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**APPENDIX D – WASTE WATER REPORT**

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0800 PPGROUP



27 March 2012

Ballantyne Developments Ltd  
 c/o Patterson Pitts Partners (Wanaka) Ltd  
 PO Box 283  
 Wanaka

**ATTENTION:** Mike Botting

Dear Mike,

**RE: Ballantyne Developments Ltd, 3 parks, Wanaka**

It has been noted that we have previously prepared reports for this subdivision on 26 August 2010. This report is further to our previous report and takes into account the latest proposed development and has been carried out using the latest model.

As outlined in your e-mail dated 22 August 2012 our wastewater modelling report has been prepared for the proposed development by Ballantyne Developments Ltd within the 3 Parks area, Wanaka. Legal names being Lot 4 DP22854, Lot 1 & Lot 2 DP304423, Lot 1 DP 12726, Lot 1 DP12295 and Lot 1 DP12296. This report is based on the Wanaka dynamic wastewater model (2011), calibrated to flow data from December 2010 and January 2011.

The objective of this work is to determine if the wastewater network has sufficient capacity with the addition of this development.

We have completed our investigations based on the development containing the following loads:

Catchment	Load Type	Units	Total Units	Load / Unit / Day (l/d)	Total Load (l/d)	Approx Peaking Factor	Rainfall Catchment Area (Ha)
A	Residential	Units	60	660	39,600	2.7	28.54
B	Residential	Units	510	660	336,600	2.7	
B	Mixed Business	Ha	0.74	60,480	44,755	1.5	9.27
C	Residential	Units	133	660	87,780	2.7	

All residential loads have been modelled as per the standard load from the calibrated model. As per our previous report, we have included the mixed business load as per NZS4404 Table 5.2.

The following catchment connection configurations have been modelled:

Scenario 1

- Catchment A – Pumping to manhole ID SM11373 (Model UID 211938), located on Ballantyne Road, Wanaka.
- Catchment B – Gravitating to manhole ID SM11237 (Model UID 228712), located along side the Wanaka to Luggate Highway.
- Catchment C – Pumping to manhole ID SM11225 (Model UID 228709), located along side the Wanaka to Luggate Highway.

## Scenario 2

- Catchment A – Pumping to Catchment B.
- Catchment B – Gravitating to manhole ID SM10750 (Model UID 228712), located alongside the Wanaka to Luggate Highway.
- Catchment C – Pumping to Catchment B.

To model the two proposed pump stations two key assumptions have been made:

- The pump capacity is equal to approximately 120% of the maximum daily inflow for the modelled scenario.
- The pump station operating volume has been set so that the minimum delay between pump runs does not exceed 2 hours to minimise septicity and odour issues.

## Modelling Standard

The model has been run to the following standard, as is currently agreed with Council:

- 2011 peak day population sanitary loadings and diurnal patterns.
  - Residential load, 660 l/d/dwelling, approximate peaking factor of 2.7
  - Accommodation load, 370 l/d/unit, approximate peaking factor of 2.5
  - Commercial load, 150 l/d/connection, approximate peaking factor of 1.5
- 20 year return, 12 Hr duration storm.

The relevant sections of the network have been checked for capacity using the following criteria:

- No overflows allowed at any network element.
- No pump station overflows based on the duty pump capacity.

## Scenario 1

### Results – Ballantyne Developments Ltd to Riverbank Road Pump Station

- There are no related network elements overflowing.
- The pump station inflow does not exceed outflow at any time. This is based on a single duty pump capacity of 250l/s and a total storage volume of 141.8m<sup>3</sup>.

### Results – Riverbank Road Pump Station to Albert Town – Hawea Road Pump Station 2

- There are no related network elements overflowing.
- The pump station inflow does exceed outflow. However this does not result in an overflow. This is based on a single duty pump capacity of 215l/s and a total storage volume of 114.8m<sup>3</sup>.

## Scenario 2

### Results – Ballantyne Developments Ltd to Riverbank Road Pump Station

- There are no related network elements overflowing.
- The pump station inflow does not exceed outflow at any time. This is based on a single duty pump capacity of 250l/s and a total storage volume of 141.8m<sup>3</sup>

### Results – Riverbank Road Pump Station to Albert Town – Hawea Road Pump Station 2

- There are no related network elements overflowing.
- The pump station inflow does exceed outflow. However this does not result in an overflow. This is based on a single duty pump capacity of 215l/s and a total storage volume of 114.8m<sup>3</sup>.

## Discussion

Modelling of the current Riverbank Road Pump Station catchment and downstream network indicates that the existing network has sufficient capacity to handle the addition of this development, under either configuration scenario, based on the above assumptions.

It should be noted that the current model includes the diversion of flows from Anderson Road, away from the Wanaka CBD to the Riverbank Road Pump Station, via the Wanaka – Luggate Highway Pump Station.

## Recommendation

It is our recommendation that the development is allowed to connect. However, we recommend that the whole of life cost of the asset should be considered when choosing which scenario will be constructed.

Due to the rapid growth occurring in this area, the validity of this letter should be checked any time it is used as supporting evidence in a consent application.

It should be noted that the wastewater model is an attempt to simulate a physical system using hydraulic equations and various assumptions, hence it bears some uncertainty. QLDC's GIS data was used to develop the models and we can offer no guarantee on the accuracy of this information. The sanitary loads, diurnal patterns and infiltration and inflow rates are an approximation of the patterns in the townships which have been agreed with QLDC.

Yours Sincerely,



**Mark Baker**  
Infrastructure Analyst



**Tom Lucas**  
Director / Infrastructure Analyst

Figure 1 – Scenario 1 & 2 – Catchment A, Proposed Pump Station Inflow / Outflow

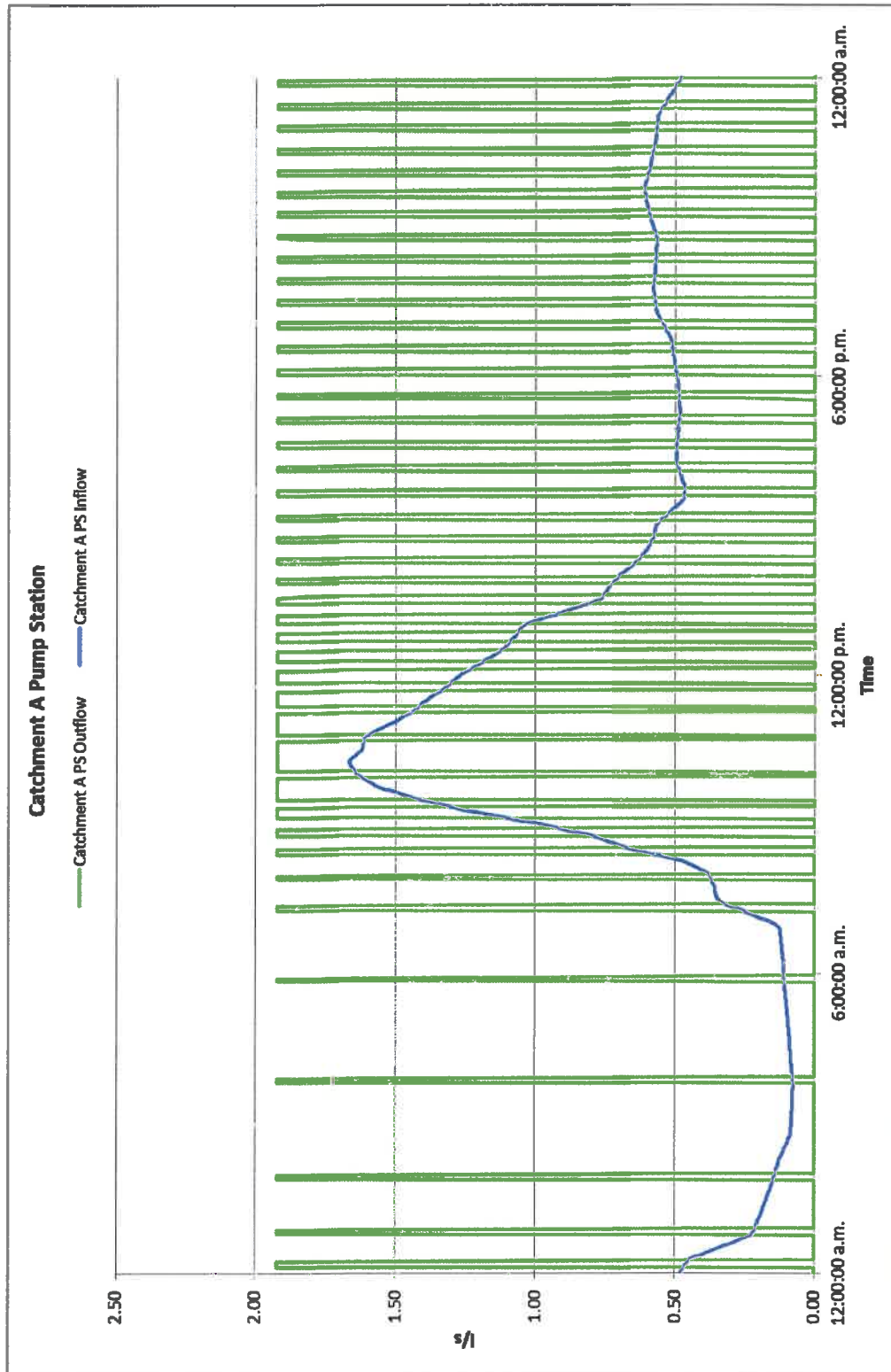


Figure 2 – Scenario 1 & 2 – Catchment C, Proposed Pump Station Inflow / Outflow

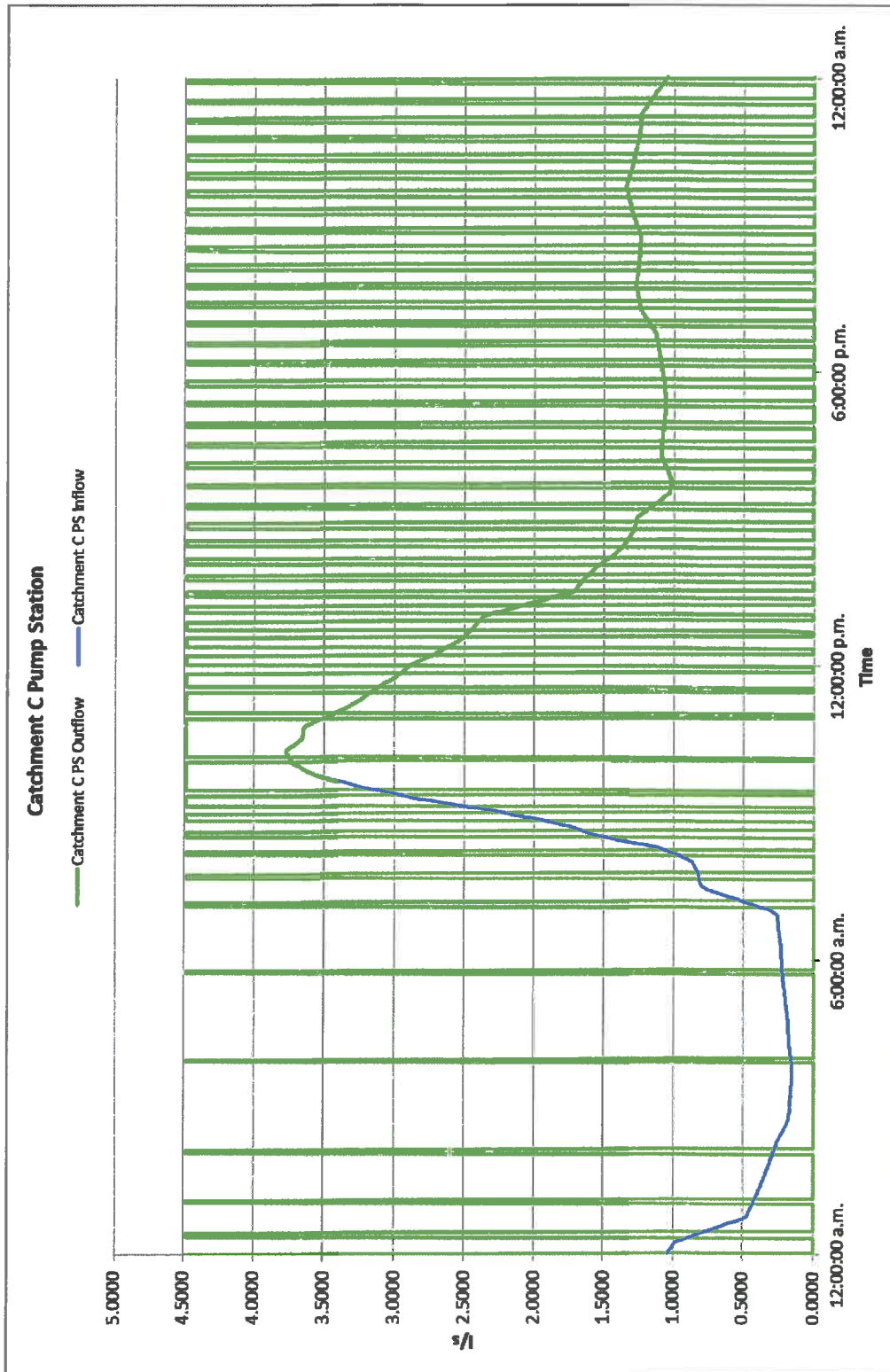


Figure 3 – Scenario 1 – Riverbank Road Inflow / Outflow

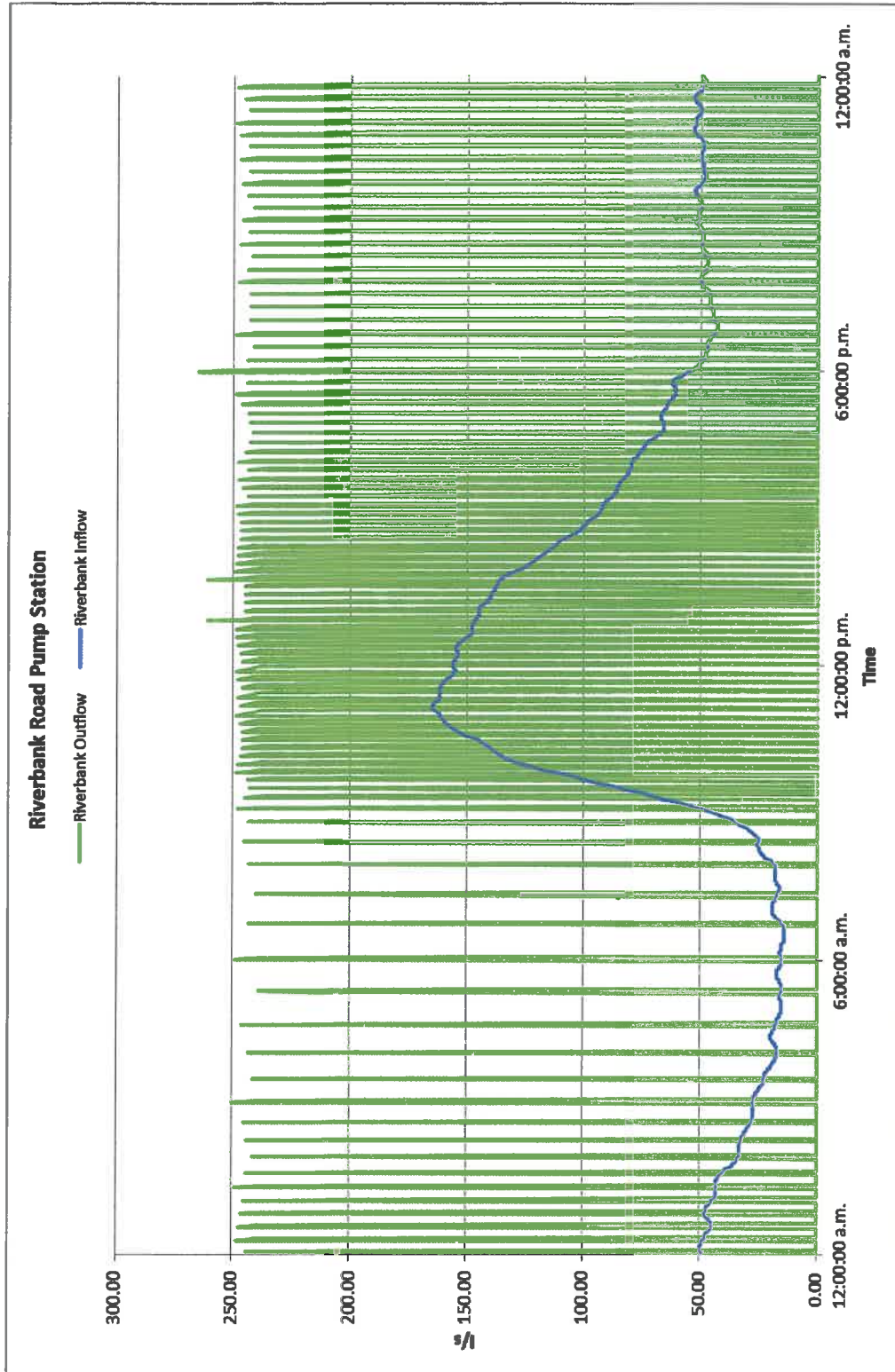


Figure 4 – Scenario 1 – Albert Town - Hawea Rd Pump Station 2 Inflow / Outflow

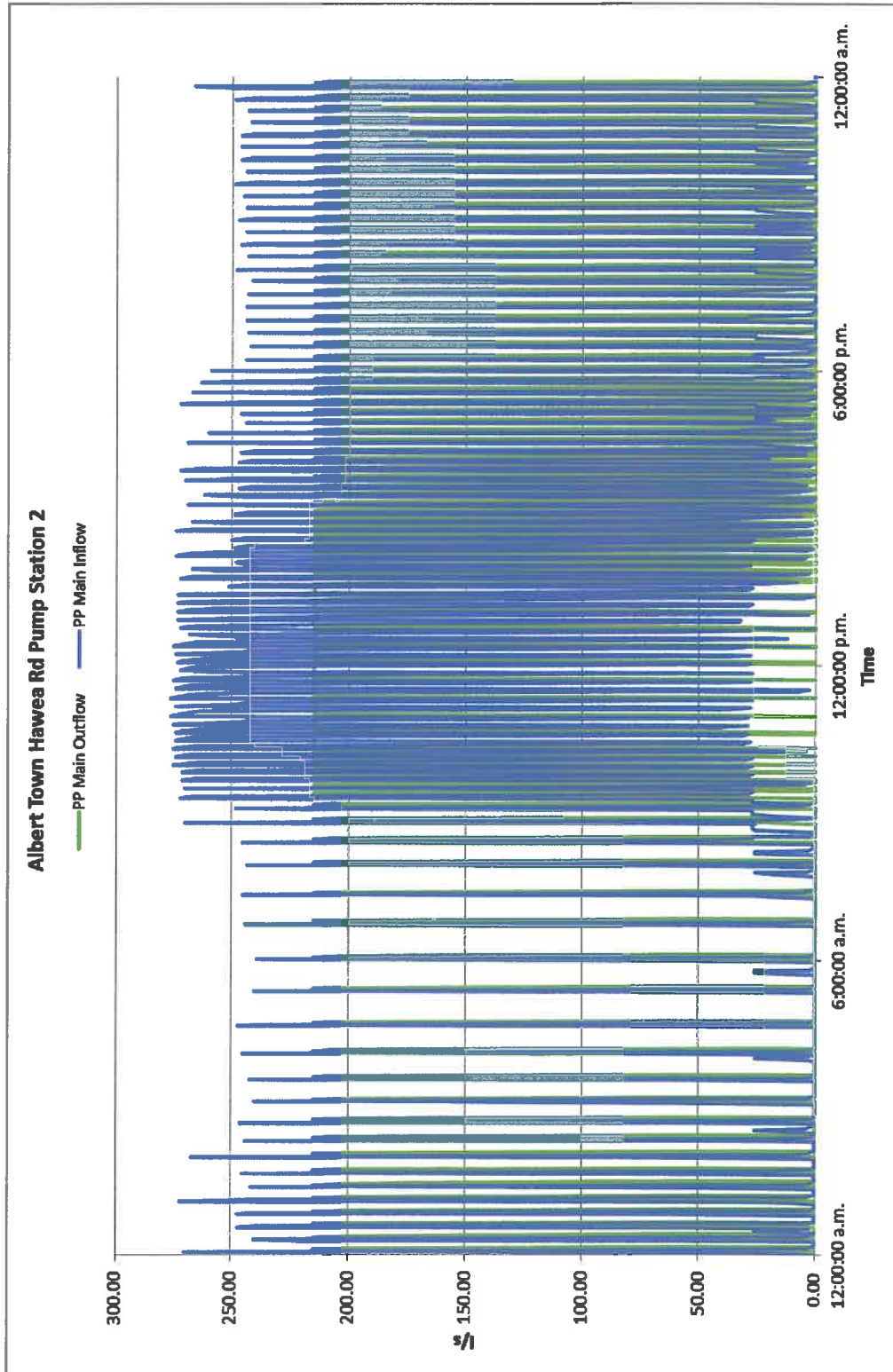




Figure 5 – Scenario 2 – Riverbank Road Inflow / Outflow

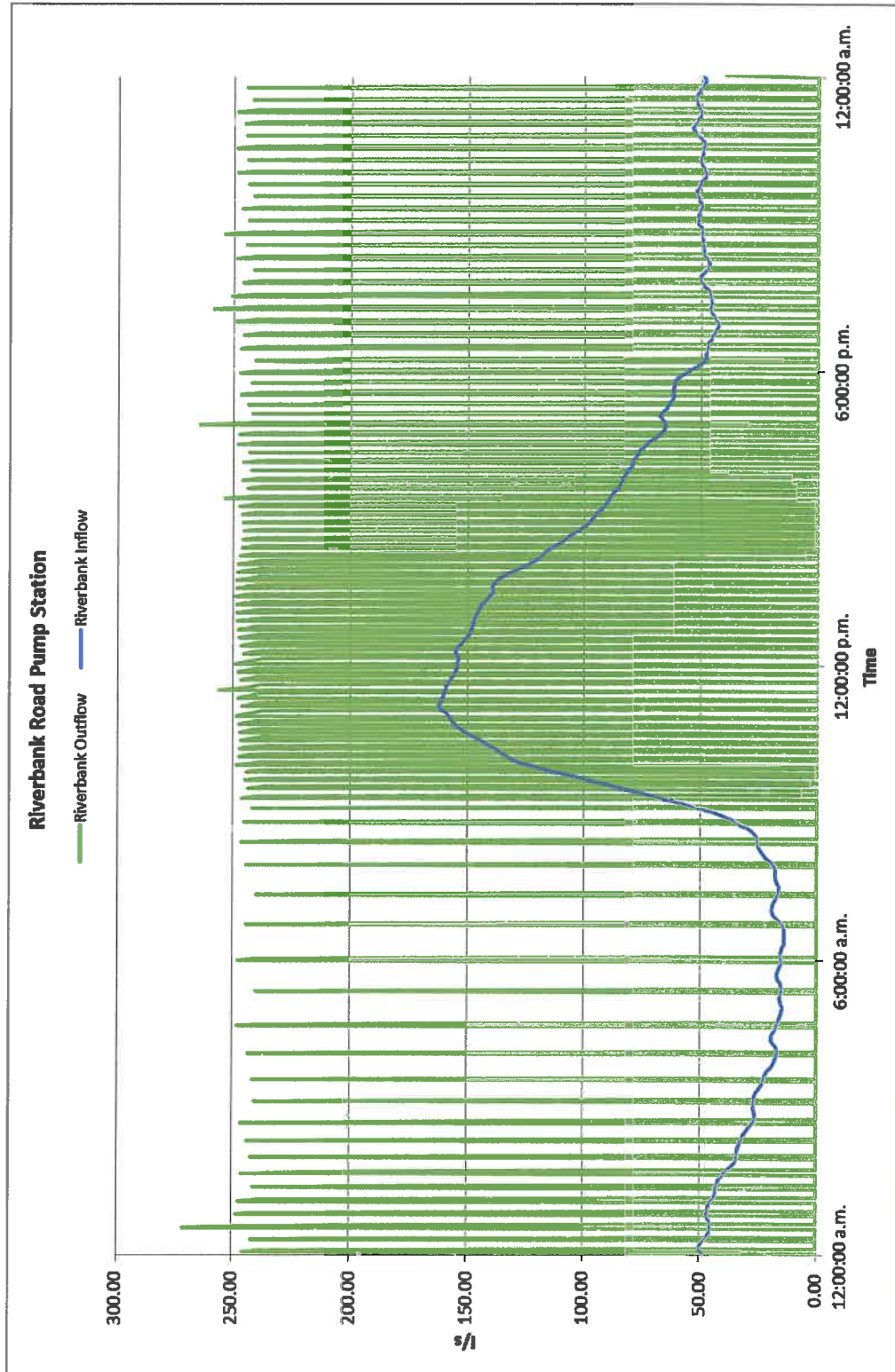


Figure 6 – Scenario 2 – Albert Town - Hawea Rd Pump Station 2 Inflow / Outflow

