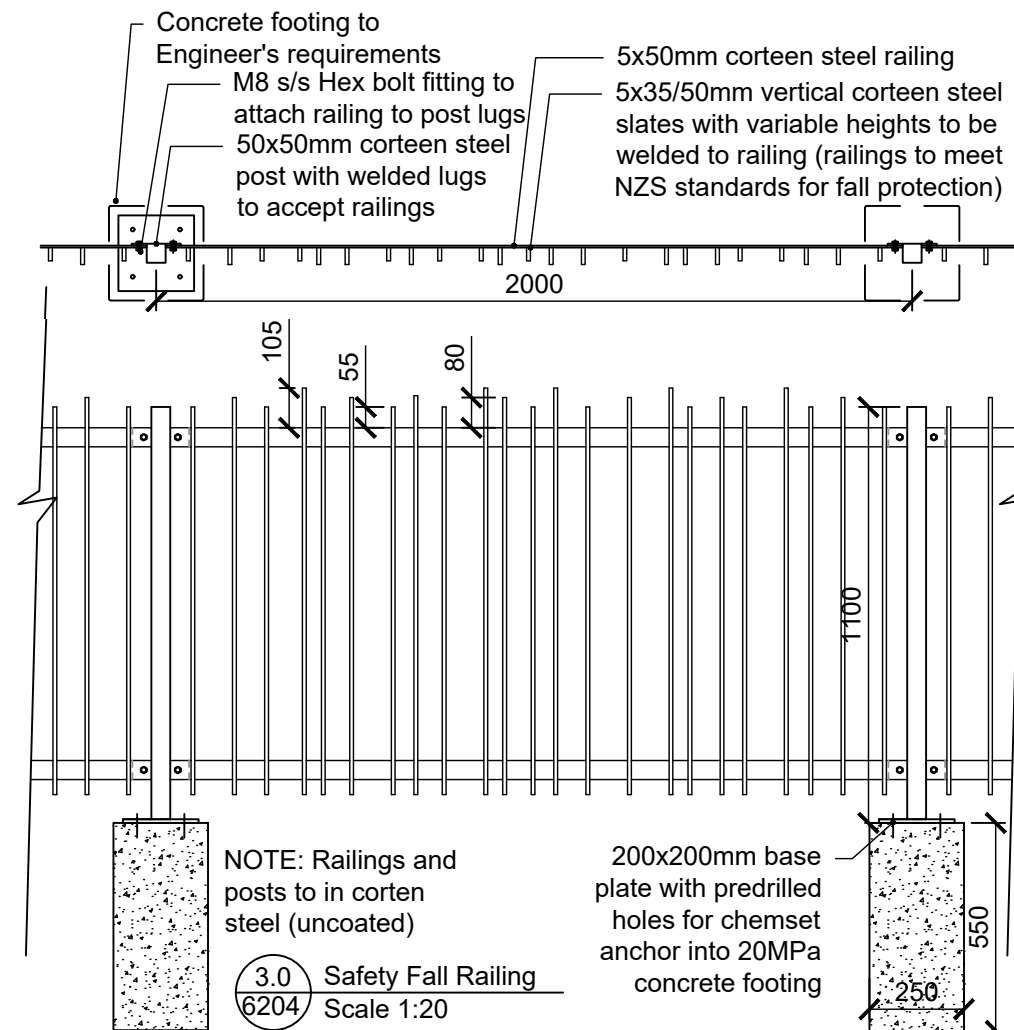
1.0 Underpass Wall Mural Treatment  
6204 Scale 1:100



2.0 Examples of Underpass Wall Cultural Mural  
6204 Scale 1:100

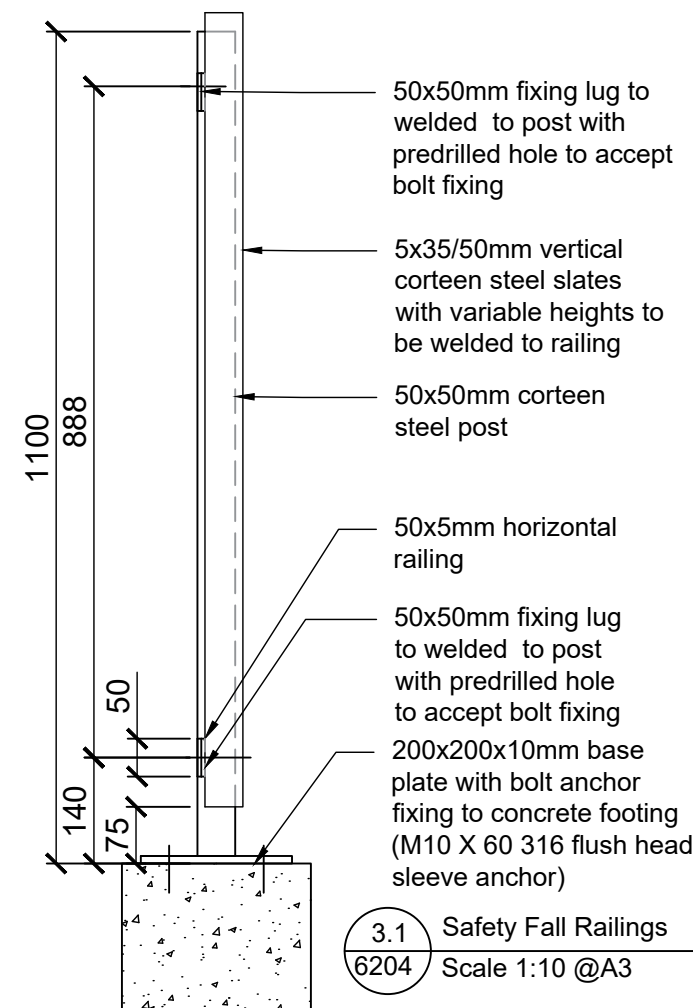


- LEGEND
- FIRTH 'ROCKFACE' MSE KEYSTONE BLOCK
  - FIRTH 'NATURAL' MSE KEYSTONE BLOCK
  - FIRTH 'SANDSTONE' MSE KEYSTONE BLOCK

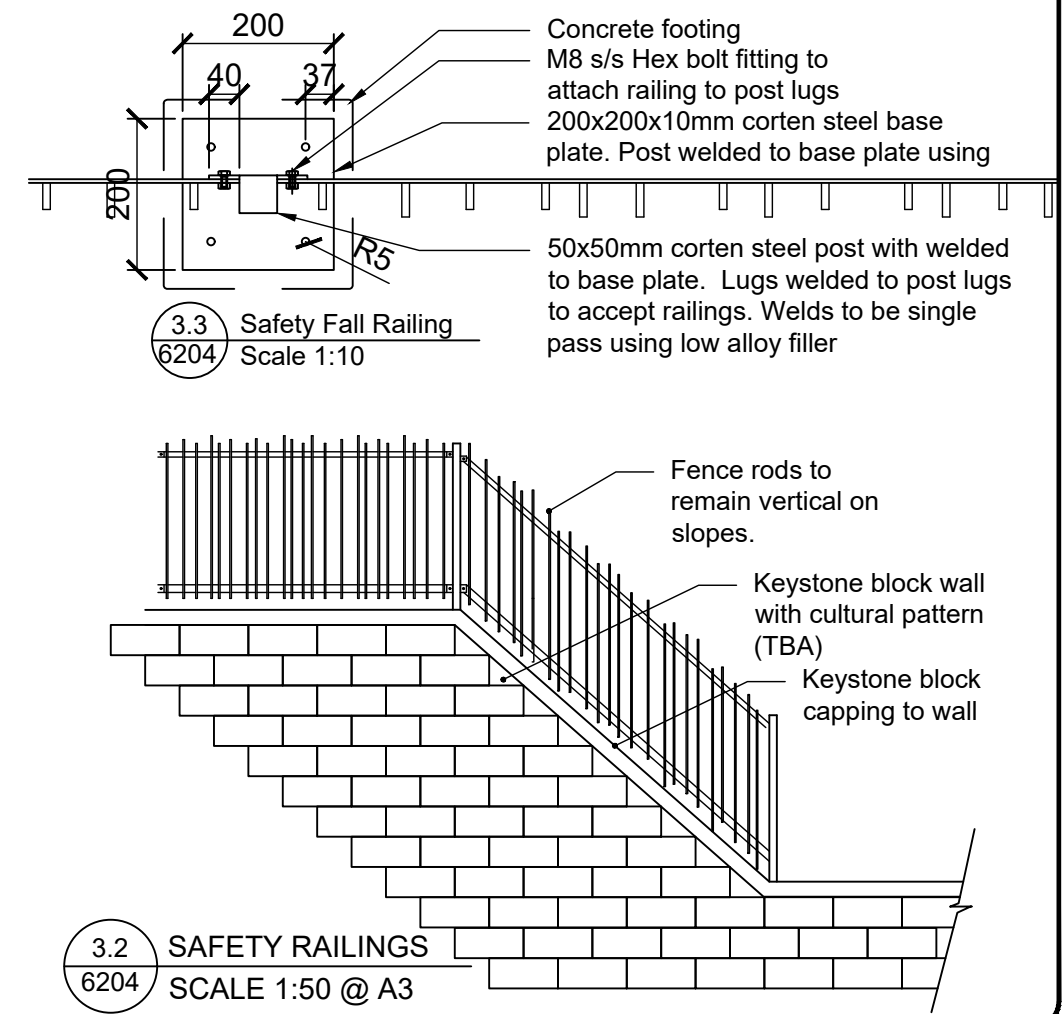


NOTE: Railings and posts to in corten steel (uncoated)

3.0 Safety Fall Railing  
6204 Scale 1:20



3.1 Safety Fall Railings  
6204 Scale 1:10 @A3



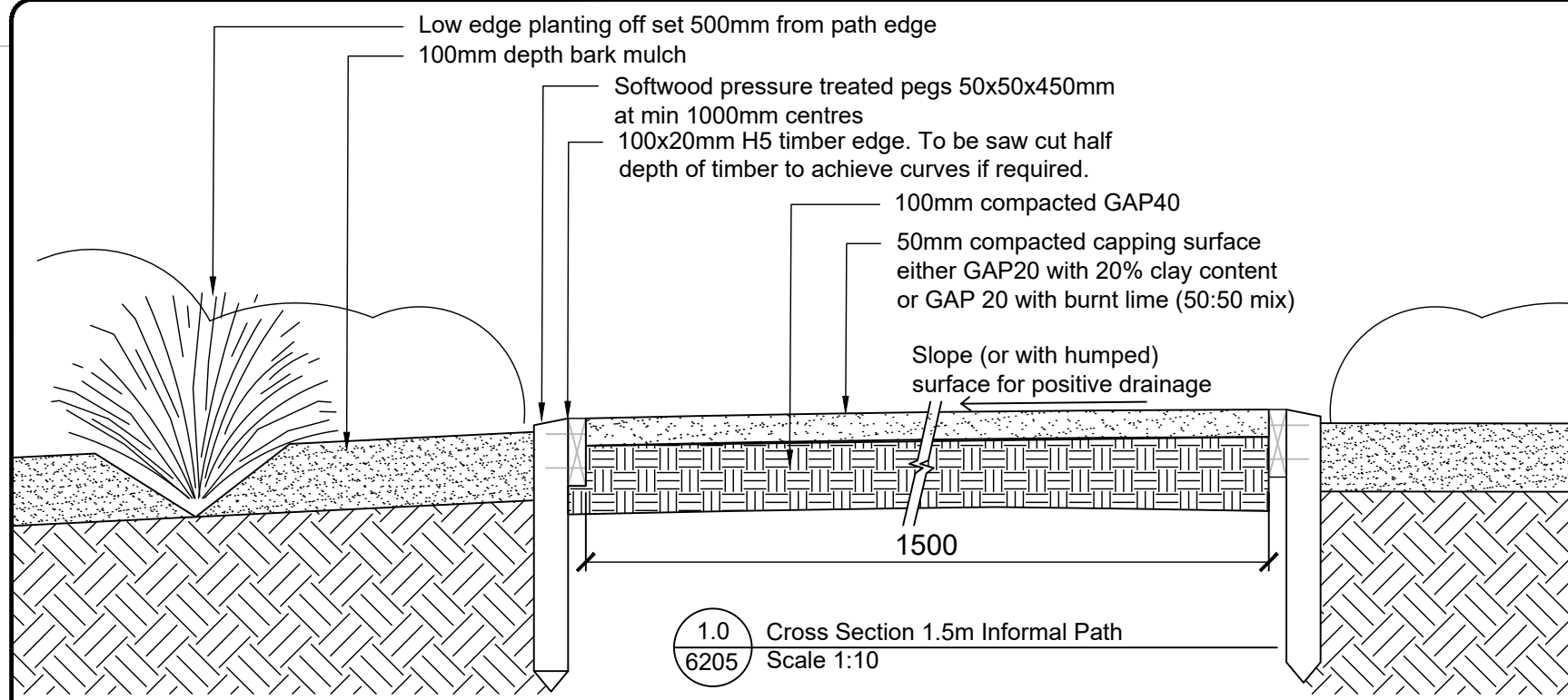
3.2 SAFETY RAILINGS  
6204 SCALE 1:50 @ A3



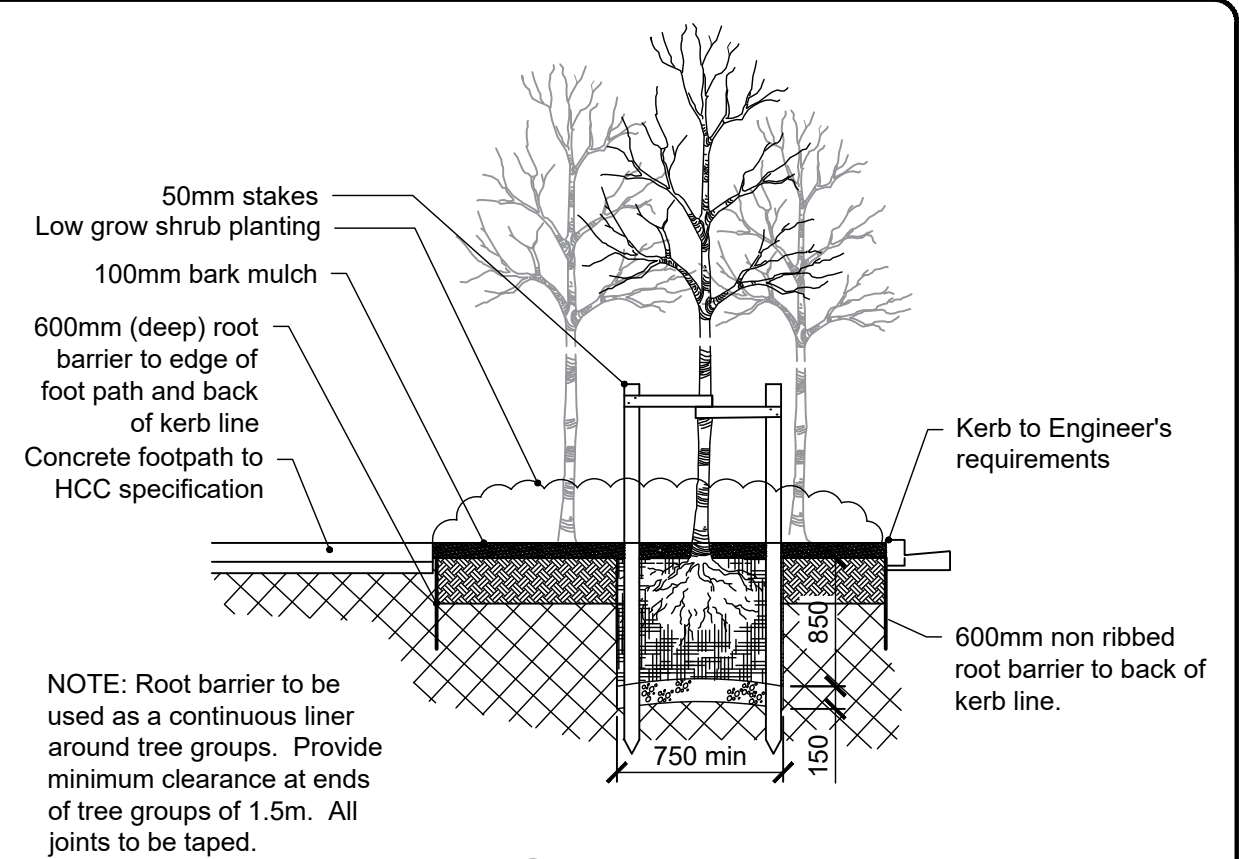
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SCALE FOR VALIDATING SIZE OF A3 PLOT ONLY

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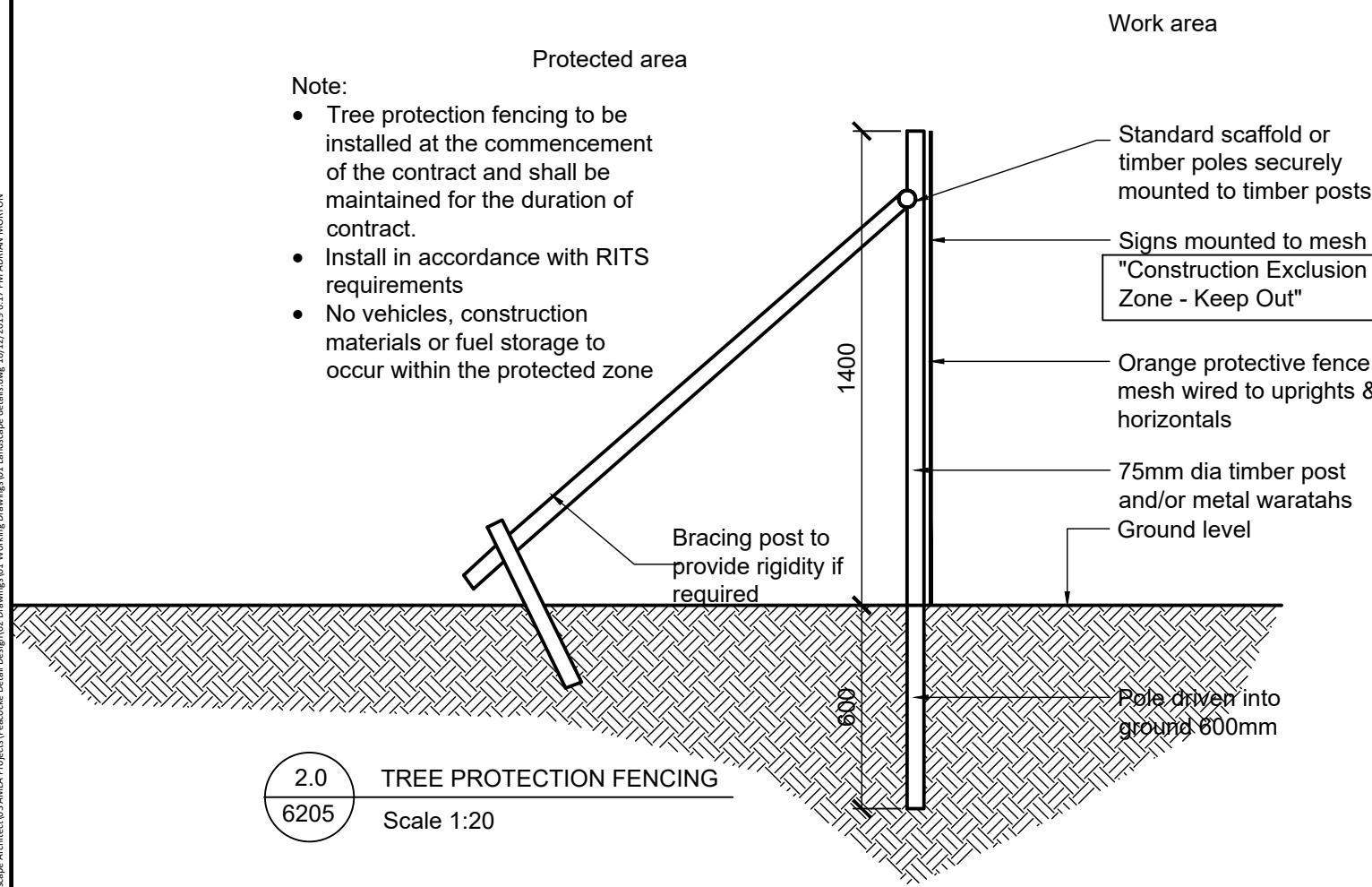
1.0 Cross Section 1.5m Informal Path  
Scale 1:10



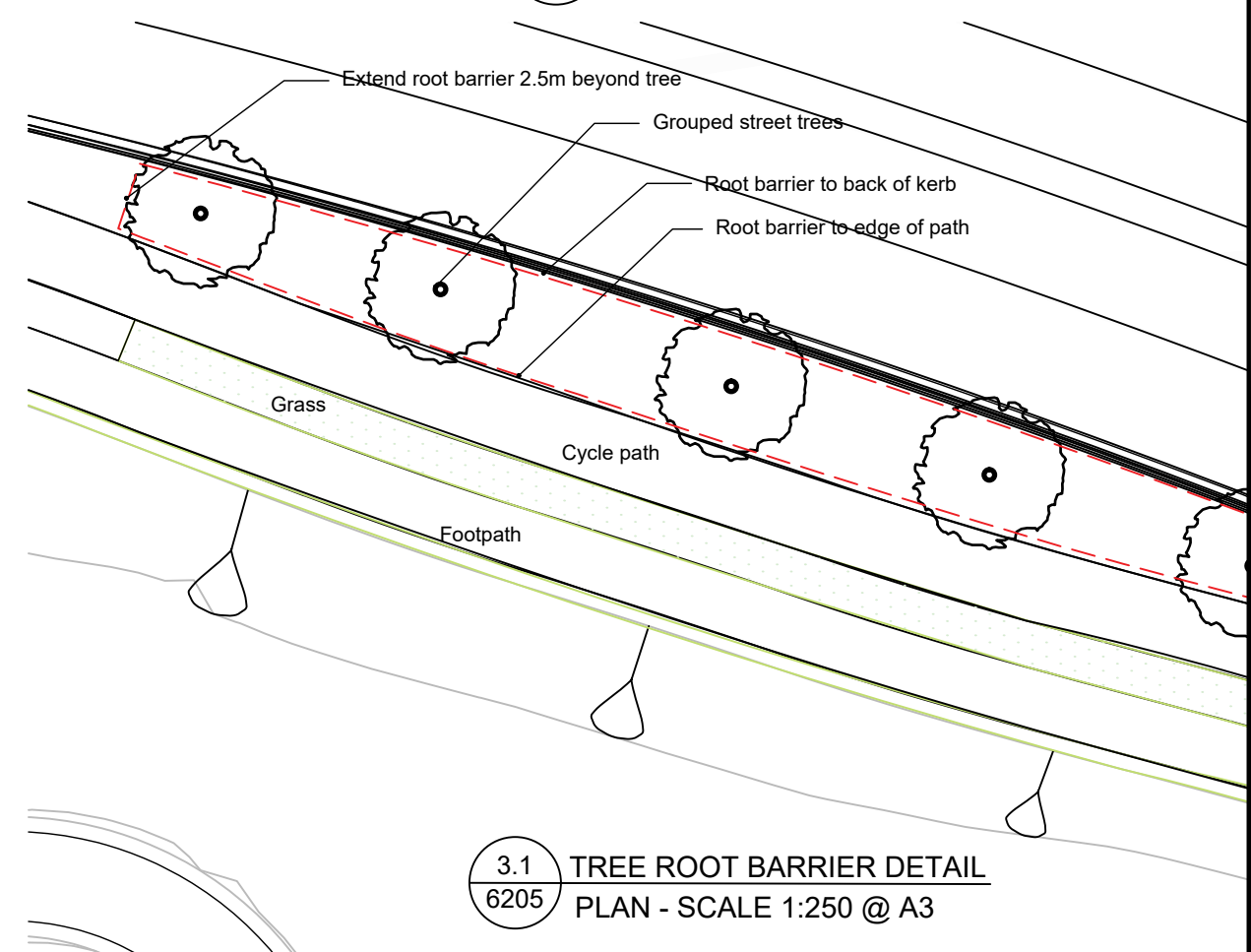
3.0 TREE ROOT BARRIER DETAIL  
6205 SCALE 1:50 @ A3

Note:

- Tree protection fencing to be installed at the commencement of the contract and shall be maintained for the duration of contract.
- Install in accordance with RITS requirements
- No vehicles, construction materials or fuel storage to occur within the protected zone



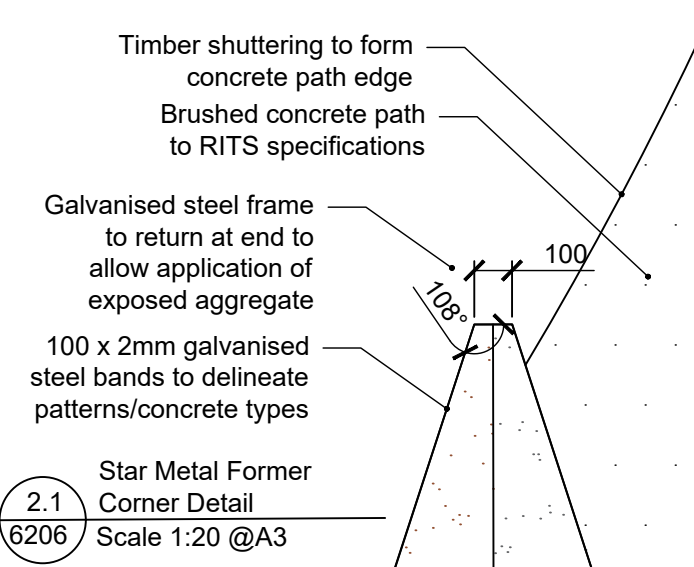
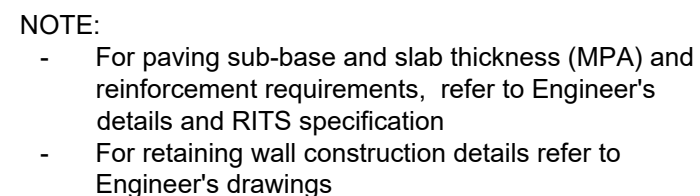
2.0 TREE PROTECTION FENCING  
6205 Scale 1:20



3.1 TREE ROOT BARRIER DETAIL  
6205 PLAN - SCALE 1:250 @ A3

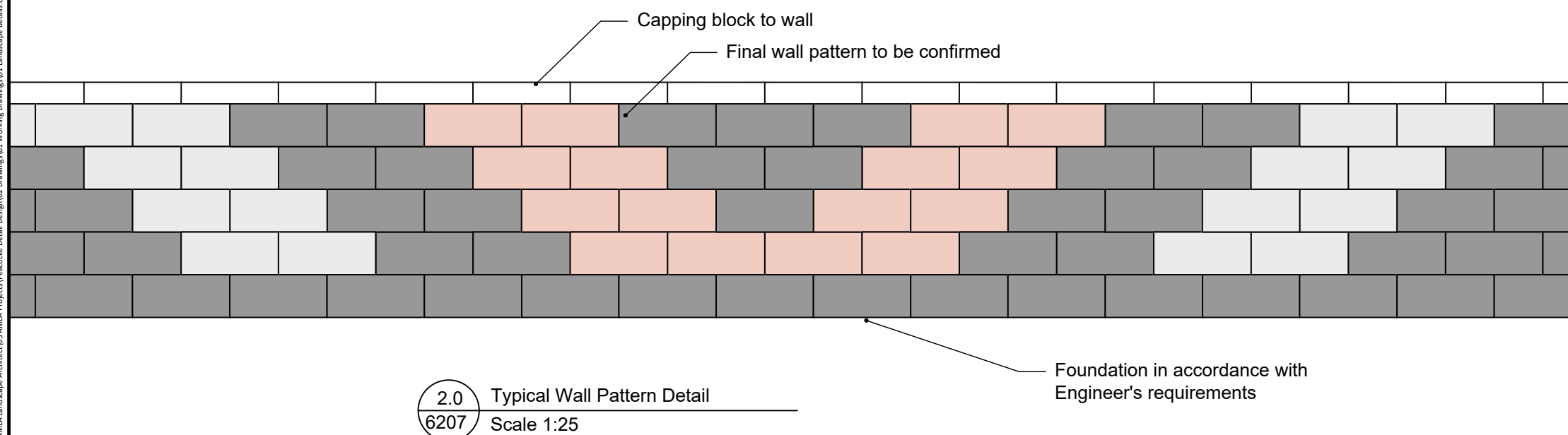
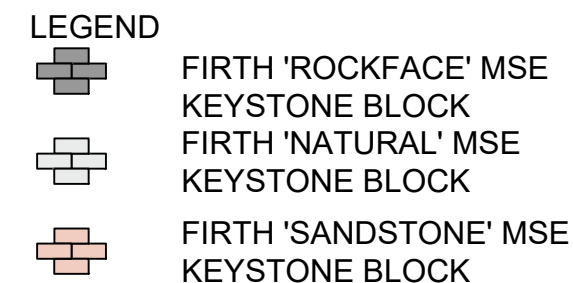
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				DRAWN		APPROVED							STRATEGIC TRANSPORT PROJECT				CONSTRUCTION DETAILS				DATE		SCALE (ORIGINAL SIZE A3)	
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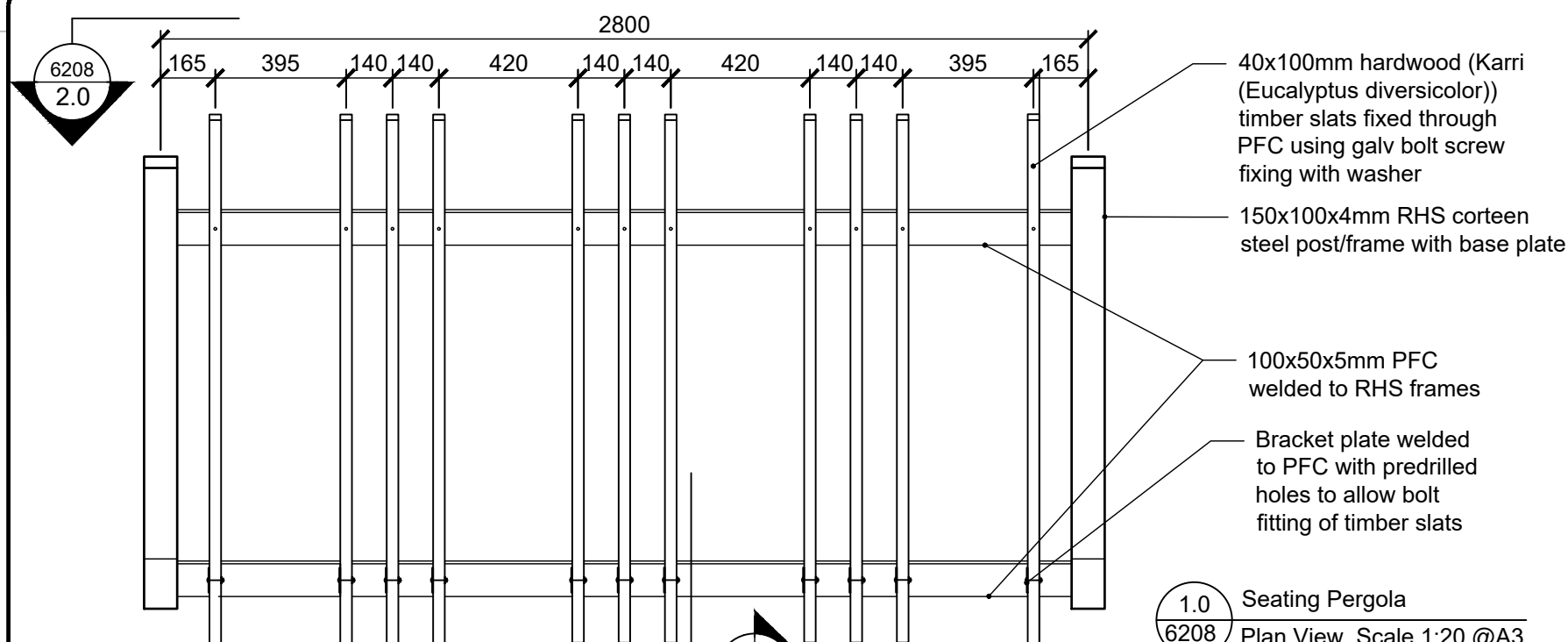
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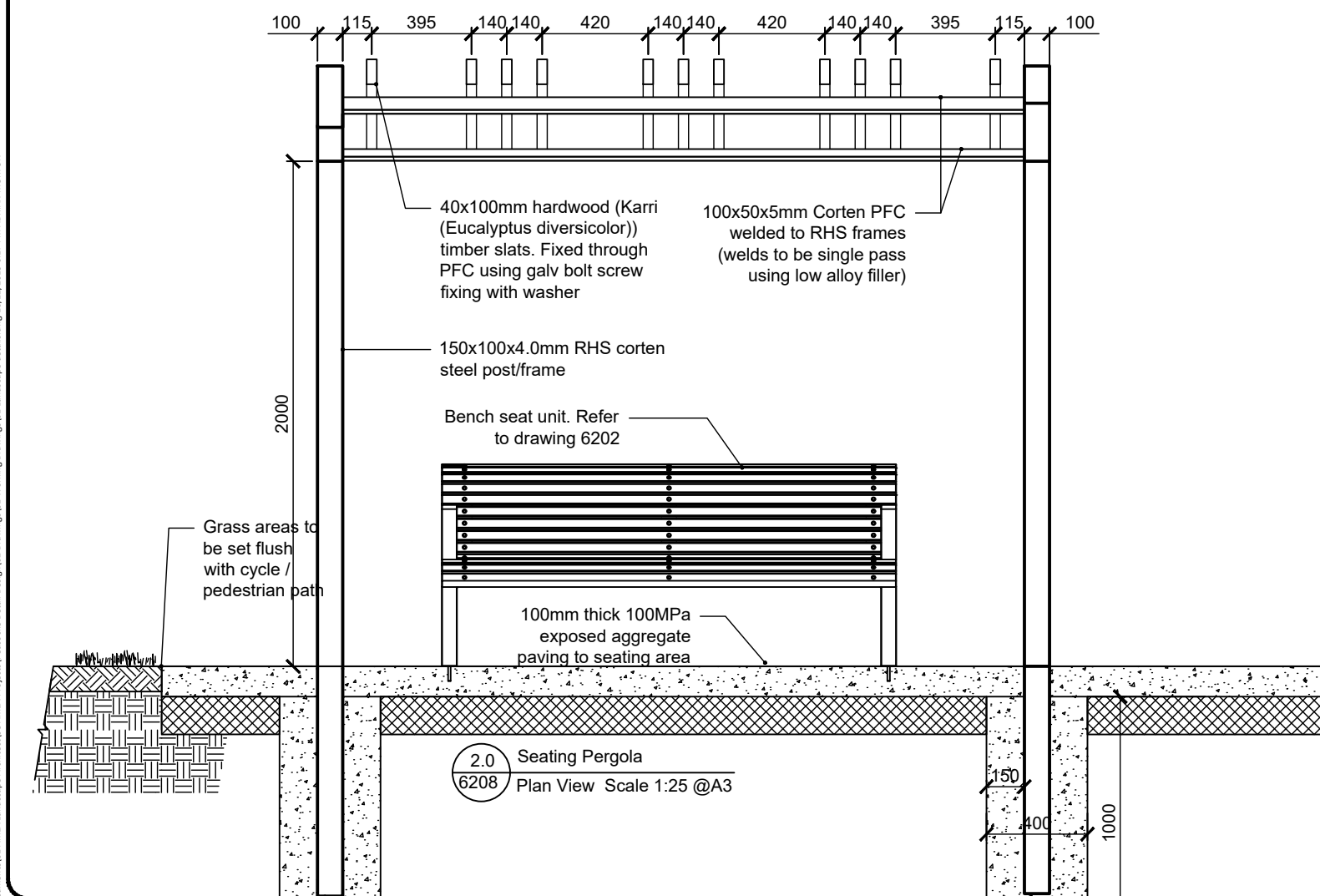
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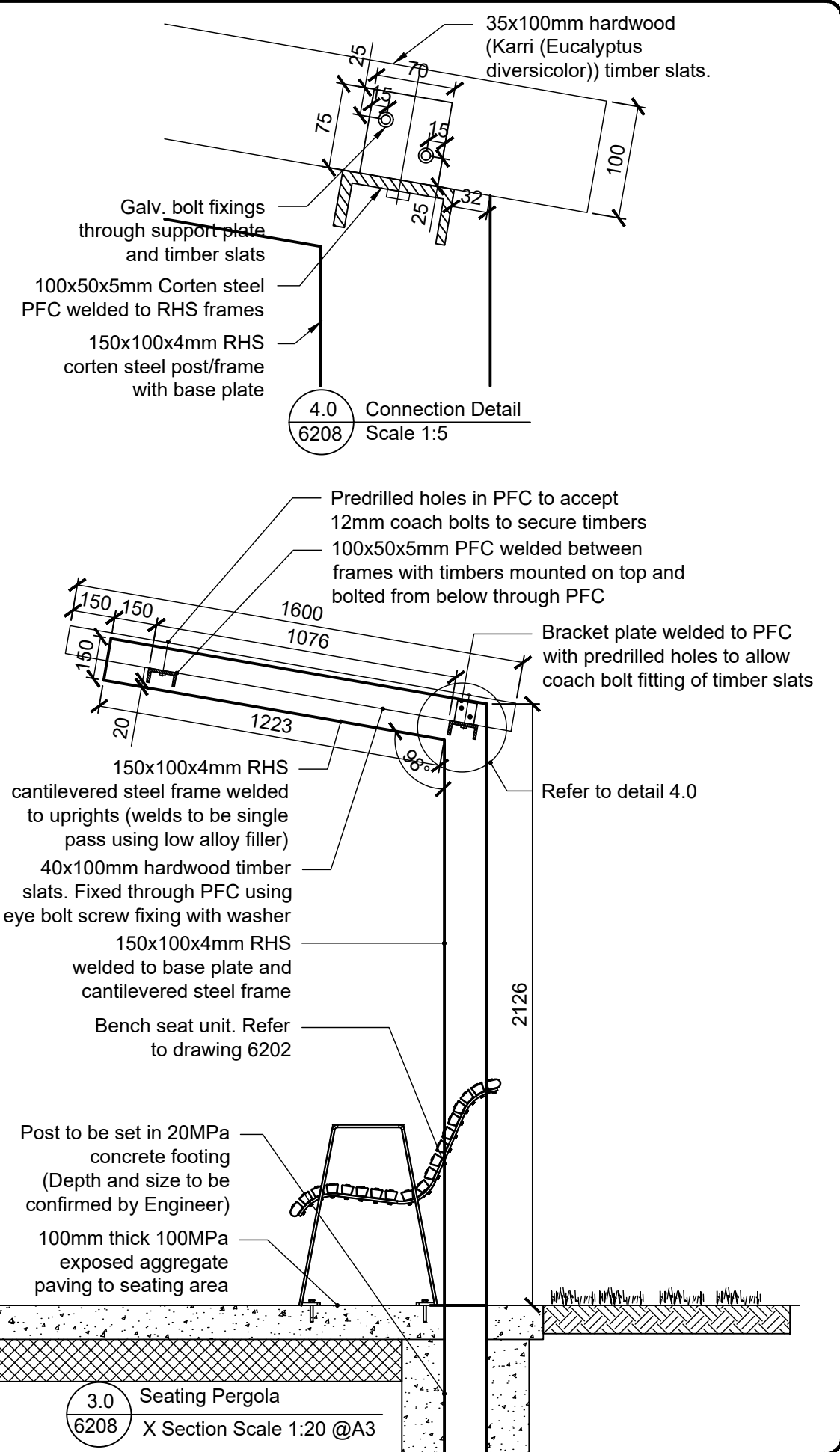
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1.0 Seating Pergola  
6208 Plan View Scale 1:20 @A3



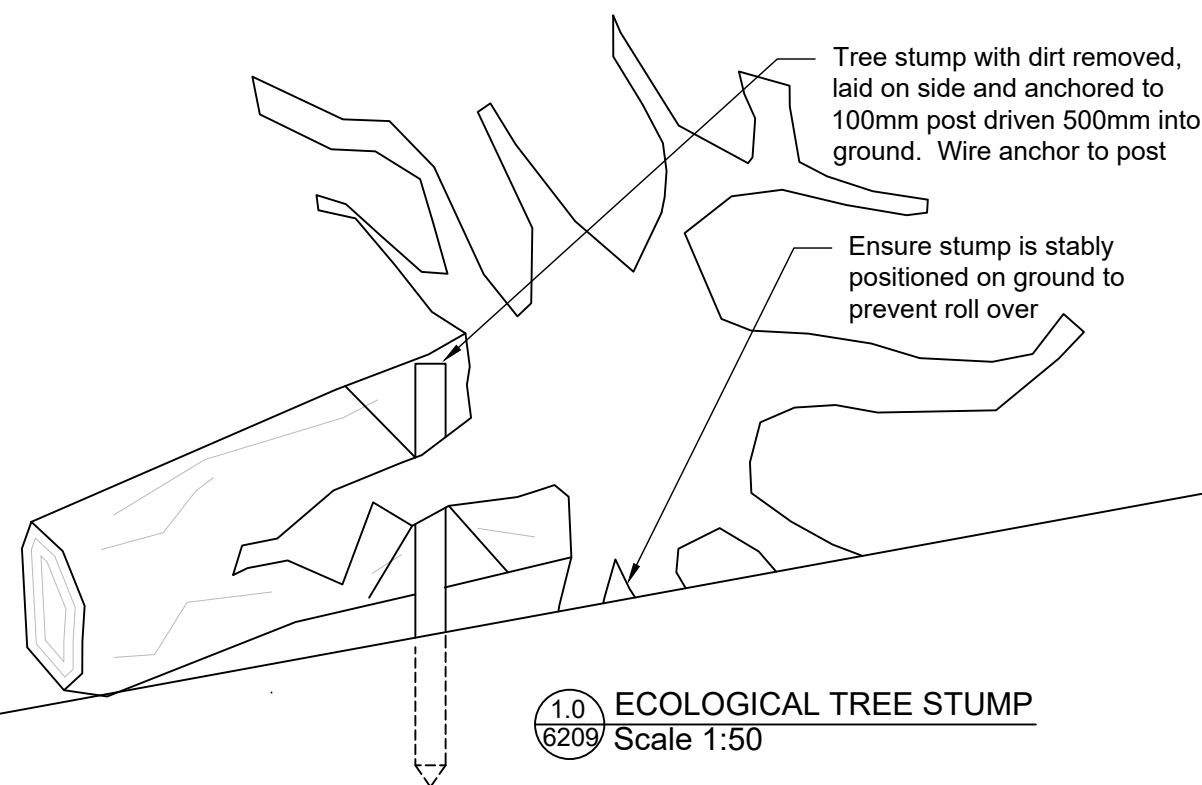
2.0 Seating Pergola  
6208 Plan View Scale 1:25 @A3



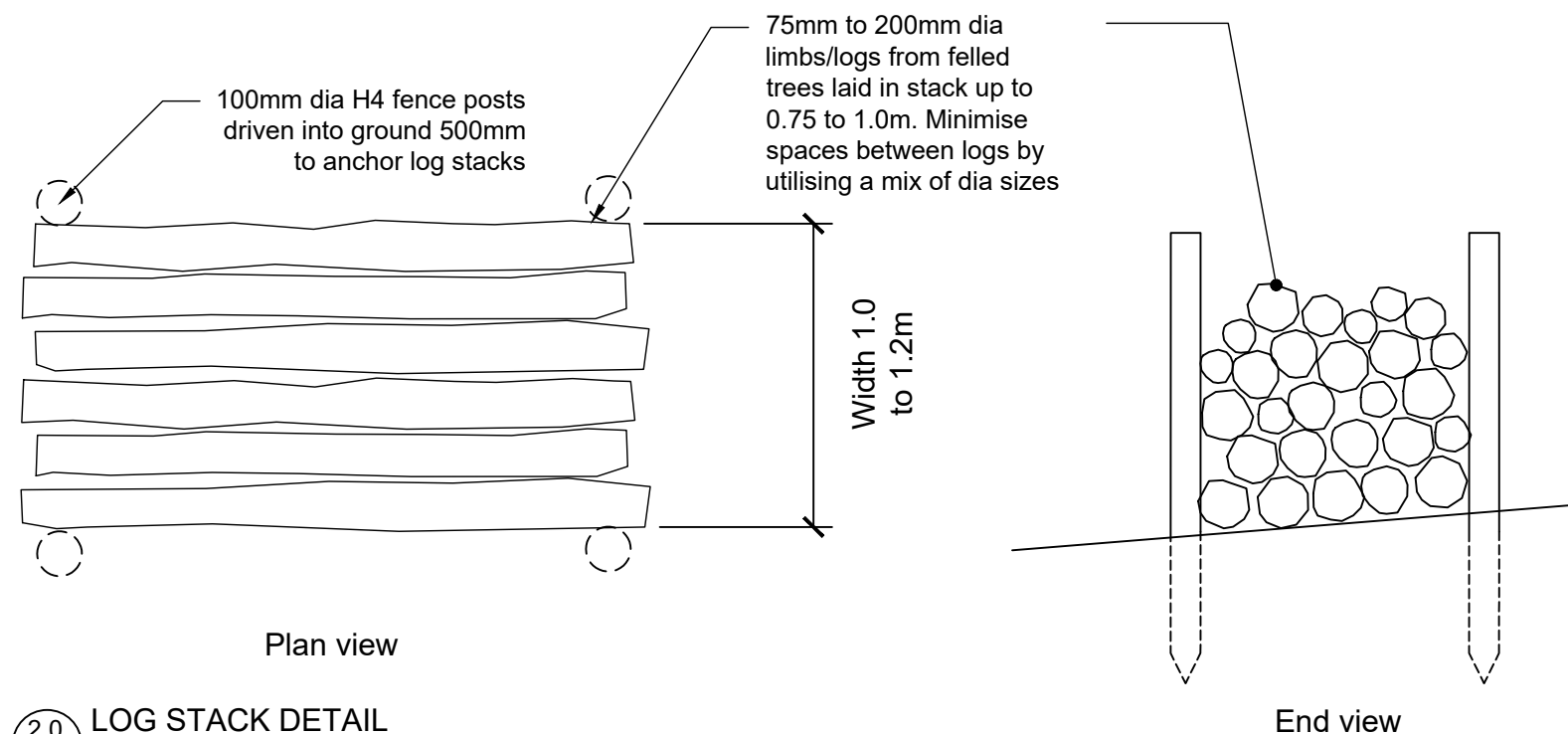
3.0 Seating Pergola  
6208 X Section Scale 1:20 @A3

4.0 Connection Detail  
6208 Scale 1:5

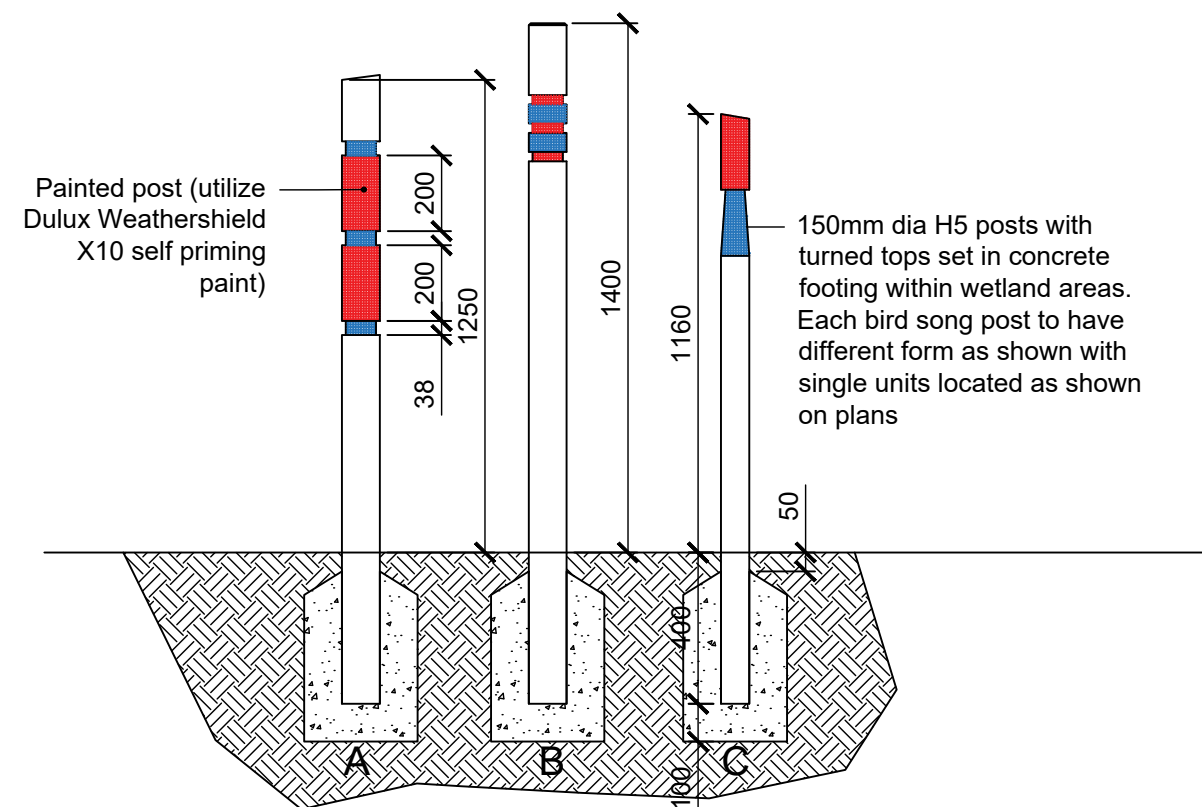




1.0 ECOLOGICAL TREE STUMP  
6209 Scale 1:50



LOG STACK DETAIL  
Scale 1:25



3.0 BIRD SONG POST  
6209 Scale 1:20

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PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING

LANDSCAPE DETAILS

ECOLOGICAL ENHANCEMENT DETAILS

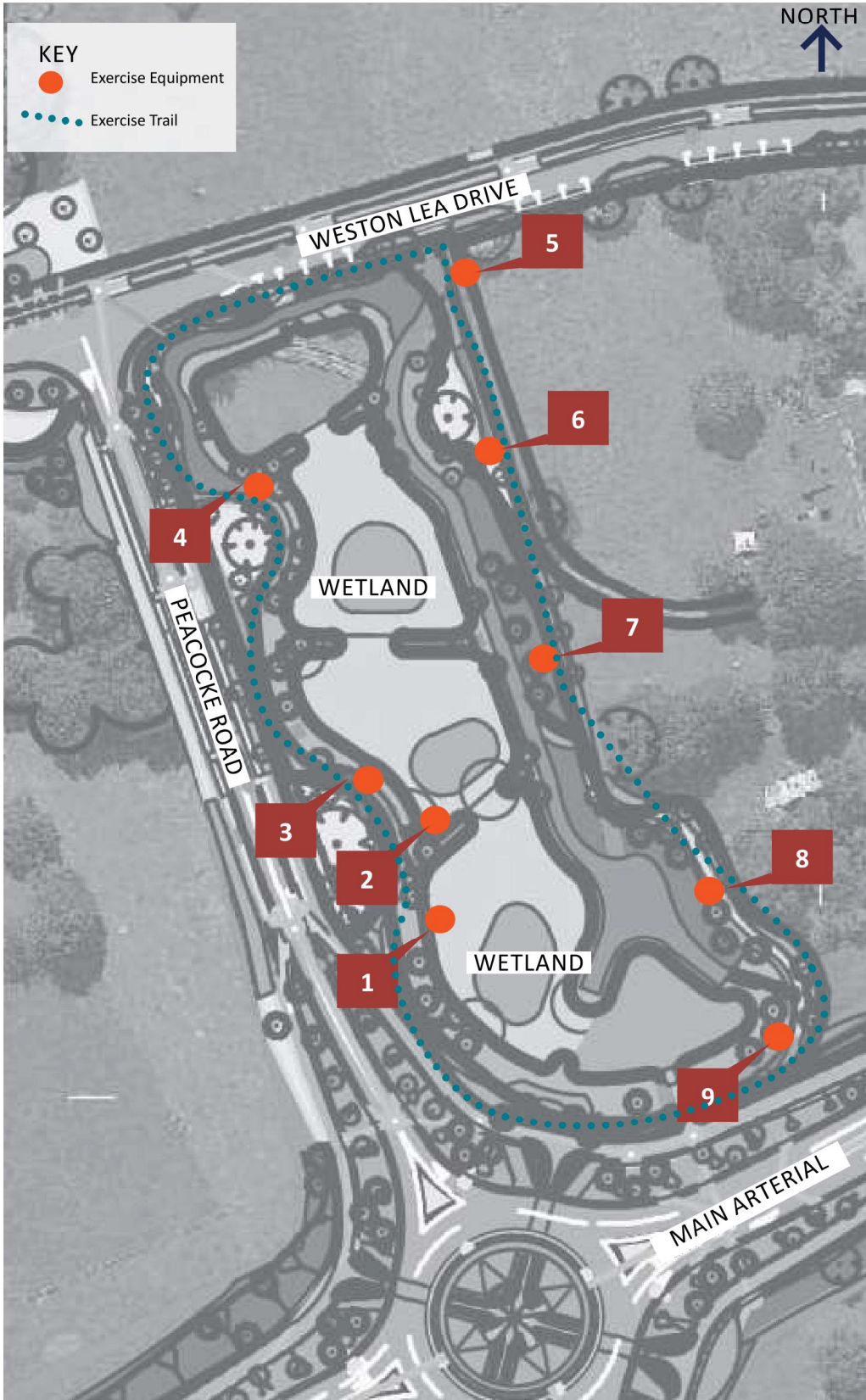
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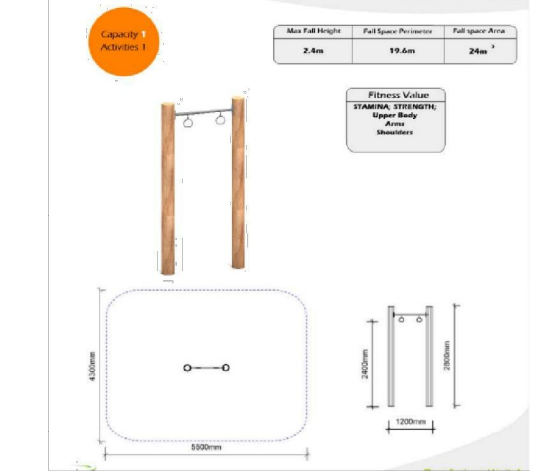
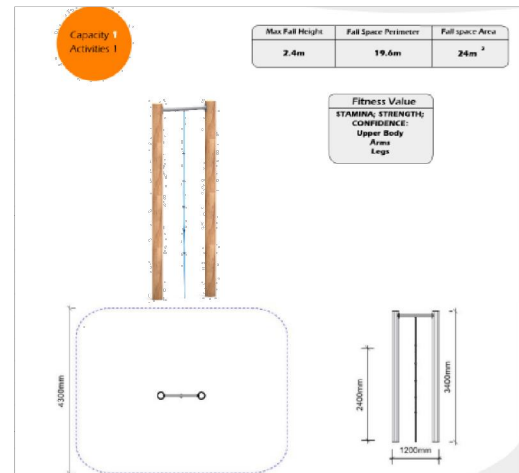
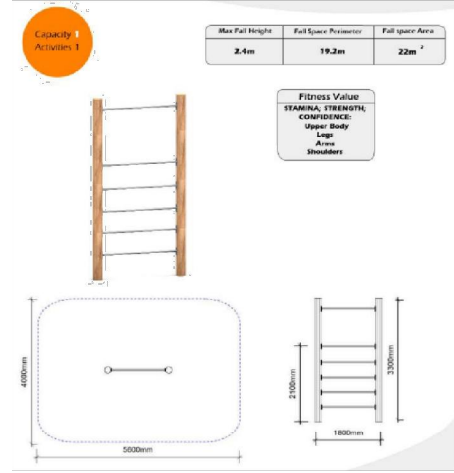
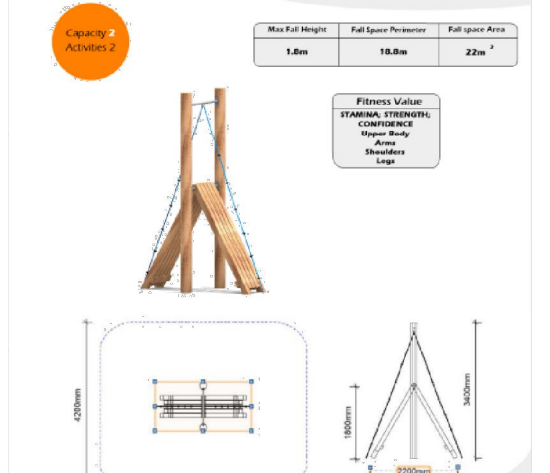
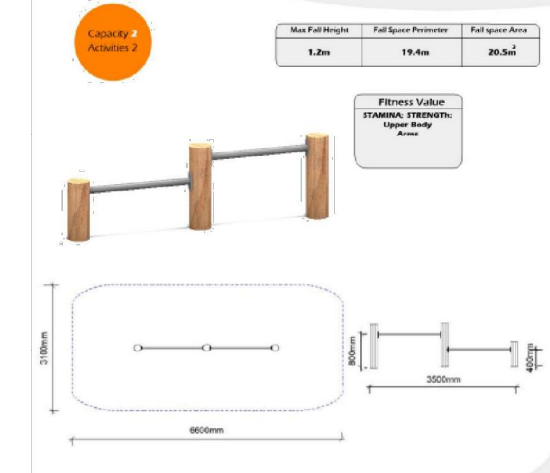
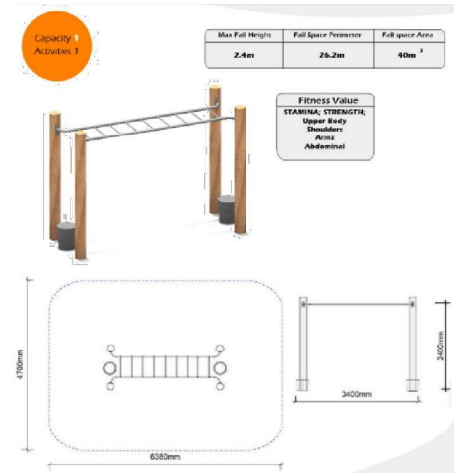
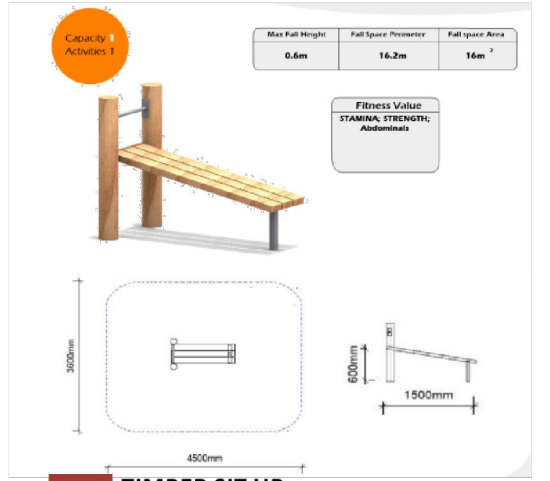
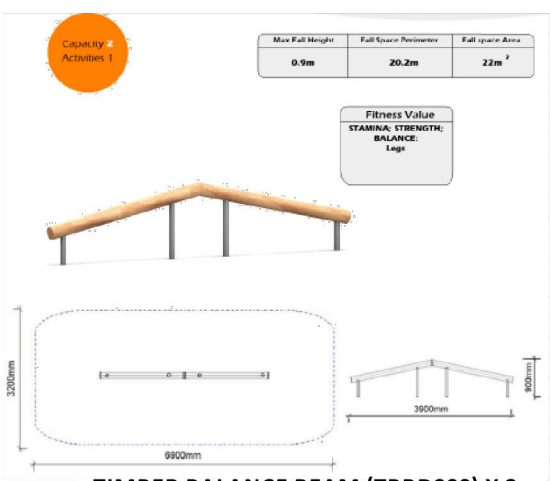
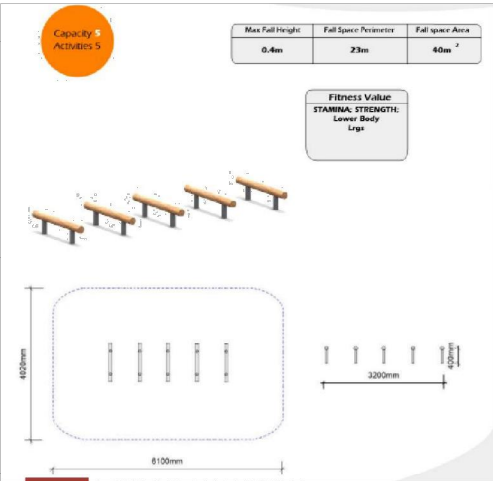
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RECREATION INTERVENTIONS

WETLAND RECREATION TRAIL



EXERCISE TRAIL COMPONENTS

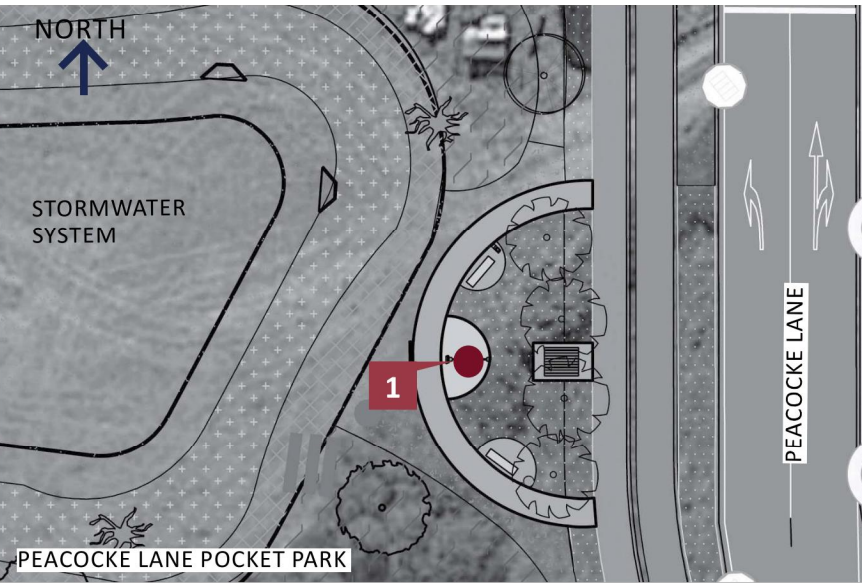
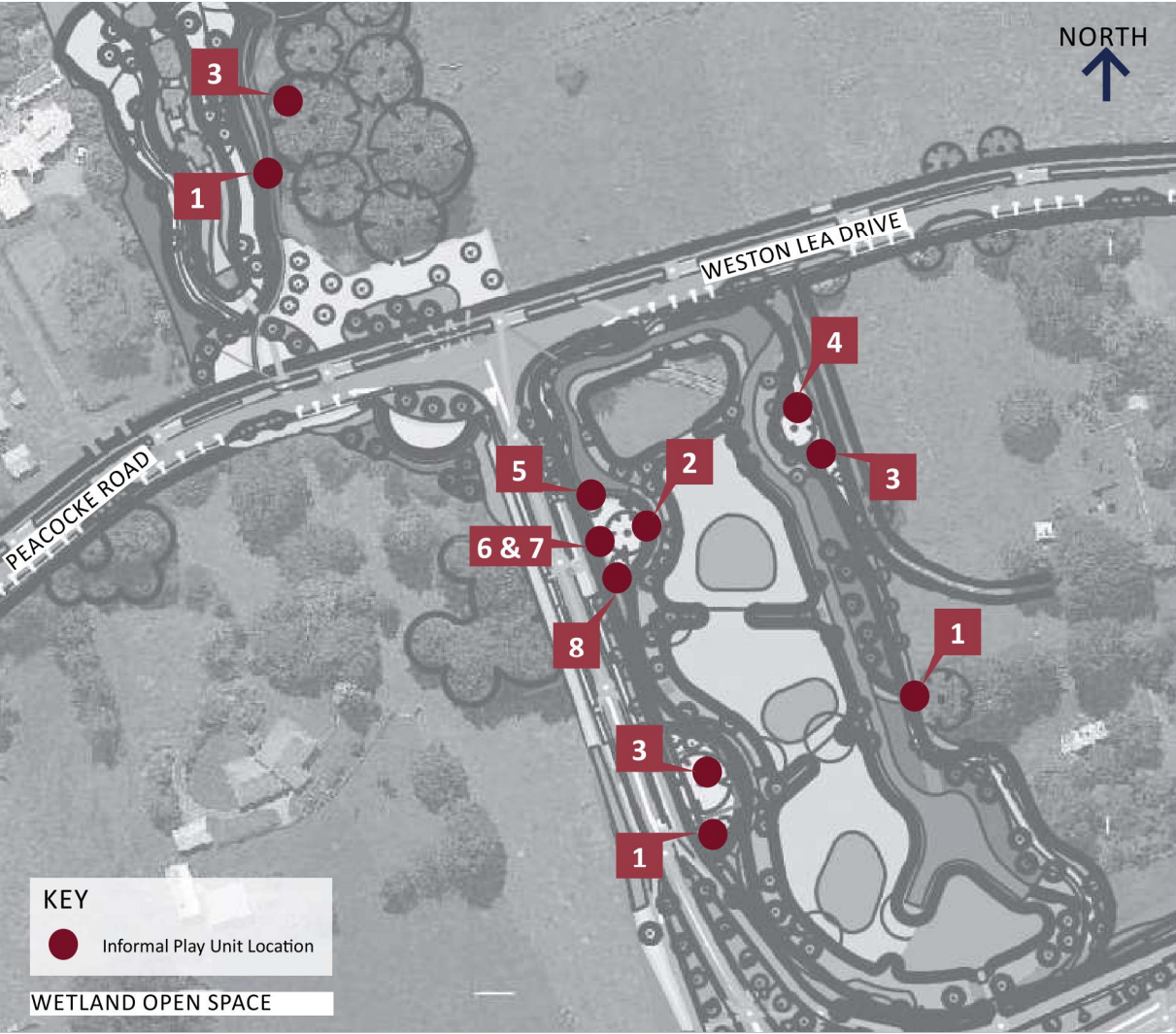




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PLAY INTERVENTIONS

INFORMAL PLAY AREAS



CHILDRENS PLAY TRAIL COMPONENTS



1 INFORMAL LOG CLIMB WITH FALL SAFETY SURFACE



2 BASKET SWING



3 TREE MOUNTED BASKET SWING



4 SPIDER NET



5 POST CLIMB (RE-PURPOSED FELLED TREES)



6 WOODEN STEPPING LOGS



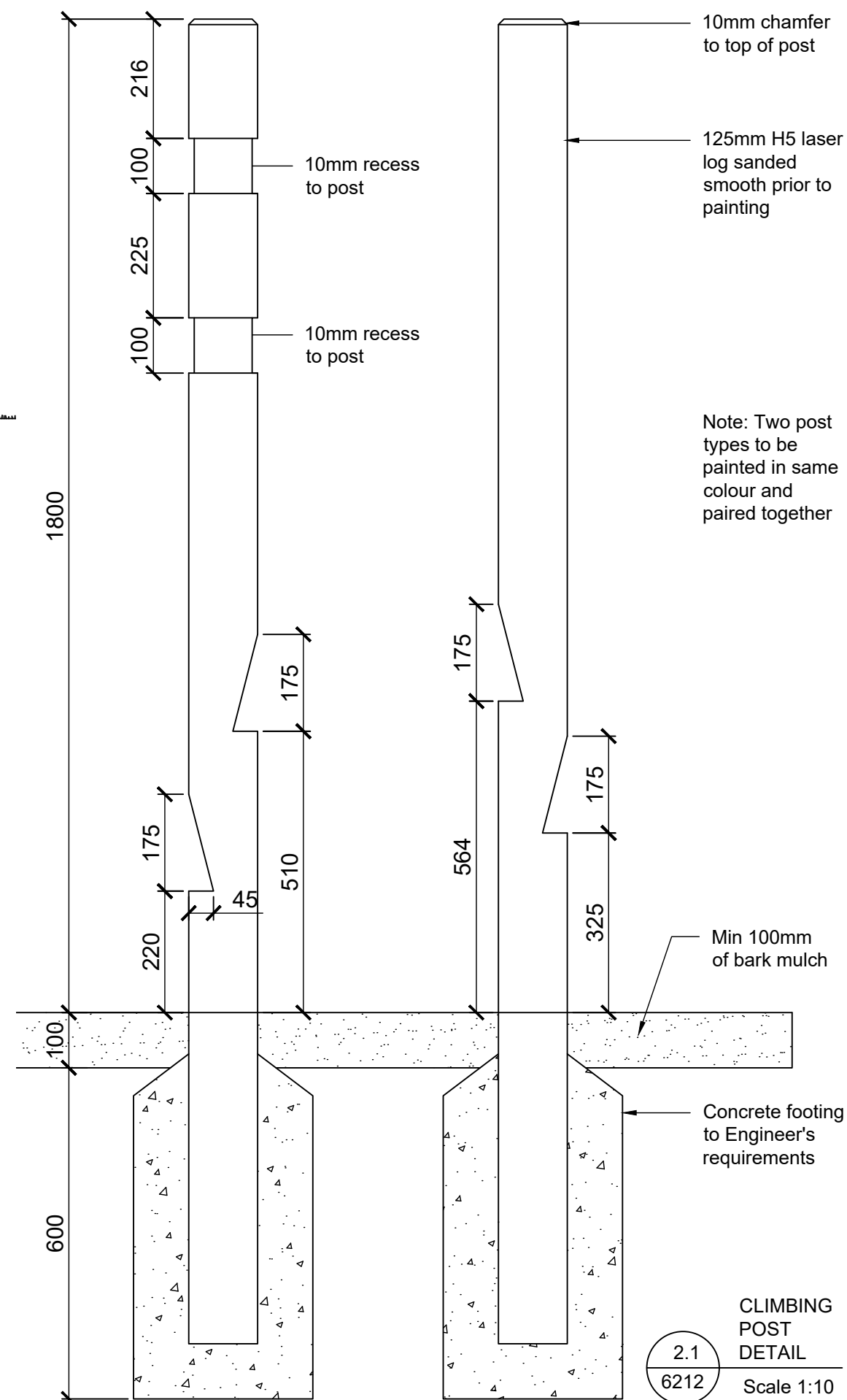
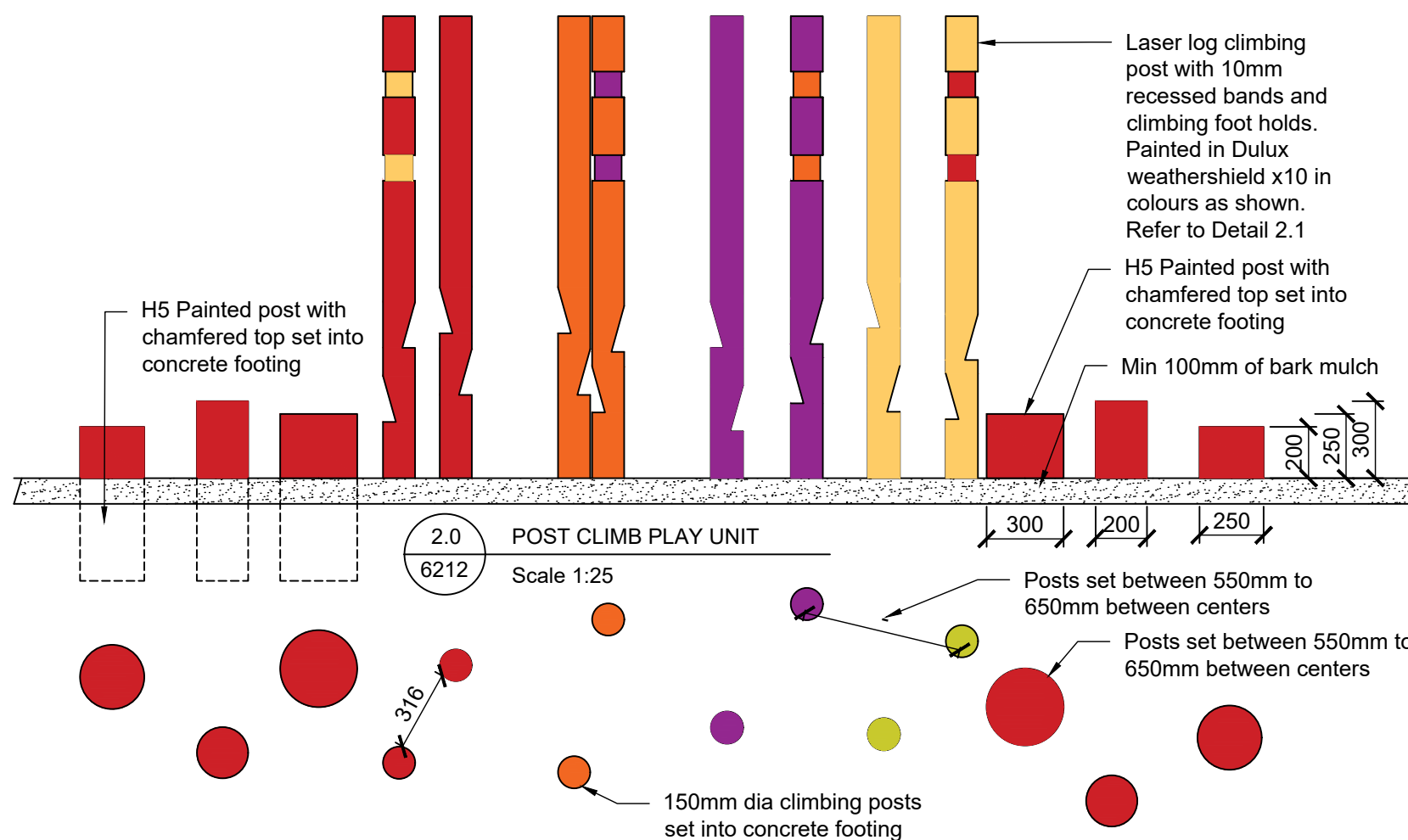
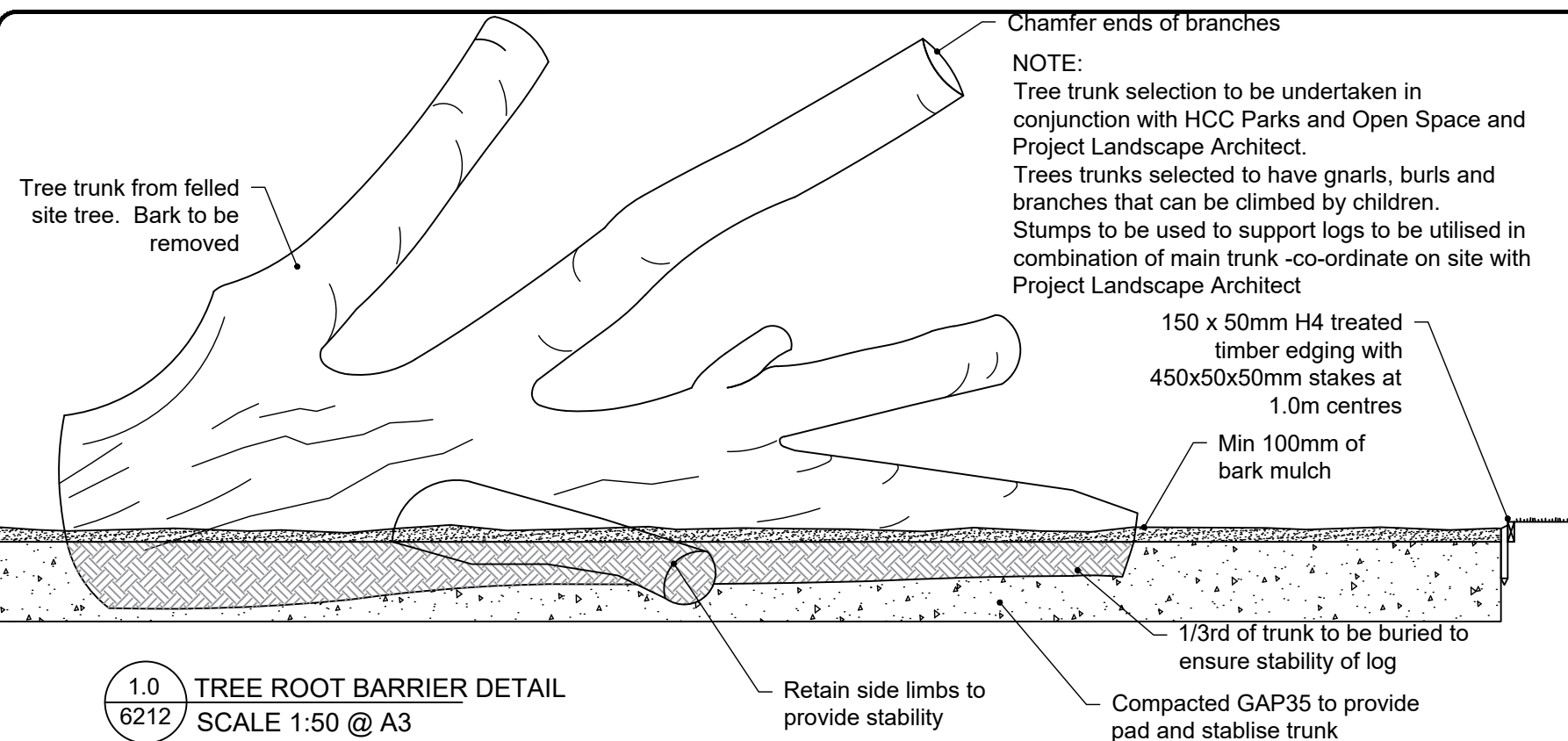
7 TREE LOG CLIMBING SET (RE-PURPOSED FELLED TREES TRUNKS)



8 THE SPIDER'S COTTAGE

										DESIGNED		CHECKED		 BLOXAM BURNETT & OLLIVER	Adrian Morton <b>Landscape Architects Ltd</b> Landscape Architecture :: Urban Design :: Environmental Planning	PROJECT <b>PEACOCKE STRATEGIC TRANSPORT PROJECT</b>	DRAWING <b>LANDSCAPE DETAILS PLAY EQUIPMENT</b>	STATUS <b>TENDER</b>							
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# PROJECT PEACOCKE STRATEGIC TRANSPORT PROJECT

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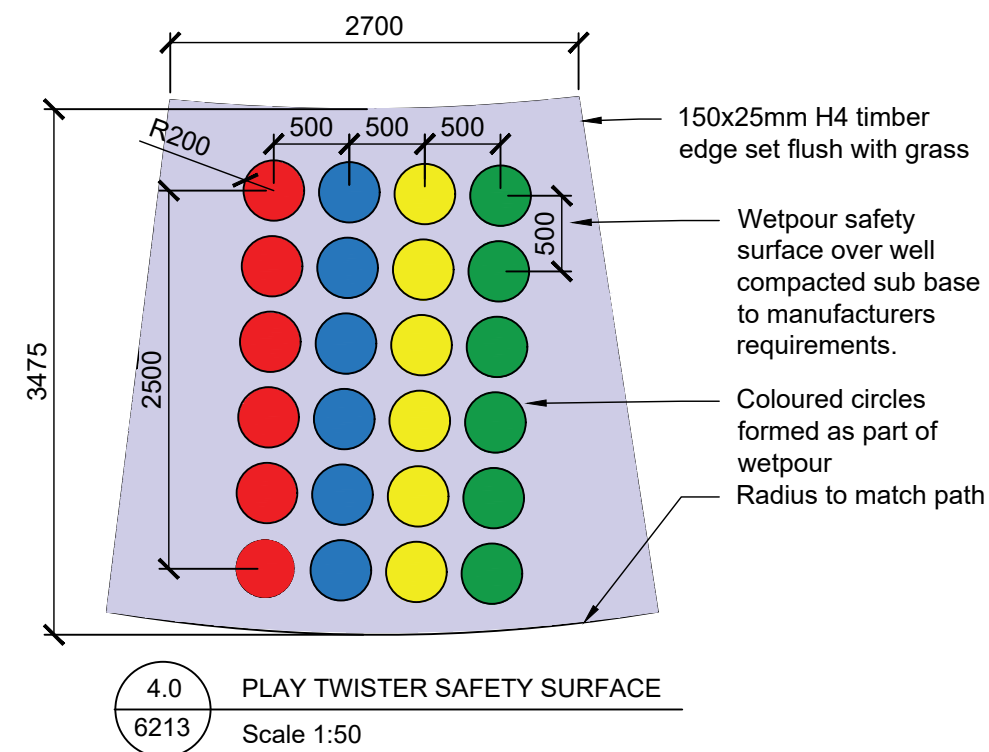
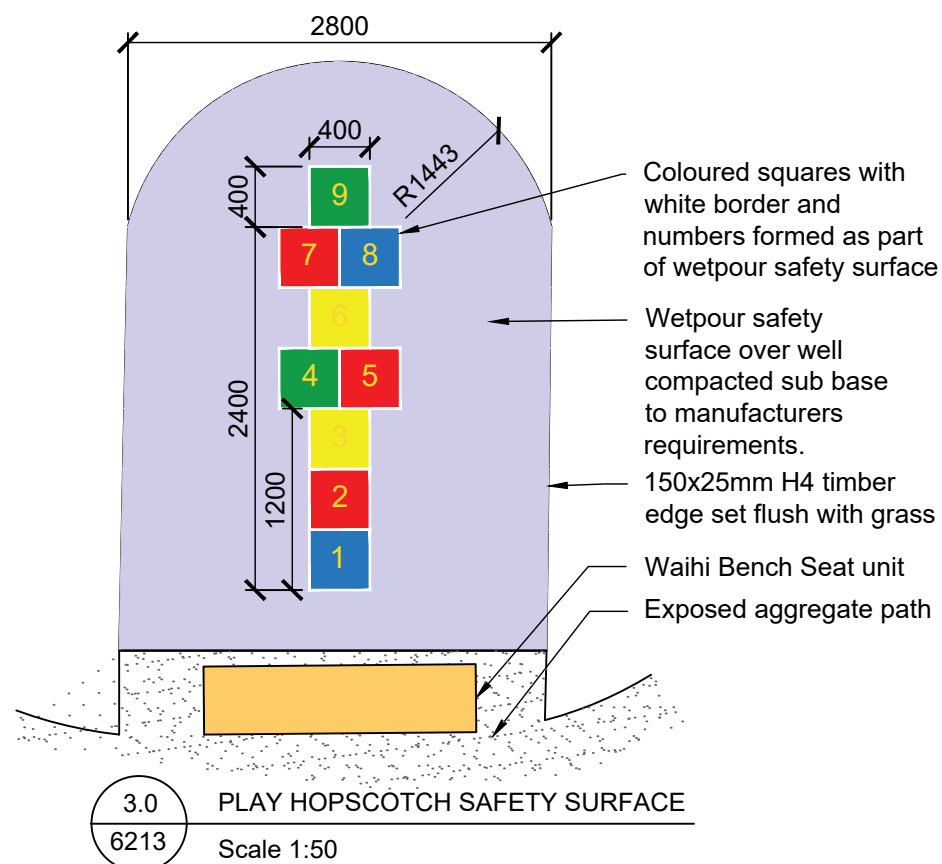
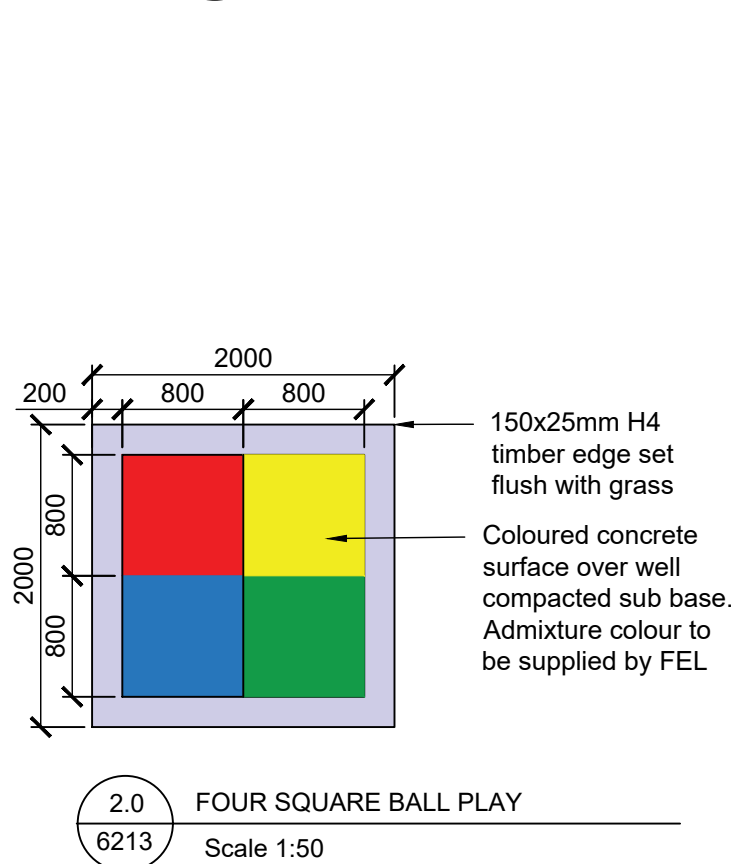
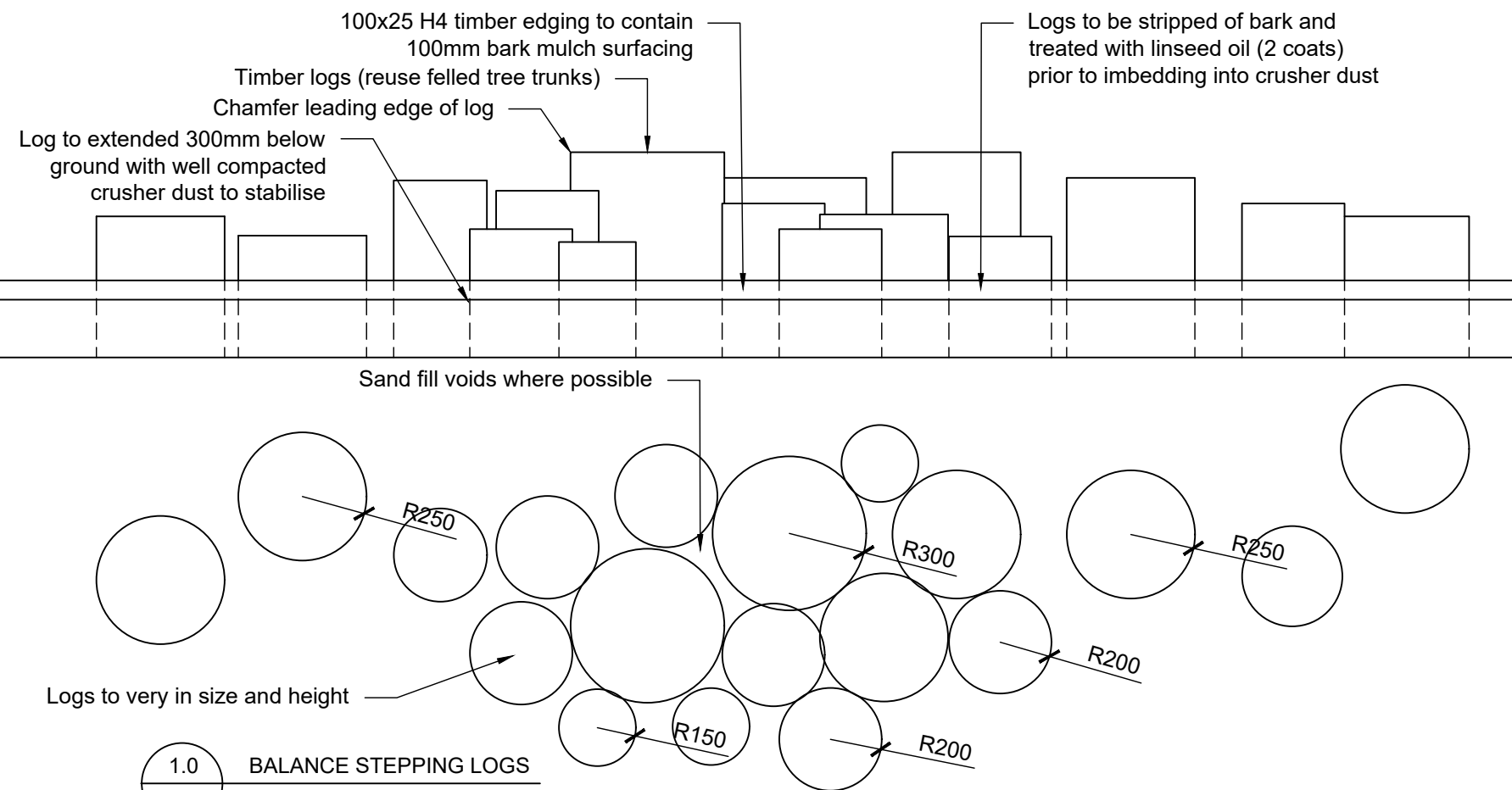
LANDSCAPE DETAILS

PLAY EQUIPMENT

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PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE DETAILS  
PLAY EQUIPMENT

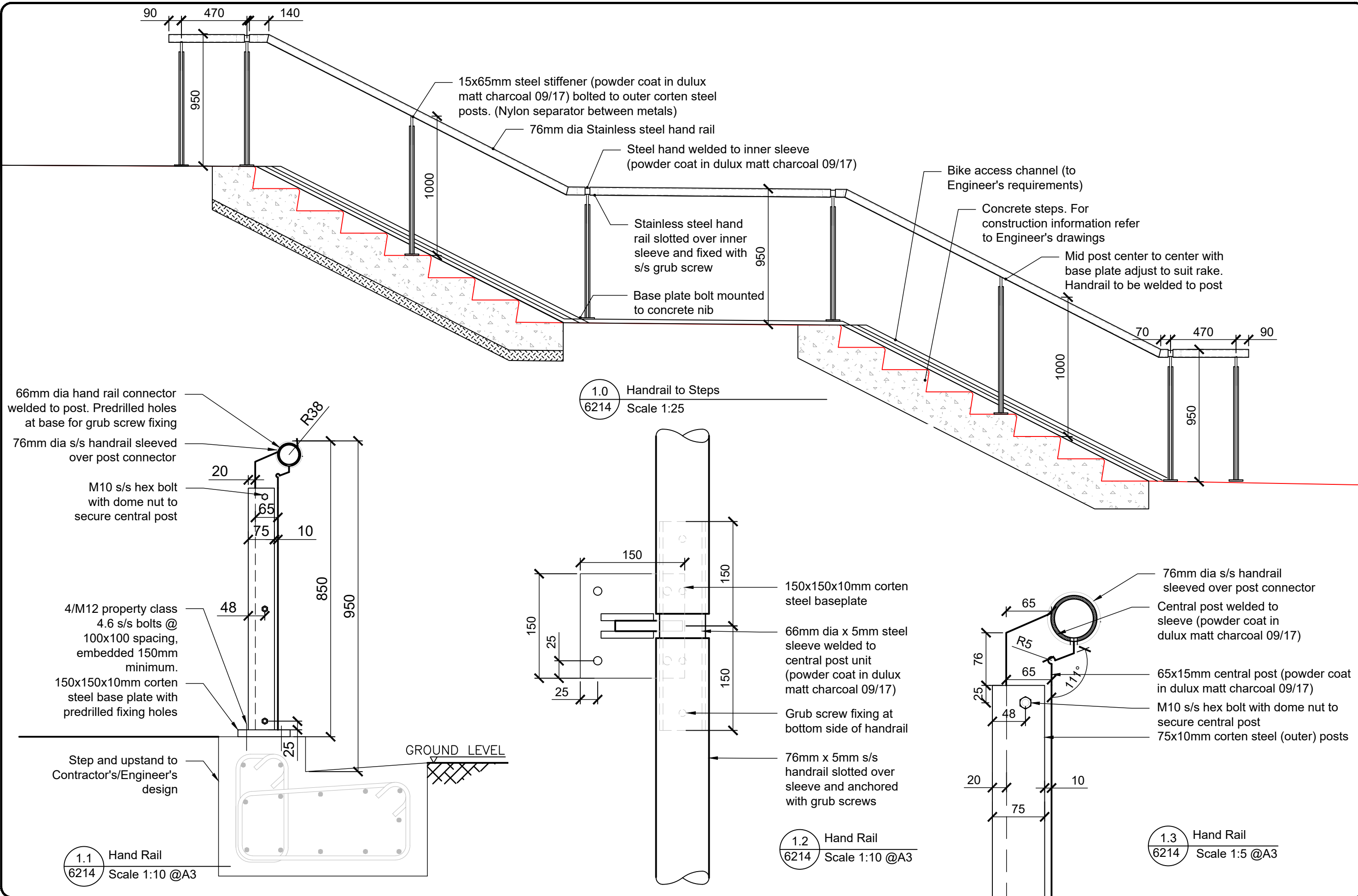
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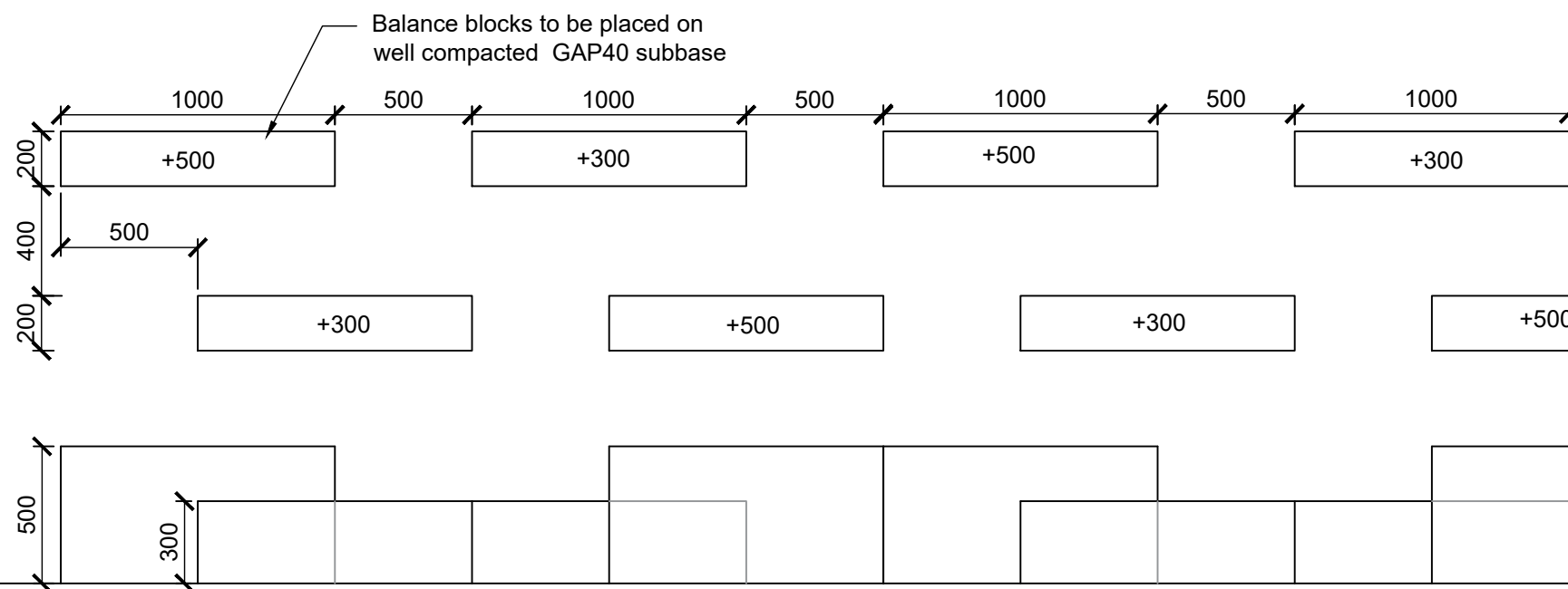
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STRATEGIC TRANSPORT  
PROJECT

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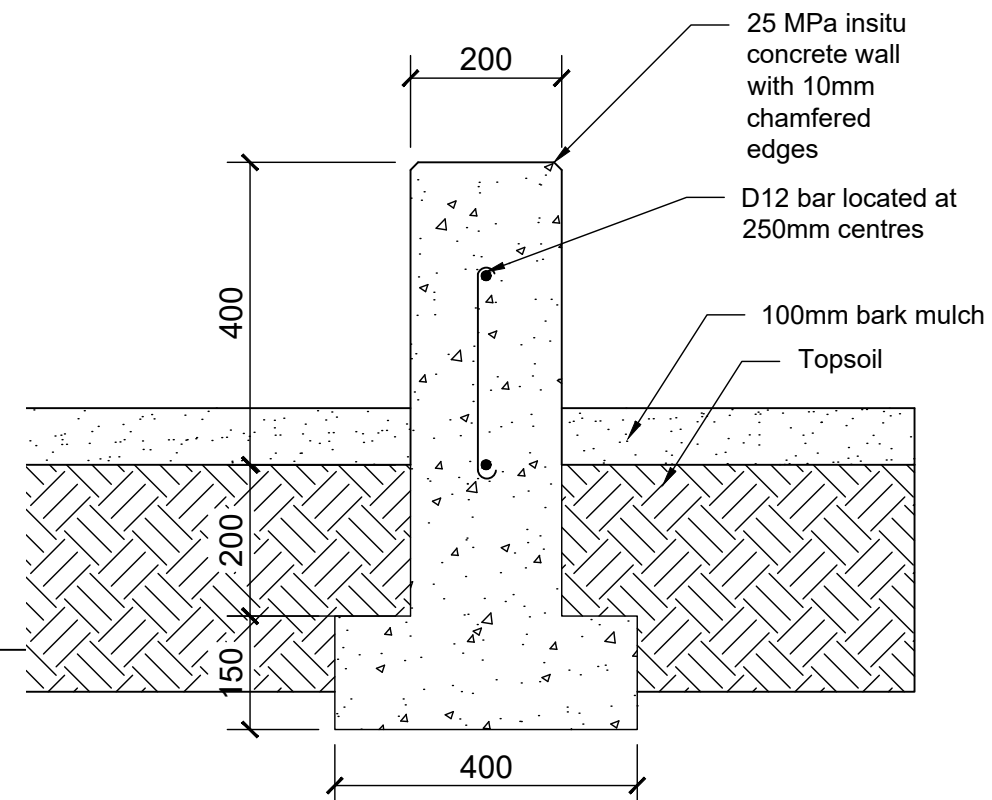
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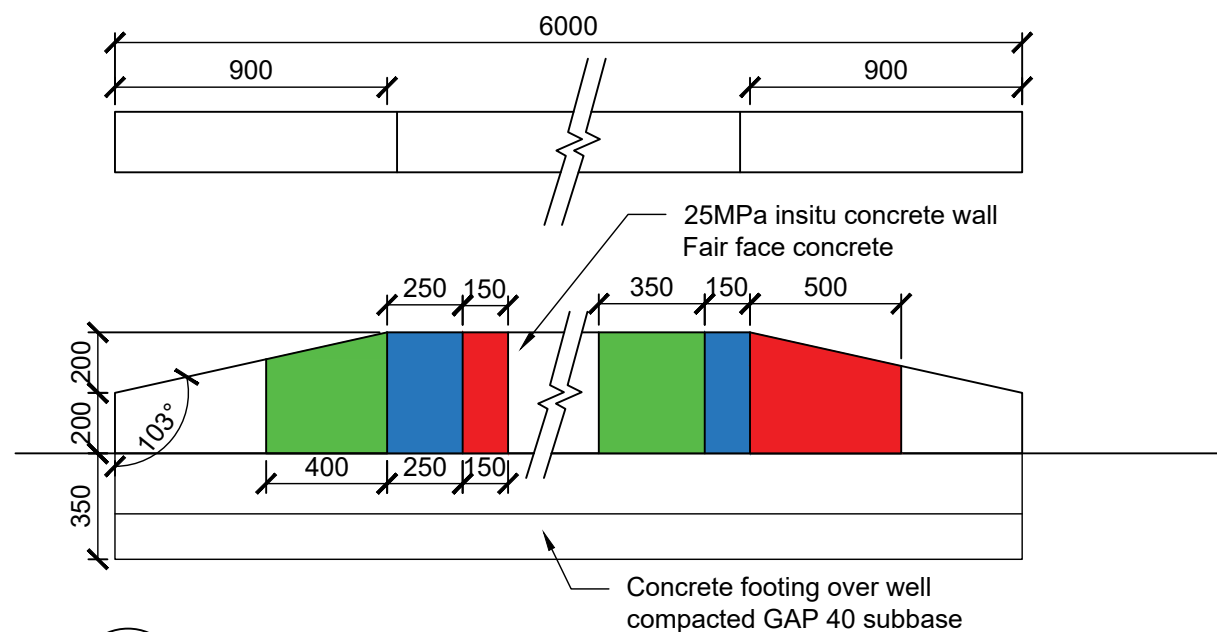
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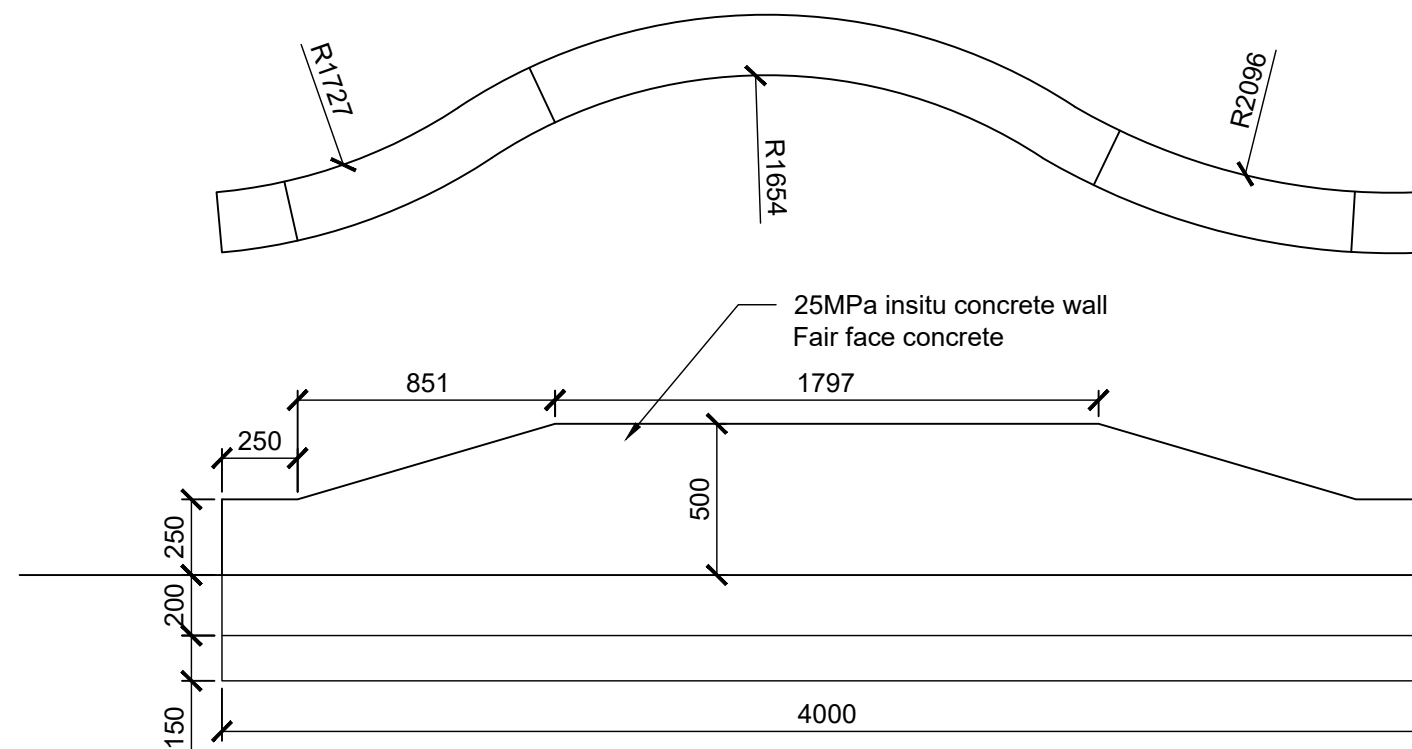
1.0 STEPPING BLOCKS  
6215 Scale 1:25



1.1 TYPICAL CONCRETE WALL DETAIL  
6215 Scale 1:10 - typical section



2.0 CONCRETE BALANCE BEAM  
6215 Scale 1:25



3.0 CONCRETE BALANCE BEAM  
6215 Scale 1:25

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PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE DETAILS  
PLAY ON THE WAY FEATURES

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PLAN

ELEVATION

150mm dia SED H5. General positions and angles as shown  
130mm dia SED H5 posts to be embedded 500mm into 20MPa concrete footing

S/S M20 bolt with s/s dome nuts SS 27.5mm washers countersunk into beam

Paint:  
Dulux Weathershield X10 self priming paint. Colours  
Dulux 'Tawa' (red)  
Dulux 'Lake Karapiro' (blue)

S/S M16 bolts with s/s dome nuts SS 27.5mm washers countersunk into beam  
100mm bark mulch

600mm deep 20MPa concrete footing with 100mm coverage to post. Footing to be embedded min 600mm into solid ground

1.1  
PLAY ON THE WAY  
TIMBER BALANCE BEAM  
6216  
Scale 1:20 - typical section

1.0  
PLAY ON THE WAY  
TIMBER BALANCE BEAM  
6216  
Scale 1:25

Randomly positioned basalt stepping stones set within planting

On site shuttered wall over well compacted subbase. Leading edges to have 10mm chamfer with fair-faced concrete finish

Paint:  
Dulux Weathershield X10 self priming paint). Colours  
Dulux 'Tawa' (red)  
Dulux 'Lake Karapiro' (blue)  
Dulux 'Wai O Taki Bay' (green)  
Dulux 'Rotorua' (yellow)

25MPa insitu concrete wall with painted finish  
D12 bar located at 250mm centres  
Concrete footing over well compacted GAP 40 subbase

3.0  
PLAY ON THE WAY CONCRETE WALL  
6216  
Scale 1:50

2.0  
PLAY ON THE WAY  
STEPPING STONES  
6216  
Scale 1:50

Spacing to vary between 200 to 250mm  
600mm dia SED post  
500mm dia SED post  
400mm dia SED post. All posts to visible edges smoothed off to prevent splinters. Log lay out to be confirmed on site

600 to 1000mm basalt boulder with 1/3rd set into ground  
100mm bark mulch  
300mm top soil  
600 to 1000mm basalt boulder with 1/3rd set into ground

2.1  
STEPPING STONE  
6216  
Scale 1:20 - typical section

4.0  
PLAY ON THE WAY TIMBER STEPPING LOGS  
6216  
Scale 1:50

600mm deep 20MPa concrete footing with 150mm coverage to posts

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AM	JG



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PEACOCKE  
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DRAWING  
LANDSCAPE DETAILS  
PLAY ON THE WAY FEATURES

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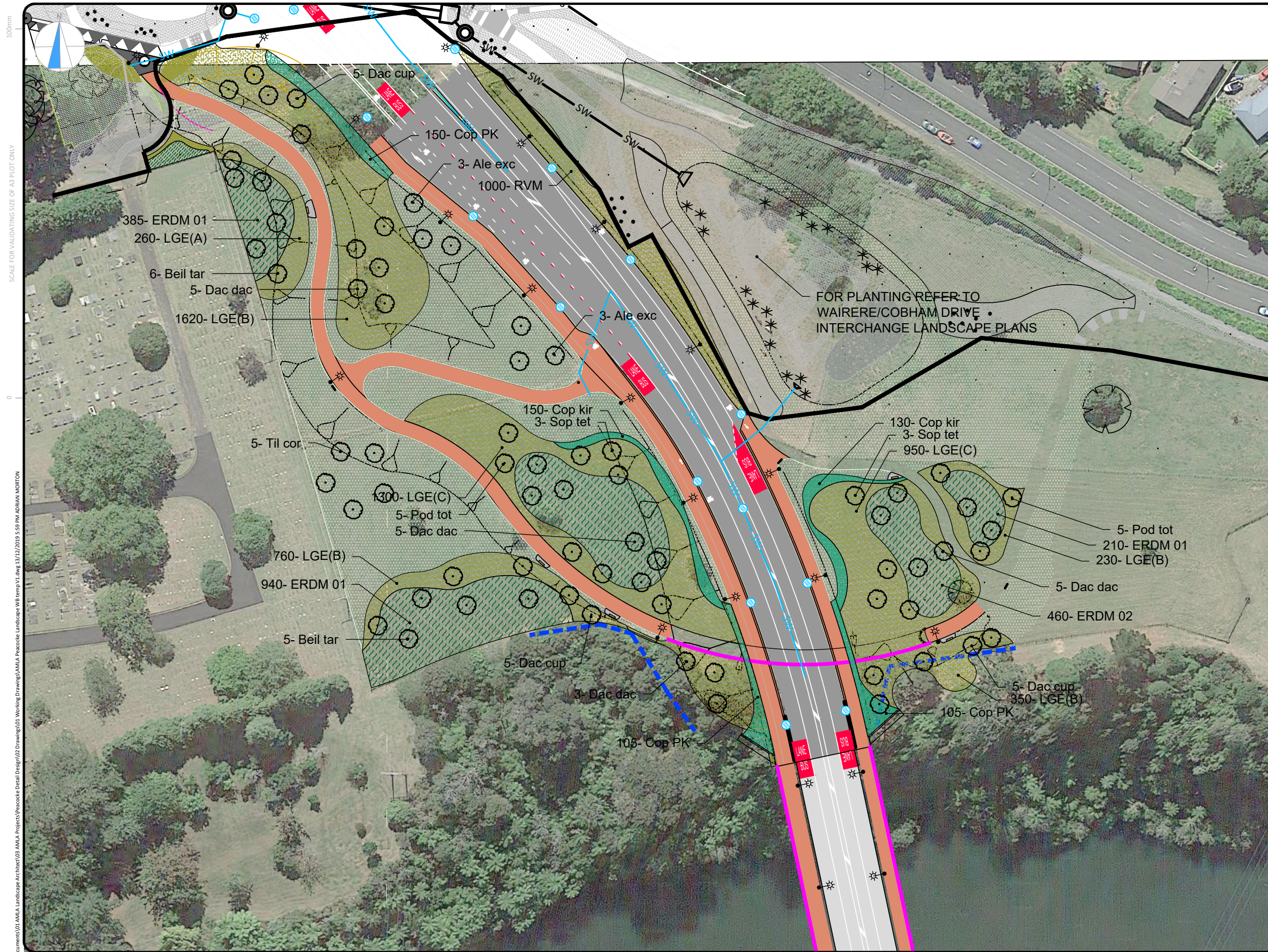


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# APPENDIX C

## LANDSCAPE PLANTING PLANS





**LEGEND**

- Open Space Grassland
- (WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)
- (WSE) Wetland Mix (shallow zone 0.3 to 0.6m)
- (RM) Riparian Mix (Wet margin 0-0.3m)
- (LSZ) Live Storage Zone Mix (Periodically inundated)
- (PEM) Pond Edge Mix (Predominantly dry)
- (RGP) Rain Garden Planting Mix
- (SBM) Swale Base Mix
- (SEM) Swale Edge Mix
- (LGE) Low Grow Edge Mix (A & B)
- (RVM) Road Verge Mix
- (ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht)
- Single Plant Species
- Future Landscape Ecological Planting (medium tall height)
- Native Specimen Tree
- Exotic Specimen Tree or Fruit Tree
- Trees to be Retained
- Trees to be Removed
- Contours
- Cut and Fill Profiles
- Drainage Outlet and Terrace Pools
- Concrete Cycle and Pedestrian Paths
- 1.5m wide gravel or exposed aggregate path
- Future Cycle and Pedestrian Paths
- Insect and Lizard Log Stack
- Stump Insect 'Hotel'
- Wetland pond
- Cycle speed restriction bars and bollard
- Drainage grates and covers
- Light column and lamp unit
- Seating with bin over exposed aggregate base
- Recreation circuit equipment over safety surface
- Tree protection fence
- Designation

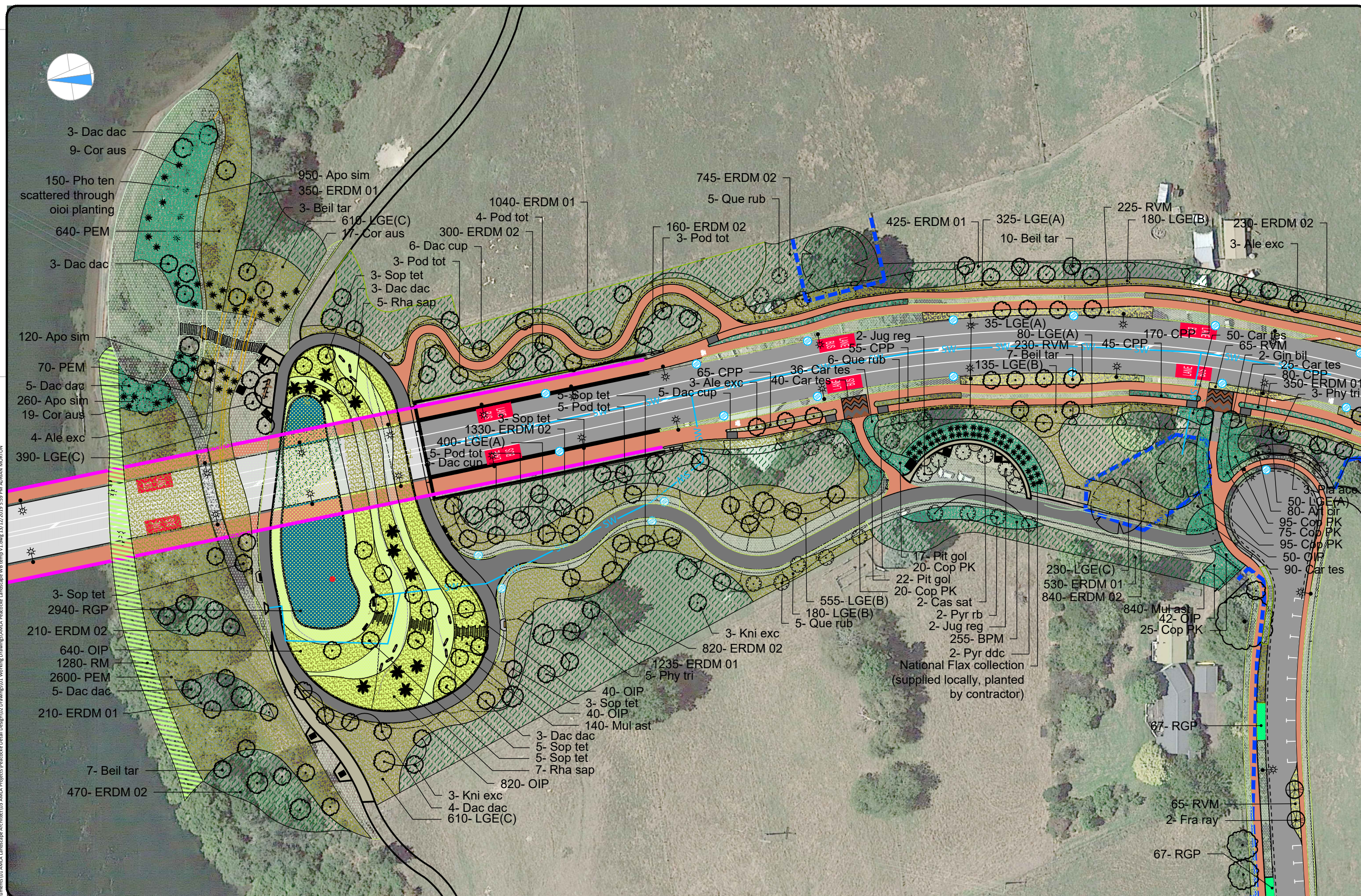
**GENERAL NOTES**

- All vegetation/tree removal to be approved and instructed by Engineer (consent condition).
- Stumps to be either removed (for reuse) or stump ground
- For Exercise Equipment information refer to Drawing 6210
- For Play Equipment information refer to Drawing 6211 to 6213

DESIGNED AM		CHECKED JG		 BLOXAM BURNETT & OLLIVER	Adrian Morton <b>Landscape Architects Ltd</b> Landscape Architecture :: Urban Design :: Environmental Planning	PROJECT <b>PEACOCKE STRATEGIC TRANSPORT PROJECT</b>	DRAWING <b>LANDSCAPE PROPOSALS PLANTING PLAN</b>	STATUS <b>TENDER</b>
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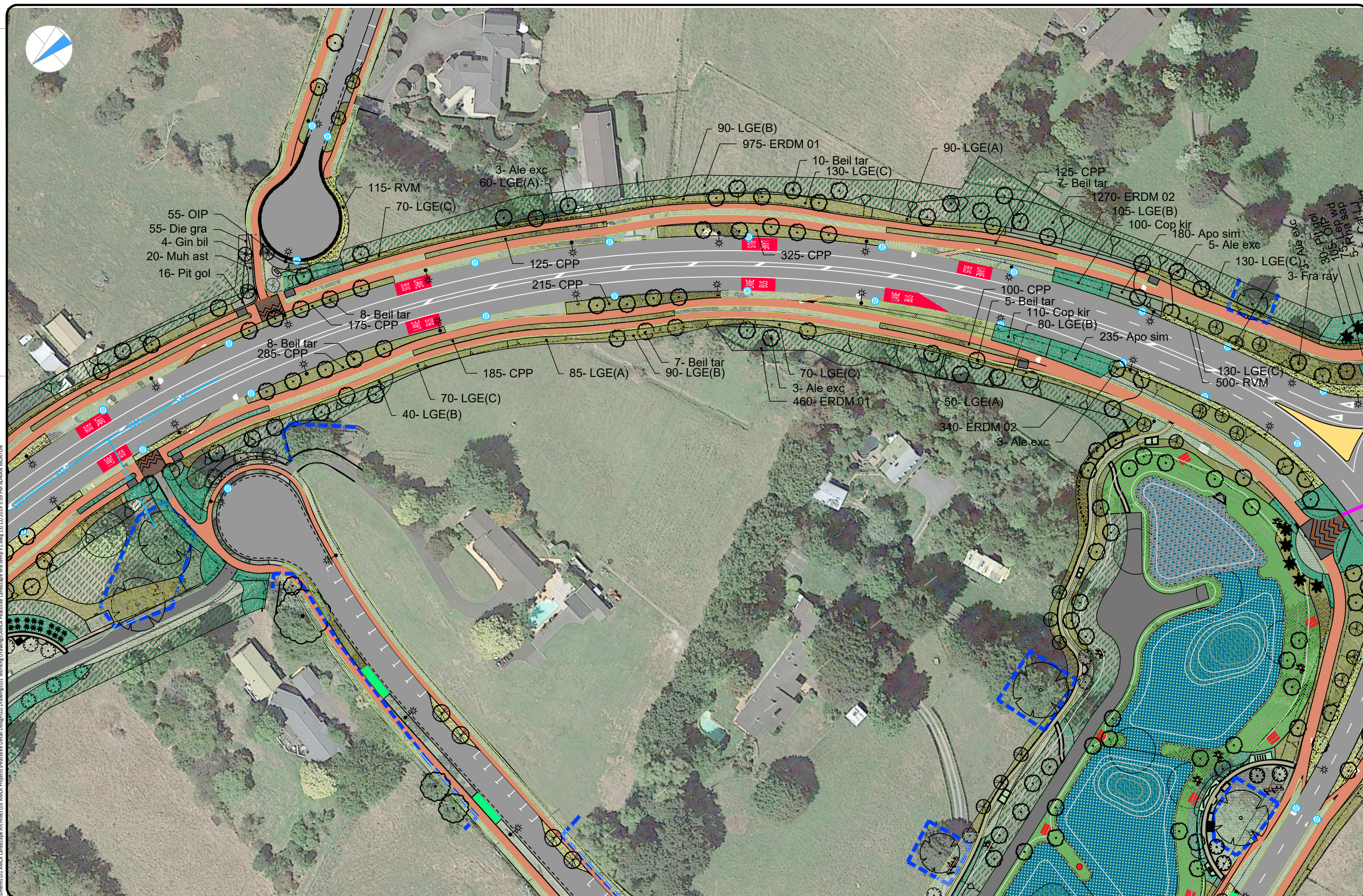
# PROJECT PEACOCKE STRATEGIC TRANSPORT PROJECT

DRAWING

LANDSCAPE PROPOSALS  
PLANTING PLAN

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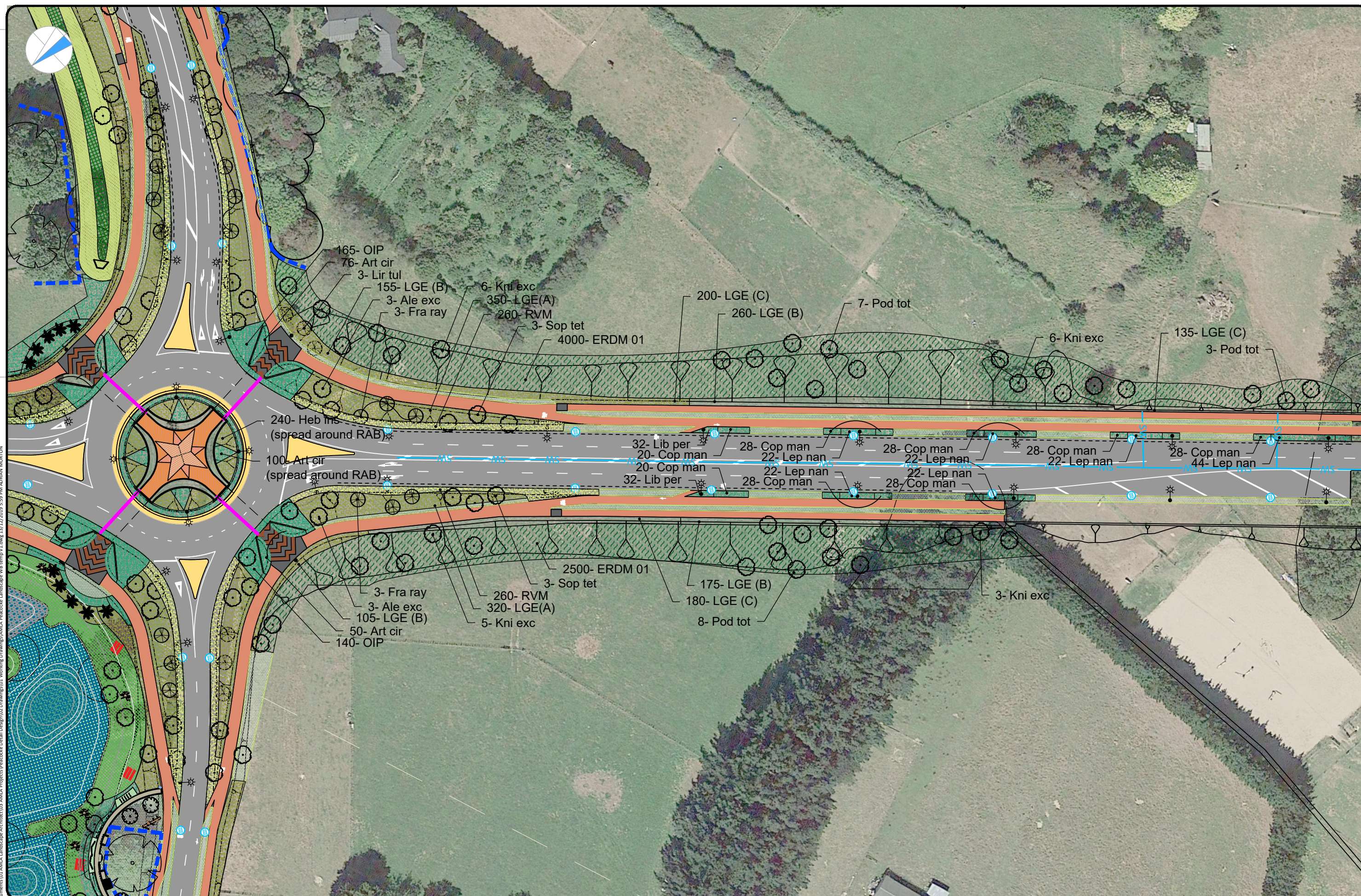
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LANDSCAPE PROPOSALS

PLANTING PLAN

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STRATEGIC TRANSPORT  
PROJECT

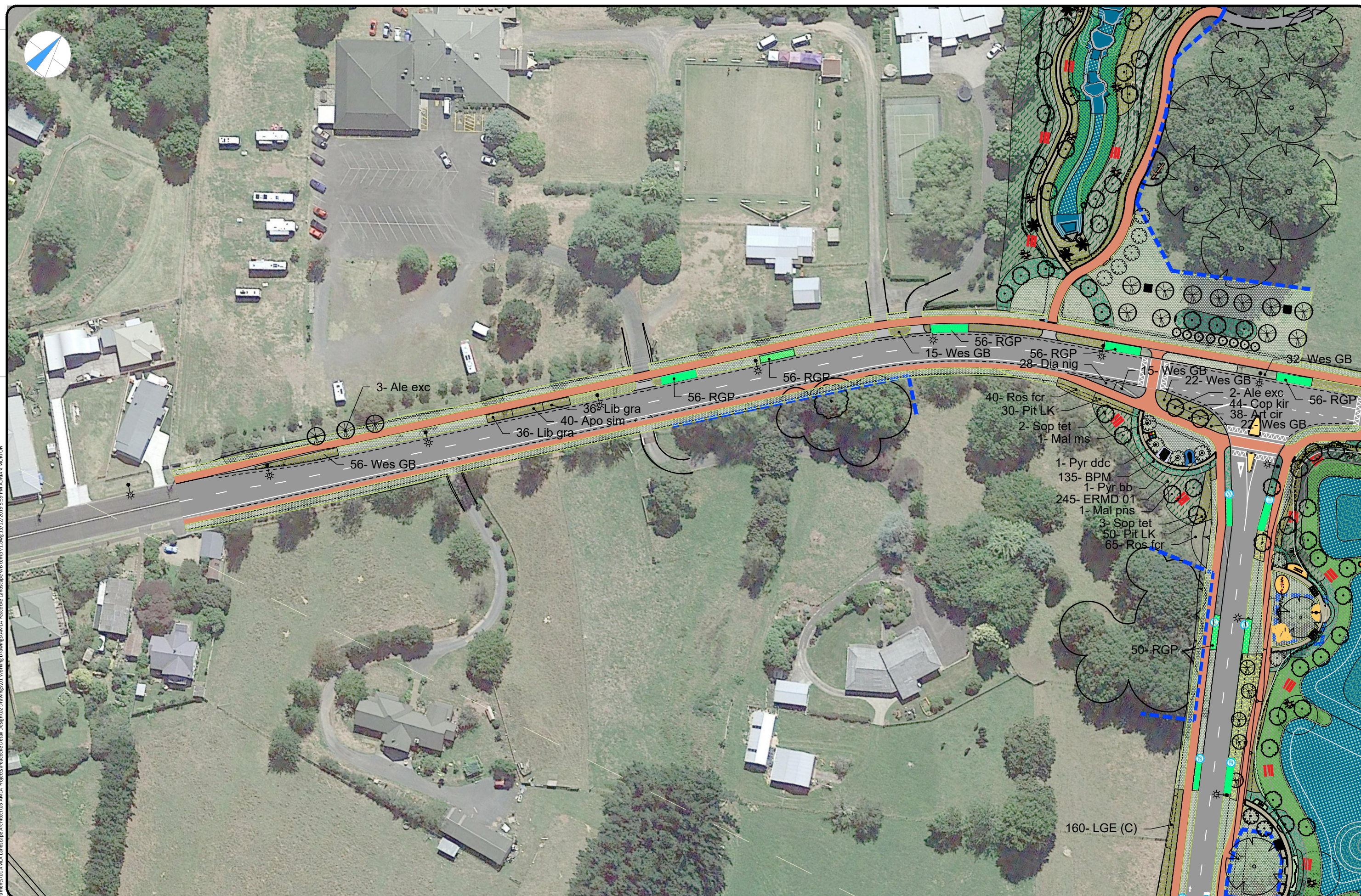
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LANDSCAPE PROPOSALS

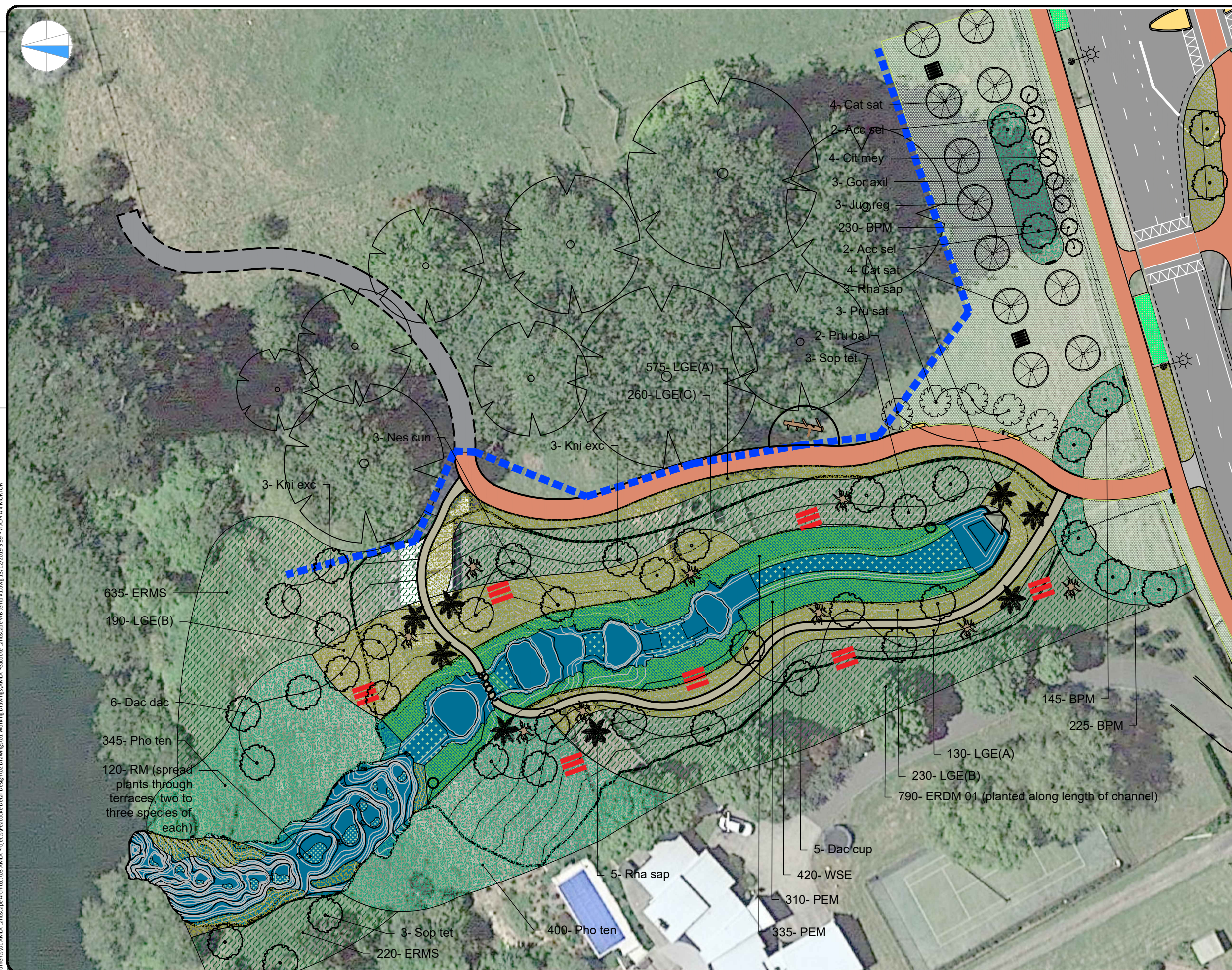
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DRAWING NUMBER			
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## LEGEND

- |  |   |
|--|---|
|  | Open Space Grassland  |
|  | (WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)                |
|  | (WSE) Wetland Mix (shallow zone 0.3 to 0.6m)                  |
|  | (RM) Riparian Mix (Wet margin 0-0.3m)                         |
|  | (LSZ) Live Storage Zone Mix (Periodically inundated)          |
|  | (PEM) Pond Edge Mix (Predominately dry)                       |
|  | (RGP) Rain Garden Planting Mix                                |
|  | (SBM) Swale Base Mix  |
|  | (SEM) Swale Edge Mix  |
|  | (LGE) Low Grow Edge Mix (A & B)                               |
|  | (RVM) Road Verge Mix  |
|  | (ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht) |
|  | Single Plant Species  |
|  | Future Landscape Ecological Planting (medium tall height)     |
|  | Native Specimen Tree  |
|  | Exotic Specimen Tree or Fruit Tree                            |
|  | Trees to be Retained  |
|  | Trees to be Removed   |
|  | Contours  |
|  | Cut and Fill Profiles   |
|  | Drainage Outlet and Terrace Pools                             |
|  | Concrete Cycle and Pedestrian Paths                           |
|  | 1.0 to 1.8m wide gravel paths                                 |
|  | Future Cycle and Pedestrian Paths                             |
|  | Insect and Lizard Log Stack                                   |
|  | Stump Insect 'Hotel'  |
|  | Wetland pond  |
|  | Cycle speed restriction bars and bollard                      |
|  | Drainage grates and covers                                    |
|  | Light column and lamp unit                                    |
|  | Seating with bin over exposed aggregate base                  |
|  | Recreation circuit equipment over safety surface              |

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mx model version:



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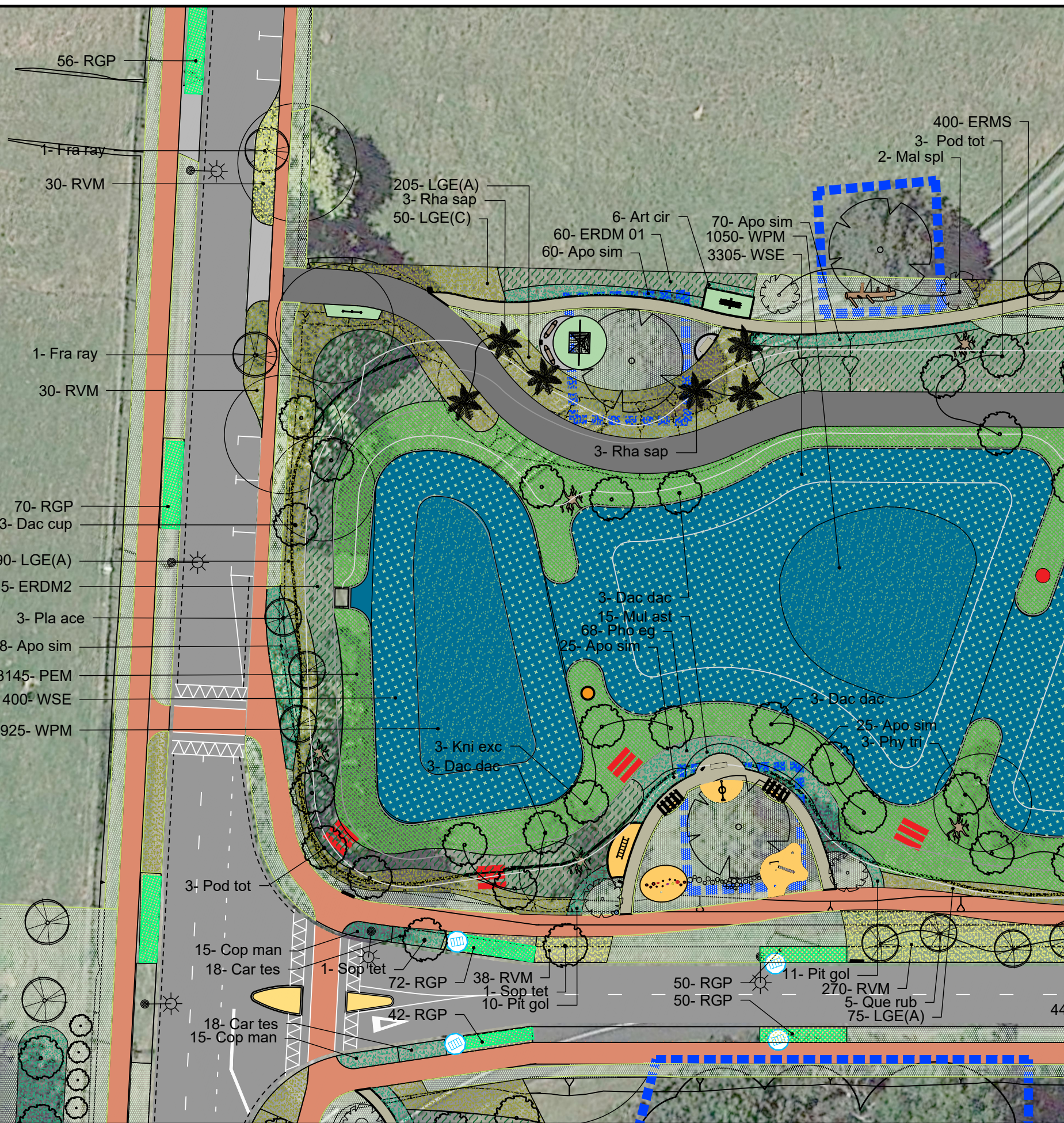


PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING  
LANDSCAPE PROPOSALS  
PLANTING PLAN

STATUS		TENDER	
DATE			
20/03/2020		SCALE (ORIGINAL SIZE A3)	
		1:500	
DRAWING NUMBER			REVISION
145900-001A-6105			A





	Open Space Grassland
	(WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)
	(WSE) Wetland Mix (shallow zone 0.3 to 0.6m)
	(RM) Riparian Mix (Wet margin 0-0.3m)
	(LSZ) Live Storage Zone Mix (Periodically inundated)
	(PEM) Pond Edge Mix (Predominantly dry)
	(RGP) Rain Garden Planting Mix
	(SBM) Swale Base Mix
	(SEM) Swale Edge Mix
	(LGE) Low Grow Edge Mix (A & B)
	(RVM) Road Verge Mix
	(ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht)
	Single Plant Species
	Future Landscape Ecological Planting (medium tall height)
	Native Specimen Tree
	Exotic Specimen Tree or Fruit Tree
	Trees to be Retained
	Trees to be Removed
	Contours
	Cut and Fill Profiles
	Drainage Outlet and Terrace Pools
	Concrete Cycle and Pedestrian Paths
	1.5m wide gravel or exposed aggregate path
	Future Cycle and Pedestrian Paths
	Insect and Lizard Log Stack
	Stump Insect 'Hotel'
	Wetland pond
	Cycle speed restriction bars and bollard
	Drainage grates and covers
	Light column and lamp unit
	Seating with bin over exposed aggregate base
	Recreation circuit equipment over safety surface
	Tree protection fence
	Designation

- All vegetation/tree removal to be approved and instructed by Engineer (consent condition).
- Stumps to be either removed (for reuse) or stump ground
- For Exercise Equipment information refer to Drawing 6210
- For Play Equipment information refer to Drawing 6211 to 6213

A	20.03.20	Tender issue		AM	JG
	DATE	ISSUE/REVISION DETAIL	BY	CHK	APPR

DESIGNED	CHECKED
AM	JG
DRAWN	APPROVED
AM	JG
mx model version:	



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 **Hamilton City Council**  
Te kaupapa o Kirikiriroa

PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

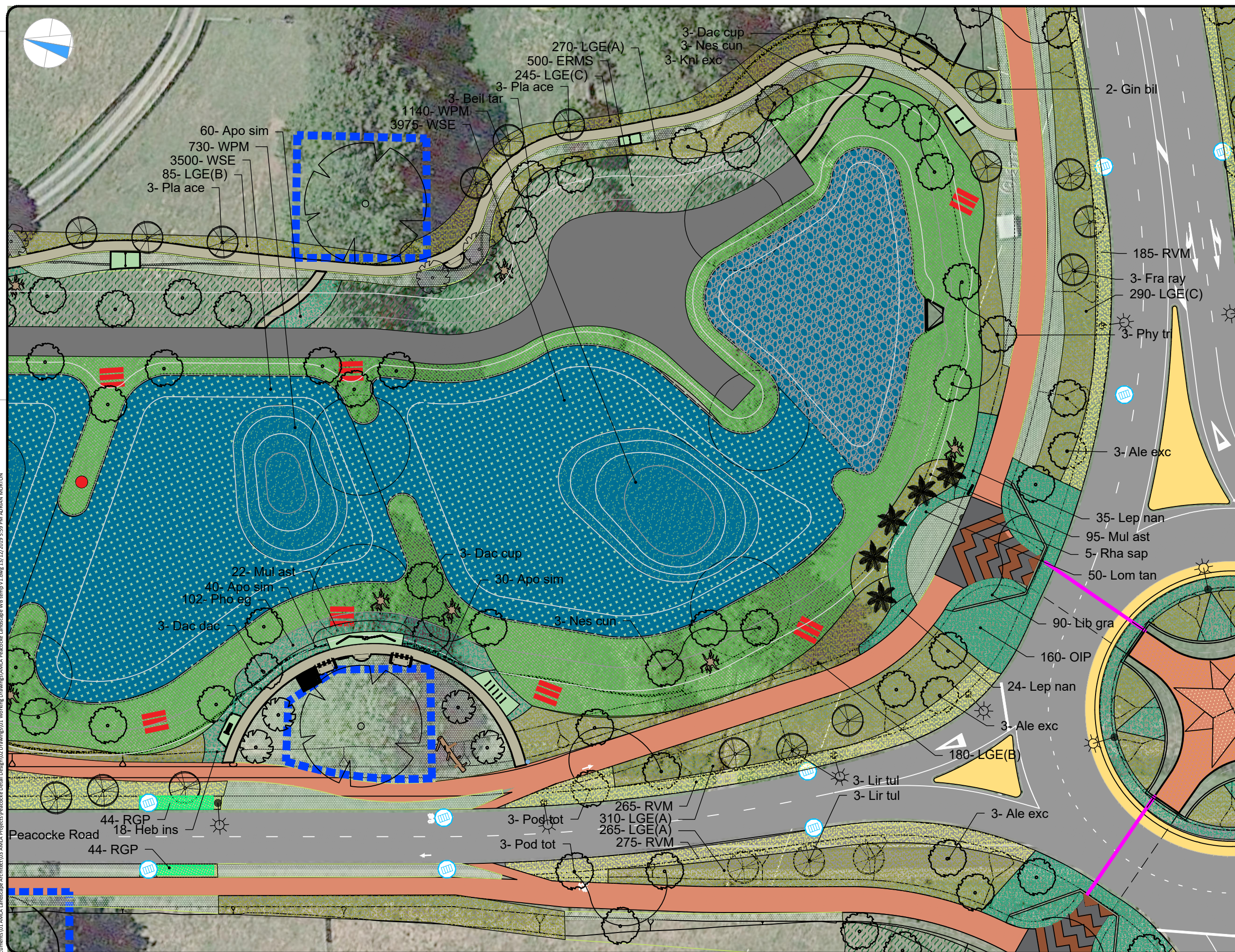
DRAWING

LANDSCAPE PROPOSALS

PLANTING PLAN

STATUS		TENDER	
DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:500	
DRAWING NUMBER 145900-001A-6306		REVISION A	





## LEGEND

- |  |   |
|--|---|
|  | Open Space Grassland  |
|  | (WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)                |
|  | (WSE) Wetland Mix (shallow zone 0.3 to 0.6m)                  |
|  | (RM) Riparian Mix (Wet margin 0-0.3m)                         |
|  | (LSZ) Live Storage Zone Mix (Periodically inundated)          |
|  | (PEM) Pond Edge Mix (Predominantly dry)                       |
|  | (RGP) Rain Garden Planting Mix                                |
|  | (SBM) Swale Base Mix  |
|  | (SEM) Swale Edge Mix  |
|  | (LGE) Low Grow Edge Mix (A & B)                               |
|  | (RVM) Road Verge Mix  |
|  | (ERMS or ERMD) Ecological Revegetation Mixes (medium tall ht) |
|  | Single Plant Species  |
|  | Future Landscape Ecological Planting (medium tall height)     |
|  | Native Specimen Tree  |
|  | Exotic Specimen Tree or Fruit Tree                            |
|  | Trees to be Retained  |
|  | Trees to be Removed   |
|  | Contours  |
|  | Cut and Fill Profiles   |
|  | Drainage Outlet and Terrace Pools                             |
|  | Concrete Cycle and Pedestrian Paths                           |
|  | 1.5m wide gravel or exposed aggregate path                    |
|  | Future Cycle and Pedestrian Paths                             |
|  | Insect and Lizard Log Stack                                   |
|  | Stump Insect 'Hotel'  |
|  | Wetland pond  |
|  | Cycle speed restriction bars and bollard                      |
|  | Drainage grates and covers                                    |
|  | Light column and lamp unit                                    |
|  | Seating with bin over exposed aggregate base                  |
|  | Recreation circuit equipment over safety surface              |
|  | Tree protection fence   |
|  | Designation   |

## GENERAL NOTES

- All vegetation/tree removal to be approved and instructed by Engineer (consent condition).
- Stumps to be either removed (for reuse) or stump ground
- For Exercise Equipment information refer to Drawing 6210
- For Play Equipment information refer to Drawing 6211 to 6213

A	20.03.20 DZIF	Tender issue	ISSUE/REVISION DETAIL	AM BY	AM CHK	JG APP

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AM	JG
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AM	JG

mx model version:



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Landscape Architecture :: Urban Design :: Environmental Planning



PROJECT  
PEACOCKE  
STRATEGIC TRANSPORT  
PROJECT

DRAWING

LANDSCAPE PROPOSALS

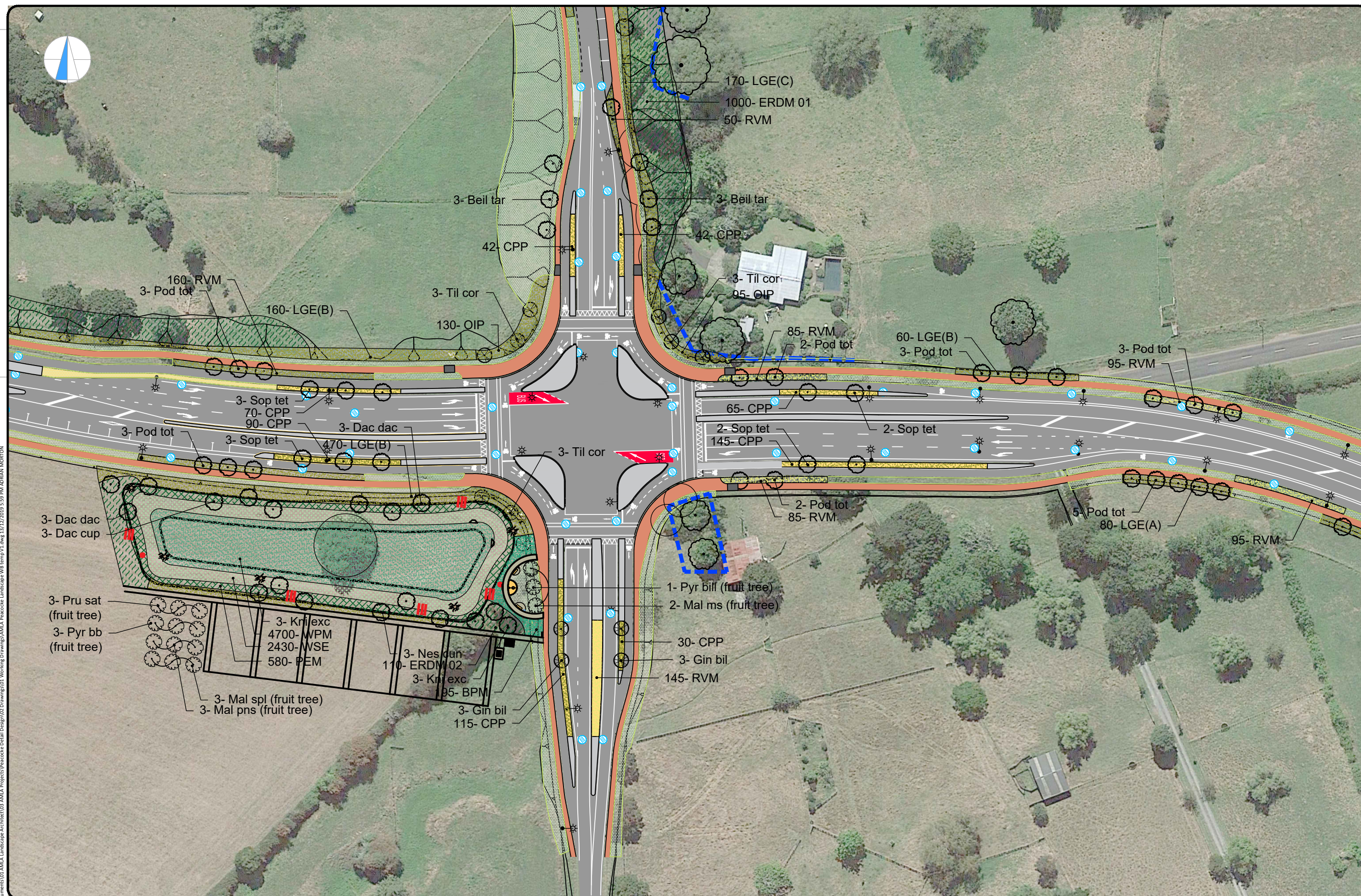
PLANTING PLAN

STATUS		TENDER	
DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:500	
DRAWING NUMBER 145900-001A-6307		REVISION A	



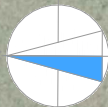






			DESIGNED AM			CHECKED JG			 BLOXAM BURNETT & OLLIVER	Adrian Morton Landscape Architects Ltd Landscape Architecture :: Urban Design :: Environmental Planning	PROJECT PEACOCKE STRATEGIC TRANSPORT PROJECT	DRAWING LANDSCAPE PROPOSALS PLANTING PLAN	STATUS TENDER	
			DRAWN AM			APPROVED JG							DATE 20/03/2020	SCALE (ORIGINAL SIZE A3) 1:1000
													DRAWING NUMBER 145900-001A-6309	REVISION A
A 20.03.20 Tender issue			AM	AM	JG	mx model version:								
DATE ISSUE/REVISION DETAIL														





	Open Space Grassland
	(WPM) Wetland Pond Mix (deep Zone 0.6 to 1.0m)
	(WSE) Wetland Mix (shallow zone 0.3 to 0.6m)
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	Cut and Fill Profiles
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- Stumps to be either removed (for reuse) or stump ground
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- For Play Equipment information refer to Drawing 6211 to 6213

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DESIGNED AM	CHECKED JG
DRAWN AM	APPROVED JG

mx model version:



**Hamilton City Council**  
Te Kaitiaki o Kaitiaki

## PROJECT PEACOCKE STRATEGIC TRANSPORT PROJECT

DRAWING

LANDSCAPE PROPOSALS

PLANTING PLAN

STATUS		TENDER	
DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:1000	
DRAWING NUMBER 145900-001A-6310		REVISION A	





										DESIGNED AM JG		CHECKED JG		 BLOXAM BURNETT & OLLIVER	PROJECT Adrian Morton <b>Landscape Architects Ltd</b> Landscape Architecture :: Urban Design :: Environmental Planning	DRAWING <b>LANDSCAPE PROPOSALS</b> <b>PLANTING PLAN</b> Weston Lea Drive	STATUS <b>TENDER</b>						
										DRAWN AM JG							DATE 20/03/2020		SCALE (ORIGINAL SIZE A3) 1:1000				
A 20.03.20 Tender issue										AM BY		AM CHK					JG APP		max model version:		DRAWING NUMBER 145900-001A-6311		REVISION A
ISSUE/REVISION DETAIL																							







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## **APPENDIX D**

### PEACOCKE TRANSFER PUMP STATION








- LEGEND:**
- SITE BOUNDARY
  - SECURITY FENCE
  - P. TOTARA*
  - A. EXCELSUS*  
*S. TETRAPTERA*
  - C. AUSTRALIS*  
*R. SAPIDA*
  - P. CRASSIFOLIUM*
  - AMENITY MIX 1
  - AMENITY MIX 2
  - RE-VEGETATION MIX 1
  - RE-VEGETATION MIX 2
  - VERGE MIX 1
  - VERGE MIX 2
  - P. TENAX*

PLAN



OUTLINE PLAN SUBMISSION

Revision	Amendment	Approved	Revision Date
A	FOR PRELIMINARY DESIGN REVIEW	ISP	2019.12.05
B	REVISED FOLLOW PRELIM DESIGN	RD	2020.03.02
C	OUTLINE PLAN SUBMISSION	JC	2020.04.30

  			<b>FOR INFORMATION</b> NOT FOR CONSTRUCTION			Project HAMILTON CITY COUNCIL PEACOCKE STRATEGIC WASTEWATER		
Designed J. BYRNE			Approved J. COOKE			Approved Date 2020.04.30		
Drawn B. TOSIC			Scales 1:500 @ A1			Project No. 3255182-AL-001		
						Sheet No. AL-001		
						Revision C		



# Peacockes N4 - Planting Palette

## PLANTING PHILOSOPHY

The planting design aims to provide regenerative planting which promotes ecological enhancement and biodiversity of the area as well as building upon some of the key design principles set out in the *Peacocke Infrastructure Project - Concept Landscape Management Plan (CLMP) 2019* document;

- *Protect and enhance the visual amenity for local road users and protect and enhance views in relation to future residential development areas*
- *Define significant points along the corridor and include stopping points with interpretive wayfinding signage as part of the pedestrian and cycle network with signage reflecting the historic, cultural and environmental narratives of the area*
- *Integrate stand-alone public art into the open space and integrate art finishes within the form and finish of structures to celebrate the historic, cultural and environmental narratives of the area*
- *Minimise long term maintenance requirements with the use of appropriate plant mixes*
- *Follow recommendations of CPTED, particularly in association with public space, footpath and cycle facilities*

The plant mixes are made up of low growing verge and amenity mixes to the public realm spaces within the site, this approach will provide passive surveillance for users and also frame the building and feature facade as a sculpture on this future intersection. The backdrop of the building will be dense revegetation mixes which aim to enhance and link ecological habitats across the greater Peacockes Infrastructure Project.

The species selection has been derived from the approved schedules listed in the CLMP document which have met HCC requirements and NZTA Guidelines and aim to provide appropriate low maintenance requirements and achieve the long-term objective of successional planting where possible.



### AMENITY MIX 1:



*Muehlenbeckia axillaris*  
Pohuehue



*Phormium cookianum*  
Wharariki



### AMENITY MIX 2:



*Apodasmia similis*  
Oioi



*Dianella nigra*  
Turutu



*Libertia ixioides*  
Mikoikoi, Tukauki



*Muehlenbeckia axillaris*  
Pohuehue



*Phormium cookianum*  
Wharariki



### RE - VEGETATION MIX 1:



*Austroderia fulvida*  
Toi Toi



*Coprosma acerosa*  
Tatarahake



*Corokia cotoneaster*  
Korokio



*Griselinia littoralis*  
Kapuka



*Kunzea ericoides*  
Kanuka



*Leptospermum scoparium*  
Manuka



*Muehlenbeckia astonii*  
Shrubby Tororaro



*Myrsine australis*  
Red Mapou



*Phormium tenax*  
Harakeke



### RE - VEGETATION MIX 2:



*Coprosma robusta*  
Karamu



*Corokia cotoeaster*  
Korokio



*Dodonaea viscosa*  
Green Ake Ake



*Hebe stricta*  
Koromiko



*Leptospermum scoparium*  
Manuka



*Phormium tenax*  
Harakeke



OUTLINE PLAN SUBMISSION

Revision	Amendment	Approved	Revision Date
A	OUTLINE PLAN SUBMISSION	JC	2020.04.30



Project			Sheet		
HAMILTON CITY COUNCIL			PEACOCKE STRATEGIC WASTEWATER		
			LANDSCAPE PLANTING PALETTE 1 OF 2		
Designed	Approved	Approved Date	Project No.	Sheet No.	Revision
J. BYRNE	J. COOKE	2020.04.30	3255182-AL-101	AL-101	A
Drawn	Scales				
B. TOSIC	NA				



► Peacocks N4 - Planting Palette



VERGE MIX 1:



*Dianella nigra*  
Turutu



*Libertia grandiflora*  
Tukauki / Mikoikoi



VERGE MIX 2:



*Arthropodium cirratum*  
Rengarenga



*Coprosma acerosa*  
Tatarahake



*Carex testacea*  
Sedge



*Dianella nigra*  
Turutu



*Lobelia angulata*  
Panakenaka



*Phormium cookianum*  
Wharariki



INDIVIDUAL PLANT SPECIES:



*Phormium tenax*  
Harakeke



TREES:



*Alectryon excelsus*  
Titoki



*Cordyline australis*  
Ti Kouka



*Pseudopanax crassifolius*  
Lancewood



*Podocarpus totara*  
Totara



*Rhopalostylis sapida*  
Nikau palm



*Sopora tetraptera*  
Kowhai



OUTLINE PLAN SUBMISSION

Revision	Amendment	Approved	Revision Date
A	OUTLINE PLAN SUBMISSION	JC	2020.04.30



Designed	Approved	Approved Date
J. BYRNE	J. COOKE	2020.04.30
Drawn	Scales	
B. TOSIC	NA	

Project	Sheet No.	Revision
HAMILTON CITY COUNCIL		
PEACOCKE STRATEGIC WASTEWATER		
Sheet		
LANDSCAPE		
PLANTING PALETTE 2 OF 2		
Project No.	3255182-AL-102	
	AL-102	A