

Auckland Unitary Plan Operative in part

Plan Change 46 (Private): Drury South

Operative 29 October 2021

Enclosed:

- Public Notice
- Seal page
- Clause 20As
- Operative version

Public Notice

Auckland Unitary Plan

Plan Change to become operative

Resource Management Act 1991 (the Act)

Plan Change 46 (Private): Drury South

At its meeting on 3 June 2021 the council resolved to approve the above plan change to the Auckland Unitary Plan following the completion of the statutory processes.

The operative date is 29 October 2021.

The updated district plan and background information may be viewed at the following www.aucklandcouncil.govt.nz/planchanges

Dated 22 October 2021.

**Find out more: phone 09 301 0101
or visit aucklandcouncil.govt.nz**

Seal Page

**Auckland Unitary Plan
Plan Change 46 (Private): Drury South**

THE COMMON SEAL of the **AUCKLAND COUNCIL** was hereby affixed under the
authority of council :



A handwritten signature in blue ink, appearing to read "C. Sell".

Mayor / Deputy Mayor / Chief Executive / Chief Officer

A handwritten signature in black ink, appearing to read "H. W. G.". The signature is more stylized and complex than the one above.

Deputy Mayor / Chief Executive / Chief Officer / General Counsel

This plan change became operative on 29 October 2021

Clause 20As

1. Clause 20A changes to text – Reinsert Appendix 2
2. Clause 20A changes to text –Numbering corrections
3. Clause 20A changes to text – Precinct Name

1. Clause 20A changes to text – Reinsert Appendix 2

Memo

Date: 19 October 2021

To: Celia Davison – Manager Planning - Central/South
 From: Sanjay Bangs – Senior Policy Planner - Central/South

Subject: Plan Modification: Clause 20A modification to Auckland Unitary Plan





Corrections are required to the Auckland Unitary Plan (Operative in Part) 2016 (the AUP).

I seek your approval of this plan modification pursuant to clause 20A, first schedule, Resource Management Act 1991.

You have delegated authority, as a tier four manager, to make a decision to correct an error to an operative plan under clause 20A. Schedule 2A of the Auckland Council Combined Chief Executives Delegation Register authorises all powers, functions, and duties under RMA's first schedule (except clause 17 which cannot be delegated) to tier four positions.

| | |
|--|---|
| Rule or Section of Unitary Plan | Chapter I Precincts: I410.11.1 Drury South Industrial Precinct Appendix 1 |
| Subject Site (if applicable) | Multiple sites within the Drury South Industrial and Mixed Use Precinct at Quarry Road, Fitzgerald Road and Ramarama Road, Drury |
| Legal Description (if applicable) | - |
| Nature of change | <p>Plan Change 4 (PC4) amended Chapter I140.11.1 Drury South Industrial Precinct Appendix 1 of the AUP, in order to address technical errors and update references. However, when the AUP was updated to reflect PC4, Appendix 2 from Chapter I140.11.1 was omitted in error. This was not proposed to be deleted by PC4.</p> <p>Therefore, Chapter I140.11.1 needs to be amended to reinsert the Appendix 2 text deleted in error.</p> <p>Note: This is the first of three changes to the Chapters I140 and I410.11.1 in this AUP update.</p> |
| Effect of change | The changes have no effect, as the text being reinserted was never deleted by PC4. The effect of the changes are both neutral and less than minor. No person would benefit or be prejudiced by these changes. |
| Changes required to be made (text/in-text diagrams) | Refer to markups shown in red in Attachment 1 . |
| Changes required to be made (maps) | N/A |
| Attachments | Attachment 1: Text changes |

¹ updated February 2021 and available on Kotahi at [Delegation Register](#)

| | |
|--|---|
| <p>Prepared by: Sanjay Bangs Senior Policy Planner</p> | <p>Text Entered by: Sarah El Karamany Planning Technician</p> |
| <p>Signature:</p>  | <p>Signature:</p>  |
| <p>Maps prepared by: N/A Geospatial Analyst</p> | <p>Reviewed by: Craig Cairncross Team Leader - Central/South</p> |
| <p>Signature:</p> | <p>Signature:</p>  |
| <p>Decision: I agree/disagree to authorise the Clause 20A modification using my delegated authority</p> <p>Celia Davison Manager Planning - Central/South Date: 27 October 2021</p> | |
| <p>Signature:</p>  | |

Attachment 1: Text changes

Attachment One

I410.11.1: Attachment 5 (Drury South Industrial Appendix)

APPENDIX: DRURY SOUTH INDUSTRIAL PRECINCT _SUBDIVISION DESIGN ASSESSMENT CRITERIA

PURPOSE OF APPENDIX I410.11.1

Within the Drury South Industrial Precinct, applications for any subdivision or any development of land which precedes a subdivision being undertaken which complies with Standard I410.6.3 as a restricted discretionary activity will be assessed in terms of a series of matters to which the Council will restrict the exercise of its discretion. One of the matters which the Council will have regard to as set out in standard I410.8.2(1)(d) is:

the extent to which subdivision design and layout gives effect to the objectives and policies identified for the Drury South Industrial Precinct and the subdivision design assessment criteria set out in Appendix I410.11.1.

In addition, the criteria will also be used in the consideration of discretionary applications for subdivision, as appropriate.

This appendix sets out assessment criteria under a number of "Design Elements". Accompanying illustrations are intended to support the text and represent good design solutions, but are not intended to represent the only design solution. All illustrations are indicative only.

Each Design Element includes an explanation, which summarises the rationale for the particular Design Element and expands on the individual criteria. The explanation may be used as further guidance in interpreting the intention of the criteria and assessing the extent to which the proposal accords with them.

INFORMATION REQUIREMENTS

The applicant shall provide a written assessment describing how the criteria for each Design Element are addressed. Applicants will have to demonstrate that the provisions of the criteria have been acknowledged.

It is recognised that certain proposals will not achieve absolute accord with all criteria. Where necessary, in regard to a criterion demonstrably not met, the applicant shall explain with reference to the explanation for the particular Design Element:

- whether site constraints inhibit the ability to address the criterion, and/or;
- how the intention of the criterion is met by the proposal, and/or ;
- whether the proposal represents a better design solution than that suggested by the criterion.

Planting plans and maintenance plans for recreation and esplanade reserves and stormwater management areas will need to be submitted with applications for subdivision consent and approved by the Council.

Design Element 1: Road, Reserve and Access Networks:

1. Earthworks should be undertaken principally at the initial subdivision stage, and where appropriate the creation of reasonably flat sites should occur at the bulk earthworks stage (in order to avoid creating retaining walls at site development stage).
2. Road patterns should maximise convenient / direct access to the Maketu Road and limit connection to existing rural roads (such as Ararimu Road) except where this relates to the wider essential network.
3. The road pattern should facilitate access to and accessibility within Sub-precinct C Mixed Use.
4. Road patterns should be logical and contribute to the legibility of and ease of wayfinding within the area (refer Diagrams 1 and 2 for generic legibility and proposed street hierarchy).
5. Subdivision layout design should achieve protection and enhancement of all significant streams / tributaries to be retained and their riparian corridors (20m minimum either side from edge of stream) and concentrate open space as part of the riparian network (refer Diagram 3).
6. Subdivision layout design should achieve an interconnected open space and movement network.
7. Safe pedestrian and cycle routes through the structure plan area should be integrated with the riparian, reserve and road design.
8. Equestrian bridle trails should be integrated with riparian reserve development and provide access to the large centrally located public open space / stormwater management area.

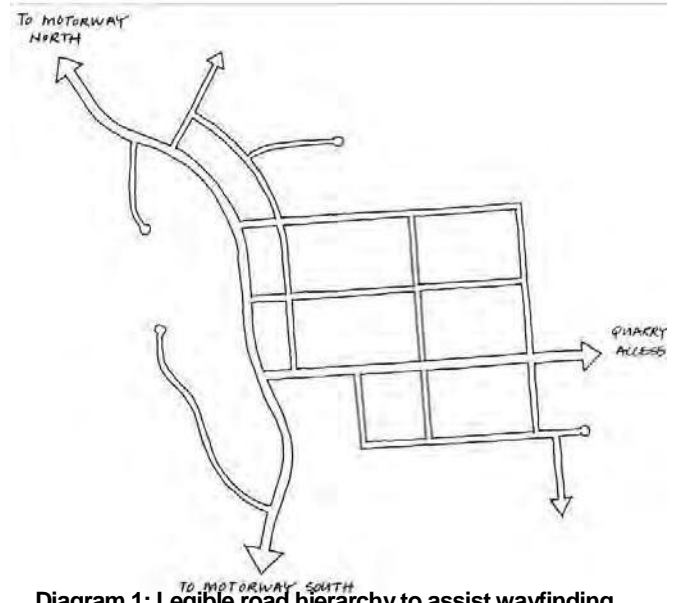
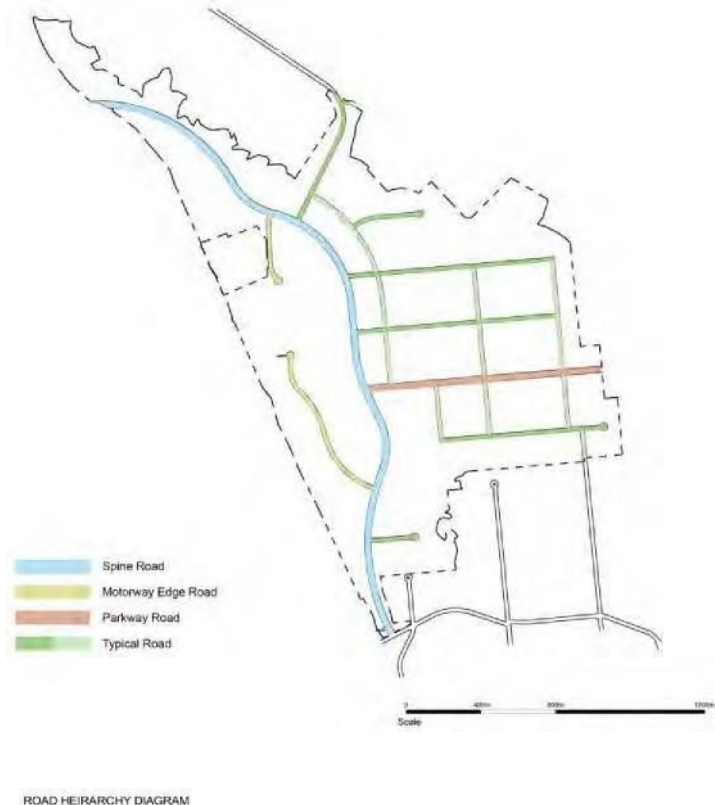


Diagram 1: Legible road hierarchy to assist wayfinding



ROAD HIERARCHY DIAGRAM

Diagram 2: Road hierarchy

9. Layouts should retain mature trees within the riparian corridors, particularly those of indigenous species.
10. In Motorway Edge Sub-precinct areas layouts should seek to retain as many existing established trees, particularly those of indigenous species, as possible.
11. In Motorway Edge Sub-precinct, areas access to sites off the Maketu Road should be combined wherever practicable.

Explanation:

Design Element 1 pertains to the overall site topography and the general layout of the networks of roads, reserves and other access linkages that make up the public space of the Drury South Industrial Precinct. These should be considered in an integrated fashion together with the development blocks that they create.

The existing site topography within the proposed Industrial Precinct is relatively flat although bulk earthworks including cut and fill will be required to establish levels for future development above the flood plain and appropriate falls across the land.

The riparian corridors of the Hingaia and Maketu Streams and their significant tributaries will remain an important feature of the site topography once the Precinct is established. Vegetation associated with these corridors is also important to the structuring, screening and ecology of the area and its proposed activities.

The riparian corridors also provide a focus for future recreation and open space development and form part of the enhancement framework for the Precinct.

The road network and hierarchy (refer Diagrams 1 and 2), has been designed to efficiently direct traffic into and out of the Precinct connecting to the Southern Motorway (SH1) at both the Ramarama (south) and Drury (north) interchanges. The proposed Spine Road is important to the legibility and traffic efficiency of the Precinct; this route will provide the primary connection into and out of the Precinct with other streets connected to the Maketu Road through corridor.

The proposed street network has also been designed to limit the impact of vehicles destined for the Precinct on existing rural residential and community roads such as the road accessing and adjacent to the Ramarama School. Implementation of the street network to achieve the beneficial improvements to heavy vehicle (including quarry truck) and other Precinct related traffic movement is imperative as a part of delivery of the zone.



Diagram 3: Open space concentrated along Hingaia, Maketu, Roslyn and Northern Diversion Stream corridors

By its nature the Sub-precinct C Mixed Use will require a finer grain street network with smaller street blocks, greater walkability, good service access and parking.

A legible road pattern (refer Diagram 1) is one that is easily understandable for the people that use it and that provides cues for first time users as well as those habitual users. Consistent road design and landscape themes can further emphasise the position of each street in the road hierarchy and in the pattern of streets in the wider area. Road patterns that are logical and easy to comprehend and navigate make an area feel more comfortable and help to provide a sense of identity.

Design Element 2 - Block Size, Lot Type and Orientation:

1. Blocks should be of a scale and shape to achieve a permeable street layout suited to the functional requirements of the proposed land use.
2. All lots should front onto and be accessed directly from a legal road. Rear lots are to be avoided (refer Diagram 4).
3. Through lots (with dual road frontage) are permissible (refer Diagram 4).

Explanation:

Design Element 2 describes the principles for consideration in the layout of blocks and lots within the Precinct.

Blocks within an industrial area are typically larger than those within finer grain residential or Mixed Use areas. A good permeable and well connected-street network is however still required in Light and Heavy Industry Sub-precincts A, B and E to facilitate access, provide an appropriate street address and reduce traffic volumes on side streets. Within Sub-precinct C Mixed Use, Design Element 1 also provides opportunities for views through to the open space corridor to the west of the Sub-precinct from Maketu Road.

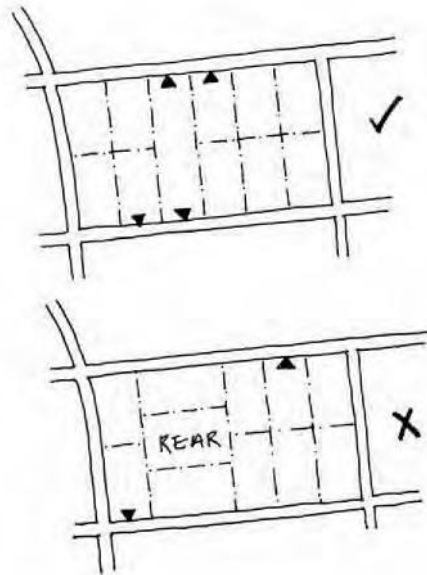


Diagram 4: All lots should front onto a legal road; through lots are permissible

Lots need to be of a size and shape to accommodate large scale, land extensive land uses and flexible to enable reasonable long term growth. At the same time rear lots are considered undesirable with a preference for development to address the street.

Design Element 3: - Roads and Accessways:

1. In addition to Auckland Transport Code of Practice and Council's Development Code requirements, minimum road and design elements should be appropriate to the nature of the function that they provide and also reflect urban design legibility considerations – i.e. wayfinding, as set out in Table 1 below.
2. Cyclists should be accommodated on the street carriageway.
3. A consistent palette of traffic management tools should be used across the Precinct. Traffic management devices such as chicanes, speed humps and other such restrictive management devices are not expected, however the use of thematic planting and measures such as localised narrowing to create thresholds or define changes in the street environment could be used.

4. All streets are required to accommodate strong avenue specimen tree planting. Refer Cross Sections Attachment 1. This planting is required to achieve the breaking up of the overall scale of the development particularly as seen from elevated locations, as well as to establish the enhanced expected amenity and character of the Precinct.
5. In addition to the street avenue planting a planted central median is also required on the roads identified as 'Arterial' and 'Parkway'.

Explanation:

Design Element 3 pertains to principles for the design of roads and other access routes within the Precinct. Road design should be appropriate to function and provide practical widths for vehicular access, including for emergency vehicles, parking, planting and services.

Pedestrian and cycle paths should generally be integrated with road and reserve design. Paths which are separated from vehicle routes should be designed for safety.

Table 1 below sets out the indicative function and design elements of the collector roads within the Drury South Industrial and Mixed Use precinct.

Table 1 – Indicative Road Function and Required Design Elements

| Road Name | Proposed Role and Function of Road in Precinct Area | Freight or Heavy Vehicle Route | Minimum Road Reserve ² | Total Number of Lanes | Design Speed (kph) | Access Restriction | Bus Provision ⁴ | Median | Cycle Provision ⁵ | Pedestrian Provision |
|---|---|--------------------------------|-----------------------------------|-----------------------|--------------------|--------------------|----------------------------|---------------|------------------------------|----------------------|
| Maketu Road ¹ South of Link Road | Arterial | Yes | 33.45m | 4 | 60 | Yes ³ | Yes | No | Yes – separated | Both Sides |
| Maketu Road (North of Link Road) | Collector | Yes | 27.65m | 2 | 60 | Yes ³ | Yes | Yes (Flushed) | Yes | Both Sides |
| New Quarry Access Road ¹ | Collector | Yes | 27.65m | 2 | 50 | No | Yes | Yes (Flushed) | Yes – shared path | Both Sides |
| Link Road | Collector | Yes | 27.65m | 2 | 60 | No | Yes | Yes (Flushed) | Yes | Both Sides |
| Ramarama Road (Fitzgerald Road Connection) | Collector | Yes | 21m | 2 | 50 | No | Yes | Yes (Flushed) | Yes | Both Sides |

Note 1: Already have Engineering Plan Approval and are under construction

Note 2: Typical minimum cross section which may need to be varied in specific locations where required to accommodate batters, structures, intersection design, significant constraints or other localised design requirements.

Note 3: Refer to Assessment Criteria I410.8.1(2)

Note 4: Carriageway lanes and geometry of intersections capable of accommodating buses.

Note 5: Type of cycle provision, i.e. separated or shared path, to be confirmed at the Engineering Plan Approval stage, based on nature and character of the Local Road.

Design Element 4: Reserves, Stormwater Management Areas and Riparian Planting:

1. Stormwater detention and treatment reserves should be located in general accordance with the locations shown in the Drury South Industrial Precinct Plan and in accordance with the relevant stormwater discharge consents, the Council's Development Code and relevant technical publications. The Cross Sections (Attachment 2) illustrate the Typical Wetland Stormwater Pond and Typical Stream Corridor Cross Sections.
2. Stormwater ponds should be designed to fit in with the surrounding landscape and appear as an integrally designed infrastructural component of the overall setting.
3. Vegetated buffers, not less than 40m in total width for any retained permanent or diverted stream, should be provided on the margins of streams, ponds and wetlands and should:
 - Include native species as identified in Attachment 3;
 - Include native trees on the lower and upper banks of ponds predominantly to the north and west to provide shade;
 - Provide a minimum of 10m of native planting either side of the stream corridor including shallow water rushes and sedges;
 - Avoid vegetation that will exacerbate flooding and the blockage of water flow along the immediate riparian corridor.

The only exception to these requirements is the retained permanent stream in the northwest of the Precinct (adjacent to the Transpower site) which will be subject to a minimum requirement of 10m of native planting either side of the stream corridor only.

Note: Attachment 5 sets out 'Stream and Wetland Rehabilitation Guidelines (June 2013) for the DSSP area.

4. Walkways / cycleways along riparian corridors and through buffer planting should be designed to minimise any impacts on ecological function and give due consideration to personal safety and Crime Prevention Through Environmental Design (CPTED) principles.
5. Edge buffer reserves should be located in accordance with the Drury South Industrial Precinct Plan, be a minimum of 30m in width and be planted in generally accordance with Diagram 5 below. Planting should be fast growing rural shelter belt species capable of attaining a minimum height of 6 metres at maturity.



Diagram 5: Typical landscape buffer cross section

6. Suitable mechanisms to ensure the establishment and ongoing maintenance of landscaping of reserves and stormwater management areas until those areas are vested in the Council will be required to ensure the long term success of any landscaping.

Explanation:

Design Element 4 pertains to matters for consideration for locating, sizing and designing reserves stormwater management areas and riparian planting. These areas will be generally located in accordance with the locations shown in the Drury South Industrial Precinct Plan; regard should also be given to Design Element 5 when designing reserves within the Precinct.

The principal reserve network within the Precinct, as illustrated in the Drury South Industrial Precinct Plan, is structured around riparian protection and enhancement as well as stormwater management including detention and treatment. The reserve network is however designed for multiple functions and values including passive and active recreation, pedestrian / cycle commuter access, ecological values, visual screening / separation and aesthetic amenity.

The Precinct Plan also includes buffer reserves, adjoining the Light Industry zoned Sub-precincts A and B. The main purpose of these reserve is to physically and visually screen and separate adjacent existing land uses and residents from these areas. These reserves are planted to maintain a robust rural character with a woodlot/ shelter belt form of land management. Whilst providing multiple functions including biodiversity and aesthetic values, their primary function will remain as that of a buffer to land uses outside of the Precinct.

Design Element 5: Reserve Interface Design:

1. Reserves intended for public recreation and use should be designed to be bounded by public roads as much as possible given topographical and natural feature constraints. (Note proposed buffer reserves are not intended to be bounded by public roads)
2. Where reserves or riparian buffer areas adjoin lots, the boundary should be securely delineated and fenced to avoid encroachment (refer Diagram 5).

Explanation:

Reserves intended for public use that are well fronted by public roads are more secure because of the informal surveillance from the road and activities that interface with the road across the carriageway. Ideally not less than half the total length of legal boundary of any reserve should adjoin a legal road.

Design Element 5a: Earthworks and Retaining Walls

1. Changes of level adjoining streets and open space corridors should be achieved by gently battering and contouring land.
2. Where retaining walls are required, they should be screened from public view. This may be achieved by planting and breaking up the vertical extent of walls through physical stepping.

Additional Sub-Precinct Criteria

In the case of subdivision within Sub-precinct B Motorway Edge and Sub-precinct C Mixed Use, the following criteria shall also apply and take precedence over the general assessment criteria for subdivision stated above, where this is inconsistency or conflict.

Additional Design Element 6: Subdivision within Sub-precinct B Motorway Edge

1. Earthworks should be designed to retain a more natural, undulating topography and character outside of building platforms and other areas required through function to retain a flat topography.
2. Intersections between public roads serving the sub-precinct and the north south primary road (Maketu Road corridor) should be minimised.
3. Specimen tree planting should be provided on all public and internal private access roads within the Motorway Edge Sub-Precinct. Refer Attachment 1 Typical Road CrossSection for Motorway Edge Sub-Precinct.

Additional Design Element 7: Subdivision within Sub-precinct C Mixed Use

1. Where through lots with dual street frontage are created, these should provide frontage to both street edges (i.e. no rear elevations to the street). However, where buildings are required to be setback from Maketu Road for acoustic amenity reasons, a safe and attractive edge to Maketu Road should be provided. Methods to achieve this include providing landscaping at the street edge and providing a good degree of glazing on the building facade overlooking Maketu Road.

APPENDIX 5B.4B: DRURY SOUTH STRUCTURE PLAN AREA – MOTORWAY EDGE PRECINCT AND COMMERCIAL SERVICES PRECINCT ASSESSMENT CRITERIA

PURPOSE OF APPENDIX 5B.4.B

In the Motorway Edge Precinct and Commercial Services Precinct within the Drury South Structure Plan area building design and appearance, landscape design and internal site layout are listed as controlled activities if they also comply with the standards and terms specified in 6.11.7.2.

Rule 6.15.1 sets out controlled activity assessment criteria for all controlled activities in the industrial zones and contains the following clause:

“In the case of the Motorway Edge Precinct and the Commercial Service Precinct within the Drury South Structure Plan Area (Part 5B.4 in Section One of the District Plan) the Council will, in addition to the criteria set out in (a) to (f) above, assess the application against the criteria set out for those precincts in Appendix 5B.4.B in Section One of the District Plan.”

In addition, these criteria will also be used as appropriate in the consideration of restricted discretionary and discretionary activity applications involving the construction or alteration of buildings.

This Appendix sets out assessment criteria under a number of “Design Elements” for both the Motorway Edge Precinct and the Commercial Services Precinct.

The criteria listed under each Design Element are intended to give flexibility, enabling site responsive designs, while ensuring that development provides a positive contribution to the amenity of the Drury South Structure Plan Area.

The criteria are intended to guide development rather than prescribe exact design and layout. Most criteria are illustrated. The illustrations are intended to support the text and are representative of good design solutions, but are not necessarily intended to represent the only design solution.

Each Design Element includes an explanation, which summarises the rationale for the particular Design Element and expands on the individual criteria. The explanation may be used as further guidance in interpreting the intention of the criteria and assessing the extent to which the proposal accords with them.

INFORMATION REQUIREMENTS

The applicant shall provide a written assessment describing how the criteria for each Design Element are addressed. Applicants will have to demonstrate that the provisions of the criteria have been acknowledged. It is recognised that certain proposals will not achieve absolute accord with all criteria. Where necessary, in regard to a criterion demonstrably not met, the applicant shall explain with reference to the explanation for the particular Design Element:

- whether site constraints inhibit the ability to address the criterion, and/or;
- how the intention of the criterion is met by the proposal, and/or ;
- whether the proposal represents a better design solution than that suggested by the criterion.

Applicants will also be required to provide a Landscape Concept Plan with sufficient detail to ensure that the relevant assessment criteria are able to be considered, identifying hard and soft landscaping treatment, large grade specimen trees (species and planting size), groupings of ground covers and shrubs with species schedule.

MOTORWAY EDGE PRECINCT DESIGN ASSESSMENT CRITERIA

The following criteria shall apply to building design and appearance, landscape design and internal site layout within the Motorway Edge Precinct where activities are listed as controlled activities.

Design Element – Internal Private Access Roads:

1. Specimen tree planting should be provided on all public and internal private access roads within the Motorway Edge Precinct.

Design Element – Existing Vegetation:

1. Where ever possible layouts should retain and protect existing mature trees, particularly those of indigenous species, where these contribute to the site character and amenity.

Design Element – Planting:

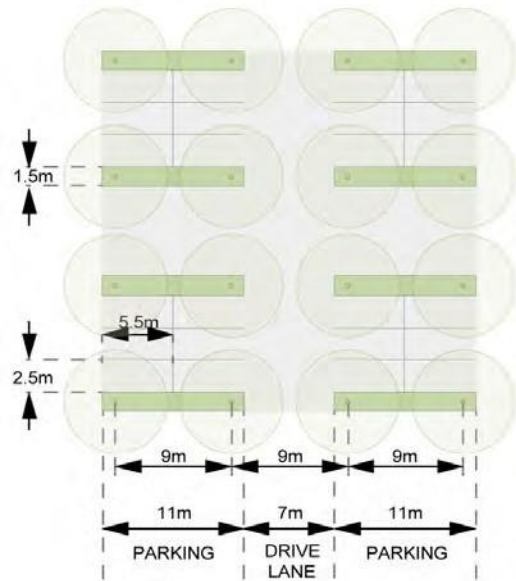
1. Planting should be designed to have a large scale landscape effect and combine native as well as appropriate exotic species to provide seasonal change and quality amenity.
2. Where reserve land adjoins the motorway boundary planting that creates a continuous visual barrier to eastward views from the SH1 (Southern Motorway) corridor should be avoided, however landscape design should emphasise the current sequence of intermittent views to the Hunua Ranges from the SH1 corridor and the pattern of variable depth of such views.
3. Where industrial sites adjoin the motorway boundary, a detailed rule applies requiring a double row of Leyland Cypress to create the appearance of a rural shelterbelt providing a continuous visual barrier defining the curve in the motorway alignment.

Design Element – Buildings:

1. Buildings should be located with design consideration for their visibility and reduced visual impact as viewed from the SH1, (Southern Motorway) corridor and the desirability of maintaining a sense of openness as seen from the motorway.
2. The visual mass of larger buildings should be minimised by employing the following methods:
 - Utilising subdued, recessive colours;
 - Providing variation in materials and finish for facades viewed from the motorway;
 - Creating variation of roof profiles with consideration given to the overall roofscape viewed from the motorway;
 - All rooftop servicing and plant should be designed as an integral part of the roofscape with particular consideration given to the view from the motorway.

Design Element – Parking Areas:

1. Parking areas should be designed to incorporate trees to break up the scale of hard surface areas.
2. Adoption of the Fully Planted Permeable Carpark Design Layout (refer Diagram 6) style of parking is advocated within the Motorway Edge Precinct.



Design Element – Internal Site layout:

1. Storage and waste management activities should be located and / or designed to be screened from view of the State Highway.

Diagram 6: Fully planted permeable carpark design layout - detail

COMMERCIAL SERVICES PRECINCT DESIGN ASSESSMENT CRITERIA

The following criteria shall apply to building design and appearance, landscape design and internal site layout within the Commercial Services Precinct where activities are listed as controlled activities.

Design Element – Block Size, Lot Type and Orientation:

1. Buildings on corner lots should be designed to provide for a quality architectural response to the corner. Appropriate design responses would be provision of additional height at the corner, windows and activities addressing both street frontages (avoidance of blank walls to one or both sides of the corner). Service activities such as loading docks or storage yards should not be located on corners or any site frontage.

Design Element – Street Interface Design:

1. Built development should front the street with a quality recognisable pedestrian entry to the street.
2. Parking should be provided on the road network adjacent to Commercial Service Precinct areas with on site parking layouts designed in accordance with the typical layout identified (refer Attachment 4).

Design Element – Signage:

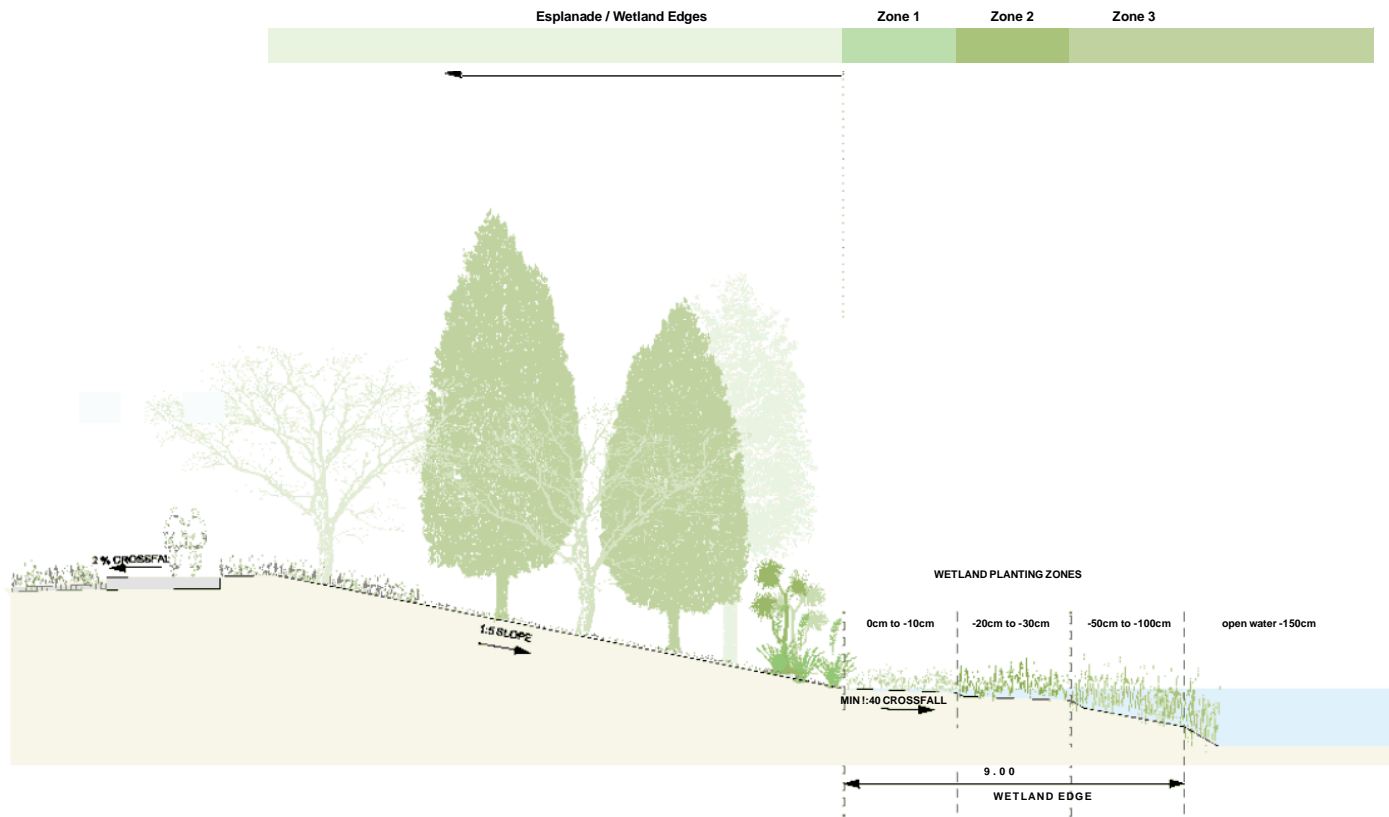
1. Signage for each Commercial Services Precinct development should be coordinated including the physical location of signs, their type, face, style and content with a maximum of two signs per business, one located to address the street frontage and one to identify the building entry (a third sign is permissible where the service access is separate from building entry or there are multiple entries).

Design Element – Service Areas:

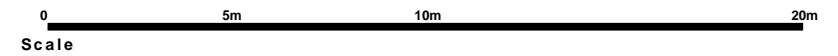
1. Service areas should be located so as to avoid observation from a public road with access either from a service lane, incorporation within the main building or full screening of service /storage and dock areas.

Attachment 2

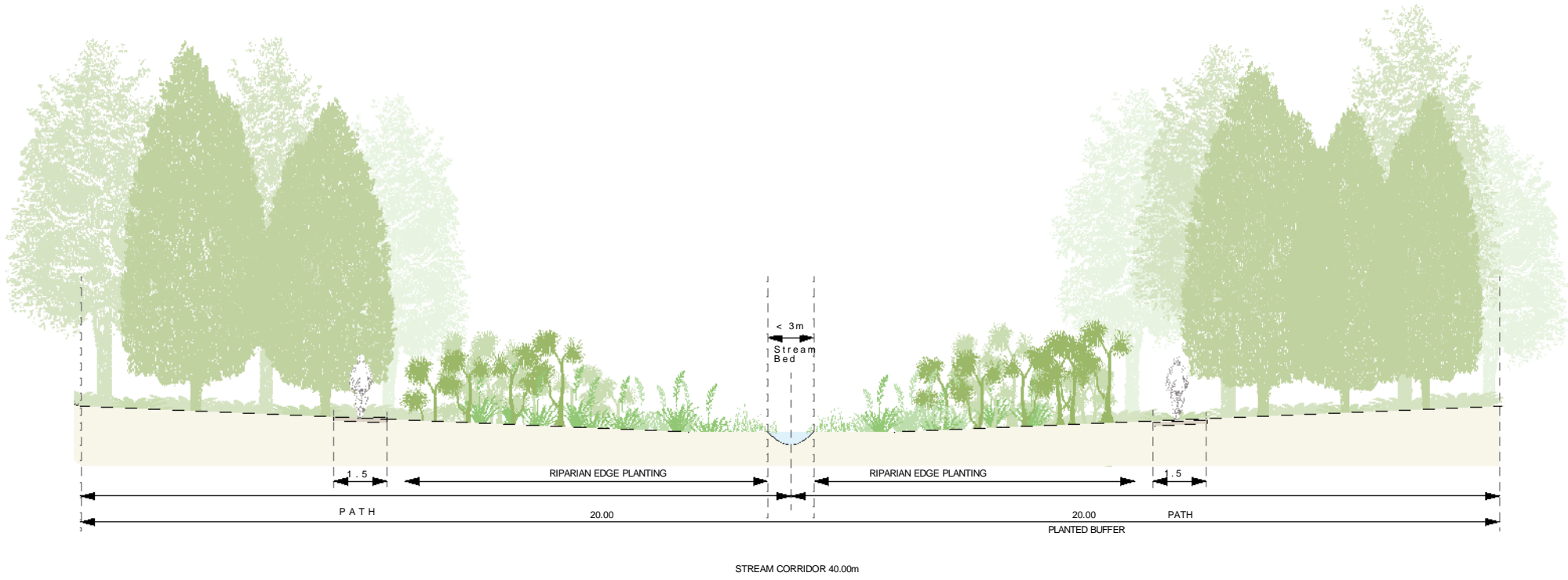
Typical Wetland Stormwater Pond and Typical Stream Corridor Cross Sections



| Location | Botanical Name | Common Name |
|------------------------------------|---|--|
| Esplanade / Wetland Edges | <i>Salix babylonica</i> | Weeping Willow |
| | <i>Dacrycarpus darydiodes</i> | Kahikatea |
| | <i>Cordylone australis</i> | Cabbage palm |
| | <i>Anemathele lessoniana</i> | Wind grass |
| | <i>Carex secta</i> <i>Carex testacea</i> | Purei |
| Zone 1 Wetlands (0 to -10cm) | <i>Carex geminata</i> <i>Cyperus ustulatus</i> <i>Cordaderia fulvia</i> | Toetoe |
| Zone 2 Wetlands (-20 to -30cm) | <i>Schoenoplectus validus</i> <i>Eleocharis acuta</i> <i>Juncus gregiflorus</i> <i>Bolboschoenus fluviatilis</i> <i>Leptocarpus similis</i> | Kopupu / kuta Spike rush Wiwi rush Ririwaka Oioi /Jointed Rush |
| Zone 3 Wetlands (-50 to -100cm) | <i>Baumea rubiginosa</i> <i>Baumea articulata</i> <i>Baumea teretifolia</i> <i>Eleocharis sphacelata</i> <i>Juncus pallidus</i> | Ngawha / Great spike rush Giant rush |



INDICATIVE WETLAND EDGE DETAIL



INDICATIVE 40m RIPARIAN BUFFER FOR STREAM BEDS LESS THAN 3m WIDE





TYPICAL ONE SIDED RIPARIAN BUFFER FOR STREAM BEDS LESS THAN 3m WIDE



INDICATIVE ONE SIDED RIPARIAN BUFFER FOR STREAM BEDS 3m AND GREATER

Attachment 3

Drury South Industrial Precinct

Indigenous Species Plant List

Note: The species underlined are recognised as being rare / uncommon in the Auckland region.

Wetland Species

| | |
|--|---|
| Schoenoplectus tabernaemontani also Eleocharis sphacelata | Multiple Māori names include kukuta and kutakuta. |
| Carex virgata and Carex secta | pukio |
| Baumea articulata | jointed twig-rush |
| Typha orientalis | raupo |
| Myriophyllum robustum | stout water milfoil |
| Baumea tenax | |
| Isachne glabosa | swamp grass |
| Phormium tenax | particularly the variety known to Maori as 'Muka' - soft for weaving |

Riparian Marginal Species

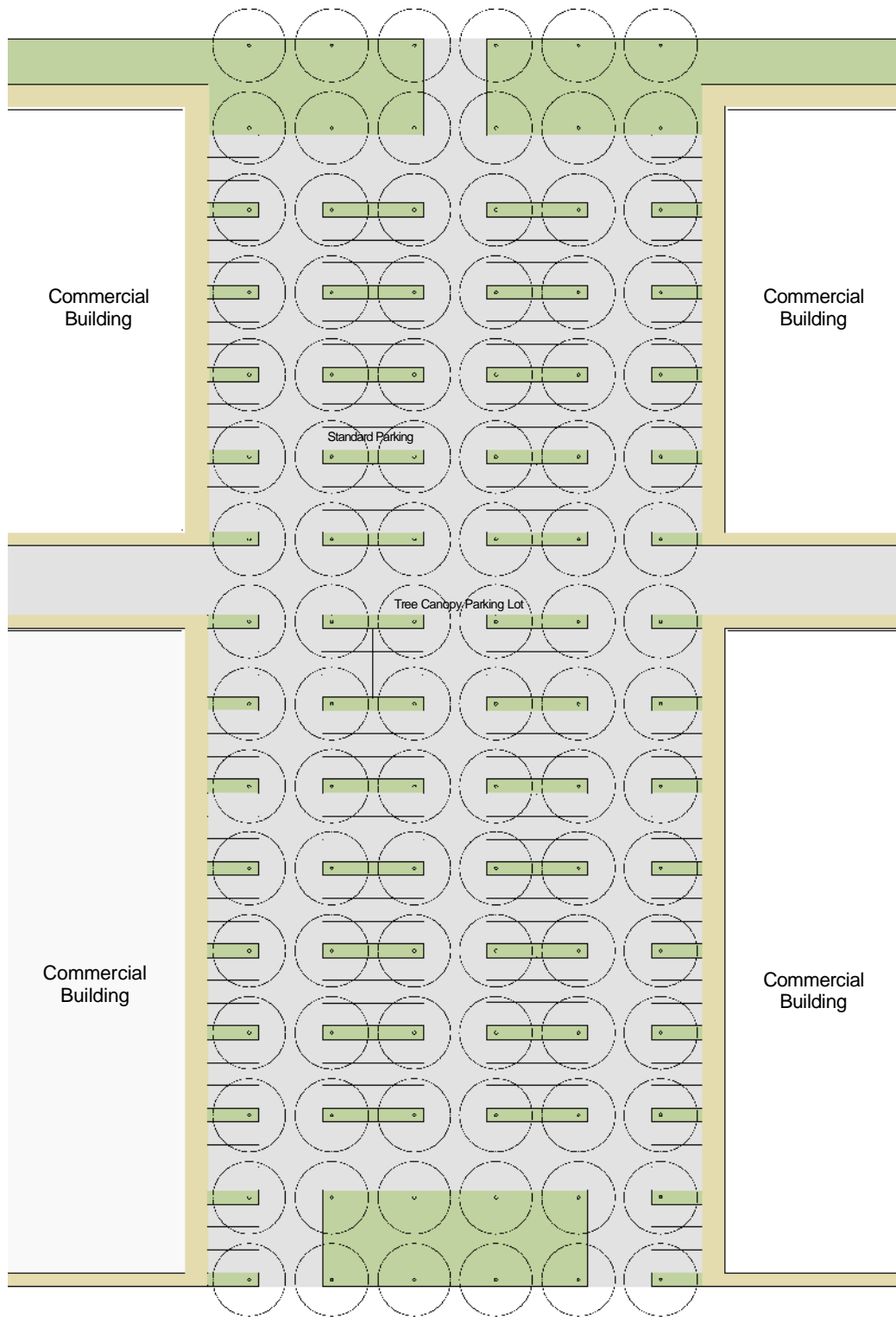
| | |
|-------------------------|----------------|
| Freycinetia baueriana | kie kei |
| Alectryon excelsa | titoki |
| Vitex lucens | puriri |
| Prumnopitys taxifolia | matai |
| Sophora microphlla | kowhai |
| Rhopalostylis sapida | nikau |
| Hoheria populnea | lacebark |
| Corynocarpus laevigatus | karaka |
| Plagianthus betulinus | manatu |
| Pennantia corymbosa | kaikomako |
| Hedycarya arborea | pigeonwood |
| Aristolelia serrata | makomako |
| Kunzea ericoides | kanuka |
| Cordyline australis | ti whanake |
| Dysoxylum spectabile | kohekohe |
| Coprosma grandifolia | kanono |
| Streblus banksii | towai |
| Streblus microphylla | turepo |
| Myrsine divaricata | weeping matipo |
| Marrattia salicina | king fern |

Swamp Forest Species

| | |
|--------------------------|---------------|
| Syzygium maire | maire, tawake |
| Laurelia novae-zelandiae | pukatea |
| Carpodetus serratus | putaputaweta |
| Phormium tenax | harakeke |
| Coprosma tenuicaulis | hukihuki |
| Dacrycarpus dacrydioides | kahikatea |
| Blechnum novae-zelandiae | swamp kiokio |
| Cortaderia fulvida | toetoe |
| Astelia grandis | swamp astelia |
| Schefflera digitata | pate |
| Podocarpus totara | totara |

Attachment 4

Typical Sub-Precinct C Mixed Use Precinct Access and Car Park Layout



0 10m 20m 40m

Scale

TYPICAL COMMERCIAL LAYOUT

Attachment 5

**Drury South Industrial Precinct: Stream and Wetland Rehabilitation Guidelines
(June 2013)**

Drury South Industrial Precinct

Stream and Wetland Rehabilitation Guidelines

June2013



Boffa Miskell



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Drury South Industrial Precinct
Stream and Wetland Rehabilitation Guidelines



1.0 Introduction

1.1 Purpose of this Document

The Drury South Industrial Precinct (DSIP) Stream and Wetland Rehabilitation Guidelines provide a summary of proposed stream and wetland works associated with the DSIP project. This includes all stream corridors to be removed, realigned, or restored, and wetlands created associated with stormwater management. The purpose of this document is to achieve the following:

1. To provide technical input to the planning process (to be read in conjunction with the Ecological and Landscape Assessments, Assessment of Environmental Effects (AEE) and Infrastructure Assessment report (IAR).
2. To provide the project team with a set of principles for treatment of riparian (stream and wetland) areas within the DSIP area.

1.2 Proposed Stream and Wetland Rehabilitation Works

In line with the proposed Drury South Industrial Precinct, the existing Hingaia and Maketu streams will be protected and enhanced by corridors of riparian restoration 40 metres in width (20m on each bank). Dense riparian planting will also occur along SH1 in association with the Roslyn Stream realignment and along the northern boundary of the site in association with a newly formed northern stream realignment.

Some streams and farm drains within the DSIP area will be filled. Piped infrastructure or vegetated swales will direct these modified catchments to the Hingaia Stream. These systems, as well as stormwater runoff from business activities will be treated for water quality in extensive wetland areas associated with the Hingaia stream corridor. These wetland areas will function for stormwater quality and quantity, ecosystem function and values, landscape amenity, natural character, and recreation.

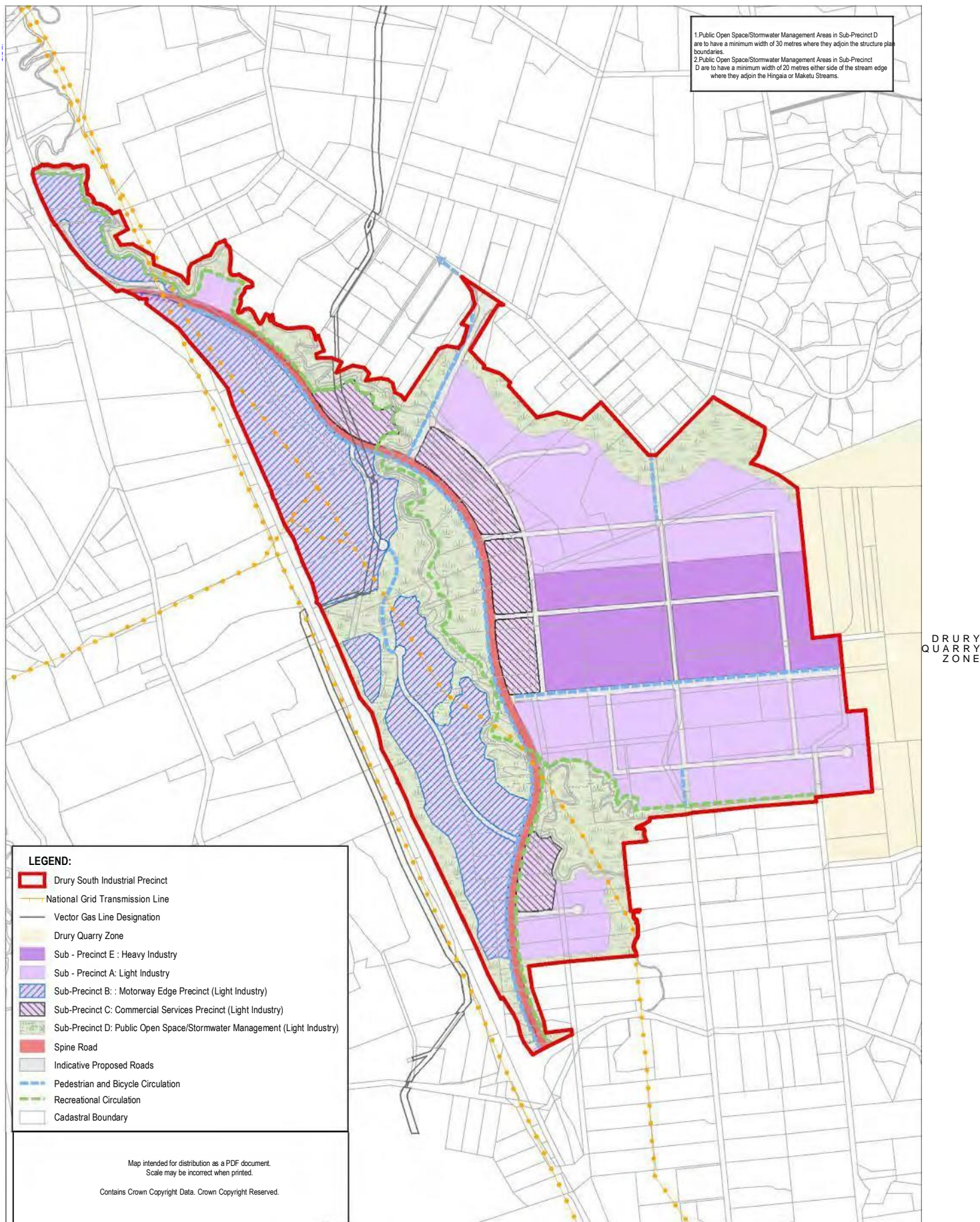


FIGURE1:DSIP Concept Plan - December 2010 (Source: BECA Ltd)

Drury South Industrial Precinct Stream and Wetland Rehabilitation Guidelines

2.0 Streams of the Project Area

2.1 Existing Streams and Proposed Mitigation

The Hingaia Stream flows through the DSIP area from south to north before continuing through the Drury Township to discharge to Drury Creek and eventually the Pahurehure Inlet to the Manukau Harbour. The Maketu Stream flows into the site at the south eastern corner of the DSIP area, and joins with the Hingaia Stream. The Roslyn Stream flows from the west under the State Highway and joins a further tributary to the Hingaia Stream. The remainder of streams traversing the site do not have officially recorded names, are smaller, highly modified, and in some cases have been piped.

An assessment of the existing surface water network and receiving environment has been carried out as part of the Hingaia Stream ICMP. This included a stream ecology study, "The Hingaia Catchment Environmental Assessment, Golder Associates, August 2009". This study included field survey of streams within the DSIP area with respect to water quality, and aquatic flora and fauna. Each stream potentially affected by the DSIP has been evaluated by the 'stream ecological valuation' method (SEV) in accordance with the technical publication ARC TP302:2008.

Existing watercourses and modified farm drains between Stevensons Quarry and SH1 will need to be filled or re-aligned to accommodate the DSIP earthworks footprint. This includes intermittent and permanent streams (refer Figure 2). Many of the existing overland flowpaths are farm drains, constructed for active drainage. All streams to be affected by the proposed DSIP have been heavily modified by farming or roading operations, including dredging, spraying, straightening, and ongoing impact by stock. In general all of these streams have low to moderate functional values for stream ecology.

Proposed mitigation for stream loss includes the restoration of riparian zones along the length of the Hingaia and Maketu Streams within the DSIP Area. This includes a 40m wide planted riparian buffer along all streams. In addition, streams to be re-aligned will have an appropriate stream profile and riparian planting to provide for sustainable stream function.



One of many existing intermittent farm drains showing evidence of earthworks, spraying and access by stock



LOCATION A (FIGURE 2) - The northern stream is directed along Quarry Road in a highly constrained and modified environment, with low ecological values



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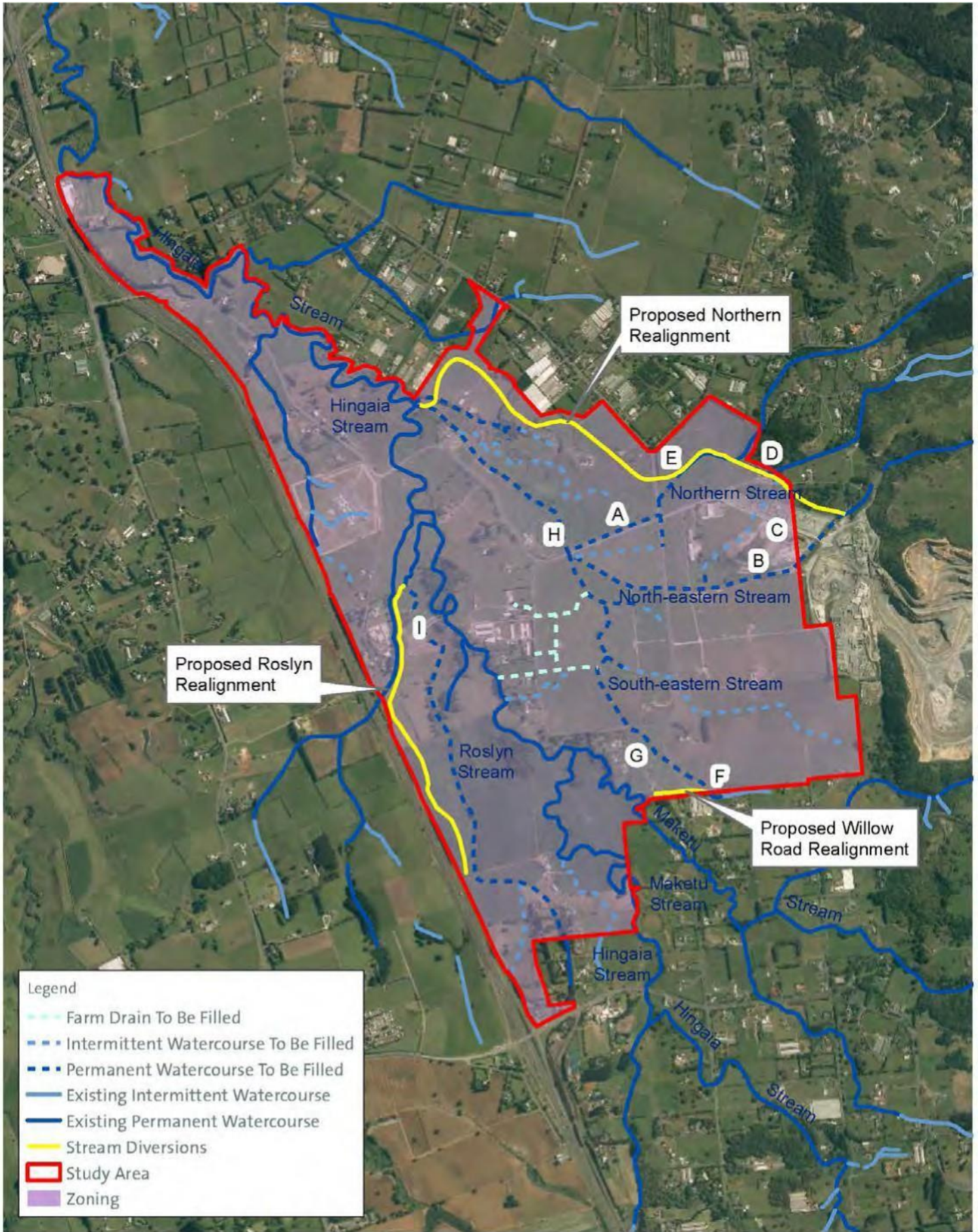


FIGURE2: DSIP Existing and Proposed Water Courses (Source: BECA Ltd)

Drury South Industrial Precinct Stream and Wetland Rehabilitation Guidelines

2.1.1 Northern Streams

A tributary to the northeast of Stevenson Quarry is currently dammed in its headwaters for quarry operations before being reticulated to a channel (refer Figure 2, Location B below). The northeastern stream also receives stormwater from the quarry via adjacent treatment facilities (Location C). As part of the works to accommodate the DSIP, the upper catchment of this stream will be directed to the existing northern stream corridor (Location D).

This northern stream will be rehabilitated with an enhanced stream profile, and restored streambank and floodplain vegetation. The northern re-alignment will be 1,800m in length, comprising 1,500m of new channel and 300m of rehabilitated channel.



LOCATION B (FIG 2) - The north-eastern channel flowing through mixed exotic vegetation



LOCATION C (FIG 2) - The north-eastern channel directed alongside the quarry settlement ponds



LOCATION D (FIG 2) - The existing northern stream channel will be enhanced to receive there – aligned north-eastern tributary



LOCATION E (FIG 2) - The northern stream at the base of the northern escarpment will be rehabilitated as part of the proposed works

2.1.2 Southern Streams

The streams to be filled between the quarry and the Hingaia Stream are relatively small, with low gradient catchments that do not extend beyond the project area. A stream from the southeast of the site (refer Figure 2 and Photos Location F and G) conveys a number of intermittent stream tributaries from the centre of the project area, before joining with the existing northern stream and northeastern tributary previously mentioned (Location H). The southeastern stream and its tributaries have no vegetation cover beyond aquatic macrophytes and pasture species. These watercourses have been heavily modified by pastoral land use.



LOCATION F (FIG2)-The southeastern stream ponding behind a road culvert, 50 metres downstream of the proposed Willow Road Re-alignment



LOCATION G (FIG2)-The southeastern stream winds through the middle of the project area before combining with the northern stream

At least 230 metres of the headwaters of the southeastern stream will be retained, enhanced, and linked westward to the Maketu Stream via an 180m section of new channel (the Willow Road Realignment). This realignment will be planted with a riparian buffer. The remaining watercourses between the Hingaia Stream and quarry will be filled.

2.1.3 3 Eastern Streams

The Roslyn Stream (Location I) to the west of the Hingaia Stream will be re-aligned toward the SH1 corridor. The current stream is an open farm channel with low summer flows and dense growth of the exotic reed sweet grass (*Glyceria maxima*). The re-alignment will include filling of 450m of the upper reach of this stream, and formation of 1,600m of newly aligned channel. The realigned channel will be formed with an appropriate profile and rehabilitated for enhanced ecological function, with a 20 metre wide riparian corridor on both sides.



LOCATION H (FIG2)-The channel flowing to the Hingaia, containing the combined flows of the south-eastern, northern, and north-eastern streams following a rain event



LOCATION I (FIG2) – The Roslyn Stream (mid-ground), a farm channel with low flows, is to be realigned and rehabilitated

2.2 Existing Streambank Erosion

Streambank erosion has been identified in the ICMP studies as an existing issue at a number of locations. The Hingaia Stream is subject to extensive bank erosion, identified near the Quarry Road bridge on the Hingaia Stream and near Davies Road Bridge on the Maketu Stream.

Stormwater wetlands prior to the Hingaia channel are proposed for the DSIP in order to detain any additional flows that may adversely impact stream erosion (refer Section 3.5). Riparian vegetation is proposed along the Maketu and Hingaia and for all re-aligned stream channels to stabilise banks in the short term and reach a sustainable stream equilibrium in the long term.



A lack of riparian vegetation and active erosion along the Hingaia channel



The Maketu channel with erosion scour at the outside bank

2.3 Existing Aquatic Ecology

As part of the Hingaia Stream ICMP, Golder and Associates undertook SEV surveys of representative stream reaches (Golder 2009). Most of the stream environments in the project area had poor functional values due to extensive modification by agriculture.

The Hingaia ICMP surveyed thirteen sites within the DSIP Area. The best quality site was on the Maketu Stream, with higher scores across all functional categories. Another site, located on the lower Hingaia Stream, also scored relatively high. The best value site for the tributaries was located on the northeastern quarry stream. Full descriptions of functional ecology values can be found in the DSIP Assessment of Ecological Effects (Boffa Miskell 2010).

A total of 6 species of fish were recorded across the project area. Shortfin eels were the most common species, with occurrences of longfin eel, common bully, inanga and cran's bully. Five of the seven tributary sites had no fish, or mosquito fish only. The mosquito fish is an exotic pest fish classified as 'Unwanted' under Biosecurity legislation. These sites had very low fish community values.

Macroinvertebrate communities indicated low environmental quality at most sites. Except for the northeastern stream, tributary sites were characterised by worms, dipteran flies, leaches, and flatworms, suggesting nutrient enrichment and fine sediment. The Maketu site had a notable portion of mayflies (*Zephlebia* spp.), possibly due to better water quality (e.g. lower water temperature).

3.0: Stream and Wetland Rehabilitation

3.1 Rehabilitation Principles

The following rehabilitation principles are intended to inform the rehabilitation of streams and wetlands in the DSIP area. The principles have been prepared by an inter-disciplinary project team, including landscape architects, planners, ecologists, and engineers. Principles seek to enhance the landscape and ecology values of the riparian systems, while providing appropriate design responses for hydraulic flow and stormwater management.

3.1.1 Landscape Values

There is significant opportunity to improve the natural character values within the DSIP area. Stream and wetland environments will also be integrated within a wider open space network, providing opportunities for enhanced recreation and landscape buffers. The following landscape principles apply to proposed stream and wetland rehabilitation:

- Contribute to landscape amenity values
- Provide vegetated buffers to specific land use activities as appropriate
- Integrate stream and wetland rehabilitation with streetscape and open space planning
- Provide for visual and physical access to rehabilitated natural areas
- Optimise natural character values through the planting of representative native communities
- Provide a diversity of natural habitats and plant communities to achieve a variety of landscape and spatial character, and to demonstrate a legible sequence of habitat types.
- Structure riparian vegetation to screen/define undesirable views, offer broad views to wetland environments, and frame distant views to eastern Hunua hills from SH1
- Apply appropriate standards for CPTED and IPTED for public or maintenance access
- Place pedestrian bridges as necessary to ensure landscape connections, and investigate opportunities to use existing stream spans (infrastructure) for this function
- Identify opportunities to involve the community in stream restoration planting
- Liaise with relevant representatives and apply appropriate protocols for any archaeological sites or heritage elements associated with rehabilitation works
- Enhance Cultural Value through the re-establishment of indigenous species and investigating cultural harvest opportunities

3.1.2 Ecological Functions

Enhancing ecological functions within the DSIP area will require a combined response to aquatic and terrestrial environments, in order to restore target species, representative habitats, and ecological processes. The following ecology principles apply to stream and wetland rehabilitation:

- Plant stream margins, banks and floodplain areas to achieve not less than 40m total width (10m min width either side of stream corridor)
- Utilise species sourced from the Manukau Ecological District that are representative of natural vegetation communities as predicted by LENZ
- Restore representative in-stream heterogeneity, providing for pool, riffle, run and cascade sequences as appropriate.
- Provide fish passage to the extent possible, including bullies and inanga to within their natural range
- Preserve groundwater influence and inundation regimes for existing floodplain forest in proposed stream corridors
- Provide appropriate transitional edge vegetation to remnant mature vegetation
- Optimise site coalescence between remnant vegetation areas along the Hingaia Stream
- Provide for breeding populations of water and wetland birds species
- Provide for appropriate staging and construction techniques to avoid potential impacts to downstream environments and in-stream aquatic habitat.

3.1.3 Hydrology and Hydraulics (H&H)

Stream and wetland rehabilitation will provide opportunities for water quality treatment for the DSIP, and appropriate hydraulic flows, and hydrologic capacity for the catchment. The following H&H principles apply to the rehabilitation areas:

- Use biotechnical stream stabilisation to restore a sustainable streambank morphology
- Apply a cross sectional profile that resembles a natural staged channel, including a permanent flow channel, a stream channel based on a bankfull (approximate two year average recurrence interval (ARI)), and associated floodplains and berms to hold the one hundred year ARI.
- Provide for an appropriate stream meander patterns for the floodplain extent, longitudinal stream profile, flow velocities, and expected bankfull event.
- Provide for hydraulic connections and fish passage to stormwater wetlands wherever extended detention is not required
- Place all forebay devices for stormwater wetlands outside of the 5 year ARI flood extent.



FIGURE 3: DSIP Concept Planting plan. (Source Boffa Miskell and Source Design)

3.2 Open Space Network

The stream and wetland rehabilitation concepts (refer Figure 3) integrate with a broader open space network to optimize specific requirements for public use and access, to ensure diverse representative habitats, and to enhance environmental services for the DSIP.

The open space network reinforces existing features and patterns of the project area. The Hingaia Stream corridor will be reinforced by wide riparian margins of representative planting of early successional forest, as well as kahikatea floodplain forest. In the north a substantial open space buffer is set aside to reinforce the natural escarpment separating the DSIP basin from the Fitzgerald Road ridgeline. This occurs in conjunction with the northern stream realignment and associated riparian rehabilitation works. In the south west of the project area, riparian planting along there – aligned Roslyn stream will form a landscape buffer to SH1.

Larger remnants of existing vegetation will be coalesced along the Hingaia Stream. Planting in association with stormwater wetland areas will further buffer and augment the conservation values of these remnants.

3.3 Stream Rehabilitation

The land use change associated with the DSIP provides a significant opportunity to restore the Hingaia Stream, a low gradient moderate order stream, which retains remnant kahikatea floodplain forest. The project also provides the opportunity to coalesce modified drainage channels across the site into a larger order stream channel and floodplain, with supporting streambank and floodplain vegetation. Stream rehabilitation proposals are the result of an iterative design process between ecologists, landscape architects, and engineers to optimise the principles of these guidelines.

3.3.1 Hingaia Stream

The Hingaia Stream is a significant watercourse, with a wide, actively meandering channel across the floodplain. The stream currently runs through pastoral and agricultural land uses, and receives runoff from existing farm drains in the project area. The rehabilitation of the Hingaia stream is a key objective of the DSIP, with a 40 metre vegetated buffer proposed along the corridor where it corresponds with the project area. The width of the riparian buffer would extend to accommodate a stormwater treatment swale proposed along a northern reach, and stormwater wetlands proposed within the Hingaia Stream's extended floodplain.

The rehabilitation of the Hingaia Stream will include:

1. The coalescence of the floodplain forest remnants (including significant natural areas) already occurring within Hingaia floodplain
2. The restoration planting of streambanks along the length of the stream within the Project Area, with the potential for specific interventions to restore the stream profile at erosion hot spots
3. The planting of banks and proposed riparian buffers with simple lowland plant communities with the expectation that these communities will secede with time to include more diverse species
4. Planting of feature areas of flax-cabbage tree and broadleaf species on extended floodplains
5. Hydrological connections and fish passage to stormwater wetlands where practical

3.3.2 Stream Realignments

A number of farm drains and watercourses will be replaced with overland flow paths and reticulated networks associated with the proposed development. In addition, some headwaters will be realigned to newly formed watercourses along the boundaries of the DSIP area. The Hingaia and the Maketu Streams will not be altered beyond restoration activities.

A detailed description of the potential effects on stream ecology and the proposed mitigation measures is presented in Boffa Miskell, 2010, "Drury South Business Project Assessment of Ecological Effects Associated with the Proposed Plan Change". These guidelines inform the potential design response to optimise the flood management function of the rehabilitated streams, and their landscape and ecology values.

3.3.2.1 Design Parameters

The profile of each re-aligned stream channel is based on the cross-sectional area to accommodate a 1.5 to 2 year average recurrence interval (ARI). This flow is traditionally associated with a 'bank-full' event with active stream erosion and re-deposition.

The morphology of realigned streams is also based on their substrate, longitudinal gradient, and association with their floodplain. These functions can be used to prescribe channel sinuosity and width to depth ratio (Rosgen 1994). The bankfull width is used as a function to predict the stream meander wavelength and the radius of curvature for bends (Leopold 2003 and Thorne et al 2003). Refer to Figure 4 below.

Proposed stream morphology is intended to minimise friction within the channel to prevent active erosion, and also to provide a floodplain width that can accommodate the stream in equilibrium.

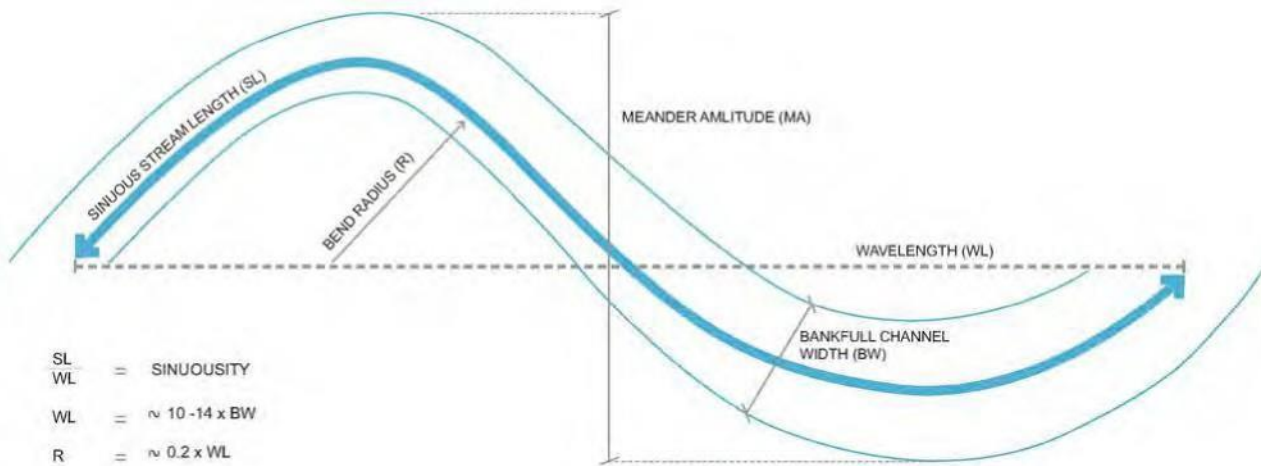


FIGURE 4: (above) The indicative relationship between channel width, and meander pattern

BELOW: A natural meander occurring as an overland flow event during flood conditions in the project area



3.3.2.2 Construction

Construction of the realigned channels is intended to occur off-line where possible, or to be staged to avoid potential impacts to downstream environments and in-stream aquatic habitat. Material selection is expected to be inert and where possible to be the equivalent of materials expected in these stream environments in their natural state.

It will be possible to utilize 'natural' materials through the application of biotechnical construction, which utilises a combination of persistent and biodegradable materials to retain channel shape until plants can establish. In general biotechnical responses for stream stabilisation can include:

- Stream profiling to respond to specific flow events
- Floodplains to dissipate flood velocities
- Stabilised bank toe and outside bends with hard materials such as rock, root vanes etc
- Directing flows and forming riffles through rock vanes
- Reinforcement of stream banks through planting established in erosion control blankets
- Stabilising the crown of banks with appropriate vegetation
- Provision of appropriate pool-riffle-run sequences.
- Grade control structures that accommodate fish passage
- Specific biotechnical treatments to accommodate 'nick' erosion points and stormwater outlets

3.3.2.3 Planting

Plant species selection will provide ecological functional values and representative plant communities. Stream planting objectives may include:

- Shade for temperature moderation
- Weed suppression
- Slope stabilization
- Tolerance to inundation
- Growth form to accommodate/obstruct views
- Stature to accommodate hydraulic flow rates
- Inherent aesthetic or spatial qualities of single plants or grouping of vegetation.

Based on LENZ predicted natural vegetation layers, representative plant communities for the DSIP area include lowland alluvial floodplain species, generally consisting of kahikatea forest. Other communities include tawa and pukatea, while matai, rimu and totara are generally restricted to better-drained soils. Titoki and puriri are locally abundant, with the potential for other broadleaf such as taraire, occurrence of kauri on the flanks of the basin, and occasional rimu and pukatea.

The project area extending into the flanks of the project basin and the hills beyond would be expected to support kauri, kahikatea, rimu and/or totara emergent over a diverse canopy dominated by varying mixtures of taraire and kohekohe. Other widespread tree species might include hinau, pukatea, rewarewa, and miro. Puriri is locally abundant at lower elevations, particularly on alluvial surfaces and tanekaha would be locally abundant, particularly on disturbed sites.

Where basalt occurs at the surface of the project area there may occur unique basalt forest environments, with an expected predominance of mahoe, karaka, kohekohe, totara, puriri, and titoki.

Until climax communities establish, it is expected that large areas of the riparian corridors will be planted with early succession and hardy species, such as riparian shrubs, kanuka, and totara to rapidly establish cover and to act as a nurse crop for later succession species. It is expected that certain low vegetation types will be applicable in places along the riparian corridors to accommodate hydraulic flows, to preserve viewshafts, and provide useable open space areas. Such planting may involve mown grass areas, sedge-rushlands, and flax-cabbage tree communities.

3.3.3 Northern Stream

A stream is proposed along the northern boundary of the DSIP area at the base of the northern escarpment. An existing section of this northern stream receives flows from three tributaries. A fourth tributary, previously described as the 'northeastern stream' (refer Section 2.1.1 and Figure 2) will also be directed to this channel from the quarry zone. The northern stream will accommodate the flow from these four tributaries, as well as localised catchments before discharging to the Hingaia Stream west of the proposed Link Road.

A typical northern stream cross section is shown in Figure 5, where a 'bankfull' channel represents the 1.5 year ARI event, and the associated floodplain conveys a 100 year ARI event with 500mm freeboard to the proposed development. Detailed design will provide pool-riffle and run sequences with adapted profiles. Biotechnical construction techniques will form narrower riffle sections, shallower point bars, and steeper outside bends.

The proposed sinuosity of the northern stream is relatively high, close to 1.5 times the wavelength (refer Figure 7). This is appropriate, based on the cross section of the bank full channel (with a low width to depth ratio) the longitudinal profile of the floodplain (a relatively flat lowland environment), and the general character of the bed materials and banks (being generally resistant but somewhat erodible).

The sinuosity is expected to reduce the longitudinal profile of the channel, reduce erosion of stream banks, provide strong connections to floodplain environments, and increase the overall length and diversity of stream habitat. Some stream reaches have constrained floodplains, where riffle sequences with local rock may be appropriate.

The northern re-alignment follows the northern boundary to combine stream environments with adjacent open space and to form a buffer to adjacent land use. The stream corridor and floodplain will be densely vegetated as indicated in figure 7. Planting will be dominated by early succession kanuka-totara forest. Kahikatea forest planting is proposed beside the Link Road entrance to act as a natural threshold at the DSIP entrance. Pockets of broadleaf forest are proposed to add diversity to the northern riparian corridor. Low areas of sedge-rushlands, grass areas, and flax-cabbage tree associations could provide views into the stream corridor from select locations.

3.3.4 Roslyn Stream Realignment

There is an existing water course running south to north through Roslyn Farm at the south west corner of the project area, which picks up flow from two culverts. Site assessment also revealed an existing spring feeding the stream. This stream will be realigned for part of its length whilst retaining links to existing spring and culvert in flows, the realigned corridor will provide a stronger vegetated element to adjacent to SH1 (refer Section 2.1.3 and Figure 2).

A typical Roslyn Stream diversion cross section is shown in Figure 6, where a dedicated 'bankfull' channel contains the 1.5 year ARI event, and the associated floodplain conveys a 100 year ARI event with 500mm freeboard to the proposed development. The Roslyn channel has a wide stream base with a lower depth to create a combined wetland/overland-flow-path appropriate for the small catchment, the low longitudinal gradient, and a strong groundwater influence.

Because the Roslyn channel is a lower energy environment than the northern re-alignment, with less likelihood of erosion, it is reasonable to expect a less sinuous character. Therefore a low sinuosity of 1.1 times the wavelength has been applied.

Planting along the Roslyn stream is proposed to be a combination of sedge-rushland planting and large swathes of flax-cabbage tree associations to create a wide wetland environment. Kanuka-totara forest may occur in existing knoll areas beside SH1 to frame views to the eastern Hunva foothills. Kanuka forest may continue along mid reaches of the stream and groups of kahikatea may occur alongside of a stormwater wetland to frame views from boardwalk locations and to shade permanent water features.

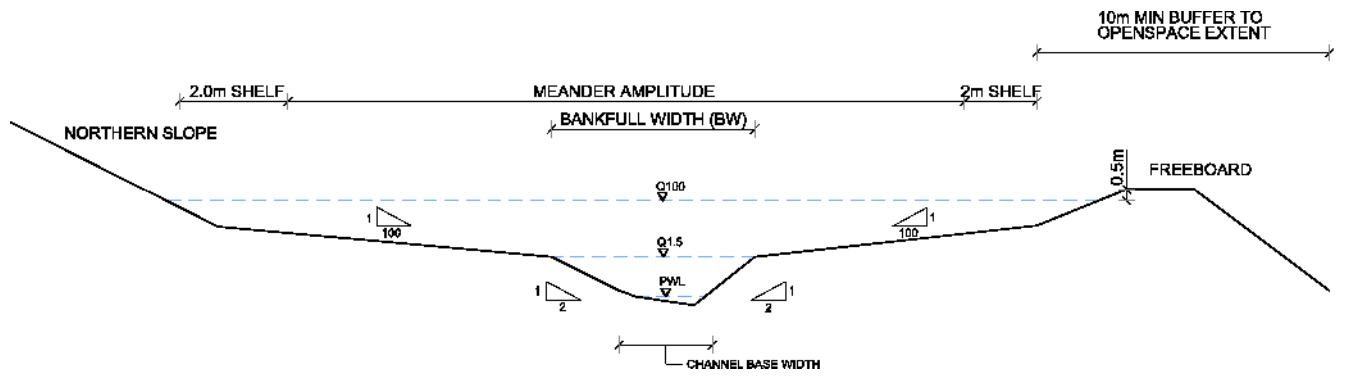


FIGURE 5: Typical section of the northern realignment in terms of flooding profiles

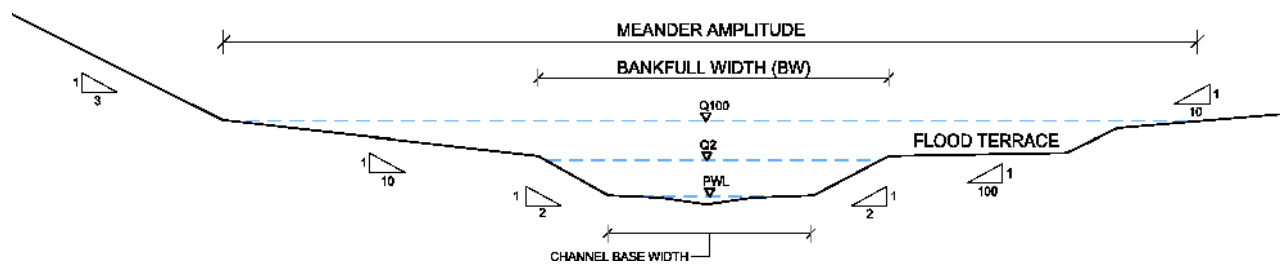


FIGURE6: Typical section of the Roslyn Stream realignment in terms of flooding profiles

3.3.5 Willow Road Realignment

There is a small roadside drain running east to west along Willow Road. The stream currently crosses Willow Road through a culvert near the intersection with Ramarama Road and continues north through the proposed DSIP area, eventually joining the Hingaia Stream. As discussed previously, this stream is heavily modified by pastoral land use and is largely unvegetated. It is proposed to divert this roadside drain directly west to the Maketu Stream along a vegetated riparian corridor that provides for a 1.5 year stream profile and accommodates a 100 year ARI event.

Drury South Industrial Precinct Stream and Wetland Rehabilitation Guidelines

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FIGURE 7: Proposed DRAFT planting plan for the Northern Re-alignment



FIGURE 8: Proposed DRAFT planting plan for the Roslyn Re-alignment

3.4 Riparian Revegetation Guidelines

3.4.1 Introduction

Riparian revegetation is proposed for the main stems of the Hingaia and Maketu Streams. In addition the Northern and Roslyn realignments will also be restored with riparian vegetation (as depicted in Figures 7 – 8). The progressive planting of these realignments as well as the present grasslands alongside the Hingaia and Maketu Streams will ultimately provide a greater extent of riparian bush, increasing the habitat opportunities and potential carrying capacity of the DSIP area as well as providing vegetated riparian corridors within the local landscape.

The following revegetation guidelines outline an accepted industry-wide approach to large scale revegetation programmes that should inform the development of the final detailed planting plans for the DSIP riparian margins.

3.4.2 General Procedure

The general procedure for the proposed revegetation plantings should be as set out below.

- Slope stabilization
- Seed should be sourced as is available from the Manukau Ecological District. However, notwithstanding the desire to use only genetic material sourced from this specific area in the revegetation programme, additional source material from the wider Auckland Ecological Region may be used.
- Planting of species into existing pasture should require pre-planting repeat herbicide applications to reduce the potential for grasses to compete with the seedlings planted.
- Blanket spraying in close proximity to the existing native bush areas needs to be avoided or very carefully managed so as to avoid by-kill. Herbicide should be carefully applied at least 2 weeks before planting.
- Where the earth has been previously compacted the areas to be revegetated should have a single treatment of earth tilling, in order to loosen the sub-soil and encourage successful rooting.
- Planting should be undertaken in favourable conditions, at the earliest opportunity during the planting season, preferably over the autumn months.
- The revegetation plantings should be supplemented with weed and browsing pest control to allow good establishment of the planted material. Ongoing weed control should be carried out until canopy closure is sufficient to suppress weed growth. Browsing pest control may be required over the longer term in order to allow these vegetated areas to progress in good health. However, once pest numbers are reduced to a minimal level, continued control should require a reduced effort.
- All planting and maintenance operations should be carried out by an approved contractor, experienced in native revegetation planting programmes.

3.4.3 Plant Material

- The plant material needs to be of the specified size and condition. All plants will have well developed root systems and a well-shaped stem and head free of disfigurements or injury, pests and disease.
- The plant material should have been sufficiently “hardened off” at the nursery prior to being passed on to the planting contractors.

3.4.3 Planting Methods

- Planting should follow an approved planting plan, indicating set-out, species, size, density and spacing.
- A dual system of planting is proposed, involving the establishment of a nurse crop of hardy pioneer species such as kanuka. These will be enriched with appropriate native tree species when the nurse crop has sufficiently established, which should be at approximately 3 years age.
- Nurse plant stock should be set out at appropriate spacing and percentages, and according to each species niche preferences.
- Once a good cover of the nurse plantings is established, enrichment plantings should be implemented. Enrichment species trees should be distributed (at wider centres) amongst nurse planting and according to site preferences in copses/groves spread further apart in subsequent seasons.
- The enrichment plantings may include the pruning or removal of modest numbers of nurse shrubs in order to create the necessary light wells.
- Plants should be set out and appropriately spaced in an informal manner avoiding straightlines and regular geometric patterns, while ensuring an even cover across the planting area. Species should be distributed at appropriate percentages and according to each species niche preferences, microclimate and ground conditions.
- Planting holes should be dug out to spade depth and seedlings located next to pre-dug holes in the correct species mix. Actual planting should be by hand only. The base of the planting hole should be filled evenly without compaction to a level where the top of the plant root ball is level with surrounding ground. The plant should be plumb and orientated so that the weathered face of the main stem faces north. When the backfilling is complete the plant should be gently firmed in. All plants should be encouraged to grow to maturity as naturally as possible to achieve their desired character and form, through sound management practices including weeding, and other accepted horticultural practises.
- Slow release fertiliser should be used within the proposed planting operation, with at least one tablet of 20-4-4(N-P-K) that is designed to last at least 12 months (preferably 24 months). The controlled release fertilizer tablets need to be inserted into each planting hole approximately half way up the back fill material, ensuring placement of the fertilizer on the upper slope side of each plant
- Approved chipped tree mulch or post-peeling bark mulch could be spread around the base of individual plants used in the mass revegetation plantings, but only in areas outside of the floodplain (to avoid mulch being washed away in floods).

3.5 Stormwater Management

Stormwater design is discussed in greater detail in the DSIP Infrastructure Assessment Report (BECA 2010). The general approach is to utilize the large floodplains associated with the Hingaia Stream to accommodate stormwater wetlands. Each wetland would include a forebay and accommodate the water quality volume. There is also allowance for extended detention to limit potential effects of stormwater volumes on downstream erosion.

Wetlands have been placed above the stream invert to not unduly effect ground water levels, and forebays have been placed above the 5 year flooding event to prevent re-suspension of contaminants stored in these areas.

Safety considerations have allowed for benching around the perimeter of each wetland and a reverse bench along each embankment. Appropriate maintenance access will be provided to forebays and to the base of wetlands for restorative maintenance if required.

Biotechnical approaches similar to those described for stream realignment works will be considered during detailed design, with specific consideration for the formation of access and outlets to the Hingaia, with fish passage possible to wetlands that are not required to detain extended detention volumes.

Planting would be exclusively sedges, rushes, and small riparian shrubs around wetlands for water quality treatment, to stabilize the wetland profile, and to allow ease of maintenance. Trees and taller shrubs would be expected at the edges of wetlands, at their interface with stream environments, and around the northern edges of forebays for shade.

3.5.1 Stormwater Wetland One

Stormwater Wetland One has been designed as a landscape amenity feature through an iterative design process between landscape architects, engineers, and ecologists. This has driven the design of forebays, the shape and extent of the permanent pools and wetland planting, the integration of multiple public access structures, and a pedestrian circulation path that crosses the Hingaia stream corridor (refer figure 9). Wetland One has been tiered to suit the local topography and the bathymetric design directs flows along three separate treatment paths.

3.5.2 Northern Swale

A swale is proposed for stormwater management along the western edge of the lower Hingaia Stream. The total width of the swale and vegetated buffer contributes an additional 25m of vegetation to the riparian buffer. The length of swale is significantly longer than required for water quality and is expected to exceed regulatory expectations at the entry point to the Hingaia.

Planting will be selected with the ability to sustain temporary ponding and saturated soils, and will allow appropriate hydraulic flows and residence time.



FIGURE 9: Proposed Planting Plan for Stormwater Wetland One

4.0: Summary

The DSIP area is traversed by the main stems of the Hingaia and Markeu Streams and several other permanent and intermittent streams and farm drains. Watercourses other than the Hingaia and Maketu Streams will be modified or re-aligned in order to facilitate the proposed land use. Stormwater management will also lead to the creation of additional naturalised wetland areas in association with the Hingaia Stream corridor.

All streams affected by the proposed DSIP have been previously modified by farming or roading operations, including dredging, spraying, straightening, and ongoing impact by stock. Stream bank erosion has been identified in the Hingaia ICMF as an existing issue at a number of locations. In general all of these streams have low to moderate functional values for stream ecology. Five of the seven tributaries to the Hingaia were observed as having very low to absent fish community values.

The DSIP Stream and Wetland Rehabilitation Guidelines establish a set of principles to enhance the landscape and ecology values of riparian systems in the DSIP area. The document is intended to provide technical input to the planning process and to provide guidance to ongoing more detailed design and implementation. The guidelines apply an inter-disciplinary approach to riparian rehabilitation.

Stream rehabilitation is proposed for the length of the Hingaia and Maketu Streams within the DSIP Area, including a 40m wide planted riparian buffer along the streams. In addition, streams to be realigned will have appropriate stream profiles and riparian planting to provide for sustainable stream function. Riparian rehabilitation will contribute to a wider open space network and enhanced natural character.

5.0: References

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Boffa Miskell 2010. Assessment of Ecological Effects Associated with the Proposed Plan Change. Prepared for Stevenson Group Ltd by Boffa Miskell March 2010

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Leopold, L. A View of the River (2003). Harvard Press, USA 2003

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2. Clause 20A changes to text – Numbering corrections

Memo

Date 21 October 2021

To: Celia Davison – Manager Planning - Central/South
 From: Sanjay Bangs – Senior Policy Planner - Central/South

Subject: **Plan Modification: Clause 20A modification to Auckland Unitary Plan**




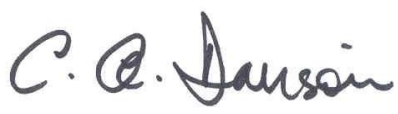
Corrections are required to the Auckland Unitary Plan (Operative in Part) 2016 (the AUP).

I seek your approval of this plan modification pursuant to clause 20A, first schedule, Resource Management Act 1991.

You have delegated authority, as a tier four manager, to make a decision to correct an error to an operative plan under clause 20A. Schedule 2A of the Auckland Council Combined Chief Executives Delegation Register¹ authorises all powers, functions, and duties under RMA's first schedule (except clause 17 which cannot be delegated) to tier four positions.

| | |
|--|--|
| Rule or Section of Unitary Plan | I410 Drury South Industrial and Mixed Use Precinct I410.11.1 Drury South Industrial Appendix |
| Subject Site (if applicable) | N/A |
| Legal Description (if applicable) | N/A |
| Nature of change | A Clause 20A modification is required to correct a number of minor errors in Chapter I410 in the AUP. Discussion Numbering errors detected in Chapter I410. This is not consistent with the Auckland Unitary Pan numbering format. |
| Effect of change | The change is minor in nature. The amendment does not change the application or intent of the provisions but rather it ensures the correct administering of the plan as was originally intended. There is no effect nor impact upon either the environment or persons. |
| Changes required to be made (text/in-text diagrams) | Amend Chapter I410 in the Operative in Part version. Refer to changes in red in Attachment 1 . |
| Changes required to be made (maps) | N/A |
| Attachments | Attachment 1: List of changes |

¹ updated February 2021 and available on Kotahi at [Delegation Register](#)

| | |
|--|---|
| <p>Prepared by: Sanjay Bangs Senior Policy Planner - Central/South</p> | <p>Text Entered by: Sarah El Karamany Planning Technician</p> |
| <p>Signature:</p>  | <p>Signature:</p>  |
| <p>Maps prepared by: N/A Geospatial Analyst</p> | <p>Reviewed by: Craig Cairncross Team Leader - Central/South</p> |
| <p>Signature:</p> | <p>Signature:</p>  |
| <p>Decision: I agree/disagree to authorise the Clause 20A modification using my delegated authority</p> <p>Celia Davison Manager Planning - Central/South Date: 27 October 2021</p> | |
| <p>Signature:</p>  | |

Attachment 1: Text changes

I410. Drury South Industrial and Mixed Use Precinct

I410.1. Precinct description

The Drury South Industrial and Mixed Use Precinct applies to approximately 257ha of land, bounded by State Highway 1 in the west, the Drury Quarry and the Hunua foothills in the east, the rural areas of Fitzgerald Road in the north and Ararimu Road in the south, as shown on Precinct Plan 1. The transportation network development requirements of the precinct are shown on Precinct plan 2. The precinct is characterised by a flat to subdued contour and is traversed by the Hingaia Stream and its tributaries including the Maketu Streams. Land which surrounds and defines the precinct has more pronounced topographical contours. The precinct lies between the Drury and Ramarama interchanges on State Highway 1 and local traffic patterns are dominated by truck traffic accessing the Drury Quarry.

The zones within the precinct are Business – Light Industry Zone, Business – Heavy Industry Zone, Business – Mixed Use, and Open Space – Conservation Zone. The purpose of the precinct is to provide for land extensive industrial activity employment opportunities, and a mix of residential and supporting commercial in identified areas, as well as provide for areas of stormwater management, existing and proposed network utility infrastructure, public open space and proposed roads, while recognising the ecological, cultural, landscape and other environmental constraints of the locality.

The precinct is divided into the following sub-precincts:

- Sub-precinct A Light Industry (approximately 130ha)
- Sub-precinct B Motorway Edge (Light Industry) (approximately 45ha)
- Sub-precinct C Mixed Use (approximately 10ha)
- Sub-precinct D Open Space / Stormwater Management (approximately 41ha)
- Sub-precinct E: Heavy Industry (approximately 24ha).

Sub-precinct A is zoned Business – Light Industry Zone. Activities within the sub-precinct are subject to additional standards.

Sub-precinct B is zoned Business – Light Industry Zone. The Transpower switchyard is located within this sub-precinct. Activities in the sub-precinct are subject to additional landscaping and building layout design standards.

Sub-precinct C is zoned Business - Mixed Use. Activities within this sub-precinct are subject to additional standards. The sub-precinct also provides for certain commercial activities to enable a mix of residential and supporting commercial uses.

Sub-precinct D is zoned Business – Light Industry Zone but provides for recreational uses and will be rezoned to an appropriate zone (e.g. Open Space - Informal Recreation Zone) once the Public Open Space / Stormwater Management Areas shown on Precinct Plan 1 are developed and vested.

Sub-precinct E has an underlying zoning of Business – Heavy Industry Zone. Activities within the sub-precinct are subject to additional standards.

I410.2. Objectives [rp/dp]

The objectives of the underlying Business – Light Industry Zone apply in sub-precincts A-B, the objectives of the underlying Mixed Use zone apply in sub-Precinct C, the objectives of the Open Space – Informal Recreation Zone apply in sub-precinct D, the objectives of the underlying Business – Heavy Industry Zone apply in sub-precinct E and the Auckland-wide objectives as well as the precinct objectives below apply throughout in this the precinct, unless there is a conflict between the precinct objectives and the Auckland-wide objectives or underlying zone objectives, in which case the precinct objectives prevail.

- (1) Development maintains and enhances the stream ecology and the natural vegetation and habitat values of the Hingaia and Maketu streams.
- (2) The cultural heritage values of the precinct are maintained and enhanced.
- (3) Landscape and visual amenity values within the precinct are maintained and enhanced (particularly when viewed from State Highway 1).
- (4) The air quality, acoustic and other amenity values of surrounding areas are protected.
- (5) The establishment of a convenient and well-designed industrial area with good quality streetscapes and a mixed use precinct is facilitated.
- (6) The timely and co-ordinated provision of robust and sustainable transport, stormwater, water, wastewater, energy and communications infrastructure networks are provided.
- (7) A transport network to facilitate the safe and efficient movement of people, goods and services and manage effects on the safe and efficient operation of the surrounding transport network.
- (8) The Drury Quarry, activities within the Business – Heavy Industry Zone or the adjoining rural area operate efficiently and are not unreasonably constrained by other activities.
- (9) Development and land use within the precinct avoids or minimises adverse effects on significant existing high voltage electricity, natural gas and communications infrastructure.
- (10) Subdivision and development in the precinct area avoids or mitigates the adverse effects of stormwater runoff on surface and groundwater quality and avoids increased flood risks to habitable buildings upstream and downstream of the precinct.
- (11) Visual and physical links to the surrounding area are protected.
- (12) Landscaping themes are complementary, consistent and coherent throughout the precinct.

(13) Activities sensitive to noise adjacent to the strategic freight network (Maketu Road and New Quarry Access Road) serving the Drury Quarry are protected from unreasonable levels of transport noise.

(154) Activities in sub-precinct C do not compromise the function, role and amenity of the City Centre Zone, Business – Metropolitan Centre Zone, Business – Town Centre Zone and Business – Local Centre Zone (either zoned or identified in the Council approved Structure Plan for Drury).

I410.3. Policies [rp/dp]

The policies of the underlying Light Industry zone apply in sub-precincts A-B, the policies of the underlying Mixed Use zone apply in sub-Precinct C, the policies of the Open Space – Informal Recreation Zone apply in Sub-precinct D, the policies of the Business – Heavy Industry Zone apply in sub-precinct E and the Auckland-wide policies as well as the precinct policies below apply throughout the precinct unless there is a conflict between the precinct policies or underlying zone policies and the Auckland-wide policies, in which case the precinct policies prevail.

- (1) Protect and enhance the significant streams and vegetation within Sub-precinct D.
- (2) Enhance the biodiversity of ecological resources and linkages and restore degraded ecosystems while reducing stream bank erosion through riparian planting along retained watercourses in sub-precincts B and D.
- (3) Reflect the cultural heritage values of the Hingaia and Maketu streams as cultural linkages between historical hill top pa and coastal areas in the development of sub-precinct D.
- (4) Maintain a sense of openness and naturalness on land adjacent to State Highway 1.
- (5) Maintain visual and physical links to the surrounding area within the precinct.
- (6) Utilise complementary, consistent and coherent landscaping themes throughout the precinct.
- (7) Design and construct attractive wetland areas for stormwater treatment and detention that also provide reserve and visual amenity opportunities.
- (8) Provide public open space buffer areas between the land to be developed for business activities and surrounding rural land.
- (9) Ensure buildings in Sub-precinct C address and engage the street and public realm and exhibit a high standard of amenity and pedestrian safety and convenience.

(10)[Deleted]

- (101) Provide for transport infrastructure and connections including Maketu Road, Link Road, New Quarry Access Road and Ramarama Road through to Fitzgerald Road, to support safe and efficient movement for all modes within and through the precinct and to and from the surrounding transport network.
- (142) Provide high quality public open spaces in Sub-precinct D that result in opportunities for passive surveillance.
- (123) Provide adequate stormwater, water, wastewater, communications and energy networks in a timely and co-ordinated manner to service development within the precinct.
- (134) Co-ordinate transport network (including the state highway) improvements both within and outside the precinct with development within the precinct to manage adverse effects on the safe and efficient operation of the surrounding road transport network.
- (145) Make adequate provision within Sub-precinct D to detain the 100 year Average Recurrence Interval (ARI) event without adverse effects on the extent of flooding of upstream and downstream areas.
- (156) Provide sufficient floodplain storage within Sub-precinct D to avoid increasing flood risk upstream and downstream, and manage increased flood risk within the precinct, to habitable rooms for all flood events from the 50% and up to the 1% AEP.
- (167) Undertake earthworks to form the modified floodplain in a manner which ensures flood effects on downstream or upstream areas are not exacerbated.
- (178) Avoid locating buildings within the 100 year ARI modified floodplain.
- (189) Avoid locating infrastructure within the 100 year modified ARI floodplain unless it can be designed to be resilient to flood related damage and does not exacerbate flood risks for upstream or downstream activities.
- (1920) Identify overland flowpaths in a stormwater management plan or discharge consent and ensure that they remain unobstructed and able to convey surface water runoff safely into the reticulated stormwater network.
- (201) Avoid or mitigate adverse effects on surface or groundwater quality from stormwater runoff within the precinct through on-site stormwater management and containment and the provision of catchment based stormwater treatment ponds.
- (242) Mitigate any diversion or piping of existing degraded or modified watercourses by the ecological enhancement and landscape planting of existing natural and diverted watercourses within and immediately adjacent to the precinct.
- (223) In Sub-precinct A, B, D and E, avoid the establishment of sensitive residential land uses.

~~(24)~~[Deleted]

~~(235)~~Control activities sensitive to noise adjacent to the strategic freight network (Maketu Road and New Quarry Access Road) serving the Drury Quarry. so that occupants are not exposed to unreasonable levels of transport noise.

~~(246)~~Manage development and subsequent land use to minimise adverse effects on the efficient and safe operation of existing high voltage electrical transmission and distribution lines, fibre optic cables and the Vector natural gas pipeline.

~~(257)~~Encourage a mix of residential and commercial uses within Sub-precinct C close to potential public transport routes and open space amenity, which provides opportunities to integrate with the Drury South Residential Precinct and the balance of the Drury South Industrial and Mixed Use Precinct.

~~(268)~~Provide for a range of commercial activities in Sub-Precinct C that will not compromise the role and amenity of the Business – Metropolitan Centre zone, Business – Town Centre zone (either zoned or identified in the Council approved Structure Plan for Drury) beyond those effects ordinarily associated with trade effects on trade competitors. In particular:

(a) Discourage the concentration of retail activity in one part of sub-precinct C, having regard to the effects of the scale and type of retail activity proposed;

(b) Appropriately stage the provision of retail (including supermarkets) in Sub-Precinct C over time as development in the surrounding area occurs;

(c) Enable appropriately scaled office activities to establish in sub-precinct C that support surrounding land uses in the Drury South precinct.

~~(279)~~Encourage a complementary mix of convenience activities to locate in the southern part of sub-precinct C, where it would be most accessible to the Drury South Residential precinct and would support a local community focal point.

I410.4. Activity table

The provisions in any relevant overlays, zone and the Auckland-wide apply in this precinct unless otherwise specified below.

In the event of a conflict between the zone or Auckland-wide rules and the precinct rules, the precinct rules prevail.

Table I410.4.1 specifies the activity status of development and subdivision activities in the sub-precincts A-E pursuant to sections 9(3) and 11 of the Resource Management Act 1991.

Table I410.4.1 Activity table 1 – Sub-precincts A to E

| Activity | | Activity status |
|--------------------|--|-----------------|
| Development | | |
| (A1) | Subdivision, or any development of land which precedes a | RD |

I410 Drury South Industrial Precinct

| | | |
|--------|---|----|
| | subdivision, being undertaken which complies with Standard I410.6.3 below. (Note that for the purposes of this rule "development" means the carrying out of any work on the land including any earthworks or site preparation activities and the construction or alteration of any building) | |
| (A2) | Subdivision, or any development of land which precedes a subdivision, being undertaken which does not comply with Standard I410.6.3 below, or results in increased flood risk to habitable rooms for all flood events from the 50% and up to 1% AEP flood event downstream and upstream of the Structure Plan area. | NC |
| (A3) | The creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct Plan 2 which also has frontage to another road shown on that Plan | RD |
| (A43A) | Residential activities in sub-precinct C which do not comply with Standard I410.6.5 (no-complaints covenant) | NC |

Table I410.4.2 specifies the activity status of land use activities in Sub-precinct A pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.2 Activity table 2 – Sub-precinct A (Light Industry)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Commerce | | |
| (A54) | Commercial services | NC |
| (A46) | Dairies | NC |
| (A76) | Drive-through restaurants | NC |
| (A87) | Entertainment facilities | NC |
| (A98) | Food and beverage | NC |
| (A109) | Retail over 450m ² except for Trade Suppliers | Pr |
| (A119A) | Trade Suppliers | P |
| (A10) | Activities that do not comply with standards in I410.6.2(9)(10) | D |

Table I410.4.3 specifies the activity status of land use and development activities in Sub-precinct B pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.3 Activity table 3 – Sub-precinct B (Light Industry - Motorway Edge)

| Activity | | Activity status |
|------------|---------------------|-----------------|
| Use | | |
| Commerce | | |
| (A121) | Commercial services | NC |

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| | | |
|----------------------|--|----|
| (A1 32) | Dairies | NC |
| (A1 43) | Drive-through restaurants | NC |
| (A1 45) | Entertainment facilities | NC |
| (A1 65) | Food and beverage | NC |
| (A1 76) | Retail over 450m ² | Pr |
| Development | | |
| (A1 87) | New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities | C |
| (A1 98) | Additions to buildings that are less than: <ul style="list-style-type: none"> • 10 per cent of the existing gross floor area of the building; or • 250m² whichever is the lesser | P |
| (A 2019) | Internal alterations to buildings | P |
| (A20) | Activities that do not comply with the standards in I410.6.2(9)(10) | D |

Table I410.4.4 specifies the activity status of land use and development activities in Sub-precinct C pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.4 Activity table 4 – Sub-precinct C (Business - Mixed Use)

| Activity | | Activity status |
|---------------------|---|-----------------|
| Use | | |
| Commerce | | |
| (A21) | [Deleted] | |
| (A21 A) | Trade Suppliers | P |
| (A22) | [Deleted] | |
| (A22 A) | Garden Centres | P |
| (A23) | [Deleted] | |
| (A23 A) | Motor Vehicle Sales | P |
| (A24) | [Deleted] | |
| (A24 A) | Marine Retail | P |
| (A25) | [Deleted] | |
| (A25 A) | Department Stores | NC |
| (A26) | [Deleted] | |
| (A26 A) | A single supermarket greater than 2000m ² gross floor area | RD |
| (A27) | [Deleted] | |

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| | | |
|--------|--|----|
| (A27A) | Retail not otherwise permitted up to 200m ² gross floor area per tenancy | P |
| (A28) | [Deleted] | |
| (A28A) | Retail not otherwise permitted greater than 200m ² gross floor area per tenancy | D |
| (A29) | [Deleted] | |
| (A29A) | Offices up to 500m ² per tenancy | P |
| (A30) | [Deleted] | |
| (A30A) | Offices between 501m ² – 1000m ² per tenancy | RD |
| (A31) | [Deleted] | |
| (A31A) | Offices greater than 1000m ² per tenancy | D |
| (A32) | [Deleted] | |
| (A32A) | Activities that do not comply with the standards in I410.6.2(9)(10) | D |
| (A33) | [Deleted] | |

Table I410.4.5 specifies the activity status of land use activities in Sub-precinct D pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.5 Activity table 5 – Sub-Precinct D (Open Space – Informal Recreation Zone / Stormwater Management)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Community | | |
| (A324) | Any activity listed as a permitted activity in the Open Space – Informal Recreation Zone | P |
| (A335) | Stormwater management devices | P |
| (A346) | Activities that do not comply with the standards in I410.6.2 | D |

Table I410.4.6 specifies the activity status of land use activities in Sub-precinct E pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.6 Activity table 6 – Sub-precinct E (Heavy Industry)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Commerce | | |
| (A357) | Dairies | NC |
| (A368) | Food and beverage | NC |
| (A379) | Activities that do not comply with the standards in I410.6.2 | D |

I410.5. Notification

- (1) An application for resource consent for a controlled activity listed in Tables I410.4.1 - I410.4.6 above will be considered without public or limited notification or the need to obtain written approval from affected parties unless the Council decides that special circumstances exist under section 95A(4) of the Resource Management Act 1991.
- (2) Any application for resource consent for an activity listed in Tables I410.4.1 - I410.4.6 and which is not listed in I410.5(1) will be subject to the normal tests for notification under the relevant sections of the Resource Management Act 1991.
- (3) When deciding who is an affected person in relation to any activity for the purposes of section 95E of the Resource Management Act 1991 the Council will give specific consideration to those persons listed in [Rule C1.13\(4\)](#).

I410.6. Standards

The overlay, Auckland-wide and zone standards apply in this precinct, unless otherwise specified below.

For the purposes of Rule E27.6.1(2)(b), the following activities have been assessed as part of an Integrated Transport Assessment on which the Drury South Industrial and Mixed Use Precinct provisions for Sub-precinct A and C are based:

| Activity | GFA (m²) |
|-----------------------------------|----------------------------|
| Supermarket | 4,500 |
| Retail | 4,400 |
| Offices | 15,000 |
| Trade suppliers | 11,000 |
| Supporting commercial services | 3,300 |
| Residential – apartments | 12,300 |
| Activity | GFA (m²) |
| Residential – Retirement Villages | 22,000 |

I410.6.1. Sub-precinct C

All activities listed as permitted in Table I410.4.4 must comply with the following standards

I410.6.1.1. ~~Deleted~~

- (1) ~~Deleted~~
- (2) ~~Deleted~~

I410.6.1.1A. Retail and Office Gross Floor Area

- (1) Retail must not exceed a total of 1000m² gross floor area in Sub-Precinct C. This excludes one supermarket greater than 2000m², service stations, trade suppliers, garden centres, motor vehicle sales, marine retail and food and beverage.
- (2) Retail activities specified in (1) above, greater than 1000m² and up to and including 4,500m² in Sub-Precinct C will be assessed as a restricted discretionary activity on a non-notified basis.
- (3) Retail activities specified in (1) above, greater than 4,500m² in Sub-Precinct C will be assessed as a discretionary activity.
- (4) Offices must not exceed 15,000m² in total in Sub-Precinct C. Offices greater than 15,000m² will be assessed as a discretionary activity.
- (5) Trade suppliers within Sub-Precincts A and C must not exceed a total of 11,000m² gross floor area. Trade suppliers that are greater than 11,000m² gross floor area will be assessed as a restricted discretionary activity on a non-notified basis.

I410.6.1.2. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.1.3. [Deleted]

- (1) [Deleted]

I410.6.1.4. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.2. Sub-precincts A-E

The standards are those listed in the Auckland-wide rules (in respect of sub-precincts A-E), Business – Light Industry Zone (in respect of sub-precincts A-B), Business – Mixed Use Zone (in respect of sub-precinct C), the Open Space – Informal Recreation Zone (in respect of sub-precinct D) and the Business – Heavy Industry Zone (in respect of Sub-precinct E) except as follows:

- (1) [Deleted]

(42) Buildings must not exceed 25m in height in Sub-precinct E and Sub-Precinct C.

(23) Within the Drury South Industrial and Mixed Use Precinct the industrial zone height in relation to boundary control will not apply, and instead, buildings must not project beyond a 45 degree recession plane measured from a point

2 metres vertically above ground level along the residential or public open space boundary.

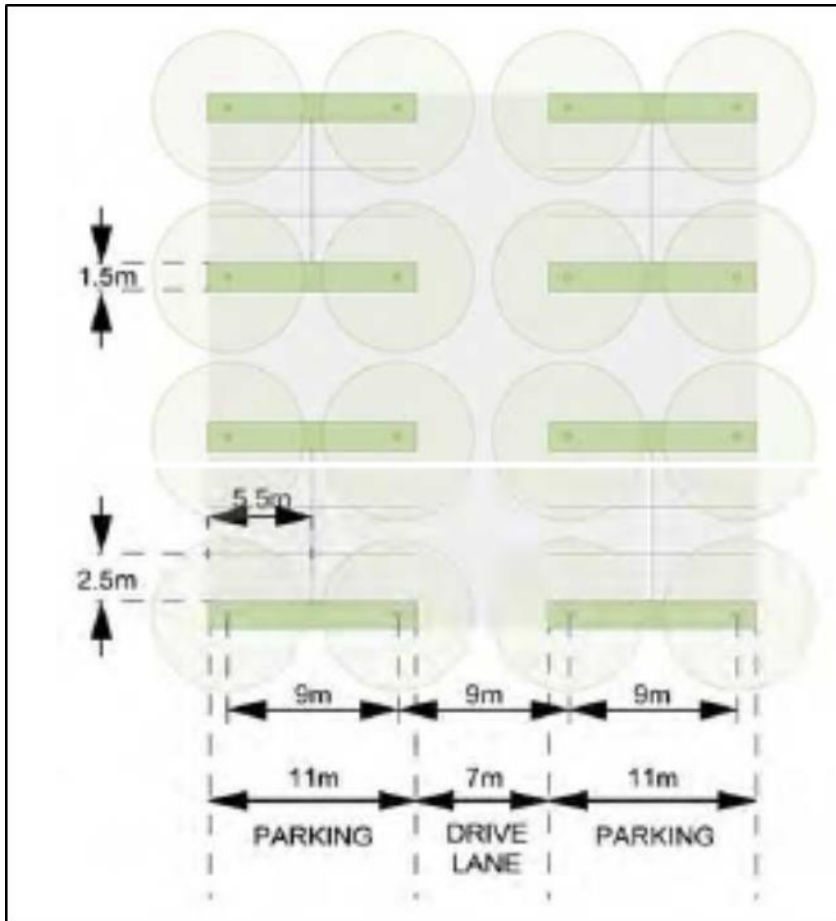
- (34) All new roads must be designed and constructed to comply with the provisions of New Zealand Standard NZS6806:2010 "Acoustics – Road Traffic Noise – New and Altered Roads".
- (45) The upward waste light ratio from any luminaire must not be more than 3 per cent. The upward waste light ratio is defined as: "The ratio of the light flux emitted above the horizontal by a luminaire to the total light flux emitted, expressed as a percentage, evaluated for the upcast angle".
- (56) Any required security fence must be setback a minimum of 3 metres from the front boundary and such fencing (whether in front yards or on rear or side boundaries) must be 2 metre maximum height and must not incorporate barbed or razor wire or an angled top. Fence posts and wire mesh are to be black coloured.

(7) [Deleted]

(7A) Where any new building is proposed, the reflectivity value of the roof or roofs must not exceed 30 per cent.

(8) Within Sub-precinct B no less than 30 per cent of the net site area of each site is to be in permeable landscape area (including any on site stormwater treatment). Where on site car parking adopts a layout fully conforming with the fully planted permeable carpark design layout detailed in Figure I410.6.2.1 below, the permeable landscape area may be reduced to no less than 20 per cent of the site area.

Figure I410.6.2.1 Carpark design



~~(9)~~ [Deleted]

(910) Any land modification to form the 1% AEP modified flood plain must:

- (a) not reduce flood storage capacity in the precinct; and
- (b) not change the flood characteristics upstream or downstream of the precinct for all flood events from the 50% and up to the 1% AEP flood event in ways that result in an increase in peak flood levels.

I410.6.3. Subdivision or development preceding subdivision in Sub-precincts A – E

- (1) Proposed roads (including pedestrian and bicycle routes) identified on the Precinct Plan 1 and Precinct Plan 2, must be located generally in the position indicated on Precinct plan 1 and Precinct Plan 2. An alternative roading layout may be proposed provided that an integrated approach to land use and transport can be achieved throughout the Drury South Industrial and Drury South Residential precincts.
- (2) The land identified as part of Sub-precinct D on Precinct plan 1 must be developed upon subdivision or development of the relevant area. Proposed stormwater management areas must be located generally in the position

indicated on Precinct Plan 1, and must be offered to the Council. Vegetated buffers not less than 40 metres in total width are to be provided along stream corridors within stormwater management areas and must include a minimum of 10 metres of native riparian planting either side of the stream edge. Off-site stormwater management services including wetlands and the primary and secondary stormwater conveyance system is to be vested at no cost to the council in accordance with a network discharge consent or other relevant discharge consent or a stormwater management plan approved by the Council. All stormwater management areas and wetlands must be designed to serve a dual function to treat stormwater and provide ecological benefits.

- (3) Reticulated water services must be supplied to the precinct and all new water infrastructure must be fully funded (including consenting costs) by the developer(s) of the land within the precinct. Such services must be provided to the relevant part of the precinct in advance of or concurrent with a resource consent for subdivision and development provided that any necessary resource consents or designations for the reticulated water services have been granted.
- (4) Wastewater services are to be provided to the precinct either by (in no particular order):
 - (a) the construction of a connection to Watercare's existing wastewater network and any necessary upgrading of that network that is required to service the Precinct; and/or
 - (b) the construction of a Wastewater Treatment Plant to service the Precinct, or a larger catchment if required.

In either case wastewater services are to be provided in a manner approved by Watercare and constructed to Watercare's design and operational standards. The developer(s) must fully fund (including consenting costs) all new wastewater infrastructure required to service the Precinct. Wastewater services must be provided to the relevant part of the Precinct in advance of or concurrent with a resource consent for subdivision and development provided that any necessary resource consents or designations for the reticulated water services have been granted. In the event that a new regional wastewater treatment plant becomes available to service the precinct, and subject to approval from Watercare, the precinct could be connected to that plant.

Note: that for the purposes of the Standards I410.6.3(1)-(4) above, references to "Watercare" means Watercare Services Limited and references to "development" means the carrying out of any work on the land including any earthworks or site preparation activities and the construction or alteration of any building.

I410.6.4. Sub-Precinct C (Noise and Ventilation)

- (1) Any building containing a noise sensitive space within Sub-Precinct C must be located and/or designed and/or insulated, or screened by suitable barriers, so that the design noise levels do not exceed:
 - (a) 40 dB $L_{Aeq(24\text{ h})}$ inside any noise sensitive space; and
 - (b) 70 dB $L_{Aeq(24\text{ h})}$ incident on any façade facing Maketu Road that encloses a noise sensitive space.
- (2) Compliance with Standard I410.6.4(1) must be determined based on a road traffic noise level 10m from the nearest traffic lane of Maketu Road of 75 dB $L_{Aeq(24\text{ h})}$, 83 dB $L_{eq(24\text{ h})}$ at 63 Hz and 79 dB $L_{eq(24\text{ h})}$ at 125 Hz.
- (3) For residential dwellings, where the internal noise levels in Standard 1 can only be complied with when doors or windows to those rooms are closed, those rooms adopt the relevant mechanical ventilation and/or cooling requirements of E25.6.10(3)(b) or (c).
- (4) For the avoidance of doubt, the noise insulation requirements set out in Standard I410.6.4(1)-(3) apply in addition to any other noise insulation requirements set out in Chapter E25 – Noise and Vibration.

I410.6.5. Sub-Precinct C (Restrictive non-complaint covenant)

- (1) Residential activities in Sub-precinct C shall be subject to a restrictive non-complaint covenant* in favour of the operator of Drury Quarry.

*For the purposes of the Drury South Industrial and Mixed Use precinct and of this rule a 'restrictive non-complaint covenant' is defined as a restrictive covenant registered on the Title to the property or a binding agreement to covenant, in favour of the operator of Drury Quarry, by the landowner (and binding any successors in title) not to complain as to effects generated by the lawful operation of the quarry, including heavy vehicle movement noise. The restrictive non-complaint covenant is limited to the effects that could be lawfully generated by the quarry activities at the time the agreement to covenant is entered into. This does not require the covenantor to forego any right to lodge submissions in respect of resource consent applications or plan changes in relation to quarry activities (although an individual restrictive non-complaint covenant may do so.) Details of the existence of covenant documents may be obtained from the Quarry Operator, its solicitors, or in the case of registered covenants by searching the Title to the property.

I410.7. Assessment – controlled activities

I410.7.1. Matters of control

The Council will reserve its control to all of the following matters when assessing a controlled activity resource consent application:

- (1) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct B:
 - (a) retention of existing vegetation;

- (b) planting;
- (c) building design and appearance;
- (d) parking area design;
- (e) storage and waste management location and design; and
- (f) vehicular access;

(2) [Deleted]

I410.7.2. Assessment criteria

The Council will consider the relevant assessment criteria below for controlled activities:

- (1) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct B:

- (a) retention of existing vegetation:

- (i) the extent to which layouts retain and protect existing mature trees, particularly those of indigenous species, where these contribute to the site character and amenity.

- (b) planting:

- (i) the extent to which planting is designed to have a large scale landscape effect and combine native as well as appropriate exotic species to provide seasonal change and quality amenity; or
- (ii) where public open space land adjoins the motorway, the extent to which boundary planting that creates a continuous visual barrier to eastward views from the State Highway 1 corridor is avoided and whether landscape design emphasises the current sequence of intermittent views to the Hunua Ranges from the State Highway 1 corridor and the pattern of variable depth of such views;
- (iii) the extent to which the integrated site layout, building and landscape design provides a high quality and visually attractive frontage to State Highway 1, while ensuring any landscaping, including the use of large tree and shrub species, does not restrict access to the electricity infrastructure for maintenance and does not compromise the safe and reliable operation of the electricity network.

Advice note: In considering whether this criterion is met, the Council may take into account whether a review has been undertaken by or on behalf of Counties Power which confirms that the proposed planting will not affect the safe and reliable operation and maintenance of the electricity network.

- (c) building design and appearance:

- (i) the extent to which buildings are located with design consideration for their visibility and reduced visual impact as viewed from the State Highway 1 corridor and the desirability of maintaining a sense of openness as seen from the motorway; or
- (ii) the extent to which the visual mass of larger buildings is minimised by employing the following methods:
 - utilising subdued, recessive colours;
 - providing variation in materials and finish for facades viewed from the motorway;
 - creating variation of roof profiles with consideration given to the overall roofscape viewed from the motorway;
 - all rooftop servicing and plant should be designed as an integral part of the roofscape with particular consideration given to the view from the motorway;

(d) parking area design:

- (i) the extent to which parking areas are designed to incorporate trees to break up the scale of hard surface areas; or
- (ii) the extent to which the fully planted permeable carpark design layout (refer Figure I410.6.2.1 above) style of parking is adopted within Sub-precinct B;

(e) storage and waste management location and design:

- (i) the extent to which storage and waste management activities are located and/or designed to be screened from view of State Highway 1;

(f) vehicular access:

- (i) the extent to which proposed vehicle access to sites adjoining the Maketu_Road and New Quarry Access Road shown on the Precinct plan 2 minimises any conflict with safety and efficiency of these routes as part of the strategic freight network;

(2) ~~Deleted~~

I410.8. Assessment – restricted discretionary activities

I410.8.1. Matters of discretion

The Council will consider the relevant assessment criteria below for restricted discretionary activities, in addition to the assessment criteria specified for the relevant restricted discretionary activities in the overlay, Auckland wide or zone provisions:

- (1) subdivision or any development of land which precedes a subdivision being undertaken which complies with Standard I410.6.3:
 - (a) the relevant council and Auckland Transport development code or codes of practice;
 - (b) geotechnical and seismic;
 - (c) servicing and development sequencing;
 - (d) design and layout;
 - (e) earthworks;
 - (f) transportation network development requirements;
 - (g) ecology;
 - (h) Counties Power 110 Kv sub-transmission lines; and
 - (i) stormwater management;
- (2) the creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct Plan 2 which also has frontage to another road shown on that plan:
 - (a) effect of the location and design of the access on the safe and efficient operation of the adjacent transport network; and
 - (b) adequacy of access arrangements.
- (3) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct C:
 - (a) building design;
 - (b) parking area design;
 - (c) signs;
 - (d) service area location;
 - (e) vehicular access; and
 - (f) mitigation of traffic noise.

- (4) A single supermarket greater than 2000m², supermarkets exceeding 450m² and up to 2000m² gross floor area per tenancy, offices between 501m² – 1000m² per tenancy and retail greater than 1000m² and up to and including 4,500m² in Sub-Precinct C
- (a) the compatibility of the effects of intensity and scale of the development arising from the numbers of people and/or vehicles using the site, with the existing and expected future amenity values of the surrounding area and any practicable mitigation measures that would be appropriate to manage those effects;
 - (b) the effects of the design and location of parking areas and vehicle access and servicing arrangements on visual amenity of the streetscape and on pedestrian safety;
 - (c) the effects of the size, composition, characteristics, and concentration of retail or office activities proposed in Sub-precinct C on the existing and expected future function, role and amenity of other Metropolitan or Town Centres that are zoned or are identified in a Council approved Structure Plan for Drury, having regard to the need to enable convenient access of communities to commercial and community services while disregarding any effects ordinarily associated with trade effects on trade competitors;
 - (d) In determining (c) above, whether the activity is coordinated with the rate of residential and commercial development in the local area to ensure that the activity individually, or in combination with other consented or permitted activities, meets the needs of the local catchment;
 - (e) whether the retail or office proposal, individually, or in combination with other consented or permitted activities, meets the needs of the local residential and employment catchment;
 - (f) the assessment of the above matters having regard to the need to provide for the functional requirements of the activity.
- (5) Trade Suppliers in Sub-Precincts A and C greater than 11,000m² gross floor area
- (a) Effects of the activity on the safe and efficient operation of the surrounding transport network.
- (6) Infringement I410.6.4 – Sub-Precinct C (Noise and Ventilation)
- (a) the effects of land transport noise of the noise sensitive activity;
 - (b) the potential reverse sensitivity effects of the infringement.

I410.8.2. Assessment criteria

The Council will restrict its discretion to all of the following matters when assessing a restricted discretionary activity resource consent application, in addition to the

matters specified for the relevant restricted discretionary activities in the overlay, Auckland-wide or zone provisions:

- (1) subdivision, or any development of land which precedes a subdivision being undertaken, which complies with Standard I410.6.3:
 - (a) the extent to which the subdivision or development is in accordance with the relevant codes or codes of practice or engineering standards, and whether the road network is consistent with its intended function as set out within those codes or codes of practice and the subdivision design assessment criteria set out in Appendix I410.11.
 - (b) the extent to which the subdivided lots or the land on which the development is to be undertaken are geotechnically suitable for the development of a permitted activity or an activity for which resource consent has been obtained. This may include an assessment of the following:
 - (i) any proposed fill materials;
 - (ii) stability in areas of deep cut particularly adjacent to the boundaries of the Precinct;
 - (iii) settlement and stability issues associated with the Hingaia and Maketu streams;
 - (iv) time dependent settlement;
 - (v) ground seismicity and buffer zone; or
 - (vi) liquefaction;
 - (c) the extent to which subdivision and development occurs in a logical and sequential manner in relation to:
 - (i) the implementation of improvements and/or upgrades to the roading network;
 - (iiA) the implementation of a potential pedestrian and cycling connection shown on Precinct Plan 1 between the Drury South Residential Precinct and Sub-Precinct C and the integration of this with proposed built development in Sub-Precinct C;
 - (iii) the establishment of the stormwater management areas within sub-precinct D identified on Precinct Plan 1 and catchment wide stormwater management devices as identified in the relevant discharge consent and/or stormwater management plan required by the special information requirements below;
 - (iiV) the provision for overland flowpaths identified in an approved discharge consent and/or stormwater management plan required by the special information requirements below; or

- (iv) the provision of wastewater facilities, water supply, electricity, gas and telecommunications, including the protection and /or relocation of any existing local electricity, gas and communications assets;
- (d) the extent to which subdivision design and layout gives effect to the objectives and policies identified for the Drury South Industrial and Mixed Use Precinct and the subdivision design assessment criteria set out in Appendix I410.11.1.
- (e) the extent to which the earthworks required by the subdivision or development:
- (i) avoid or mitigate adverse effects on land stability, existing underground infrastructure facilities (such as the Vector gas pipeline and Telecom telecommunications cables), and groundwater quantity and quality;
 - (ii) avoid or mitigate adverse effects on the visual quality of the landscape or natural landforms, watercourses, habitats or vegetation;
 - (iii) avoid or mitigate adverse effects on traffic management within the area or create damage, danger, or nuisance to surrounding residents or the Ramarama School;
 - (iv) consider opportunities to recharge the aquifer using treated stormwater where permeable soils are available;
 - (v) ensure that the creation of level development platforms are contoured to integrate with the surrounding street environment and open space corridors;
 - (vi) screen retaining walls from public view;
 - (vii) provide and maintain continuity of overland flow paths both within the site, as well as upstream and downstream; and where overland flow paths are diverted and/or altered show how:
 - potential effects on other properties from the diversion or alteration is avoided or mitigated;
 - effects from scouring and erosion are mitigated;
 - further changes to the overland flow path will be limited, when appropriate through an easement in favour of Council;
 - (viii) if located in the 1% AEP modified flood plain, including earthworks for the formation of stormwater management devices such as wetlands and/or for necessary infrastructure (including associated landscaping and accessways), whether:
 - the design of the device, including associated earthworks, landscaping and accessways avoids impeding flood flows or

otherwise exacerbating flood risk upstream or downstream of the site and how such effects can be avoided;

- the design of the device or mitigation works is resilient to damage from the full range of flood events;
- access to the device for maintenance is provided and maintenance plans address potential effects that may result from the proposed access route;

(f) the extent to which the following transportation network requirements are met:

- (i) whether subdivision or development will result in the central 'Maketu Road' being progressively constructed on an alignment consistent with that indicated in Precinct plan 2;
- (ii) whether the following road projects indicatively shown on Precinct plan 2 will be completed before any buildings within the precinct are occupied:
 - the realignment of existing Quarry Road onto the alignment of the 'Maketu Road' from the State Highway 1 over-bridge to the southern extent of the first stage of subdivision;
 - the upgrading of the existing Quarry Road/Great South Road intersection;
 - the provision of traffic signals or an alternative upgrade which achieves equivalent transport performance at the existing Great South Road/State Highway 22 (Karaka Road) intersection;
 - under the scenario where development of the Precinct proceeds in advance of the Mill Road Corridor Project, the upgrading of the right turn bay on Waihoehoe Road at the Waihoehoe Road/Fitzgerald Road intersection;
- (iii) whether a new dedicated pedestrian path and cycleway has been constructed between the existing Drury township and the precinct before development and occupation of more than 25 hectares of Industrial zoned land within the precinct occurs;
- (iv) whether Ramarama Road, at the northern boundary of the precinct remains open as defined on Precinct Plan 2;
- (v) whether the Link Road from the Maketu Road to Fitzgerald Road shown on Precinct Plan 2 is provided and shoulder widening, intersection treatments and localised widening works within the existing road reserve on Fitzgerald Road between the Link Road and Waihoehoe Road is undertaken before Ramarama Road is closed at the northern boundary of the Precinct;

- (vi) whether the 'Avenue' Road and the portion of the Maketu Road shown on Precinct Plan 2 is provided as the adjacent Sub-precinct C is developed, and whether the 'Avenue' Road is connected with Maketu Road at the southern end of Sub-precinct C, and is extended to, but not connected with, Maketu Road at the northern end of Sub-Precinct C. An alternative location for vehicle access through a portion of Sub-precinct C (the 'Avenue Road') may be appropriate where it is safe and efficient, and provided that a continuous and high amenity pedestrian and cycle connection is located along the western edge.
- (vii) whether Ramarama Road, at the southern boundary of the precinct, is closed to all vehicular traffic by the time 89 hectares of Industrial zoned land within the precinct has been subdivided or developed;
- (viii) whether the southern portion of the Maketu Road that connects to Ararimu Road is constructed before:
- Ramarama Road is closed at the southern boundary of the Precinct; or
 - any development of the precinct south of the New Quarry Access Road shown on Precinct Plan 2 occurs;
- (ix) whether State Highway 1 Ramarama Interchange is capable of accommodating the traffic from the subdivided and developed portion of the precinct including the predicted traffic from the land which is the subject of the application. To enable assessment of this criterion, applications for subdivision or development must include a traffic assessment of the effects of the subdivision or development on the interchange prepared by a qualified and experienced traffic engineer.
- Note: This criterion will be considered to be met where such an assessment includes a review undertaken by or on behalf of NZTA which confirms that there is sufficient capacity or planned capacity at this interchange to accommodate the predicted increase in traffic;
- (g) in respect of those new areas of planting in stormwater management and wetland areas in Sub-precinct D the extent to which:
- (i) plants should be eco-sourced as close as possible to the developed area;
 - (ii) the mechanisms proposed ensure the weed and pest management programme and the herpetofaunal mitigation/rehabilitation plan are implemented;
 - (iii) The public open space area that adjoins the southern boundary of the Precinct will provide the basis of an ecological corridor linkage of 30 metres in width between the southern buffer in the Precinct and bush areas in the Special Purpose – Quarry Zone when planted with

suitable tree species at the time of subdivision of the adjoining industrial zoned land;

- (h) whether the existing 110kV Counties Power electricity lines are provided for in the existing positions in any subdivision or whether the existing lines can be relocated in agreement with Counties Power;
- (i) whether the stormwater management plan and works proposed as part of the subdivision or development:
 - (i) comply with any approved discharge consent;
 - (ii) are effective in avoiding, remedying or mitigating the potential adverse effects of stormwater discharge on water quality and flood hazards. In the case of stormwater management facilities within private land this assessment will include how the operation and maintenance of such facilities is to be secured by way of appropriate covenants or consent notices;
 - (iii) can effectively contain all the natural and diverted streams and their margins, wetlands, and other off-site stormwater management devices;
 - (iv) provide for overland flowpaths;
 - (v) require a bond or other security to be provided to ensure that the stormwater management works will be completed, with such bond to be released when the works are completed and the stormwater management areas and their devices are vested in council;
 - (vi) ensure that subdivision and development does not result in increased flood risk to habitable rooms for all flood events from the 50% and up to 1% AEP flood event downstream and upstream of the precinct;
- (2) the creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct plan 2 which also has frontage to another road shown on that plan:
 - (a) any adverse effect from the location and design of the access on the safe and efficient operation of the adjacent transport network, including public transport, cyclists and general traffic, having regard to:
 - (i) the number of other access points to or from the Maketu Road in the vicinity of the proposed access;
 - (ii) whether conflicts will be reduced by the presence of a raised central median which prevents right turning in the vicinity of the site;
 - (iii) visibility and safe sight distances particularly the extent to which vehicles entering/exiting the site can see, and be seen by, pedestrians, cyclists and other vehicles on the footpath and road carriageway;

- (iv) existing and future traffic conditions including speed, volume, type, current accident rate, and the need for safe manoeuvring in all weathers;
 - (v) existing pedestrian numbers, and estimated future pedestrian numbers having regard to the level of development provided for in the this Plan; and
 - (vi) existing community or public infrastructure located in the adjoining road, such as bus stops, bus lanes and cycleways.
- (b) whether the access arrangements are practicable and adequate having regard to site limitations and layout, and arrangement of buildings and activities, users and operational requirements, and having regard to whether the site can reasonably be served by shared or amalgamated access with another site or sites on the Maketu Road where the sites in question are held in the same ownership.
- (3) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct C:
- (a) building design:
 - (i) the extent to which buildings on corner lots are designed to provide for a quality architectural response to the corner. Appropriate design responses include the provision of additional height at the corner, windows and activities addressing both street frontages and avoiding blank walls to one or both sides of the corner;
 - (ii) the extent to which built development fronts the street and open space with a quality recognisable pedestrian entry or entries to the street.
 - (iii) Where buildings are required to be setback from Maketu Road for acoustic amenity reasons, a safe and attractive edge to Maketu Road should be provided. Methods to achieve this include providing landscaping at the street edge and providing a good degree of glazing on the building facade overlooking Maketu Road;
 - (iv) the extent to which developments for trade suppliers, garden centres, marine retail, motor vehicle sales or supermarkets provide a quality frontage to the street and provide appropriate treatments to side and rear boundaries, including quality fencing and landscaping, to recognise the broader range of activities enabled in sub-precinct C and the higher standard of amenity expected in the Mixed Use zone, while also taking into account the functional requirements of the activity.
 - (b) parking area design:
 - (i) the extent to which parking is provided on the road network adjacent to sub-precinct C areas and on-site parking layouts are designed in accordance with the typical layout identified in Appendix I410.11.1.

(c) signs:

- (i) the extent to which signs for each sub-precinct C development are coordinated including the physical location of signs, their type-face, style and content;

(d) service area location:

- (i) the extent to which service areas are located so as to avoid observation from a public road with access either from a service lane, incorporation within the main building or full screening of service/storage and dock areas;

(e) vehicular access:

- (i) the extent to which proposed vehicle access to sites adjoining the Maketu Road shown on the Precinct plan 2 minimises any conflict with safety and efficiency of these routes as part of the strategic freight network;

(f) mitigation of traffic noise:

- (i) the extent to which premises offering food and beverages, health professional rooms and childcare centres (being permitted activities which may be sensitive to heavy commercial vehicle traffic noise) are designed to mitigate traffic noise effects. Mitigation measures may include acoustic treatment of buildings and arranging site layout so noise sensitive activities are screened from the heavy traffic noise.

(g) Drury South Industrial and Mixed Use precinct Appendix

- (i) The extent to which buildings and development in Sub-Precinct C are consistent with the criteria in Appendix I410,11.2.

(4) A single supermarket greater than 2000m², supermarkets exceeding 450m² and up to 2000m² gross floor area per tenancy, offices between 501m² – 1000m² per tenancy and retail greater than 1000m² and up to and including 4,500m² in Sub-Precinct C

- (a) The extent to which the effects of the size, composition, characteristics and concentration of retail or office activities in Sub-precinct C will be complementary to the existing and expected future function, role and amenity of other Metropolitan or Town Centres that are zoned or are identified in a Council approved Structure Plan, having regard to the need to enable convenient access of communities to commercial and community services while disregarding any effects ordinarily associated with trade effects on trade competitors;
- (b) The extent to which retail that meets local convenience needs is located at the southern part of sub-precinct C, where it would be most accessible to

the Drury South Residential precinct and would support a local community focal point.

- (c) The extent to which the activity is coordinated with the rate of residential and commercial development in the wider area to ensure that the activity individually, or in combination with other consented or permitted activities, meets the needs of the local catchment;
 - (d) The extent to which the size, composition and characteristics of any office activity would serve a local function and support adjoining businesses in Drury South.
- (5) Trade Suppliers in Sub-Precincts A and C greater than 11,000m² gross floor area
- (a) the extent to which the activity affects the safe and efficient operation of the adjacent transport network including pedestrian and cycling movement, particularly at peak traffic times;
 - (b) the extent to which the proposal incorporates mitigation measures to address adverse effects.
- (6) Infringement I410.6.4 – Sub-Precinct C (Noise and Ventilation)
- (a) the extent to which the type of activity proposed is likely to be adversely affected by the expected levels of transport noise;
 - (b) the extent to which any characteristics of the proposed use or area make compliance with of New Zealand Standard NZS6806:2010 "Acoustics – Road Traffic Noise – New and Altered Roads" unnecessary;
 - (c) whether the building and any outdoor living areas are appropriately located, and/or setback an appropriate distance from the Spine Road and/or State Highway 1 to minimise the potential for adverse effects from land transport noise.

I410.9. Special information requirements

I410.9.1. Earthworks plans

- (1) Any application for subdivision or development must be accompanied by detailed earthworks plans. Such plans must:
 - (a) describe the nature and scale of the proposed earthworks, such as the extent of cut and/or fill, sources of fill and how the cut and fill is to be transported;
 - (b) describe the construction management and communication methods to be followed to minimise nuisances and disruption to surrounding residents and Ramarama School (in particular, dust, traffic and noise impacts) during the construction period; and

- (c) provide detailed design of the modified flood plain.

I410.9.2. Ecological management plans

- (1) In respect of any new areas of planting in Sub-precinct D the following must be provided:
 - (a) a weed and pest management programme for any new areas of planting within the stormwater management areas and wetland areas and remaining indigenous forest fragments in Sub-precinct D; and
 - (b) a herpetofaunal mitigation/rehabilitation plan which targets only potentially suitable lizard habitat for relocation searches.

I410.9.3. Stormwater management report and plans

- (1) Any application for subdivision or development preceding subdivision must be accompanied by detailed stormwater management report and plans. Such report and plans must:
 - (a) describe how the plans comply with the conditions of any relevant discharge consent;
 - (b) identify overland flow paths;
 - (c) describe the nature and extent of any off-site stormwater management devices and how these devices are to be delivered if they are on land outside the application site;
 - (d) if stormwater management devices are to be located within the modified 1% AEP floodplain, describe how these devices are to be designed to be resilient to flood-related damage while not exacerbating flood risks for upstream or downstream activities;
 - (e) where streams are to be diverted and/or recreated as identified on the precinct plan, describe how this is to be achieved in a way that ensures that they function in a manner similar to natural stream systems. Detailed landscape treatment plans will be required to demonstrate:
 - (i) the proposed long section and cross sections;
 - (ii) how the new stream banks are to be stabilised;
 - (iii) how pool – riffles - run sequences are to be formed; and
 - (iv) how stormwater outlets are controlled.
- (2) A subdivision application for vacant lot subdivision or a land use application for a new building or buildings in Sub-precinct C must be accompanied by an indicative 'integration plan' showing how the proposed development integrates with potential future development in the remainder of Sub-precinct C, including existing or potential transport connections and activities.

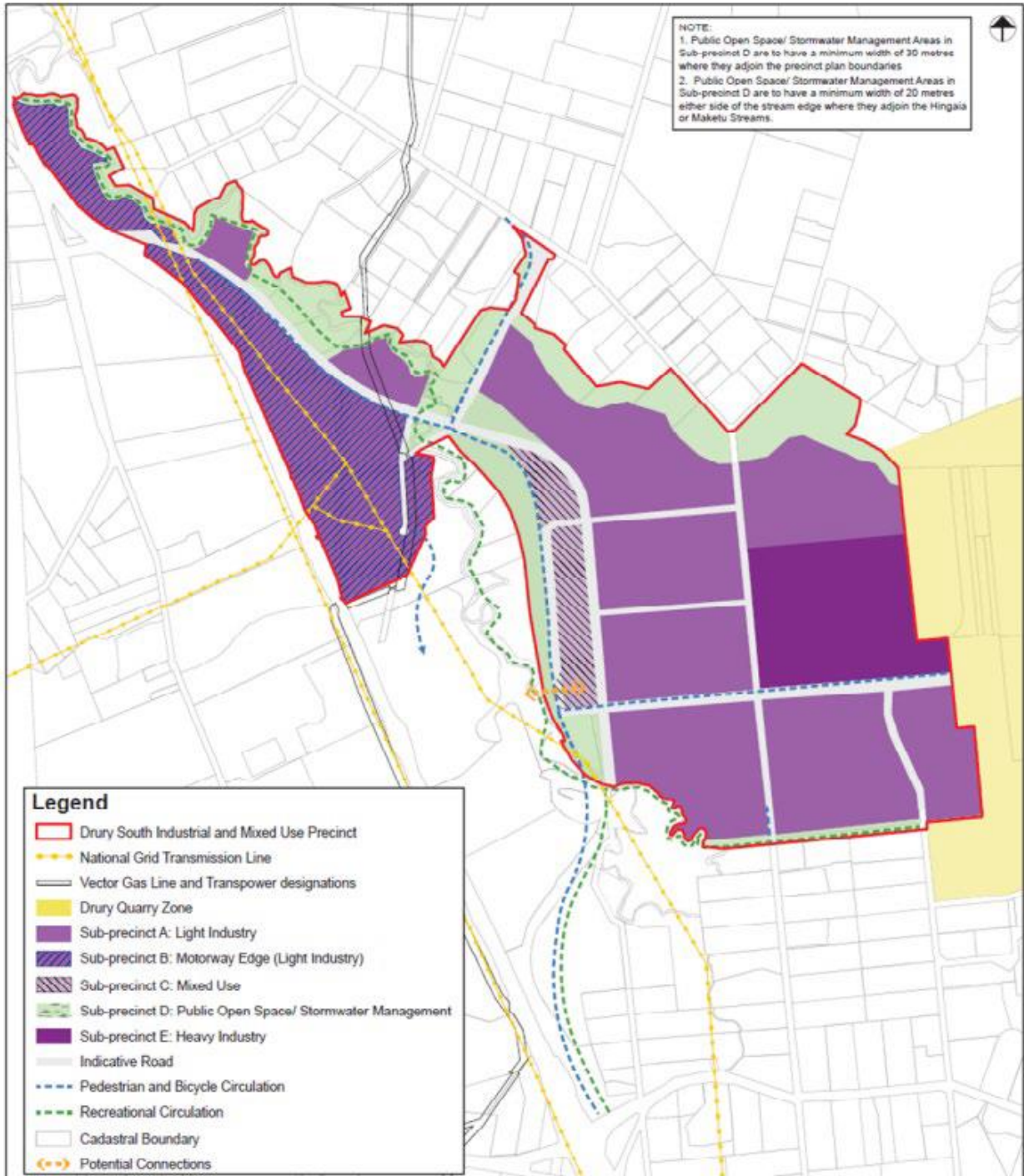
I410 Drury South Industrial Precinct

To avoid doubt, this plan is not subject to any approval from the Council and is for information only. Its purpose is to inform how a particular stage of development will positively contribute to the visual quality and interest of streets, public open spaces and pedestrian amenity, movement and safety (Policy H13.3(3)), in an integrated manner across Sub-precinct C.

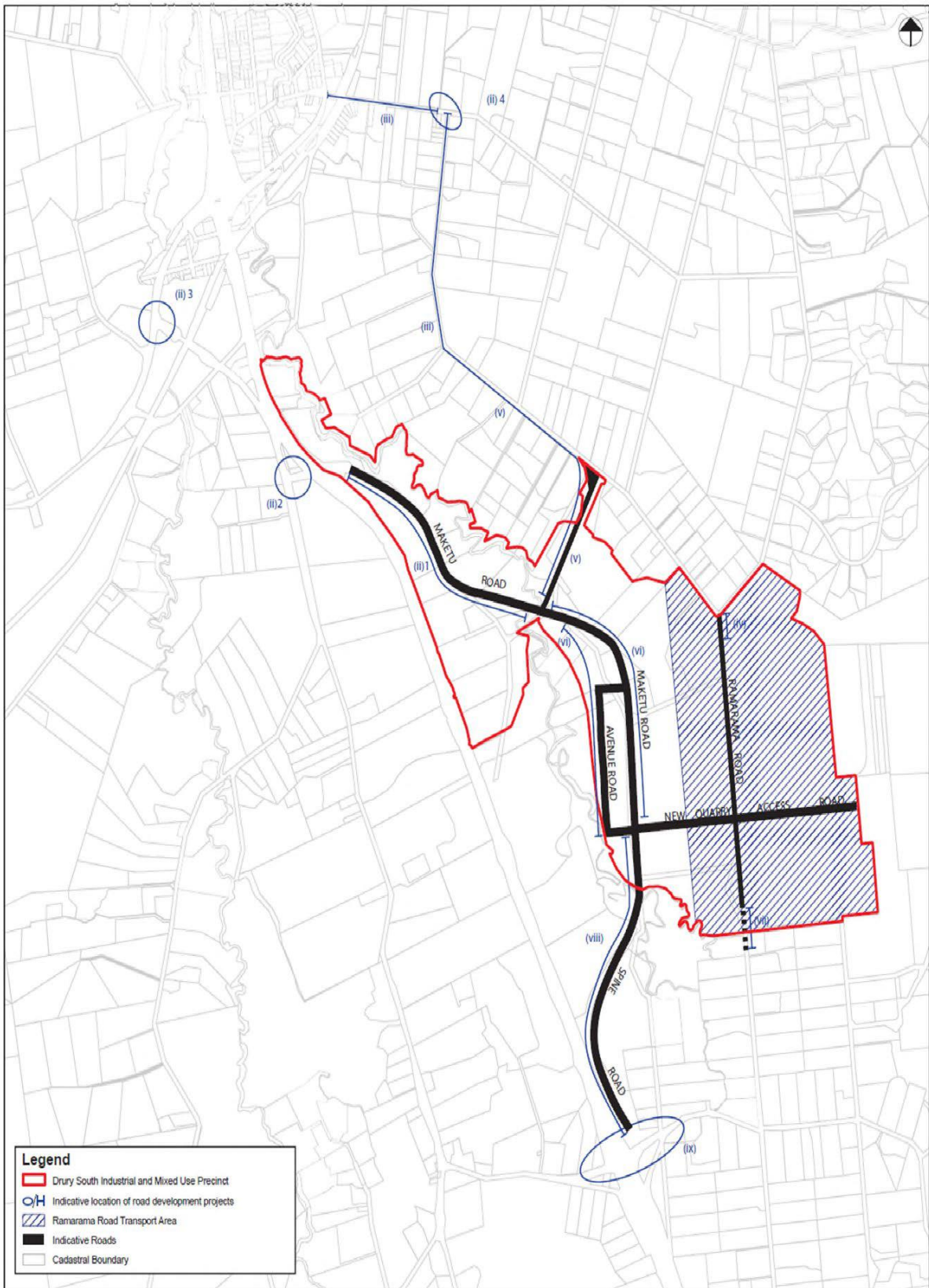
I410.10. Precinct plans

I410.10.1 Drury South Industrial and Mixed Use: Precinct plan 1

I410 Drury South Industrial Precinct



I410.10.2 Drury South Industrial and Mixed Use: Precinct plan 2



I410.11. Appendices

3. Clause 20A changes to text – Precinct Name

Memo

Date: 21 October 2021

To: Celia Davison – Manager Planning - Central/South
 From: Sanjay Bangs – Senior Policy Planner - Central/South

Subject: Plan Modification: Clause 20A modification to Auckland Unitary Plan

Corrections are required to the Auckland Unitary Plan (Operative in Part) 2016 (the AUP).






I seek your approval of this plan modification pursuant to clause 20A, first schedule, Resource Management Act 1991.

You have delegated authority, as a tier four manager, to make a decision to correct an error to an operative plan under clause 20A. Schedule 2A of the Auckland Council Combined Chief Executives Delegation Register authorises all powers, functions, and duties under RMA’s first schedule (except clause 17 which cannot be delegated) to tier four positions.

| | |
|--|---|
| Rule or Section of Unitary Plan | <p><u>Chapter I Precincts</u> I410 Drury South Industrial and Mixed Use Precinct I410.11.1 Drury South Industrial Precinct Appendix 1</p> |
| Subject Site (if applicable) | Multiple sites within the Drury South Industrial and Mixed Use Precinct at Quarry Road, Fitzgerald Road and Ramarama Road, Drury |
| Legal Description (if applicable) | - |
| Nature of change | <p>Changes are required to the Drury South Industrial and Mixed Use Precinct to:</p> <ul style="list-style-type: none"> • Rename the precinct title to make it easier to depict on the AUP GIS Viewer • Update a clause in Chapter I140.11.1 Drury South Industrial Precinct Appendix <p>This request is intended to be read alongside the AUP update request to make Plan Change 46 (Drury South) (PC46) operative.</p> <p>Precinct Title</p> <p>PC46 has amended the title of the precinct from ‘<i>Drury South Industrial Precinct</i>’ to ‘<i>Drury South Industrial and Mixed Use Precinct</i>’.</p> <p>Subsequent to decision making on Plan Change 46, Auckland Council’s geospatial staff have advised that the amended precinct title will difficult to depict on the Unitary Plan maps. As such, it is proposed to shorten the precinct title to ‘<i>Drury South Precinct</i>’, including updating all references within Chapter I140 and I140.11.1, and amending the precinct name in the AUP Viewer.</p> <p>In addition, the decision version of the precinct contained numbering errors which are being corrected.</p> |

| | |
|--|---|
| | <p>Update Clause 3 to Additional Design Element 6</p> <p>The amendments made by PC46 to Chapter I140.11.1 were made in error as they were overlaid on an outdated version of the base text. Since PC46 was lodged, Plan Change 4 (PC4) had made minor amendments to Chapter I140.11.1 to address technical errors and update references.</p> <p>The conflict between the operative text (as amended by PC4) and the PC46 text (based on a prior base text) has now been rectified through an Environment Court dispensation. This is discussed in the AUP update for PC46 which accompanies this Clause 20A amendment.</p> <p>However, there is a clause introduced by PC4 that references road cross sections, which were subsequently deleted by PC46. This was not addressed by the Environment Court dispensation. This reference sits within Clause 3 to Additional Design Element 6. The reference to road cross sections should be deleted as follows:</p> <p style="text-align: center;"><i>3. Specimen tree planting should be provided on all public and internal private access roads within the Motorway Edge Sub-Precinct. Refer Attachment 1 Typical Road Cross Section for Motorway Edge Sub-Precinct.</i></p> |
| Effect of change | The change to precinct title and numbering are administrative. The effect of the changes are both neutral and less than minor. No person would benefit or be prejudiced by these changes. |
| Changes required to be made (text/in-text diagrams) | Refer to markups shown in red in Attachment 1 . |
| Changes required to be made (maps) | Amend the precinct name on the AUP Viewer under Unitary Plan Management Layers: Precincts, from <i>Drury South Industrial and Mixed Use Precinct</i> to <i>Drury South Precinct</i> . Amend sub-precinct names accordingly. |
| Attachments | Attachment 1: Changes to text |

¹ updated February 2021 and available on Kotahi at [Delegation Register](#)

| | |
|--|---|
| <p>Prepared by: Sanjay Bangs Senior Policy Planner – Central/South</p> | <p>Text Entered by: Sarah El Karamany Planning Technician</p> |
| <p>Signature:</p>  | <p>Signature:</p>  |
| <p>Maps prepared by: Shelley Glassey Geospatial Analyst</p> | <p>Reviewed by: Craig Cairncross Team Leader - Central/South</p> |
| <p>Signature:</p>  | <p>Signature:</p>  |
| <p>Decision: I agree/disagree to authorise the Clause 20A modification using my delegated authority</p> <p>Celia Davison Manager Planning - Central/South Date: 27 October 2021</p> | |
| <p>Signature:</p>  | |

Attachment 1: Text changes

I410. Drury South ~~Industrial and Mixed Use~~ Precinct

I410.1. Precinct description

The Drury South ~~Industrial and Mixed Use~~ Precinct applies to approximately 257ha of land, bounded by State Highway 1 in the west, the Drury Quarry and the Hunua foothills in the east, the rural areas of Fitzgerald Road in the north and Ararimu Road in the south, as shown on Precinct Plan 1. The transportation network development requirements of the precinct are shown on Precinct plan 2. The precinct is characterised by a flat to subdued contour and is traversed by the Hingaia Stream and its tributaries including the Maketu Streams. Land which surrounds and defines the precinct has more pronounced topographical contours. The precinct lies between the Drury and Ramarama interchanges on State Highway 1 and local traffic patterns are dominated by truck traffic accessing the Drury Quarry.

The zones within the precinct are Business – Light Industry Zone, Business – Heavy Industry Zone, Business – Mixed Use, and Open Space – Conservation Zone. The purpose of the precinct is to provide for land extensive industrial activity employment opportunities, and a mix of residential and supporting commercial in identified areas, as well as provide for areas of stormwater management, existing and proposed network utility infrastructure, public open space and proposed roads, while recognising the ecological, cultural, landscape and other environmental constraints of the locality.

The precinct is divided into the following sub-precincts:

- Sub-precinct A Light Industry (approximately 130ha)
- Sub-precinct B Motorway Edge (Light Industry) (approximately 45ha)
- Sub-precinct C Mixed Use (approximately 10ha)
- Sub-precinct D Open Space / Stormwater Management (approximately 41ha)
- Sub-precinct E: Heavy Industry (approximately 24ha).

Sub-precinct A is zoned Business – Light Industry Zone. Activities within the sub-precinct are subject to additional standards.

Sub-precinct B is zoned Business – Light Industry Zone. The Transpower switchyard is located within this sub-precinct. Activities in the sub-precinct are subject to additional landscaping and building layout design standards.

Sub-precinct C is zoned Business - Mixed Use. Activities within this sub-precinct are subject to additional standards. The sub-precinct also provides for certain commercial activities to enable a mix of residential and supporting commercial uses.

Sub-precinct D is zoned Business – Light Industry Zone but provides for recreational uses and will be rezoned to an appropriate zone (e.g. Open Space - Informal Recreation Zone) once the Public Open Space / Stormwater Management Areas shown on Precinct Plan 1 are developed and vested.

Sub-precinct E has an underlying zoning of Business – Heavy Industry Zone. Activities within the sub-precinct are subject to additional standards.

I410.2. Objectives [rp/dp]

The objectives of the underlying Business – Light Industry Zone apply in sub-precincts A-B, the objectives of the underlying Mixed Use zone apply in sub-Precinct C, the objectives of the Open Space – Informal Recreation Zone apply in sub-precinct D, the objectives of the underlying Business – Heavy Industry Zone apply in sub-precinct E and the Auckland-wide objectives as well as the precinct objectives below apply throughout in this the precinct, unless there is a conflict between the precinct objectives and the Auckland-wide objectives or underlying zone objectives, in which case the precinct objectives prevail.

- (1) Development maintains and enhances the stream ecology and the natural vegetation and habitat values of the Hingaia and Maketu streams.
- (2) The cultural heritage values of the precinct are maintained and enhanced.
- (3) Landscape and visual amenity values within the precinct are maintained and enhanced (particularly when viewed from State Highway 1).
- (4) The air quality, acoustic and other amenity values of surrounding areas are protected.
- (5) The establishment of a convenient and well-designed industrial area with good quality streetscapes and a mixed use precinct is facilitated.
- (6) The timely and co-ordinated provision of robust and sustainable transport, stormwater, water, wastewater, energy and communications infrastructure networks are provided.
- (7) A transport network to facilitate the safe and efficient movement of people, goods and services and manage effects on the safe and efficient operation of the surrounding transport network.
- (8) The Drury Quarry, activities within the Business – Heavy Industry Zone or the adjoining rural area operate efficiently and are not unreasonably constrained by other activities.
- (9) Development and land use within the precinct avoids or minimises adverse effects on significant existing high voltage electricity, natural gas and communications infrastructure.
- (10) Subdivision and development in the precinct area avoids or mitigates the adverse effects of stormwater runoff on surface and groundwater quality and avoids increased flood risks to habitable buildings upstream and downstream of the precinct.
- (11) Visual and physical links to the surrounding area are protected.
- (12) Landscaping themes are complementary, consistent and coherent throughout the precinct.

- (13) Activities sensitive to noise adjacent to the strategic freight network (Maketu Road and New Quarry Access Road) serving the Drury Quarry are protected from unreasonable levels of transport noise.
- (14) Activities in sub-precinct C do not compromise the function, role and amenity of the City Centre Zone, Business – Metropolitan Centre Zone, Business – Town Centre Zone and Business – Local Centre Zone (either zoned or identified in the Council approved Structure Plan for Drury).

I410.3. Policies [rp/dp]

The policies of the underlying Light Industry zone apply in sub-precincts A-B, the policies of the underlying Mixed Use zone apply in sub-Precinct C, the policies of the Open Space – Informal Recreation Zone apply in Sub-precinct D, the policies of the Business – Heavy Industry Zone apply in sub-precinct E and the Auckland-wide policies as well as the precinct policies below apply throughout the precinct unless there is a conflict between the precinct policies or underlying zone policies and the Auckland-wide policies, in which case the precinct policies prevail.

- (1) Protect and enhance the significant streams and vegetation within Sub-precinct D.
- (2) Enhance the biodiversity of ecological resources and linkages and restore degraded ecosystems while reducing stream bank erosion through riparian planting along retained watercourses in sub-precincts B and D.
- (3) Reflect the cultural heritage values of the Hingaia and Maketu streams as cultural linkages between historical hill top pa and coastal areas in the development of sub-precinct D.
- (4) Maintain a sense of openness and naturalness on land adjacent to State Highway 1.
- (5) Maintain visual and physical links to the surrounding area within the precinct.
- (6) Utilise complementary, consistent and coherent landscaping themes throughout the precinct.
- (7) Design and construct attractive wetland areas for stormwater treatment and detention that also provide reserve and visual amenity opportunities.
- (8) Provide public open space buffer areas between the land to be developed for business activities and surrounding rural land.
- (9) Ensure buildings in Sub-precinct C address and engage the street and public realm and exhibit a high standard of amenity and pedestrian safety and convenience.
- (10) [Deleted]

- (11) Provide for transport infrastructure and connections including Maketu Road, Link Road, New Quarry Access Road and Ramarama Road through to Fitzgerald Road, to support safe and efficient movement for all modes within and through the precinct and to and from the surrounding transport network.
- (12) Provide high quality public open spaces in Sub-precinct D that result in opportunities for passive surveillance.
- (13) Provide adequate stormwater, water, wastewater, communications and energy networks in a timely and co-ordinated manner to service development within the precinct.
- (14) Co-ordinate transport network (including the state highway) improvements both within and outside the precinct with development within the precinct to manage adverse effects on the safe and efficient operation of the surrounding road transport network.
- (15) Make adequate provision within Sub-precinct D to detain the 100 year Average Recurrence Interval (ARI) event without adverse effects on the extent of flooding of upstream and downstream areas.
- (16) Provide sufficient floodplain storage within Sub-precinct D to avoid increasing flood risk upstream and downstream, and manage increased flood risk within the precinct, to habitable rooms for all flood events from the 50% and up to the 1% AEP.
- (17) Undertake earthworks to form the modified floodplain in a manner which ensures flood effects on downstream or upstream areas are not exacerbated.
- (18) Avoid locating buildings within the 100 year ARI modified floodplain.
- (19) Avoid locating infrastructure within the 100 year modified ARI floodplain unless it can be designed to be resilient to flood related damage and does not exacerbate flood risks for upstream or downstream activities.
- (20) Identify overland flowpaths in a stormwater management plan or discharge consent and ensure that they remain unobstructed and able to convey surface water runoff safely into the reticulated stormwater network.
- (21) Avoid or mitigate adverse effects on surface or groundwater quality from stormwater runoff within the precinct through on-site stormwater management and containment and the provision of catchment based stormwater treatment ponds.
- (22) Mitigate any diversion or piping of existing degraded or modified watercourses by the ecological enhancement and landscape planting of existing natural and diverted watercourses within and immediately adjacent to the precinct.
- (23) In Sub-precinct A, B, D and E, avoid the establishment of sensitive residential land uses.

- (24) [Deleted]
- (25) Control activities sensitive to noise adjacent to the strategic freight network (Maketu Road and New Quarry Access Road) serving the Drury Quarry. so that occupants are not exposed to unreasonable levels of transport noise.
- (26) Manage development and subsequent land use to minimise adverse effects on the efficient and safe operation of existing high voltage electrical transmission and distribution lines, fibre optic cables and the Vector natural gas pipeline.
- (27) Encourage a mix of residential and commercial uses within Sub-precinct C close to potential public transport routes and open space amenity, which provides opportunities to integrate with the Drury South Residential Precinct and the balance of the Drury South ~~Industrial and Mixed Use~~ Precinct.
- (28) Provide for a range of commercial activities in Sub-Precinct C that will not compromise the role and amenity of the Business – Metropolitan Centre zone, Business – Town Centre zone (either zoned or identified in the Council approved Structure Plan for Drury) beyond those effects ordinarily associated with trade effects on trade competitors. In particular:
- (a) Discourage the concentration of retail activity in one part of sub-precinct C, having regard to the effects of the scale and type of retail activity proposed;
 - (b) Appropriately stage the provision of retail (including supermarkets) in Sub-Precinct C over time as development in the surrounding area occurs;
 - (c) Enable appropriately scaled office activities to establish in sub-precinct C that support surrounding land uses in the Drury South precinct.
- (29) Encourage a complementary mix of convenience activities to locate in the southern part of sub-precinct C, where it would be most accessible to the Drury South Residential precinct and would support a local community focal point.

I410.4. Activity table

The provisions in any relevant overlays, zone and the Auckland-wide apply in this precinct unless otherwise specified below.

In the event of a conflict between the zone or Auckland-wide rules and the precinct rules, the precinct rules prevail.

Table I410.4.1 specifies the activity status of development and subdivision activities in the sub-precincts A-E pursuant to sections 9(3) and 11 of the Resource Management Act 1991.

Table I410.4.1 Activity table 1 – Sub-precincts A to E

| Activity | | Activity status |
|--------------------|--|-----------------|
| Development | | |
| (A1) | Subdivision, or any development of land which precedes a | RD |

I410 Drury South Industrial Precinct

| | | |
|-------|---|----|
| | subdivision, being undertaken which complies with Standard I410.6.3 below. (Note that for the purposes of this rule "development" means the carrying out of any work on the land including any earthworks or site preparation activities and the construction or alteration of any building) | |
| (A2) | Subdivision, or any development of land which precedes a subdivision, being undertaken which does not comply with Standard I410.6.3 below, or results in increased flood risk to habitable rooms for all flood events from the 50% and up to 1% AEP flood event downstream and upstream of the Structure Plan area. | NC |
| (A3) | The creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct Plan 2 which also has frontage to another road shown on that Plan | RD |
| (A3A) | Residential activities in sub-precinct C which do not comply with Standard I410.6.5 (no-complaints covenant) | NC |

Table I410.4.2 specifies the activity status of land use activities in Sub-precinct A pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.2 Activity table 2 – Sub-precinct A (Light Industry)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Commerce | | |
| (A4) | Commercial services | NC |
| (A5) | Dairies | NC |
| (A6) | Drive-through restaurants | NC |
| (A7) | Entertainment facilities | NC |
| (A8) | Food and beverage | NC |
| (A9) | Retail over 450m ² except for Trade Suppliers | Pr |
| (A9A) | Trade Suppliers | P |
| (A10) | Activities that do not comply with standards in I410.6.2(10) | D |

Table I410.4.3 specifies the activity status of land use and development activities in Sub-precinct B pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.3 Activity table 3 – Sub-precinct B (Light Industry - Motorway Edge)

| Activity | | Activity status |
|------------|---------------------|-----------------|
| Use | | |
| Commerce | | |
| (A11) | Commercial services | NC |
| (A12) | Dairies | NC |

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| | | |
|--------------------|---|----|
| (A13) | Drive-through restaurants | NC |
| (A14) | Entertainment facilities | NC |
| (A15) | Food and beverage | NC |
| (A16) | Retail over 450m ² | Pr |
| Development | | |
| (A17) | New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities | C |
| (A18) | Additions to buildings that are less than: <ul style="list-style-type: none"> • 10 per cent of the existing gross floor area of the building; or • 250m² whichever is the lesser | P |
| (A19) | Internal alterations to buildings | P |
| (A20) | Activities that do not comply with the standards in I410.6.2(10) | D |

Table I410.4.4 specifies the activity status of land use and development activities in Sub-precinct C pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.4 Activity table 4 – Sub-precinct C (Business - Mixed Use)

| Activity | | Activity status |
|------------|---|-----------------|
| Use | | |
| Commerce | | |
| (A21) | [Deleted] | |
| (A21A) | Trade Suppliers | P |
| (A22) | [Deleted] | |
| (A22A) | Garden Centres | P |
| (A23) | [Deleted] | |
| (A23A) | Motor Vehicle Sales | P |
| (A24) | [Deleted] | |
| (A24A) | Marine Retail | P |
| (A25) | [Deleted] | |
| (A25A) | Department Stores | NC |
| (A26) | [Deleted] | |
| (A26A) | A single supermarket greater than 2000m ² gross floor area | RD |
| (A27) | [Deleted] | |
| (A27A) | Retail not otherwise permitted up to 200m ² gross floor area per tenancy | P |

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| | | |
|--------|--|----|
| (A28) | [Deleted] | |
| (A28A) | Retail not otherwise permitted greater than 200m ² gross floor area per tenancy | D |
| (A29) | [Deleted] | |
| (A29A) | Offices up to 500m ² per tenancy | P |
| (A30) | [Deleted] | |
| (A30A) | Offices between 501m ² – 1000m ² per tenancy | RD |
| (A31) | [Deleted] | |
| (A31A) | Offices greater than 1000m ² per tenancy | D |
| (A32) | [Deleted] | |
| (A32A) | Activities that do not comply with the standards in I410.6.2(10) | D |
| (A33) | [Deleted] | |

Table I410.4.5 specifies the activity status of land use activities in Sub-precinct D pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.5 Activity table 5 – Sub-Precinct D (Open Space – Informal Recreation Zone / Stormwater Management)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Community | | |
| (A34) | Any activity listed as a permitted activity in the Open Space – Informal Recreation Zone | P |
| (A35) | Stormwater management devices | P |
| (A36) | Activities that do not comply with the standards in I410.6.2 | D |

Table I410.4.6 specifies the activity status of land use activities in Sub-precinct E pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.6 Activity table 6 – Sub-precinct E (Heavy Industry)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Commerce | | |
| (A37) | Dairies | NC |
| (A38) | Food and beverage | NC |
| (A39) | Activities that do not comply with the standards in I410.6.2 | D |

I410.5. Notification

- (1) An application for resource consent for a controlled activity listed in Tables I410.4.1 - I410.4.6 above will be considered without public or limited notification or the need to obtain written approval from affected parties unless the Council decides that special circumstances exist under section 95A(4) of the Resource Management Act 1991.
- (2) Any application for resource consent for an activity listed in Tables I410.4.1 - I410.4.6 and which is not listed in I410.5(1) will be subject to the normal tests for notification under the relevant sections of the Resource Management Act 1991.
- (3) When deciding who is an affected person in relation to any activity for the purposes of section 95E of the Resource Management Act 1991 the Council will give specific consideration to those persons listed in [Rule C1.13\(4\)](#).

I410.6. Standards

The overlay, Auckland-wide and zone standards apply in this precinct, unless otherwise specified below.

For the purposes of Rule E27.6.1(2)(b), the following activities have been assessed as part of an Integrated Transport Assessment on which the Drury South ~~Industrial and Mixed Use~~ Precinct provisions for Sub-precinct A and C are based:

| Activity | GFA (m²) |
|-----------------------------------|----------------------------|
| Supermarket | 4,500 |
| Retail | 4,400 |
| Offices | 15,000 |
| Trade suppliers | 11,000 |
| Supporting commercial services | 3,300 |
| Residential – apartments | 12,300 |
| Activity | GFA (m²) |
| Residential – Retirement Villages | 22,000 |

I410.6.1. Sub-precinct C

All activities listed as permitted in Table I410.4.4 must comply with the following standards

I410.6.1.1. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.1.1A. Retail and Office Gross Floor Area

- (1) Retail must not exceed a total of 1000m² gross floor area in Sub-Precinct C. This excludes one supermarket greater than 2000m², service stations, trade suppliers, garden centres, motor vehicle sales, marine retail and food and beverage.
- (2) Retail activities specified in (1) above, greater than 1000m² and up to and including 4,500m² in Sub-Precinct C will be assessed as a restricted discretionary activity on a non-notified basis.
- (3) Retail activities specified in (1) above, greater than 4,500m² in Sub-Precinct C will be assessed as a discretionary activity.
- (4) Offices must not exceed 15,000m² in total in Sub-Precinct C. Offices greater than 15,000m² will be assessed as a discretionary activity.
- (5) Trade suppliers within Sub-Precincts A and C must not exceed a total of 11,000m² gross floor area. Trade suppliers that are greater than 11,000m² gross floor area will be assessed as a restricted discretionary activity on a non-notified basis.

I410.6.1.2. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.1.3. [Deleted]

- (1) [Deleted]

I410.6.1.4. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.2. Sub-precincts A-E

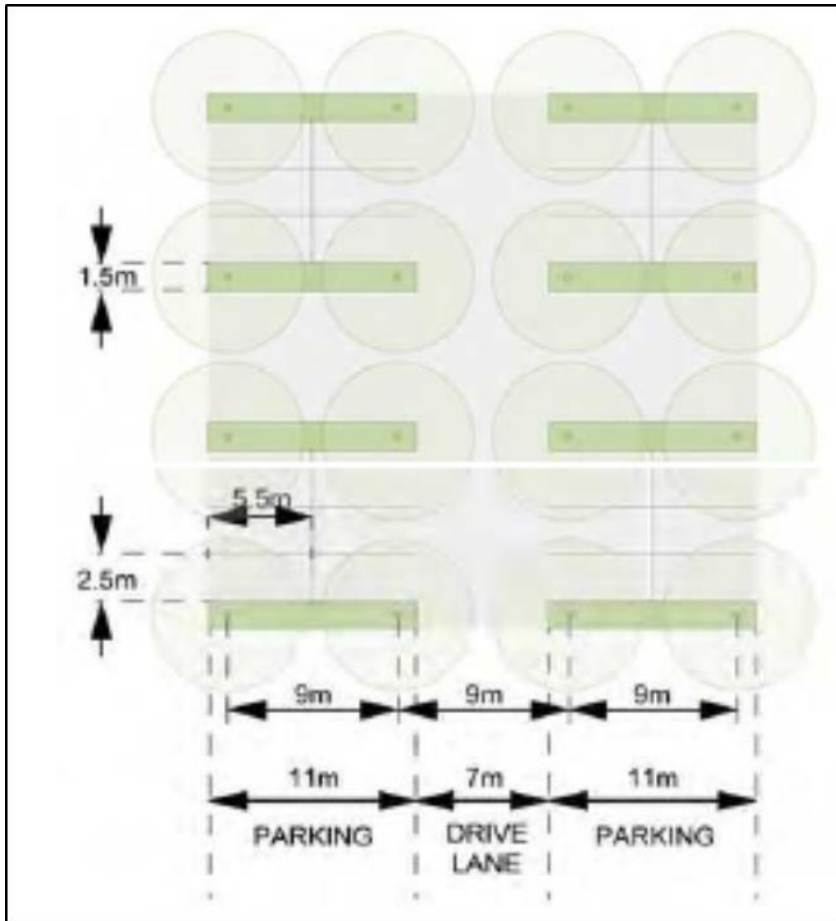
The standards are those listed in the Auckland-wide rules (in respect of sub-precincts A-E), Business – Light Industry Zone (in respect of sub-precincts A-B), Business – Mixed Use Zone (in respect of sub-precinct C), the Open Space – Informal Recreation Zone (in respect of sub-precinct D) and the Business – Heavy Industry Zone (in respect of Sub-precinct E) except as follows:

- (1) [Deleted]
- (2) Buildings must not exceed 25m in height in Sub-precinct E and Sub-Precinct C.
- (3) Within the Drury South ~~Industrial and Mixed Use~~ Precinct the industrial zone height in relation to boundary control will not apply, and instead, buildings must not project beyond a 45 degree recession plane measured from a point

2 metres vertically above ground level along the residential or public open space boundary.

- (4) All new roads must be designed and constructed to comply with the provisions of New Zealand Standard NZS6806:2010 "Acoustics – Road Traffic Noise – New and Altered Roads".
- (5) The upward waste light ratio from any luminaire must not be more than 3 per cent. The upward waste light ratio is defined as: "The ratio of the light flux emitted above the horizontal by a luminaire to the total light flux emitted, expressed as a percentage, evaluated for the upcast angle".
- (6) Any required security fence must be setback a minimum of 3 metres from the front boundary and such fencing (whether in front yards or on rear or side boundaries) must be 2 metre maximum height and must not incorporate barbed or razor wire or an angled top. Fence posts and wire mesh are to be black coloured.
- (7) [Deleted]
- (7A) Where any new building is proposed, the reflectivity value of the roof or roofs must not exceed 30 per cent.
- (8) Within Sub-precinct B no less than 30 per cent of the net site area of each site is to be in permeable landscape area (including any on site stormwater treatment). Where on site car parking adopts a layout fully conforming with the fully planted permeable carpark design layout detailed in Figure I410.6.2.1 below, the permeable landscape area may be reduced to no less than 20 per cent of the site area.

Figure I410.6.2.1 Carpark design



(9) [Deleted]

(10) Any land modification to form the 1% AEP modified flood plain must:

- (a) not reduce flood storage capacity in the precinct; and
- (b) not change the flood characteristics upstream or downstream of the precinct for all flood events from the 50% and up to the 1% AEP flood event in ways that result in an increase in peak flood levels.

I410.6.3. Subdivision or development preceding subdivision in Sub-precincts A – E

- (1) Proposed roads (including pedestrian and bicycle routes) identified on the Precinct Plan 1 and Precinct Plan 2, must be located generally in the position indicated on Precinct plan 1 and Precinct Plan 2. An alternative roading layout may be proposed provided that an integrated approach to land use and transport can be achieved throughout the Drury South Industrial and Drury South Residential precincts.
- (2) The land identified as part of Sub-precinct D on Precinct plan 1 must be developed upon subdivision or development of the relevant area. Proposed stormwater management areas must be located generally in the position indicated on Precinct Plan 1, and must be offered to the Council. Vegetated

buffers not less than 40 metres in total width are to be provided along stream corridors within stormwater management areas and must include a minimum of 10 metres of native riparian planting either side of the stream edge. Off-site stormwater management services including wetlands and the primary and secondary stormwater conveyance system is to be vested at no cost to the council in accordance with a network discharge consent or other relevant discharge consent or a stormwater management plan approved by the Council. All stormwater management areas and wetlands must be designed to serve a dual function to treat stormwater and provide ecological benefits.

- (3) Reticulated water services must be supplied to the precinct and all new water infrastructure must be fully funded (including consenting costs) by the developer(s) of the land within the precinct. Such services must be provided to the relevant part of the precinct in advance of or concurrent with a resource consent for subdivision and development provided that any necessary resource consents or designations for the reticulated water services have been granted.
- (4) Wastewater services are to be provided to the precinct either by (in no particular order):
 - (a) the construction of a connection to Watercare's existing wastewater network and any necessary upgrading of that network that is required to service the Precinct; and/or
 - (b) the construction of a Wastewater Treatment Plant to service the Precinct, or a larger catchment if required.

In either case wastewater services are to be provided in a manner approved by Watercare and constructed to Watercare's design and operational standards. The developer(s) must fully fund (including consenting costs) all new wastewater infrastructure required to service the Precinct. Wastewater services must be provided to the relevant part of the Precinct in advance of or concurrent with a resource consent for subdivision and development provided that any necessary resource consents or designations for the reticulated water services have been granted. In the event that a new regional wastewater treatment plant becomes available to service the precinct, and subject to approval from Watercare, the precinct could be connected to that plant.

Note: that for the purposes of the Standards I410.6.3(1)-(4) above, references to "Watercare" means Watercare Services Limited and references to "development" means the carrying out of any work on the land including any earthworks or site preparation activities and the construction or alteration of any building.

I410.6.4. Sub-Precinct C (Noise and Ventilation)

- (1) Any building containing a noise sensitive space within Sub-Precinct C must be located and/or designed and/or insulated, or screened by suitable barriers, so that the design noise levels do not exceed:
 - (a) 40 dB $L_{Aeq(24\text{ h})}$ inside any noise sensitive space; and
 - (b) 70 dB $L_{Aeq(24\text{ h})}$ incident on any façade facing Maketu Road that encloses a noise sensitive space.
- (2) Compliance with Standard I410.6.4(1) must be determined based on a road traffic noise level 10m from the nearest traffic lane of Maketu Road of 75 dB $L_{Aeq(24\text{ h})}$, 83 dB $L_{eq(24\text{ h})}$ at 63 Hz and 79 dB $L_{eq(24\text{ h})}$ at 125 Hz.
- (3) For residential dwellings, where the internal noise levels in Standard 1 can only be complied with when doors or windows to those rooms are closed, those rooms adopt the relevant mechanical ventilation and/or cooling requirements of E25.6.10(3)(b) or (c).
- (4) For the avoidance of doubt, the noise insulation requirements set out in Standard I410.6.4(1)-(3) apply in addition to any other noise insulation requirements set out in Chapter E25 – Noise and Vibration.

I410.6.5. Sub-Precinct C (Restrictive non-complaint covenant)

- (1) Residential activities in Sub-precinct C shall be subject to a restrictive non-complaint covenant* in favour of the operator of Drury Quarry.

*For the purposes of the Drury South ~~Industrial and Mixed Use~~ precinct and of this rule a 'restrictive non-complaint covenant' is defined as a restrictive covenant registered on the Title to the property or a binding agreement to covenant, in favour of the operator of Drury Quarry, by the landowner (and binding any successors in title) not to complain as to effects generated by the lawful operation of the quarry, including heavy vehicle movement noise. The restrictive non-complaint covenant is limited to the effects that could be lawfully generated by the quarry activities at the time the agreement to covenant is entered into. This does not require the covenantor to forego any right to lodge submissions in respect of resource consent applications or plan changes in relation to quarry activities (although an individual restrictive non-complaint covenant may do so.) Details of the existence of covenant documents may be obtained from the Quarry Operator, its solicitors, or in the case of registered covenants by searching the Title to the property.

I410.7. Assessment – controlled activities

I410.7.1. Matters of control

The Council will reserve its control to all of the following matters when assessing a controlled activity resource consent application:

- (1) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct B:

- (a) retention of existing vegetation;
- (b) planting;
- (c) building design and appearance;
- (d) parking area design;
- (e) storage and waste management location and design; and
- (f) vehicular access;

(2) [Deleted]

I410.7.2. Assessment criteria

The Council will consider the relevant assessment criteria below for controlled activities:

- (1) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct B:
 - (a) retention of existing vegetation:
 - (i) the extent to which layouts retain and protect existing mature trees, particularly those of indigenous species, where these contribute to the site character and amenity.
 - (b) planting:
 - (i) the extent to which planting is designed to have a large scale landscape effect and combine native as well as appropriate exotic species to provide seasonal change and quality amenity; or
 - (ii) where public open space land adjoins the motorway, the extent to which boundary planting that creates a continuous visual barrier to eastward views from the State Highway 1 corridor is avoided and whether landscape design emphasises the current sequence of intermittent views to the Hunua Ranges from the State Highway 1 corridor and the pattern of variable depth of such views;
 - (iii) the extent to which the integrated site layout, building and landscape design provides a high quality and visually attractive frontage to State Highway 1, while ensuring any landscaping, including the use of large tree and shrub species, does not restrict access to the electricity infrastructure for maintenance and does not compromise the safe and reliable operation of the electricity network.

Advice note: In considering whether this criterion is met, the Council may take into account whether a review has been undertaken by or on behalf of Counties Power which confirms that the proposed planting will not affect the safe and reliable operation and maintenance of the electricity network.

(c) building design and appearance:

- (i) the extent to which buildings are located with design consideration for their visibility and reduced visual impact as viewed from the State Highway 1 corridor and the desirability of maintaining a sense of openness as seen from the motorway; or
- (ii) the extent to which the visual mass of larger buildings is minimised by employing the following methods:
 - utilising subdued, recessive colours;
 - providing variation in materials and finish for facades viewed from the motorway;
 - creating variation of roof profiles with consideration given to the overall roofscape viewed from the motorway;
 - all rooftop servicing and plant should be designed as an integral part of the roofscape with particular consideration given to the view from the motorway;

(d) parking area design:

- (i) the extent to which parking areas are designed to incorporate trees to break up the scale of hard surface areas; or
- (ii) the extent to which the fully planted permeable carpark design layout (refer Figure I410.6.2.1 above) style of parking is adopted within Sub-precinct B;

(e) storage and waste management location and design:

- (i) the extent to which storage and waste management activities are located and/or designed to be screened from view of State Highway 1;

(f) vehicular access:

- (i) the extent to which proposed vehicle access to sites adjoining the Maketu_Road and New Quarry Access Road shown on the Precinct plan 2 minimises any conflict with safety and efficiency of these routes as part of the strategic freight network;

(2) [Deleted]

I410.8. Assessment – restricted discretionary activities

I410.8.1. Matters of discretion

The Council will consider the relevant assessment criteria below for restricted discretionary activities, in addition to the assessment criteria specified for the relevant restricted discretionary activities in the overlay, Auckland wide or zone provisions:

- (1) subdivision or any development of land which precedes a subdivision being undertaken which complies with Standard I410.6.3:
 - (a) the relevant council and Auckland Transport development code or codes of practice;
 - (b) geotechnical and seismic;
 - (c) servicing and development sequencing;
 - (d) design and layout;
 - (e) earthworks;
 - (f) transportation network development requirements;
 - (g) ecology;
 - (h) Counties Power 110 Kv sub-transmission lines; and
 - (i) stormwater management;
- (2) the creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct Plan 2 which also has frontage to another road shown on that plan:
 - (a) effect of the location and design of the access on the safe and efficient operation of the adjacent transport network; and
 - (b) adequacy of access arrangements.
- (3) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct C:
 - (a) building design;
 - (b) parking area design;
 - (c) signs;
 - (d) service area location;
 - (e) vehicular access; and
 - (f) mitigation of traffic noise.

- (4) A single supermarket greater than 2000m², supermarkets exceeding 450m² and up to 2000m² gross floor area per tenancy, offices between 501m² – 1000m² per tenancy and retail greater than 1000m² and up to and including 4,500m² in Sub-Precinct C
- (a) the compatibility of the effects of intensity and scale of the development arising from the numbers of people and/or vehicles using the site, with the existing and expected future amenity values of the surrounding area and any practicable mitigation measures that would be appropriate to manage those effects;
 - (b) the effects of the design and location of parking areas and vehicle access and servicing arrangements on visual amenity of the streetscape and on pedestrian safety;
 - (c) the effects of the size, composition, characteristics, and concentration of retail or office activities proposed in Sub-precinct C on the existing and expected future function, role and amenity of other Metropolitan or Town Centres that are zoned or are identified in a Council approved Structure Plan for Drury, having regard to the need to enable convenient access of communities to commercial and community services while disregarding any effects ordinarily associated with trade effects on trade competitors;
 - (d) In determining (c) above, whether the activity is coordinated with the rate of residential and commercial development in the local area to ensure that the activity individually, or in combination with other consented or permitted activities, meets the needs of the local catchment;
 - (e) whether the retail or office proposal, individually, or in combination with other consented or permitted activities, meets the needs of the local residential and employment catchment;
 - (f) the assessment of the above matters having regard to the need to provide for the functional requirements of the activity.
- (5) Trade Suppliers in Sub-Precincts A and C greater than 11,000m² gross floor area
- (a) Effects of the activity on the safe and efficient operation of the surrounding transport network.
- (6) Infringement I410.6.4 – Sub-Precinct C (Noise and Ventilation)
- (a) the effects of land transport noise of the noise sensitive activity;
 - (b) the potential reverse sensitivity effects of the infringement.

I410.8.2. Assessment criteria

The Council will restrict its discretion to all of the following matters when assessing a restricted discretionary activity resource consent application, in addition to the

matters specified for the relevant restricted discretionary activities in the overlay, Auckland-wide or zone provisions:

- (1) subdivision, or any development of land which precedes a subdivision being undertaken, which complies with Standard I410.6.3:
 - (a) the extent to which the subdivision or development is in accordance with the relevant codes or codes of practice or engineering standards, and whether the road network is consistent with its intended function as set out within those codes or codes of practice and the subdivision design assessment criteria set out in Appendix I410.11.
 - (b) the extent to which the subdivided lots or the land on which the development is to be undertaken are geotechnically suitable for the development of a permitted activity or an activity for which resource consent has been obtained. This may include an assessment of the following:
 - (i) any proposed fill materials;
 - (ii) stability in areas of deep cut particularly adjacent to the boundaries of the Precinct;
 - (iii) settlement and stability issues associated with the Hingaia and Maketu streams;
 - (iv) time dependent settlement;
 - (v) ground seismicity and buffer zone; or
 - (vi) liquefaction;
 - (c) the extent to which subdivision and development occurs in a logical and sequential manner in relation to:
 - (i) the implementation of improvements and/or upgrades to the roading network;
 - (iA) the implementation of a potential pedestrian and cycling connection shown on Precinct Plan 1 between the Drury South Residential Precinct and Sub-Precinct C and the integration of this with proposed built development in Sub-Precinct C;
 - (ii) the establishment of the stormwater management areas within sub-precinct D identified on Precinct Plan 1 and catchment wide stormwater management devices as identified in the relevant discharge consent and/or stormwater management plan required by the special information requirements below;
 - (iii) the provision for overland flowpaths identified in an approved discharge consent and/or stormwater management plan required by the special information requirements below; or

- (iv) the provision of wastewater facilities, water supply, electricity, gas and telecommunications, including the protection and /or relocation of any existing local electricity, gas and communications assets;
- (d) the extent to which subdivision design and layout gives effect to the objectives and policies identified for the Drury South ~~Industrial and Mixed Use~~ Precinct and the subdivision design assessment criteria set out in Appendix I410.11.1.
- (e) the extent to which the earthworks required by the subdivision or development:
- (i) avoid or mitigate adverse effects on land stability, existing underground infrastructure facilities (such as the Vector gas pipeline and Telecom telecommunications cables), and groundwater quantity and quality;
 - (ii) avoid or mitigate adverse effects on the visual quality of the landscape or natural landforms, watercourses, habitats or vegetation;
 - (iii) avoid or mitigate adverse effects on traffic management within the area or create damage, danger, or nuisance to surrounding residents or the Ramarama School;
 - (iv) consider opportunities to recharge the aquifer using treated stormwater where permeable soils are available;
 - (v) ensure that the creation of level development platforms are contoured to integrate with the surrounding street environment and open space corridors;
 - (vi) screen retaining walls from public view;
 - (vii) provide and maintain continuity of overland flow paths both within the site, as well as upstream and downstream; and where overland flow paths are diverted and/or altered show how:
 - potential effects on other properties from the diversion or alteration is avoided or mitigated;
 - effects from scouring and erosion are mitigated;
 - further changes to the overland flow path will be limited, when appropriate through an easement in favour of Council;
 - (viii) if located in the 1% AEP modified flood plain, including earthworks for the formation of stormwater management devices such as wetlands and/or for necessary infrastructure (including associated landscaping and accessways), whether:
 - the design of the device, including associated earthworks, landscaping and accessways avoids impeding flood flows or

otherwise exacerbating flood risk upstream or downstream of the site and how such effects can be avoided;

- the design of the device or mitigation works is resilient to damage from the full range of flood events;
- access to the device for maintenance is provided and maintenance plans address potential effects that may result from the proposed access route;

(f) the extent to which the following transportation network requirements are met:

- (i) whether subdivision or development will result in the central 'Maketu Road' being progressively constructed on an alignment consistent with that indicated in Precinct plan 2;
- (ii) whether the following road projects indicatively shown on Precinct plan 2 will be completed before any buildings within the precinct are occupied:
 - the realignment of existing Quarry Road onto the alignment of the 'Maketu Road' from the State Highway 1 over-bridge to the southern extent of the first stage of subdivision;
 - the upgrading of the existing Quarry Road/Great South Road intersection;
 - the provision of traffic signals or an alternative upgrade which achieves equivalent transport performance at the existing Great South Road/State Highway 22 (Karaka Road) intersection;
 - under the scenario where development of the Precinct proceeds in advance of the Mill Road Corridor Project, the upgrading of the right turn bay on Waihoehoe Road at the Waihoehoe Road/Fitzgerald Road intersection;
- (iii) whether a new dedicated pedestrian path and cycleway has been constructed between the existing Drury township and the precinct before development and occupation of more than 25 hectares of Industrial zoned land within the precinct occurs;
- (iv) whether Ramarama Road, at the northern boundary of the precinct remains open as defined on Precinct Plan 2;
- (v) whether the Link Road from the Maketu Road to Fitzgerald Road shown on Precinct Plan 2 is provided and shoulder widening, intersection treatments and localised widening works within the existing road reserve on Fitzgerald Road between the Link Road and Waihoehoe Road is undertaken before Ramarama Road is closed at the northern boundary of the Precinct;

- (vi) whether the 'Avenue' Road and the portion of the Maketu Road shown on Precinct Plan 2 is provided as the adjacent Sub-precinct C is developed, and whether the 'Avenue' Road is connected with Maketu Road at the southern end of Sub-precinct C, and is extended to, but not connected with, Maketu Road at the northern end of Sub-Precinct C. An alternative location for vehicle access through a portion of Sub-precinct C (the 'Avenue Road') may be appropriate where it is safe and efficient, and provided that a continuous and high amenity pedestrian and cycle connection is located along the western edge.
- (vii) whether Ramarama Road, at the southern boundary of the precinct, is closed to all vehicular traffic by the time 89 hectares of Industrial zoned land within the precinct has been subdivided or developed;
- (viii) whether the southern portion of the Maketu Road that connects to Ararimu Road is constructed before:
- Ramarama Road is closed at the southern boundary of the Precinct; or
 - any development of the precinct south of the New Quarry Access Road shown on Precinct Plan 2 occurs;
- (ix) whether State Highway 1 Ramarama Interchange is capable of accommodating the traffic from the subdivided and developed portion of the precinct including the predicted traffic from the land which is the subject of the application. To enable assessment of this criterion, applications for subdivision or development must include a traffic assessment of the effects of the subdivision or development on the interchange prepared by a qualified and experienced traffic engineer.
- Note: This criterion will be considered to be met where such an assessment includes a review undertaken by or on behalf of NZTA which confirms that there is sufficient capacity or planned capacity at this interchange to accommodate the predicted increase in traffic;
- (g) in respect of those new areas of planting in stormwater management and wetland areas in Sub-precinct D the extent to which:
- (i) plants should be eco-sourced as close as possible to the developed area;
 - (ii) the mechanisms proposed ensure the weed and pest management programme and the herpetofaunal mitigation/rehabilitation plan are implemented;
 - (iii) The public open space area that adjoins the southern boundary of the Precinct will provide the basis of an ecological corridor linkage of 30 metres in width between the southern buffer in the Precinct and bush areas in the Special Purpose – Quarry Zone when planted with

suitable tree species at the time of subdivision of the adjoining industrial zoned land;

- (h) whether the existing 110kV Counties Power electricity lines are provided for in the existing positions in any subdivision or whether the existing lines can be relocated in agreement with Counties Power;
- (i) whether the stormwater management plan and works proposed as part of the subdivision or development:
 - (i) comply with any approved discharge consent;
 - (ii) are effective in avoiding, remedying or mitigating the potential adverse effects of stormwater discharge on water quality and flood hazards. In the case of stormwater management facilities within private land this assessment will include how the operation and maintenance of such facilities is to be secured by way of appropriate covenants or consent notices;
 - (iii) can effectively contain all the natural and diverted streams and their margins, wetlands, and other off-site stormwater management devices;
 - (iv) provide for overland flowpaths;
 - (v) require a bond or other security to be provided to ensure that the stormwater management works will be completed, with such bond to be released when the works are completed and the stormwater management areas and their devices are vested in council;
 - (vi) ensure that subdivision and development does not result in increased flood risk to habitable rooms for all flood events from the 50% and up to 1% AEP flood event downstream and upstream of the precinct;
- (2) the creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct plan 2 which also has frontage to another road shown on that plan:
 - (a) any adverse effect from the location and design of the access on the safe and efficient operation of the adjacent transport network, including public transport, cyclists and general traffic, having regard to:
 - (i) the number of other access points to or from the Maketu Road in the vicinity of the proposed access;
 - (ii) whether conflicts will be reduced by the presence of a raised central median which prevents right turning in the vicinity of the site;
 - (iii) visibility and safe sight distances particularly the extent to which vehicles entering/exiting the site can see, and be seen by, pedestrians, cyclists and other vehicles on the footpath and road carriageway;

- (iv) existing and future traffic conditions including speed, volume, type, current accident rate, and the need for safe manoeuvring in all weathers;
 - (v) existing pedestrian numbers, and estimated future pedestrian numbers having regard to the level of development provided for in the this Plan; and
 - (vi) existing community or public infrastructure located in the adjoining road, such as bus stops, bus lanes and cycleways.
- (b) whether the access arrangements are practicable and adequate having regard to site limitations and layout, and arrangement of buildings and activities, users and operational requirements, and having regard to whether the site can reasonably be served by shared or amalgamated access with another site or sites on the Maketu Road where the sites in question are held in the same ownership.
- (3) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct C:
- (a) building design:
 - (i) the extent to which buildings on corner lots are designed to provide for a quality architectural response to the corner. Appropriate design responses include the provision of additional height at the corner, windows and activities addressing both street frontages and avoiding blank walls to one or both sides of the corner;
 - (ii) the extent to which built development fronts the street and open space with a quality recognisable pedestrian entry or entries to the street.
 - (iii) Where buildings are required to be setback from Maketu Road for acoustic amenity reasons, a safe and attractive edge to Maketu Road should be provided. Methods to achieve this include providing landscaping at the street edge and providing a good degree of glazing on the building facade overlooking Maketu Road;
 - (iv) the extent to which developments for trade suppliers, garden centres, marine retail, motor vehicle sales or supermarkets provide a quality frontage to the street and provide appropriate treatments to side and rear boundaries, including quality fencing and landscaping, to recognise the broader range of activities enabled in sub-precinct C and the higher standard of amenity expected in the Mixed Use zone, while also taking into account the functional requirements of the activity.
 - (b) parking area design:
 - (i) the extent to which parking is provided on the road network adjacent to sub-precinct C areas and on-site parking layouts are designed in accordance with the typical layout identified in Appendix I410.11.1.

(c) signs:

- (i) the extent to which signs for each sub-precinct C development are coordinated including the physical location of signs, their type-face, style and content;

(d) service area location:

- (i) the extent to which service areas are located so as to avoid observation from a public road with access either from a service lane, incorporation within the main building or full screening of service/storage and dock areas;

(e) vehicular access:

- (i) the extent to which proposed vehicle access to sites adjoining the Maketu Road shown on the Precinct plan 2 minimises any conflict with safety and efficiency of these routes as part of the strategic freight network;

(f) mitigation of traffic noise:

- (i) the extent to which premises offering food and beverages, health professional rooms and childcare centres (being permitted activities which may be sensitive to heavy commercial vehicle traffic noise) are designed to mitigate traffic noise effects. Mitigation measures may include acoustic treatment of buildings and arranging site layout so noise sensitive activities are screened from the heavy traffic noise.

(g) Drury South **Industrial and Mixed Use** precinct Appendix

- (i) The extent to which buildings and development in Sub-Precinct C are consistent with the criteria in Appendix I410,11.2.

(4) A single supermarket greater than 2000m², supermarkets exceeding 450m² and up to 2000m² gross floor area per tenancy, offices between 501m² – 1000m² per tenancy and retail greater than 1000m² and up to and including 4,500m² in Sub-Precinct C

- (a) The extent to which the effects of the size, composition, characteristics and concentration of retail or office activities in Sub-precinct C will be complementary to the existing and expected future function, role and amenity of other Metropolitan or Town Centres that are zoned or are identified in a Council approved Structure Plan, having regard to the need to enable convenient access of communities to commercial and community services while disregarding any effects ordinarily associated with trade effects on trade competitors;
- (b) The extent to which retail that meets local convenience needs is located at the southern part of sub-precinct C, where it would be most accessible to

the Drury South Residential precinct and would support a local community focal point.

- (c) The extent to which the activity is coordinated with the rate of residential and commercial development in the wider area to ensure that the activity individually, or in combination with other consented or permitted activities, meets the needs of the local catchment;
 - (d) The extent to which the size, composition and characteristics of any office activity would serve a local function and support adjoining businesses in Drury South.
- (5) Trade Suppliers in Sub-Precincts A and C greater than 11,000m² gross floor area
- (a) the extent to which the activity affects the safe and efficient operation of the adjacent transport network including pedestrian and cycling movement, particularly at peak traffic times;
 - (b) the extent to which the proposal incorporates mitigation measures to address adverse effects.
- (6) Infringement I410.6.4 – Sub-Precinct C (Noise and Ventilation)
- (a) the extent to which the type of activity proposed is likely to be adversely affected by the expected levels of transport noise;
 - (b) the extent to which any characteristics of the proposed use or area make compliance with of New Zealand Standard NZS6806:2010 "Acoustics – Road Traffic Noise – New and Altered Roads" unnecessary;
 - (c) whether the building and any outdoor living areas are appropriately located, and/or setback an appropriate distance from the Spine Road and/or State Highway 1 to minimise the potential for adverse effects from land transport noise.

I410.9. Special information requirements

I410.9.1. Earthworks plans

- (1) Any application for subdivision or development must be accompanied by detailed earthworks plans. Such plans must:
 - (a) describe the nature and scale of the proposed earthworks, such as the extent of cut and/or fill, sources of fill and how the cut and fill is to be transported;
 - (b) describe the construction management and communication methods to be followed to minimise nuisances and disruption to surrounding residents and Ramarama School (in particular, dust, traffic and noise impacts) during the construction period; and

- (c) provide detailed design of the modified flood plain.

I410.9.2. Ecological management plans

- (1) In respect of any new areas of planting in Sub-precinct D the following must be provided:
 - (a) a weed and pest management programme for any new areas of planting within the stormwater management areas and wetland areas and remaining indigenous forest fragments in Sub-precinct D; and
 - (b) a herpetofaunal mitigation/rehabilitation plan which targets only potentially suitable lizard habitat for relocation searches.

I410.9.3. Stormwater management report and plans

- (1) Any application for subdivision or development preceding subdivision must be accompanied by detailed stormwater management report and plans. Such report and plans must:
 - (a) describe how the plans comply with the conditions of any relevant discharge consent;
 - (b) identify overland flow paths;
 - (c) describe the nature and extent of any off-site stormwater management devices and how these devices are to be delivered if they are on land outside the application site;
 - (d) if stormwater management devices are to be located within the modified 1% AEP floodplain, describe how these devices are to be designed to be resilient to flood-related damage while not exacerbating flood risks for upstream or downstream activities;
 - (e) where streams are to be diverted and/or recreated as identified on the precinct plan, describe how this is to be achieved in a way that ensures that they function in a manner similar to natural stream systems. Detailed landscape treatment plans will be required to demonstrate:
 - (i) the proposed long section and cross sections;
 - (ii) how the new stream banks are to be stabilised;
 - (iii) how pool – riffles - run sequences are to be formed; and
 - (iv) how stormwater outlets are controlled.
- (2) A subdivision application for vacant lot subdivision or a land use application for a new building or buildings in Sub-precinct C must be accompanied by an indicative 'integration plan' showing how the proposed development integrates with potential future development in the remainder of Sub-precinct C, including existing or potential transport connections and activities.

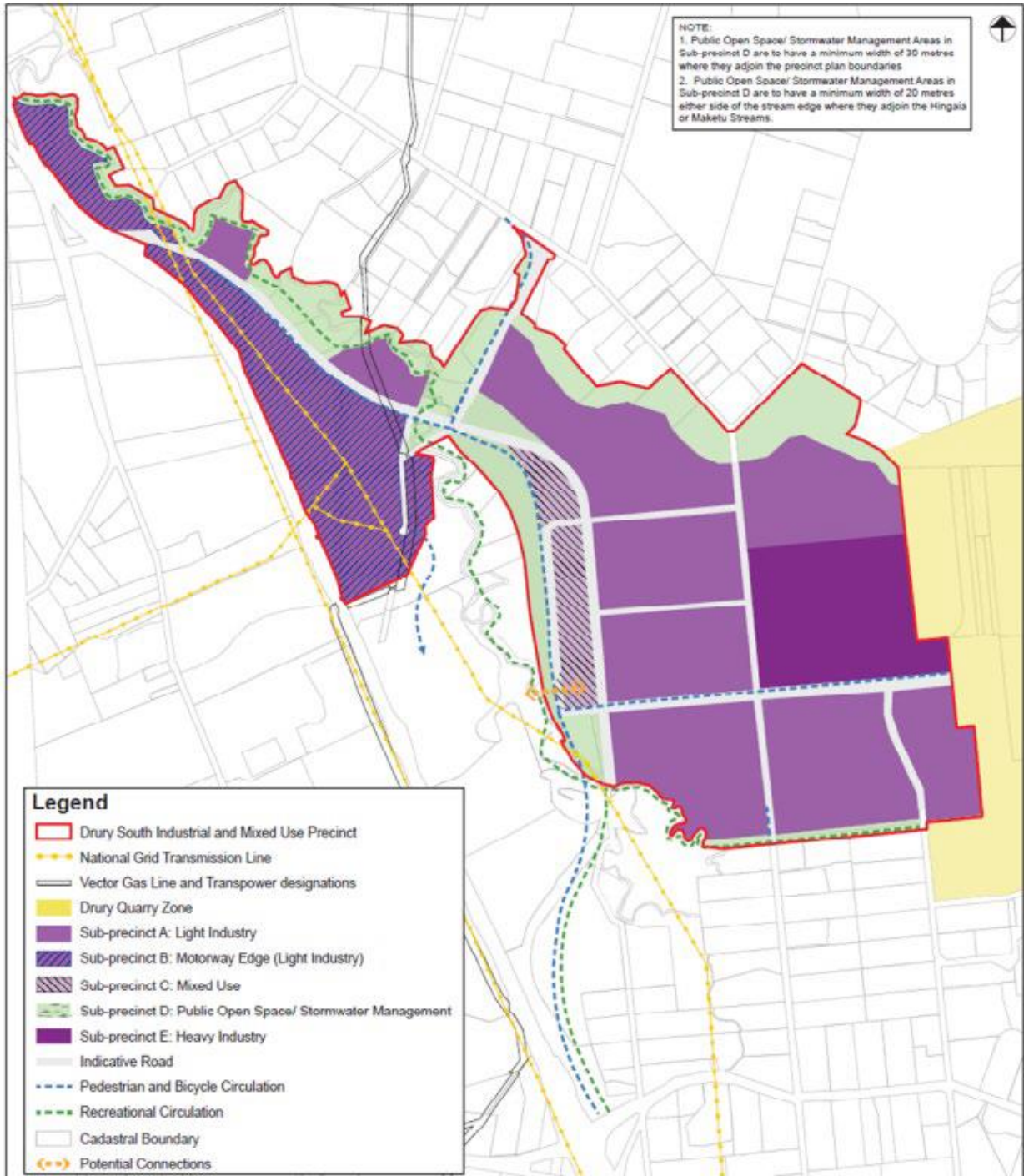
I410 Drury South Industrial Precinct

To avoid doubt, this plan is not subject to any approval from the Council and is for information only. Its purpose is to inform how a particular stage of development will positively contribute to the visual quality and interest of streets, public open spaces and pedestrian amenity, movement and safety (Policy H13.3(3)), in an integrated manner across Sub-precinct C.

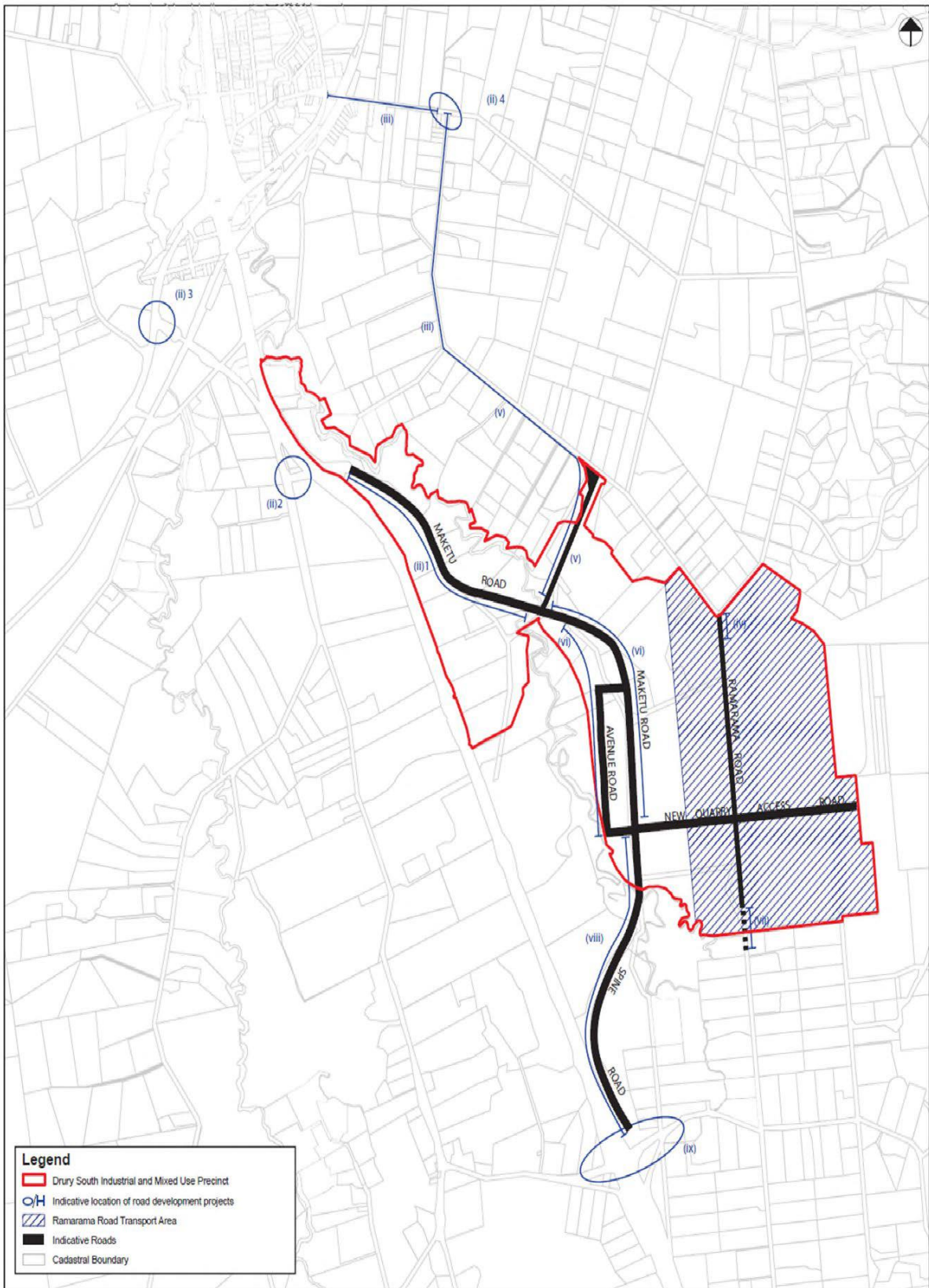
I410.10. Precinct plans

I410.10.1 Drury South ~~Industrial and Mixed Use~~: Precinct plan 1

I410 Drury South Industrial Precinct



I410.10.2 Drury South Industrial and Mixed Use: Precinct plan 2



I410.11. Appendices

Attachment One

I410.11.1: Attachment 5 (Drury South **Industrial** Appendix)

APPENDIX: DRURY SOUTH INDUSTRIAL PRECINCT _SUBDIVISION DESIGN ASSESSMENT CRITERIA

PURPOSE OF APPENDIX I410.11.1

Within the Drury South **Industrial** Precinct, applications for any subdivision or any development of land which precedes a subdivision being undertaken which complies with Standard I410.6.3 as a restricted discretionary activity will be assessed in terms of a series of matters to which the Council will restrict the exercise of its discretion. One of the matters which the Council will have regard to as set out in standard I410.8.2(1)(d) is:

*the extent to which subdivision design and layout gives effect to the objectives and policies identified for the Drury South **Industrial** Precinct and the subdivision design assessment criteria set out in Appendix I410.11.1.*

In addition, the criteria will also be used in the consideration of discretionary applications for subdivision, as appropriate.

This appendix sets out assessment criteria under a number of "Design Elements". Accompanying illustrations are intended to support the text and represent good design solutions, but are not intended to represent the only design solution. All illustrations are indicative only.

Each Design Element includes an explanation, which summarises the rationale for the particular Design Element and expands on the individual criteria. The explanation may be used as further guidance in interpreting the intention of the criteria and assessing the extent to which the proposal accords with them.

INFORMATION REQUIREMENTS

The applicant shall provide a written assessment describing how the criteria for each Design Element are addressed. Applicants will have to demonstrate that the provisions of the criteria have been acknowledged.

It is recognized that certain proposals will not achieve absolute accordance with all criteria. Where necessary, in regard to a criterion demonstrably not met, the applicant shall explain with reference to the explanation for the particular Design Element:

- whether site constraints inhibit the ability to address the criterion, and/or;
- how the intention of the criterion is met by the proposal, and/or ;
- whether the proposal represents a better design solution than that suggested by the criterion.

Planting plans and maintenance plans for recreation and esplanade reserves and stormwater management areas will need to be submitted with applications for subdivision consent and approved by the Council.

Design Element 1: Road, Reserve and Access Networks:

1. Earthworks should be undertaken principally at the initial subdivision stage, and where appropriate the creation of reasonably flat sites should occur at the bulk earthworks stage (in order to avoid creating retaining walls at site development stage).
2. Road patterns should maximise convenient / direct access to the Maketu Road and limit connection to existing rural roads (such as Ararimu Road) except where this relates to the wider essential network.
3. The road pattern should facilitate access to and accessibility within Sub-precinct C Mixed Use.
4. Road patterns should be logical and contribute to the legibility of and ease of wayfinding within the area (refer Diagrams 1 and 2 for generic legibility and proposed street hierarchy).
5. Subdivision layout design should achieve protection and enhancement of all significant streams / tributaries to be retained and their riparian corridors (20m minimum either side from edge of stream) and concentrate open space as part of the riparian network (refer Diagram 3).
6. Subdivision layout design should achieve an interconnected open space and movement network.
7. Safe pedestrian and cycle routes through the structure plan area should be integrated with the riparian, reserve and road design.
8. Equestrian bridle trails should be integrated with riparian reserve development and provide access to the large centrally located public open space / stormwater management area.

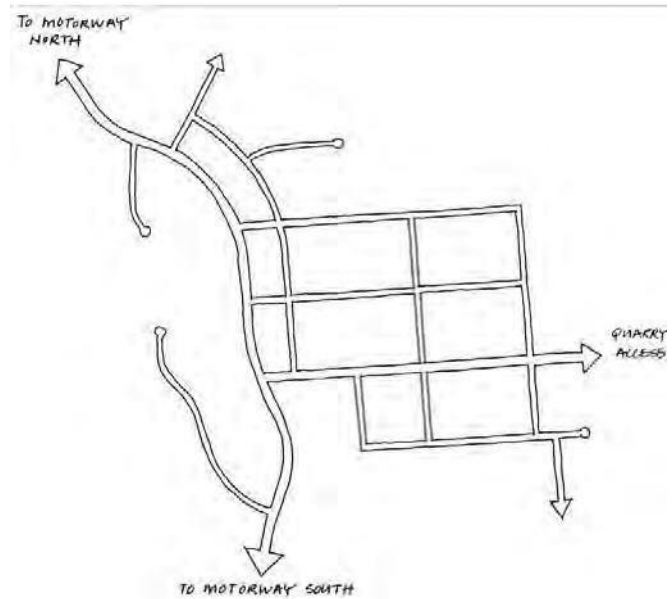


Diagram 1: Legible road hierarchy to assist wayfinding

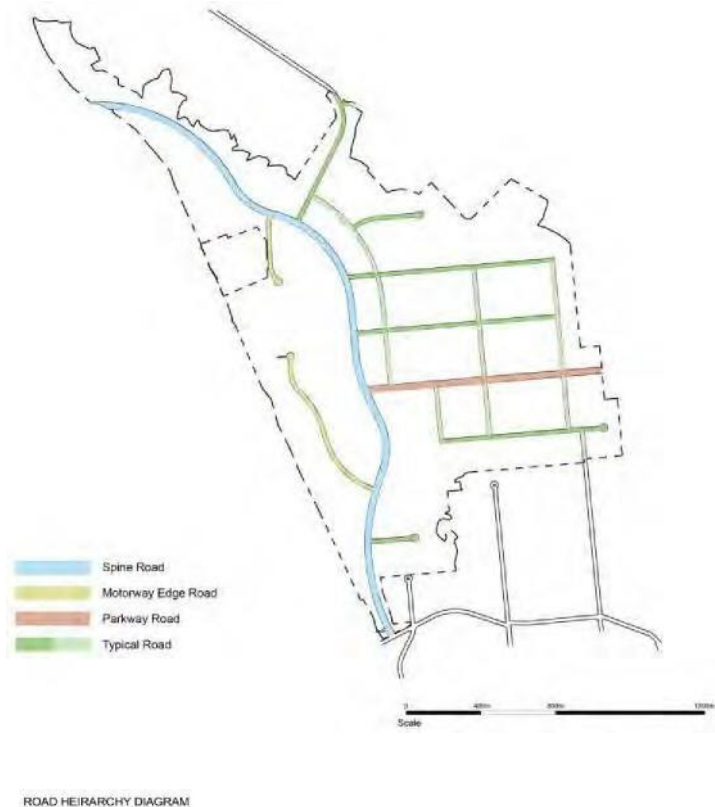


Diagram 2: Road hierarchy

9. Layouts should retain mature trees within the riparian corridors, particularly those of indigenous species.
10. In Motorway Edge Sub-precinct areas layouts should seek to retain as many existing established trees, particularly those of indigenous species, as possible.
11. In Motorway Edge Sub-precinct, areas access to sites off the Maketu Road should be combined wherever practicable.

Explanation:

Design Element 1 pertains to the overall site topography and the general layout of the networks of roads, reserves and other access linkages that make up the public space of the Drury South **Industrial** Precinct. These should be considered in an integrated fashion together with the development blocks that they create.

The existing site topography within the proposed **Industrial** Precinct is relatively flat although bulk earthworks including cut and fill will be required to establish levels for future development above the flood plain and appropriate falls across the land.

The riparian corridors of the Hingaia and Maketu Streams and their significant tributaries will remain an important feature of the site topography once the Precinct is established. Vegetation associated with these corridors is also important to the structuring, screening and ecology of the area and its proposed activities.

The riparian corridors also provide a focus for future recreation and open space development and form part of the enhancement framework for the Precinct.

The road network and hierarchy (refer Diagrams 1 and 2), has been designed to efficiently direct traffic into and out of the Precinct connecting to the Southern Motorway (SH1) at both the Ramarama (south) and Drury (north) interchanges. The proposed Spine Road is important to the legibility and traffic efficiency of the Precinct; this route will provide the primary connection into and out of the Precinct with other streets connected to the Maketu Road through corridor.

The proposed street network has also been designed to limit the impact of vehicles destined for the Precinct on existing rural residential and community roads such as the road accessing and adjacent to the Ramarama School. Implementation of the street network to achieve the beneficial improvements to heavy vehicle (including quarry truck) and other Precinct related traffic movement is imperative as a part of delivery of the zone.



Diagram 3: Open space concentrated along Hingaia, Maketu, Roslyn and Northern Diversion Stream corridors

By its nature the Sub-precinct C Mixed Use will require a finer grain street network with smaller street blocks, greater walkability, good service access and parking.

A legible road pattern (refer Diagram 1) is one that is easily understandable for the people that use it and that provides cues for first time users as well as those habitual users. Consistent road design and landscape themes can further emphasise the position of each street in the road hierarchy and in the pattern of streets in the wider area. Road patterns that are logical and easy to comprehend and navigate make an area feel more comfortable and help to provide a sense of identity.

Design Element 2: - Block Size, Lot Type and Orientation:

1. Blocks should be of a scale and shape to achieve a permeable street layout suited to the functional requirements of the proposed land use.
2. All lots should front onto and be accessed directly from a legal road. Rear lots are to be avoided (refer Diagram 4).
3. Through lots (with dual road frontage) are permissible (refer Diagram 4).

Explanation:

Design Element 2 describes the principles for consideration in the layout of blocks and lots within the Precinct.

Blocks within an industrial area are typically larger than those within finer grain residential or Mixed Use areas. A good permeable and well connected-street network is however still required in Light and Heavy Industry Sub-precincts A, B and E to facilitate access, provide an appropriate street address and reduce traffic volumes on side streets. Within Sub-precinct C Mixed Use, Design Element 1 also provides opportunities for views through to the open space corridor to the west of the Sub-precinct from Maketu Road.



Diagram 4: All lots should front onto a legal road; through lots are permissible

Lots need to be of a size and shape to accommodate large scale, land extensive land uses and flexible to enable reasonable long term growth. At the same time rear lots are considered undesirable with a preference for development to address the street.

Design Element 3: - Roads and Accessways:

1. In addition to Auckland Transport Code of Practice and Council's Development Code requirements, minimum road and design elements should be appropriate to the nature of the function that they provide and also reflect urban design legibility considerations – i.e. wayfinding, as set out in Table 1 below.
2. Cyclists should be accommodated on the street carriageway.
3. A consistent palette of traffic management tools should be used across the Precinct. Traffic management devices such as chicanes, speed humps and other such restrictive management devices are not expected, however the use of thematic planting and measures such as localised narrowing to create thresholds or define changes in the street environment could be used.

4. All streets are required to accommodate strong avenue specimen tree planting. Refer Cross Sections Attachment 1. This planting is required to achieve the breaking up of the overall scale of the development particularly as seen from elevated locations, as well as to establish the enhanced expected amenity and character of the Precinct.
5. In addition to the street avenue planting a planted central median is also required on the roads identified as 'Arterial' and 'Parkway'.

Explanation:

Design Element 3 pertains to principles for the design of roads and other access routes within the Precinct. Road design should be appropriate to function and provide practical widths for vehicular access, including for emergency vehicles, parking, planting and services.

Pedestrian and cycle paths should generally be integrated with road and reserve design. Paths which are separated from vehicle routes should be designed for safety.

Table 1 below sets out the indicative function and design elements of the collector roads within the Drury South ~~Industrial and Mixed Use~~ Precinct.

Table 1 – Indicative Road Function and Required Design Elements

| Road Name | Proposed Role and Function of Road in Precinct Area | Freight or Heavy Vehicle Route | Minimum Road Reserve ² | Total Number of Lanes | Design Speed (kph) | Access Restriction | Bus Provision ⁴ | Median | Cycle Provision ⁵ | Pedestrian Provision |
|---|---|--------------------------------|-----------------------------------|-----------------------|--------------------|--------------------|----------------------------|---------------|------------------------------|----------------------|
| Maketu Road ¹ South of Link Road | Arterial | Yes | 33.45m | 4 | 60 | Yes ³ | Yes | No | Yes – separated | Both Sides |
| Maketu Road (North of Link Road) | Collector | Yes | 27.65m | 2 | 60 | Yes ³ | Yes | Yes (Flushed) | Yes | Both Sides |
| New Quarry Access Road ¹ | Collector | Yes | 27.65m | 2 | 50 | No | Yes | Yes (Flushed) | Yes – shared path | Both Sides |
| Link Road | Collector | Yes | 27.65m | 2 | 60 | No | Yes | Yes (Flushed) | Yes | Both Sides |
| Ramarama Road (Fitzgerald Road Connection) | Collector | Yes | 21m | 2 | 50 | No | Yes | Yes (Flushed) | Yes | Both Sides |

Note 1: Already have Engineering Plan Approval and are under construction

Note 2: Typical minimum cross section which may need to be varied in specific locations where required to accommodate batters, structures, intersection design, significant constraints or other localised design requirements.

Note 3: Refer to Assessment Criteria I410.8.1(2)

Note 4: Carriageway lanes and geometry of intersections capable of accommodating buses.

Note 5: Type of cycle provision, i.e. separated or shared path, to be confirmed at the Engineering Plan Approval stage, based on nature and character of the Local Road.

Design Element 4: Reserves, Stormwater Management Areas and Riparian Planting:

1. Stormwater detention and treatment reserves should be located in general accordance with the locations shown in the Drury South ~~Industrial~~ Precinct Plan and in accordance with the relevant stormwater discharge consents, the Council's Development Code and relevant technical publications. The Cross Sections (Attachment 2) illustrate the Typical Wetland Stormwater Pond and Typical Stream Corridor Cross Sections.
2. Stormwater ponds should be designed to fit in with the surrounding landscape and appear as an integrally designed infrastructural component of the overall setting.
3. Vegetated buffers, not less than 40m in total width for any retained permanent or diverted stream, should be provided on the margins of streams, ponds and wetlands and should:
 - Include native species as identified in Attachment 3;
 - Include native trees on the lower and upper banks of ponds predominantly to the north and west to provide shade;
 - Provide a minimum of 10m of native planting either side of the stream corridor including shallow water rushes and sedges;
 - Avoid vegetation that will exacerbate flooding and the blockage of water flow along the immediate riparian corridor.

The only exception to these requirements is the retained permanent stream in the northwest of the Precinct (adjacent to the Transpower site) which will be subject to a minimum requirement of 10m of native planting either side of the stream corridor only.

Note: Attachment 5 sets out 'Stream and Wetland Rehabilitation Guidelines (June 2013) for the DSSP area.

4. Walkways / cycleways along riparian corridors and through buffer planting should be designed to minimise any impacts on ecological function and give due consideration to personal safety and Crime Prevention Through Environmental Design (CPTED) principles.
5. Edge buffer reserves should be located in accordance with the Drury South **Industrial** Precinct Plan, be a minimum of 30m in width and be planted in generally accordance with Diagram 5 below. Planting should be fast growing rural shelter belt species capable of attaining a minimum height of 6 metres at maturity.



Diagram 5: Typical landscape buffer cross section

6. Suitable mechanisms to ensure the establishment and ongoing maintenance of landscaping of reserves and stormwater management areas until those areas are vested in the Council will be required to ensure the long term success of any landscaping.

Explanation:

Design Element 4 pertains to matters for consideration for locating, sizing and designing reserves stormwater management areas and riparian planting. These areas will be generally located in accordance with the locations shown in the Drury South **Industrial** Precinct Plan; regard should also be given to Design Element 5 when designing reserves within the Precinct.

The principal reserve network within the Precinct, as illustrated in the Drury South **Industrial** Precinct Plan, is structured around riparian protection and enhancement as well as stormwater management including detention and treatment. The reserve network is however designed for multiple functions and values including passive and active recreation, pedestrian / cycle commuter access, ecological values, visual screening / separation and aesthetic amenity.

The Precinct Plan also includes buffer reserves, adjoining the Light Industry zoned Sub-precincts A and B. The main purpose of these reserve is to physically and visually screen and separate adjacent existing land uses and residents from these areas. These reserves are planted to maintain a robust rural character with a woodlot/ shelter belt form of land management. Whilst providing multiple functions including biodiversity and aesthetic values, their primary function will remain as that of a buffer to land uses outside of the Precinct.

Design Element 5: Reserve Interface Design:

1. Reserves intended for public recreation and use should be designed to be bounded by public roads as much as possible given topographical and natural feature constraints. (Note proposed buffer reserves are not intended to be bounded by public roads)
2. Where reserves or riparian buffer areas adjoin lots, the boundary should be securely delineated and fenced to avoid encroachment (refer Diagram 5).

Explanation:

Reserves intended for public use that are well fronted by public roads are more secure because of the informal surveillance from the road and activities that interface with the road across the carriageway. Ideally not less than half the total length of legal boundary of any reserve should adjoin a legal road.

Design Element 5a: Earthworks and Retaining Walls

1. Changes of level adjoining streets and open space corridors should be achieved by gently battering and contouring land.
2. Where retaining walls are required, they should be screened from public view. This may be achieved by planting and breaking up the vertical extent of walls through physical stepping.

Additional Sub-Precinct Criteria

In the case of subdivision within Sub-precinct B Motorway Edge and Sub-precinct C Mixed Use, the following criteria shall also apply and take precedence over the general assessment criteria for subdivision stated above, where this is inconsistency or conflict.

Additional Design Element 6: Subdivision within Sub-precinct B Motorway Edge

1. Earthworks should be designed to retain a more natural, undulating topography and character outside of building platforms and other areas required through function to retain a flat topography.
2. Intersections between public roads serving the sub-precinct and the north south primary road (Maketu Road corridor) should be minimised.
3. Specimen tree planting should be provided on all public and internal private access roads within the Motorway Edge Sub-Precinct. ~~Refer Attachment 1 Typical Road CrossSection for Motorway Edge Sub-Precinct.~~

Additional Design Element 7: Subdivision within Sub-precinct C Mixed Use

1. Where through lots with dual street frontage are created, these should provide frontage to both street edges (i.e. no rear elevations to the street). However, where buildings are required to be setback from Maketu Road for acoustic amenity reasons, a safe and attractive edge to Maketu Road should be provided. Methods to achieve this include providing landscaping at the street edge and providing a good degree of glazing on the building facade overlooking Maketu Road.

APPENDIX I410.11.2: DRURY SOUTH INDUSTRIAL PRECINCT – SUB-PRECINCT B MOTORWAY EDGE PRECINCT AND SUB-PRECINCT C MIXED USE ASSESSMENT CRITERIA

PURPOSE OF APPENDIX I410.11.2

In Sub-precinct B Motorway Edge New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities' are controlled activities and in Sub-precinct C Mixed

Use, 'New buildings' and 'Additions and alterations not otherwise provided for' are restricted discretionary activities.

Rule 6.15.1 sets out controlled activity assessment criteria for all restricted discretionary activities in the industrial zones and contains the following clause:

"In the case of the Motorway Edge Precinct and the Commercial Service Precinct within the Drury South Structure Plan Area (Part 5B.4 in Section One of the District Plan) the Council will, in addition to the criteria set out in (a) to (f) above, assess the application against the criteria set out for those precincts in Appendix 5B.4.B in Section One of the District Plan."

This Appendix sets out assessment criteria under a number of "Design Elements" for both Sub-precinct B Motorway Edge and the Sub-precinct C Mixed Use.

The criteria listed under each Design Element are intended to give flexibility, enabling site responsive designs, while ensuring that development provides a positive contribution to the amenity of the Precinct.

The criteria are intended to guide development rather than prescribe exact design and layout. Most criteria are illustrated. The illustrations are intended to support the text and are representative of good design solutions, but are not necessarily intended to represent the only design solution.

Each Design Element includes an explanation, which summarises the rationale for the particular Design Element and expands on the individual criteria. The explanation may be used as further guidance in interpreting the intention of the criteria and assessing the extent to which the proposal accords with them.

INFORMATION REQUIREMENTS

The applicant shall provide a written assessment describing how the criteria for each Design Element are addressed. Applicants will have to demonstrate that the provisions of the criteria have been acknowledged. It is recognised that certain proposals will not achieve absolute accordance with all criteria. Where necessary, in regard to a criterion demonstrably not met, the applicant shall explain with reference to the explanation for the particular Design Element:

- whether site constraints inhibit the ability to address the criterion, and/or;
- how the intention of the criterion is met by the proposal, and/or ;
- whether the proposal represents a better design solution than that suggested by the criterion.

Applicants will also be required to provide a Landscape Concept Plan with sufficient detail to ensure that the relevant assessment criteria are able to be considered, identifying hard and soft landscaping treatment, large grade specimen trees (species and planting size), groupings of ground covers and shrubs with species schedule.

SUB-PRECINCT B MOTORWAY EDGE PRECINCT DESIGN ASSESSMENT CRITERIA

The following criteria shall apply to 'New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities Sub-precinct B Motorway Edge Precinct.

Design Element – Internal Private Access Roads:

1. Specimen tree planting should be provided on all public and internal private access roads within the Sub-precinct B Motorway Edge.

Design Element – Existing Vegetation:

1. Where ever possible layouts should retain and protect existing mature trees, particularly those of indigenous species, where these contribute to the site character and amenity.

Design Element – Planting:

1. Planting should be designed to have a large scale landscape effect and combine native as well as appropriate exotic species to provide seasonal change and quality amenity.
2. Where reserve land adjoins the motorway, boundary planting that creates a continuous visual barrier to eastward views from the SH1 (Southern Motorway) corridor should be avoided, however landscape design should emphasise the current sequence of intermittent views to the Hunua Ranges from the SH1 corridor and the pattern of variable depth of such views.
3. Where industrial sites adjoin the motorway boundary, a detailed rule applies requiring a double row of Leyland Cypress to create the appearance of a rural shelterbelt providing a continuous visual barrier defining the curve in the motorway alignment.

Design Element – Buildings:

1. Buildings should be located with design consideration for their visibility and reduced visual impact as viewed from the SH1, (Southern Motorway) corridor and the desirability of maintaining a sense of openness as seen from the motorway.
2. The visual mass of larger buildings should be minimised by employing the following methods:
 - Utilising subdued, recessive colours;
 - Providing variation in materials and finish for facades viewed from the motorway;
 - Creating variation of roof profiles with consideration given to the overall roofscape viewed from the motorway;
 - All rooftop servicing and plant should be designed as an integral part of the roofscape with particular consideration given to the view from the motorway.

Design Element – Parking Areas:

1. Parking areas should be designed to incorporate trees to break up the scale of hard surface areas.
2. Adoption of the Fully Planted Permeable Carpark Design Layout (refer Diagram 6) style of parking is advocated within Sub-precinct B Motorway Edge.

Design Element – Internal Site layout:

1. Storage and waste management activities should be located and / or designed to be screened from view of the State Highway.

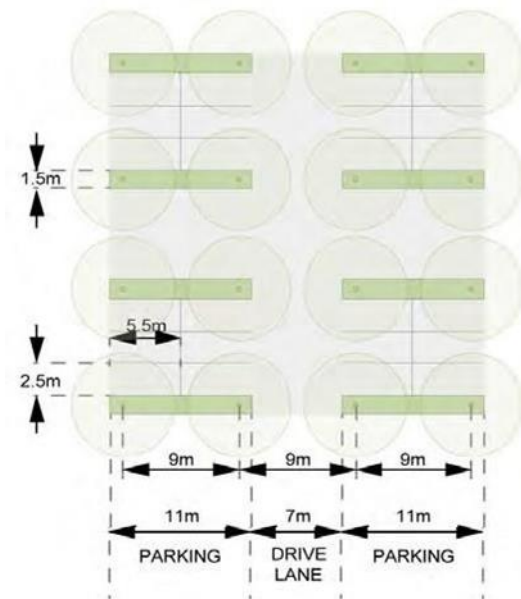


Diagram 6: Fully planted permeable carpark design layout - detail

SUB-PRECINCT C MIXED USE DESIGN ASSESSMENT CRITERIA

The following criteria shall apply to 'New buildings' and 'Additions and alterations not otherwise provided for' in Sub-precinct C Mixed Use.

Design Element – Block Size, Lot Type and Orientation:

1. Buildings on corner lots should be designed to provide for a quality architectural response to the corner. Appropriate design responses include provision of additional height at the corner and windows and activities addressing both street frontages. Service activities such as loading docks or storage yards should not be located on corners or any site frontage, however, where this is required to support the functional and operational requirements of the activity, the service area visible from the street should be minimised as much as practicable and attractively screened from public view with landscaping.

Design Element – Street Interface Design:

1. Built development should front the street with a quality, recognisable pedestrian entry to the street.
2. At-grade parking should be located and designed in such a manner as to avoid or mitigate adverse effects on pedestrian amenity and the streetscape. This includes through positioning carparking away from street frontages, to the sides or rear of buildings and the use of extensive landscaping within the carpark, including tree planting. Refer to Attachment 4 for an example of a layout and design consistent with this guideline.

Design Element – Signage:

1. Signage for each Sub-precinct C Mixed Use development

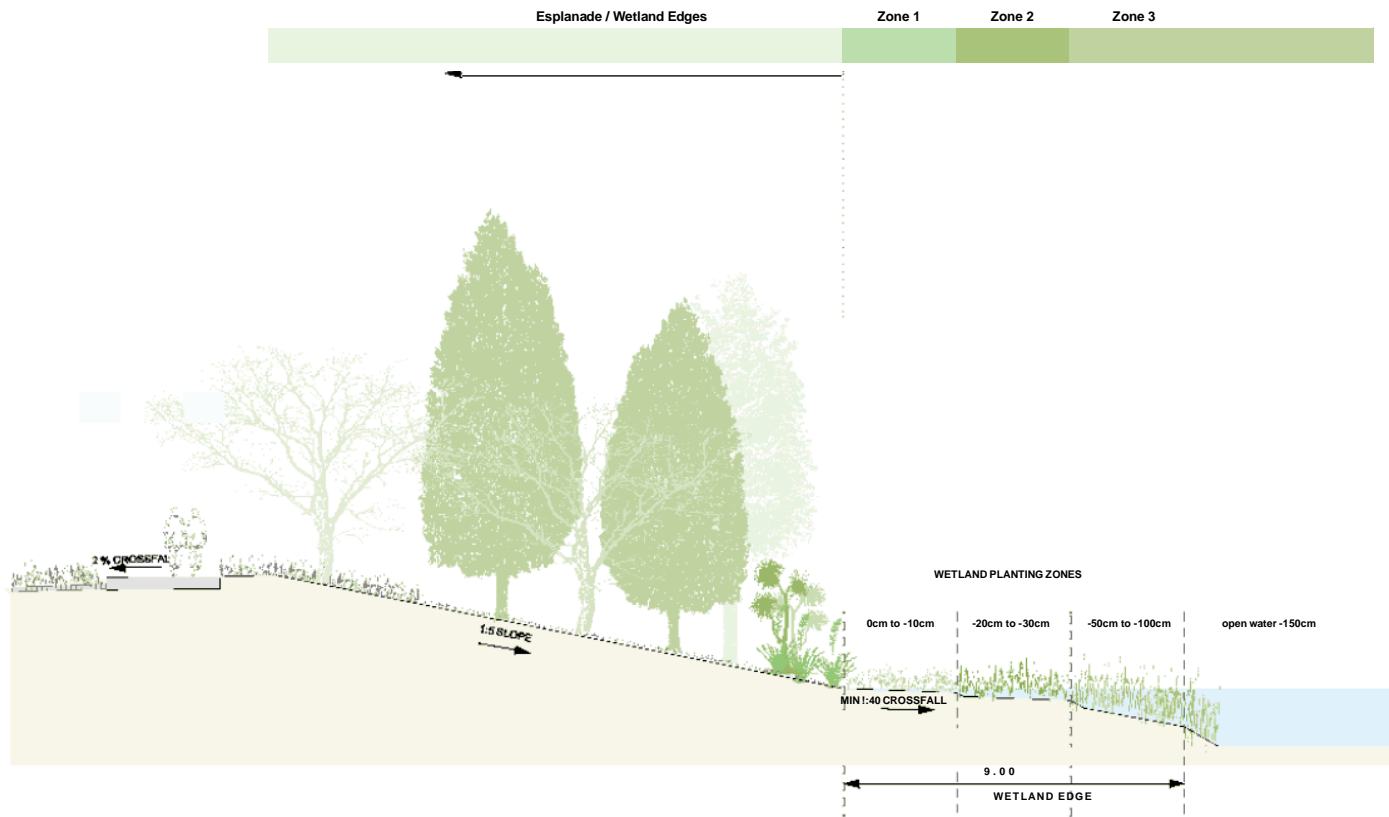
should be coordinated including the physical location of signs, their type face, style and content with a maximum of two signs per business, one located to address the street frontage and one to identify the building entry (a third sign is permissible where the service access is separate from building entry or there are multiple entries).

Design Element – Service Areas:

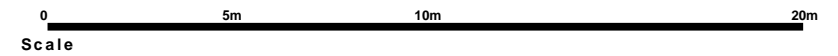
1. Service areas should be located so as to avoid observation from a public road with access either from a service lane, incorporation within the main building or full screening of service / storage and dock areas. However, where this is required to support the functional and operational requirements of the activity, the service area visible from the street should be minimised as much as practicable and attractively screened from public view with landscaping.

Attachment 2

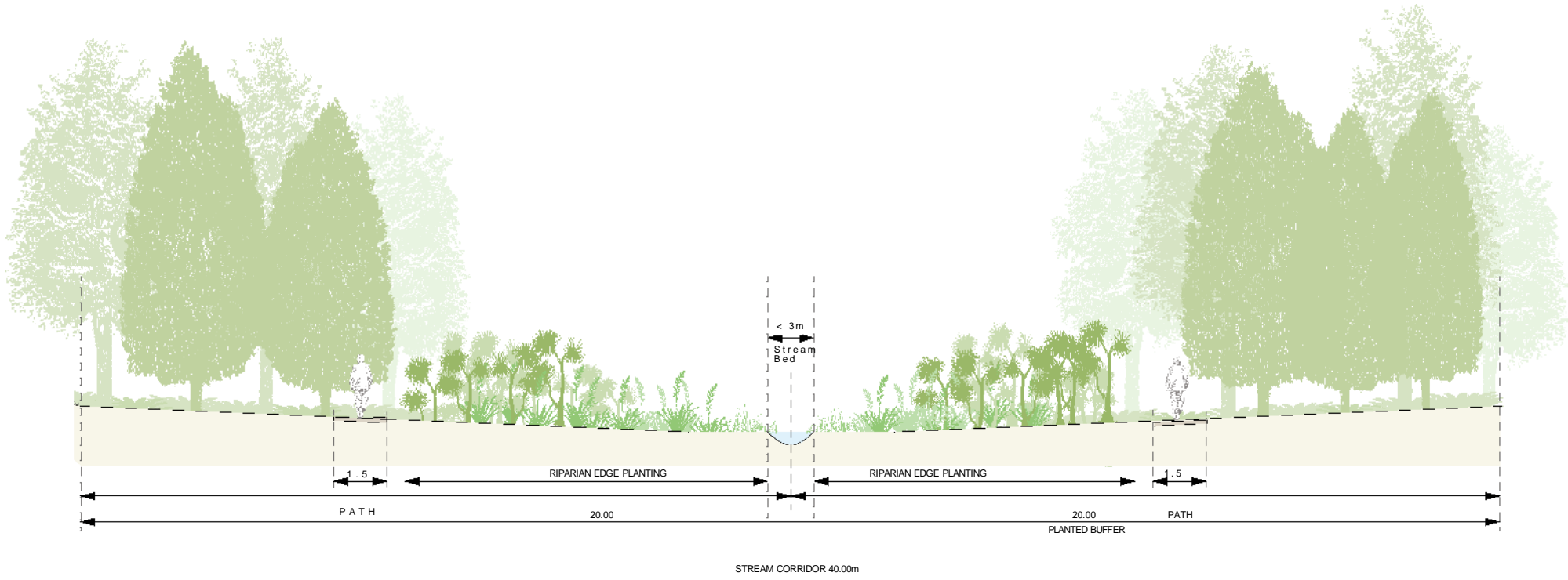
Typical Wetland Stormwater Pond and Typical Stream Corridor Cross Sections



| Location | Botanical Name | Common Name |
|------------------------------------|---|--|
| Esplanade / Wetland Edges | <i>Salix babylonica</i> | Weeping Willow |
| | <i>Dacrycarpus darydiodes</i> | Kahikatea |
| | <i>Cordylone australis</i> | Cabbage palm |
| | <i>Anemathele lessoniana</i> | Wind grass |
| | <i>Carex secta</i> <i>Carex testacea</i> | Purei |
| Zone 1 Wetlands (0 to -10cm) | <i>Carex geminata</i> <i>Cyperus ustulatus</i> <i>Cordaderia fulvia</i> | Toetoe |
| Zone 2 Wetlands (-20 to -30cm) | <i>Schoenoplectus validus</i> <i>Eleocharis acuta</i> <i>Juncus gregiflorus</i> <i>Bolboschoenus fluviatilis</i> <i>Leptocarpus similis</i> | Kopupu / kuta Spike rush Wiwi rush Ririwaka Oioi /Jointed Rush |
| Zone 3 Wetlands (-50 to -100cm) | <i>Baumea rubiginosa</i> <i>Baumea articulata</i> <i>Baumea teretifolia</i> <i>Eleocharis sphacelata</i> <i>Juncus pallidus</i> | Ngawha / Great spike rush Giant rush |



INDICATIVE WETLAND EDGE DETAIL



INDICATIVE 40m RIPARIAN BUFFER FOR STREAM BEDS LESS THAN 3m WIDE





TYPICAL ONE SIDED RIPARIAN BUFFER FOR STREAM BEDS LESS THAN 3m WIDE



Scale
 0 2.0m 5m 10m

INDICATIVE ONE SIDED RIPARIAN BUFFER FOR STREAM BEDS 3m AND GREATER

Attachment 3

Drury South ~~Industrial~~ Precinct

Indigenous Species Plant List

Note: The species underlined are recognised as being rare / uncommon in the Auckland region.

Wetland Species

| | |
|--|---|
| Schoenoplectus tabernaemontani also Eleocharis sphacelata | Multiple Māori names include kukuta and kutakuta. |
| Carex virgata and Carex secta | pukio |
| Baumea articulata | jointed twig-rush |
| Typha orientalis | raupo |
| Myriophyllum robustum | stout water milfoil |
| Baumea tenax | |
| Isachne glabosa | swamp grass |
| Phormium tenax | particularly the variety known to Maori as 'Muka' - soft for weaving |

Riparian Marginal Species

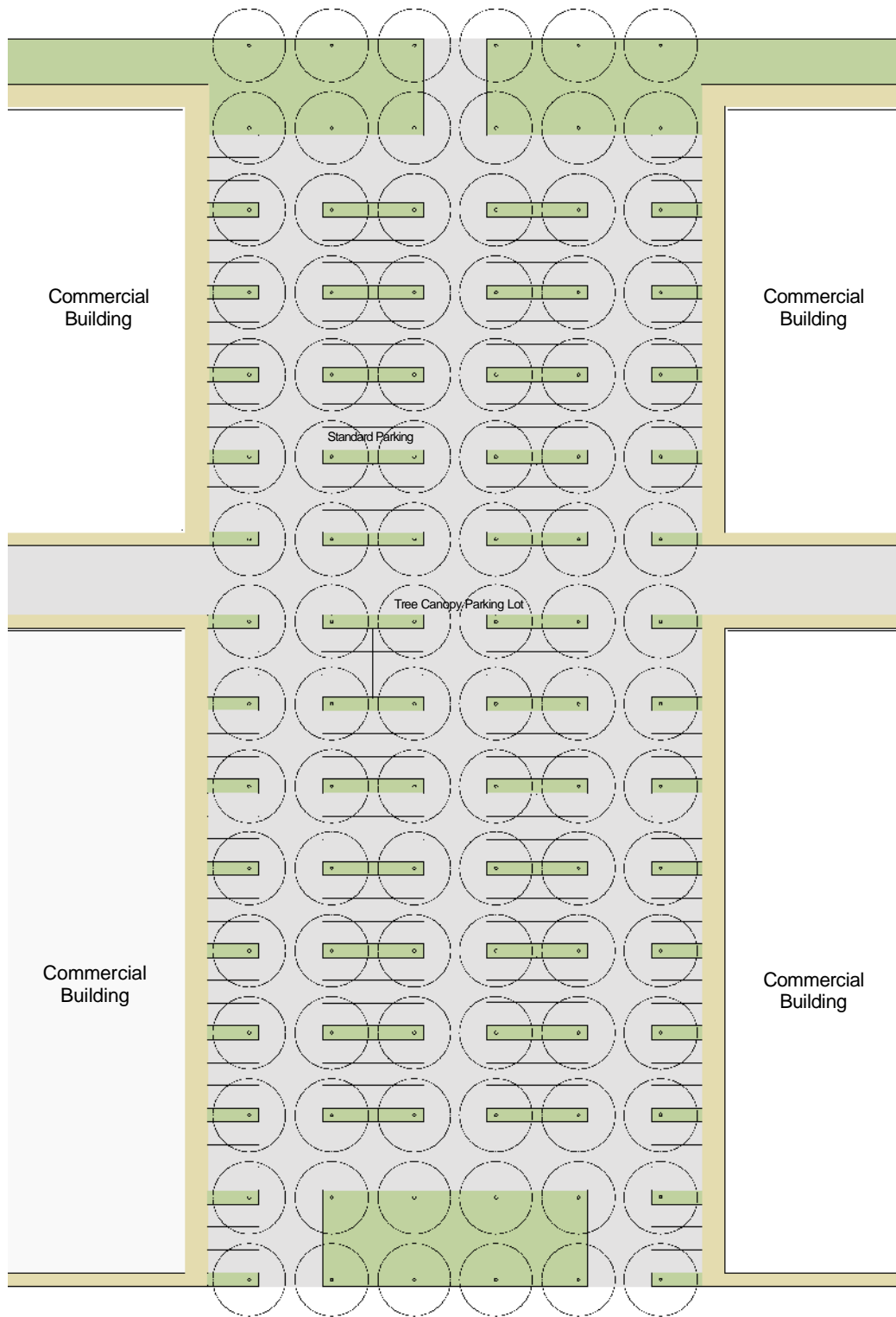
| | |
|-------------------------|----------------|
| Freycinetia baueriana | kie kei |
| Alectryon excelsa | titoki |
| Vitex lucens | puriri |
| Prumnopitys taxifolia | matai |
| Sophora microphlla | kowhai |
| Rhopalostylis sapida | nikau |
| Hoheria populnea | lacebark |
| Corynocarpus laevigatus | karaka |
| Plagianthus betulinus | manatu |
| Pennantia corymbosa | kaikomako |
| Hedycarya arborea | pigeonwood |
| Aristolelia serrata | makomako |
| Kunzea ericoides | kanuka |
| Cordyline australis | ti whanake |
| Dysoxylum spectabile | kohekohe |
| Coprosma grandifolia | kanono |
| Streblus banksii | towai |
| Streblus microphylla | turepo |
| Myrsine divaricata | weeping matipo |
| Marrattia salicina | king fern |

Swamp Forest Species

| | |
|---------------------------------|---------------|
| <i>Syzygium maire</i> | maire, tawake |
| <i>Laurelia novae-zelandiae</i> | pukatea |
| <i>Carpodetus serratus</i> | putaputaweta |
| <i>Phormium tenax</i> | harakeke |
| <i>Coprosma tenuicaulis</i> | hukihuki |
| <i>Dacrycarpus dacrydioides</i> | kahikatea |
| <i>Blechnum novae-zelandiae</i> | swamp kiokio |
| <i>Cortaderia fulvida</i> | toetoe |
| <i>Astelia grandis</i> | swamp astelia |
| <i>Schefflera digitata</i> | pate |
| <i>Podocarpus totara</i> | totara |

Attachment 4

Typical Sub-Precinct C Mixed Use Precinct Access and Car Park Layout



Scale

TYPICAL COMMERCIAL LAYOUT

Attachment 5

**Drury South Industrial Precinct: Stream and Wetland Rehabilitation Guidelines
(June 2013)**

Drury South Industrial Precinct

Stream and Wetland Rehabilitation Guidelines

June2013



Boffa Miskell



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Drury South Industrial Precinct
Stream and Wetland Rehabilitation Guidelines



1.0 Introduction

1.1 Purpose of this Document

The Drury South Industrial Precinct (DSIP) Stream and Wetland Rehabilitation Guidelines provide a summary of proposed stream and wetland works associated with the DSIP project. This includes all stream corridors to be removed, realigned, or restored, and wetlands created associated with stormwater management. The purpose of this document is to achieve the following:

1. To provide technical input to the planning process (to be read in conjunction with the Ecological and Landscape Assessments, Assessment of Environmental Effects (AEE) and Infrastructure Assessment report (IAR).
2. To provide the project team with a set of principles for treatment of riparian (stream and wetland) areas within the DSIP area.

1.2 Proposed Stream and Wetland Rehabilitation Works

In line with the proposed Drury South Industrial Precinct, the existing Hingaia and Maketu streams will be protected and enhanced by corridors of riparian restoration 40 metres in width (20m on each bank). Dense riparian planting will also occur along SH1 in association with the Roslyn Stream realignment and along the northern boundary of the site in association with a newly formed northern stream realignment.

Some streams and farm drains within the DSIP area will be filled. Piped infrastructure or vegetated swales will direct these modified catchments to the Hingaia Stream. These systems, as well as stormwater runoff from business activities will be treated for water quality in extensive wetland areas associated with the Hingaia stream corridor. These wetland areas will function for stormwater quality and quantity, ecosystem function and values, landscape amenity, natural character, and recreation.

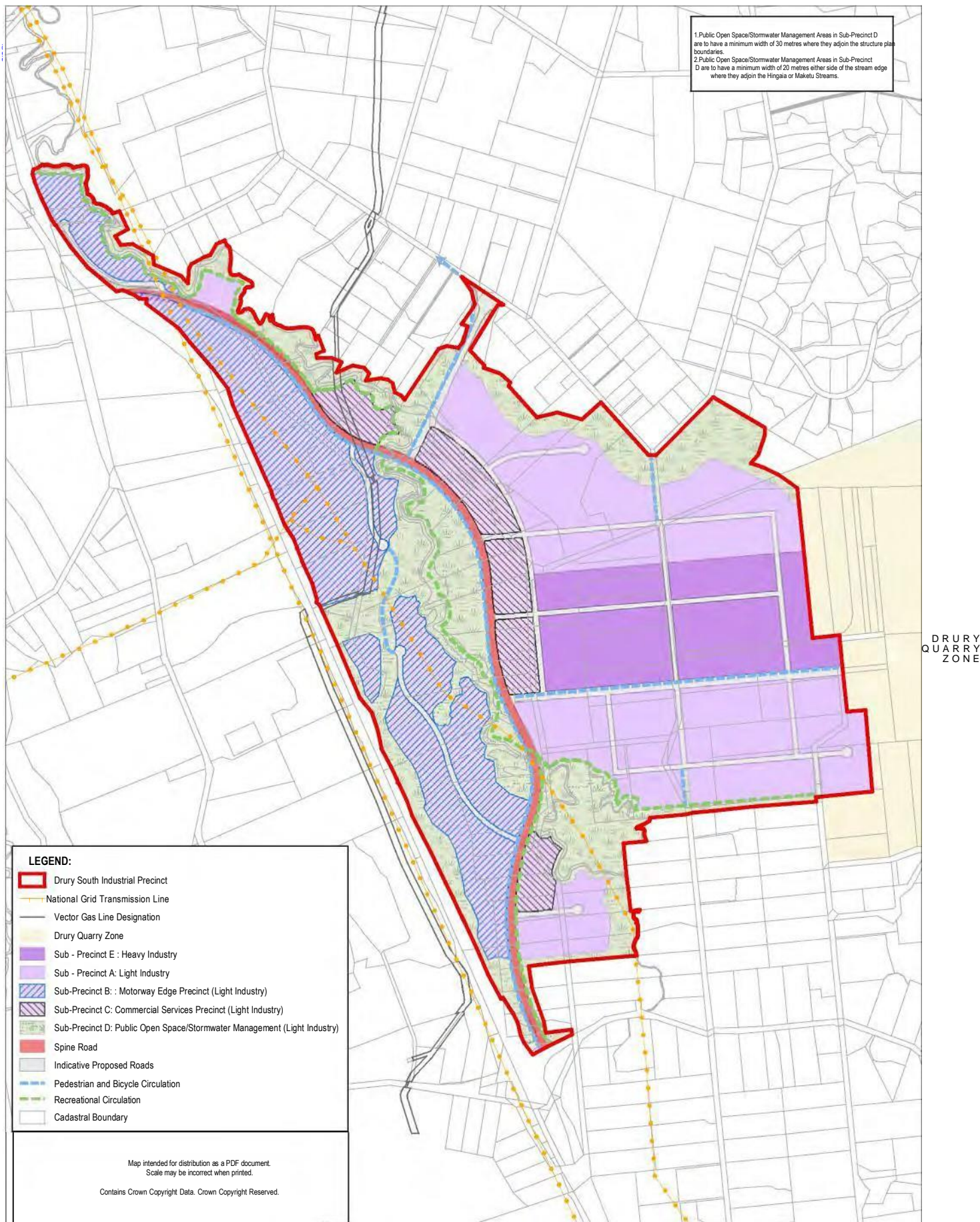


FIGURE1:DSIP Concept Plan - December 2010 (Source: BECA Ltd)

Drury South Industrial Precinct Stream and Wetland Rehabilitation Guidelines

2.0 Streams of the Project Area

2.1 Existing Streams and Proposed Mitigation

The Hingaia Stream flows through the DSIP area from south to north before continuing through the Drury Township to discharge to Drury Creek and eventually the Pahurehure Inlet to the Manukau Harbour. The Maketu Stream flows into the site at the south eastern corner of the DSIP area, and joins with the Hingaia Stream. The Roslyn Stream flows from the west under the State Highway and joins a further tributary to the Hingaia Stream. The remainder of streams traversing the site do not have officially recorded names, are smaller, highly modified, and in some cases have been piped.

An assessment of the existing surface water network and receiving environment has been carried out as part of the Hingaia Stream ICMP. This included a stream ecology study, "The Hingaia Catchment Environmental Assessment, Golder Associates, August 2009". This study included field survey of streams within the DSIP area with respect to water quality, and aquatic flora and fauna. Each stream potentially affected by the DSIP has been evaluated by the 'stream ecological valuation' method (SEV) in accordance with the technical publication ARC TP302:2008.

Existing watercourses and modified farm drains between Stevensons Quarry and SH1 will need to be filled or re-aligned to accommodate the DSIP earthworks footprint. This includes intermittent and permanent streams (refer Figure 2). Many of the existing overland flowpaths are farm drains, constructed for active drainage. All streams to be affected by the proposed DSIP have been heavily modified by farming or roading operations, including dredging, spraying, straightening, and ongoing impact by stock. In general all of these streams have low to moderate functional values for stream ecology.

Proposed mitigation for stream loss includes the restoration of riparian zones along the length of the Hingaia and Maketu Streams within the DSIP Area. This includes a 40m wide planted riparian buffer along all streams. In addition, streams to be re-aligned will have an appropriate stream profile and riparian planting to provide for sustainable stream function.



One of many existing intermittent farm drains showing evidence of earthworks, spraying and access by stock



LOCATION A (FIGURE 2) - The northern stream is directed along Quarry Road in a highly constrained and modified environment, with low ecological values



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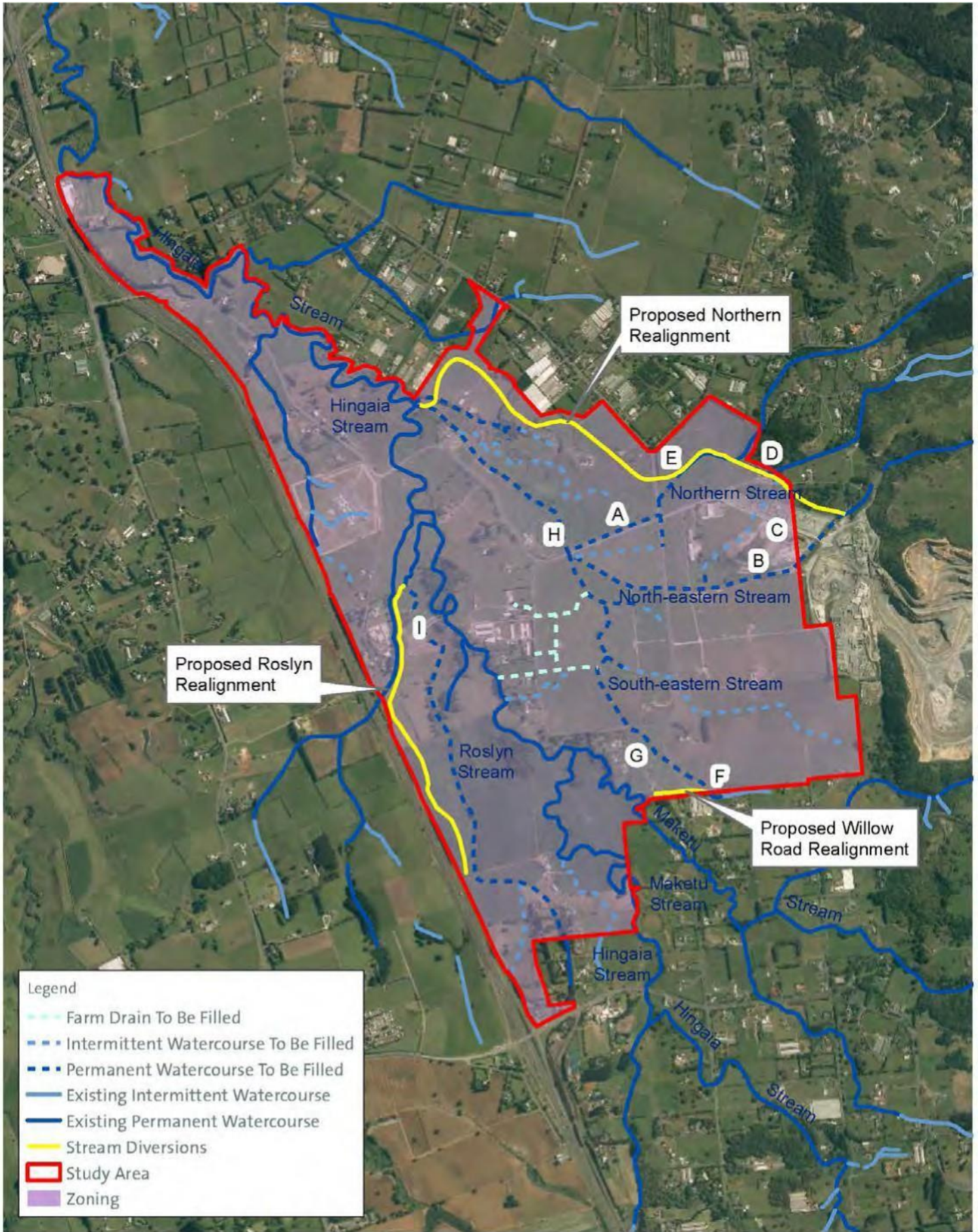


FIGURE2: DSIP Existing and Proposed Water Courses (Source: BECA Ltd)

2.1.1 Northern Streams

A tributary to the northeast of Stevenson Quarry is currently dammed in its headwaters for quarry operations before being reticulated to a channel (refer Figure 2, Location B below). The northeastern stream also receives stormwater from the quarry via adjacent treatment facilities (Location C). As part of the works to accommodate the DSIP, the upper catchment of this stream will be directed to the existing northern stream corridor (Location D).

This northern stream will be rehabilitated with an enhanced stream profile, and restored streambank and floodplain vegetation. The northern re-alignment will be 1,800m in length, comprising 1,500m of new channel and 300m of rehabilitated channel.



LOCATION B (FIG 2) - The north-eastern channel flowing through mixed exotic vegetation



LOCATION C (FIG 2) - The north-eastern channel directed alongside the quarry settlement ponds



LOCATION D (FIG 2) - The existing northern stream channel will be enhanced to receive there – aligned north-eastern tributary



LOCATION E (FIG 2) - The northern stream at the base of the northern escarpment will be rehabilitated as part of the proposed works

2.1.2 Southern Streams

The streams to be filled between the quarry and the Hingaia Stream are relatively small, with low gradient catchments that do not extend beyond the project area. A stream from the southeast of the site (refer Figure 2 and Photos Location F and G) conveys a number of intermittent stream tributaries from the centre of the project area, before joining with the existing northern stream and northeastern tributary previously mentioned (Location H). The southeastern stream and its tributaries have no vegetation cover beyond aquatic macrophytes and pasture species. These watercourses have been heavily modified by pastoral land use.



LOCATION F (FIG2)-The southeastern stream ponding behind a road culvert, 50 metres downstream of the proposed Willow Road Re-alignment



LOCATION G (FIG2)-The southeastern stream wends through the middle of the project area before combining with the northern stream

At least 230 metres of the headwaters of the southeastern stream will be retained, enhanced, and linked westward to the Maketu Stream via an 180m section of new channel (the Willow Road Realignment). This realignment will be planted with a riparian buffer. The remaining watercourses between the Hingaia Stream and quarry will be filled.

2.1.3 3 Eastern Streams

The Roslyn Stream (Location I) to the west of the Hingaia Stream will be re-aligned toward the SH1 corridor. The current stream is an open farm channel with low summer flows and dense growth of the exotic reed sweet grass (*Glyceria maxima*). The re-alignment will include filling of 450m of the upper reach of this stream, and formation of 1,600m of newly aligned channel. The realigned channel will be formed with an appropriate profile and rehabilitated for enhanced ecological function, with a 20 metre wide riparian corridor on both sides.



LOCATION H (FIG2)-The channel flowing to the Hingaia, containing the combined flows of the south-eastern, northern, and north-eastern streams following a rain event



LOCATION I (FIG2) – The Roslyn Stream (mid-ground), a farm channel with low flows, is to be realigned and rehabilitated

2.2 Existing Streambank Erosion

Streambank erosion has been identified in the ICMP studies as an existing issue at a number of locations. The Hingaia Stream is subject to extensive bank erosion, identified near the Quarry Road bridge on the Hingaia Stream and near Davies Road Bridge on the Maketu Stream.

Stormwater wetlands prior to the Hingaia channel are proposed for the DSIP in order to detain any additional flows that may adversely impact stream erosion (refer Section 3.5). Riparian vegetation is proposed along the Maketu and Hingaia and for all re-aligned stream channels to stabilise banks in the short term and reach a sustainable stream equilibrium in the long term.



A lack of riparian vegetation and active erosion along the Hingaia channel



The Maketu channel with erosion scour at the outside bank

2.3 Existing Aquatic Ecology

As part of the Hingaia Stream ICMP, Golder and Associates undertook SEV surveys of representative stream reaches (Golder 2009). Most of the stream environments in the project area had poor functional values due to extensive modification by agriculture.

The Hingaia ICMP surveyed thirteen sites within the DSIP Area. The best quality site was on the Maketu Stream, with higher scores across all functional categories. Another site, located on the lower Hingaia Stream, also scored relatively high. The best value site for the tributaries was located on the northeastern quarry stream. Full descriptions of functional ecology values can be found in the DSIP Assessment of Ecological Effects (Boffa Miskell 2010).

A total of 6 species of fish were recorded across the project area. Shortfin eels were the most common species, with occurrences of longfin eel, common bully, inanga and cran's bully. Five of the seven tributary sites had no fish, or mosquito fish only. The mosquito fish is an exotic pest fish classified as 'Unwanted' under Biosecurity legislation. These sites had very low fish community values.

Macroinvertebrate communities indicated low environmental quality at most sites. Except for the northeastern stream, tributary sites were characterised by worms, dipteran flies, leaches, and flatworms, suggesting nutrient enrichment and fine sediment. The Maketu site had a notable portion of mayflies (*Zephlebia* spp.), possibly due to better water quality (e.g. lower water temperature).

3.0: Stream and Wetland Rehabilitation

3.1 Rehabilitation Principles

The following rehabilitation principles are intended to inform the rehabilitation of streams and wetlands in the DSIP area. The principles have been prepared by an inter-disciplinary project team, including landscape architects, planners, ecologists, and engineers. Principles seek to enhance the landscape and ecology values of the riparian systems, while providing appropriate design responses for hydraulic flow and stormwater management.

3.1.1 Landscape Values

There is significant opportunity to improve the natural character values within the DSIP area. Stream and wetland environments will also be integrated within a wider open space network, providing opportunities for enhanced recreation and landscape buffers. The following landscape principles apply to proposed stream and wetland rehabilitation:

- Contribute to landscape amenity values
- Provide vegetated buffers to specific land use activities as appropriate
- Integrate stream and wetland rehabilitation with streetscape and open space planning
- Provide for visual and physical access to rehabilitated natural areas
- Optimise natural character values through the planting of representative native communities
- Provide a diversity of natural habitats and plant communities to achieve a variety of landscape and spatial character, and to demonstrate a legible sequence of habitat types.
- Structure riparian vegetation to screen/define undesirable views, offer broad views to wetland environments, and frame distant views to eastern Hunua hills from SH1
- Apply appropriate standards for CPTED and IPTED for public or maintenance access
- Place pedestrian bridges as necessary to ensure landscape connections, and investigate opportunities to use existing stream spans (infrastructure) for this function
- Identify opportunities to involve the community in stream restoration planting
- Liaise with relevant representatives and apply appropriate protocols for any archaeological sites or heritage elements associated with rehabilitation works
- Enhance Cultural Value through the re-establishment of indigenous species and investigating cultural harvest opportunities

3.1.2 Ecological Functions

Enhancing ecological functions within the DSIP area will require a combined response to aquatic and terrestrial environments, in order to restore target species, representative habitats, and ecological processes. The following ecology principles apply to stream and wetland rehabilitation:

- Plant stream margins, banks and floodplain areas to achieve not less than 40m total width (10m min width either side of stream corridor)
- Utilise species sourced from the Manukau Ecological District that are representative of natural vegetation communities as predicted by LENZ
- Restore representative in-stream heterogeneity, providing for pool, riffle, run and cascade sequences as appropriate.
- Provide fish passage to the extent possible, including bullies and inanga to within their natural range
- Preserve groundwater influence and inundation regimes for existing floodplain forest in proposed stream corridors
- Provide appropriate transitional edge vegetation to remnant mature vegetation
- Optimise site coalescence between remnant vegetation areas along the Hingaia Stream
- Provide for breeding populations of water and wetland birds species
- Provide for appropriate staging and construction techniques to avoid potential impacts to downstream environments and in-stream aquatic habitat.

3.1.3 Hydrology and Hydraulics (H&H)

Stream and wetland rehabilitation will provide opportunities for water quality treatment for the DSIP, and appropriate hydraulic flows, and hydrologic capacity for the catchment. The following H&H principles apply to the rehabilitation areas:

- Use biotechnical stream stabilisation to restore a sustainable streambank morphology
- Apply a cross sectional profile that resembles a natural staged channel, including a permanent flow channel, a stream channel based on a bankfull (approximate two year average recurrence interval (ARI)), and associated floodplains and berms to hold the one hundred year ARI.
- Provide for an appropriate stream meander patterns for the floodplain extent, longitudinal stream profile, flow velocities, and expected bankfull event.
- Provide for hydraulic connections and fish passage to stormwater wetlands wherever extended detention is not required
- Place all forebay devices for stormwater wetlands outside of the 5 year ARI flood extent.



FIGURE 3: DSIP Concept Planting plan. (Source Boffa Miskell and Source Design)

3.2 Open Space Network

The stream and wetland rehabilitation concepts (refer Figure 3) integrate with a broader open space network to optimize specific requirements for public use and access, to ensure diverse representative habitats, and to enhance environmental services for the DSIP.

The open space network reinforces existing features and patterns of the project area. The Hingaia Stream corridor will be reinforced by wide riparian margins of representative planting of early successional forest, as well as kahikatea floodplain forest. In the north a substantial open space buffer is set aside to reinforce the natural escarpment separating the DSIP basin from the Fitzgerald Road ridgeline. This occurs in conjunction with the northern stream realignment and associated riparian rehabilitation works. In the south west of the project area, riparian planting along there – aligned Roslyn stream will form a landscape buffer to SH1.

Larger remnants of existing vegetation will be coalesced along the Hingaia Stream. Planting in association with stormwater wetland areas will further buffer and augment the conservation values of these remnants.

3.3 Stream Rehabilitation

The land use change associated with the DSIP provides a significant opportunity to restore the Hingaia Stream, a low gradient moderate order stream, which retains remnant kahikatea floodplain forest. The project also provides the opportunity to coalesce modified drainage channels across the site into a larger order stream channel and floodplain, with supporting streambank and floodplain vegetation. Stream rehabilitation proposals are the result of an iterative design process between ecologists, landscape architects, and engineers to optimise the principles of these guidelines.

3.3.1 Hingaia Stream

The Hingaia Stream is a significant watercourse, with a wide, actively meandering channel across the floodplain. The stream currently runs through pastoral and agricultural land uses, and receives runoff from existing farm drains in the project area. The rehabilitation of the Hingaia stream is a key objective of the DSIP, with a 40 metre vegetated buffer proposed along the corridor where it corresponds with the project area. The width of the riparian buffer would extend to accommodate a stormwater treatment swale proposed along a northern reach, and stormwater wetlands proposed within the Hingaia Stream's extended floodplain.

The rehabilitation of the Hingaia Stream will include:

1. The coalescence of the floodplain forest remnants (including significant natural areas) already occurring within Hingaia floodplain
2. The restoration planting of streambanks along the length of the stream within the Project Area, with the potential for specific interventions to restore the stream profile at erosion hot spots
3. The planting of banks and proposed riparian buffers with simple lowland plant communities with the expectation that these communities will secede with time to include more diverse species
4. Planting of feature areas of flax-cabbage tree and broadleaf species on extended floodplains
5. Hydrological connections and fish passage to stormwater wetlands where practical

3.3.2 Stream Realignments

A number of farm drains and watercourses will be replaced with overland flow paths and reticulated networks associated with the proposed development. In addition, some headwaters will be realigned to newly formed watercourses along the boundaries of the DSIP area. The Hingaia and the Maketu Streams will not be altered beyond restoration activities.

A detailed description of the potential effects on stream ecology and the proposed mitigation measures is presented in Boffa Miskell, 2010, "Drury South Business Project Assessment of Ecological Effects Associated with the Proposed Plan Change". These guidelines inform the potential design response to optimise the flood management function of the rehabilitated streams, and their landscape and ecology values.

3.3.2.1 Design Parameters

The profile of each re-aligned stream channel is based on the cross-sectional area to accommodate a 1.5 to 2 year average recurrence interval (ARI). This flow is traditionally associated with a 'bank-full' event with active stream erosion and re-deposition.

The morphology of realigned streams is also based on their substrate, longitudinal gradient, and association with their floodplain. These functions can be used to prescribe channel sinuosity and width to depth ratio (Rosgen 1994). The bankfull width is used as a function to predict the stream meander wavelength and the radius of curvature for bends (Leopold 2003 and Thorne et al 2003). Refer to Figure 4 below.

Proposed stream morphology is intended to minimise friction within the channel to prevent active erosion, and also to provide a floodplain width that can accommodate the stream in equilibrium.

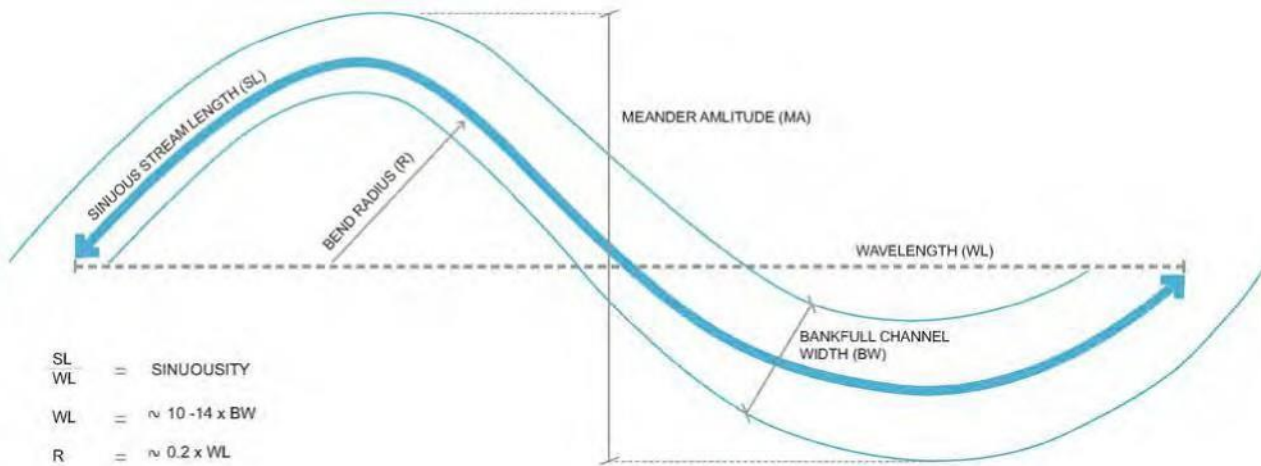


FIGURE 4: (above) The indicative relationship between channel width, and meander pattern

BELOW: A natural meander occurring as an overland flow event during flood conditions in the project area



3.3.2.2 Construction

Construction of the realigned channels is intended to occur off-line where possible, or to be staged to avoid potential impacts to downstream environments and in-stream aquatic habitat. Material selection is expected to be inert and where possible to be the equivalent of materials expected in these stream environments in their natural state.

It will be possible to utilize 'natural' materials through the application of biotechnical construction, which utilises a combination of persistent and biodegradable materials to retain channel shape until plants can establish. In general biotechnical responses for stream stabilisation can include:

- Stream profiling to respond to specific flow events
- Floodplains to dissipate flood velocities
- Stabilised bank toe and outside bends with hard materials such as rock, root vanes etc
- Directing flows and forming riffles through rock vanes
- Reinforcement of stream banks through planting established in erosion control blankets
- Stabilising the crown of banks with appropriate vegetation
- Provision of appropriate pool-riffle-run sequences.
- Grade control structures that accommodate fish passage
- Specific biotechnical treatments to accommodate 'nick' erosion points and stormwater outlets

3.3.2.3 Planting

Plant species selection will provide ecological functional values and representative plant communities. Stream planting objectives may include:

- Shade for temperature moderation
- Weed suppression
- Slope stabilization
- Tolerance to inundation
- Growth form to accommodate/obstruct views
- Stature to accommodate hydraulic flow rates
- Inherent aesthetic or spatial qualities of single plants or grouping of vegetation.

Based on LENZ predicted natural vegetation layers, representative plant communities for the DSIP area include lowland alluvial floodplain species, generally consisting of kahikatea forest. Other communities include tawa and pukatea, while matai, rimu and totara are generally restricted to better-drained soils. Titoki and puriri are locally abundant, with the potential for other broadleaf such as taraire, occurrence of kauri on the flanks of the basin, and occasional rimu and pukatea.

The project area extending into the flanks of the project basin and the hills beyond would be expected to support kauri, kahikatea, rimu and/or totara emergent over a diverse canopy dominated by varying mixtures of taraire and kohekohe. Other widespread tree species might include hinau, pukatea, rewarewa, and miro. Puriri is locally abundant at lower elevations, particularly on alluvial surfaces and tanekaha would be locally abundant, particularly on disturbed sites.

Where basalt occurs at the surface of the project area there may occur unique basalt forest environments, with an expected predominance of mahoe, karaka, kohekohe, totara, puriri, and titoki.

Until climax communities establish, it is expected that large areas of the riparian corridors will be planted with early succession and hardy species, such as riparian shrubs, kanuka, and totara to rapidly establish cover and to act as a nurse crop for later succession species. It is expected that certain low vegetation types will be applicable in places along the riparian corridors to accommodate hydraulic flows, to preserve viewshafts, and provide useable open space areas. Such planting may involve mown grass areas, sedge-rushlands, and flax-cabbage tree communities.

3.3.3 Northern Stream

A stream is proposed along the northern boundary of the DSIP area at the base of the northern escarpment. An existing section of this northern stream receives flows from three tributaries. A fourth tributary, previously described as the 'northeastern stream' (refer Section 2.1.1 and Figure 2) will also be directed to this channel from the quarry zone. The northern stream will accommodate the flow from these four tributaries, as well as localised catchments before discharging to the Hingaia Stream west of the proposed Link Road.

A typical northern stream cross section is shown in Figure 5, where a 'bankfull' channel represents the 1.5 year ARI event, and the associated floodplain conveys a 100 year ARI event with 500mm freeboard to the proposed development. Detailed design will provide pool-riffle and run sequences with adapted profiles. Biotechnical construction techniques will form narrower riffle sections, shallower point bars, and steeper outside bends.

The proposed sinuosity of the northern stream is relatively high, close to 1.5 times the wavelength (refer Figure 7). This is appropriate, based on the cross section of the bank full channel (with a low width to depth ratio) the longitudinal profile of the floodplain (a relatively flat lowland environment), and the general character of the bed materials and banks (being generally resistant but somewhat erodible).

The sinuosity is expected to reduce the longitudinal profile of the channel, reduce erosion of stream banks, provide strong connections to floodplain environments, and increase the overall length and diversity of stream habitat. Some stream reaches have constrained floodplains, where riffle sequences with local rock may be appropriate.

The northern re-alignment follows the northern boundary to combine stream environments with adjacent open space and to form a buffer to adjacent land use. The stream corridor and floodplain will be densely vegetated as indicated in figure 7. Planting will be dominated by early succession kanuka-totara forest. Kahikatea forest planting is proposed beside the Link Road entrance to act as a natural threshold at the DSIP entrance. Pockets of broadleaf forest are proposed to add diversity to the northern riparian corridor. Low areas of sedge-rushlands, grass areas, and flax-cabbage tree associations could provide views into the stream corridor from select locations.

3.3.4 Roslyn Stream Realignment

There is an existing water course running south to north through Roslyn Farm at the south west corner of the project area, which picks up flow from two culverts. Site assessment also revealed an existing spring feeding the stream. This stream will be realigned for part of its length whilst retaining links to existing spring and culvert in flows, the realigned corridor will provide a stronger vegetated element to adjacent to SH1 (refer Section 2.1.3 and Figure 2).

A typical Roslyn Stream diversion cross section is shown in Figure 6, where a dedicated 'bankfull' channel contains the 1.5 year ARI event, and the associated floodplain conveys a 100 year ARI event with 500mm freeboard to the proposed development. The Roslyn channel has a wide stream base with a lower depth to create a combined wetland/overland-flow-path appropriate for the small catchment, the low longitudinal gradient, and a strong groundwater influence.

Because the Roslyn channel is a lower energy environment than the northern re-alignment, with less likelihood of erosion, it is reasonable to expect a less sinuous character. Therefore a low sinuosity of 1.1 times the wavelength has been applied.

Planting along the Roslyn stream is proposed to be a combination of sedge-rushland planting and large swathes of flax-cabbage tree associations to create a wide wetland environment. Kanuka-totara forest may occur in existing knoll areas beside SH1 to frame views to the eastern Hunva foothills. Kanuka forest may continue along mid reaches of the stream and groups of kahikatea may occur alongside of a stormwater wetland to frame views from boardwalk locations and to shade permanent water features.

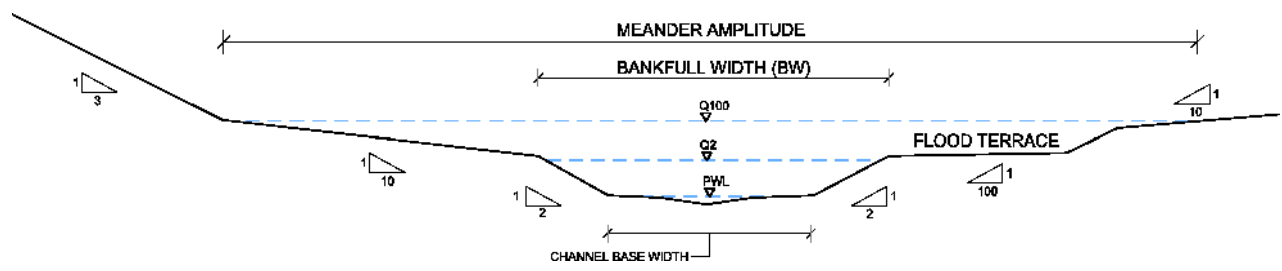
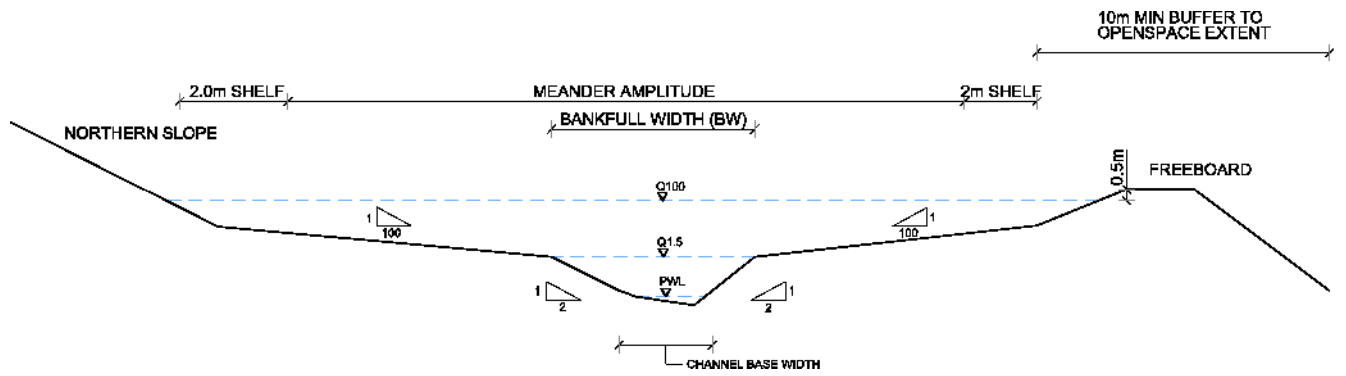


FIGURE 5: Typical section of the northern realignment in terms of flooding profiles

FIGURE6: Typical section of the Roslyn Stream realignment in terms of flooding profiles

3.3.5 Willow Road Realignment

There is a small roadside drain running east to west along Willow Road. The stream currently crosses Willow Road through a culvert near the intersection with Ramarama Road and continues north through the proposed DSIP area, eventually joining the Hingaia Stream. As discussed previously, this stream is heavily modified by pastoral land use and is largely unvegetated. It is proposed to divert this roadside drain directly west to the Maketu Stream along a vegetated riparian corridor that provides for a 1.5 year stream profile and accommodates a 100 year ARI event.

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FIGURE 7: Proposed DRAFT planting plan for the Northern Re-alignment



FIGURE 8: Proposed DRAFT planting plan for the Roslyn Realignment

3.4 Riparian Revegetation Guidelines

3.4.1 Introduction

Riparian revegetation is proposed for the main stems of the Hingaia and Maketu Streams. In addition the Northern and Roslyn realignments will also be restored with riparian vegetation (as depicted in Figures 7 – 8). The progressive planting of these realignments as well as the present grasslands alongside the Hingaia and Maketu Streams will ultimately provide a greater extent of riparian bush, increasing the habitat opportunities and potential carrying capacity of the DSIP area as well as providing vegetated riparian corridors within the local landscape.

The following revegetation guidelines outline an accepted industry-wide approach to large scale revegetation programmes that should inform the development of the final detailed planting plans for the DSIP riparian margins.

3.4.2 General Procedure

The general procedure for the proposed revegetation plantings should be as set out below.

- Slope stabilization
- Seed should be sourced as is available from the Manukau Ecological District. However, notwithstanding the desire to use only genetic material sourced from this specific area in the revegetation programme, additional source material from the wider Auckland Ecological Region may be used.
- Planting of species into existing pasture should require pre-planting repeat herbicide applications to reduce the potential for grasses to compete with the seedlings planted.
- Blanket spraying in close proximity to the existing native bush areas needs to be avoided or very carefully managed so as to avoid by-kill. Herbicide should be carefully applied at least 2 weeks before planting.
- Where the earth has been previously compacted the areas to be revegetated should have a single treatment of earth tilling, in order to loosen the sub-soil and encourage successful rooting.
- Planting should be undertaken in favourable conditions, at the earliest opportunity during the planting season, preferably over the autumn months.
- The revegetation plantings should be supplemented with weed and browsing pest control to allow good establishment of the planted material. Ongoing weed control should be carried out until canopy closure is sufficient to suppress weed growth. Browsing pest control may be required over the longer term in order to allow these vegetated areas to progress in good health. However, once pest numbers are reduced to a minimal level, continued control should require a reduced effort.
- All planting and maintenance operations should be carried out by an approved contractor, experienced in native revegetation planting programmes.

3.4.3 Plant Material

- The plant material needs to be of the specified size and condition. All plants will have well developed root systems and a well-shaped stem and head free of disfigurements or injury, pests and disease.
- The plant material should have been sufficiently “hardened off” at the nursery prior to being passed on to the planting contractors.

3.4.3 Planting Methods

- Planting should follow an approved planting plan, indicating set-out, species, size, density and spacing.
- A dual system of planting is proposed, involving the establishment of a nurse crop of hardy pioneer species such as kanuka. These will be enriched with appropriate native tree species when the nurse crop has sufficiently established, which should be at approximately 3 years age.
- Nurse plant stock should be set out at appropriate spacing and percentages, and according to each species niche preferences.
- Once a good cover of the nurse plantings is established, enrichment plantings should be implemented. Enrichment species trees should be distributed (at wider centres) amongst nurse planting and according to site preferences in copses/groves spread further apart in subsequent seasons.
- The enrichment plantings may include the pruning or removal of modest numbers of nurse shrubs in order to create the necessary light wells.
- Plants should be set out and appropriately spaced in an informal manner avoiding straightlines and regular geometric patterns, while ensuring an even cover across the planting area. Species should be distributed at appropriate percentages and according to each species niche preferences, microclimate and ground conditions.
- Planting holes should be dug out to spade depth and seedlings located next to pre-dug holes in the correct species mix. Actual planting should be by hand only. The base of the planting hole should be filled evenly without compaction to a level where the top of the plant root ball is level with surrounding ground. The plant should be plumb and orientated so that the weathered face of the main stem faces north. When the backfilling is complete the plant should be gently firmed in. All plants should be encouraged to grow to maturity as naturally as possible to achieve their desired character and form, through sound management practices including weeding, and other accepted horticultural practises.
- Slow release fertiliser should be used within the proposed planting operation, with at least one tablet of 20-4-4(N-P-K) that is designed to last at least 12 months (preferably 24 months). The controlled release fertilizer tablets need to be inserted into each planting hole approximately half way up the back fill material, ensuring placement of the fertilizer on the upper slope side of each plant
- Approved chipped tree mulch or post-peeling bark mulch could be spread around the base of individual plants used in the mass revegetation plantings, but only in areas outside of the floodplain (to avoid mulch being washed away in floods).

3.5 Stormwater Management

Stormwater design is discussed in greater detail in the DSIP Infrastructure Assessment Report (BECA 2010). The general approach is to utilize the large floodplains associated with the Hingaia Stream to accommodate stormwater wetlands. Each wetland would include a forebay and accommodate the water quality volume. There is also allowance for extended detention to limit potential effects of stormwater volumes on downstream erosion.

Wetlands have been placed above the stream invert to not unduly effect ground water levels, and forebays have been placed above the 5 year flooding event to prevent re-suspension of contaminants stored in these areas.

Safety considerations have allowed for benching around the perimeter of each wetland and a reverse bench along each embankment. Appropriate maintenance access will be provided to forebays and to the base of wetlands for restorative maintenance if required.

Biotechnical approaches similar to those described for stream realignment works will be considered during detailed design, with specific consideration for the formation of access and outlets to the Hingaia, with fish passage possible to wetlands that are not required to detain extended detention volumes.

Planting would be exclusively sedges, rushes, and small riparian shrubs around wetlands for water quality treatment, to stabilize the wetland profile, and to allow ease of maintenance. Trees and taller shrubs would be expected at the edges of wetlands, at their interface with stream environments, and around the northern edges of forebays for shade.

3.5.1 Stormwater Wetland One

Stormwater Wetland One has been designed as a landscape amenity feature through an iterative design process between landscape architects, engineers, and ecologists. This has driven the design of forebays, the shape and extent of the permanent pools and wetland planting, the integration of multiple public access structures, and a pedestrian circulation path that crosses the Hingaia stream corridor (refer figure 9). Wetland One has been tiered to suit the local topography and the bathymetric design directs flows along three separate treatment paths.

3.5.2 Northern Swale

A swale is proposed for stormwater management along the western edge of the lower Hingaia Stream. The total width of the swale and vegetated buffer contributes an additional 25m of vegetation to the riparian buffer. The length of swale is significantly longer than required for water quality and is expected to exceed regulatory expectations at the entry point to the Hingaia.

Planting will be selected with the ability to sustain temporary ponding and saturated soils, and will allow appropriate hydraulic flows and residence time.



FIGURE 9: Proposed Planting Plan for Stormwater Wetland One

4.0: Summary

The DSIP area is traversed by the main stems of the Hingaia and Markeu Streams and several other permanent and intermittent streams and farm drains. Watercourses other than the Hingaia and Maketu Streams will be modified or re-aligned in order to facilitate the proposed land use. Stormwater management will also lead to the creation of additional naturalised wetland areas in association with the Hingaia Stream corridor.

All streams affected by the proposed DSIP have been previously modified by farming or roading operations, including dredging, spraying, straightening, and ongoing impact by stock. Stream bank erosion has been identified in the Hingaia ICMF as an existing issue at a number of locations. In general all of these streams have low to moderate functional values for stream ecology. Five of the seven tributaries to the Hingaia were observed as having very low to absent fish community values.

The DSIP Stream and Wetland Rehabilitation Guidelines establish a set of principles to enhance the landscape and ecology values of riparian systems in the DSIP area. The document is intended to provide technical input to the planning process and to provide guidance to ongoing more detailed design and implementation. The guidelines apply an inter-disciplinary approach to riparian rehabilitation.

Stream rehabilitation is proposed for the length of the Hingaia and Maketu Streams within the DSIP Area, including a 40m wide planted riparian buffer along the streams. In addition, streams to be realigned will have appropriate stream profiles and riparian planting to provide for sustainable stream function. Riparian rehabilitation will contribute to a wider open space network and enhanced natural character.

5.0: References

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Operative version

I410. Drury South Precinct

I410.1. Precinct description

The Drury South Precinct applies to approximately 257ha of land, bounded by State Highway 1 in the west, the Drury Quarry and the Hunua foothills in the east, the rural areas of Fitzgerald Road in the north and Ararimu Road in the south, as shown on Precinct Plan 1. The transportation network development requirements of the precinct are shown on Precinct plan 2. The precinct is characterised by a flat to subdued contour and is traversed by the Hingaia Stream and its tributaries including the Maketu Streams. Land which surrounds and defines the precinct has more pronounced topographical contours. The precinct lies between the Drury and Ramarama interchanges on State Highway 1 and local traffic patterns are dominated by truck traffic accessing the Drury Quarry.

The zones within the precinct are Business – Light Industry Zone, Business – Heavy Industry Zone, Business – Mixed Use, and Open Space – Conservation Zone. The purpose of the precinct is to provide for land extensive industrial activity employment opportunities, and a mix of residential and supporting commercial in identified areas, as well as provide for areas of stormwater management, existing and proposed network utility infrastructure, public open space and proposed roads, while recognising the ecological, cultural, landscape and other environmental constraints of the locality.

The precinct is divided into the following sub-precincts:

- Sub-precinct A Light Industry (approximately 130ha)
- Sub-precinct B Motorway Edge (Light Industry) (approximately 45ha)
- Sub-precinct C Mixed Use (approximately 10ha)
- Sub-precinct D Open Space / Stormwater Management (approximately 41ha)
- Sub-precinct E: Heavy Industry (approximately 24ha).

Sub-precinct A is zoned Business – Light Industry Zone. Activities within the sub-precinct are subject to additional standards.

Sub-precinct B is zoned Business – Light Industry Zone. The Transpower switchyard is located within this sub-precinct. Activities in the sub-precinct are subject to additional landscaping and building layout design standards.

Sub-precinct C is zoned Business - Mixed Use. Activities within this sub-precinct are subject to additional standards. The sub-precinct also provides for certain commercial activities to enable a mix of residential and supporting commercial uses.

Sub-precinct D is zoned Business – Light Industry Zone but provides for recreational uses and will be rezoned to an appropriate zone (e.g. Open Space - Informal Recreation Zone) once the Public Open Space / Stormwater Management Areas shown on Precinct Plan 1 are developed and vested.

Sub-precinct E has an underlying zoning of Business – Heavy Industry Zone. Activities within the sub-precinct are subject to additional standards.

I410.2. Objectives [rp/dp]

The objectives of the underlying Business – Light Industry Zone apply in sub-precincts A-B, the objectives of the underlying Mixed Use zone apply in sub-Precinct C, the objectives of the Open Space – Informal Recreation Zone apply in sub-precinct D, the objectives of the underlying Business – Heavy Industry Zone apply in sub-precinct E and the Auckland-wide objectives as well as the precinct objectives below apply throughout in this the precinct, unless there is a conflict between the precinct objectives and the Auckland-wide objectives or underlying zone objectives, in which case the precinct objectives prevail.

- (1) Development maintains and enhances the stream ecology and the natural vegetation and habitat values of the Hingaia and Maketu streams.
- (2) The cultural heritage values of the precinct are maintained and enhanced.
- (3) Landscape and visual amenity values within the precinct are maintained and enhanced (particularly when viewed from State Highway 1).
- (4) The air quality, acoustic and other amenity values of surrounding areas are protected.
- (5) The establishment of a convenient and well-designed industrial area with good quality streetscapes and a mixed use precinct is facilitated.
- (6) The timely and co-ordinated provision of robust and sustainable transport, stormwater, water, wastewater, energy and communications infrastructure networks are provided.
- (7) A transport network to facilitate the safe and efficient movement of people, goods and services and manage effects on the safe and efficient operation of the surrounding transport network.
- (8) The Drury Quarry, activities within the Business – Heavy Industry Zone or the adjoining rural area operate efficiently and are not unreasonably constrained by other activities.
- (9) Development and land use within the precinct avoids or minimises adverse effects on significant existing high voltage electricity, natural gas and communications infrastructure.
- (10) Subdivision and development in the precinct area avoids or mitigates the adverse effects of stormwater runoff on surface and groundwater quality and avoids increased flood risks to habitable buildings upstream and downstream of the precinct.
- (11) Visual and physical links to the surrounding area are protected.
- (12) Landscaping themes are complementary, consistent and coherent throughout the precinct.

- (13) Activities sensitive to noise adjacent to the strategic freight network (Maketu Road and New Quarry Access Road) serving the Drury Quarry are protected from unreasonable levels of transport noise.
- (14) Activities in sub-precinct C do not compromise the function, role and amenity of the City Centre Zone, Business – Metropolitan Centre Zone, Business – Town Centre Zone and Business – Local Centre Zone (either zoned or identified in the Council approved Structure Plan for Drury).

I410.3. Policies [rp/dp]

The policies of the underlying Light Industry zone apply in sub-precincts A-B, the policies of the underlying Mixed Use zone apply in sub-Precinct C, the policies of the Open Space – Informal Recreation Zone apply in Sub-precinct D, the policies of the Business – Heavy Industry Zone apply in sub-precinct E and the Auckland-wide policies as well as the precinct policies below apply throughout the precinct unless there is a conflict between the precinct policies or underlying zone policies and the Auckland-wide policies, in which case the precinct policies prevail.

- (1) Protect and enhance the significant streams and vegetation within Sub-precinct D.
- (2) Enhance the biodiversity of ecological resources and linkages and restore degraded ecosystems while reducing stream bank erosion through riparian planting along retained watercourses in sub-precincts B and D.
- (3) Reflect the cultural heritage values of the Hingaia and Maketu streams as cultural linkages between historical hill top pa and coastal areas in the development of sub-precinct D.
- (4) Maintain a sense of openness and naturalness on land adjacent to State Highway 1.
- (5) Maintain visual and physical links to the surrounding area within the precinct.
- (6) Utilise complementary, consistent and coherent landscaping themes throughout the precinct.
- (7) Design and construct attractive wetland areas for stormwater treatment and detention that also provide reserve and visual amenity opportunities.
- (8) Provide public open space buffer areas between the land to be developed for business activities and surrounding rural land.
- (9) Ensure buildings in Sub-precinct C address and engage the street and public realm and exhibit a high standard of amenity and pedestrian safety and convenience.
- (10) [Deleted]

- (11) Provide for transport infrastructure and connections including Maketu Road, Link Road, New Quarry Access Road and Ramarama Road through to Fitzgerald Road, to support safe and efficient movement for all modes within and through the precinct and to and from the surrounding transport network.
- (12) Provide high quality public open spaces in Sub-precinct D that result in opportunities for passive surveillance.
- (13) Provide adequate stormwater, water, wastewater, communications and energy networks in a timely and co-ordinated manner to service development within the precinct.
- (14) Co-ordinate transport network (including the state highway) improvements both within and outside the precinct with development within the precinct to manage adverse effects on the safe and efficient operation of the surrounding road transport network.
- (15) Make adequate provision within Sub-precinct D to detain the 100 year Average Recurrence Interval (ARI) event without adverse effects on the extent of flooding of upstream and downstream areas.
- (16) Provide sufficient floodplain storage within Sub-precinct D to avoid increasing flood risk upstream and downstream, and manage increased flood risk within the precinct, to habitable rooms for all flood events from the 50% and up to the 1% AEP.
- (17) Undertake earthworks to form the modified floodplain in a manner which ensures flood effects on downstream or upstream areas are not exacerbated.
- (18) Avoid locating buildings within the 100 year ARI modified floodplain.
- (19) Avoid locating infrastructure within the 100 year modified ARI floodplain unless it can be designed to be resilient to flood related damage and does not exacerbate flood risks for upstream or downstream activities.
- (20) Identify overland flowpaths in a stormwater management plan or discharge consent and ensure that they remain unobstructed and able to convey surface water runoff safely into the reticulated stormwater network.
- (21) Avoid or mitigate adverse effects on surface or groundwater quality from stormwater runoff within the precinct through on-site stormwater management and containment and the provision of catchment based stormwater treatment ponds.
- (22) Mitigate any diversion or piping of existing degraded or modified watercourses by the ecological enhancement and landscape planting of existing natural and diverted watercourses within and immediately adjacent to the precinct.
- (23) In Sub-precinct A, B, D and E, avoid the establishment of sensitive residential land uses.

- (24) [Deleted]
- (25) Control activities sensitive to noise adjacent to the strategic freight network (Maketu Road and New Quarry Access Road) serving the Drury Quarry. so that occupants are not exposed to unreasonable levels of transport noise.
- (26) Manage development and subsequent land use to minimise adverse effects on the efficient and safe operation of existing high voltage electrical transmission and distribution lines, fibre optic cables and the Vector natural gas pipeline.
- (27) Encourage a mix of residential and commercial uses within Sub-precinct C close to potential public transport routes and open space amenity, which provides opportunities to integrate with the Drury South Residential Precinct and the balance of the Drury South Precinct.
- (28) Provide for a range of commercial activities in Sub-Precinct C that will not compromise the role and amenity of the Business – Metropolitan Centre zone, Business – Town Centre zone (either zoned or identified in the Council approved Structure Plan for Drury) beyond those effects ordinarily associated with trade effects on trade competitors. In particular:
- (a) Discourage the concentration of retail activity in one part of sub-precinct C, having regard to the effects of the scale and type of retail activity proposed;
 - (b) Appropriately stage the provision of retail (including supermarkets) in Sub-Precinct C over time as development in the surrounding area occurs;
 - (c) Enable appropriately scaled office activities to establish in sub-precinct C that support surrounding land uses in the Drury South precinct.
- (29) Encourage a complementary mix of convenience activities to locate in the southern part of sub-precinct C, where it would be most accessible to the Drury South Residential precinct and would support a local community focal point.

I410.4. Activity table

The provisions in any relevant overlays, zone and the Auckland-wide apply in this precinct unless otherwise specified below.

In the event of a conflict between the zone or Auckland-wide rules and the precinct rules, the precinct rules prevail.

Table I410.4.1 specifies the activity status of development and subdivision activities in the sub-precincts A-E pursuant to sections 9(3) and 11 of the Resource Management Act 1991.

Table I410.4.1 Activity table 1 – Sub-precincts A to E

| Activity | | Activity status |
|--------------------|--|-----------------|
| Development | | |
| (A1) | Subdivision, or any development of land which precedes a | RD |

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| | | |
|-------|---|----|
| | subdivision, being undertaken which complies with Standard I410.6.3 below. (Note that for the purposes of this rule "development" means the carrying out of any work on the land including any earthworks or site preparation activities and the construction or alteration of any building) | |
| (A2) | Subdivision, or any development of land which precedes a subdivision, being undertaken which does not comply with Standard I410.6.3 below, or results in increased flood risk to habitable rooms for all flood events from the 50% and up to 1% AEP flood event downstream and upstream of the Structure Plan area. | NC |
| (A3) | The creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct Plan 2 which also has frontage to another road shown on that Plan | RD |
| (A3A) | Residential activities in sub-precinct C which do not comply with Standard I410.6.5 (no-complaints covenant) | NC |

Table I410.4.2 specifies the activity status of land use activities in Sub-precinct A pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.2 Activity table 2 – Sub-precinct A (Light Industry)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Commerce | | |
| (A4) | Commercial services | NC |
| (A5) | Dairies | NC |
| (A6) | Drive-through restaurants | NC |
| (A7) | Entertainment facilities | NC |
| (A8) | Food and beverage | NC |
| (A9) | Retail over 450m ² except for Trade Suppliers | Pr |
| (A9A) | Trade Suppliers | P |
| (A10) | Activities that do not comply with standards in I410.6.2(10) | D |

Table I410.4.3 specifies the activity status of land use and development activities in Sub-precinct B pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.3 Activity table 3 – Sub-precinct B (Light Industry - Motorway Edge)

| Activity | | Activity status |
|------------|---------------------|-----------------|
| Use | | |
| Commerce | | |
| (A11) | Commercial services | NC |
| (A12) | Dairies | NC |

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| | | |
|--------------------|---|----|
| (A13) | Drive-through restaurants | NC |
| (A14) | Entertainment facilities | NC |
| (A15) | Food and beverage | NC |
| (A16) | Retail over 450m ² | Pr |
| Development | | |
| (A17) | New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities | C |
| (A18) | Additions to buildings that are less than: • 10 per cent of the existing gross floor area of the building; or • 250m ² whichever is the lesser | P |
| (A19) | Internal alterations to buildings | P |
| (A20) | Activities that do not comply with the standards in I410.6.2(10) | D |

Table I410.4.4 specifies the activity status of land use and development activities in Sub-precinct C pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.4 Activity table 4 – Sub-precinct C (Business - Mixed Use)

| Activity | | Activity status |
|------------|---|-----------------|
| Use | | |
| Commerce | | |
| (A21) | [Deleted] | |
| (A21A) | Trade Suppliers | P |
| (A22) | [Deleted] | |
| (A22A) | Garden Centres | P |
| (A23) | [Deleted] | |
| (A23A) | Motor Vehicle Sales | P |
| (A24) | [Deleted] | |
| (A24A) | Marine Retail | P |
| (A25) | [Deleted] | |
| (A25A) | Department Stores | NC |
| (A26) | [Deleted] | |
| (A26A) | A single supermarket greater than 2000m ² gross floor area | RD |
| (A27) | [Deleted] | |
| (A27A) | Retail not otherwise permitted up to 200m ² gross floor area per tenancy | P |

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| | | |
|--------|--|----|
| (A28) | [Deleted] | |
| (A28A) | Retail not otherwise permitted greater than 200m ² gross floor area per tenancy | D |
| (A29) | [Deleted] | |
| (A29A) | Offices up to 500m ² per tenancy | P |
| (A30) | [Deleted] | |
| (A30A) | Offices between 501m ² – 1000m ² per tenancy | RD |
| (A31) | [Deleted] | |
| (A31A) | Offices greater than 1000m ² per tenancy | D |
| (A32) | [Deleted] | |
| (A32A) | Activities that do not comply with the standards in I410.6.2(10) | D |
| (A33) | [Deleted] | |

Table I410.4.5 specifies the activity status of land use activities in Sub-precinct D pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.5 Activity table 5 – Sub-Precinct D (Open Space – Informal Recreation Zone / Stormwater Management)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Community | | |
| (A34) | Any activity listed as a permitted activity in the Open Space – Informal Recreation Zone | P |
| (A35) | Stormwater management devices | P |
| (A36) | Activities that do not comply with the standards in I410.6.2 | D |

Table I410.4.6 specifies the activity status of land use activities in Sub-precinct E pursuant to section 9(3) of the Resource Management Act 1991.

Table I410.4.6 Activity table 6 – Sub-precinct E (Heavy Industry)

| Activity | | Activity status |
|------------|--|-----------------|
| Use | | |
| Commerce | | |
| (A37) | Dairies | NC |
| (A38) | Food and beverage | NC |
| (A39) | Activities that do not comply with the standards in I410.6.2 | D |

I410.5. Notification

- (1) An application for resource consent for a controlled activity listed in Tables I410.4.1 - I410.4.6 above will be considered without public or limited notification or the need to obtain written approval from affected parties unless the Council decides that special circumstances exist under section 95A(4) of the Resource Management Act 1991.
- (2) Any application for resource consent for an activity listed in Tables I410.4.1 - I410.4.6 and which is not listed in I410.5(1) will be subject to the normal tests for notification under the relevant sections of the Resource Management Act 1991.
- (3) When deciding who is an affected person in relation to any activity for the purposes of section 95E of the Resource Management Act 1991 the Council will give specific consideration to those persons listed in [Rule C1.13\(4\)](#).

I410.6. Standards

The overlay, Auckland-wide and zone standards apply in this precinct, unless otherwise specified below.

For the purposes of Rule E27.6.1(2)(b), the following activities have been assessed as part of an Integrated Transport Assessment on which the Drury South Precinct provisions for Sub-precinct A and C are based:

| Activity | GFA (m²) |
|-----------------------------------|----------------------------|
| Supermarket | 4,500 |
| Retail | 4,400 |
| Offices | 15,000 |
| Trade suppliers | 11,000 |
| Supporting commercial services | 3,300 |
| Residential – apartments | 12,300 |
| Activity | GFA (m²) |
| Residential – Retirement Villages | 22,000 |

I410.6.1. Sub-precinct C

All activities listed as permitted in Table I410.4.4 must comply with the following standards

I410.6.1.1. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.1.1A. Retail and Office Gross Floor Area

- (1) Retail must not exceed a total of 1000m² gross floor area in Sub-Precinct C. This excludes one supermarket greater than 2000m², service stations, trade suppliers, garden centres, motor vehicle sales, marine retail and food and beverage.
- (2) Retail activities specified in (1) above, greater than 1000m² and up to and including 4,500m² in Sub-Precinct C will be assessed as a restricted discretionary activity on a non-notified basis.
- (3) Retail activities specified in (1) above, greater than 4,500m² in Sub-Precinct C will be assessed as a discretionary activity.
- (4) Offices must not exceed 15,000m² in total in Sub-Precinct C. Offices greater than 15,000m² will be assessed as a discretionary activity.
- (5) Trade suppliers within Sub-Precincts A and C must not exceed a total of 11,000m² gross floor area. Trade suppliers that are greater than 11,000m² gross floor area will be assessed as a restricted discretionary activity on a non-notified basis.

I410.6.1.2. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.1.3. [Deleted]

- (1) [Deleted]

I410.6.1.4. [Deleted]

- (1) [Deleted]
- (2) [Deleted]

I410.6.2. Sub-precincts A-E

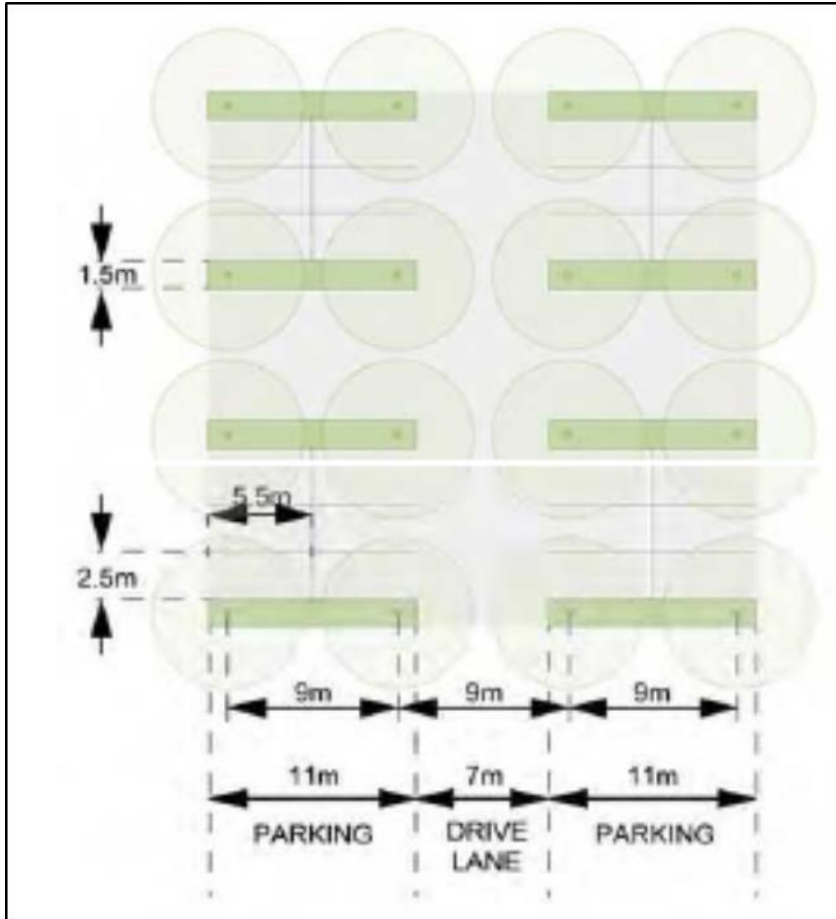
The standards are those listed in the Auckland-wide rules (in respect of sub-precincts A-E), Business – Light Industry Zone (in respect of sub-precincts A-B), Business – Mixed Use Zone (in respect of sub-precinct C), the Open Space – Informal Recreation Zone (in respect of sub-precinct D) and the Business – Heavy Industry Zone (in respect of Sub-precinct E) except as follows:

- (1) [Deleted]
- (2) Buildings must not exceed 25m in height in Sub-precinct E and Sub-Precinct C.
- (3) Within the Drury South Precinct the industrial zone height in relation to boundary control will not apply, and instead, buildings must not project beyond a 45 degree recession plane measured from a point 2 metres

vertically above ground level along the residential or public open space boundary.

- (4) All new roads must be designed and constructed to comply with the provisions of New Zealand Standard NZS6806:2010 "Acoustics – Road Traffic Noise – New and Altered Roads".
- (5) The upward waste light ratio from any luminaire must not be more than 3 per cent. The upward waste light ratio is defined as: "The ratio of the light flux emitted above the horizontal by a luminaire to the total light flux emitted, expressed as a percentage, evaluated for the upcast angle".
- (6) Any required security fence must be setback a minimum of 3 metres from the front boundary and such fencing (whether in front yards or on rear or side boundaries) must be 2 metre maximum height and must not incorporate barbed or razor wire or an angled top. Fence posts and wire mesh are to be black coloured.
- (7) [Deleted]
- (7A) Where any new building is proposed, the reflectivity value of the roof or roofs must not exceed 30 per cent.
- (8) Within Sub-precinct B no less than 30 per cent of the net site area of each site is to be in permeable landscape area (including any on site stormwater treatment). Where on site car parking adopts a layout fully conforming with the fully planted permeable carpark design layout detailed in Figure I410.6.2.1 below, the permeable landscape area may be reduced to no less than 20 per cent of the site area.

Figure I410.6.2.1 Carpark design



(9) [Deleted]

(10) Any land modification to form the 1% AEP modified flood plain must:

- (a) not reduce flood storage capacity in the precinct; and
- (b) not change the flood characteristics upstream or downstream of the precinct for all flood events from the 50% and up to the 1% AEP flood event in ways that result in an increase in peak flood levels.

I410.6.3. Subdivision or development preceding subdivision in Sub-precincts A – E

- (1) Proposed roads (including pedestrian and bicycle routes) identified on the Precinct Plan 1 and Precinct Plan 2, must be located generally in the position indicated on Precinct plan 1 and Precinct Plan 2. An alternative roading layout may be proposed provided that an integrated approach to land use and transport can be achieved throughout the Drury South and Drury South Residential precincts.
- (2) The land identified as part of Sub-precinct D on Precinct plan 1 must be developed upon subdivision or development of the relevant area. Proposed stormwater management areas must be located generally in the position indicated on Precinct Plan 1, and must be offered to the Council. Vegetated

buffers not less than 40 metres in total width are to be provided along stream corridors within stormwater management areas and must include a minimum of 10 metres of native riparian planting either side of the stream edge. Off-site stormwater management services including wetlands and the primary and secondary stormwater conveyance system is to be vested at no cost to the council in accordance with a network discharge consent or other relevant discharge consent or a stormwater management plan approved by the Council. All stormwater management areas and wetlands must be designed to serve a dual function to treat stormwater and provide ecological benefits.

- (3) Reticulated water services must be supplied to the precinct and all new water infrastructure must be fully funded (including consenting costs) by the developer(s) of the land within the precinct. Such services must be provided to the relevant part of the precinct in advance of or concurrent with a resource consent for subdivision and development provided that any necessary resource consents or designations for the reticulated water services have been granted.
- (4) Wastewater services are to be provided to the precinct either by (in no particular order):
 - (a) the construction of a connection to Watercare's existing wastewater network and any necessary upgrading of that network that is required to service the Precinct; and/or
 - (b) the construction of a Wastewater Treatment Plant to service the Precinct, or a larger catchment if required.

In either case wastewater services are to be provided in a manner approved by Watercare and constructed to Watercare's design and operational standards. The developer(s) must fully fund (including consenting costs) all new wastewater infrastructure required to service the Precinct. Wastewater services must be provided to the relevant part of the Precinct in advance of or concurrent with a resource consent for subdivision and development provided that any necessary resource consents or designations for the reticulated water services have been granted. In the event that a new regional wastewater treatment plant becomes available to service the precinct, and subject to approval from Watercare, the precinct could be connected to that plant.

Note: that for the purposes of the Standards I410.6.3(1)-(4) above, references to "Watercare" means Watercare Services Limited and references to "development" means the carrying out of any work on the land including any earthworks or site preparation activities and the construction or alteration of any building.

I410.6.4. Sub-Precinct C (Noise and Ventilation)

- (1) Any building containing a noise sensitive space within Sub-Precinct C must be located and/or designed and/or insulated, or screened by suitable barriers, so that the design noise levels do not exceed:
 - (a) 40 dB $L_{Aeq(24\text{ h})}$ inside any noise sensitive space; and
 - (b) 70 dB $L_{Aeq(24\text{ h})}$ incident on any façade facing Maketu Road that encloses a noise sensitive space.
- (2) Compliance with Standard I410.6.4(1) must be determined based on a road traffic noise level 10m from the nearest traffic lane of Maketu Road of 75 dB $L_{Aeq(24\text{ h})}$, 83 dB $L_{Aeq(24\text{ h})}$ at 63 Hz and 79 dB $L_{Aeq(24\text{ h})}$ at 125 Hz.
- (3) For residential dwellings, where the internal noise levels in Standard 1 can only be complied with when doors or windows to those rooms are closed, those rooms adopt the relevant mechanical ventilation and/or cooling requirements of E25.6.10(3)(b) or (c).
- (4) For the avoidance of doubt, the noise insulation requirements set out in Standard I410.6.4(1)-(3) apply in addition to any other noise insulation requirements set out in Chapter E25 – Noise and Vibration.

I410.6.5. Sub-Precinct C (Restrictive non-complaint covenant)

- (1) Residential activities in Sub-precinct C shall be subject to a restrictive non-complaint covenant* in favour of the operator of Drury Quarry.

*For the purposes of the Drury South precinct and of this rule a 'restrictive non-complaint covenant' is defined as a restrictive covenant registered on the Title to the property or a binding agreement to covenant, in favour of the operator of Drury Quarry, by the landowner (and binding any successors in title) not to complain as to effects generated by the lawful operation of the quarry, including heavy vehicle movement noise. The restrictive non-complaint covenant is limited to the effects that could be lawfully generated by the quarry activities at the time the agreement to covenant is entered into. This does not require the covenantor to forego any right to lodge submissions in respect of resource consent applications or plan changes in relation to quarry activities (although an individual restrictive non-complaint covenant may do so.) Details of the existence of covenant documents may be obtained from the Quarry Operator, its solicitors, or in the case of registered covenants by searching the Title to the property.

I410.7. Assessment – controlled activities

I410.7.1. Matters of control

The Council will reserve its control to all of the following matters when assessing a controlled activity resource consent application:

- (1) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct B:
 - (a) retention of existing vegetation;

- (b) planting;
- (c) building design and appearance;
- (d) parking area design;
- (e) storage and waste management location and design; and
- (f) vehicular access;

(2) [Deleted]

I410.7.2. Assessment criteria

The Council will consider the relevant assessment criteria below for controlled activities:

(1) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct B:

(a) retention of existing vegetation:

- (i) the extent to which layouts retain and protect existing mature trees, particularly those of indigenous species, where these contribute to the site character and amenity.

(b) planting:

- (i) the extent to which planting is designed to have a large scale landscape effect and combine native as well as appropriate exotic species to provide seasonal change and quality amenity; or
- (ii) where public open space land adjoins the motorway, the extent to which boundary planting that creates a continuous visual barrier to eastward views from the State Highway 1 corridor is avoided and whether landscape design emphasises the current sequence of intermittent views to the Hunua Ranges from the State Highway 1 corridor and the pattern of variable depth of such views;
- (iii) the extent to which the integrated site layout, building and landscape design provides a high quality and visually attractive frontage to State Highway 1, while ensuring any landscaping, including the use of large tree and shrub species, does not restrict access to the electricity infrastructure for maintenance and does not compromise the safe and reliable operation of the electricity network.

Advice note: In considering whether this criterion is met, the Council may take into account whether a review has been undertaken by or on behalf of Counties Power which confirms that the proposed planting will not affect the safe and reliable operation and maintenance of the electricity network.

(c) building design and appearance:

- (i) the extent to which buildings are located with design consideration for their visibility and reduced visual impact as viewed from the State Highway 1 corridor and the desirability of maintaining a sense of openness as seen from the motorway; or
- (ii) the extent to which the visual mass of larger buildings is minimised by employing the following methods:
 - utilising subdued, recessive colours;
 - providing variation in materials and finish for facades viewed from the motorway;
 - creating variation of roof profiles with consideration given to the overall roofscape viewed from the motorway;
 - all rooftop servicing and plant should be designed as an integral part of the roofscape with particular consideration given to the view from the motorway;

(d) parking area design:

- (i) the extent to which parking areas are designed to incorporate trees to break up the scale of hard surface areas; or
- (ii) the extent to which the fully planted permeable carpark design layout (refer Figure I410.6.2.1 above) style of parking is adopted within Sub-precinct B;

(e) storage and waste management location and design:

- (i) the extent to which storage and waste management activities are located and/or designed to be screened from view of State Highway 1;

(f) vehicular access:

- (i) the extent to which proposed vehicle access to sites adjoining the Maketu_Road and New Quarry Access Road shown on the Precinct plan 2 minimises any conflict with safety and efficiency of these routes as part of the strategic freight network;

(2) [Deleted]

I410.8. Assessment – restricted discretionary activities

I410.8.1. Matters of discretion

The Council will consider the relevant assessment criteria below for restricted discretionary activities, in addition to the assessment criteria specified for the relevant restricted discretionary activities in the overlay, Auckland wide or zone provisions:

- (1) subdivision or any development of land which precedes a subdivision being undertaken which complies with Standard I410.6.3:
 - (a) the relevant council and Auckland Transport development code or codes of practice;
 - (b) geotechnical and seismic;
 - (c) servicing and development sequencing;
 - (d) design and layout;
 - (e) earthworks;
 - (f) transportation network development requirements;
 - (g) ecology;
 - (h) Counties Power 110 Kv sub-transmission lines; and
 - (i) stormwater management;
- (2) the creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct Plan 2 which also has frontage to another road shown on that plan:
 - (a) effect of the location and design of the access on the safe and efficient operation of the adjacent transport network; and
 - (b) adequacy of access arrangements.
- (3) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct C:
 - (a) building design;
 - (b) parking area design;
 - (c) signs;
 - (d) service area location;
 - (e) vehicular access; and
 - (f) mitigation of traffic noise.

- (4) A single supermarket greater than 2000m², supermarkets exceeding 450m² and up to 2000m² gross floor area per tenancy, offices between 501m² – 1000m² per tenancy and retail greater than 1000m² and up to and including 4,500m² in Sub-Precinct C
- (a) the compatibility of the effects of intensity and scale of the development arising from the numbers of people and/or vehicles using the site, with the existing and expected future amenity values of the surrounding area and any practicable mitigation measures that would be appropriate to manage those effects;
 - (b) the effects of the design and location of parking areas and vehicle access and servicing arrangements on visual amenity of the streetscape and on pedestrian safety;
 - (c) the effects of the size, composition, characteristics, and concentration of retail or office activities proposed in Sub-precinct C on the existing and expected future function, role and amenity of other Metropolitan or Town Centres that are zoned or are identified in a Council approved Structure Plan for Drury, having regard to the need to enable convenient access of communities to commercial and community services while disregarding any effects ordinarily associated with trade effects on trade competitors;
 - (d) In determining (c) above, whether the activity is coordinated with the rate of residential and commercial development in the local area to ensure that the activity individually, or in combination with other consented or permitted activities, meets the needs of the local catchment;
 - (e) whether the retail or office proposal, individually, or in combination with other consented or permitted activities, meets the needs of the local residential and employment catchment;
 - (f) the assessment of the above matters having regard to the need to provide for the functional requirements of the activity.
- (5) Trade Suppliers in Sub-Precincts A and C greater than 11,000m² gross floor area
- (a) Effects of the activity on the safe and efficient operation of the surrounding transport network.
- (6) Infringement I410.6.4 – Sub-Precinct C (Noise and Ventilation)
- (a) the effects of land transport noise of the noise sensitive activity;
 - (b) the potential reverse sensitivity effects of the infringement.

I410.8.2. Assessment criteria

The Council will restrict its discretion to all of the following matters when assessing a restricted discretionary activity resource consent application, in addition to the

matters specified for the relevant restricted discretionary activities in the overlay, Auckland-wide or zone provisions:

- (1) subdivision, or any development of land which precedes a subdivision being undertaken, which complies with Standard I410.6.3:
 - (a) the extent to which the subdivision or development is in accordance with the relevant codes or codes of practice or engineering standards, and whether the road network is consistent with its intended function as set out within those codes or codes of practice and the subdivision design assessment criteria set out in Appendix I410.11.
 - (b) the extent to which the subdivided lots or the land on which the development is to be undertaken are geotechnically suitable for the development of a permitted activity or an activity for which resource consent has been obtained. This may include an assessment of the following:
 - (i) any proposed fill materials;
 - (ii) stability in areas of deep cut particularly adjacent to the boundaries of the Precinct;
 - (iii) settlement and stability issues associated with the Hingaia and Maketu streams;
 - (iv) time dependent settlement;
 - (v) ground seismicity and buffer zone; or
 - (vi) liquefaction;
 - (c) the extent to which subdivision and development occurs in a logical and sequential manner in relation to:
 - (i) the implementation of improvements and/or upgrades to the roading network;
 - (iA) the implementation of a potential pedestrian and cycling connection shown on Precinct Plan 1 between the Drury South Residential Precinct and Sub-Precinct C and the integration of this with proposed built development in Sub-Precinct C;
 - (ii) the establishment of the stormwater management areas within sub-precinct D identified on Precinct Plan 1 and catchment wide stormwater management devices as identified in the relevant discharge consent and/or stormwater management plan required by the special information requirements below;
 - (iii) the provision for overland flowpaths identified in an approved discharge consent and/or stormwater management plan required by the special information requirements below; or

- (iv) the provision of wastewater facilities, water supply, electricity, gas and telecommunications, including the protection and /or relocation of any existing local electricity, gas and communications assets;
- (d) the extent to which subdivision design and layout gives effect to the objectives and policies identified for the Drury South Precinct and the subdivision design assessment criteria set out in Appendix I410.11.1.
- (e) the extent to which the earthworks required by the subdivision or development:
 - (i) avoid or mitigate adverse effects on land stability, existing underground infrastructure facilities (such as the Vector gas pipeline and Telecom telecommunications cables), and groundwater quantity and quality;
 - (ii) avoid or mitigate adverse effects on the visual quality of the landscape or natural landforms, watercourses, habitats or vegetation;
 - (iii) avoid or mitigate adverse effects on traffic management within the area or create damage, danger, or nuisance to surrounding residents or the Ramarama School;
 - (iv) consider opportunities to recharge the aquifer using treated stormwater where permeable soils are available;
 - (v) ensure that the creation of level development platforms are contoured to integrate with the surrounding street environment and open space corridors;
 - (vi) screen retaining walls from public view;
 - (vii) provide and maintain continuity of overland flow paths both within the site, as well as upstream and downstream; and where overland flow paths are diverted and/or altered show how:
 - potential effects on other properties from the diversion or alteration is avoided or mitigated;
 - effects from scouring and erosion are mitigated;
 - further changes to the overland flow path will be limited, when appropriate through an easement in favour of Council;
 - (viii) if located in the 1% AEP modified flood plain, including earthworks for the formation of stormwater management devices such as wetlands and/or for necessary infrastructure (including associated landscaping and accessways), whether:
 - the design of the device, including associated earthworks, landscaping and accessways avoids impeding flood flows or otherwise exacerbating flood risk upstream or downstream of the site and how such effects can be avoided;

- the design of the device or mitigation works is resilient to damage from the full range of flood events;
 - access to the device for maintenance is provided and maintenance plans address potential effects that may result from the proposed access route;
- (f) the extent to which the following transportation network requirements are met:
- (i) whether subdivision or development will result in the central 'Maketu Road' being progressively constructed on an alignment consistent with that indicated in Precinct plan 2;
 - (ii) whether the following road projects indicatively shown on Precinct plan 2 will be completed before any buildings within the precinct are occupied:
 - the realignment of existing Quarry Road onto the alignment of the 'Maketu Road' from the State Highway 1 over-bridge to the southern extent of the first stage of subdivision;
 - the upgrading of the existing Quarry Road/Great South Road intersection;
 - the provision of traffic signals or an alternative upgrade which achieves equivalent transport performance at the existing Great South Road/State Highway 22 (Karaka Road) intersection;
 - under the scenario where development of the Precinct proceeds in advance of the Mill Road Corridor Project, the upgrading of the right turn bay on Waihoehoe Road at the Waihoehoe Road/Fitzgerald Road intersection;
 - (iii) whether a new dedicated pedestrian path and cycleway has been constructed between the existing Drury township and the precinct before development and occupation of more than 25 hectares of Industrial zoned land within the precinct occurs;
 - (iv) whether Ramarama Road, at the northern boundary of the precinct remains open as defined on Precinct Plan 2;
 - (v) whether the Link Road from the Maketu Road to Fitzgerald Road shown on Precinct Plan 2 is provided and shoulder widening, intersection treatments and localised widening works within the existing road reserve on Fitzgerald Road between the Link Road and Waihoehoe Road is undertaken before Ramarama Road is closed at the northern boundary of the Precinct;
 - (vi) whether the 'Avenue' Road and the portion of the Maketu Road shown on Precinct Plan 2 is provided as the adjacent Sub-precinct C is

developed, and whether the 'Avenue' Road is connected with Maketu Road at the southern end of Sub-precinct C, and is extended to, but not connected with, Maketu Road at the northern end of Sub-Precinct C. An alternative location for vehicle access through a portion of Sub-precinct C (the 'Avenue Road') may be appropriate where it is safe and efficient, and provided that a continuous and high amenity pedestrian and cycle connection is located along the western edge.

(vii) whether Ramarama Road, at the southern boundary of the precinct, is closed to all vehicular traffic by the time 89 hectares of Industrial zoned land within the precinct has been subdivided or developed;

(viii) whether the southern portion of the Maketu Road that connects to Ararimu Road is constructed before:

- Ramarama Road is closed at the southern boundary of the Precinct; or
- any development of the precinct south of the New Quarry Access Road shown on Precinct Plan 2 occurs;

(ix) whether State Highway 1 Ramarama Interchange is capable of accommodating the traffic from the subdivided and developed portion of the precinct including the predicted traffic from the land which is the subject of the application. To enable assessment of this criterion, applications for subdivision or development must include a traffic assessment of the effects of the subdivision or development on the interchange prepared by a qualified and experienced traffic engineer.

Note: This criterion will be considered to be met where such an assessment includes a review undertaken by or on behalf of NZTA which confirms that there is sufficient capacity or planned capacity at this interchange to accommodate the predicted increase in traffic;

(g) in respect of those new areas of planting in stormwater management and wetland areas in Sub-precinct D the extent to which:

- (i) plants should be eco-sourced as close as possible to the developed area;
- (ii) the mechanisms proposed ensure the weed and pest management programme and the herpetofaunal mitigation/rehabilitation plan are implemented;
- (iii) The public open space area that adjoins the southern boundary of the Precinct will provide the basis of an ecological corridor linkage of 30 metres in width between the southern buffer in the Precinct and bush areas in the Special Purpose – Quarry Zone when planted with suitable tree species at the time of subdivision of the adjoining industrial zoned land;

- (h) whether the existing 110kV Counties Power electricity lines are provided for in the existing positions in any subdivision or whether the existing lines can be relocated in agreement with Counties Power;
- (i) whether the stormwater management plan and works proposed as part of the subdivision or development:
 - (i) comply with any approved discharge consent;
 - (ii) are effective in avoiding, remedying or mitigating the potential adverse effects of stormwater discharge on water quality and flood hazards. In the case of stormwater management facilities within private land this assessment will include how the operation and maintenance of such facilities is to be secured by way of appropriate covenants or consent notices;
 - (iii) can effectively contain all the natural and diverted streams and their margins, wetlands, and other off-site stormwater management devices;
 - (iv) provide for overland flowpaths;
 - (v) require a bond or other security to be provided to ensure that the stormwater management works will be completed, with such bond to be released when the works are completed and the stormwater management areas and their devices are vested in council;
 - (vi) ensure that subdivision and development does not result in increased flood risk to habitable rooms for all flood events from the 50% and up to 1% AEP flood event downstream and upstream of the precinct;
- (2) the creation of vehicle access to any site with frontage to or from the Maketu Road shown on Precinct plan 2 which also has frontage to another road shown on that plan:
 - (a) any adverse effect from the location and design of the access on the safe and efficient operation of the adjacent transport network, including public transport, cyclists and general traffic, having regard to:
 - (i) the number of other access points to or from the Maketu Road in the vicinity of the proposed access;
 - (ii) whether conflicts will be reduced by the presence of a raised central median which prevents right turning in the vicinity of the site;
 - (iii) visibility and safe sight distances particularly the extent to which vehicles entering/exiting the site can see, and be seen by, pedestrians, cyclists and other vehicles on the footpath and road carriageway;
 - (iv) existing and future traffic conditions including speed, volume, type, current accident rate, and the need for safe manoeuvring in all weathers;

- (v) existing pedestrian numbers, and estimated future pedestrian numbers having regard to the level of development provided for in the this Plan; and
 - (vi) existing community or public infrastructure located in the adjoining road, such as bus stops, bus lanes and cycleways.
- (b) whether the access arrangements are practicable and adequate having regard to site limitations and layout, and arrangement of buildings and activities, users and operational requirements, and having regard to whether the site can reasonably be served by shared or amalgamated access with another site or sites on the Maketu Road where the sites in question are held in the same ownership.
- (3) new buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities in Sub-precinct C:
- (a) building design:
 - (i) the extent to which buildings on corner lots are designed to provide for a quality architectural response to the corner. Appropriate design responses include the provision of additional height at the corner, windows and activities addressing both street frontages and avoiding blank walls to one or both sides of the corner;
 - (ii) the extent to which built development fronts the street and open space with a quality recognisable pedestrian entry or entries to the street.
 - (iii) Where buildings are required to be setback from Maketu Road for acoustic amenity reasons, a safe and attractive edge to Maketu Road should be provided. Methods to achieve this include providing landscaping at the street edge and providing a good degree of glazing on the building facade overlooking Maketu Road;
 - (iv) the extent to which developments for trade suppliers, garden centres, marine retail, motor vehicle sales or supermarkets provide a quality frontage to the street and provide appropriate treatments to side and rear boundaries, including quality fencing and landscaping, to recognise the broader range of activities enabled in sub-precinct C and the higher standard of amenity expected in the Mixed Use zone, while also taking into account the functional requirements of the activity.
 - (b) parking area design:
 - (i) the extent to which parking is provided on the road network adjacent to sub-precinct C areas and on-site parking layouts are designed in accordance with the typical layout identified in Appendix I410.11.1.
 - (c) signs:

- (i) the extent to which signs for each sub-precinct C development are coordinated including the physical location of signs, their type-face, style and content;
- (d) service area location:
- (i) the extent to which service areas are located so as to avoid observation from a public road with access either from a service lane, incorporation within the main building or full screening of service/storage and dock areas;
- (e) vehicular access:
- (i) the extent to which proposed vehicle access to sites adjoining the Maketu Road shown on the Precinct plan 2 minimises any conflict with safety and efficiency of these routes as part of the strategic freight network;
- (f) mitigation of traffic noise:
- (i) the extent to which premises offering food and beverages, health professional rooms and childcare centres (being permitted activities which may be sensitive to heavy commercial vehicle traffic noise) are designed to mitigate traffic noise effects. Mitigation measures may include acoustic treatment of buildings and arranging site layout so noise sensitive activities are screened from the heavy traffic noise.
- (g) Drury South precinct Appendix
- (i) The extent to which buildings and development in Sub-Precinct C are consistent with the criteria in Appendix I410,11.2.
- (4) A single supermarket greater than 2000m², supermarkets exceeding 450m² and up to 2000m² gross floor area per tenancy, offices between 501m² – 1000m² per tenancy and retail greater than 1000m² and up to and including 4,500m² in Sub-Precinct C
- (a) The extent to which the effects of the size, composition, characteristics and concentration of retail or office activities in Sub-precinct C will be complementary to the existing and expected future function, role and amenity of other Metropolitan or Town Centres that are zoned or are identified in a Council approved Structure Plan, having regard to the need to enable convenient access of communities to commercial and community services while disregarding any effects ordinarily associated with trade effects on trade competitors;
 - (b) The extent to which retail that meets local convenience needs is located at the southern part of sub-precinct C, where it would be most accessible to the Drury South Residential precinct and would support a local community focal point.

- (c) The extent to which the activity is coordinated with the rate of residential and commercial development in the wider area to ensure that the activity individually, or in combination with other consented or permitted activities, meets the needs of the local catchment;
 - (d) The extent to which the size, composition and characteristics of any office activity would serve a local function and support adjoining businesses in Drury South.
- (5) Trade Suppliers in Sub-Precincts A and C greater than 11,000m² gross floor area
- (a) the extent to which the activity affects the safe and efficient operation of the adjacent transport network including pedestrian and cycling movement, particularly at peak traffic times;
 - (b) the extent to which the proposal incorporates mitigation measures to address adverse effects.
- (6) Infringement I410.6.4 – Sub-Precinct C (Noise and Ventilation)
- (a) the extent to which the type of activity proposed is likely to be adversely affected by the expected levels of transport noise;
 - (b) the extent to which any characteristics of the proposed use or area make compliance with of New Zealand Standard NZS6806:2010 "Acoustics – Road Traffic Noise – New and Altered Roads" unnecessary;
 - (c) whether the building and any outdoor living areas are appropriately located, and/or setback an appropriate distance from the Spine Road and/or State Highway 1 to minimise the potential for adverse effects from land transport noise.

I410.9. Special information requirements

I410.9.1. Earthworks plans

- (1) Any application for subdivision or development must be accompanied by detailed earthworks plans. Such plans must:
 - (a) describe the nature and scale of the proposed earthworks, such as the extent of cut and/or fill, sources of fill and how the cut and fill is to be transported;
 - (b) describe the construction management and communication methods to be followed to minimise nuisances and disruption to surrounding residents and Ramarama School (in particular, dust, traffic and noise impacts) during the construction period; and
 - (c) provide detailed design of the modified flood plain.

I410.9.2. Ecological management plans

- (1) In respect of any new areas of planting in Sub-precinct D the following must be provided:
 - (a) a weed and pest management programme for any new areas of planting within the stormwater management areas and wetland areas and remaining indigenous forest fragments in Sub-precinct D; and
 - (b) a herpetofaunal mitigation/rehabilitation plan which targets only potentially suitable lizard habitat for relocation searches.

I410.9.3. Stormwater management report and plans

- (1) Any application for subdivision or development preceding subdivision must be accompanied by detailed stormwater management report and plans. Such report and plans must:
 - (a) describe how the plans comply with the conditions of any relevant discharge consent;
 - (b) identify overland flow paths;
 - (c) describe the nature and extent of any off-site stormwater management devices and how these devices are to be delivered if they are on land outside the application site;
 - (d) if stormwater management devices are to be located within the modified 1% AEP floodplain, describe how these devices are to be designed to be resilient to flood-related damage while not exacerbating flood risks for upstream or downstream activities;
 - (e) where streams are to be diverted and/or recreated as identified on the precinct plan, describe how this is to be achieved in a way that ensures that they function in a manner similar to natural stream systems. Detailed landscape treatment plans will be required to demonstrate:
 - (i) the proposed long section and cross sections;
 - (ii) how the new stream banks are to be stabilised;
 - (iii) how pool – riffles - run sequences are to be formed; and
 - (iv) how stormwater outlets are controlled.
- (2) A subdivision application for vacant lot subdivision or a land use application for a new building or buildings in Sub-precinct C must be accompanied by an indicative 'integration plan' showing how the proposed development integrates with potential future development in the remainder of Sub-precinct C, including existing or potential transport connections and activities.

To avoid doubt, this plan is not subject to any approval from the Council and is for information only. Its purpose is to inform how a particular stage of

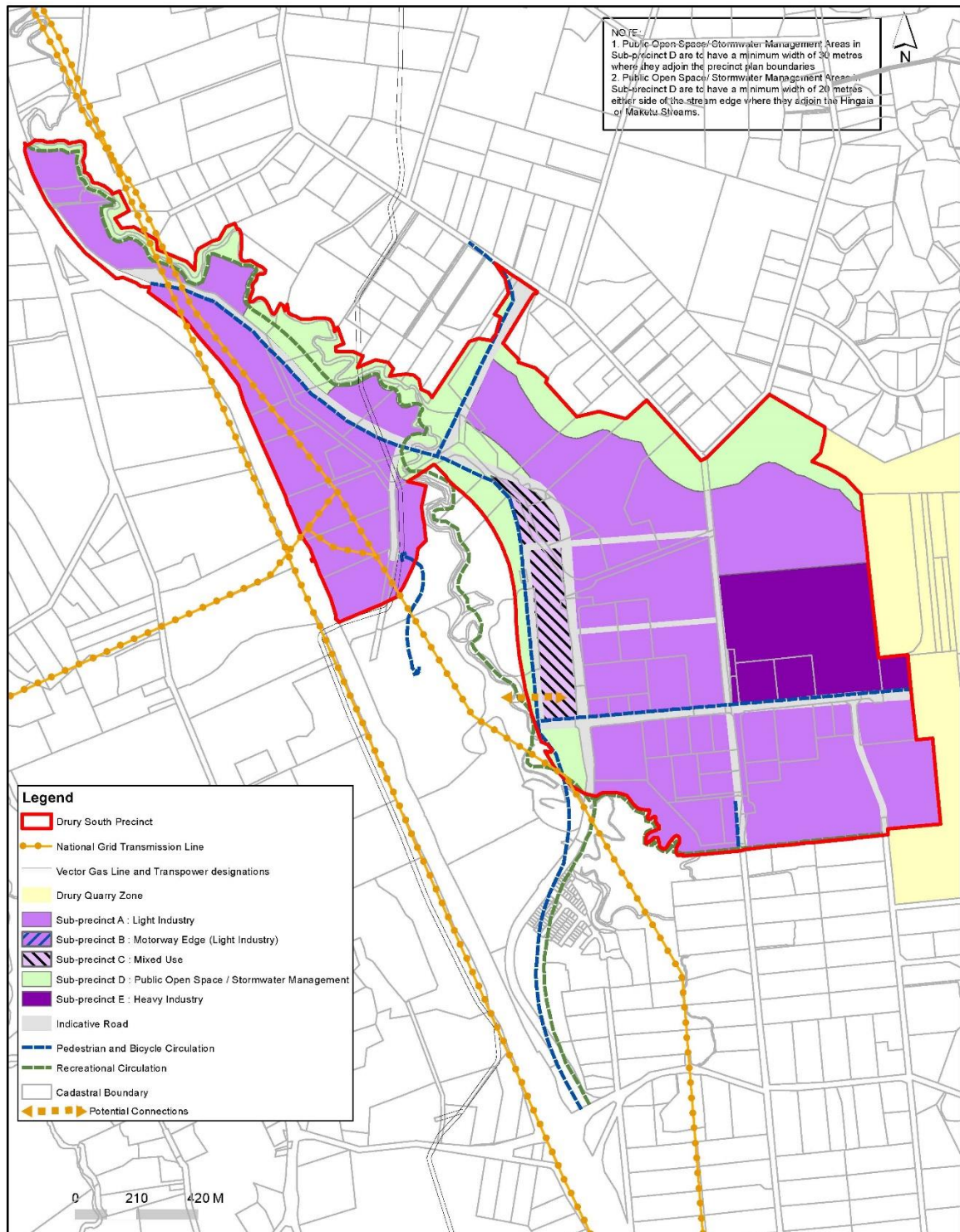
I410 Drury South Industrial Precinct

development will positively contribute to the visual quality and interest of streets, public open spaces and pedestrian amenity, movement and safety (Policy H13.3(3)), in an integrated manner across Sub-precinct C.

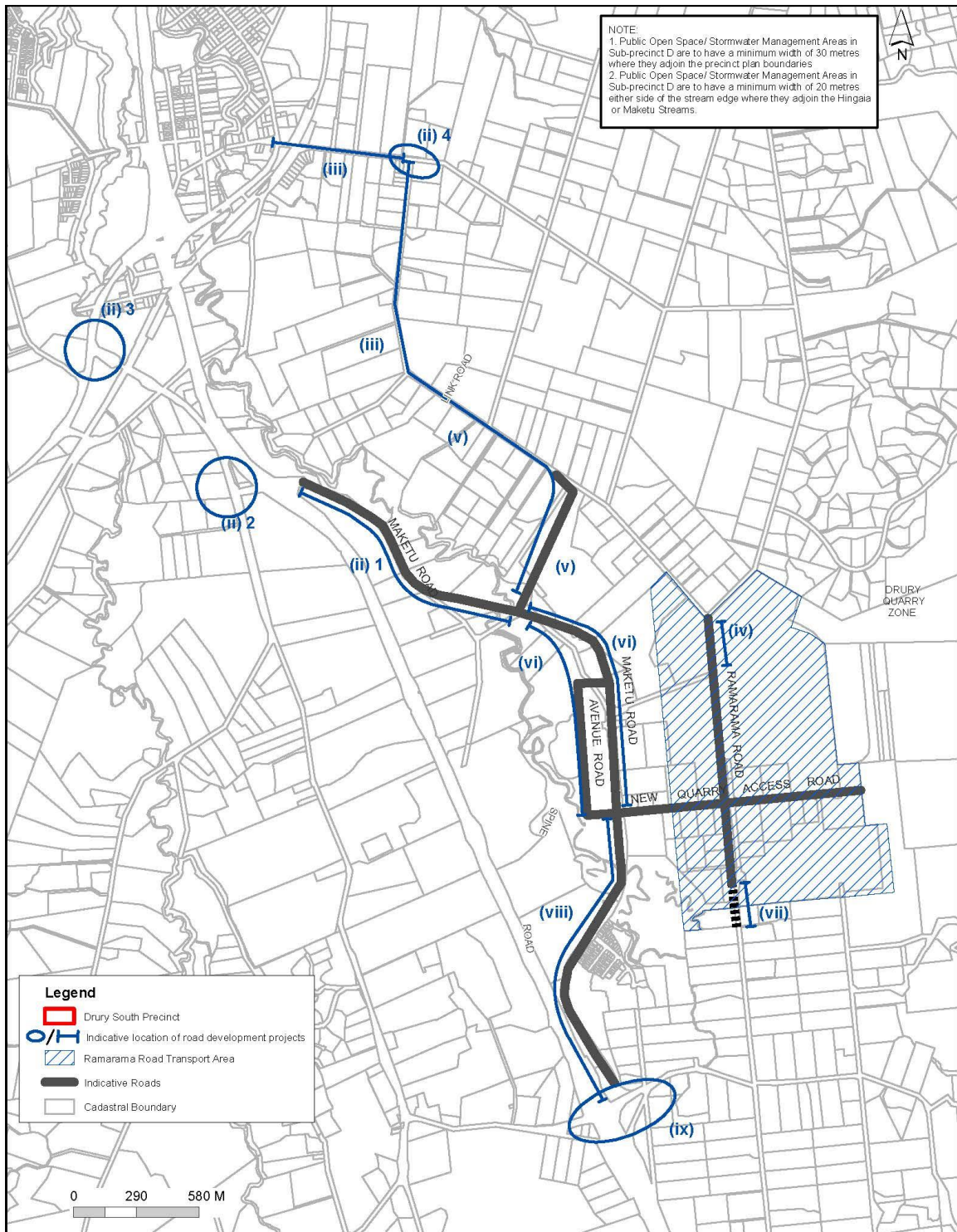
I410 Drury South Industrial Precinct

I410.10. Precinct plans

I410.10.1 Drury South: Precinct plan 1



I410.10.2 Drury South: Precinct plan 2



I410.11. Appendices

Attachment One

I410.11.1: Attachment 5 (Drury South Appendix)

APPENDIX: DRURY SOUTH PRECINCT _SUBDIVISION DESIGN ASSESSMENT CRITERIA

PURPOSE OF APPENDIX I410.11.1

Within the Drury South Precinct, applications for any subdivision or any development of land which precedes a subdivision being undertaken which complies with Standard I410.6.3 as a restricted discretionary activity will be assessed in terms of a series of matters to which the Council will restrict the exercise of its discretion. One of the matters which the Council will have regard to as set out in standard I410.8.2(1)(d) is:

the extent to which subdivision design and layout gives effect to the objectives and policies identified for the Drury South Precinct and the subdivision design assessment criteria set out in Appendix I410.11.1.

In addition, the criteria will also be used in the consideration of discretionary applications for subdivision, as appropriate.

This appendix sets out assessment criteria under a number of “Design Elements”. Accompanying illustrations are intended to support the text and represent good design solutions, but are not intended to represent the only design solution. All illustrations are indicative only.

Each Design Element includes an explanation, which summarises the rationale for the particular Design Element and expands on the individual criteria. The explanation may be used as further guidance in interpreting the intention of the criteria and assessing the extent to which the proposal accords with them.

INFORMATION REQUIREMENTS

The applicant shall provide a written assessment describing how the criteria for each Design Element are addressed. Applicants will have to demonstrate that the provisions of the criteria have been acknowledged.

It is recognized that certain proposals will not achieve absolute accordance with all criteria. Where necessary, in regard to a criterion demonstrably not met, the applicant shall explain with reference to the explanation for the particular Design Element:

- whether site constraints inhibit the ability to address the criterion, and/or;
- how the intention of the criterion is met by the proposal, and/or ;
- whether the proposal represents a better design solution than that suggested by the criterion.

Planting plans and maintenance plans for recreation and esplanade reserves and stormwater management areas will need to be submitted with applications for subdivision consent and approved by the Council.

Design Element 1: Road, Reserve and Access Networks:

1. Earthworks should be undertaken principally at the initial subdivision stage, and where appropriate the creation of reasonably flat sites should occur at the bulk earthworks stage (in order to avoid creating retaining walls at site development stage).
2. Road patterns should maximise convenient / direct access to the Maketu Road and limit connection to existing rural roads (such as Ararimu Road) except where this relates to the wider essential network.
3. The road pattern should facilitate access to and accessibility within Sub-precinct C Mixed Use.
4. Road patterns should be logical and contribute to the legibility of and ease of wayfinding within the area (refer Diagrams 1 and 2 for generic legibility and proposed street hierarchy).
5. Subdivision layout design should achieve protection and enhancement of all significant streams / tributaries to be retained and their riparian corridors (20m minimum either side from edge of stream) and concentrate open space as part of the riparian network (refer Diagram 3).
6. Subdivision layout design should achieve an interconnected open space and movement network.
7. Safe pedestrian and cycle routes through the structure plan area should be integrated with the riparian, reserve and road design.
8. Equestrian bridle trails should be integrated with riparian reserve development and provide access to the large centrally located public open space / stormwater management area.

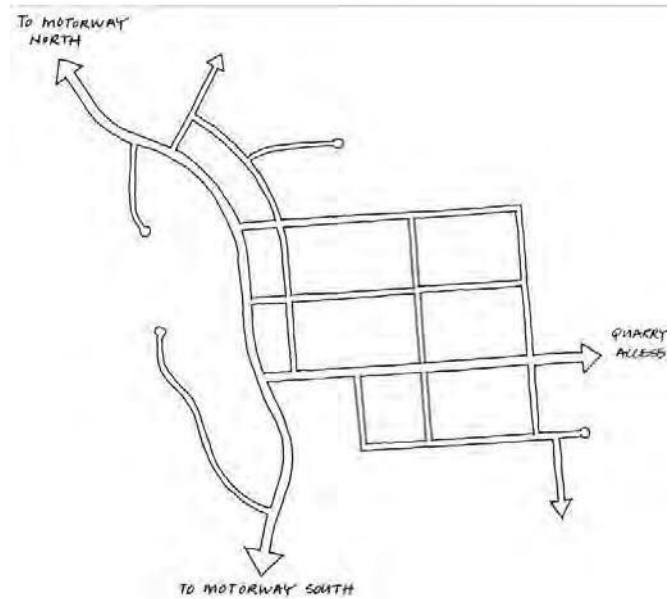


Diagram 1: Legible road hierarchy to assist wayfinding

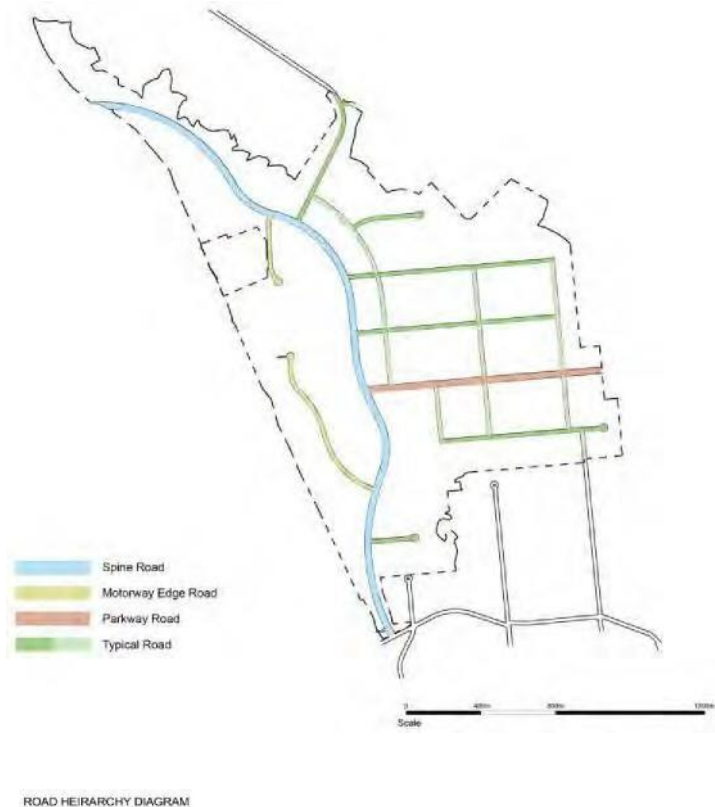


Diagram 2: Road hierarchy

9. Layouts should retain mature trees within the riparian corridors, particularly those of indigenous species.
10. In Motorway Edge Sub-precinct areas layouts should seek to retain as many existing established trees, particularly those of indigenous species, as possible.
11. In Motorway Edge Sub-precinct, areas access to sites off the Maketu Road should be combined wherever practicable.

Explanation:

Design Element 1 pertains to the overall site topography and the general layout of the networks of roads, reserves and other access linkages that make up the public space of the Drury South Precinct. These should be considered in an integrated fashion together with the development blocks that they create.

The existing site topography within the proposed Precinct is relatively flat although bulk earthworks including cut and fill will be required to establish levels for future development above the flood plain and appropriate falls across the land.

The riparian corridors of the Hingaia and Maketu Streams and their significant tributaries will remain an important feature of the site topography once the Precinct is established. Vegetation associated with these corridors is also important to the structuring, screening and ecology of the area and its proposed activities.

The riparian corridors also provide a focus for future recreation and open space development and form part of the enhancement framework for the Precinct.

The road network and hierarchy (refer Diagrams 1 and 2), has been designed to efficiently direct traffic into and out of the Precinct connecting to the Southern Motorway (SH1) at both the Ramarama (south) and Drury (north) interchanges. The proposed Spine Road is important to the legibility and traffic efficiency of the Precinct; this route will provide the primary connection into and out of the Precinct with other streets connected to the Maketu Road through corridor.

The proposed street network has also been designed to limit the impact of vehicles destined for the Precinct on existing rural residential and community roads such as the road accessing and adjacent to the Ramarama School. Implementation of the street network to achieve the beneficial improvements to heavy vehicle (including quarry truck) and other Precinct related traffic movement is imperative as a part of delivery of the zone.



Diagram 3: Open space concentrated along Hingaia, Maketu, Roslyn and Northern Diversion Stream corridors

By its nature the Sub-precinct C Mixed Use will require a finer grain street network with smaller street blocks, greater walkability, good service access and parking.

A legible road pattern (refer Diagram 1) is one that is easily understandable for the people that use it and that provides cues for first time users as well as those habitual users. Consistent road design and landscape themes can further emphasise the position of each street in the road hierarchy and in the pattern of streets in the wider area. Road patterns that are logical and easy to comprehend and navigate make an area feel more comfortable and help to provide a sense of identity.

Design Element 2: - Block Size, Lot Type and Orientation:

1. Blocks should be of a scale and shape to achieve a permeable street layout suited to the functional requirements of the proposed land use.
2. All lots should front onto and be accessed directly from a legal road. Rear lots are to be avoided (refer Diagram 4).
3. Through lots (with dual road frontage) are permissible (refer Diagram 4).

Explanation:

Design Element 2 describes the principles for consideration in the layout of blocks and lots within the Precinct.

Blocks within an industrial area are typically larger than those within finer grain residential or Mixed Use areas. A good permeable and well connected-street network is however still required in Light and Heavy Industry Sub-precincts A, B and E to facilitate access, provide an appropriate street address and reduce traffic volumes on side streets. Within Sub-precinct C Mixed Use, Design Element 1 also provides opportunities for views through to the open space corridor to the west of the Sub-precinct from Maketu Road.



Diagram 4: All lots should front onto a legal road; through lots are permissible

Lots need to be of a size and shape to accommodate large scale, land extensive land uses and flexible to enable reasonable long term growth. At the same time rear lots are considered undesirable with a preference for development to address the street.

Design Element 3: - Roads and Accessways:

1. In addition to Auckland Transport Code of Practice and Council's Development Code requirements, minimum road and design elements should be appropriate to the nature of the function that they provide and also reflect urban design legibility considerations – i.e. wayfinding, as set out in Table 1 below.
2. Cyclists should be accommodated on the street carriageway.
3. A consistent palette of traffic management tools should be used across the Precinct. Traffic management devices such as chicanes, speed humps and other such restrictive management devices are not expected, however the use of thematic planting and measures such as localised narrowing to create thresholds or define changes in the street environment could be used.

4. All streets are required to accommodate strong avenue specimen tree planting. Refer Cross Sections Attachment 1. This planting is required to achieve the breaking up of the overall scale of the development particularly as seen from elevated locations, as well as to establish the enhanced expected amenity and character of the Precinct.
5. In addition to the street avenue planting a planted central median is also required on the roads identified as 'Arterial' and 'Parkway'.

Explanation:

Design Element 3 pertains to principles for the design of roads and other access routes within the Precinct. Road design should be appropriate to function and provide practical widths for vehicular access, including for emergency vehicles, parking, planting and services.

Pedestrian and cycle paths should generally be integrated with road and reserve design. Paths which are separated from vehicle routes should be designed for safety.

Table 1 below sets out the indicative function and design elements of the collector roads within the Drury South Precinct.

Table 1 – Indicative Road Function and Required Design Elements

| Road Name | Proposed Role and Function of Road in Precinct Area | Freight or Heavy Vehicle Route | Minimum Road Reserve ² | Total Number of Lanes | Design Speed (kph) | Access Restriction | Bus Provision ⁴ | Median | Cycle Provision ⁵ | Pedestrian Provision |
|---|---|--------------------------------|-----------------------------------|-----------------------|--------------------|--------------------|----------------------------|---------------|------------------------------|----------------------|
| Maketu Road ¹ South of Link Road | Arterial | Yes | 33.45m | 4 | 60 | Yes ³ | Yes | No | Yes – separated | Both Sides |
| Maketu Road (North of Link Road) | Collector | Yes | 27.65m | 2 | 60 | Yes ³ | Yes | Yes (Flushed) | Yes | Both Sides |
| New Quarry Access Road ¹ | Collector | Yes | 27.65m | 2 | 50 | No | Yes | Yes (Flushed) | Yes – shared path | Both Sides |
| Link Road | Collector | Yes | 27.65m | 2 | 60 | No | Yes | Yes (Flushed) | Yes | Both Sides |
| Ramarama Road (Fitzgerald Road Connection) | Collector | Yes | 21m | 2 | 50 | No | Yes | Yes (Flushed) | Yes | Both Sides |

Note 1: Already have Engineering Plan Approval and are under construction

Note 2: Typical minimum cross section which may need to be varied in specific locations where required to accommodate batters, structures, intersection design, significant constraints or other localised design requirements.

Note 3: Refer to Assessment Criteria I410.8.1(2)

Note 4: Carriageway lanes and geometry of intersections capable of accommodating buses.

Note 5: Type of cycle provision, i.e. separated or shared path, to be confirmed at the Engineering Plan Approval stage, based on nature and character of the Local Road.

Design Element 4: Reserves, Stormwater Management Areas and Riparian Planting:

1. Stormwater detention and treatment reserves should be located in general accordance with the locations shown in the Drury South Precinct Plan and in accordance with the relevant stormwater discharge consents, the Council's Development Code and relevant technical publications. The Cross Sections (Attachment 2) illustrate the Typical Wetland Stormwater Pond and Typical Stream Corridor Cross Sections.
2. Stormwater ponds should be designed to fit in with the surrounding landscape and appear as an integrally designed infrastructural component of the overall setting.
3. Vegetated buffers, not less than 40m in total width for any retained permanent or diverted stream, should be provided on the margins of streams, ponds and wetlands and should:
 - Include native species as identified in Attachment 3;
 - Include native trees on the lower and upper banks of ponds predominantly to the north and west to provide shade;
 - Provide a minimum of 10m of native planting either side of the stream corridor including shallow water rushes and sedges;
 - Avoid vegetation that will exacerbate flooding and the blockage of water flow along the immediate riparian corridor.

The only exception to these requirements is the retained permanent stream in the northwest of the Precinct (adjacent to the Transpower site) which will be subject to a minimum requirement of 10m of native planting either side of the stream corridor only.

Note: Attachment 5 sets out 'Stream and Wetland Rehabilitation Guidelines (June 2013) for the DSSP area.

4. Walkways / cycleways along riparian corridors and through buffer planting should be designed to minimise any impacts on ecological function and give due consideration to personal safety and Crime Prevention Through Environmental Design (CPTED) principles.
5. Edge buffer reserves should be located in accordance with the Drury South Precinct Plan, be a minimum of 30m in width and be planted in generally accordance with Diagram 5 below. Planting should be fast growing rural shelter belt species capable of attaining a minimum height of 6 metres at maturity.

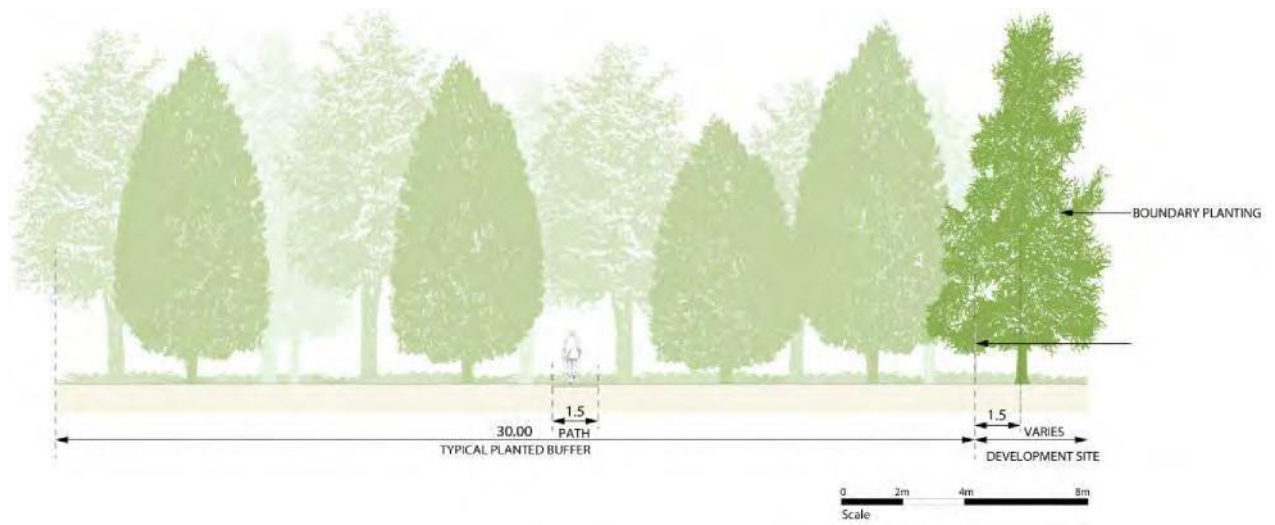


Diagram 5: Typical landscape buffer cross section

6. Suitable mechanisms to ensure the establishment and ongoing maintenance of landscaping of reserves and stormwater management areas until those areas are vested in the Council will be required to ensure the long term success of any landscaping.

Explanation:

Design Element 4 pertains to matters for consideration for locating, sizing and designing reserves stormwater management areas and riparian planting. These areas will be generally located in accordance with the locations shown in the Drury South Precinct Plan; regard should also be given to Design Element 5 when designing reserves within the Precinct.

The principal reserve network within the Precinct, as illustrated in the Drury South Precinct Plan, is structured around riparian protection and enhancement as well as stormwater management including detention and treatment. The reserve network is however designed for multiple functions and values including passive and active recreation, pedestrian / cycle commuter access, ecological values, visual screening / separation and aesthetic amenity.

The Precinct Plan also includes buffer reserves, adjoining the Light Industry zoned Sub-precincts A and B. The main purpose of these reserve is to physically and visually screen and separate adjacent existing land uses and residents from these areas. These reserves are planted to maintain a robust rural character with a woodlot/ shelter belt form of land management. Whilst providing multiple functions including biodiversity and aesthetic values, their primary function will remain as that of a buffer to land uses outside of the Precinct.

Design Element 5: Reserve Interface Design:

1. Reserves intended for public recreation and use should be designed to be bounded by public roads as much as possible given topographical and natural feature constraints. (Note proposed buffer reserves are not intended to be bounded by public roads)
2. Where reserves or riparian buffer areas adjoin lots, the boundary should be securely delineated and fenced to avoid encroachment (refer Diagram 5).

Explanation:

Reserves intended for public use that are well fronted by public roads are more secure because of the informal surveillance from the road and activities that interface with the road across the carriageway. Ideally not less than half the total length of legal boundary of any reserve should adjoin a legal road.

Design Element 5a: Earthworks and Retaining Walls

1. Changes of level adjoining streets and open space corridors should be achieved by gently battering and contouring land.
2. Where retaining walls are required, they should be screened from public view. This may be achieved by planting and breaking up the vertical extent of walls through physical stepping.

Additional Sub-Precinct Criteria

In the case of subdivision within Sub-precinct B Motorway Edge and Sub-precinct C Mixed Use, the following criteria shall also apply and take precedence over the general assessment criteria for subdivision stated above, where this is inconsistency or conflict.

Additional Design Element 6: Subdivision within Sub-precinct B Motorway Edge

1. Earthworks should be designed to retain a more natural, undulating topography and character outside of building platforms and other areas required through function to retain a flat topography.
2. Intersections between public roads serving the sub-precinct and the north south primary road (Maketu Road corridor) should be minimised.
3. Specimen tree planting should be provided on all public and internal private access roads within the Motorway Edge Sub-Precinct.

Additional Design Element 7: Subdivision within Sub-precinct C Mixed Use

1. Where through lots with dual street frontage are created, these should provide frontage to both street edges (i.e. no rear elevations to the street). However, where buildings are required to be setback from Maketu Road for acoustic amenity reasons, a safe and attractive edge to Maketu Road should be provided. Methods to achieve this include providing landscaping at the street edge and providing a good degree of glazing on the building facade overlooking Maketu Road.

APPENDIX I410.11.2: DRURY SOUTH PRECINCT – SUB-PRECINCT B MOTORWAY EDGE PRECINCT AND SUB- PRECINCT C MIXED USE ASSESSMENT CRITERIA

PURPOSE OF APPENDIX I410.11.2

In Sub-precinct B Motorway Edge New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities' are controlled activities and in Sub-precinct C Mixed

Use, 'New buildings' and 'Additions and alterations not otherwise provided for' are restricted discretionary activities.

Rule 6.15.1 sets out controlled activity assessment criteria for all restricted discretionary activities in the industrial zones and contains the following clause:

"In the case of the Motorway Edge Precinct and the Commercial Service Precinct within the Drury South Structure Plan Area (Part 5B.4 in Section One of the District Plan) the Council will, in addition to the criteria set out in (a) to (f) above, assess the application against the criteria set out for those precincts in Appendix 5B.4.B in Section One of the District Plan."

This Appendix sets out assessment criteria under a number of "Design Elements" for both Sub-precinct B Motorway Edge and the Sub-precinct C Mixed Use.

The criteria listed under each Design Element are intended to give flexibility, enabling site responsive designs, while ensuring that development provides a positive contribution to the amenity of the Precinct.

The criteria are intended to guide development rather than prescribe exact design and layout. Most criteria are illustrated. The illustrations are intended to support the text and are representative of good design solutions, but are not necessarily intended to represent the only design solution.

Each Design Element includes an explanation, which summarises the rationale for the particular Design Element and expands on the individual criteria. The explanation may be used as further guidance in interpreting the intention of the criteria and assessing the extent to which the proposal accords with them.

INFORMATION REQUIREMENTS

The applicant shall provide a written assessment describing how the criteria for each Design Element are addressed. Applicants will have to demonstrate that the provisions of the criteria have been acknowledged. It is recognised that certain proposals will not achieve absolute accordance with all criteria. Where necessary, in regard to a criterion demonstrably not met, the applicant shall explain with reference to the explanation for the particular Design Element:

- whether site constraints inhibit the ability to address the criterion, and/or;
- how the intention of the criterion is met by the proposal, and/or ;
- whether the proposal represents a better design solution than that suggested by the criterion.

Applicants will also be required to provide a Landscape Concept Plan with sufficient detail to ensure that the relevant assessment criteria are able to be considered, identifying hard and soft landscaping treatment, large grade specimen trees (species and planting size), groupings of ground covers and shrubs with species schedule.

SUB-PRECINCT B MOTORWAY EDGE PRECINCT DESIGN ASSESSMENT CRITERIA

The following criteria shall apply to 'New buildings (excluding buildings for network utilities) or additions to buildings not otherwise provided for as permitted activities Sub-precinct B Motorway Edge Precinct.

Design Element – Internal Private Access Roads:

1. Specimen tree planting should be provided on all public and internal private access roads within the Sub-precinct B Motorway Edge.

Design Element – Existing Vegetation:

1. Where ever possible layouts should retain and protect existing mature trees, particularly those of indigenous species, where these contribute to the site character and amenity.

Design Element – Planting:

1. Planting should be designed to have a large scale landscape effect and combine native as well as appropriate exotic species to provide seasonal change and quality amenity.
2. Where reserve land adjoins the motorway, boundary planting that creates a continuous visual barrier to eastward views from the SH1 (Southern Motorway) corridor should be avoided, however landscape design should emphasise the current sequence of intermittent views to the Hunua Ranges from the SH1 corridor and the pattern of variable depth of such views.
3. Where industrial sites adjoin the motorway boundary, a detailed rule applies requiring a double row of Leyland Cypress to create the appearance of a rural shelterbelt providing a continuous visual barrier defining the curve in the motorway alignment.

Design Element – Buildings:

1. Buildings should be located with design consideration for their visibility and reduced visual impact as viewed from the SH1, (Southern Motorway) corridor and the desirability of maintaining a sense of openness as seen from the motorway.
2. The visual mass of larger buildings should be minimised by employing the following methods:
 - Utilising subdued, recessive colours;
 - Providing variation in materials and finish for facades viewed from the motorway;
 - Creating variation of roof profiles with consideration given to the overall roofscape viewed from the motorway;
 - All rooftop servicing and plant should be designed as an integral part of the roofscape with particular consideration given to the view from the motorway.

Design Element – Parking Areas:

1. Parking areas should be designed to incorporate trees to break up the scale of hard surface areas.
2. Adoption of the Fully Planted Permeable Carpark Design Layout (refer Diagram 6) style of parking is advocated within Sub-precinct B Motorway Edge.

Design Element – Internal Site layout:

1. Storage and waste management activities should be located and / or designed to be screened from view of the State Highway.

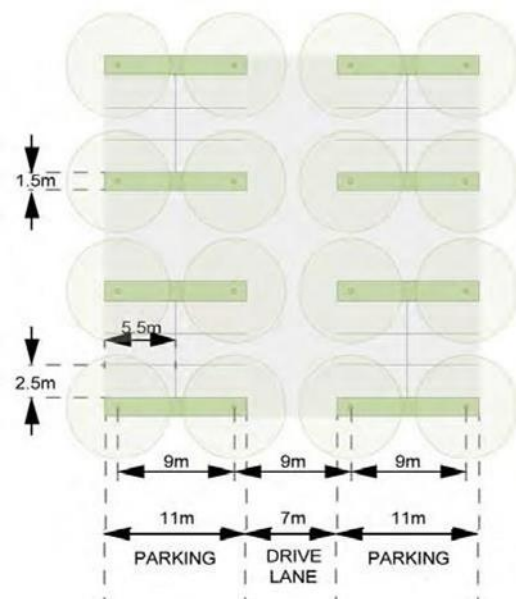


Diagram 6: Fully planted permeable carpark design layout - detail

SUB-PRECINCT C MIXED USE DESIGN ASSESSMENT CRITERIA

The following criteria shall apply to 'New buildings' and 'Additions and alterations not otherwise provided for' in Sub-precinct C Mixed Use.

Design Element – Block Size, Lot Type and Orientation:

1. Buildings on corner lots should be designed to provide for a quality architectural response to the corner. Appropriate design responses include provision of additional height at the corner and windows and activities addressing both street frontages. Service activities such as loading docks or storage yards should not be located on corners or any site frontage, however, where this is required to support the functional and operational requirements of the activity, the service area visible from the street should be minimised as much as practicable and attractively screened from public view with landscaping.

Design Element – Street Interface Design:

1. Built development should front the street with a quality, recognisable pedestrian entry to the street.
2. At-grade parking should be located and designed in such a manner as to avoid or mitigate adverse effects on pedestrian amenity and the streetscape. This includes through positioning carparking away from street frontages, to the sides or rear of buildings and the use of extensive landscaping within the carpark, including tree planting. Refer to Attachment 4 for an example of a layout and design consistent with this guideline.

Design Element – Signage:

1. Signage for each Sub-precinct C Mixed Use development

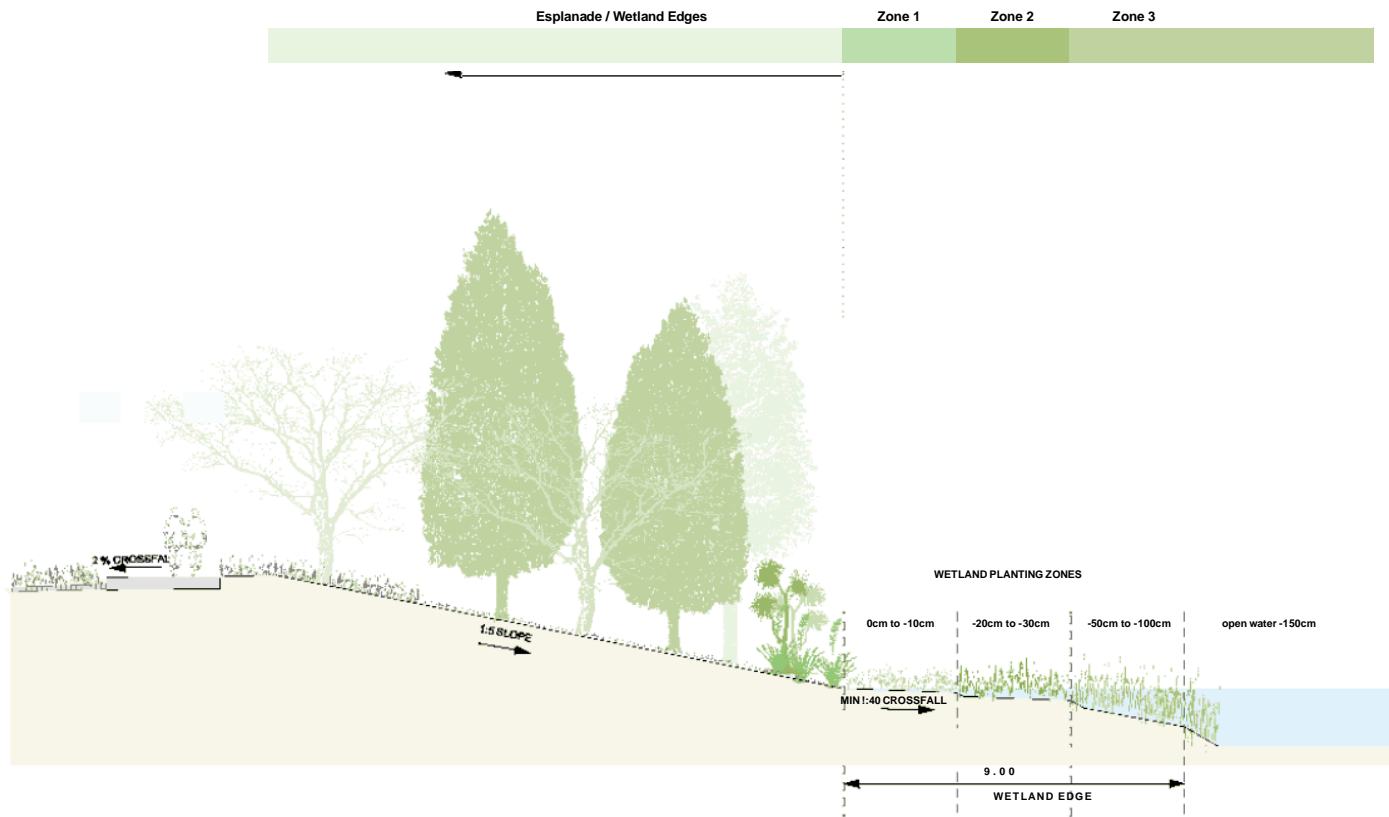
should be coordinated including the physical location of signs, their type face, style and content with a maximum of two signs per business, one located to address the street frontage and one to identify the building entry (a third sign is permissible where the service access is separate from building entry or there are multiple entries).

Design Element – Service Areas:

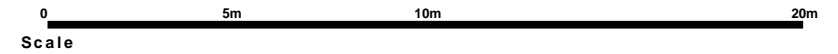
1. Service areas should be located so as to avoid observation from a public road with access either from a service lane, incorporation within the main building or full screening of service / storage and dock areas. However, where this is required to support the functional and operational requirements of the activity, the service area visible from the street should be minimised as much as practicable and attractively screened from public view with landscaping.

Attachment 2

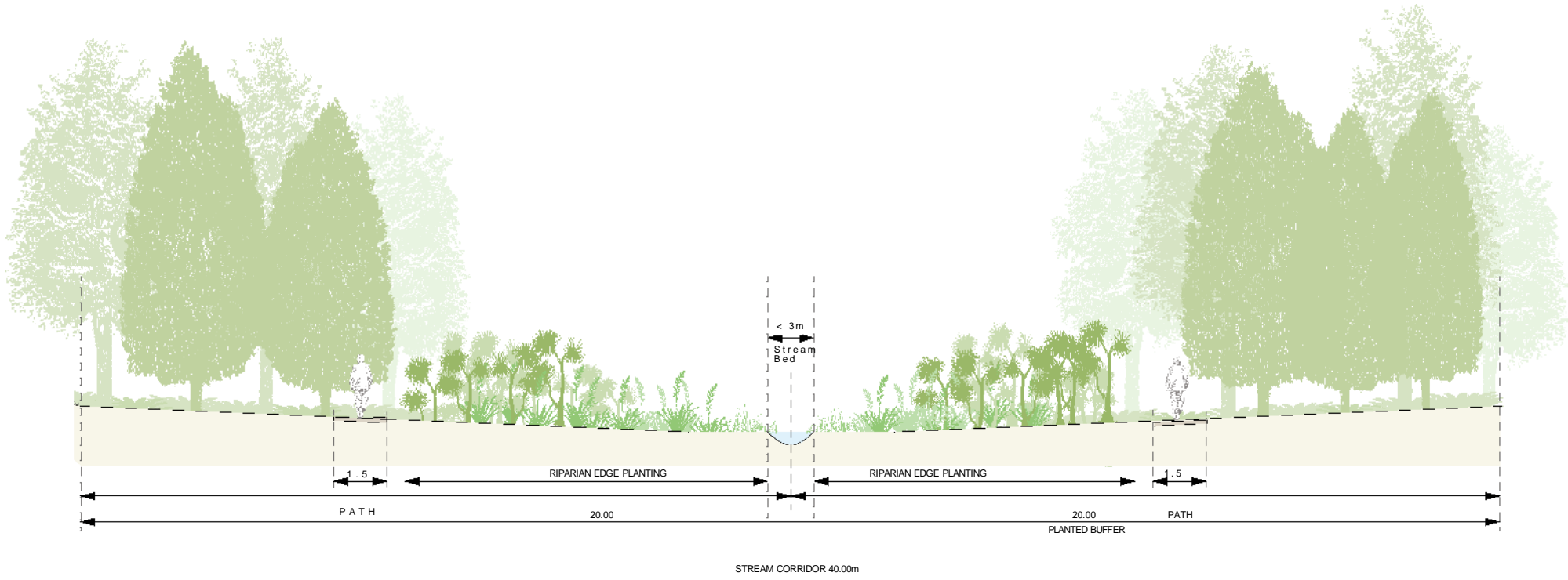
Typical Wetland Stormwater Pond and Typical Stream Corridor Cross Sections



| Location | Botanical Name | Common Name |
|------------------------------------|---|--|
| Esplanade / Wetland Edges | <i>Salix babylonica</i> | Weeping Willow |
| | <i>Dacrycarpus darydiodes</i> | Kahikatea |
| | <i>Cordylone australis</i> | Cabbage palm |
| | <i>Anemathele lessoniana</i> | Wind grass |
| | <i>Carex secta</i> <i>Carex testacea</i> | Purei |
| Zone 1 Wetlands (0 to -10cm) | <i>Carex geminata</i> <i>Cyperus ustulatus</i> <i>Cordaderia fulvia</i> | Toetoe |
| Zone 2 Wetlands (-20 to -30cm) | <i>Schoenoplectus validus</i> <i>Eleocharis acuta</i> <i>Juncus gregiflorus</i> <i>Bolboschoenus fluviatilis</i> <i>Leptocarpus similis</i> | Kopupu / kuta Spike rush Wiwi rush Ririwaka Oioi /Jointed Rush |
| Zone 3 Wetlands (-50 to -100cm) | <i>Baumea rubiginosa</i> <i>Baumea articulata</i> <i>Baumea teretifolia</i> <i>Eleocharis sphacelata</i> <i>Juncus pallidus</i> | Ngawha / Great spike rush Giant rush |



INDICATIVE WETLAND EDGE DETAIL



INDICATIVE 40m RIPARIAN BUFFER FOR STREAM BEDS LESS THAN 3m WIDE





TYPICAL ONE SIDED RIPARIAN BUFFER FOR STREAM BEDS LESS THAN 3m WIDE



INDICATIVE ONE SIDED RIPARIAN BUFFER FOR STREAM BEDS 3m AND GREATER

Attachment 3

Drury South Precinct

Indigenous Species Plant List

Note: The species underlined are recognised as being rare / uncommon in the Auckland region.

Wetland Species

| | |
|--|---|
| Schoenoplectus tabernaemontani also Eleocharis sphacelata | Multiple Māori names include kukuta and kutakuta. |
| Carex virgata and Carex secta | pukio |
| Baumea articulata | jointed twig-rush |
| Typha orientalis | raupo |
| Myriophyllum robustum | stout water milfoil |
| Baumea tenax | |
| Isachne glabosa | swamp grass |
| Phormium tenax | particularly the variety known to Maori as 'Muka' - soft for weaving |

Riparian Marginal Species

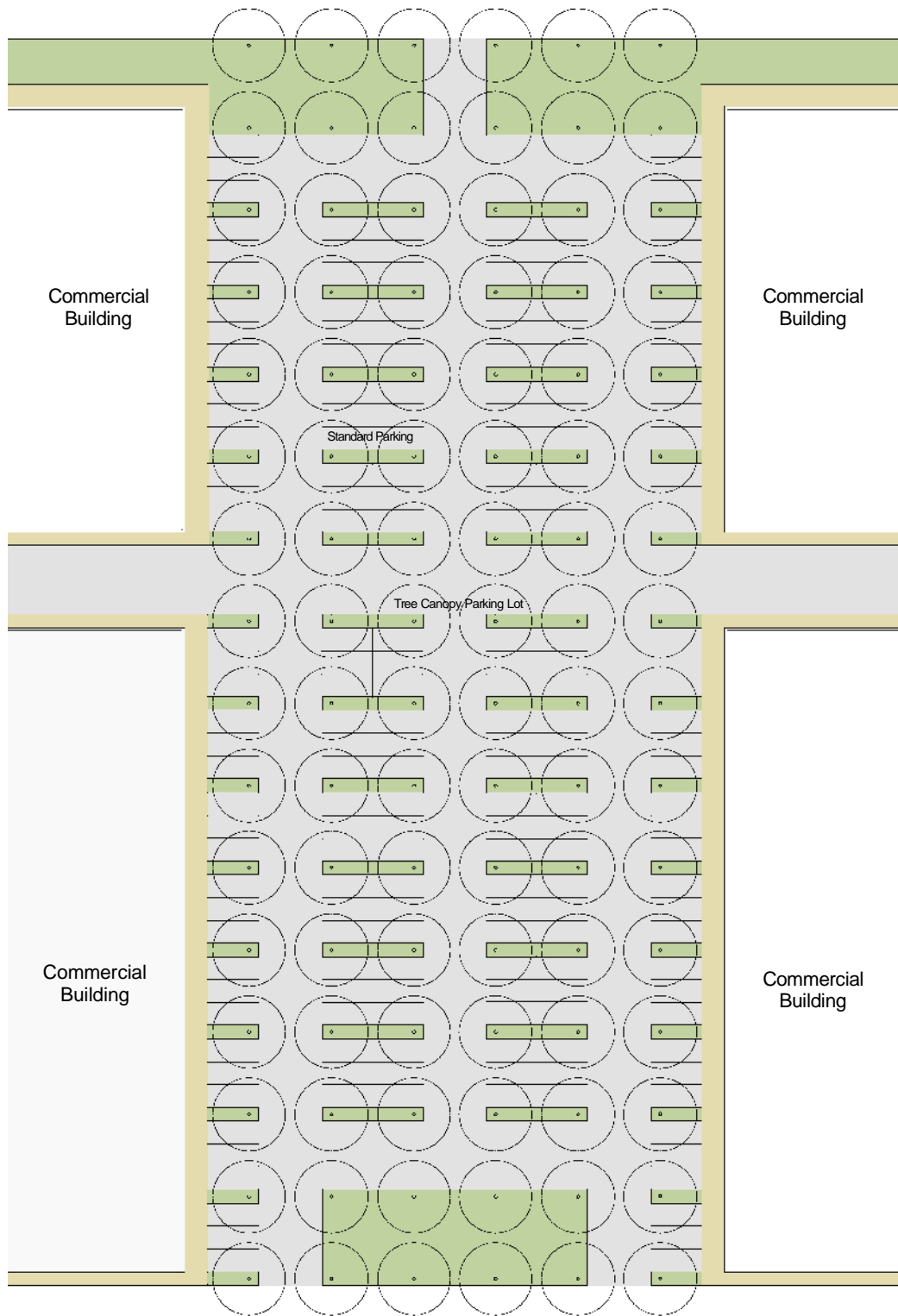
| | |
|-------------------------|----------------|
| Freycinetia baueriana | kie kei |
| Alectryon excelsa | titoki |
| Vitex lucens | puriri |
| Prumnopitys taxifolia | matai |
| Sophora microphlla | kowhai |
| Rhopalostylis sapida | nikau |
| Hoheria populnea | lacebark |
| Corynocarpus laevigatus | karaka |
| Plagianthus betulinus | manatu |
| Pennantia corymbosa | kaikomako |
| Hedycarya arborea | pigeonwood |
| Aristolelia serrata | makomako |
| Kunzea ericoides | kanuka |
| Cordyline australis | ti whanake |
| Dysoxylum spectabile | kohekohe |
| Coprosma grandifolia | kanono |
| Streblus banksii | towai |
| Streblus microphylla | turepo |
| Myrsine divaricata | weeping matipo |
| Marrattia salicina | king fern |

Swamp Forest Species

| | |
|---------------------------------|---------------|
| <i>Syzygium maire</i> | maire, tawake |
| <i>Laurelia novae-zelandiae</i> | pukatea |
| <i>Carpodetus serratus</i> | putaputaweta |
| <i>Phormium tenax</i> | harakeke |
| <i>Coprosma tenuicaulis</i> | hukihuki |
| <i>Dacrycarpus dacrydioides</i> | kahikatea |
| <i>Blechnum novae-zelandiae</i> | swamp kiokio |
| <i>Cortaderia fulvida</i> | toetoe |
| <i>Astelia grandis</i> | swamp astelia |
| <i>Schefflera digitata</i> | pate |
| <i>Podocarpus totara</i> | totara |

Attachment 4

Typical Sub-Precinct C Mixed Use Precinct Access and Car Park Layout



0 10m 20m 40m

Scale

TYPICAL COMMERCIAL LAYOUT

Attachment 5

Drury South Precinct: Stream and Wetland Rehabilitation Guidelines (June 2013)

Drury South Industrial Precinct

Stream and Wetland Rehabilitation Guidelines

June2013



Boffa Miskell



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Drury South Industrial Precinct
Stream and Wetland Rehabilitation Guidelines



1.0 Introduction

1.1 Purpose of this Document

The Drury South Industrial Precinct (DSIP) Stream and Wetland Rehabilitation Guidelines provide a summary of proposed stream and wetland works associated with the DSIP project. This includes all stream corridors to be removed, realigned, or restored, and wetlands created associated with stormwater management. The purpose of this document is to achieve the following:

1. To provide technical input to the planning process (to be read in conjunction with the Ecological and Landscape Assessments, Assessment of Environmental Effects (AEE) and Infrastructure Assessment report (IAR).
2. To provide the project team with a set of principles for treatment of riparian (stream and wetland) areas within the DSIP area.

1.2 Proposed Stream and Wetland Rehabilitation Works

In line with the proposed Drury South Industrial Precinct, the existing Hingaia and Maketu streams will be protected and enhanced by corridors of riparian restoration 40 metres in width (20m on each bank). Dense riparian planting will also occur along SH1 in association with the Roslyn Stream realignment and along the northern boundary of the site in association with a newly formed northern stream realignment.

Some streams and farm drains within the DSIP area will be filled. Piped infrastructure or vegetated swales will direct these modified catchments to the Hingaia Stream. These systems, as well as stormwater runoff from business activities will be treated for water quality in extensive wetland areas associated with the Hingaia stream corridor. These wetland areas will function for stormwater quality and quantity, ecosystem function and values, landscape amenity, natural character, and recreation.

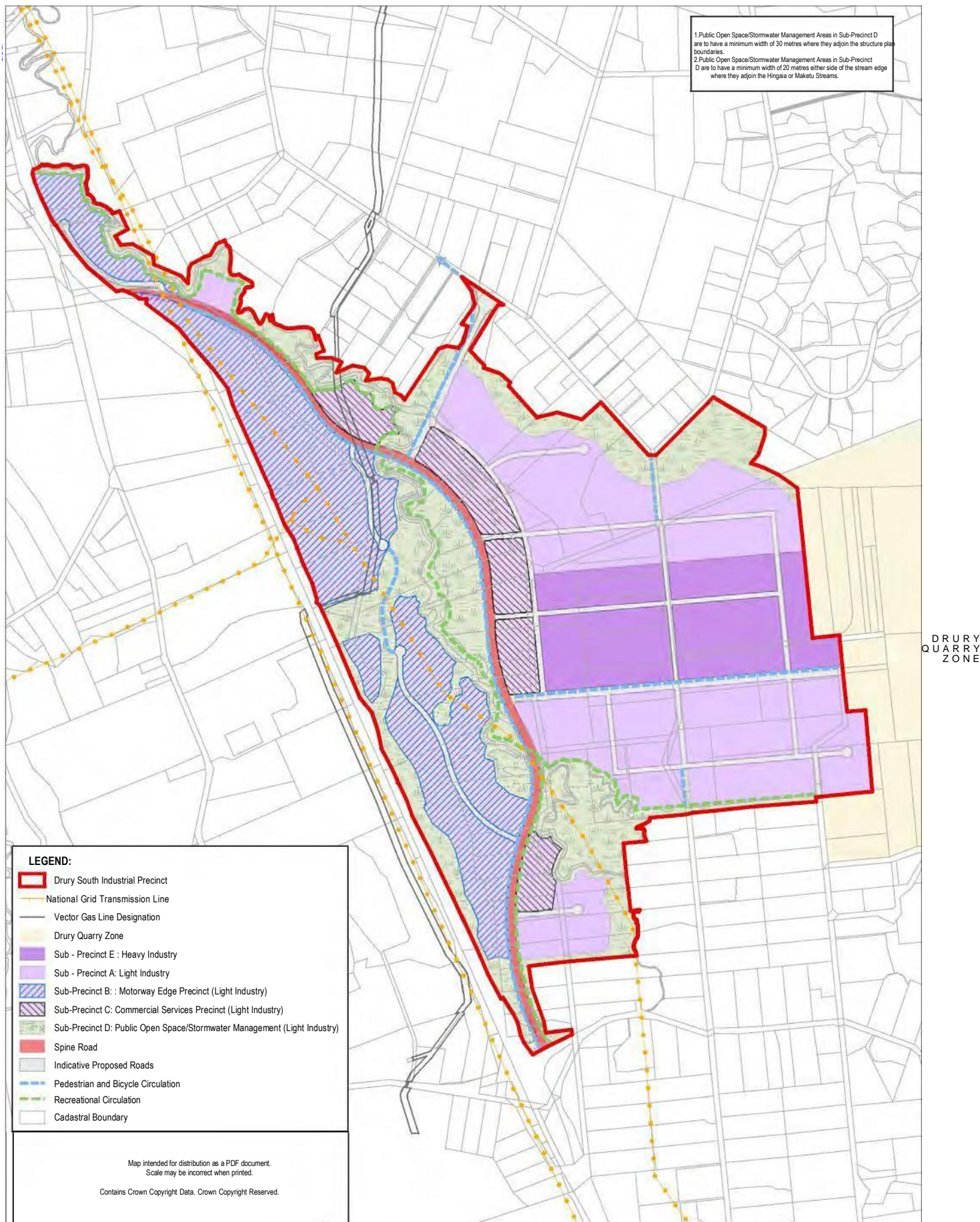


FIGURE1:DSIP Concept Plan - December 2010 (Source: BECA Ltd)

Drury South Industrial Precinct Stream and Wetland Rehabilitation Guidelines

2.0 Streams of the Project Area

2.1 Existing Streams and Proposed Mitigation

The Hingaia Stream flows through the DSIP area from south to north before continuing through the Drury Township to discharge to Drury Creek and eventually the Pahurehure Inlet to the Manukau Harbour. The Maketu Stream flows into the site at the south eastern corner of the DSIP area, and joins with the Hingaia Stream. The Roslyn Stream flows from the west under the State Highway and joins a further tributary to the Hingaia Stream. The remainder of streams traversing the site do not have officially recorded names, are smaller, highly modified, and in some cases have been piped.

An assessment of the existing surface water network and receiving environment has been carried out as part of the Hingaia Stream ICMP. This included a stream ecology study, "The Hingaia Catchment Environmental Assessment, Golder Associates, August 2009". This study included field survey of streams within the DSIP area with respect to water quality, and aquatic flora and fauna. Each stream potentially affected by the DSIP has been evaluated by the 'stream ecological valuation' method (SEV) in accordance with the technical publication ARC TP302:2008.

Existing watercourses and modified farm drains between Stevensons Quarry and SH1 will need to be filled or re-aligned to accommodate the DSIP earthworks footprint. This includes intermittent and permanent streams (refer Figure 2). Many of the existing overland flowpaths are farm drains, constructed for active drainage. All streams to be affected by the proposed DSIP have been heavily modified by farming or roading operations, including dredging, spraying, straightening, and ongoing impact by stock. In general all of these streams have low to moderate functional values for stream ecology.

Proposed mitigation for stream loss includes the restoration of riparian zones along the length of the Hingaia and Maketu Streams within the DSIP Area. This includes a 40m wide planted riparian buffer along all streams. In addition, streams to be re-aligned will have an appropriate stream profile and riparian planting to provide for sustainable stream function.



One of many existing intermittent farm drains showing evidence of earthworks, spraying and access by stock



LOCATION A (FIGURE 2) - The northern stream is directed along Quarry Road in a highly constrained and modified environment, with low ecological values



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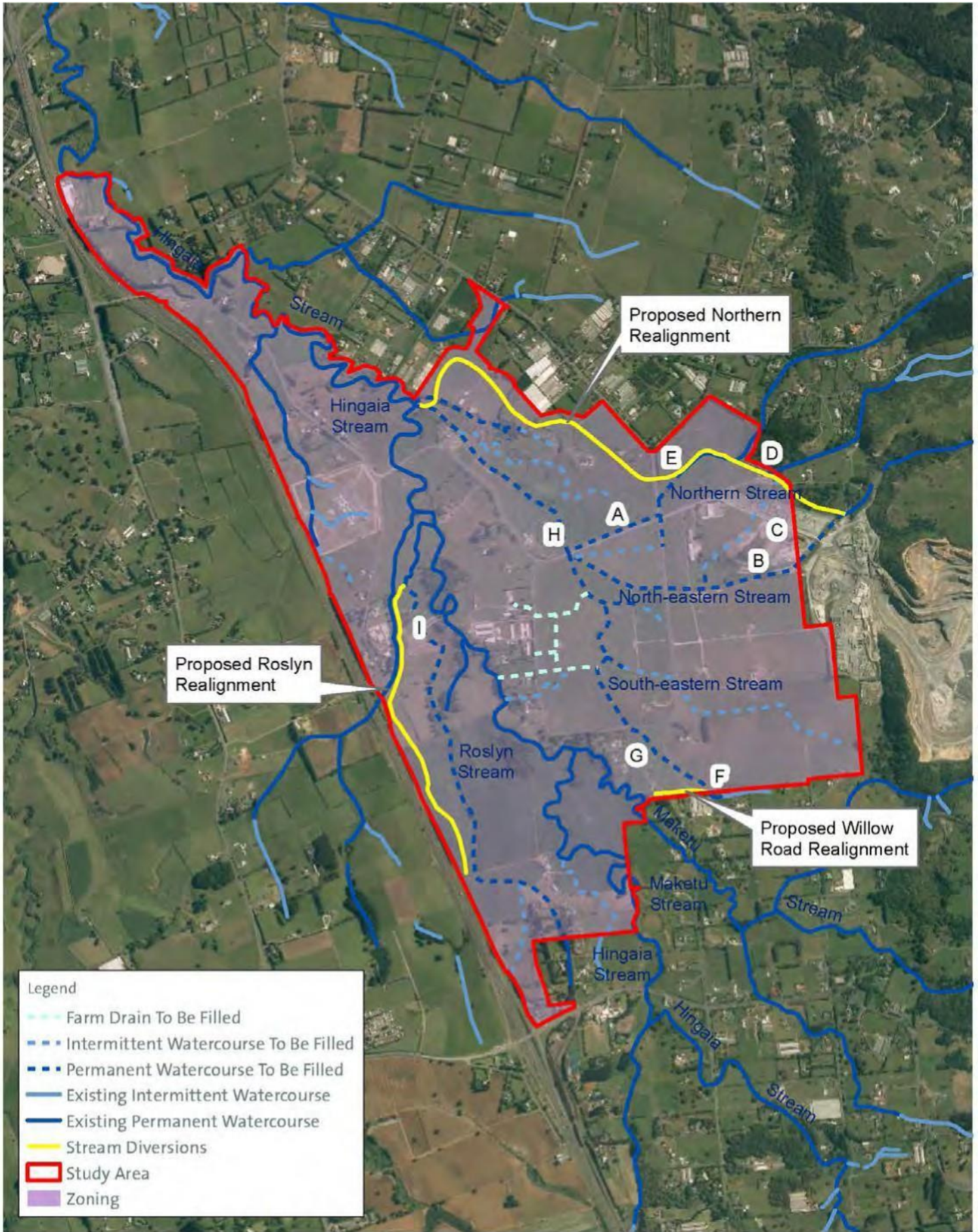


FIGURE2: DSIP Existing and Proposed Water Courses (Source: BECA Ltd)

**Drury South Industrial Precinct
Stream and Wetland Rehabilitation Guidelines**

2.1.1 Northern Streams

A tributary to the northeast of Stevenson Quarry is currently dammed in its headwaters for quarry operations before being reticulated to a channel (refer Figure 2, Location B below). The northeastern stream also receives stormwater from the quarry via adjacent treatment facilities (Location C). As part of the works to accommodate the DSIP, the upper catchment of this stream will be directed to the existing northern stream corridor (Location D).

This northern stream will be rehabilitated with an enhanced stream profile, and restored streambank and floodplain vegetation. The northern re-alignment will be 1,800m in length, comprising 1,500m of new channel and 300m of rehabilitated channel.



LOCATION B (FIG 2) - The north-eastern channel flowing through mixed exotic vegetation



LOCATION C (FIG 2) - The north-eastern channel directed alongside the quarry settlement ponds



LOCATION D (FIG 2) - The existing northern stream channel will be enhanced to receive there – aligned north-eastern tributary



LOCATION E (FIG 2) - The northern stream at the base of the northern escarpment will be rehabilitated as part of the proposed works

2.1.2 Southern Streams

The streams to be filled between the quarry and the Hingaia Stream are relatively small, with low gradient catchments that do not extend beyond the project area. A stream from the southeast of the site (refer Figure 2 and Photos Location F and G) conveys a number of intermittent stream tributaries from the centre of the project area, before joining with the existing northern stream and northeastern tributary previously mentioned (Location H). The southeastern stream and its tributaries have no vegetation cover beyond aquatic macrophytes and pasture species. These watercourses have been heavily modified by pastoral land use.



LOCATION F (FIG2)-The southeastern stream ponding behind a road culvert, 50 metres downstream of the proposed Willow Road Re-alignment



LOCATION G (FIG2)-The southeastern stream winds through the middle of the project area before combining with the northern stream

At least 230 metres of the headwaters of the southeastern stream will be retained, enhanced, and linked westward to the Maketu Stream via an 180m section of new channel (the Willow Road Realignment). This realignment will be planted with a riparian buffer. The remaining watercourses between the Hingaia Stream and quarry will be filled.

2.1.3 3 Eastern Streams

The Roslyn Stream (Location I) to the west of the Hingaia Stream will be re-aligned toward the SH1 corridor. The current stream is an open farm channel with low summer flows and dense growth of the exotic reed sweet grass (*Glyceria maxima*). The re-alignment will include filling of 450m of the upper reach of this stream, and formation of 1,600m of newly aligned channel. The realigned channel will be formed with an appropriate profile and rehabilitated for enhanced ecological function, with a 20 metre wide riparian corridor on both sides.



LOCATION H (FIG2)-The channel flowing to the Hingaia, containing the combined flows of the south-eastern, northern, and north-eastern streams following a rain event



LOCATION I (FIG2) – The Roslyn Stream (mid-ground), a farm channel with low flows, is to be realigned and rehabilitated

2.2 Existing Streambank Erosion

Streambank erosion has been identified in the ICMP studies as an existing issue at a number of locations. The Hingaia Stream is subject to extensive bank erosion, identified near the Quarry Road bridge on the Hingaia Stream and near Davies Road Bridge on the Maketu Stream.

Stormwater wetlands prior to the Hingaia channel are proposed for the DSIP in order to detain any additional flows that may adversely impact stream erosion (refer Section 3.5). Riparian vegetation is proposed along the Maketu and Hingaia and for all re-aligned stream channels to stabilise banks in the short term and reach a sustainable stream equilibrium in the long term.



A lack of riparian vegetation and active erosion along the Hingaia channel



The Maketu channel with erosion scour at the outside bank

2.3 Existing Aquatic Ecology

As part of the Hingaia Stream ICMP, Golder and Associates undertook SEV surveys of representative stream reaches (Golder 2009). Most of the stream environments in the project area had poor functional values due to extensive modification by agriculture.

The Hingaia ICMP surveyed thirteen sites within the DSIP Area. The best quality site was on the Maketu Stream, with higher scores across all functional categories. Another site, located on the lower Hingaia Stream, also scored relatively high. The best value site for the tributaries was located on the northeastern quarry stream. Full descriptions of functional ecology values can be found in the DSIP Assessment of Ecological Effects (Boffa Miskell 2010).

A total of 6 species of fish were recorded across the project area. Shortfin eels were the most common species, with occurrences of longfin eel, common bully, inanga and cran's bully. Five of the seven tributary sites had no fish, or mosquito fish only. The mosquito fish is an exotic pest fish classified as 'Unwanted' under Biosecurity legislation. These sites had very low fish community values.

Macroinvertebrate communities indicated low environmental quality at most sites. Except for the northeastern stream, tributary sites were characterised by worms, dipteran flies, leaches, and flatworms, suggesting nutrient enrichment and fine sediment. The Maketu site had a notable portion of mayflies (*Zephlebia* spp.), possibly due to better water quality (e.g. lower water temperature).

3.0: Stream and Wetland Rehabilitation

3.1 Rehabilitation Principles

The following rehabilitation principles are intended to inform the rehabilitation of streams and wetlands in the DSIP area. The principles have been prepared by an inter-disciplinary project team, including landscape architects, planners, ecologists, and engineers. Principles seek to enhance the landscape and ecology values of the riparian systems, while providing appropriate design responses for hydraulic flow and stormwater management.

3.1.1 Landscape Values

There is significant opportunity to improve the natural character values within the DSIP area. Stream and wetland environments will also be integrated within a wider open space network, providing opportunities for enhanced recreation and landscape buffers. The following landscape principles apply to proposed stream and wetland rehabilitation:

- Contribute to landscape amenity values
- Provide vegetated buffers to specific land use activities as appropriate
- Integrate stream and wetland rehabilitation with streetscape and open space planning
- Provide for visual and physical access to rehabilitated natural areas
- Optimise natural character values through the planting of representative native communities
- Provide a diversity of natural habitats and plant communities to achieve a variety of landscape and spatial character, and to demonstrate a legible sequence of habitat types.
- Structure riparian vegetation to screen/define undesirable views, offer broad views to wetland environments, and frame distant views to eastern Hunua hills from SH1
- Apply appropriate standards for CPTED and IPTED for public or maintenance access
- Place pedestrian bridges as necessary to ensure landscape connections, and investigate opportunities to use existing stream spans (infrastructure) for this function
- Identify opportunities to involve the community in stream restoration planting
- Liaise with relevant representatives and apply appropriate protocols for any archaeological sites or heritage elements associated with rehabilitation works
- Enhance Cultural Value through the re-establishment of indigenous species and investigating cultural harvest opportunities

3.1.2 Ecological Functions

Enhancing ecological functions within the DSIP area will require a combined response to aquatic and terrestrial environments, in order to restore target species, representative habitats, and ecological processes. The following ecology principles apply to stream and wetland rehabilitation:

- Plant stream margins, banks and floodplain areas to achieve not less than 40m total width (10m min width either side of stream corridor)
- Utilise species sourced from the Manukau Ecological District that are representative of natural vegetation communities as predicted by LENZ
- Restore representative in-stream heterogeneity, providing for pool, riffle, run and cascade sequences as appropriate.
- Provide fish passage to the extent possible, including bullies and inanga to within their natural range
- Preserve groundwater influence and inundation regimes for existing floodplain forest in proposed stream corridors
- Provide appropriate transitional edge vegetation to remnant mature vegetation
- Optimise site coalescence between remnant vegetation areas along the Hingaia Stream
- Provide for breeding populations of water and wetland birds species
- Provide for appropriate staging and construction techniques to avoid potential impacts to downstream environments and in-stream aquatic habitat.

3.1.3 Hydrology and Hydraulics (H&H)

Stream and wetland rehabilitation will provide opportunities for water quality treatment for the DSIP, and appropriate hydraulic flows, and hydrologic capacity for the catchment. The following H&H principles apply to the rehabilitation areas:

- Use biotechnical stream stabilisation to restore a sustainable streambank morphology
- Apply a cross sectional profile that resembles a natural staged channel, including a permanent flow channel, a stream channel based on a bankfull (approximate two year average recurrence interval (ARI)), and associated floodplains and berms to hold the one hundred year ARI.
- Provide for an appropriate stream meander patterns for the floodplain extent, longitudinal stream profile, flow velocities, and expected bankfull event.
- Provide for hydraulic connections and fish passage to stormwater wetlands wherever extended detention is not required
- Place all forebay devices for stormwater wetlands outside of the 5 year ARI flood extent.



FIGURE 3: DSIP Concept Planting plan. (Source Boffa Miskell and Source Design)

3.2 Open Space Network

The stream and wetland rehabilitation concepts (refer Figure 3) integrate with a broader open space network to optimize specific requirements for public use and access, to ensure diverse representative habitats, and to enhance environmental services for the DSIP.

The open space network reinforces existing features and patterns of the project area. The Hingaia Stream corridor will be reinforced by wide riparian margins of representative planting of early successional forest, as well as kahikatea floodplain forest. In the north a substantial open space buffer is set aside to reinforce the natural escarpment separating the DSIP basin from the Fitzgerald Road ridgeline. This occurs in conjunction with the northern stream realignment and associated riparian rehabilitation works. In the south west of the project area, riparian planting along there – aligned Roslyn stream will form a landscape buffer to SH1.

Larger remnants of existing vegetation will be coalesced along the Hingaia Stream. Planting in association with stormwater wetland areas will further buffer and augment the conservation values of these remnants.

3.3 Stream Rehabilitation

The land use change associated with the DSIP provides a significant opportunity to restore the Hingaia Stream, a low gradient moderate order stream, which retains remnant kahikatea floodplain forest. The project also provides the opportunity to coalesce modified drainage channels across the site into a larger order stream channel and floodplain, with supporting streambank and floodplain vegetation. Stream rehabilitation proposals are the result of an iterative design process between ecologists, landscape architects, and engineers to optimise the principles of these guidelines.

3.3.1 Hingaia Stream

The Hingaia Stream is a significant watercourse, with a wide, actively meandering channel across the floodplain. The stream currently runs through pastoral and agricultural land uses, and receives runoff from existing farm drains in the project area. The rehabilitation of the Hingaia stream is a key objective of the DSIP, with a 40 metre vegetated buffer proposed along the corridor where it corresponds with the project area. The width of the riparian buffer would extend to accommodate a stormwater treatment swale proposed along a northern reach, and stormwater wetlands proposed within the Hingaia Stream's extended floodplain.

The rehabilitation of the Hingaia Stream will include:

1. The coalescence of the floodplain forest remnants (including significant natural areas) already occurring within Hingaia floodplain
2. The restoration planting of streambanks along the length of the stream within the Project Area, with the potential for specific interventions to restore the stream profile at erosion hot spots
3. The planting of banks and proposed riparian buffers with simple lowland plant communities with the expectation that these communities will secede with time to include more diverse species
4. Planting of feature areas of flax-cabbage tree and broadleaf species on extended floodplains
5. Hydrological connections and fish passage to stormwater wetlands where practical

3.3.2 Stream Realignments

A number of farm drains and watercourses will be replaced with overland flow paths and reticulated networks associated with the proposed development. In addition, some headwaters will be realigned to newly formed watercourses along the boundaries of the DSIP area. The Hingaia and the Maketu Streams will not be altered beyond restoration activities.

A detailed description of the potential effects on stream ecology and the proposed mitigation measures is presented in Boffa Miskell, 2010, "Drury South Business Project Assessment of Ecological Effects Associated with the Proposed Plan Change". These guidelines inform the potential design response to optimise the flood management function of the rehabilitated streams, and their landscape and ecology values.

3.3.2.1 Design Parameters

The profile of each re-aligned stream channel is based on the cross-sectional area to accommodate a 1.5 to 2 year average recurrence interval (ARI). This flow is traditionally associated with a 'bank-full' event with active stream erosion and re-deposition.

The morphology of realigned streams is also based on their substrate, longitudinal gradient, and association with their floodplain. These functions can be used to prescribe channel sinuosity and width to depth ratio (Rosgen 1994). The bankfull width is used as a function to predict the stream meander wavelength and the radius of curvature for bends (Leopold 2003 and Thorne et al 2003). Refer to Figure 4 below.

Proposed stream morphology is intended to minimise friction within the channel to prevent active erosion, and also to provide a floodplain width that can accommodate the stream in equilibrium.

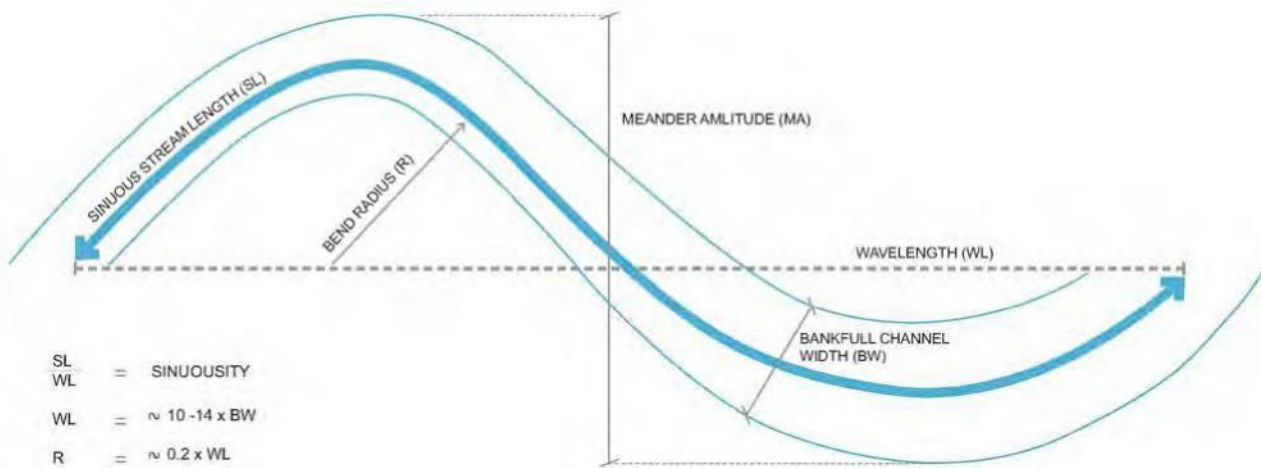


FIGURE 4: (above) The indicative relationship between channel width, and meander pattern

BELOW: A natural meander occurring as an overland flow event during flood conditions in the project area



3.3.2.2 Construction

Construction of the realigned channels is intended to occur off-line where possible, or to be staged to avoid potential impacts to downstream environments and in-stream aquatic habitat. Material selection is expected to be inert and where possible to be the equivalent of materials expected in these stream environments in their natural state.

It will be possible to utilize 'natural' materials through the application of biotechnical construction, which utilises a combination of persistent and biodegradable materials to retain channel shape until plants can establish. In general biotechnical responses for stream stabilisation can include:

- Stream profiling to respond to specific flow events
- Floodplains to dissipate flood velocities
- Stabilised bank toe and outside bends with hard materials such as rock, root vanes etc
- Directing flows and forming riffles through rock vanes
- Reinforcement of stream banks through planting established in erosion control blankets
- Stabilising the crown of banks with appropriate vegetation
- Provision of appropriate pool-riffle-run sequences.
- Grade control structures that accommodate fish passage
- Specific biotechnical treatments to accommodate 'nick' erosion points and stormwater outlets

3.3.2.3 Planting

Plant species selection will provide ecological functional values and representative plant communities. Stream planting objectives may include:

- Shade for temperature moderation
- Weed suppression
- Slope stabilization
- Tolerance to inundation
- Growth form to accommodate/obstruct views
- Stature to accommodate hydraulic flow rates
- Inherent aesthetic or spatial qualities of single plants or grouping of vegetation.

Based on LENZ predicted natural vegetation layers, representative plant communities for the DSIP area include lowland alluvial floodplain species, generally consisting of kahikatea forest. Other communities include tawa and pukatea, while matai, rimu and totara are generally restricted to better-drained soils. Titoki and puriri are locally abundant, with the potential for other broadleaf such as taraire, occurrence of kauri on the flanks of the basin, and occasional rimu and pukatea.

The project area extending into the flanks of the project basin and the hills beyond would be expected to support kauri, kahikatea, rimu and/or totara emergent over a diverse canopy dominated by varying mixtures of taraire and kohekohe. Other widespread tree species might include hinau, pukatea, rewarewa, and miro. Puriri is locally abundant at lower elevations, particularly on alluvial surfaces and tanekaha would be locally abundant, particularly on disturbed sites.

Where basalt occurs at the surface of the project area there may occur unique basalt forest environments, with an expected predominance of mahoe, karaka, kohekohe, totara, puriri, and titoki.

Until climax communities establish, it is expected that large areas of the riparian corridors will be planted with early succession and hardy species, such as riparian shrubs, kanuka, and totara to rapidly establish cover and to act as a nurse crop for later succession species. It is expected that certain low vegetation types will be applicable in places along the riparian corridors to accommodate hydraulic flows, to preserve viewshafts, and provide useable open space areas. Such planting may involve mown grass areas, sedge-rushlands, and flax-cabbage tree communities.

3.3.3 Northern Stream

A stream is proposed along the northern boundary of the DSIP area at the base of the northern escarpment. An existing section of this northern stream receives flows from three tributaries. A fourth tributary, previously described as the 'northeastern stream' (refer Section 2.1.1 and Figure 2) will also be directed to this channel from the quarry zone. The northern stream will accommodate the flow from these four tributaries, as well as localised catchments before discharging to the Hingaia Stream west of the proposed Link Road.

A typical northern stream cross section is shown in Figure 5, where a 'bankfull' channel represents the 1.5 year ARI event, and the associated floodplain conveys a 100 year ARI event with 500mm freeboard to the proposed development. Detailed design will provide pool-riffle and run sequences with adapted profiles. Biotechnical construction techniques will form narrower riffle sections, shallower point bars, and steeper outside bends.

The proposed sinuosity of the northern stream is relatively high, close to 1.5 times the wavelength (refer Figure 7). This is appropriate, based on the cross section of the bank full channel (with a low width to depth ratio) the longitudinal profile of the floodplain (a relatively flat lowland environment), and the general character of the bed materials and banks (being generally resistant but somewhat erodible).

The sinuosity is expected to reduce the longitudinal profile of the channel, reduce erosion of stream banks, provide strong connections to floodplain environments, and increase the overall length and diversity of stream habitat. Some stream reaches have constrained floodplains, where riffle sequences with local rock may be appropriate.

The northern re-alignment follows the northern boundary to combine stream environments with adjacent open space and to form a buffer to adjacent land use. The stream corridor and floodplain will be densely vegetated as indicated in figure 7. Planting will be dominated by early succession kanuka-totara forest. Kahikatea forest planting is proposed beside the Link Road entrance to act as a natural threshold at the DSIP entrance. Pockets of broadleaf forest are proposed to add diversity to the northern riparian corridor. Low areas of sedge-rushlands, grass areas, and flax-cabbage tree associations could provide views into the stream corridor from select locations.

3.3.4 Roslyn Stream Realignment

There is an existing water course running south to north through Roslyn Farm at the south west corner of the project area, which picks up flow from two culverts. Site assessment also revealed an existing spring feeding the stream. This stream will be realigned for part of its length whilst retaining links to existing spring and culvert in flows, the realigned corridor will provide a stronger vegetated element to adjacent to SH1 (refer Section 2.1.3 and Figure 2).

A typical Roslyn Stream diversion cross section is shown in Figure 6, where a dedicated 'bankfull' channel contains the 1.5 year ARI event, and the associated floodplain conveys a 100 year ARI event with 500mm freeboard to the proposed development. The Roslyn channel has a wide stream base with a lower depth to create a combined wetland/overland-flow-path appropriate for the small catchment, the low longitudinal gradient, and a strong groundwater influence.

Because the Roslyn channel is a lower energy environment than the northern re-alignment, with less likelihood of erosion, it is reasonable to expect a less sinuous character. Therefore a low sinuosity of 1.1 times the wavelength has been applied.

Planting along the Roslyn stream is proposed to be a combination of sedge-rushland planting and large swathes of flax-cabbage tree associations to create a wide wetland environment. Kanuka-totara forest may occur in existing knoll areas beside SH1 to frame views to the eastern Hunva foothills. Kanuka forest may continue along mid reaches of the stream and groups of kahikatea may occur alongside of a stormwater wetland to frame views from boardwalk locations and to shade permanent water features.

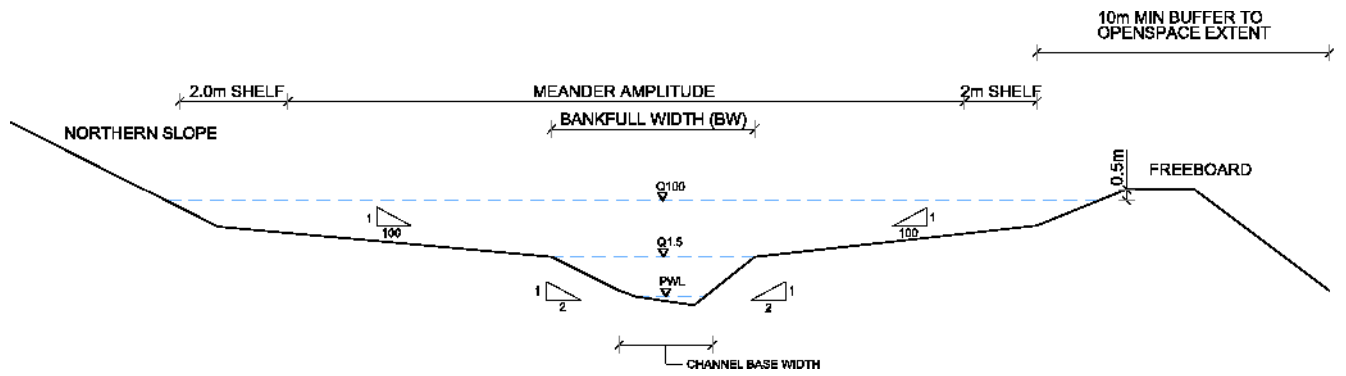


FIGURE 5: Typical section of the northern realignment in terms of flooding profiles

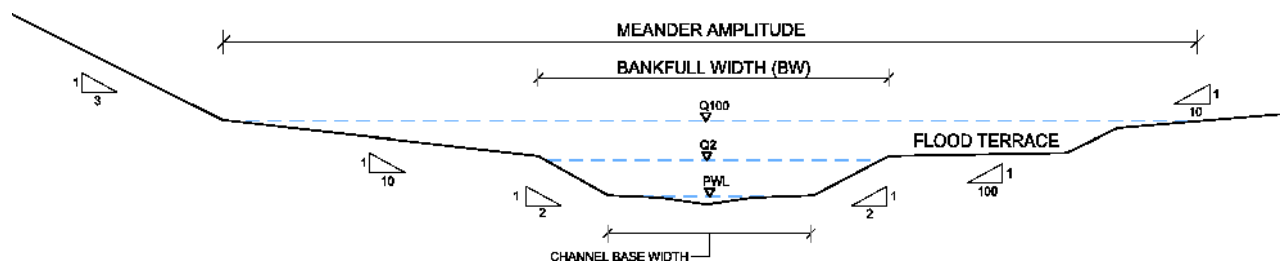


FIGURE6: Typical section of the Roslyn Stream realignment in terms of flooding profiles

3.3.5 Willow Road Realignment

There is a small roadside drain running east to west along Willow Road. The stream currently crosses Willow Road through a culvert near the intersection with Ramarama Road and continues north through the proposed DSIP area, eventually joining the Hingaia Stream. As discussed previously, this stream is heavily modified by pastoral land use and is largely unvegetated. It is proposed to divert this roadside drain directly west to the Maketu Stream along a vegetated riparian corridor that provides for a 1.5 year stream profile and accommodates a 100 year ARI event.

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FIGURE 7: Proposed DRAFT planting plan for the Northern Re-alignment



FIGURE 8: Proposed DRAFT planting plan for the Roslyn Re-alignment

3.4 Riparian Revegetation Guidelines

3.4.1 Introduction

Riparian revegetation is proposed for the main stems of the Hingaia and Maketu Streams. In addition the Northern and Roslyn realignments will also be restored with riparian vegetation (as depicted in Figures 7 – 8). The progressive planting of these realignments as well as the present grasslands alongside the Hingaia and Maketu Streams will ultimately provide a greater extent of riparian bush, increasing the habitat opportunities and potential carrying capacity of the DSIP area as well as providing vegetated riparian corridors within the local landscape.

The following revegetation guidelines outline an accepted industry-wide approach to large scale revegetation programmes that should inform the development of the final detailed planting plans for the DSIP riparian margins.

3.4.2 General Procedure

The general procedure for the proposed revegetation plantings should be as set out below.

- Slope stabilization
- Seed should be sourced as is available from the Manukau Ecological District. However, notwithstanding the desire to use only genetic material sourced from this specific area in the revegetation programme, additional source material from the wider Auckland Ecological Region may be used.
- Planting of species into existing pasture should require pre-planting repeat herbicide applications to reduce the potential for grasses to compete with the seedlings planted.
- Blanket spraying in close proximity to the existing native bush areas needs to be avoided or very carefully managed so as to avoid by-kill. Herbicide should be carefully applied at least 2 weeks before planting.
- Where the earth has been previously compacted the areas to be revegetated should have a single treatment of earth tilling, in order to loosen the sub-soil and encourage successful rooting.
- Planting should be undertaken in favourable conditions, at the earliest opportunity during the planting season, preferably over the autumn months.
- The revegetation plantings should be supplemented with weed and browsing pest control to allow good establishment of the planted material. Ongoing weed control should be carried out until canopy closure is sufficient to suppress weed growth. Browsing pest control may be required over the longer term in order to allow these vegetated areas to progress in good health. However, once pest numbers are reduced to a minimal level, continued control should require a reduced effort.
- All planting and maintenance operations should be carried out by an approved contractor, experienced in native revegetation planting programmes.

3.4.3 Plant Material

- The plant material needs to be of the specified size and condition. All plants will have well developed root systems and a well-shaped stem and head free of disfigurements or injury, pests and disease.
- The plant material should have been sufficiently “hardened off” at the nursery prior to being passed on to the planting contractors.

3.4.3 Planting Methods

- Planting should follow an approved planting plan, indicating set-out, species, size, density and spacing.
- A dual system of planting is proposed, involving the establishment of a nurse crop of hardy pioneer species such as kanuka. These will be enriched with appropriate native tree species when the nurse crop has sufficiently established, which should be at approximately 3 years age.
- Nurse plant stock should be set out at appropriate spacing and percentages, and according to each species niche preferences.
- Once a good cover of the nurse plantings is established, enrichment plantings should be implemented. Enrichment species trees should be distributed (at wider centres) amongst nurse planting and according to site preferences in copses/groves spread further apart in subsequent seasons.
- The enrichment plantings may include the pruning or removal of modest numbers of nurse shrubs in order to create the necessary light wells.
- Plants should be set out and appropriately spaced in an informal manner avoiding straightlines and regular geometric patterns, while ensuring an even cover across the planting area. Species should be distributed at appropriate percentages and according to each species niche preferences, microclimate and ground conditions.
- Planting holes should be dug out to spade depth and seedlings located next to pre-dug holes in the correct species mix. Actual planting should be by hand only. The base of the planting hole should be filled evenly without compaction to a level where the top of the plant root ball is level with surrounding ground. The plant should be plumb and orientated so that the weathered face of the main stem faces north. When the backfilling is complete the plant should be gently firmed in. All plants should be encouraged to grow to maturity as naturally as possible to achieve their desired character and form, through sound management practices including weeding, and other accepted horticultural practises.
- Slow release fertiliser should be used within the proposed planting operation, with at least one tablet of 20-4-4(N-P-K) that is designed to last at least 12 months (preferably 24 months). The controlled release fertilizer tablets need to be inserted into each planting hole approximately half way up the back fill material, ensuring placement of the fertilizer on the upper slope side of each plant
- Approved chipped tree mulch or post-peeling bark mulch could be spread around the base of individual plants used in the mass revegetation plantings, but only in areas outside of the floodplain (to avoid mulch being washed away in floods).

3.5 Stormwater Management

Stormwater design is discussed in greater detail in the DSIP Infrastructure Assessment Report (BECA 2010). The general approach is to utilize the large floodplains associated with the Hingaia Stream to accommodate stormwater wetlands. Each wetland would include a forebay and accommodate the water quality volume. There is also allowance for extended detention to limit potential effects of stormwater volumes on downstream erosion.

Wetlands have been placed above the stream invert to not unduly effect ground water levels, and forebays have been placed above the 5 year flooding event to prevent re-suspension of contaminants stored in these areas.

Safety considerations have allowed for benching around the perimeter of each wetland and a reverse bench along each embankment. Appropriate maintenance access will be provided to forebays and to the base of wetlands for restorative maintenance if required.

Biotechnical approaches similar to those described for stream realignment works will be considered during detailed design, with specific consideration for the formation of access and outlets to the Hingaia, with fish passage possible to wetlands that are not required to detain extended detention volumes.

Planting would be exclusively sedges, rushes, and small riparian shrubs around wetlands for water quality treatment, to stabilize the wetland profile, and to allow ease of maintenance. Trees and taller shrubs would be expected at the edges of wetlands, at their interface with stream environments, and around the northern edges of forebays for shade.

3.5.1 Stormwater Wetland One

Stormwater Wetland One has been designed as a landscape amenity feature through an iterative design process between landscape architects, engineers, and ecologists. This has driven the design of forebays, the shape and extent of the permanent pools and wetland planting, the integration of multiple public access structures, and a pedestrian circulation path that crosses the Hingaia stream corridor (refer figure 9). Wetland One has been tiered to suit the local topography and the bathymetric design directs flows along three separate treatment paths.

3.5.2 Northern Swale

A swale is proposed for stormwater management along the western edge of the lower Hingaia Stream. The total width of the swale and vegetated buffer contributes an additional 25m of vegetation to the riparian buffer. The length of swale is significantly longer than required for water quality and is expected to exceed regulatory expectations at the entry point to the Hingaia.

Planting will be selected with the ability to sustain temporary ponding and saturated soils, and will allow appropriate hydraulic flows and residence time.



FIGURE 9: Proposed Planting Plan for Stormwater Wetland One

4.0: Summary

The DSIP area is traversed by the main stems of the Hingaia and Markeu Streams and several other permanent and intermittent streams and farm drains. Watercourses other than the Hingaia and Maketu Streams will be modified or re-aligned in order to facilitate the proposed land use. Stormwater management will also lead to the creation of additional naturalised wetland areas in association with the Hingaia Stream corridor.

All streams affected by the proposed DSIP have been previously modified by farming or roading operations, including dredging, spraying, straightening, and ongoing impact by stock. Stream bank erosion has been identified in the Hingaia ICMF as an existing issue at a number of locations. In general all of these streams have low to moderate functional values for stream ecology. Five of the seven tributaries to the Hingaia were observed as having very low to absent fish community values.

The DSIP Stream and Wetland Rehabilitation Guidelines establish a set of principles to enhance the landscape and ecology values of riparian systems in the DSIP area. The document is intended to provide technical input to the planning process and to provide guidance to ongoing more detailed design and implementation. The guidelines apply an inter-disciplinary approach to riparian rehabilitation.

Stream rehabilitation is proposed for the length of the Hingaia and Maketu Streams within the DSIP Area, including a 40m wide planted riparian buffer along the streams. In addition, streams to be realigned will have appropriate stream profiles and riparian planting to provide for sustainable stream function. Riparian rehabilitation will contribute to a wider open space network and enhanced natural character.

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