

## 3.0 Catchment Description

### 3.1 Overview

The Waru/Haisman catchment covers an area of approximately 1,150 hectares and is located directly to the north-west of Gisborne City. The catchment is a mix of steep forested and pastoral land in the upper part of the catchment. The lower portion of the catchment is dominated by permanent and annual horticulture and an increasing number of rural lifestyle lots.

The two main drainage paths within the catchment are the Waru and Haisman Streams. Both of these streams have been heavily modified from their natural state and discharge into the Taruheru River.

### 3.2 Location and Subcatchments

The Waru/Haisman catchment is located north-west of the Gisborne Hospital. As shown in Figure 3.1 (at the end of this section), it encompasses the land bound by Hansen Road, the Back Ormond Road, Glenelg Road and the ridgeline between Matokitoki Valley and Waimata Valley.

The study area has been divided into 11 subcatchment areas. Each of these areas is described in Table 3.

**Table 3 : Description of Subcatchments**

<b>Subcatchment</b>	<b>Area (ha)</b>	<b>Description</b>
Upper Haisman (South)	58.84	Moderately steep land with 5% tree coverage. Mostly used as pasture with some residential development.
Upper Haisman (North)	141.52	Moderate to steep land with 5% tree coverage. Majority of the land is undeveloped and used for pasture only.
Back Ormond	25.98	Moderately steep land with 10-20% tree coverage. Land remains in large lot sizes with no residential development.
Lower Haisman	118.04	Flat land with no tree coverage. Land is mostly used for pasture but changing to rural residential.
Maclaurin-Anderson	4.65	Small flat rural residential catchment with minimal tree coverage.
Harrison	4.98	Small flat rural residential catchment with minimal tree coverage.
Orchiston	47.01	Moderately steep catchment with 20-30% tree coverage.
Royd Rd East	46.58	Moderately flat land with less than 10% tree coverage. West of Maclaurins Road land is used primarily for cropping or horticulture, east of Maclaurins Road is residential.
Upper Waru	477.95	Steep hill country with 20-30% tree coverage. Land is used for pasture.
Maclaurin	112.79	Steep catchment with less than 10% tree coverage. Some residential development in lower catchment, otherwise pasture.

**Table 3 : Description of Subcatchments (Cont.)**

<b>Subcatchment</b>	<b>Area (ha)</b>	<b>Description</b>
Glenelg	68.04	Flat catchment with an even mix of residential and horticulture land use.
Lower Waru	20.11	Flat catchment used mostly for cropping.
Manders	19.39	Flat catchment with a mixture of residential and cropping land use.

### 3.3 Receiving Environment

The catchment discharges into the Taruheru River via two main streams: the Waru Stream and the Haisman Stream. The Taruheru River runs westward through Gisborne City where it meets with the Waimata River and discharges into Poverty Bay.

Modelling of the Taruheru River has previously been performed and reported by Reid [4].

### 3.4 Geology

#### 3.4.1 General

The general description of the soils within the catchment has been taken from the Soil Maps of the Gisborne Plains published by the New Zealand Soil Bureau in 1959, which has been reproduced as Figure 3.2 at the end of this section.

The soils are described as:

- Kaiti Silt Loam over most of the lower catchment
- Waipaoa Silt Loam and Waihirere Silt Loam adjacent to Waru Stream

#### 3.4.2 Erosion and Land Stability

Soil erosion is a well known problem in the hill country in the Gisborne District. The District Plan has classified the land according to its suitability for sustainable management and its susceptibility to erosion and sediment loss.

In Chapter 6 of the District Plan [1] land is classified as either Land 1, 2, or 3 to describe its capacity for sustainable use or susceptibility to erosion.

- Land 1 comprises the Districts' flat land and easy hill country that is capable of a wide range of sustainable land uses.
- Land 2 comprises hill country land which is moderately limited in terms of its capability for sustainable use.
- Land 3 comprises steep hill country which is severely limited in terms of its capability for sustainable land use. It is most susceptible to erosion, sediment generation and soil loss.

Within the Waru/Haisman catchment the lower, flatter part of the catchment are designated as Land 1. The hill country in the upper catchment is a combination of Land 2 and Land 3.

### **3.5 Cultural and Heritage Alerts**

The Gisborne District Council Combined District and Land Regional Plan identifies that much of the catchment is covered by the Heritage Alert Overlay.

Several Archaeological/Waahi Tapu sites are also identified within the catchment.

In particular, the land adjacent to the Waru Stream and Taruheru River is identified in the Heritage Alert overlay.

### **3.6 Present Land Use**

The existing land use in the catchment is a mixture of rural residential developments and general rural land use.

The rural residential developments are concentrated around the Haisman Road, Maclaurin Road, Glenelg Road area where lot sizes average between 1 and 2 hectares. The general rural land is located in the upper part of the catchment where the topography is steep and is in the form of pasture and plantation forest.

Some rural production land (both permanent and annual crops) prevail but the trend over recent years has been to subdivide land into 1 hectare lots, the minimum lot size currently allowed in the Rural Residential zone. Notable recent subdivisions are the Solomon block in Back Ormond Road, Hexton Park in Hansen Road and the Moss subdivision in Haisman Road. All of these have converted former rural productive land into 1 hectare residential lots.

Presently, there is no reticulated water supply or sewer in the catchment. Water for domestic use is collected either from roofs or streams and stored in tanks. Wastewater is disposed of via on-site wastewater treatment, the majority of which are traditional septic tanks and subsoil effluent disposal fields.

### **3.7 Future Land Use**

The major change to land use in the future is the proposed plan change to allow a minimum lot size of 5,000 m<sup>2</sup> (0.5 ha) in the rural residential zone. Concerns how stormwater can be managed effectively if the plan change proceeds, have played a large part in the need for this catchment management plan to be developed. It is anticipated that the recommendations of this report will support a basis for planning rules. The extent of the proposed plan change is shown in Figure 3.3.

The proposed catchment management plan had originally included the rural residential land to the south-west of Back Ormond Road. This land would require a limited reticulated wastewater system to be installed to resolve known issues with septic tanks and disposal fields. Due to the high cost of installing the wastewater system, and relatively low demand for new sections, a decision has been made to exclude this area of land from the proposed plan change, and at this stage, the minimum lot size will be 1 hectare.

Reticulated water supply has also been proposed to be extended into the rural residential area. Water supply will be in the form of a metered supply and will be a top-up to the roof and tank supply.

The Gisborne District Council Roading section has advised that no new roads or extensions to existing roads are anticipated as part of the plan change. Where subdivision occurs access is likely to be from right-of-ways serving up to ten properties.

Allowing subdivision down to 5,000m<sup>2</sup> will leave the land highly fractured. Further subdivision (e.g. to urban residential sized lots) will be difficult as the reserves and easements required to service an urban development (e.g. road reserve, utility easements) will need to cross several different properties. It is assumed that gaining agreement from all the affected landowners make further subdivision unlikely.

It is understood that no planning changes to the land zoned Rural Production and Rural General are anticipated in the foreseeable future.

### **3.8 Existing Stormwater Infrastructure**

Stormwater is currently managed through a network of open drains and modified natural streams. The drains were constructed in the 1960s by the East Cape Catchment Board as the Waipaoa Flood Control Scheme was completed and allowed for permanent cropping of land on the floodplain. The drainage network is currently maintained by Gisborne District Council as part of the Eastern Taruheru Drainage Area.

The drains within the catchment maintained by Council include:

- Haisman Stream
- Harrisons Drain
- Maclaurin Anderson Drain
- Orchiston Drain
- Maclaurin Road Drain
- Lovelocks Drain
- Royd Road Drain
- Waru Stream, up to Maclaurin Road
- McLaurin Drain
- Glenelg Road Drain
- Whitehead Drain

The drainage network is designed and maintained to allow runoff from a 1 in 5 year storm to be conveyed without overtopping. Modifications to the natural channels have included deepening and straightening of the channels for greater hydraulic efficiency.

Manmade drains were often constructed to drain low-lying swampy areas and allow for subsurface drainage to be provided.

In addition, watertable drains are provided next to roads to minimise the impact of groundwater on pavement materials. These drains are shallow and not intended for any other purpose than collecting and disposing of runoff from the pavement surface.

No stormwater treatment or detention devices are included in the existing catchment. Aerial photographs show a few ponds but these are for the purpose of provided water for stock, rather than detain or manage excess runoff.