WAINGAWA STRUCTURE PLAN

REPORT TO THE CARTERTON DISTRICT COUNCIL

December 2008

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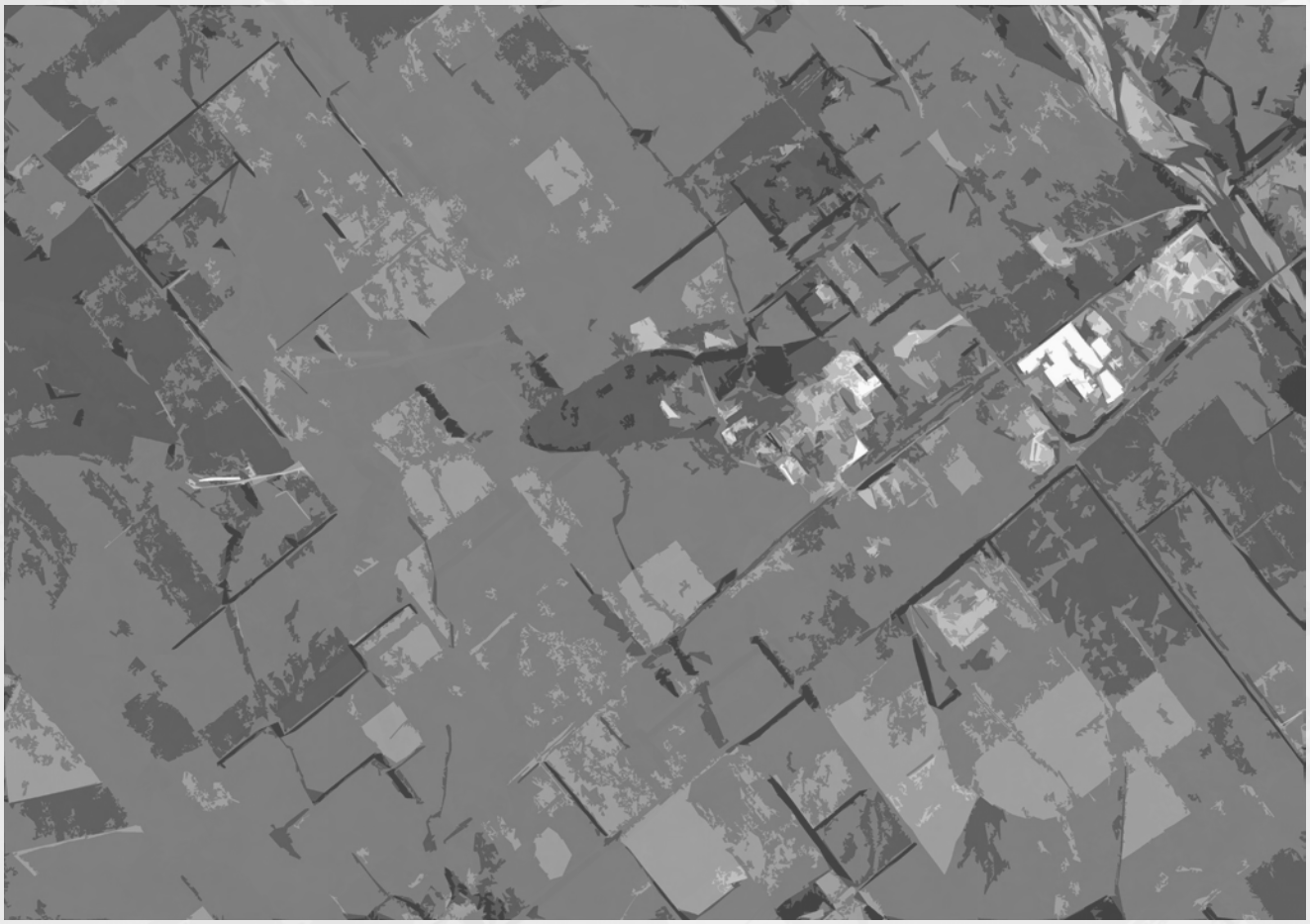

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Report to the Carterton District Council

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1 Introduction

This report accompanies the proposed Structure Plan for the Waingawa Industrial Area, an area zoned for existing and future industrial activities near the northern boundary of Carterton District, located off State Highway 2 to the south of the Waingawa River.

The Structure Plan proposes a spatial pattern for the future growth and development of the Waingawa Industrial Area in a manner that recognises the area's environmental qualities and its context within a rural environment and on a high profile location, as well as the potential infrastructural and access requirements of industry in the location.

The objective of the Structure Plan is to provide an overall development framework for directing the future expansion of the Waingawa Industrial Area in an integrated and coordinated manner that provides flexibility for a range of industrial activities to be accommodated. The reason for taking a structured approach is to ensure that a coordinated approach can be taken in providing for the staged growth of the area so that the development of one part does not frustrate the development of other parts, and that, in the long term, the final form and functioning of the Waingawa Industrial Area is efficient and environmentally sustainable.

In particular, the Structure Plan seeks to ensure that:

- The network of connections within the Waingawa Industrial Area for vehicles, cycles and pedestrians, and the links to the District's transportation network, is efficiently and safely developed
- Services can be efficiently established to meet the likely long term needs of industry within the area
- The area's natural assets can be adequately recognised, protected and enhanced through greenways, buffer areas and planting
- The design and form of buildings and associated facilities recognise and respond to their context
- Stormwater from buildings and sealed areas can be disposed through efficient and environmentally acceptable methods, and
- The overall development recognises its landscape context and rural neighbours through an appropriate form, location and pattern of built development and planting.

The Structure Plan was also prepared to allow for a comprehensive and integrated evaluation of the servicing and roading requirements for the Waingawa Industrial Area, and to thereby determine an appropriate policy for recovering investment costs in roading and services incurred by local authorities.

This Structure Plan is intended to replace the Structure Plan that is currently contained within the Proposed Combined Wairarapa District Plan, which will have to be introduced through a Variation/Plan Change. The Structure Plan will need to be accompanied by some changes to the rules and other provisions relating to subdivision, development and use of the Waingawa Industrial Area. It will also be supported by a Design Guide to assist in promoting good design outcomes in accordance with the principles and goals of the Structure Plan.

2 Background

2.1 Existing Industrial Activities

The "Waingawa Industrial Area" refers to the area zoned for industrial development and activities. The area has historically long been the location of major primary industries, notably the Freezing Works, which was a major part of the Wairarapa's economy for a long time. Taking advantage of the area's strategic location and access to railway and road network, other industrial activities also located in the vicinity.

The Wairarapa South County Council in its District Scheme made provision for industrial zoning in this area, encompassing the freezing works area, Masterton Saleyards, Farm Meats, Burlings Transport, and Masterton Metal Co (which is the site now occupied by Oldfields).

More recently the development of the Juken Nissho paper plant has ensured that this area is the Wairarapa's key industrial focal point. While the closure of the Freezing Works was a major loss, it has also presented a number of opportunities in terms of the use of its land for other industrial activities, as demonstrated by the establishment of Kiwi Lumber on part of the site. The operative Carterton District Plan continued to provide for the industrial zoning of this area.

The strategic advantages of the area continue to make this an obvious choice for industrial development, confirmed by recent subdivisions in the area, and by regular enquiries made to the Council.

The existing industrial activities are currently serviced by the Masterton District Council in terms of water supply and wastewater disposal (using the State Highway 2 Bridge over the Waingawa River for carrying pipes).

2.2 Why Expand Waingawa?

There are a number of reasons for expanding the industrial zoning of the Waingawa Industrial Area.

First, there is little capacity within the existing urban industrial areas in the Wairarapa for much further development, particularly those activities requiring large sites or sites well separated from residential neighbourhoods. Currently, most of the undeveloped industrially zoned land is located within the Masterton urban area, which is currently being developed with smaller-type industry or is anticipated to be developed in the foreseeable future. While there are some undeveloped or under-utilised blocks, these are relatively limited and small-scale in nature.

Second, under the Proposed Combined Wairarapa District Plan, an area of rural land was zoned from industrial purposes, but this area is likely to be developed for activities that are more commercial and servicing in nature rather than processing or other large-scale activities.

Third, while other areas within rural Wairarapa may be considered for industrial development, it is generally inappropriate to establish new isolated pockets of industry, but to consolidate/expand existing areas. It is good planning practice to locate large-scale industrial development in close proximity to, rather than within or adjoining urban areas – close enough to the area in which employees will live and to servicing

facilities, but not to be within the immediate vicinity of any residential areas. Such sites should also have readily available connections to water supply, wastewater disposal services and key transport networks.

The Waingawa Industrial Area is a logical place for further expansion as it has the following advantages –

- It is located within close proximity to Masterton and Carterton, for workforce and servicing requirements (noting these are the largest urban areas, from where most employees would commute)
- It is strategically located within the Wairarapa, on the railway line (with some existing siding lines) and State Highway 2, from which the land can be accessed safely through the upgraded intersection of Norfolk Road and State Highway 2
- It would avoid the need for additional traffic through new areas
- The area already has a profile as an industrial location, and presently contains a number of large scale industrial activities
- It can be readily serviced for water supply and wastewater disposal by Masterton District Council (the costs of any necessary increase in capacity would be recovered through development charges)
- The area is generally flat, with no significant development constraints, and with ample capacity for appropriate screening and buffering

No other area within the Wairarapa has this combined set of advantages.

2.3 The Wellington Regional Strategy

The Waingawa Industrial Area has been recognised by the Wellington Regional Strategy (WRS) as a component to promoting future business growth within the Region, by, among other actions, providing an adequate and adaptable supply of land for commercial and industrial use which has good transport links (for distribution and employment access) and a ready supply of labour and services.

The WRS also seeks to identify additional industrial land partly in response to a diminishing supply of available industrial land in the main urban areas, where economic pressures have seen the loss of historic industrial activities replaced by residential and commercial uses.

The WRS has identified the Waingawa Industrial Area as one of the Region's Focus Areas for action in terms of providing for the region's economic growth:

> *This is a strategically important employment site for the Wairarapa and has potential as an inland port/ cargo hub, especially in relation to forestry, food and beverages.* [Ref: http://www.wrs.govt.nz/docs/latest_updates/WRS_Consultation_Doc.pdf]

2.4 Proposed Extent of Rezoning at Waingawa

It is difficult to accurately determine the likely need for future industrial development over the next 20-30 years. However, sufficient land needs to be available to have an industrial landbank available to immediately provide for development opportunities as they arise. Furthermore, the extent and location of the landbank has to also take

account of landowners' expectations, as well as environmental, servicing and roading constraints.

Currently, under the operative Carterton District Plan, there is approximately 77 hectares of industrially zoned land at Waingawa, much of which is already developed for industrial purposes (note, Ballance Fertiliser on the corner of State Highway 2 and Cornwall Road is not zoned Industrial). It is proposed to add about 119 hectares of land into this zoning, bringing the total amount of industrially zoned land to approximately 196 hectares. This is a gross total, as it includes land required for roading/rail, separation setbacks for new buildings, and for screen bunding and planting purposes.

The total proposed additional land has been reduced slightly from that as notified earlier, as the zoning has been retracted from the northwestern side due to the presence of the Masterton Faultline, which cuts through this part of the area.

The actual extent of the proposed expansion has been dictated by a number of factors.

- The need to avoid crossing over the State Highway, which would introduce new traffic onto Cornwall Road, and introduce new safety issues at the intersection with State Highway 2;
- The need to avoid flood hazard areas along the margins of the Waingawa River;
- To limit further expansion northwards along Norfolk Road which is relatively intensely developed for rural lifestyle purposes;
- To include land that can be readily accessed by an extension of existing roads, without new crossing points over the railway line or new access points onto the State Highway (for example, it is not proposed to extend the area southwards to include the Ballance depot area because of intersection safety issues relating to Cornwall Road).

As a consequence of these factors, the shape of the expanded industrial area is somewhat elongated along State Highway 2. This shape, however, is not a significant difficulty as the land has sufficient depth to still provide an effective pattern of development through an internal roading layout that can avoid new access points.

The land around the edge of the zone has been zoned Rural (Special), which limits the minimum size of new lots to 4ha to prevent too intensive rural-residential development occurring in the immediate vicinity. This limitation is intended to reduce the potential for reverse sensitivity issues to arise in the future, due to a large number of residences located in close proximity to the Waingawa Industrial Area. In practical terms, the rezoning would not be a major reduction in subdivision potential as the minimum lot area is currently 3ha under the operative Carterton District Plan.

2.5 Form and Rate of Development

At this stage, the final rate and form of any industrial development of this additional industrial zoned land at Waingawa is uncertain. Based on the current pattern of development, it is possible that a range of new industrial sites could be formed, from about 10 new large sites through to 50 sites of mixed sizes.

The nature of future industrial development in the area is also unknown – they could range, for example, from warehousing and timber storage through to timber and food processing.

It is mostly likely that the activities would either be of a light servicing nature (for example, goods storage and distribution) or resource processing based on the resources of the Wairarapa: for example, timber processing or winemaking (such as the Montana plant at Blenheim). In the long-term, it is likely to be a mix of industries, most of which will not be "heavy" industry as such.

It is unlikely that the whole expanded zoning would be developed for industrial purposes in the immediate future, and is more likely to be staged over many years, as demand and opportunities arise. In the meantime, the rezoning will not affect the existing farming uses of the land, which can carry on indefinitely.

2.6 Why the Need for a Revised Structure Plan?

It is acknowledged that the expansion of the Waingawa Industrial Area will change the character of the immediate area, with consequential effects on adjoining landowners, including changes to their outlook and amenity values. Through the consultation process undertaken for the Proposed Combined Wairarapa District Plan, when a Draft non-statutory Plan was released for comments and community input, issues relating to the proposed expansion of the Waingawa Industrial Area were canvassed and a Structure Plan developed to address these issues, with further requirements imposed on future subdivision and industrial development through rules in the Proposed District Plan.

The main incentive for reviewing the Structure Plan has been the need to investigate and determine the servicing and transportation requirements of the Waingawa Industrial Area in order to establish some firm parameters for the provision of infrastructure and services, the estimated costs of such facilities and a process for recovering investment costs. This evaluation could not occur without being more definitive about the internal roading layout and its connections with the roading network, potential volumes of stormwater likely to be generated and the consequent need to collect and dispose of such water, and the required capacity of the network for water supply and wastewater disposal. For example, as one part of the Waingawa Industrial Area is developed, its roading and servicing capacity should provide for further growth on adjoining land.

This investigation, however, cannot be undertaken in isolation of other aspects, as an integrated approach to the form and functioning of the area is required to achieve more sustainable outcomes. For example, advantages can be taken of integrated approaches to addressing the layout and form of development, such as the use of swales and greenways for disposing stormwater.

Therefore a comprehensive review and analysis of the Waingawa Industrial Area was undertaken to ensure all the issues, constraints, opportunities and requirements were assessed and options for addressing these were considered on an integrated basis.

2.7 Key Terms

"Structure Plan" refers to a study and spatial plan for an area, usually where the land is held under multiple ownership, to provide a common integrated framework for the future development and use of that land.

"Industry/industrial" refers to activities that process, manufactures or stores products, but may also extend to some other business activities that require large site areas, good transport links such as distribution activities. It does not include retail activities, except as minor components to an industrial activity or to service the immediate needs of an area (for example, a café).

"Variation" refers to a change to a Proposed District Plan which has yet to be approved and made operative.

3 Planning Principles

The review of the Structure Plan was based on the following set of planning principles that sought to establish an integrated approach to finding an appropriate framework for promoting the development of the Waingawa Industrial Area to proceed in a sustainable way (economically, socially and environmentally).

1. Provide flexible opportunities for industrial development

The need to ensure that the form and functioning of the Structure Plan allows for a wide range of form of industrial activities to be established

2. To provide coordinated servicing and infrastructure

To ensure that the staged development of the area does not impede the efficient development of a coordinated system of servicing and infrastructure

3. To work with the character and pattern of the land

To work with the existing character and pattern of the land, including its environs, to integrate it within the landscape and through the use of environmental design, such as stormwater disposal

4. To protect and enhance natural assets

To identify and protect as appropriate the key natural assets of the area, including the nationally important wetland on the northern edge, the stream emanating from it, and the existing mature trees; and to promote ways to the enhance these assets

5. To promote connectivity and access

To ensure that all modes of transport are appropriately and safely accommodated through an efficient layout and design, with efficient and safe external connections and a high level of interconnectivity within the area

6. To promote a cohesive identity

To encourage a form of development that provides a sense of identity

7. To protect adjoining properties

To avoid or mitigate the potential adverse effects on adjacent properties arising from the development and use of the area, particularly in terms of amenity values and traffic

8. To promote intergenerational equity

To ensure that the infrastructure and servicing is provided in a way that does not unduly penalise present or future stakeholders

4 Opportunities & Constraints

The development of the expanded Waingawa Industrial Area presents a range of opportunities and constraints to be taken into account in the development of the Structure Plan.

4.1 Land Capacity/Characteristics

The expanded zoning does provide significant capacity for on-going industrial development and use, not only in terms of greenfields development but also in the intensification of some of the existing activities in the area.

The land presents no significant topographical or geotechnical difficulties for development, having a gentle gradient. The exception is in the western corner, where there is a small terrace (of 1-2m height), that creates a triangular area of land that is at a lower elevation. In addition there is a small natural drain running along the toe of this terrace, flowing westwards towards a culvert under Wiltons Road. To provide for the use of this area of land, some recognition should be given to the benefit of realigning the stream channel away from the terrace to run within the proposed buffer strip along Wiltons Road. Such realignment would also allow the stream margins to be planted (as part of a planted buffer) to enhance the stream's ecological values.

4.2 Connectivity

Currently the area is well serviced by the road network, via Norfolk Road and State Highway 2, providing access to Masterton and Carterton, and to the wider region.

Two roads currently serve the area: Waingawa Road which accesses onto Norfolk Road, and through onto State Highway 2, and Norman Avenue, a narrower road accessing directly onto State Highway 2. In terms of its use for serving an expanded Waingawa Industrial Area, Norman Avenue has a number of constraints: its relatively narrow width, its crossing of the railway line, and its less than ideal intersection with State Highway 2. However, the avenue of mature Bartram's Oaks along each side of the road presents an opportunity to provide a high level of amenity in this part of the Waingawa Industrial Area. These trees are recognised as protected trees within the District Plan.

Ideally, the Waingawa Industrial Area should have other road linkages but is constrained by the need to avoid any further access points onto State Highway 2. There are also limitations presented by any potential access onto Wiltons Road, which is relatively narrow, has intersection limitations with State Highway 2, and services rural lifestyle properties.

In terms of Norfolk Road, its intersection with State Highway 2 has capacity limitations, particularly at peak times, and would require upgrading to service any significant increase in industrial development in the Waingawa Industrial Area – at the least, a roundabout would be needed at the State Highway 2/Norfolk/East Taratahi Road intersection, and a speed limit reduction between this intersection and the Masterton urban area.

The area has the railway line linking it with Wellington and to Hawke's Bay and the Manawatu. The former sidings used by the Freezing works have largely been removed, but potentially the railway could be used for distribution purposes. This potential needs to be recognised and provided for, such as by avoiding aligning roads along the edge of the railway line.

The alignment of the railway across the length of the Waingawa Industrial Area also raises some constraints in terms of internal connectivity. Any additional railway crossings should be avoided (and may be opposed by On Track), which would result in the area being serviced by two elongated road networks using a single outlet (via Waingawa Road onto Norfolk Road), with the majority of the area's traffic having to use the existing Norman Avenue crossing of the railway to access Waingawa Road.

Another constraint is the intersection of Waingawa Road and Norman Avenue in immediate proximity to the Norman Avenue railway crossing, which would cause operational and safety issues, particularly as traffic volumes increase on these two roads. This intersection, and that of Waingawa and Norfolk Road, should ideally be located at a reasonable distance from the railway crossing.

4.3 Landscape

The landscape of the Waingawa Industrial Area and its immediate environs is typical of the Wairarapa Plains with slopes gently rising towards the Tararua Ranges, with variations due to old river channels, fault movement, and stream erosion. Generally this part of the Wairarapa Plains is open pastoral land, with shelterbelts and occasional remnant indigenous forest blocks; much of the farmed part of the Waingawa Industrial Area reflects this landscape character. In addition, there are areas of rural lifestyle blocks in the vicinity, such as those along Norfolk Road, which are typically well planted.

The existing industrial activities at Waingawa have created a semi-urban environment at the northern end of the Waingawa Industrial Area. To some degree, this industrial area creates a transition for travellers along State Highway 2 between the open rural landscape south of the Waingawa River and the urban area of Masterton north of the River.

The current rural landscape pattern presents a constraint for the further development of the Waingawa Industrial Area, in that its openness and exposure to State Highway 2 and many adjoining properties would make further development visible, if not obtrusive, particularly given the utilitarian nature of most industrial buildings.

However, there are several opportunities available to address this constraint. First the large area of undeveloped open farmland provides the ability for effective buffering to be established around the perimeter, using planting for screening purposes that would greatly reduce the visibility of development. The retention of existing shelterbelts along the edges would further facilitate this process.

In addition, those existing shelterbelts within the Waingawa Industrial Area provide an opportunity to help provide some integration into the broader landscape as well as to mitigate the visual effects of large building forms.

The presence of a permanently flowing stream, Waingawa Stream, provides an opportunity to establish a centrally located 'greenway', a belt of open space containing the stream providing the ability for riparian and amenity planting. The presence of the

Waingawa Wetland at the northern edge also presents an opportunity for the establishment of a landscape asset.

4.4 Traffic

Potentially, a fully developed industrial area of this size could have a significant traffic impact on State Highway 2 with the newly zoned land generating an additional 30,000 trips per day (total in and out) based on a unit traffic generation estimate of 270 trips per day per hectare. Patterns of traffic movement from the industrial area are likely to be broadly similar to those which occur at present with the vast majority of these trips being between the industrial zone and areas to the north including Masterton, although some would be internal to the zone and other trips (perhaps 20%) would be to or from the south.

With this level of generation, and assuming some general background increase traffic flow increase on State Highway 2, the capacity of the Waingawa River Bridge would be reached when traffic flows are around 30,000 to 40,000 vpd. At such levels, during peak periods, it is expected there would be significant traffic congestion across the bridge and the highway would provide a low level of service. As a comparison, at such traffic volumes, the level of service provided by the bridge would be broadly similar to that currently provided by the Mt Victoria Tunnel in Wellington, which has only single traffic lanes and currently carries around 36,000 vpd.

However, it is unclear whether this level of industrial development would occur in the foreseeable future. For these traffic volumes to be generated, there would need to be a massive increase in employment and population within and around Masterton. Recent New Zealand Census population figures for Masterton are shown in the table below, with the population projected out to 2026. Based on medium growth predictions the population in Masterton would essentially remain static over the next twenty years. This stability indicates that, based on population growth alone, significant industrial growth of this scale is unlikely to occur. Accordingly, the forecasts of traffic volumes used in this assessment have to be regarded as long term in nature, based on the opportunities provided by an expanded industrial zoning at Waingawa.

Table 1: Population of Masterton District 1991 to 2026

Year	District Population	Urban Population*
1991	22,600	18,407
1996	22,800	18,069
2001	23,200	17,793
2006	22,623	17,673
2011	*23,100*	*17,673*
2016	*22,800*	*17,673*
2021	*22,500*	*17,673*
2026	*22,100*	*17,673*

** Based on static urban growth from 2006*

The roading assessment for the Waingawa Industrial Area examined a number of options for providing access to the industrial area from State Highway 2. Some options considered development of both the Wiltons Road and Norfolk Road intersections,

including an option which provided a roundabout at both locations. However, given the likely flow patterns, with most movements being to and from Masterton, it would be more cost effective and efficient to create Norfolk Road as the primary access to the industrial area and to spend comparatively little on the Wiltons Road intersection. Upgrading the Wiltons Road intersection for access and egress would not greatly reduce flow through the Norfolk Road intersection and so it is unlikely that the amount of expenditure that would be required at this intersection could be reduced. Instead, it would be preferable to concentrate on upgrading the Norfolk Road intersection, and either restrict access to Wiltons Road from the industrial area or convert the intersection with State Highway 2 to allowing left in left out movement only. For the purposes of this assessment, no access onto Wiltons Road was proposed.

From Transit's perspective, this strategy is also likely to be preferable, as construction of two major intersections on State Highway 2 would reduce the level of service provided by State Highway 2 to a far greater extent than providing one major intersection at Norfolk Road.

A secondary benefit of upgrading the Norfolk Road intersection with State Highway 2 is that it would provide a better demarcation between the open road speed environment on State Highway 2 south of this point, with the urbanised and heavier trafficked road north of this point as the road enters Masterton. The upgrade of the Norfolk Road/State Highway 2 intersection would require the design and construction of a roundabout that would cater for the flows from a fully developed Waingawa Industrial Area. This has been costed by the New Zealand Transport Agency (NZTA) up to Preliminary Feasibility Report (PFR) stage as having an expected estimate of $1,349,807 with a 95th percentile estimate of $1,929,010. For the purposes of this report, we have assumed that 50% of the higher figure would be required to be funded from development contributions.

In the long term, however, the roading assessment suggests that the roundabout at the Norfolk Road intersection will approach the limits of a well designed two lane roundabout and therefore another access point will be desirable. Given that the greatest volume of traffic will be to and from Masterton, the current proposal is that, ultimately, a new Waingawa River crossing may be needed, linking Norfolk Road (north of the railway crossing) with Ngaumutawa Road (the Masterton Heavy Vehicle Bypass). This option due to the above mentioned uncertainties has not been costed.

The road network within the site would need to be developed to cater for the high flows predicted. Ultimately, for the first 500m (approximately) west of State Highway 2, Norfolk Road would need to provide a dual lane carriageway and would need to be an Arterial Road. In addition, major intersections would need to be constructed on Norfolk Road, both at the existing Waingawa Road intersection and also, in the longer term, at the proposed intersection with a new road located around 350m to the west of the Wairarapa Railway Line. In this respect, although it is recommended that Waingawa Road should be realigned to be set back from the railway by 70 metres (it is currently only 20m), it is still close enough to the railway crossing to create some design constraints on the intersection. Both these intersecting roads would need to be designed as Distributor Roads.

4.5 Stormwater

The gravelly alluvial soils of the area are effective in keeping the area well drained in all but the heaviest rains or during prolonged wet conditions, when the streams, drains and natural swales pick up the overland flows, which then flow off-site towards the

south/southeast. This characteristic provides the Waingawa Industrial Area with excellent opportunities for managing stormwater transferred from the development of hard surfaces and buildings through the use of swales and sumps, without the need for extensive piping and disposal facilities. Such natural disposal systems would assist in ensuring groundwater replenishment occurs.

Currently, the existing industrial activities use natural disposal systems to transfer stormwater collected from site, with minimal deleterious effects. However, it is important to: -

- Manage stormwater flows from site, using stormwater retention to buffer any increase in peak stormwater flows due to an increased impervious area. Orifice weirs could be included to control the flows to the downstream water race; and
- Ensure that potential contaminants from stormwater generated in the Waingawa Industrial Area are prevented from entering the natural drainage system.

A preliminary investigation has been carried out into stormwater generation of the proposed Waingawa Industrial Area and the catchment to the north, which flows into the Waingawa Industrial Area.

A storm event with an AEP of 20% as stated in NZS 4404:2004 for "Commercial and Industrial Areas" has been used for this investigation and the rainfall data was obtained from the "HIRDS V2" software package.

Indicative stormwater culvert sizing and costing has been carried out at key locations within the proposed site, at the rail corridor and at the State Highway.

The Structure Plan shows a number of "greenway" areas within the proposed development that can be used for peak stormwater retention purposes. The final form/cross-section of these greenway areas will dictate the effectiveness of these areas. These can be designed to allow storage of runoff in a 1 in 50 year rainfall event

Refer to drawing LA-SP-021 for schematic plan of the stormwater services.

It should also be noted that it is likely that resource consents from Greater Wellington Regional Council for developing the stormwater retention "greenway areas' will be required. In addition, where there is high water usage, onsite baseline stormwater detention systems may be required on a site-by-site basis.

4.6 Services

The Waingawa Industrial Area is currently serviced by reticulated potable water supply from Masterton District Council, which also services the wastewater disposal requirements of the area.

However, both the MDC water supply and wastewater disposal system has capacity constraints, and at some stage, the ability of these systems to accommodate further industrial development at Waingawa will cease, although the timing will be dependent on the types of industrial activity that establish in Waingawa – their water demand and the quantity and quality of wastewater they generate.

Potable Water Supply

The information available has identified that at this time Masterton District Council can supply 18L/s of potable water to the industrial area. This supply capacity would satisfactorily meet an average water demand of 14 L/s associated with the full development of the site for light or dry industry. The peak flow for dry or light industry is estimated to be 30 L/s.

Table 2 below summarises the estimated demand for water from the development of the Waingawa Industrial Area, based on the establishment of light or dry industry which can be supported by the water supply available.

Table 2: Estimated Water Supply Demand

Water Supply	Total Industrial Area[1] - L/s	L/s/Ha
Average	14	0.12
Peak	30	0.27

Development could be allowed where the water demands are within these amounts stated. However, where water requirements are greater the water supply will need to be supplemented, and developers or new industrial uses will be required to assess and resolve any water supply issues.

In order to meet the peak demands of the full development of the area with dry or light industry and to meet fire fighting water supply requirements an onsite reservoir is recommended. Carterton District Council has purchased the old water treatment plant located on site in the vicinity of the Waingawa Wetlands. This facility is securely fenced and contains a storage tank that can hold 2,500m^3. It is understood that this plant was previously been used to store other liquids and will require cleaning and testing, and, dependent on the results, may need lining.

Due to the size of the industrial area, a pump station is required to distribute water and provide adequate pressure to the extents of the site.

A flow meter should be installed on the bulk inlet main to the site. This can be used to monitor the water taken from the Masterton District Council Supply and will assist in future planning of the site to meet the industrial areas requirements. Flow meters are an essential tool to assist in managing water supplies affectively.

It is considered good practice to install flow meters and appropriate backflow prevention at the supply point for each industrial lot.

Refer to drawing LA-SP-022 for schematic plan of water supply services.

Fire Fighting Water Supply

There are two options for providing an adequate fire fighting water supply for the industrial area: -

[1] 115 Ha, this excludes roading and buffer areas.

- Specify that all buildings have an approved sprinkler system installed. The water supply must be capable of supplying 25 L/s with residual storage of 45m^3 or 30 minutes and a residual pressure of no less than 200kPa in order to meet the New Zealand Fire Service Fire Fighting Water supplies Code of Practice (SNZ PAS 4509:2003). This places significant costs on each development and may make the industrial area less attractive.
- A fire fighting water supply to meet Water Supply Classification 7. This would require a greater upfront cost. The water supply would need to be capable of supplying water at 100 L/s of water flow required within a radial distance of 135 m to the closest part of all buildings. With an additional 100 L/s of water flow required within a radial distance of 270 m of the closest part of all buildings. This flow should be available for a minimum of 180 minutes. There should be a minimum of 2160m^3 of fire fighting storage available. The maximum number of fire hydrants which can be used to provide this flow is eight. The minimum residual pressure in the main must not be less than 100 kPa while the main is providing the fire flow specified above.

Non-Potable Water Supply

There is significant non-potable water currently stored in the Waingawa Industrial Area, which could be distributed for fire fighting and other non-potable water requirements. However, this would have a cost associated with it and would only be feasible if development had a demand for a non-potable water supply. We have therefore assumed that the utilisation of non-potable water if required will be a direct development cost.

Wastewater Disposal

It has been identified that the Masterton District Council can treat a maximum of 15L/s of wastewater from the Waingawa Industrial Area. Wastewater must be of a suitable quality and should be restricted to domestic sewage other than up to 0.1 L/s/Ha of industrial wastewater that meets the Masterton DC trade waste controls. Any wastewater that does not meet these requirements must be pre-treated by site holders to an acceptable standard prior to discharge.

Table 3 below shows the estimated generation of wastewater from the development of the Waingawa Industrial Area based on a total discharge of 15L/s from the entire site.

Table 3: Estimated Wastewater Generation

Wastewater Discharge	Total Industrial Area[2] - L/s	L/s/Ha
Average (24 hour)	15	0.13
Operating Average[3]	60	0.34

The operating average flows indicated above are in-line with that outlined in 'NZS 4404:2004 Land Development and Subdivision Engineering' for light or dry industry.

[2] 115 Ha, this excludes roading and buffer areas.
[3] This is based on industry operating over a 9 hour period with.

Wastewater reticulation design for the Waingawa Industrial Area is complicated by the site layout and the low wastewater flows. Minimum scouring velocity is unlikely to be achieved in some areas without having pipes buried to a significant depth. The consequence of not achieving scouring velocity is that pipes can become blocked, leading to a build-up of sludge and the generation of odour. This potential problem is likely to create significant on-going maintenance costs. Accordingly, it is recommended that all pipes are laid to pump stations at a depth of 4.5m. The preliminary design has been undertaken with a minimum pipe diameter of 150mm so that they can be cleaned easily if required.

Due to the distances that the waste must travel, the relative flat nature of the site and the low flows and resultant pipe grades preliminary design indicates that a minimum of six wastewater pump stations[4] may be required. Each pump station should have a suitable wet well capacity to attenuate the peak flows. As the site becomes fully developed increased storage may be required to attenuate peak flows to maintain discharge into the Masterton District Council Wastewater system at 15 L/s or less.

A flow meter should be installed on the wastewater main from the site. This can be used to monitor the wastewater discharged to the Masterton District Council wastewater system and will assist in future planning of the site to meet the industrial areas requirements.

Refer to drawing LA-SP-023 for a schematic plan of future wastewater disposal reticulation.

4.7 Reverse Sensitivity

The introduction of industrial activities into an area will raise the potential for reverse sensitivity issues to arise, by the introduction of activities that could adversely affect the environmental qualities currently enjoyed by residents in the area. Relatively the area is not densely settled, and it largely features an extensive pastoral pattern of land use and occupation, with scattered residences: this is a major benefit of the area for locating an expanded industrial basis.

There are some clusters of residential properties in the vicinity, primarily along Norfolk Road to the north of the Waingawa Industrial Area. To a large extent, however, the location of industry near the residential properties on Norfolk Road is an existing attribute, and the presence of the fault escarpment combined with considerable plantings of trees provide a good buffer to reduce any potential for reverse sensitivity issues to arise. Nevertheless, some management of new or changing industrial activities is likely to be required to ensure the potential for adverse effects on these properties is minimised; for example, in regard to dust and odour generation.

There are also some residential properties elsewhere in the vicinity of the expanded Waingawa Industrial Area, including on Wiltons Road. Again, District Plan controls on aspects of new industrial activities that are likely to cause nuisance or the degradation of amenity values should address many potential reverse sensitivity issues. In addition, there is considerable opportunity for the establishment of buffer areas that can be used to separate industrial activities from adjacent sites, and for substantial screen plantings to occur.

[4] Including the pump station from Stage 1 of the development

Substantial planted buffers and separation distances provide the opportunity to provide for relatively large building forms to be developed without becoming obtrusive or dominant features. Nevertheless, some limitations of building height and bulk would be needed to manage the off-site visual effects of large industrial facilities.

Such buffer areas can also provide opportunities for other mitigation measures to be used if required in future. For example, earth bunds could be used where necessary for noise mitigation purposes.

4.8 Profile and Amenity Values

The Waingawa Industrial Area is located adjacent to the principal arterial route within the Wairarapa, State Highway 2, along which, in this section, some 9000 vehicles per day travel. The Waingawa Industrial Area is located at the southern "gateway" to Masterton, being sited on the south side of the bridge over the Waingawa River. While there are some existing trees along the road edge that screen part of the site, generally open vistas of the area are available from the State Highway. The area is also visible from Wiltons Road, although such views are limited in places by an existing dense shelterbelt at one end and a low terrace at the other end.

This high profile presents some constraints and opportunities for the development of the Waingawa Industrial Area. In general, industrial development along these roads could be detrimental in terms of the area's amenity values and to the perceptions of travellers in the area. Some controls would therefore be required to minimise the adverse visual effects of industrial development, particularly aspects of industrial activities creating the greatest visual detraction. However, it is not practicable, and would not be largely necessary, to seek to fully screen the area from these roads.

To a large degree, the amenity values of the existing area largely depend on its openness, and the rural character of the undeveloped properties and adjoining farms. To an extent, such values would be affected by industrial development, but, as described elsewhere, the area contains opportunities to considerably avoid or mitigate the adverse effects through appropriate buffer and separation strips, screen planting, as well as some limitation on building height and bulk. These measures could be supplemented by setback requirements for some large-scale activities in closest proximity to nearby residential properties.

4.9 Natural Assets

Waingawa Wetlands and

The location of the Waingawa wetland along the northern edge of the area provides some constraints on the development of this part of the Zone, but also some opportunities for its further protection and enhancement over the long term.

As part of the background investigations for the Structure Plan, an ecological evaluation of the wetlands was undertaken, from which a number of recommendations were made in regard to their long-term protection and enhancement (see Appendix 1).

These wetlands were originally a single large swamp, but it has since been considerably modified through drainage works, weed infestation and grazing. In addition, parts of

the wetlands have been filled in with earth and waste products, a process which is still continuing. As a consequence, these wetlands now comprise three separate parts; a large western area, and two small parts, the eastern one containing a small excavated lake the level of which is artificially elevated above the wetlands.

Most of the western wetland is now protected by a QEII National Trust covenant over the main part of the wetland to protect it, there are other opportunities presented by development in the area to extend this protection, and to confirm and implement a long-term strategy for the managing the overall state and values of this important ecological resource: the ecological evaluation made a number of recommendations in this regard. As one of the few wetland remnants left within the Wairarapa Plains, this opportunity presents a major benefit from the development of the Waingawa Industrial Area, as long as explicit direction is provided, supported by community interest and involvement.

Waterways

The Waingawa Stream, which emanates from the wetland, provides some constraints on the development of sites in that part of the Waingawa Industrial Area, in terms of affecting possible layout options and setback requirements, but it also provides opportunities, in terms of:

- Providing a centrally located area of open space, for recreation and amenity purposes
- Providing a greenway that can be used to enhance the stream's natural values, and
- Providing a natural means for disposing stormwater, such as potential stormwater detention areas.

Another opportunity is provided by the ability to avoid having this stream becoming a "back yard" to industrial activities through providing public access and visibility along the stream (for example, by aligning roads along the edge of the reserve area, and/or providing a walking access within the reserve).

There are also a number of other streams and drains within the Waingawa Industrial Area, many of which are ephemeral, flowing only after rainfall. These also provide opportunities for using natural drainage systems for stormwater disposal, and could link to roadside swales. The other permanent flowing stream is that flowing from the small artificial lake near the northern end of Norman Avenue, which has been channelised and culverted throughout most of its length, which is located in the already developed part of the Waingawa Industrial Area. It therefore provides few constraints to development.

Shelterbelts and Trees

The area currently contains a number of farm shelterbelts and other mature trees. Some of the shelterbelts, such as that along the Wiltons Road boundary near the intersection with State Highway 2, are in good condition, providing a continuous healthy line of trees. Others are in a fractured state through the loss and non-replacement of trees. These features present little constraint for future development, but present opportunities for creating amenity within the Waingawa Industrial Area in a manner that reflects the rural landscape pattern.

The Avenue of Bartrum's Oak (Quercus x hetrophylla Regis) trees along Norman Avenue are considered to provide a high degree of landscape amenity. A group of 63 of the healthiest trees have been identified and registered with the Royal New Zealand Institute of Horticulture as notable (registration No. 255). This group of trees is also recognised and protected within the District Plan (TC1). Valuable characteristic include a rarity in New Zealand of the species, the combined group value and avenue arrangement.

4.10 Natural Hazards

Potential natural hazards to development and occupation of the Waingawa Industrial Area include those associated with the fault line and flooding in relation to stormwater and stream catchments. Provisions for development associated with the above natural hazards are made in the combined district plan which should be referred to in regard of these issues.

5 Proposed Structure Plan

5.1 Overview

The proposed Structure Plan (refer to drawing LA-SP-002) represents a refinement of the current Structure Plan, and is based on a few key elements:

- An internal fully interconnected and circulatory system of roads reflecting the grid pattern of the surrounding landscapes, reinforced through the use of linear pattern of tree planting
- Continuation of the use of perimeter buffer areas, supplemented with the enhancement of Norman Avenue as a central well planted boulevard/greenway, the creation of a wide greenway to contain the Waingawa Stream, and protected buffer areas around the perimeter of the Waingawa Wetlands
- The restriction of heavy traffic using Norman Avenue, south of the railway.
- An additional road link to Norfolk Road, and provision for a future bypass link to the Masterton Heavy Traffic Bypass via a second bridge crossing, and an upgrade of the intersection of State Highway 2 with Norfolk and Cornwall Roads

5.2 Movement and Connections

Following a reassessment of the traffic requirements for the Waingawa Industrial Area, the proposed internal access system was reconfigured (refer to drawings LA-SP-003, LA-SP-004, LA-SP-006 & LA-SP-025) as follows:

Roading (including footpaths)

- The internal road system has been reconfigured, using an internal hierarchy based on primary streets (T1), and narrower secondary streets (T2) – the proposed Design Guide (Appendix 3) includes typical cross-sections for each type of road, which require minimum provision for the road carriageway, on-street parking, cycleways (on primary streets), footpaths, street trees, and stormwater swales
- The internal roading reflects the surrounding grid pattern of development, with the primary roads generally aligned in a SW-NE formation, paralleling State Highway 2, while the secondary roads (T2) being generally aligned in a NW-SE formation, paralleling Norfolk and Wiltons Roads
- The internal roading is all interconnected through two broad loops to provide a better circulation of movement, particularly for heavy traffic (the one cul-de-sac is an already consented subdivision), interlinked by a few secondary streets which can act to complete loops as the implementation progresses on a staged basis
- The proposed greenway containing the Waingawa Stream should have at least one secondary street along its edge, to provide public access and visibility of this natural asset (and to avoid the stream becoming a back yard to industrial activities)

- The roading pattern takes into account the recent development to the south of Norman Avenue, which has established two roads that can be extended further to service the area south of the railway line
- A new road will be needed between the northern end of Norman Avenue and Norfolk Road to service development in the large greenfields area to the southeast, and to avoid placing pressure on the Norman Avenue railway crossing – this new link could then link with a potential new bypass road across the Waingawa River to link with the existing Masterton bypass (see below, under Potential Upgrades)
- Waingawa Road between Norfolk Road and Norman Avenue should be realigned (at a minimum to the junctions if not the entire length)by moving it to about 50-70m south of the railway line, so that the road's intersections are not immediately adjacent to the two railway crossings. It has been assumed that developers would pay for this directly.
- Norman Avenue south of the railway would be a secondary street to recognise its limited role in providing access from State Highway 2 which would be allowed as left in and left out only. A restriction on heavy vehicles using Norman Avenue south of the railway is also proposed as way of safeguarding the future amenity value of the 63 notable trees.

Intersections and Crossings

- Access onto State Highway 2 via Norman Avenue should be restricted to left-in, left out only to prevent traffic having to cross lanes (refer to drawing LA-SP-002, intersection A)
- The intersection of Norfolk/Cornwall Roads with State Highway 2 (refer to drawing LA-SP-002, intersection B) will need to be upgraded in the near future, through a new roundabout – this would have the effect of slowing traffic speeds on State Highway 2, which should be followed through with the reduction in the speed limit on the State Highway from 100kmh to 70kmh between this intersection and the 50kmh limit north of the Waingawa River bridge
- The two railway crossings (on Norman Avenue and Norfolk Road, refer to drawing LA-SP-002, intersections C & D) will need to be upgraded at some stage as traffic volumes increases by installation of barrier arms. These barrier arms have not been costed, as we are at this point unaware whether ONTRACK is proposing to carry out these works anyway.

Future Potential Upgrades

- In the long term, as the Waingawa Industrial Area develops, traffic volumes onto Norfolk Road and State Highway 2 are likely to reach the capacity of these roads and the intersection (even after upgrading to a roundabout) be accommodated efficiently. Provision for a future new link from Norfolk Road across the Waingawa River to the existing Masterton Heavy Traffic Bypass has therefore been made in the Structure Plan (refer to drawing LA-SP-002, intersection E & future connection 5).

- The entire Waingawa Industrial Area is dependent on its primary access to State Highway 2 via Norfolk Road, which, subject to the recommended upgrades and new linkages (refer to drawing LA-SP-002, connections 3 & 4), will adequately accommodate anticipated traffic demands for most industrial activities. However, a large traffic generator(s) established within the area, particularly at the far end of either loop road, could create capacity issues for the internal roading network. To provide for this potential situation, two link strips have been identified on the Structure Plan to protect two corridors for future access to Wiltons Road (refer to drawing LA-SP-002 ,link strips 1 & 2). The protection of the link strips require a 20m wide no build restriction to be enforced. The protected land could be utilised to form part of a lot area or as a landscape connection including pedestrian and cycle paths. It should be emphasised, however, that such vehicle links could not be created without significant concurrent upgrades to Wiltons Road to safely accommodate the additional traffic, including upgrades to the railway crossing and the intersection with State Highway 2 (refer to drawing LA-SP-002, intersections F1 & F2).

5.3 Development and Servicing

Stormwater Disposal

- Roof drainage to be discharged to land[51] or the stormwater network.
- Run-off from hardstands and paved areas to be treated onsite (for example, Gross Pollutant Traps or similar) prior to discharge to land[1] or the stormwater network.
- The stormwater network is to discharge to land[1] within the "Greenway" areas, existing streams or connect to other existing discharge points bounding the site. Where an industry is a high volume user of water that would be discharged to the stormwater network on site retention and treatment may be required.

Land Development

- Provision for the realignment of the small stream in the western corner has been made, to allow this lower lying area of land to be integrated into the main development area.
- The near flat nature of the land will limit the need for cuts – nevertheless, it is recommended that any earthworks not leave any earth banks, and that any cuts should be graded back to provide more natural slope contours.

Built Form

- A key purpose of the proposed requirements for buffer strips, screen planting and street trees was to minimise the external visual effects that industrial development may have on the environs, therefore allowing flexibility in the layout and design of future industrial buildings and facilities

[5] 1 Land being either, Onsite Soakage or the "Greenway" areas identified for Stormwater Retention

- Nevertheless, some thresholds on the design, height, bulk and layout of industrial facilities are proposed to manage the scale of building and potential external effects
- The proposed Design Guide also contains a limited number of directions on the design of industrial buildings and associated facilities to provide a standard quality of design, allowing for flexibility in building design without imposing any significant costs
- The principles of ESD (Environmentally Sustainable Design) should be promoted in the design and construction of development at Waingawa

5.4 Natural Assets

The following measures have been proposed in the Structure Plan to take advantage of the Area's existing natural assets, in a way that protects and enhances their values, and provides the area with a cohesive identity and a reasonable quality of amenity (refer to drawing LA-SP-026):

Waingawa Wetlands

A more defined strategy for protecting and enhancing the Waingawa Wetlands has been developed for the Structure Plan (see the Ecological Report in Appendix 1). Some of these recommendations fall outside the Structure Plan to implement, and will require community and/or council involvement. In terms of the Structure Plan, the specific recommendations include:

- The creation of a 20m buffer along the edge of the wetlands through the esplanade provisions of the District Plan (through either subdivision or land use consents) – the width of this buffer may be reduced in many places where an effective buffer can be provided through narrower marginal strip
- No further fill or waste disposal into the wetlands should be permitted, and all earthworks within the wetlands (for example, modifying stream channels and drainage patterns) should be controlled and generally discouraged
- Public access along the edge of the wetlands should be encouraged or provided (for example, through a formed walkway) to ensure public visibility and surveillance which in turn should encourage community interest in the wetlands

Waingawa Stream Greenway

- It is proposed that a greenway been established to provide a green corridor between the Waingawa Wetlands and State Highway 2. The greenway would be an area of reserve, broad enough to contain the meandering stream channel, with open mainly grassed areas on either side (i.e., a reserve of between 50m-100m in width)
- The greenway would be largely grassed, although some amenity tree planting would be preferred, as well as riparian planting to enhance the stream's ecological values

- As described above, the greenway should have at least one road along one edge to provide public access and visibility to the greenway, thereby avoiding the potential for the stream become a backyard drain to industrial activities. The road should be designed to relate to the greenway, and, in particular, to direct stormwater to roadside swales that drain towards the stream. These swales, with appropriate planting, would intercept stormwater before it enters the natural stream system, to remove any road-sourced contaminants and solids
- Some provision for a potential streamside walkway could be made, linking with potential walkway on the edge of the wetlands. Provision should also be made for recreation opportunities in keeping with the surrounding land use, providing opportunities for exercise and seating areas to encourage social interaction.
- Areas within the greenway would be available for use as stormwater detention ponds if required

Norman Avenue Greenway

- The greenway would be an area of reserve acting as an identifiable node within the overall plan, providing shelter, recreation and stormwater management opportunities.
- The mature Bartrums Oak trees along Norman Avenue should be retained and enhanced by extended or replacement planting as required.
- In addition, a grassed buffer on either side should be retained to provide the boulevard appearance of this road.
- Provision should a be made for recreation opportunities in keeping with the surrounding land use, providing opportunities for exercise and seating areas to encourage social interaction.
- The character of the greenway will act as a strong landscape statement lending to the legibility of the industrial area and acting as a natural node within the site and gateway entry/exit.
- Traffic using the southern section of Norman Avenue below the railway would be restricted to exclude heavy vehicles in order to protect the notable trees from damage and root compaction hazards whilst providing a calmer character to the greenway.

6 Implementation

6.1 Recommended District Plan Changes

To effectively implement the Structure Plan, a number of changes are recommended to be made to the proposed Wairarapa Combined District Plan to give effect to the following:

- Replace the present Structure Plan under Appendix 12 of Volume 1 with that contained within this report
- Amend the objectives and policies for the Industrial Zone under section 7 to introduce a new objective and concomitant set of policies for the Waingawa Industrial Area that set out the purpose of the Waingawa Structure Plan and the key policies for implementing the Structure Plan (in a similar manner as for the Opaki Industrial Area in Sections 7.3.7 – 7.3.9 of the Proposed District Plan)
- Amend the Methods and Anticipated Environmental Outcomes for the Industrial Zone to reflect the proposed implementation measures and their anticipated outcomes. Specifically, include a method to recognise the purpose and use of the Structure Plan for Waingawa, and possibly add a new method for managing subdivision, development and land use at Waingawa.
- Amend the rules for the Industrial Zone under section 7 to introduce new standards and guidance recommended in this report in regard to –
  - Access and subdivision planning
  - Infrastructure and engineering
  - Protection of natural assets
  - Site design & location
  - Landscape
  - Built form
  - Signage
- Amend the Assessment Criteria within Section 22 to include new criteria for subdivision proposals within the Waingawa Structure Plan area, and to extend the criteria for land use consents in the Waingawa Structure Plan area
- Amend the Financial Contributions within Section 23 to include specific amounts for contributions for subdivision and development in the Waingawa Industrial Area, based on a proportional basis across the whole area, as detailed in Section 6.2 of this report (below).
- Introduce the Waingawa Design Guide (attached as Appendix 4 to this report) as a new Appendix to Volume 1 of the proposed Wairarapa Combined District Plan. The Design Guide would be applied in assessing resource consent applications in the Waingawa Industrial Area, similar to the application of the existing Design Guide for the Carterton Central Business District in Appendix 7 of the Proposed District Plan.
- Any other consequential changes as needed

Designations may be required to implement the recommended road network, particularly where road alignments located in any area already subdivided and developed, and such roads are determined to be required in the foreseeable future. However, at this stage no designations are proposed, and any future designations would need to be introduced in accordance with the requirements under Part 8 of the Resource Management Act.

The application of the existing esplanade reserve requirements of the Proposed District Plan will to ensure that the area around the edges of the Waingawa wetland and stream become protected at the time of subdivision and development.

6.2 Financial Contributions

Financial contributions are imposed on subdivision and land development to mitigate the adverse effects from subdivision and development on the environment, principally those effects on infrastructure (roading and services) and on the natural values in this location. Financial contributions may be in the form of money or land, although if a developer proposes to install works or services, including the installation of roads and reticulated infrastructure, these assets may be taken into account in setting the level of financial contributions for any particular development. Alternatively, if the infrastructure has already been provided, or if Council plans to undertake infrastructure works itself in the future, monetary contributions may be taken to recover the costs incurred in providing that infrastructure.

The recommended financial contributions are based on the likely and foreseeable capital expenditure that is expected as a result of the development, and the capital expenditure that Council has already incurred in anticipation of this growth area. Because of the uncertainty in knowing the scale and size of industrial development in the Waingawa Industrial Area, it is proposed that financial contributions will be applied on a per 100m² basis to apportion capital expenditure for bulk services, reserve land and community infrastructure evenly across the structure plan area.

Financial contributions are a fair and reasonable mechanism to allocate the growth costs to the section of the community that creates the need for Council to incur that expenditure: i.e., new business activity. The extent of financial contribution applicable to an individual development is calculated on a fair cost share basis relating to the extent of the development consented, whereby the cost of capital expenditure for shared bulk services, reserve land and community infrastructure is recouped across the entire development area.

This method for apportioning costs also allows for reimbursement of “upfront” expenditure by developers who are required to install works and services above the capacity required for their first stage of development to meet the likely demand for services from further development.

It is recommended that these financial contributions be reviewed on a regular basis (preferably annually), having regard to changes that affect the provision of services by Council, including cost estimates and construction costs.

The overall costs of developing the bulk community infrastructure at Waingawa are summarised in Table 4 below, and further detailed in Appendix 2, Cost Estimates. These costs are for the bulk infrastructure only, and do not include the costs associated with the provision of services to individual developments, such as local reticulation and service connections. Direct costs applicable as financial contributions as a result of

development associated with the upgrades to the State Highway Intersections have been assumed as being 50% of the 95th percentile figure.

Furthermore, it is important to recognise that it is not always possible to foresee all possible permutations and special circumstances which will arise in the growth of this area. Some development circumstances may warrant the Council requiring a specific financial contribution in liaison with the developer.

6.3 Assumptions and Costs

Before summarising the costs it is important to note the following assumptions. It is also prudent to place a margin of error on the end calculations considering that worse case scenario assumptions are adopted, resulting in a maximum spend for the proposed infrastructure works and associated land take. Therefore we believe that the figures below represent a best estimate within a band of 10% either way.

Stormwater and Landscaping

There is some debate about land values. The land values assumed are explained in the Valuation report in Appendix 4. This document essentially concludes that based on the existing land use of the individual areas $3.40 and $5.00 per m^2 for farmland and commercial sites respectively would be appropriate. However, there is an alternative methodology when calculating the current land value to be occupied by the proposed reserve areas.

- Market rate of "useable land" following development i.e. flat farm land
- Plus market rate of "un-useable land" within Reserve land i.e. bush areas etc
- Minus the cost to develop useable land
- Minus proposed development contributions
- Equals net present value of Reserve land

The profit and risk of any potential land purchaser would also need to be factored into the net present value calculation, i.e. profit of 20% risk of 10% deducted from the purchase price. This is essentially what a perspective developer would factor into their offer within a free market transaction so land values could be higher.

We have assumed that there is no land cost associated with the Green Buffer and the Wiltons Road Greenway as these areas are for amenity purposes with the land remaining in the control of the owner. Landscaping and planting in these areas has, however, been costed.

Design costs are consistent at 10% but these may be higher for stormwater as it is not known exactly what the treatment will be. In addition, there has been no allowance for preparation and lodgement of any require resource consents to Greater Wellington Regional Council;

Roading

As has been stated before the only roading works costed is for the dual laning of Norfolk Road including a roundabout at Norfolk and Waingawa Roads and the utilisation of

NZTA figures for an upgrade of the State Highway 2/Norfolk Road intersection to a roundabout. It should also be noted that financial contributions for the State Highway work would need to be agreed between NZTA and Council and factored into the Financial Contributions calculations. There is no calculation for internal roads to service development or upgrading the rail crossing.

Water Supply and Wastewater

The costs below exclude a $5,000 connection fee to cover the costs for providing bulk water supply and sewage treatment to each lot, currently provided by Masterton District Council. This connection fee will be applied in addition to the proposed flat fee per 100m² basis detailed below in Table 4, the latter fee to cover the costs of developing and providing additional water and wastewater disposal services within Waingawa. The $5000/lot connection fee would be made to the Carterton District Council; separately, Carterton District Council will make appropriate payments to Masterton District Council for the provision of bulk water and the disposal of effluent.

In the table below, it should be emphasised that there is no pump station 5 for wastewater. This is already in place as part of a recent development.

Other assumptions in relation to this and the basis for calculations are included in section 4.6 of this report.

Table 4: Summary of Infrastructure Development Costs and Development Fees

PROJECT	COST	IMPACT FEE % of total	IMPACT FEE per 100 m^2	EQUIVALENT RESIDENTIAL
Stormwater and Landscaping				
Waingawa Stream Greenway	$903,280.00	8%	$79	$550
Norman Avenue Greenway	$814,000.00	8%	$71	$495
Green Buffer	$257,600.00	2%	$22	$157
Wiltons Road Greenway	$354,450.00	3%	$31	$216
Roading				
Dual Lane Norfolk Road	$1,174,896.00	11%	$102	$715
SH2/Norfolk Road Roundabout (assume 50%)	$964,505.00	9%	$84	$587
Water Supply				
200mm Rising main to site	$390,000.00	4%	$34	$237
Reservoir	$397,345.00	4%	$35	$242
Pump station	$286,000.00	3%	$25	$174
Wastewater				
Pump Station 1	$504,270.00	5%	$44	$307
Pump Station 2	$634,595.00	6%	$55	$386
Pump Station 3	$880,620.00	8%	$77	$536
Pump Station 4	$174,785.00	2%	$15	$106
Pump Station 6	$2,569,970.00	24%	$223	$1,564
Pump Station 7	$186,485.00	2%	$16	$114
Wastewater Falling Main from Site	$293,930.00	3%	$26	$179
TOTAL FEES	**$10,786,731.00**		$938	$6,566/lot
	AREA (ha) 115			

The total applicable financial contribution is recommended to be $938 per 100m² of development site area + $5,000 per lot connection to the existing water supply & sewerage system.

The above costs are present costs with no allowance for inflation. Therefore the Cost forecast above may need to be updated during the overall implementation period of the structure plan with new contribution levels set through a plan change. The forecast should be reviewed regularly, perhaps annually to ensure that fees are a fair reflection of infrastructure costs.

6.4 Programming Bulk Infrastructure

The demand for bulk services within the Waingawa Industrial Area will depend on the uptake of the available industrial zoned land and the intensity of development. Water and sewer bulk mains and pump stations can proceed as each area of the zone develops. The work can either be managed and funded by the Carterton District Council, or managed and funded by the developer with a waiver or credit of the financial contributions.

A point will, however, be reached where the water reservoir and supply pump station and the final sewer pump station (Number 6) storage will need to be commissioned. The estimated timing, based on Table (5.2) of 'NZS 4404:2004 Land Development and Subdivision Engineering' is as follows:

Table 5: Water and Sewer Storage Timeframe

Industry Type (Water Usage)	Design Flow (L/s/h)	Area of Land Developed before Storage Required
Light	0.4	45 Hectares
Medium	0.7	25 Hectares
Heavy	1.3	15 Hectares

Section 5.3.5.1 (b) of the *NZS 4404:2004 Land Development and Subdivision Engineering* states that, where there is no specific flow information available and the local authority does not have a design guide, the figure in columns 1 and 2 from the above table can be used.

The water supply upgrade could be developed by the Carterton District Council, but the sewer storage is best included in the construction of pump station 6 as part of the development of this part of the industrial area.

The principal roading upgrade required will be the dual laning of Norfolk Road between the railway and State Highway 2 when approximately 75 Ha of new industrial property has been developed and the intersection upgrade. The balance of the work will not be required until the development is close to completion. In both cases, the work can easily be incorporated in the site development work.

Bulk stormwater work is closely linked to roading, and should be upgraded as roads are built and again it can be included in development work.

Reserve land can be programmed alongside each area as it is developed.

6.5 From Here...

It is anticipated that the proposed revised Structure Plan and the accompanying recommendations will be subject to consultation with landowners in the Waingawa Industrial Area, key stakeholders such as NZTA and Masterton District Council, and neighbours.

Further consultation must occur with Masterton District Council and NZTA to seek agreement in principle to the Plan before proceeding to consultation with landowners. In particular, Carterton District Council should meet with Masterton District Council to discuss the recommended infrastructure works, including financial contributions, which could form part of the servicing agreement between the two councils. The meeting with NZTA should focus on reaching agreement on the upgrading and access arrangements for State Highway 2, the timing and the reasonable percentage of the State Highway works that should be applied to Financial Contributions.

Once this consultation has been completed, we recommend initial consultation with landowners and neighbours occurs through a meeting/presentation. This meeting would provide Council with the opportunity to explain the background to the revised Structure Plan, its purpose, and implementation. It would also provide an opportunity for landowners and neighbours to ask questions. A short summary document comprising the draft revised Structure Plan and key implementation mechanisms (for example, District Plan Changes, financial contributions and design guide) should be provided to landowners and neighbours for them to provide feedback on.

Following feedback from this consultation, the Structure Plan and supporting recommendations will be reviewed and revised accordingly. It is then anticipated that a draft District Plan Variation would be developed for consideration by first the Carterton District Council, and then the Combined Planning Committee. If approved, the Variation would be notified for public submissions and further submissions in accordance with the First Schedule of the Resource Management Act. Any submissions would be heard and considered by the Combined Planning Committee, and a decision released.

7 Appendices

1. Ecological Report on Waingawa Wetland

2. Infrastructure Cost Estimates

3. Design Guide

Including the following design guide appendices

i Waingawa Structure Plan – General Arrangement
Drawing LA-SP-002
ii Waingawa Structure Plan – Subdivision Examples
Drawing LA-SP-005
iii Waingawa Structure Plan – Road Sections / Type T1
Drawing LA-SP-003
iv Waingawa Structure Plan – Road Sections / Type T2
Drawing LA-SP-004
v Waingawa Structure Plan – Forward Visibility's
Drawing LA-SP-006
vi Recommended Plant Species List

4. Property Valuation

5. Drawings

i Waingawa Structure Plan – Opportunities & Constraints
Drawing LA-SP-010
ii Waingawa Structure Plan – General Arrangement
Drawing LA-SP-002
iii Waingawa Structure Plan – Road Sections / Type T1
Drawing LA-SP-003
iv Waingawa Structure Plan – Road Sections / Type T2
Drawing LA-SP-004
v Waingawa Structure Plan – Stormwater
Drawing LA-SP-021
vi Waingawa Structure Plan – Water
Drawing LA-SP-022
vii Waingawa Structure Plan – Wastewater
Drawing LA-SP-023
viii Waingawa Structure Plan – Circulation
Drawing LA-SP-025
ix Waingawa Structure Plan – Landscape & Amenity
Drawing LA-SP-026