

# SOUTH WAIRARAPA DISTRICT COUNCIL

27 JUNE 2018

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## AGENDA ITEM D5

### MARTINBOROUGH GROWTH AREA UPDATE

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#### **Purpose of Report**

To inform Councillors of the progress and update in regards to the Martinborough Growth Area.

#### **Recommendations**

Officers recommend that the Council:

1. *Receive the Martinborough Growth Area Update Report.*

#### **1. Executive Summary**

The attached report by Kaha Consultancy Ltd contains an update on the topic of the Martinborough Residential Growth Area as part of initial investigation and progress towards a potential structure plan/plan change to the Wairarapa Combined District Plan.

#### **2. Background**

Council commissioned a review of residential land zoning issues and land availability in Martinborough in early 2017.

A detailed evaluation of the preferred development area identified in the "*Martinborough Urban Area: Residential growth focus, a process for exploring growth options*" report adopted by Council at its meeting in April 2017 is underway.

This evaluation involves work on infrastructural services (sewer, water supply and stormwater), land suitability (contaminant risk, bearing capacity, topography and features) and zone structure under the Wairarapa Combined District Plan.

#### **3. Discussion**

The further investigation work by Kaha Consultants will involve the evaluation of multiple land related aspects as part of effective urban planning. Further evaluative scoping work in respect of the Martinborough South block includes ensuring there are no significant constraints that would make residential development impractical.

The careful evaluation of any land constraints, rechecking population projections and land type demand needs to occur. Along with the above, further consideration of whether land beyond the area of interest is suitable will also need to be made. The consultants initial investigations have been undertaken, and these results are provided and summarised in appendix 1.

#### **4. Conclusion**

That this report with appendices be received as an update and for information purposes.

#### **5. Appendices**

Appendix 1 – Martinborough Urban Development Feasibility Interim Report  
Kaha Consultancy Ltd.

Appendix 2 – Preliminary Site Investigation Report Martinborough  
Development Area Soil Contamination, Eco Agri Logic.

Contact Officer: Russell O’Leary

Reviewed By: Russell O’Leary, Group Manager Planning and Environment

**Appendix 1 – Martinborough  
Urban Development Feasibility  
Interim Report Kaha Consultancy  
Ltd**



**Hewison Engineering Ltd**

**Honor Clark Planning Consultant**

Martinborough urban development feasibility

Interim report to South Wairarapa District Council

**15 June 2018**

## 1.0 Background

The South Wairarapa region is subject to high levels of interest from developers. The Council has already taken steps to address residential zoning shortages in Greytown. Martinborough has been the subject of concern from developers and local real estate agents who have stated to Council that there is a shortage of land available for subdivision and development.

As a result, Council commissioned a review of the residential land zoning issues and land availability in Martinborough in early 2017.

The review report<sup>1</sup> provided a broad evaluation of whether a case for more detailed work existed and then outlined how that work should be progressed. The report anticipated that a low-density growth area could be provided (with pockets of more intensive development) to the south of the existing residential area of Martinborough.

The report was presented to the April 2017 Council meeting, and approval was given by Council to the second phase of work as set out in the report, relating to the preparation of a structure plan/plan change to the Wairarapa Combined District Plan.

A consortium of three consultants has since been engaged to assist the Council with the statutory process to develop, manage and progress such a plan change.

The consultants are:

- Hans van Kregten of Kaha Consultancy Ltd,
- Honor Clark Planning Consultant, and
- Michael Hewison of Hewison Engineering Ltd.

This brief report contains a first update to Council. It provides the results of an initial demand and feasibility assessment of an area of land to the south of the existing Martinborough urban area for low to medium density residential development.

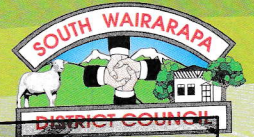
## 2.0 Extent of possible plan change area

The 2017 Kaha Consultancy report identified the large block of land at the southern fringes of Martinborough (between New York Street, Todds Road, Dublin Street and Regent Street) for further investigation. The area is shown on the following map.

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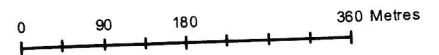
<sup>1</sup> Martinborough Urban Area: Residential growth focus, a process for exploring growth options, 15 March 2017. Report from Kaha Consultancy Ltd

# Wairarapa Maps



May 21, 2018

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**DISCLAIMER**  
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The total area of this Martinborough South block is approximately 36 hectares. It is currently divided into 68 land parcels, varying in size from small ¼-acre type sections to an allotment of 3.7 hectares in area. Many of the land parcels contain one dwelling and associated outbuildings (particularly fronting the existing roads), however the area is predominately still in pasture with some sites in small vineyards and lifestyle orchards.

In the Kaha report, this Martinborough South block was seen as logical for residential development as it is located between the existing urban residential area and land zoned Rural, as well as being close to more recently developed rural-residential type land uses such as Martinborough Estate and a golf course.

The need for the residential land and feasibility for development is summarised in 3.0 and 4.0 below. The scope of this report is limited to the area described above.

While the Martinborough South block is the primary focus of the current plan change work, Council has signalled the need to identify whether other Future Development Areas (FDA) are required, how big those areas need to be, and where those areas might be.

The Council's Long-Term Plan process considered the development of a Council Spatial Plan. A Spatial Plan would enable the wider development needs of all three South Wairarapa towns to be considered and provide direction as to what further work may be required.

### 3.0 Demand for residential properties and land

Predicting residential growth levels for a small community like Martinborough is not simple. The local housing market is linked to that of the wider Wairarapa, and indeed of the Wellington regional market. To some extent the availability of land for development tends to create its own demand, particularly when regional housing markets are tight.

Council has found that the average population projections for Martinborough used by the Department of Statistics may be too low. For its Long-term Plan, it has used a forecast by IDCCommunity demographic resources, which predicts that from 2018 the town's population will grow from 1,748, and to 2,325 by 2043. This is a 33% increase in population in 25 years. Such a growth would, because of falling occupancy rates per house, lead to an even larger rise in number of houses required.

The current high local demand for housing and residential land has been confirmed through discussions with representatives of the three main real estate companies in Martinborough (Jackie Renwick and Jeff Barber of Property Brokers, Susan Stephens of Ray White, and Anne-Marie Durkin of Mike Pero Real Estate) and the two surveying firms who mainly carry out subdivision work in Martinborough (Tomlinson & Carruthers and Adamson Shaw).

The discussions signal that there is currently a reportedly “huge” demand for residential properties in Martinborough with little or no supply. For example, a recent sale of a vacant section in Regent Street of around 1,000m<sup>2</sup>, sold for \$283,000. The auction had 5 bidders on-site and an additional 3 bidders on the phone.

## 4.0 Development constraints

As part of the scoping exercise for the Martinborough South block and the block’s suitability for a district plan change, Council needs to have certainty whether the block is in fact suitable for residential development, and that there are no ‘show stopping’ barriers.

Several possible constraints that could result in an undue level of risk on development or impose unreasonable costs that may make residential development impracticable have been identified.

These include:

- potential soil contamination from previous land uses in the area;
- infrastructure location, levels and capacity;
- waterways/drains and storm water disposal;
- land stability;
- soil suitability;
- heritage features; and
- existing vegetation

Initial investigations have now been undertaken. The results are provided below.

### Potential Soil Contamination

A Preliminary Site Investigation (PSI)<sup>2</sup> has been undertaken by soil contamination expert Esther Dijkstra of EcoAgriLogic Limited.

This investigation assessed the potential human health impact of the soils for their intended residential use. The report identified three current and previous land use activities within the focus area that are controlled by the Resource Management Regulations 2011 (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES)). These activities include farming activities, small orchards and vineyard activities, and a disused abattoir at 71 Oxford Street.

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<sup>2</sup> Preliminary Site Investigation Report Martinborough Development Area. Prepared for South Wairarapa District Council  
13 June 2018



The recommendation of the PSI states:

*“This investigation concludes these three activities will not have caused soil contamination that exceeds the soil contamination standards. The proposed plan change from primary production to residential will highly unlikely be a risk to human health, based on the current, historical and anecdotal information for these activities for this site.”*

## Infrastructure

The results of discussions with Council’s engineers regarding infrastructure are summarised below:

- There are no problems anticipated from a roading capacity and network functioning point of view.
- Potable water supply can be made available from a ring water main around the area. It appears that sufficient pressure will be available, but further information using a hydraulic model of the network will be required. Water demand will be created incrementally, and network upgrades can be provided as demand increases.
- Some form of incremental upgrading of the Council’s wastewater plant and spray area will be required as further lots are added. Also, a reticulation upgrade will be required through Martinborough to connect new area to the wastewater plant.

## Waterways/drains and storm water management

There is no formal storm water network in, around or through the town of Martinborough. Storm water at the development area currently flows across it, and some ponding can be observed after periods of high rainfall. More intensive residential development will result in additional hard surfaces (roofs and roading/parking surfaces) and increase storm water runoff. Comprehensive storm water drainage and discharge solutions will need to be developed. There is potential to enhance the swale along the northern side of New York Street. Some building restrictions may have to be imposed in lower parts of the development area, and wetland areas could be used. There are possible avenues for interception and possible infiltration that can be considered.

Storm water provision will be the most complicated infrastructural issue to deal work with, but the issue is not dissimilar to other urban areas in Martinborough due to the prevalent impermeable clay soil types. The storm water issue is capable of being addressed with appropriate engineering solutions.

## Land stability

The area is relatively flat and is not known to be subject to landslides, subsidence issues or noticeable erosion. There are no known fault lines within the vicinity of the area. The nearest known fault line is the Wairarapa Fault shown in the District Plan (Map 19), which is to the west of Greytown, some 25km from the area.

## Soil suitability

The area is considered to generally have “good ground” on which to build residential dwellings. NZ Standard 3604 requires ground with a load bearing capacity of 300kpa. Penetrometer testing undertaken by Hewison Engineering Ltd in the wider Martinborough area has confirmed that “good ground” can be found at depths suited to wooden driven piles or RibRaft foundations which provide a very stiff floor that can be sited on ground that does not quite meet the ‘good ground’ standard for bearing capacity. The finished floor level is typically 300 mm above ground level.

The softer clay soils are generally overlying gravels and suitable foundation solutions that are not prohibitively expensive can be found. These solutions would generally involve some over digging of trenches and backfilling with site concrete.

## Heritage features

Martinborough is well known for its early European history, particularly the design of its centre in the shape of a Union Jack. The focus area has, however, only one heritage item listed in the District Plan, being a honey locust tree at 113-129 Dublin Street (Ts080, Map 69). This tree has had recent STEM assessment as part of the District Plan review on trees, with a value of 132 points given. Heritage features would thus not restrict residential development.

## Existing vegetation

Apart from the tree referred to above, several substantial trees exist on properties within the focus area. It is noted that the existing vegetation adds to the existing general amenity values of the area.

## 6.0 Conclusions

- Demand for additional development opportunities in Martinborough appears strong.
- Soil contamination issues do not restrict urban development of the Martinborough South block.
- The land appears suitable for residential building development.
- Infrastructure (roading, water supply, sewerage reticulation, storm water management) can be provided.
- Storm water management may be the most challenging, but the issues are not prohibiting development.

## 7.0 Further suggestions for plan change

The Martinborough South block option would represent a significant urban extension of the existing town. It can have major impact on Martinborough's 'look and feel', demand for local and community services and business and amenity levels.

Community engagement and feedback is important. Community meetings are planned in the next stage of the project.

Further work as well as community feedback is needed to shape the detail of the plan change.

Some matters (this list is not comprehensive) that could be considered over the next few months include:

- Consider what Martinborough wants to be/look like in thirty years. what specific district plan provisions are required to achieve desired social, commercial and environmental outcomes.
- Opportunities for coordinated infrastructure provision, and links to Council's Long-Term Plan provisions.
- What mix of higher/medium/low density in the Martinborough South block would best meet those outcomes.
- Need for staging of the plan change.
- Relationship to other potential urban expansion areas and infill options of currently developed residential areas.
- Consider relationship to the existing special character and amenity of Martinborough and how to reflect this.
- Promotion of good urban design.
- Promote internal and external connectivity – cohesion of connections for vehicles, pedestrians and cycling.

## 8.0 Process moving forward

The next stages of the project can include:

- July 2018: Consultation with key stakeholders – including (but not exclusive to) landowners within the proposed plan change area, neighbours to the area, larger developers, Iwi/Maori Standing Committee, Wellington Regional Council, Martinborough Community Board, Martinborough Business Association, schools and winegrowers.
- August 2018: Presentation to Council – Including a recommendation on whether to proceed with the plan change process
- Late 2018: Preparation of Draft Plan Change and supporting s 32 RMA analysis
- Late 2018: Possible public notification of the Proposed Plan Change

- 2019: Submission Summary and call for further submissions
- 2019: Hearing process
- 2020: Possible appeals to the Environment Court

**Appendix 2 – Preliminary Site  
Investigation Report  
Martinborough Development  
Area Soil Contamination, Eco  
Agri Logic**

# **Preliminary Site Investigation Report**

## **Martinborough Development Area**

**Prepared for South Wairarapa District Council**

13 June, 2018



## Abbreviations

GWRC	Greater Wellington Regional Council
HAIL	Hazardous Activities and Industries List (October 2011)
MfE	Ministry for the Environment
NES	National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
PSI	Preliminary Site Investigation Report
SLUR	Selected Land Use Register

## Certification

This report is certified by Dr. Esther F. Dijkstra of EcoAgriLogic Ltd. PO Box 190, Carterton 5743, who has not less than 15 years of experience as a soil and contaminated site professional, whose highest qualification is PhD Environmental Sciences, University of Amsterdam (1997).



Esther Dijkstra, 13 June 2018

### Disclaimer

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## **Summary**

EcoAgriLogic Ltd was commissioned by South Wairarapa District Council to prepare a Preliminary Site Investigation Report (PSI) to determine the potential soil contamination of the proposed Martinborough Development Area ('The Site').

This Preliminary Site Investigation (PSI) Report intends to present the site and land-use history and identify potential areas where significant soil contamination potentially could have resulted from previous use of the site.

This report identified three main current and previous land-use activities for the site that are controlled by the NES: farm activities, orchard and vineyard activities and a disused abattoir.

This investigation concludes these three activities will not have caused soil contamination that exceeds the soil contamination standards.

The proposed plan change from primary production to residential will highly unlikely be a risk to human health, based on the current, historical and anecdotal information for the activities described in this report.

## **1 Introduction**

EcoAgriLogic Ltd was commissioned by South Wairarapa District Council to prepare a Preliminary Site Investigation Report (PSI) to determine the potential soil contamination of the proposed Martinborough Development Area ('The Site').

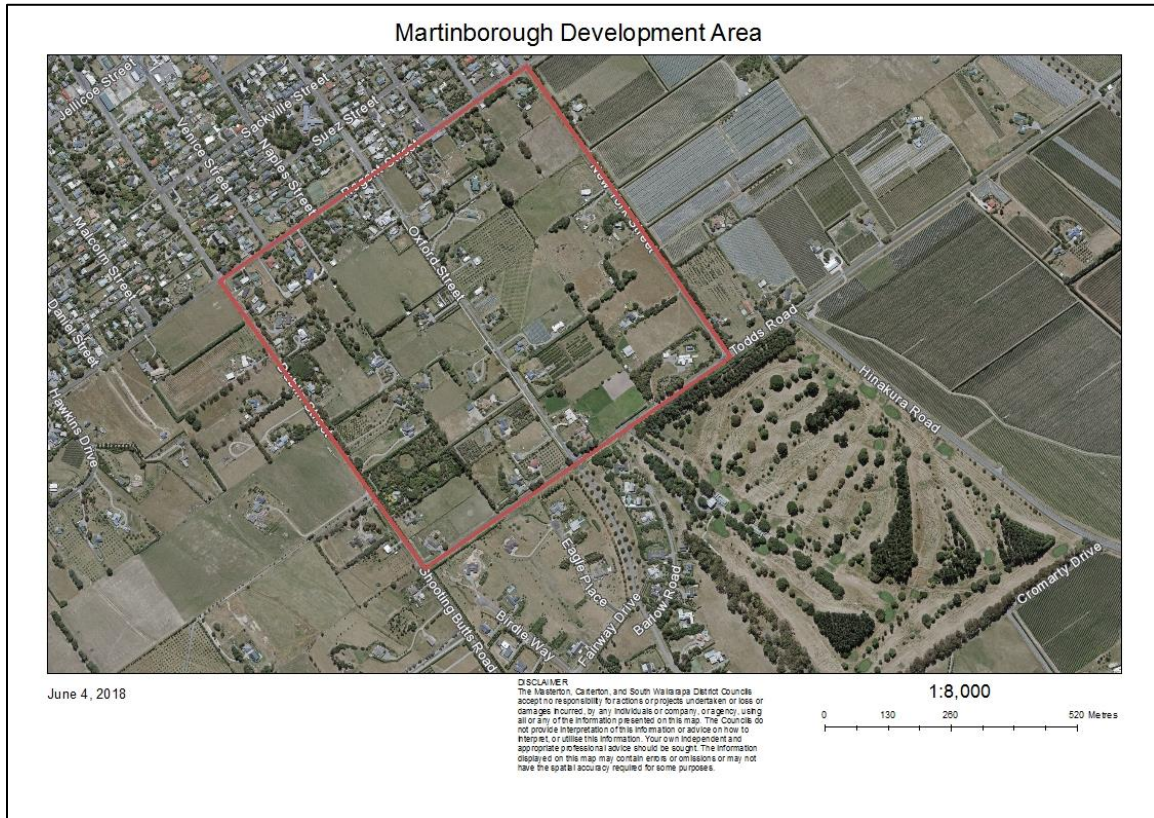
It is the intention to change the zoning of the district plan from primary production to residential.

### **1.1 Objective**

This report has been prepared for the purposes of subdivision and has been completed in accordance with the Ministry for the Environment's "Contaminated Land Management Guidelines No1: Reporting on Contaminated Sites in New Zealand" (2011). This report includes all requirements for a Stage 1 Preliminary Site Investigation (PSI) report.

The area of the subject site is located between Regent Street, New York Street, Dublin Street and Todds Road Martinborough (figure 1).

The objective of this investigation is to determine whether there is any major risk of potential contamination that would make the proposed plan change unviable.



**Figure 1** The location of Martinborough Development Area, 'the site' investigated in this report.

## 1.2 Scope of work undertaken

The purpose of this Preliminary Site Investigation (PSI) Report is to present a 'high level' site and land-use history for the site. This report will investigate the main activities that could potentially trigger the NES, identify the likelihood of contamination and assess the need for further investigation.

This investigation will not report on the activities on each individual parcel of land within the site.

This is one of the methods described in Section 6(3) of the NES to establish whether the regulations apply.

To achieve the project objective, the scope of works outlined in Table 1 was undertaken.

**Table 1.** Scope of Works

<b>Work Activity</b>	<b>Description</b>
Preliminary site investigation	Completing a site visit, reviewing selected historical aerial photographs from ca. 1940s, reviewing online geographic information systems records relating to the site and vicinity, viewing council files and collect anecdotal information
Reporting	Preparation of this report summarising the findings of the PSI

## **2 Site Description**

### **2.1 Site identification**

The site is located between Regent, New York, Dublin Streets and Todds Road on the outskirts of Martinborough (figure 1). This area is currently zoned primary production, apart for a small area that is zoned residential along Regent Street (between Dublin and Oxford Streets).

The site has already been divided into 69 smaller and larger parcels, some with dwellings, and others in pasture or orchards or vineyards.

### **2.2 Site condition**

The site was inspected on Monday the 7 May 2018 by Esther Dijkstra of EcoAgriLogic Ltd.

The site is surrounded by urban development to the northwest. Vineyards are located to the northeast. The Martinborough Golf Club and the Martinborough Estate (housing) are located to the southeast. Larger lifestyle blocks are to the southwest

There were no visible signs of contamination or plant stress at the time of inspection of the site.

One of the properties within the site is registered on Greater Wellington's selected Land Use Register (SLUR). The SLUR records sites that fit the definitions in the Ministry for the Environment's Hazardous Activities and Industries List (HAIL, 2011).

The address of this property is 71 Oxford Street, LOTS 16 17 DP 2271 LOT 3 DP 5931. The SLUR file number is SN/08/001/02 (Figure 2).

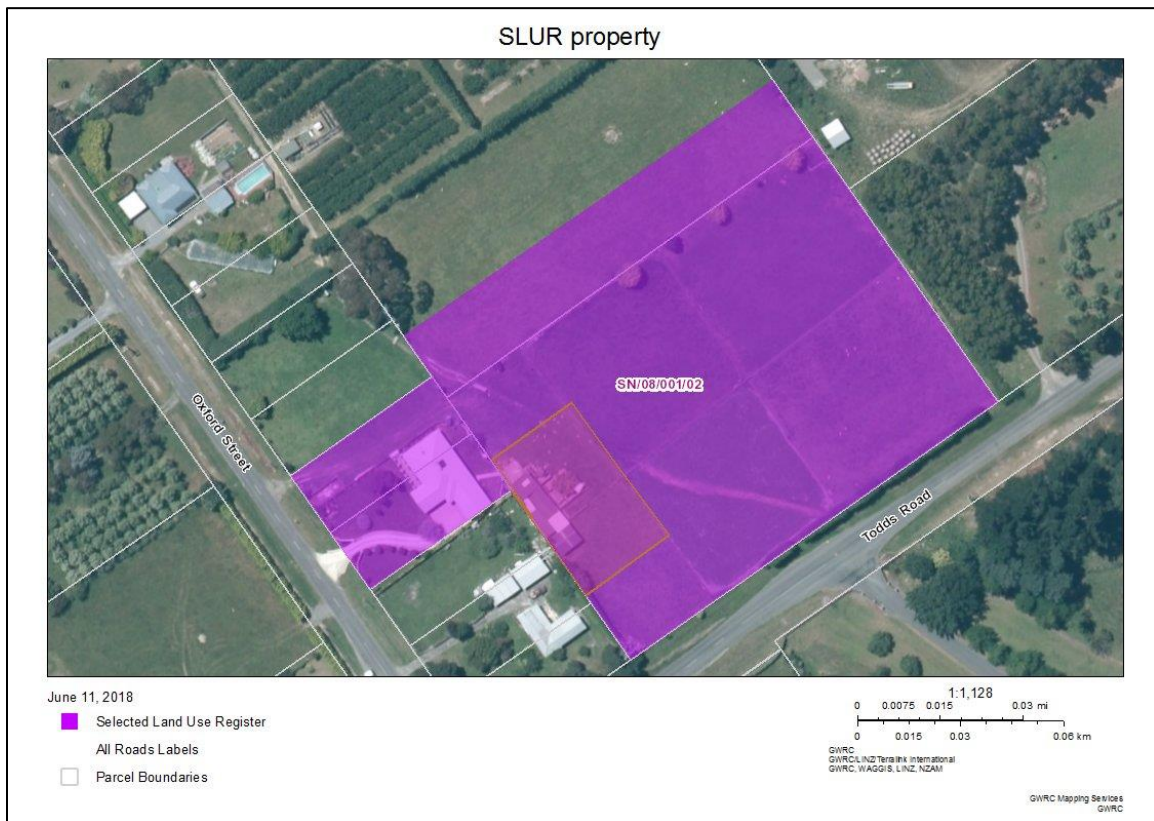
The property is included on the SLUR because it has a verified history of hazardous activity or industry listed on the HAIL: Chemical manufacture, application and bulk storage - Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products.

The following information has been obtained from Greater Wellington Regional Council's SLUR report:

'This site has previously been used as an abattoir and is currently occupied by residential housing. There is an old ofal pit on this site that has been covered over and a vent has been installed to allow the release of gas. No detailed site investigation is held by Greater Wellington and therefore the extent of contamination, if any, is unknown.'

According to additional information obtained by GWRC in 2006:

'The abattoir closed mid-1990s. The abattoir is now used as a shed. There is an old ofal pit that has been covered over and has a vent to allow the release of any gases that may build up. The site has now residential housing.'



**Figure 2** – SLUR property within the Martinborough Development Area, as indicated in purple. The orange rectangle outlines the area of the abattoir according to historical aerial photographs.

### 3 Historical Information

#### 3.1 Review of aerial photographs

Two aerial photographs (see appendix A) were used to assess the historical use of the site as detailed below. The photographs were sourced from Retrolenz.

**1944** – The earliest photograph is from 1944. This aerial photograph only shows the site at the corner of Regent and New York Streets. It is mostly as a paddock. Some smaller blocks are developed along Regent Street.

**1961** – This photograph shows some smaller blocks along Oxford Street. Otherwise mostly as paddocks or land used for cropping. The dairy sheds and yards for the town milk supply are visible along New York Street (figure 3). The property with the abattoir as described in the SLUR is visible on the corner of Oxford Street and Todds Road. The Golf Course is also clearly visible.



**Abattoir at 71 Oxford Street (1961 left, present right). Yards are found inside the orange circle.**



**Town milk supply along New York Street (1961 left, present right). The current address for this property is 132 New York Street.**

**Figure 3 – details of aerial photographs of the Martinborough development area**

Google Earth photographs from 2002 show an increased number of developed blocks especially in the area east of Oxford Street. Also clearly visible are a number of small orchards and vineyards on both sides of Oxford Street as well as along Dublin Street.

Yards and a series of sheds are visible at 71 Oxford Street. Some of the old sheds at the Town supply (132 New York Street) are also still visible (figure 3).

### **3.2 Anecdotal information**

Mr. Mate Higginson was interviewed over the phone on Tuesday the 29<sup>th</sup> of May 2018 and Friday the 8<sup>th</sup> of June 2018 about the site. Mr Higginson is a Martinborough local and has lived in Martinborough for 80 years.

He knew that the site was part of land owned by Mr. Beveridge in the early 1900s. Mr. Beveridge used the land for grazing cows and sheep. The cows were milked on the site in various cow sheds. According to Mr. Higginson, there were no wool sheds or sheep dips on this site. One wool shed was located on (what is now) Hawkins Drive and another wool shed was located on (what is now) the Martinborough Estate, Todds Road.

The town milk supply was located along New York Street. Mr. Higginson was very familiar with this place as he did some milking there himself at one point in time. This operation stopped supplying milk to Martinborough around 1958. The cows were never drenched on site, according to Mr. Higginson.

He also knew that the small abattoir on the corner of Oxford Street and Todds Road was used as a slaughterhouse for horses. It was a small scale business producing pet food, owned by Mr. Diederich. It started during the mid- 1960s and closed mid-1990s. The horse hides were not processed on site. The current owner of the adjacent property, Nick Diederich does not know where the offal pit is located.

The oldest orchard is on Oxford Street and currently owned by Mr Kirk. According to Mr. Higginson the orchard started in the 1960s as a plum orchard, owned by the local postman, J. Culkin. The orchard was later planted in apricots about 25 years ago for non-commercial purposes. According to Mr. Kirk, no harmful sprays were used.

The vineyards were planted some 20 years ago, after Mr. Kirk planted his orchard. According to Mr. Higginson, one of the vineyards was planted in the 1980s as an experimental vineyard by Mission Estate.

### **3.3 Council property files**

South Wairarapa District council property files for the site were obtained and reviewed. The property files gave little information regarding soil contamination.

## 4 Discussion

The NES applies to any piece of land on which an activity or industry described in the HAIL is being undertaken, has been undertaken or is more likely than not undertaken. An investigation into the land-use history is therefore the trigger for determining whether the land is covered by the NES.

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) came into effect on 1 January 2012. The NES applies to land where an activity which is described in the MfE's HAIL is being or has been undertaken, or it is more than likely that such an activity or industry has been undertaken.

The NES is administered by territorial authorities; in respect of the site the relevant territorial authority is South Wairarapa District Council (SWDC).

### 4.1 Farming activities

Based on readily available historical and current information, the site has been used for farming since the early 1900s, mainly for the grazing of cows and sheep.

Farming is not an activity on the HAIL. Activities related to farming that are listed on the HAIL are bulk storage of fertilisers, and the use of persistent pesticides, in particular those used for dipping sheep.

According to the available information, the site did not have woolsheds or sheep dip sites. According to Mr Higginson, woolsheds were found just outside the area of the site, on Todds Road (currently part of the Martinborough Estate) and on Hawkins Drive.

Fertilisers will have been applied to the site as part of the farming business, but there is no information that these were stored on this site in bulk quantities. Investigation shows that there have been no farm supply businesses or similar located on this site that could have stored fertilisers in bulk.

The property at 132 New York Street was once part of the town milk supply (figure 3). Yards and sheds are still present at this site. Milking cows is not an activity listed on the HAIL. Cows could potentially have been drenched in the yards, but drenching cows was not a common practice. Unlike sheep dip sites, there is no evidence in New Zealand of potential soil contamination around cattle yards.

DDT could have been used on the pastures of the site to control grass grub. It was banned for use on pastures in 1970. Despite this, measurable levels of DDT residues can be found in soils around New Zealand, which have received applications in the past. The concentrations of DDT remaining in the New

Zealand are generally far below those required to induce acute effects on human health (Boul, 1994).

There is no data available for DDT in Wairarapa pastures. A study by Cavenagh et al., 2015, shows maximum levels of  $\Sigma$ DDT in pastures ranging from <0.03 mg/kg in Auckland to 1.69 mg/kg in Bay of Plenty. Only 7% of paddocks on Canterbury farms had  $\Sigma$ DDT levels greater than 1.0 mg/kg (Orchard et al, 1991).

These levels found in paddocks around New Zealand are well below the soil contaminant standard for DDT, which is 70 mg/kg for residential 10% produce (MfE, 2011).

Given the levels found in paddocks around New Zealand, it is unlikely that the levels of DDT of the site will be exceeding the soil contaminant standard.

#### **4.2 Abattoir at 71 Oxford Street**

Abattoir activities are listed on the HAIL and therefore triggers the NES. The activity started in the 1960s. A shed was present on the 1961 aerial photographs, but not the yards. The SLUR documents reveal that this activity ceased around 1995. The abattoir was a small operation making pet food. There used to be an offal pit, but it is not clear where it is located.

There is no evidence that any skin processing took place at this site, including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing leather products.

The location of the offal pit needs to be confirmed. However, it is very unlikely that this pit will contain any chemical residues that would trigger the NES, given that the hides went off site to be processed.

The SLUR indicates that the entire area of 71 Oxford Street is potentially contaminated, including LOTS 16 17 DP 2271 LOT 3 DP 5931 (figure 2). According to the aerial photographs, the abattoir shed and yards were located on the south west boundary of LOT 3 DP 5931 (figure 2 and 3). Most likely the offal pit would be on this lot too.

#### **4.3 Orchard and vineyard activities**

Some small orchards and vineyards are visible on the Google Earth photographs since 2002. There is no aerial photographic material available between 1961 and 2002.

According to local knowledge, a plum orchard was planted along Oxford Street during the 1960s and later replaced by apricot trees. The orchard is not apparent on the 1961 aerial photograph.



The vineyard activities started about 20 years ago, according to local knowledge.

The orchards and vineyards are not for commercial production.

The potential hazards associated with (commercial) orchards and vineyards are limited to associated use of pesticides to control pests or weeds. The substances of concern for vineyards and orchards are copper, lead-arsenate and DDT.

Copper mixtures, including copper sulphate, are still being used in vineyards to control mildew and *botrytis*. Copper is a priority contaminant with a Soil Contamination Standard (SCS) to protect human health (MfE, 2011). The uptake of copper is largely by consumption of produce. The dermal and inhalation intakes are insignificant.

The derived SCSs values for copper are > 25,000 mg/kg and well above what would normally be encountered on contaminated sites in New Zealand and have therefore been assigned a value of 'no limit' (NL).

Lead-arsenates were used in orchards to control chewing insects on fruit and mealy bug on grapes. Both lead and arsenic are priority contaminants with a Soil Contamination Standard (SCS) to protect human health (MfE, 2011). Like copper, the uptake of lead and arsenic is largely by consumption of produce.

It is unlikely that lead-arsenates were used on the orchards and vineyards of the site, given that the first grapes were planted in the 1980s, and lead-arsenate mixtures were withdrawn from use in the 1970s.

The plum and apricot orchard was planted during the 1960s, before the withdrawal of lead-arsenates. Stone fruit was typically sprayed with copper and sulphur and not with lead-arsenates (Gaw et al., 2002).

DDT was widely used in orchards to control a wide variety of chewing insects between 1947 and 1970. The last products containing DDT were deregistered by the Pesticides Board in December 1989.

Gaw (2002) reports that DDT was not typically used on stone fruit. According to anecdotal evidence, no harmful pesticides were used on this orchard.

DDT was commonly used on grapevines in the past, but it is very unlikely that DDT was used on the grapes of this site, as the grapes were planted after the phasing out of DDT in New Zealand.

## 5 Recommendation

This report identified three main current and previous land-use activities for the site that are controlled by the NES: farm activities, orchard and vineyard activities and a disused abattoir.

This investigation concludes these three activities will not have caused soil contamination that exceeds the soil contamination standards.

The proposed plan change from primary production to residential will highly unlikely be a risk to human health, based on the current, historical and anecdotal information for these activities for this site.

This investigation was undertaken for a large scale plan change and not every parcel of land was investigated separately. Due diligence is advised when granting subdivisions. Further investigation might be needed, if additional information becomes available about activities on properties that trigger the NES, not covered in this report.

## References

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# Appendix A



Martinborough 1941-1944



Martinborough 1961-1962