

A decorative graphic consisting of two orange L-shaped brackets, one on the left and one on the right, framing a large, dark blue letter 'B'. Below the 'B' is a thick orange horizontal line.

# B

## **APPENDIX B**

Water and Wastewater Demands  
Response Memorandum – Woods

**To**  
Wellington City Council

**From**  
Woods  
Mark Cochran – Director

W-REF: P20-132  
30 September 2020

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## Further Information Response

### Ryman Healthcare Limited – 26 Donald St & 37 Campbell St, Karori

In response to Wellington City Council's 23 September 2020 further information request we provide the following information in relation to question 2:

#### ***Servicing and Infrastructure***

*The proposal has been reviewed by David Wilson of The Urban Engineers for Wellington Water. Mr Wilson has requested:*

*2. The information that has been used to establish the occupancy rates, water demands and sewer loads from this type of village.*

*The reason this information is requested is that numbers used are less numbers provided for in the Regional Standard for Water Services and Wellington Water requires the detail to be able to assess the validity of the design figures used.*

As stated in Woods Infrastructure Assessment Report, 25 Aug 2020, "...Ryman are experienced operators of comprehensive care retirement villages and have collected historic information on occupancy rates, water demands, and sewer loads for this type of village..."

Sewer loads are on average 160 litres/resident/day. In 2016 Woods completed a Wastewater Flow Analysis of Ryman's existing Diana Isaac Village in Christchurch. This village is serviced by a low-pressure sewer pump system and pumping run times/flows for each pump were able to be tabulated for a 246-day period. Based on the actual contributing Village population it was shown that the actual average daily wastewater flow per person was 155 litres (ie. **155 litres/person/day**). Refer to Woods 19 Feb 2016 Memo "Ryman Healthcare – Diana Isaac – Wastewater Flow Analysis.

Water demands are on average 200 litres/resident/day. Ryman Healthcare Ltd engaged Plumbing Design & Consultancy (NZ) Ltd to complete a report detailing evidence of water usage demand within these villages. This report provided analysis from two existing Ryman Villages and concluded the daily average water usage per person per day is 197 litres (ie. **197 Litres/person/day**). Refer to Plumbing Design & Consultancy Hydraulic Services Report 2008.



# **Plumbing Design & Consultancy (NZ) Ltd**

**HYDRAULIC SERVICES REPORT FOR**

**RYMAN HEALTHCARE LTD**

**REDUCED DEMAND GENERARATION AFFECTING DEVELOPMENT  
CONTRIBUTION FEES**



**PO Box 13-021**

**Johnsonville**

**WELLINGTON**

**Ph 04 232 1095**

**Fax 04 232 1096**

## HYDRAULIC SERVICES REPORT FOR DEMAND GENERATED BY RYMAN HEALTHCARE RETIREMENT VILLAGES

Client: RYMAN HEALTHCARE LTD

### **Contents**

- 1.0 Introduction
- 2.0 Development Description
- 3.0 Present Occupancy Loading Figures
- 4.0 Apartment Water Consumption Test Results
- 5.0 Complex Probable Simultaneous Flow Rates
- 6.0 Authorities Consumption and Occupancy Figures
- 7.0 Existing Development Contribution Charges
- 8.0 Percentage Comparison
- 9.0 Proposed Development Contribution Fee
- 10.0 Summary

Appendix A: Water Consumption Log Data

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## **1.0 INTRODUCTION**

- 1.1. The purpose of this report is to provide evidence that water usage demand generated by a Ryman Healthcare Retirement Village is significantly lower than a standard residential development. Included in the report is water consumption figures and the probable water usage figures using the company's records and test results.

Local Government Act and relevant case law requires generation of demand to be considered and appropriately applied when setting Development Contribution charges for water usage.

It is fair, reasonable and equitable that special consideration should be given to Ryman Healthcare based on a low generation of demand. This should result in a reduction in water usage development contribution charges.

## **2.0 RYMAN HEALTHCARE LTD BRIEF DESCRIPTION**

Ryman Healthcare Ltd provide a full range of care services to residents that include independent townhouses &/or apartments, assisted living suites, rest home, hospital and dementia care. Ryman offers choice and a continuum of care giving residents a feeling of independence, security and control over their own living conditions in their most senior and frail stages in life. The average age of residents in a Ryman Healthcare Retirement Village is 80 plus.

Ryman Healthcare as a leading and responsible operator of Retirement Villages throughout New Zealand and their comprehensive care provision separate them from other lifestyle retirement villages that cater to a younger more active resident (average age 55-65) who mainly provide independent townhouse and apartment accommodation with few, if any care beds.

Ryman the long term owners and operators of the village and consider themselves to be part of the local community. The communal style living, onsite amenities, age, lower occupancy per unit and a less active lifestyle all contribute to a significantly lower demand on all public services.

## **3.0 PRESENT OCCUPANCY LOADING FIGURES**

It is accepted that the average occupancy for an independent townhouse or apartment is 1.3 persons per independent unit. Occupancy in the care centre is 1 resident per suite. In comparison local authorities usually base the development contribution fee on an occupancy of 2.6 or 2.7 persons per unit. Ryman Healthcare's average occupancy is 50% below the local authorities demand assumption that calculates development contribution fees. This is very significant as it shows that demand generated by a Ryman Healthcare Retirement Village is half that of standard residential homes. This demand is further reduced when a resident's less active lifestyle is taken into consideration.

## **4.0 WATER CONSUMPTION TEST RESULTS**

Water usage survey test shown in appendix A was undertaken in 2004 by installing a 100mm pulse meter to the incoming water supply to 69 independent apartments of similar size and room numbers as shown in this development. Readings from the pulse meter put the peak load for the 69 apartments at 109.8 litres per minute (or 1.83 l/s) over a test period of 18 days which equates to only 1.59 litres per minute (or 0.0265 l/s) per unit.

When the above result is compared with the Probable Simultaneous Demand (PSD) figure of 5.85 l/s for 69 units within table 3.2 of AS/NZS 3500.1:2003 the actual demand figure is only 27% of what the standard would require.

The actual water usage reduction of over 60% is a direct result of lower resident occupancy and lower activity of residents.

Generally, most local authorities usually assume that a traditional residential house demand is approximately 780 litres per day and is the demand basis of the development contribution fee. The test figures shows the average water usage for each unit within the Ryman Healthcare Village is only 231 litres per day. This is only 30% of the 780 litres per day used in the working for the development contribution fee. This should be considered when assessing the development contribution fee on a Ryman Healthcare Village.

Independent townhouses and apartments have an accepted average occupancy rate of 1.3 people per unit. Occupancy rates for assisted living serviced suites and care suites have an accepted occupancy rate of 1 person per unit. Adjusting 231 litres per day per unit for the above occupancy rates, the daily average water usage per person per day is 197 litres.

The table below shows actual water usage per resident per day from 2 other Ryman Healthcare Villages over the last 12 months. This along with the attached water survey shows the significantly reduced water usage consistent across Ryman's Villages and is approximately 197 litres per resident per day.

	Residents	From	To	Days	m3	m3/day	litres per person per day
<b>Frances Hodgkins Meter</b>	138	17/01/2007	24/04/2007	97	3,573	37	268
<b>Number:</b>	138	24/04/2007	16/07/2007	83	1,299	16	116
093W038129	138	16/07/2007	1/10/2007	77	2,102	27	196
<i>Dunedin City Council</i>	138	1/10/2007	4/01/2008	95	2,361	25	181
					<b>Average</b>		<b>190</b>
<b>Rita Angus Meter</b>	247	7/03/2007	17/05/2007	71	3,782	53	215
<b>Number:</b>	247	17/05/2007	13/07/2007	57	3,014	53	215
1185402	247	13/07/2007	12/09/2007	61	3,046	50	202
<i>Wellington City Council</i>	247	12/09/2007	7/11/2007	56	2,822	50	202
	247	7/11/2007	26/01/2008	80	4,149	52	211
	247	26/01/2008	11/03/2008	45	2,674	59	239
					<b>Average</b>		<b>214.6</b>

## 5.0 PERCENTAGE COMPARISON

Comparing the councils occupancy/water usage figures with the test figures noted above and equate them to percentage figures we can get an average demand generation of only 40%.

The following is a summary of those figure:

Typical residential house demand	Ryman Healthcare Demand	% of demand compared to typical residential house
Occupancy of 2.6 persons per Unit	Occupancy of 1.3 persons per unit	50%
Water Usage of 780l/unit	Average water usage of 231l/unit	29.6%

## **6.0 SUMMARY**

Ryman Healthcare Villages generates only 40% (60% less) of the demand that a typical residential house is assumed to generate for the purposes of assessing development contribution.

Peak flow rates are only 27% of the probable simultaneous demand detailed in AS/NZS 3500.1:2003. This is mainly due to lower occupancy per unit, day to day living routine removing demands at peak times, and having a less active lifestyle generally.

Actual and surveyed results in this report shows the demand on the authorities services is not comparable to a typical residential house.

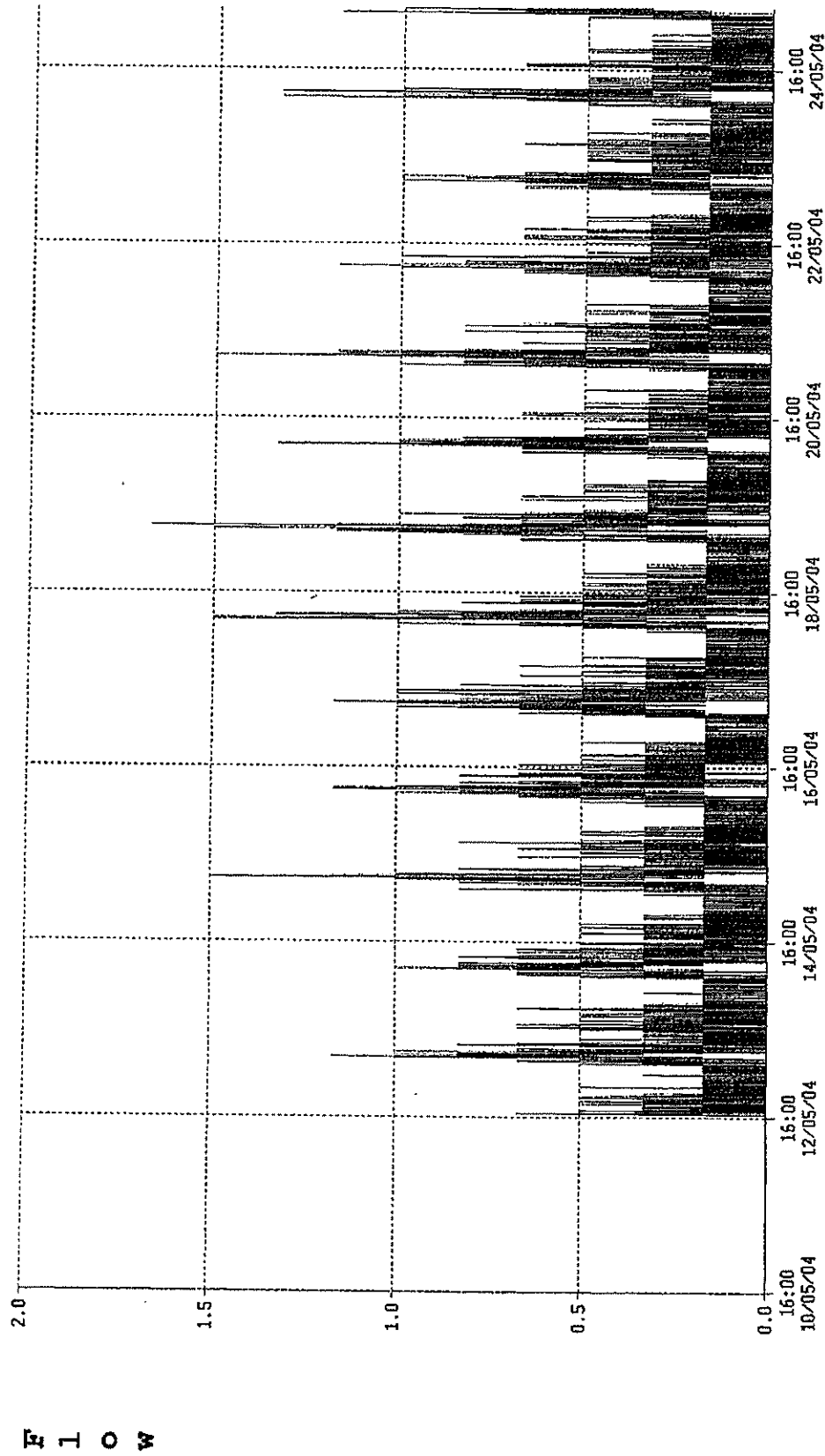
**APPENDIX 2  
NGAIO MARSH RETIREMENT VILLAGE  
WATER CONSUMPTION DATA LOG**

Daily peak flows and water Consumption for 69 units					
	Daily consumption		Consumption/per unit		Peak Water Flow
					per/minute
13/05/2004		15115		219	70.2
14/05/2004		14426		209	60
15/05/2004		15892		230	90
16/05/2004		16951		245	70.2
17/05/2004		17354		251	70.2
18/05/2004		16504		239	90
19/05/2004		18713		271	100.2
20/05/2004		15490		224	79.8
21/05/2004		17292		250	90
22/05/2004		13345		193	70.2
23/05/2004		13777		199	60
24/05/2004		14781		214	79.8
29/05/2004		15849		229	70.2
30/05/2004		14689		212	79.8
31/06/2004		16597		240	70.2
21/06/2004		17468		253	90
2/06/2004		17864		258	109.8
3/06/2004		15616		226	79.8
Total		287723		4162	
Average		15984.6		231	
Highest peak load was 109.8 litres per minute=1.59 litres per minute per dwelling					



*Rhymen Healthcare Ltd.*

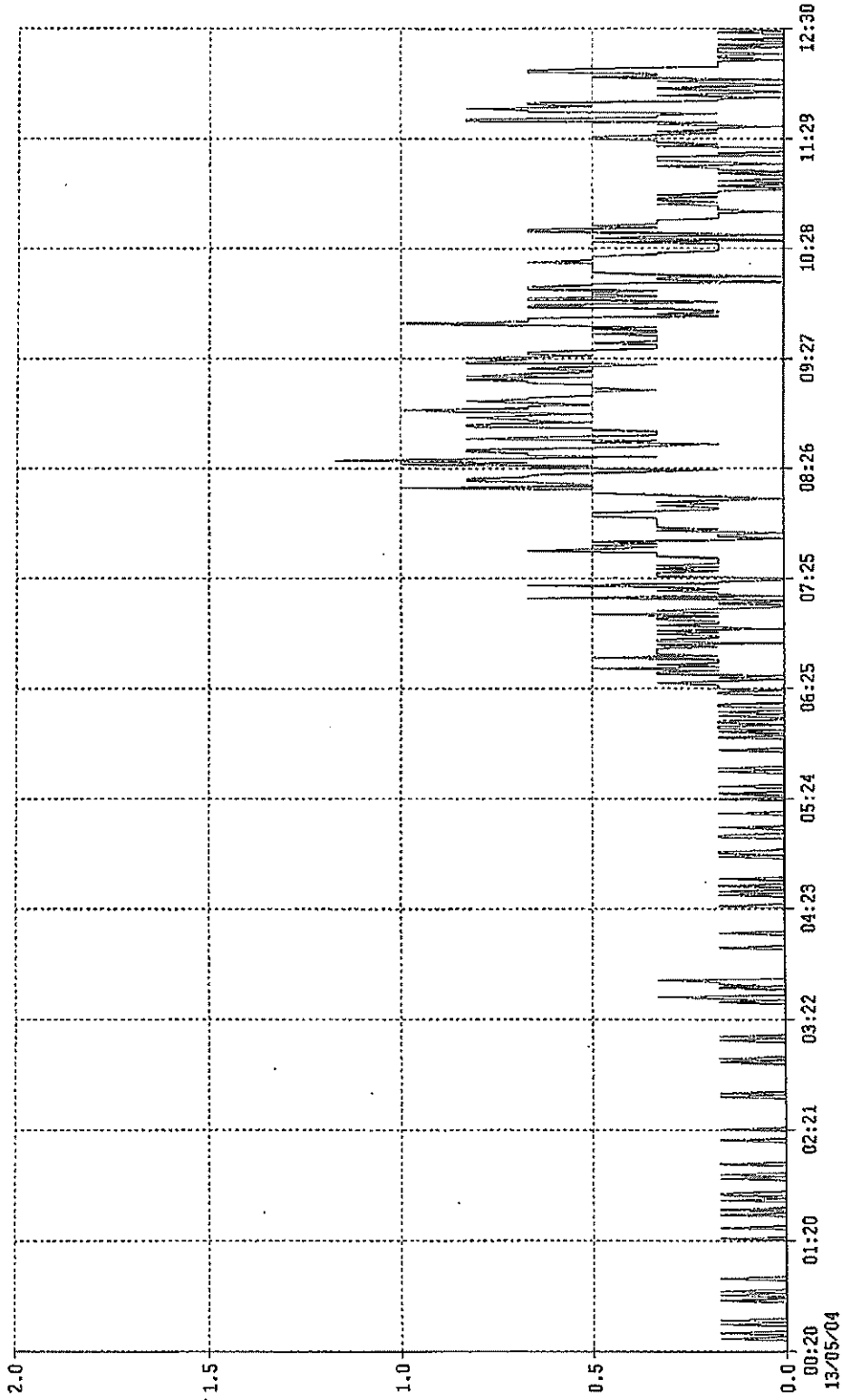
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	Min Logged Flow	Litres/Second	0.00	1.67	196311

*Rhyman Healthcare Ltd.*

*Grassmere Street H4K/100mm.*

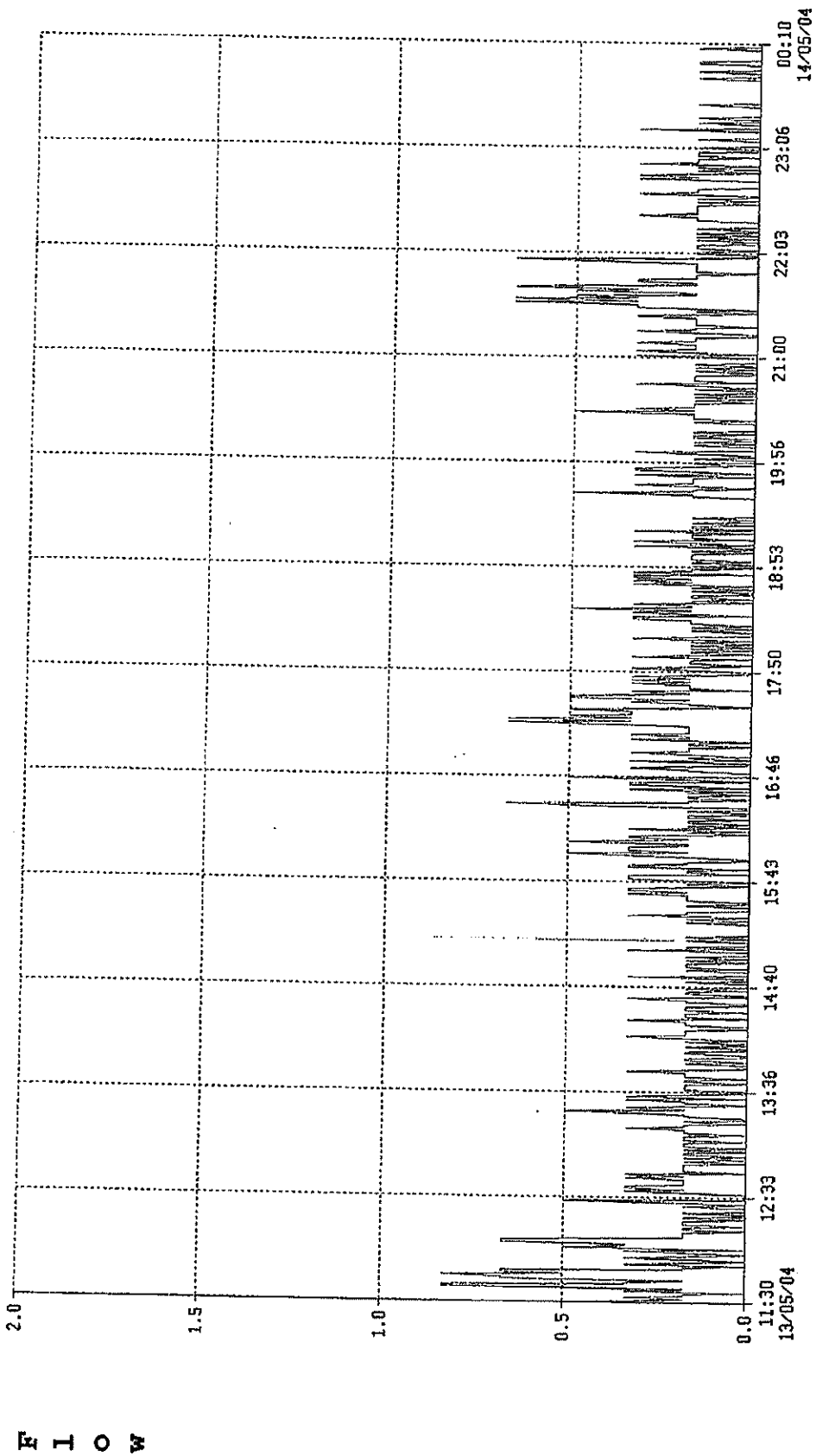


**F L O W**

Site	Channel	Units	Min	Max	Vol
121121 Park Road	Min Logged Flow	Litres/Second	0.00	1.17	8398

*Rhyman Healthcare Ltd.*

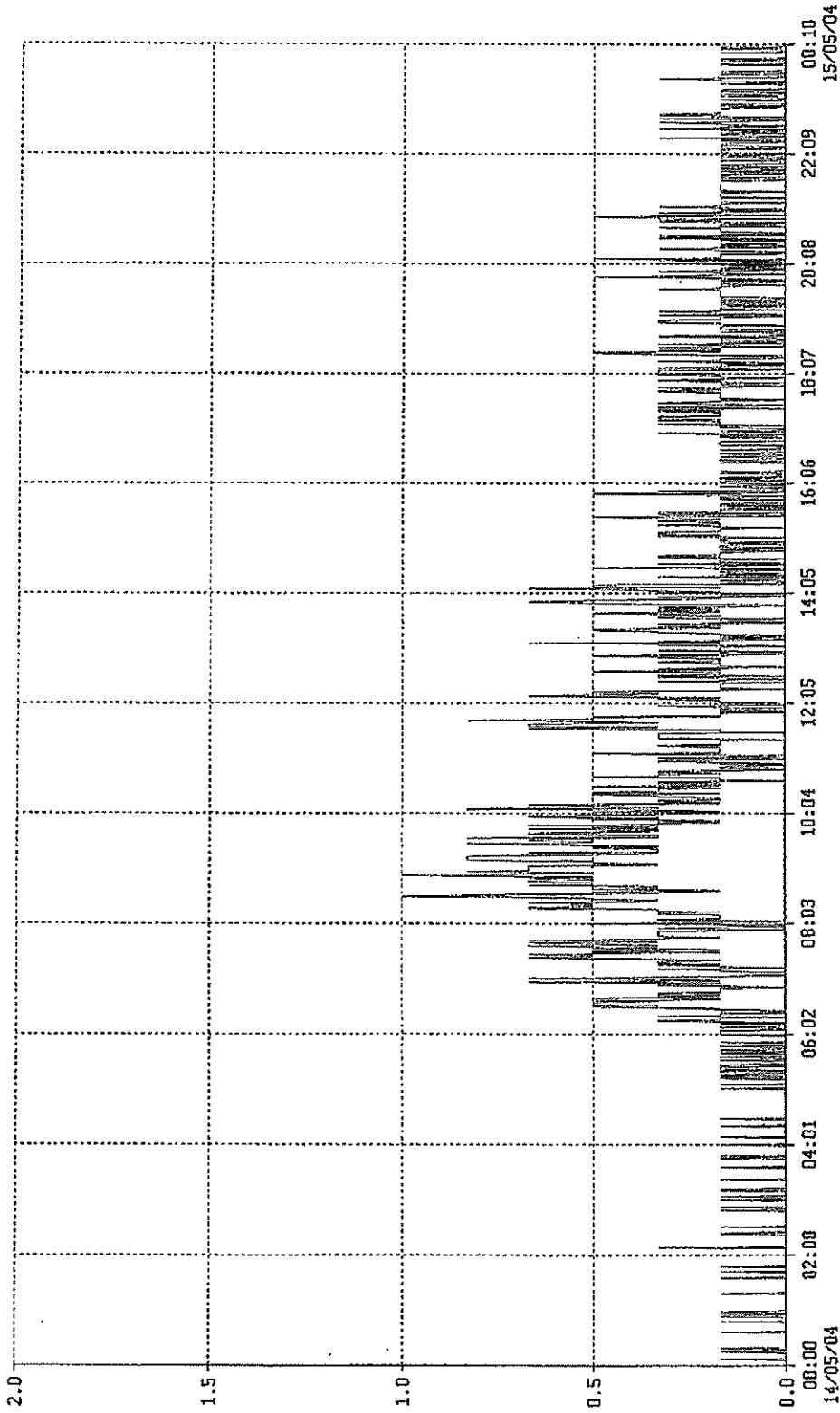
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	1Min Logged Flow	Litres/Second	0.00	0.83	6717

*Rhymen Healthcare Ltd.*

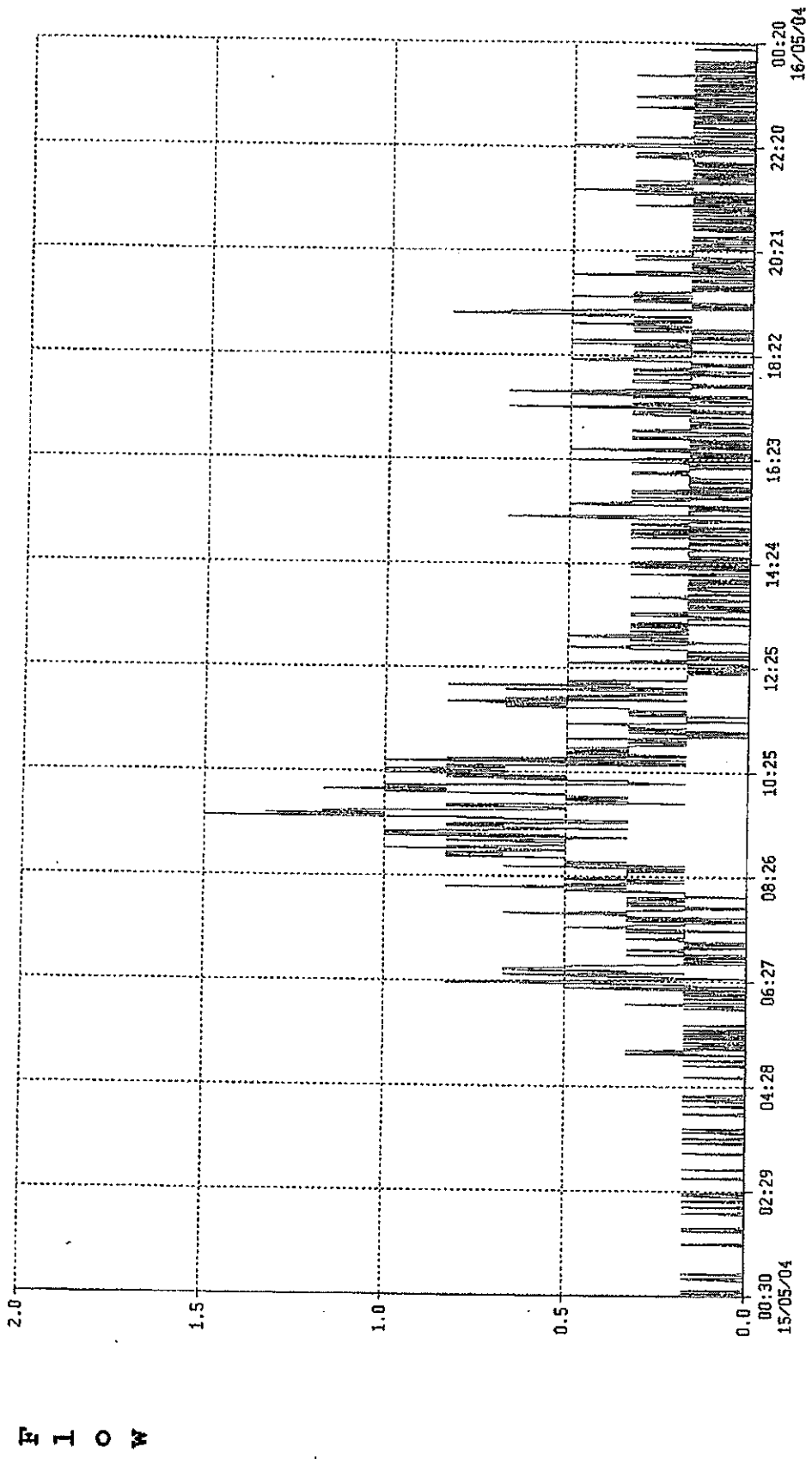
*Grassmere Street H4K/100mm.*



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121121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.00	14426

*Rhymen Healthcare Ltd.*

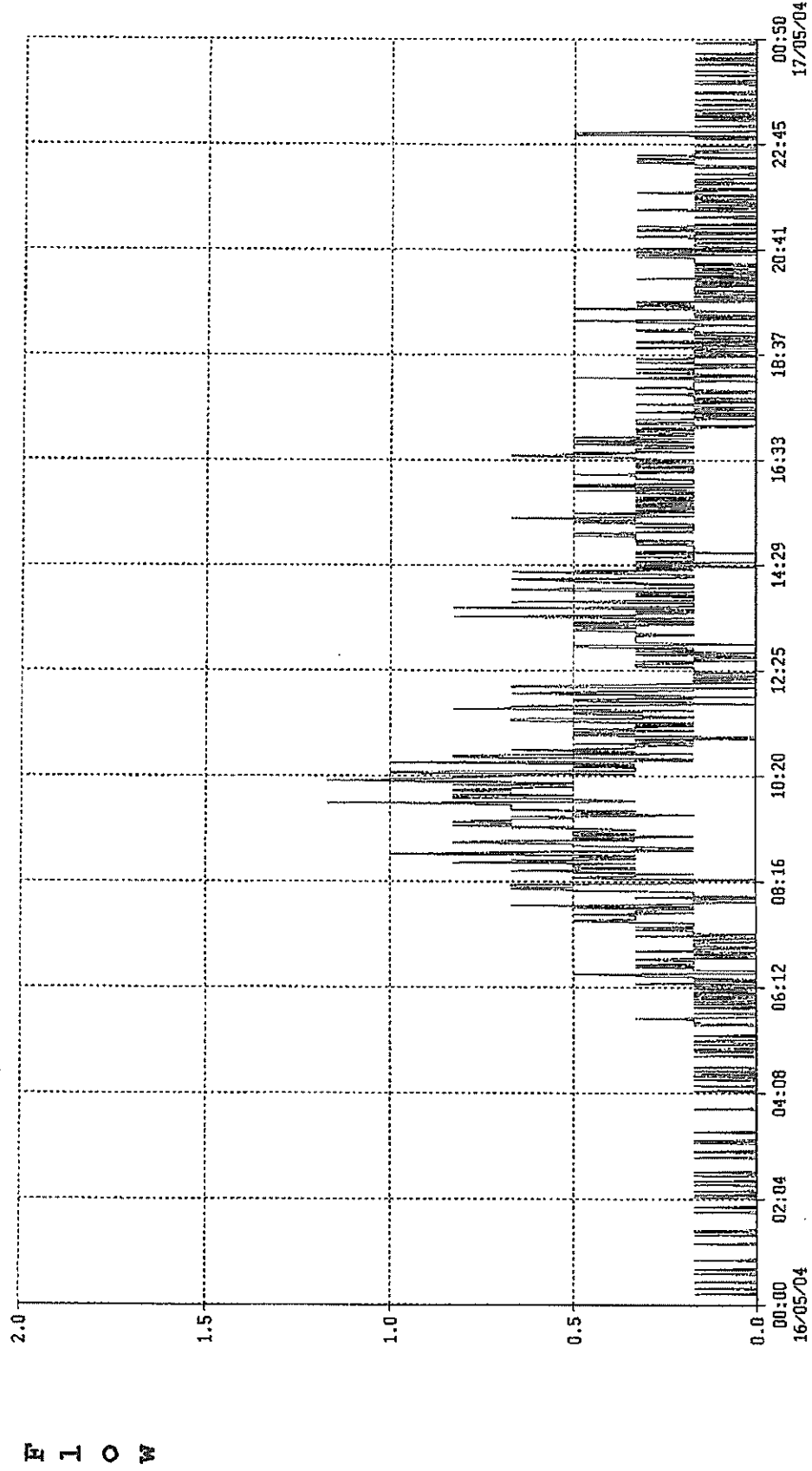
*Grassmere Street HAK/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.50	15892

*Rhymnan Healthcare Ltd.*

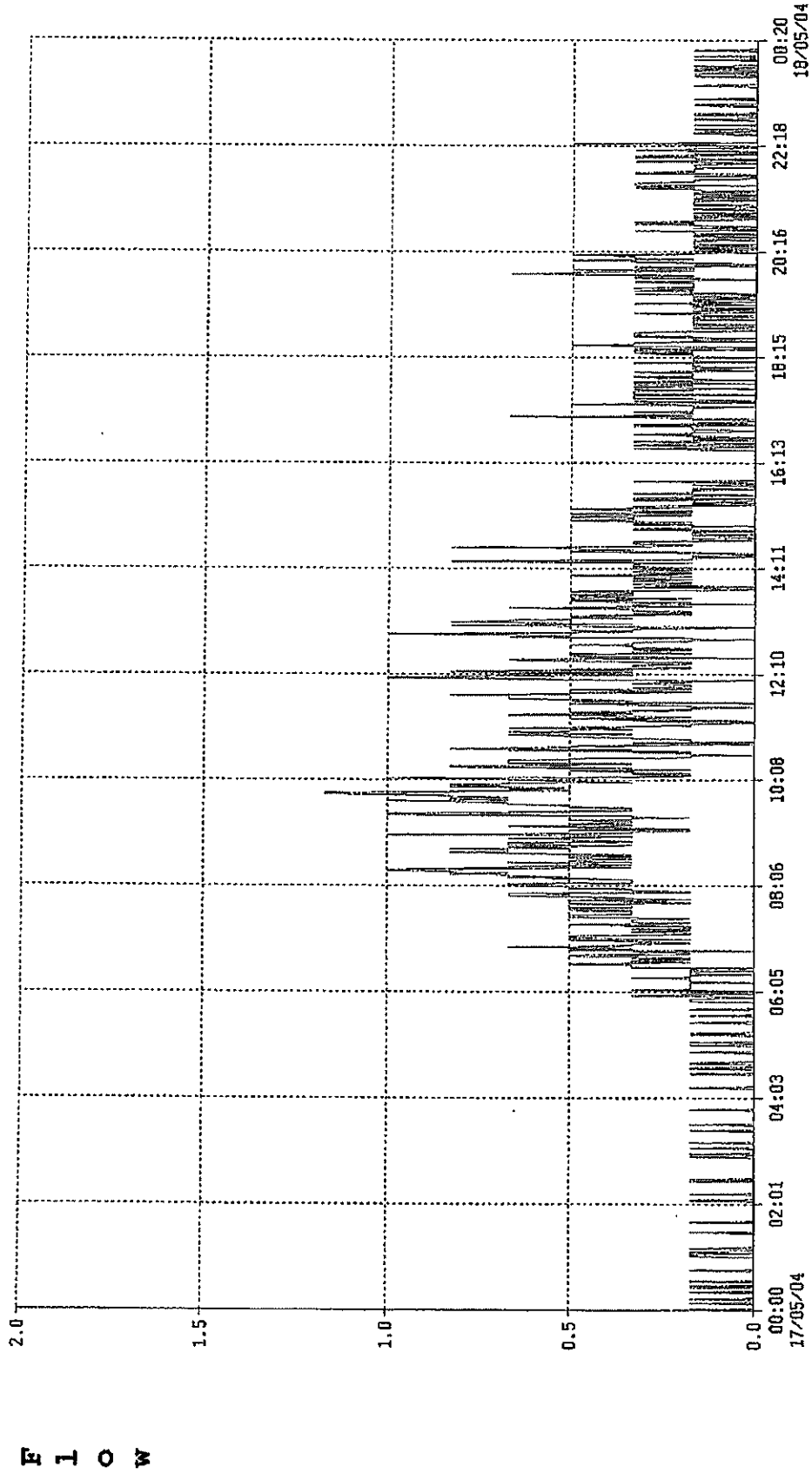
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Site	Channel	Units	Min	Max	Vol
121121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.17	16951

*Rhyman Healthcare Ltd.*

*Grassmere Street H4K/100mm.*

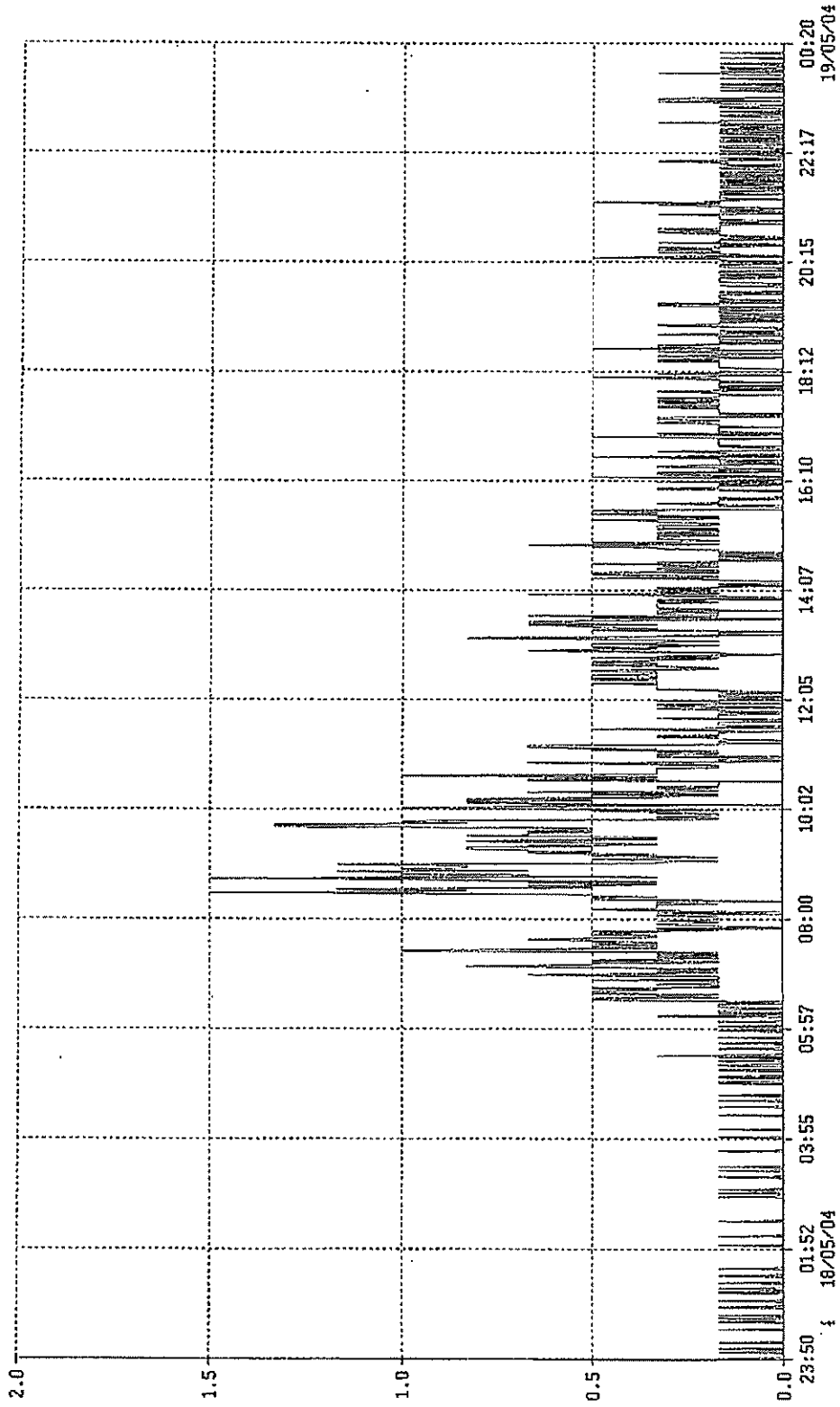


Site	Channel	Units	Min	Max	Vol
121121 Park Road	10in Logged Flow	Litres/Second	0.00	1.17	17354

*Rhyman Healthcare Ltd.*

*Grassmere Street H4K/100mm.*

F I O W

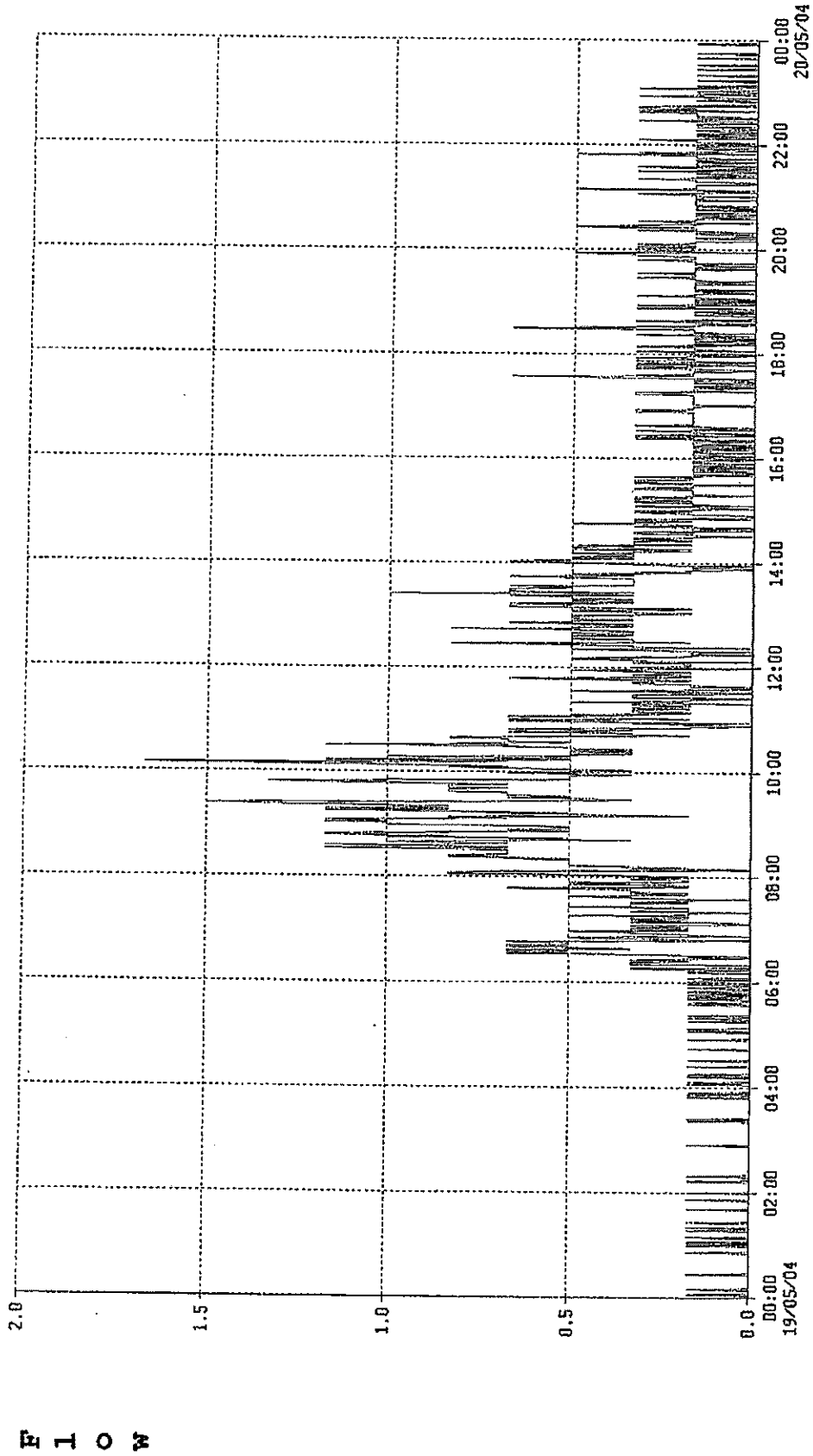


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121121 Park Road	IMin Logged Flow	Litres/Second	0.80	1.50	16504



*Rhyman Healthcare Ltd.*

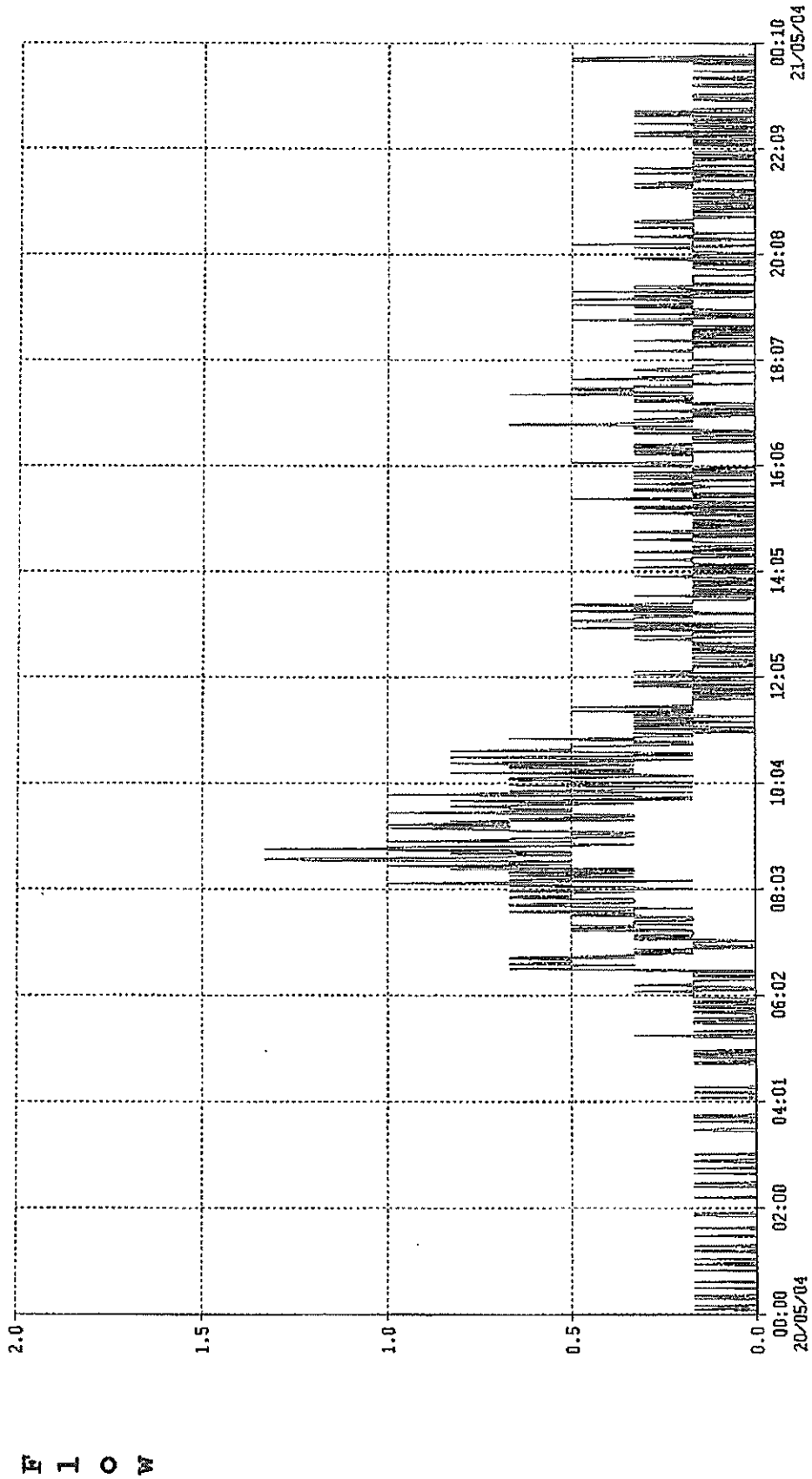
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.67	18713

*Rhyman Healthcare Ltd.*

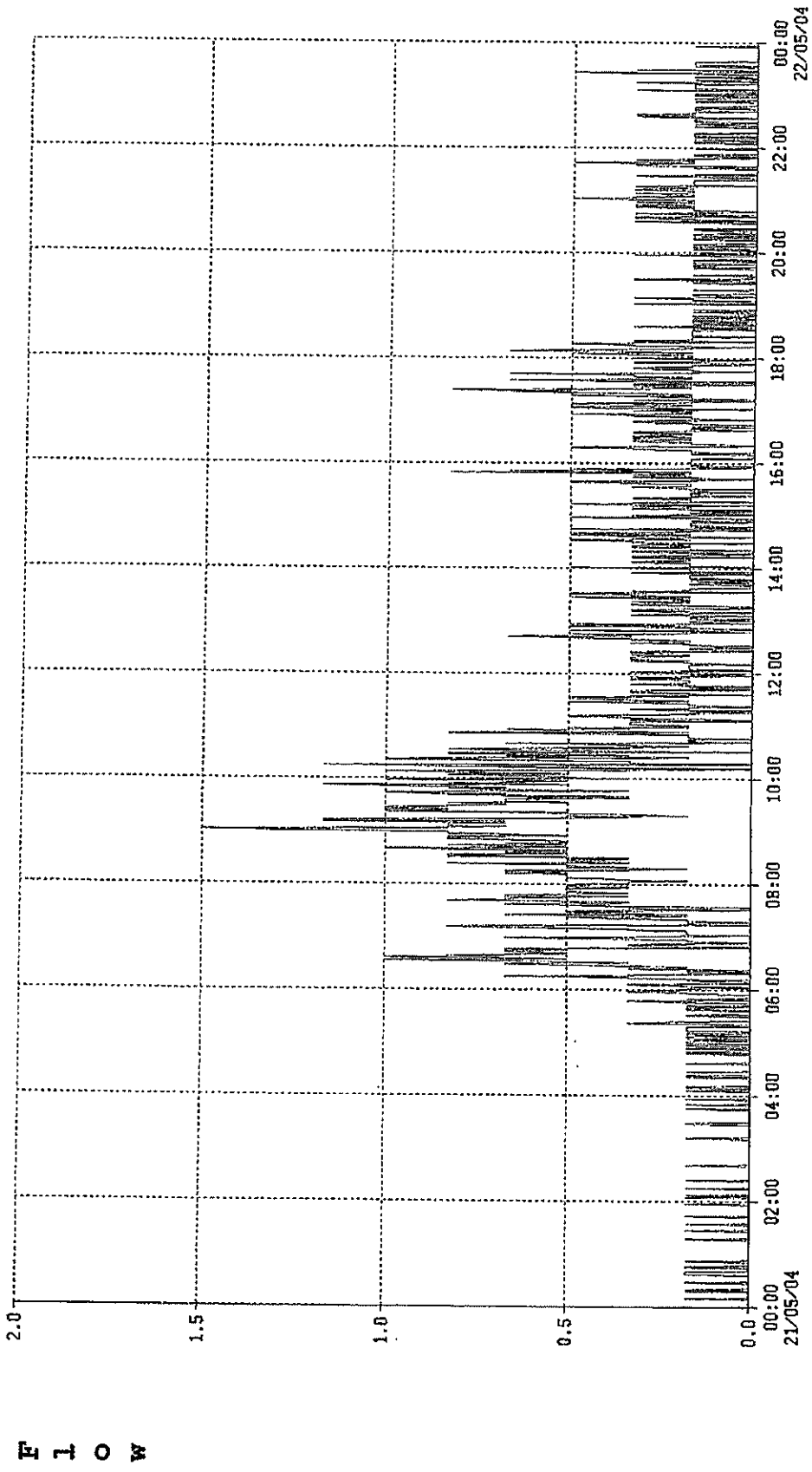
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	Min Logged Flow	Litres/Second	0.00	1.33	15490

*Rhyman Healthcare Ltd.*

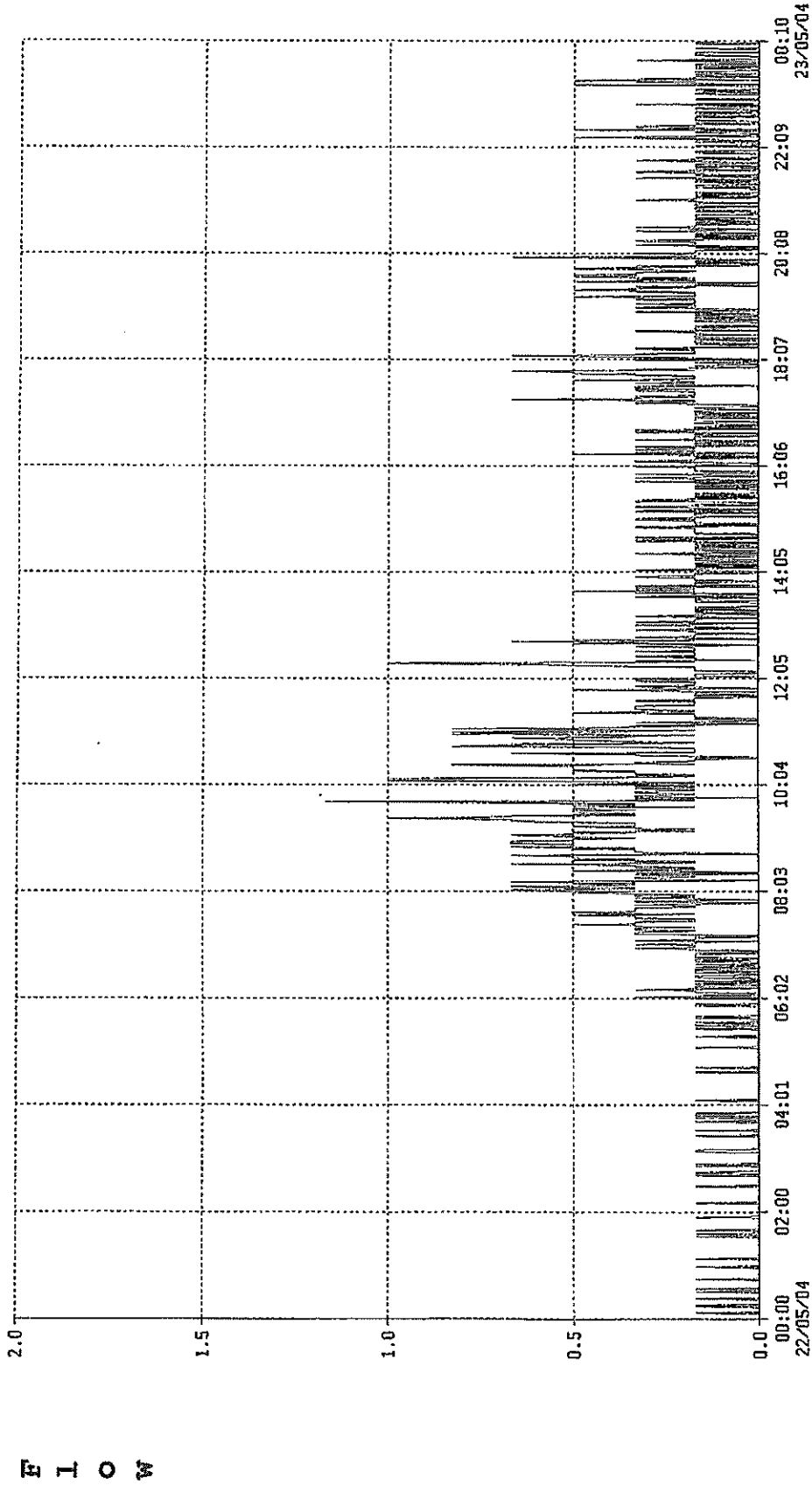
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	4Min Logged Flow	Litres/Second	0.00	1.50	17292

*Rhymnan Healthcare Ltd.*

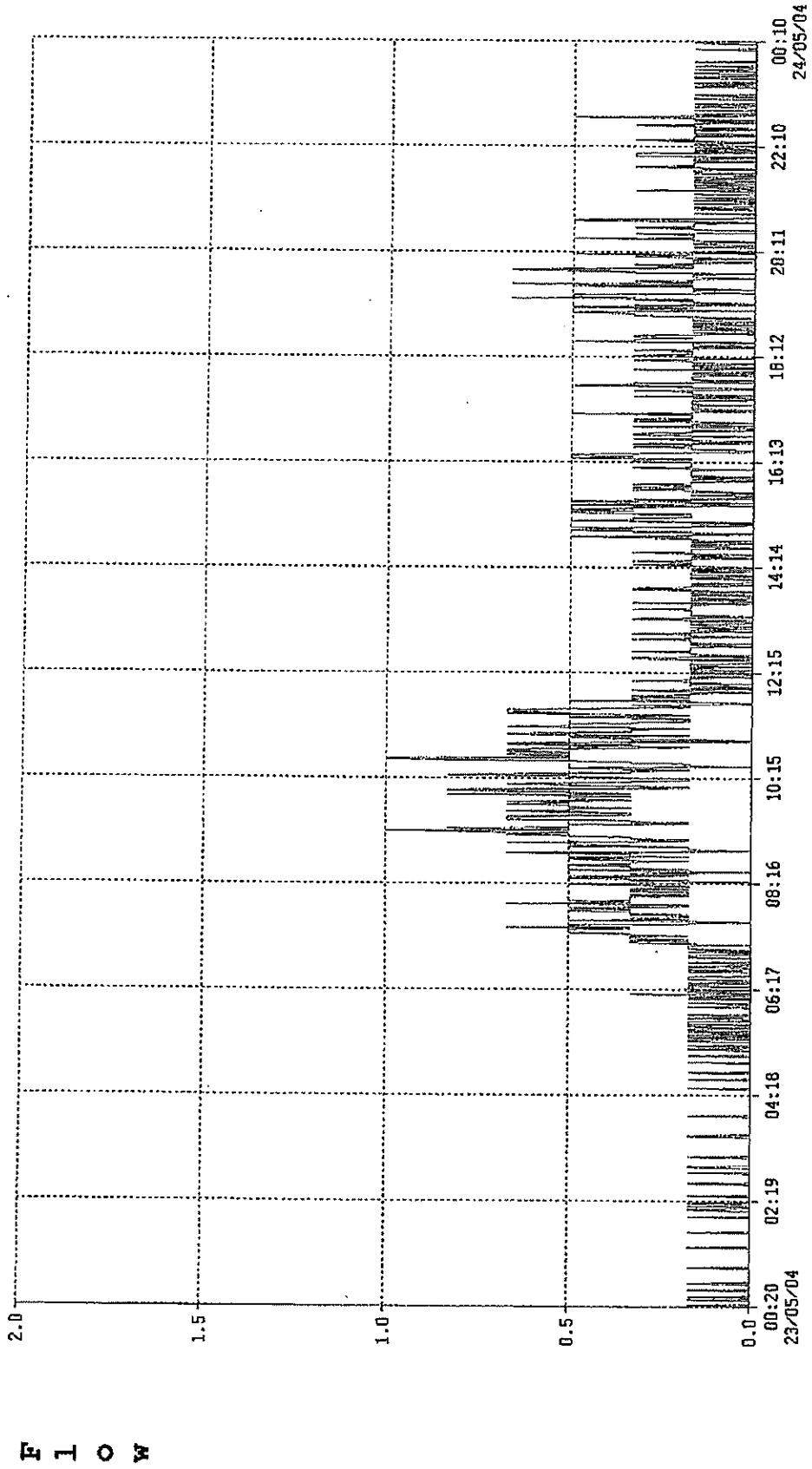
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	Min Logged Flow	Litres/Second	0.00	1.17	13345

*Rhyman Healthcare Ltd.*

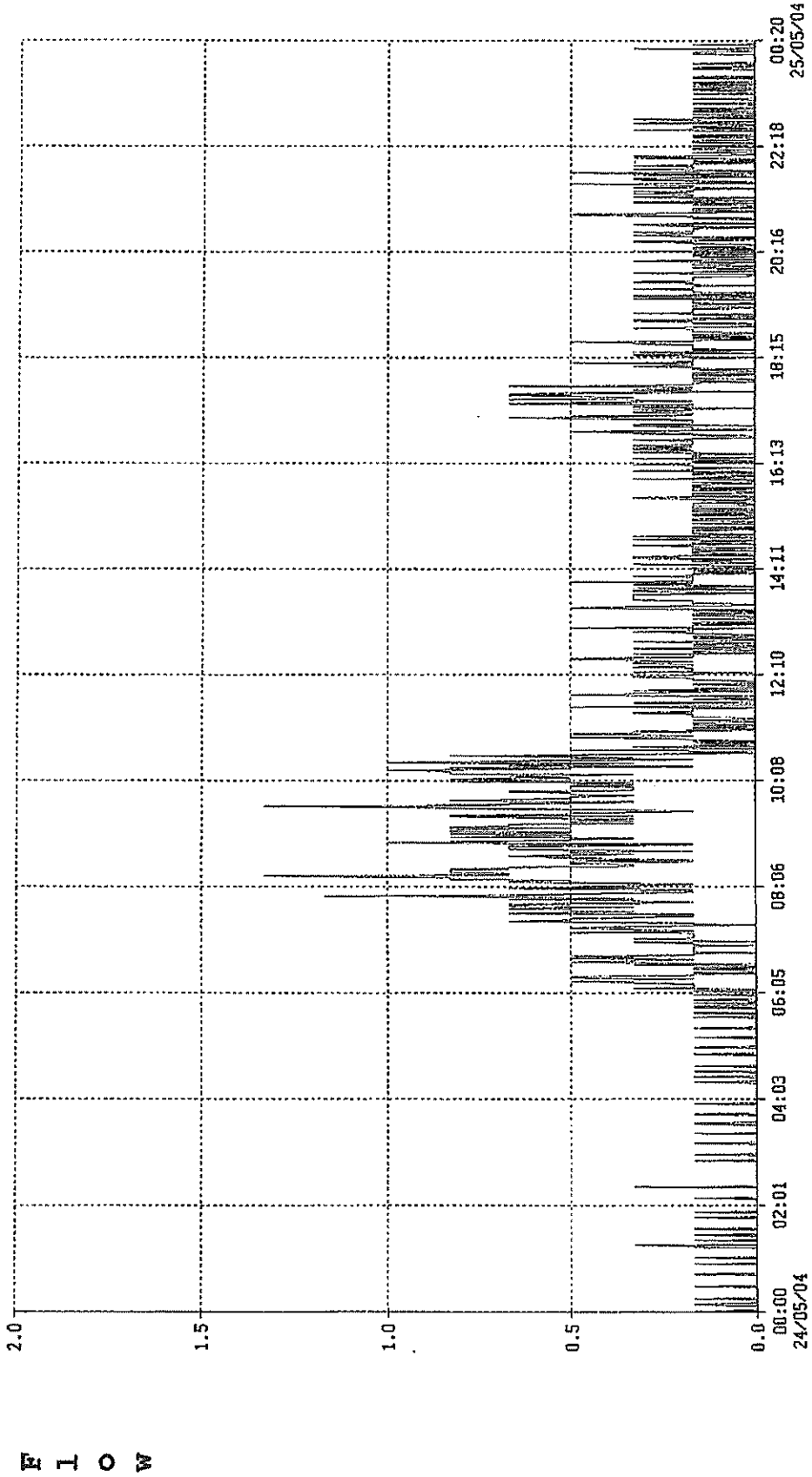
*Grassmere Street HAK/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.00	13777

*Rhyman Healthcare Ltd.*

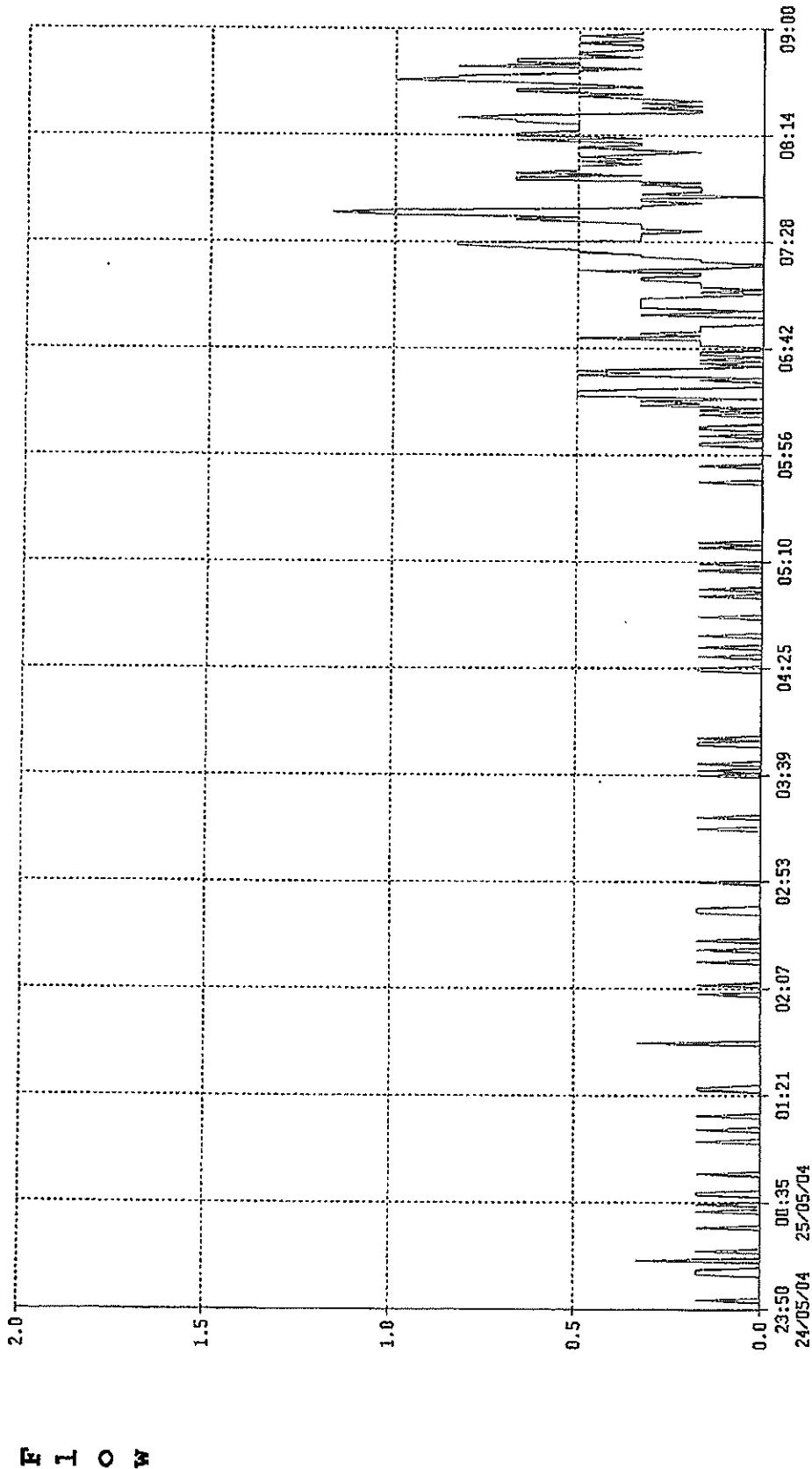
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
12121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.33	14781

*Rhyman Healthcare Ltd.*

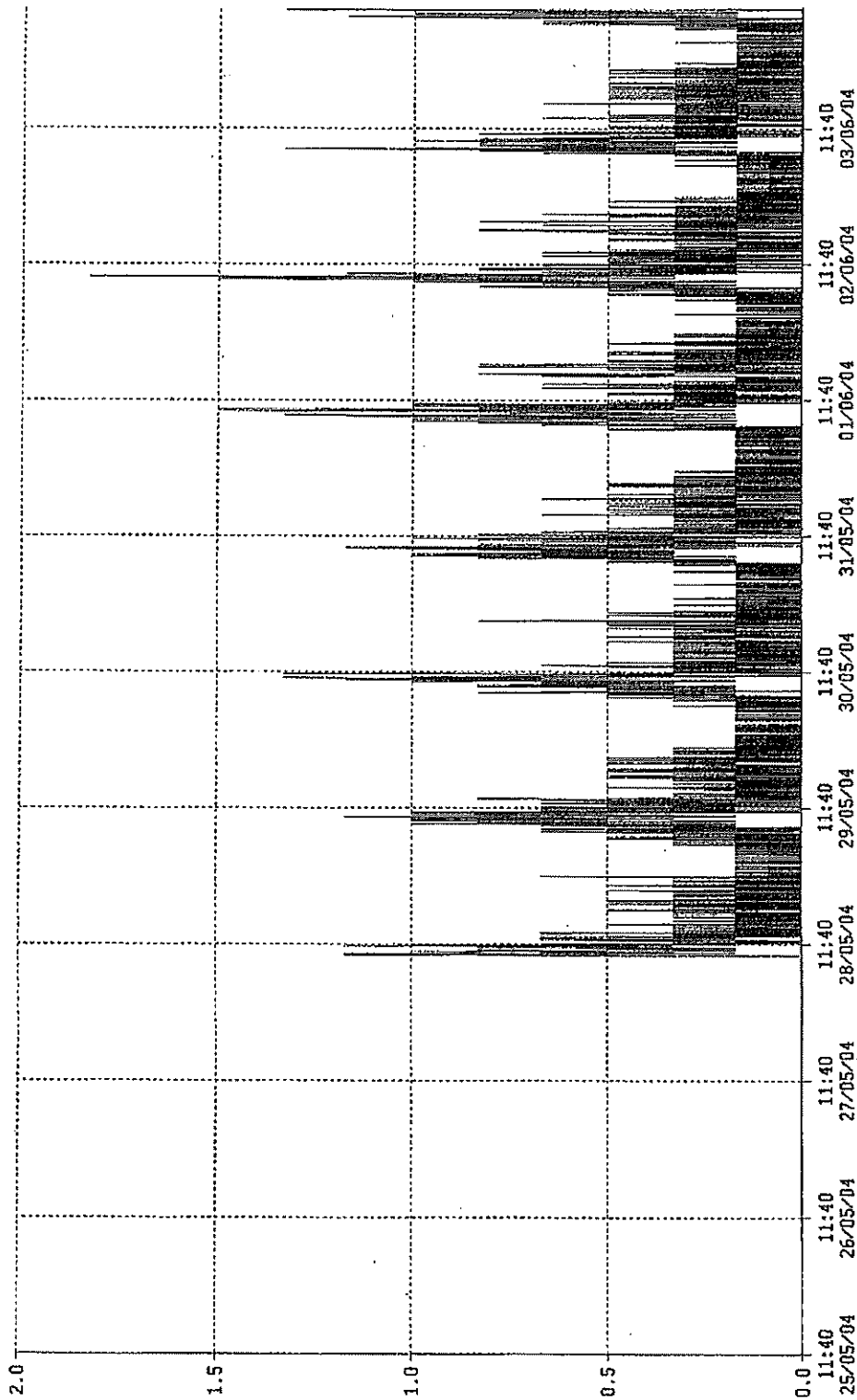
*Grassmere Street H4K/100mm.*



Site	Channel	Units	Min	Max	Vol
121121 Park Road	1Min Logged Flow	Litres/Second	0.00	1.17	4040

# Rhymen Healthcare

## 2nd Run



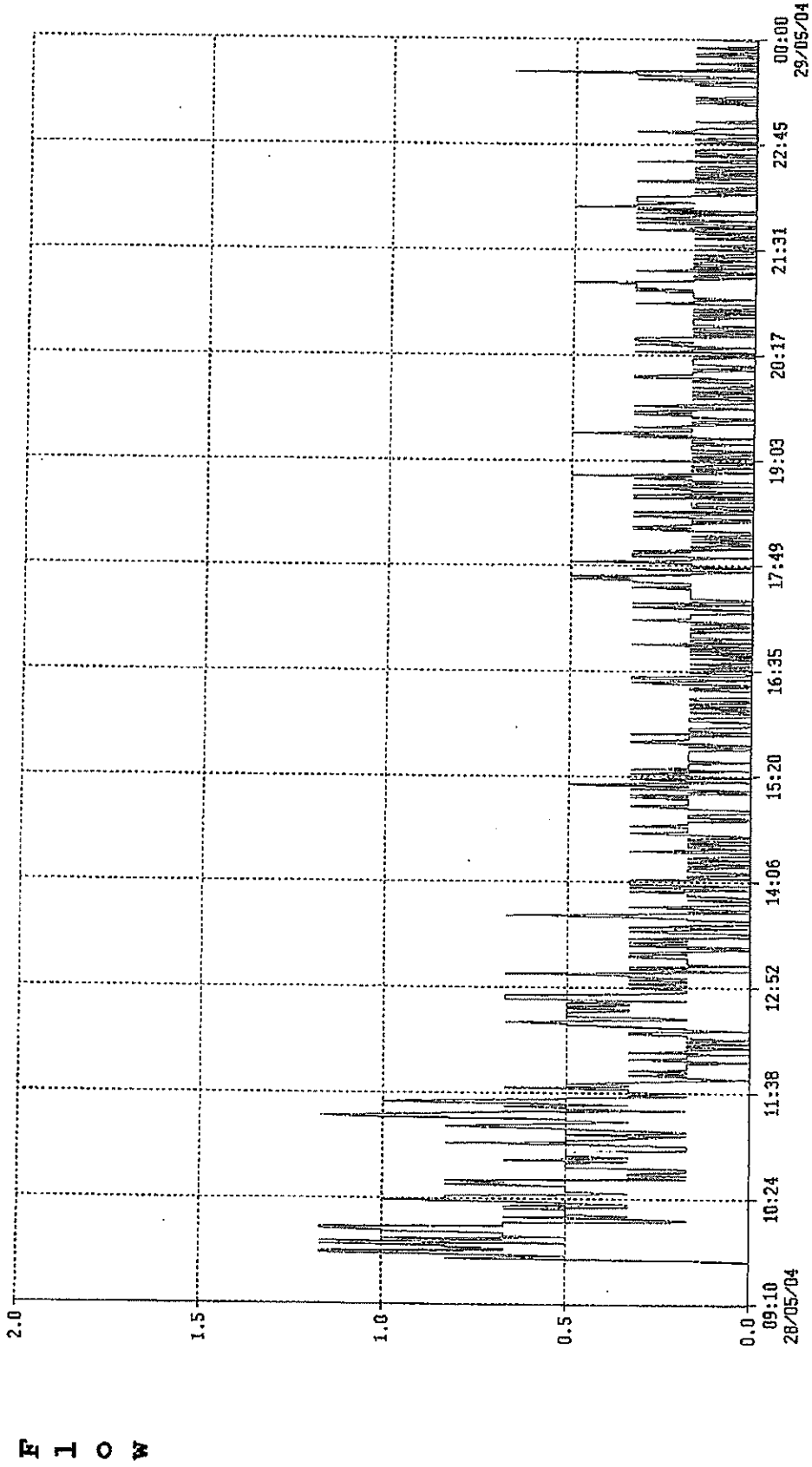
**F L O W**

Site	Channel	Units	Min	Max	Vol
	Imin Logged Flow	Litres/Second	0.00	1.83	113230



# Rhyman Healthcare

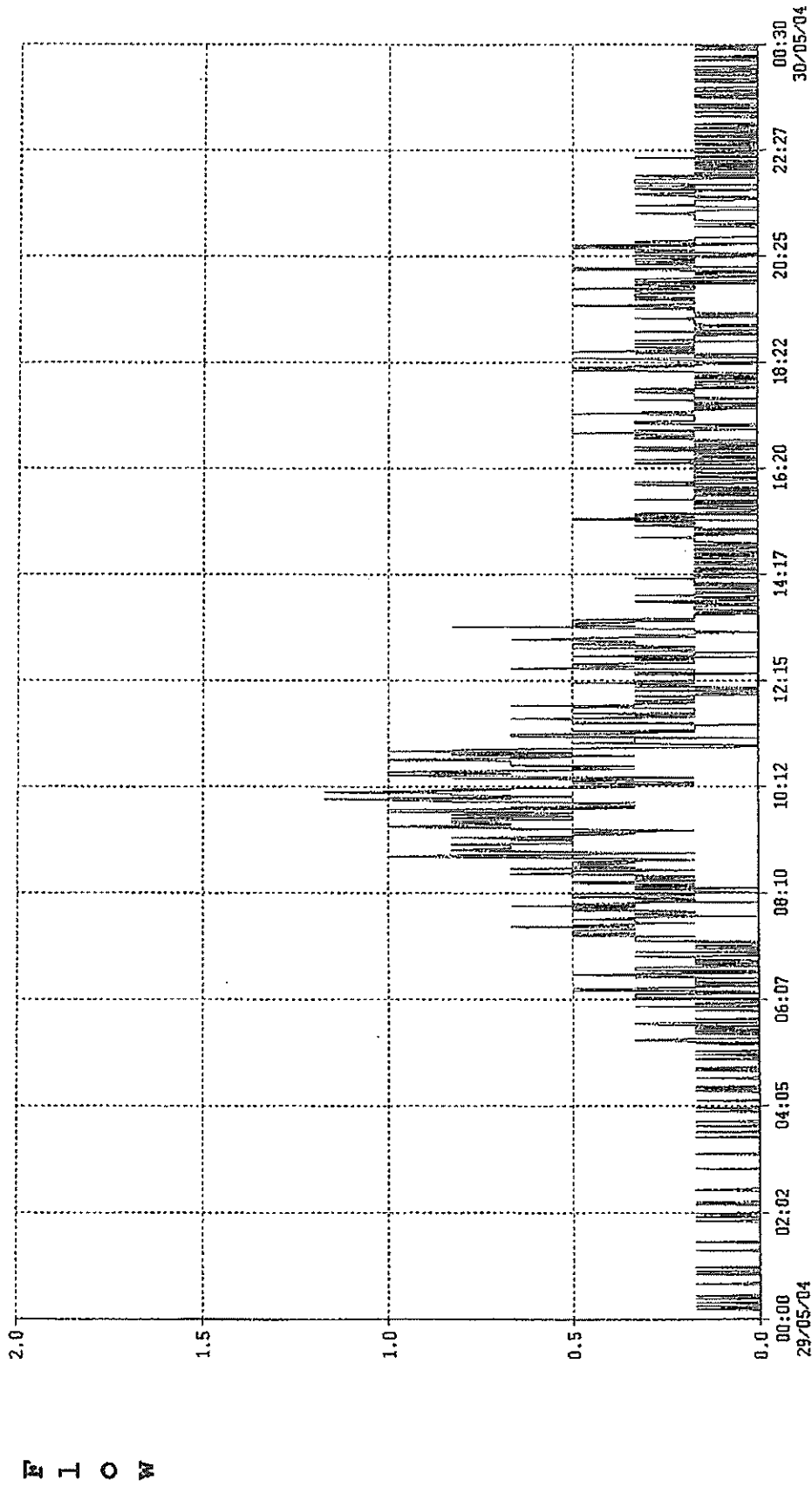
## 2nd Run



Site	Channel	Units	Min	Max	Vol
11105 Barrat Lane	1Min Logged Flow	Litres/Second	0.00	1.17	10667

# Rhyman Healthcare

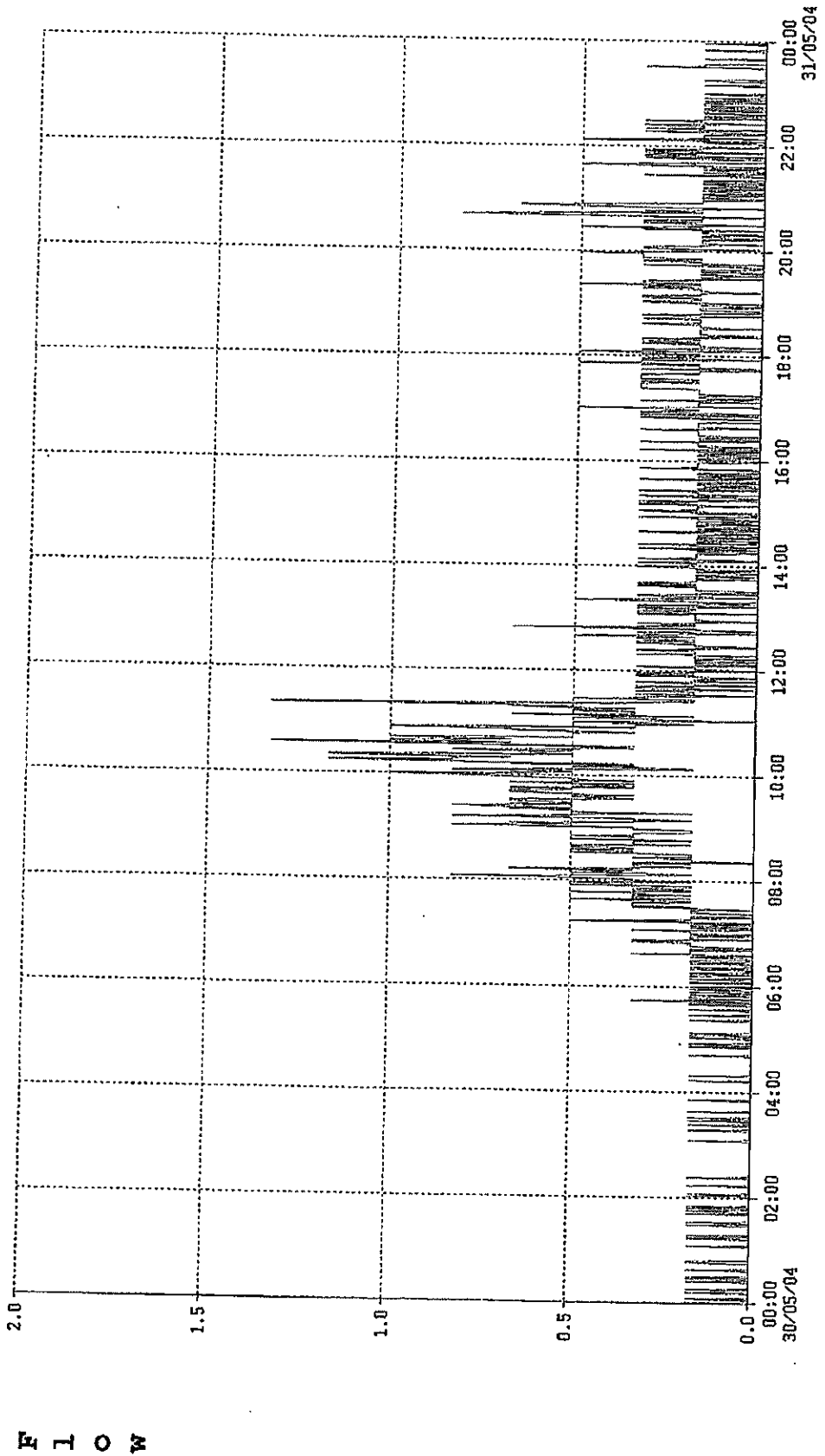
## 2nd Run



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11105 Barrat Lane	Min Logged Flow	Litres/Second	0.00	1.17	15849

# Rhymen Healthcare

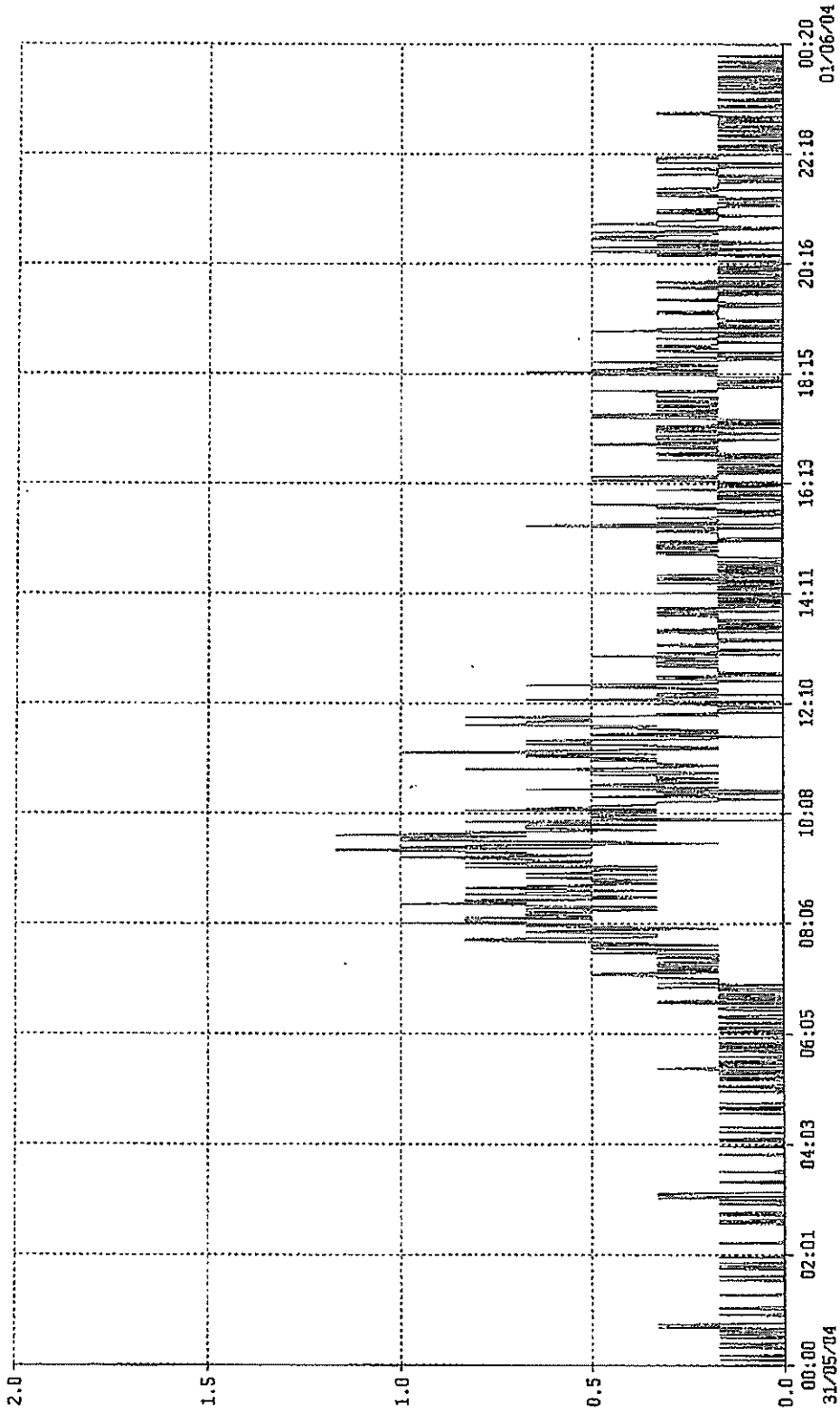
## 2nd Run



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11105 Barrat Lane	1Min Logged Flow	Litres/Second	0.00	1.33	14689

# Rhyman Healthcare

## 2nd Run

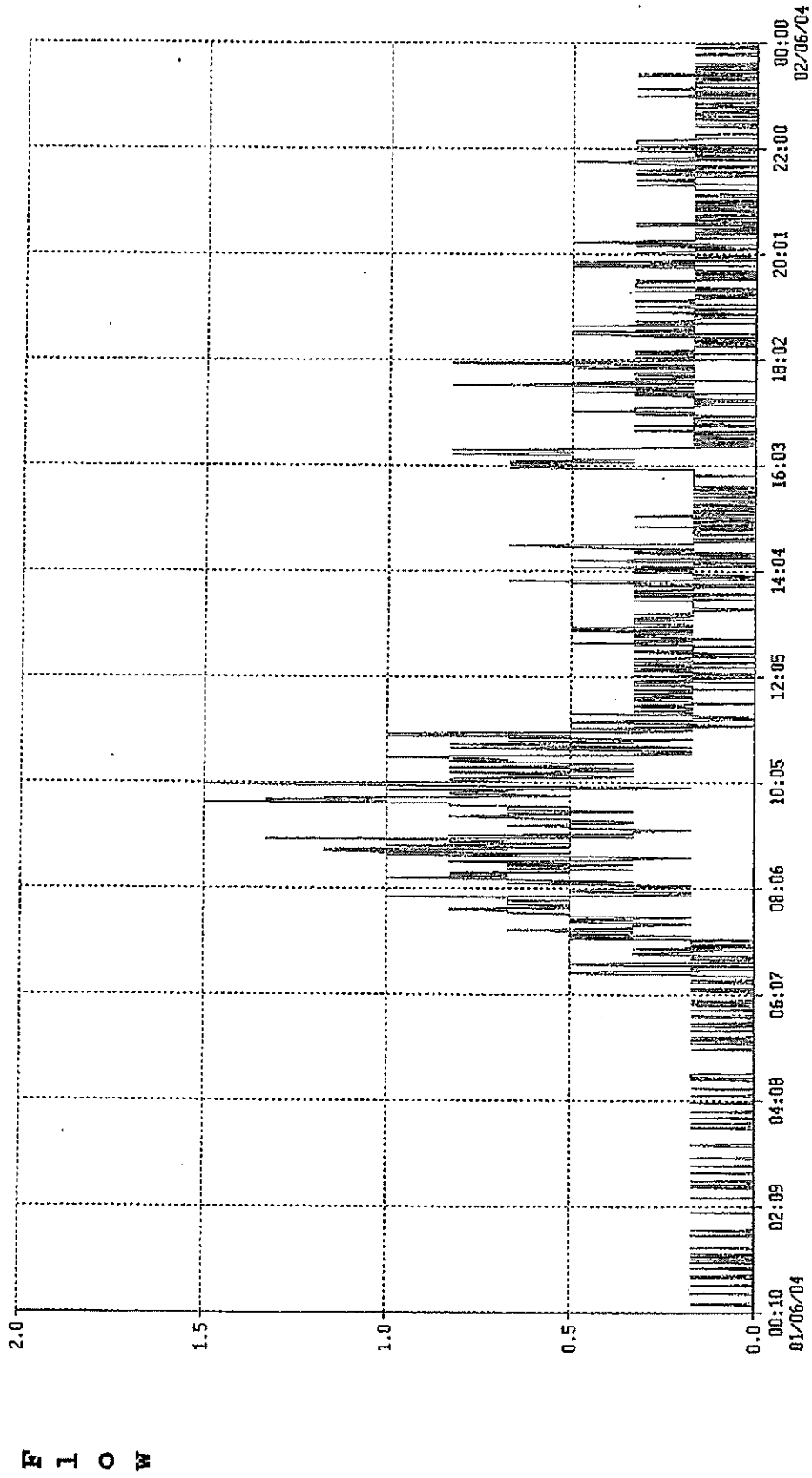


**F L O W**

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11105 Barrat Lane	IMin Logged Flow	Litres/Second	0.00	1.17	16597

# Rhyman Healthcare

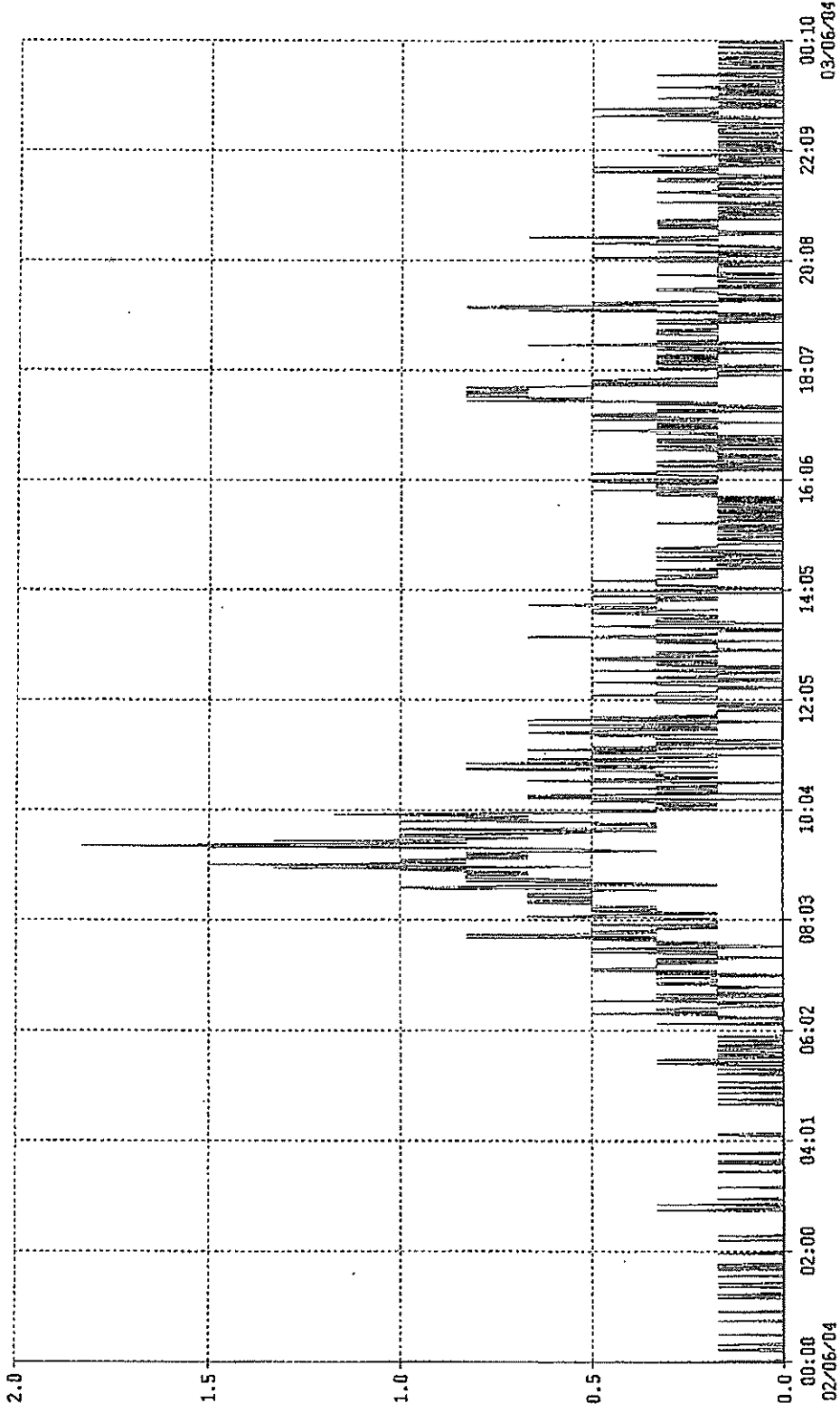
## 2nd Run



Site	Channel	Units	Min	Max	Vol
11105 Barrat Lane	1Min Logged Flow	Litres/Second	0.00	1.50	17468

# Rhyman Healthcare

## 2nd Run

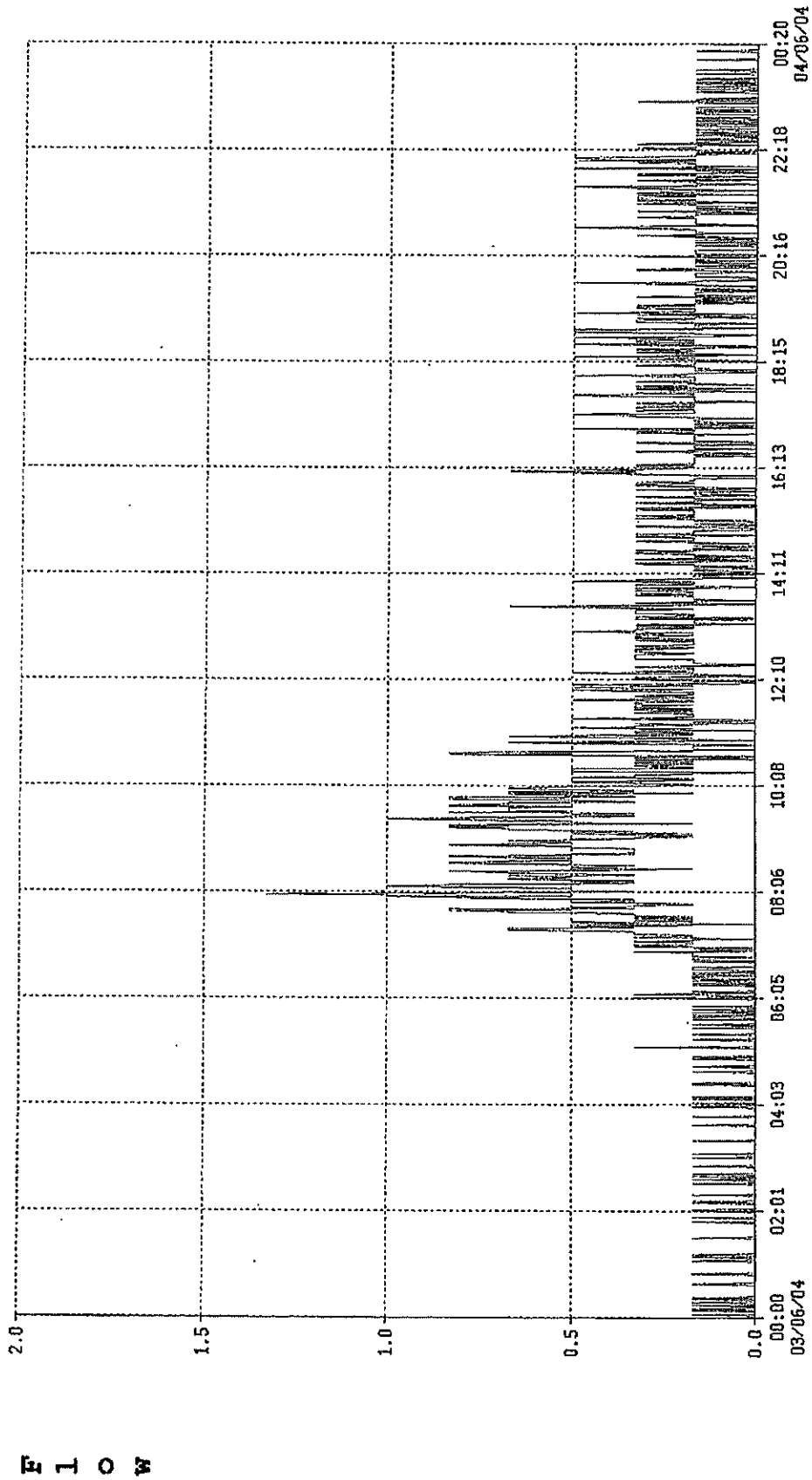


**F I O W**

Site	Channel	Units	Min	Max	Vol
11105 Barrat Lane	Min Logged Flow	Litres/Second	0.00	1.83	17864

# Rhyman Healthcare

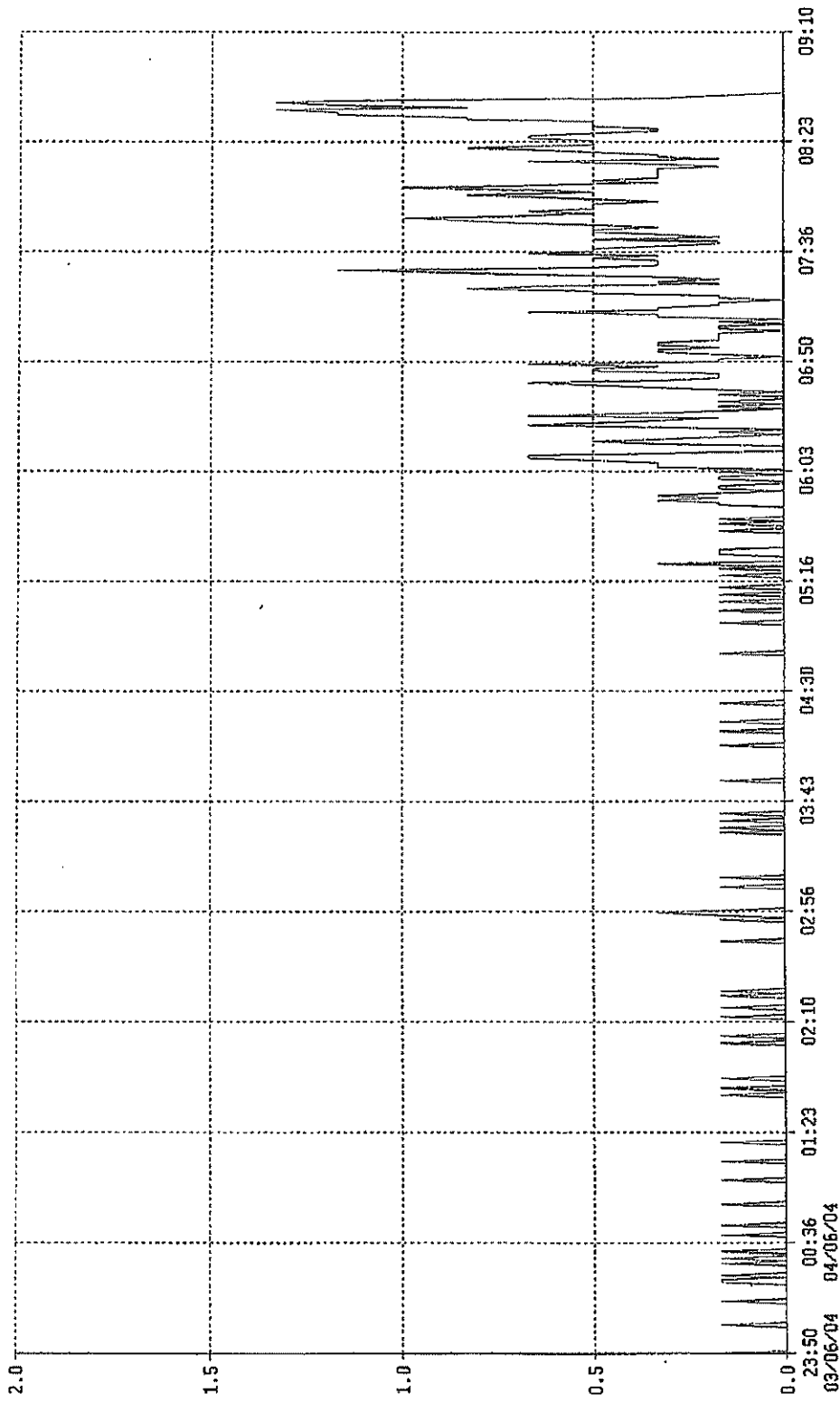
## 2nd Run



Site	Channel	Units	Min	Max	Vol
11105 Barrat Lane	Min Logged Flow	Litres/Second	0.00	1.33	15616

# Rhymen Healthcare

## 2nd Run



Site	Channel	Units	Min	Max	Vol
11105 Barrat Lane	1Min Logged Flow	Litres/Second	0.00	1.33	4659





# Memorandum

Date: 19/02/2016

File: 60847

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Pages: 2 (including this page)

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To: Ryman Healthcare Ltd

From: Ben Dawe & Tom Halpin

Re: Ryman Healthcare – Dianna Isaac – Wastewater Flow Analysis

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## Background

This memorandum describes the methodology and conclusions from the wastewater analysis completed for the Dianna Isaac Village of Philpotts Rd, St Albans, Christchurch. Run time data had been collected of the low pressure sewer pumps at the Dianna Isaac Village which was converted to actual average daily flows across the recorded periods by Ecoflow. Referencing the calculated populations of the village the generated waste water flows per person could be calculated.

### 1. Recorded Historical Data

The Dianna Isaac Retirement Village has now been functioning at full population with a low pressure sanitary sewer system servicing the site. It has been a simple task to tabulate the pumping run times from the individual pumps. Ecoflow were able to tabulate these records on the 12th of March 2015 and enabled a pumping period of 246 days to be recorded which started on the 9th of July 2014. The raw tabulated data can be found in Appendix A.

The average daily flow was determined per pump chamber by Ecoflow using the total run time, the known pumping rate and the number of days in the recording period.

### 2. Average Daily Flow

The town houses used in the analysis as illustrated on plan in Appendix C house over half the projected total population and are serviced by 34 sanitary sewer pump chambers. As historically adopted during the design of other Ryman Healthcare villages the town houses are assumed to have a population average of 1.3 people per town house. The total number of town houses serviced by each pump chamber was determined from historical Woods plans which in turn gave the population. Using the population per chamber and average daily flow per chamber an average daily flow per person was calculated across the 34 chambers we had recorded data for. The average daily wastewater flow per person was calculated as 155l/p/d and the corresponding excel calculation sheet can be found in Appendix B.

# Memorandum

## 3. Conclusions

The average daily wastewater flow per person has been determined at **155l/p/d** from data relating to town houses as shown on plan in Appendix C. The average daily waste water flow calculated is less than that historically adopted across previous Ryman Healthcare Village design. In comparison, 160l/p/d (80% of water usage of 200l/p/d) has been previously adopted.

# Memorandum

## APPENDIX A HISTORICAL DATA RECORDED/CALCULATED FROM ECOFLOW

Serial Number	Street 1	Total Run Time (Hrs) 9/07/2014	Total Run Time (Hrs) 12/03/2015	Total Run Time (Hrs)	Litres/RunTime since last reading	Average Daily Flow
S11960820110094	Chamber 01	359	475	116	250560	1018.5
S11960820110084	Chamber 02	440	598	158	341280	1387.3
S11960820110101	Chamber 03	471	649	178	384480	1562.9
S12122220120048	Chamber 05	195	265	70	151200	614.6
S12122220120043	Chamber 08	308	432	124	267840	1088.8
S12469220120108	Chamber 09	282	476	194	419040	1703.4
S12430420120070	Chamber 11	140	191	51	110160	447.8
S12430420120072	Chamber 13	133	189	56	120960	491.7
S12122220120028	Chamber 14	408	594	186	401760	1633.2
S12122220120023	Chamber 15	3	90	87	187920	763.9
S12469020120010	Chamber 16	327	561	234	505440	2054.6
S12469020120008	Chamber 17	287	403	116	250560	1018.5
S12469020120017	Chamber 18	294	380	86	185760	755.1
S12469020120011	Chamber 19	295	380	85	183600	746.3
S12969220120100	Chamber 21	441	672	231	498960	2028.3
S12469220120102	Chamber 22	117	162	45	97200	395.1
S12469120120086	Chamber 23	319	499	180	388800	1580.5
S12792920120013	Chamber 24	207	327	120	259200	1053.7
S12792720120011	Chamber 25	209	331	122	263520	1071.2
S12792720120013	Chamber 26	466	789	323	697680	2836.1
S12792820120042	Chamber 28	252	435	183	395280	1606.8
S12792920120011	Chamber 29	254	441	187	403920	1642.0
S12792720120018	Chamber 30	178	336	158	341280	1387.3
S13024520130010	Chamber 31	107	214	107	231120	939.5
		133	238	105	226800	922.0
S13024520130004	Chamber 32	110	210	100	216000	878.0
		106	208	102	220320	895.6
S13024520130005	Chamber 33	65	148	83	179280	728.8
		61	140	79	170640	693.7
S12792820120066	Chamber 36	32	61	29	62640	254.6
S12792820120009	Chamber 37	74	161	87	187920	763.9
S13429420130012	Chamber 38	41	93	52	112320	456.6
		41	95	54	116640	474.1
S13429420130007	Chamber 39	150	319	169	365040	1483.9
			85	85	183600	746.3
S13594320130037	Chamber 40	26	159	133	287280	1167.8
S12882220130004	Chamber 41	1.25	179	177.75	383940	1560.7
		34	64	30	64800	263.4
S13429420130001	Chamber 42	0.5	150	149.5	322920	1312.7
S13429420130008	Chamber 43	32	93	61	131760	535.6
		20	84	64	138240	562.0
				<b>Total Flow</b>	<b>10707660</b>	<b>43527.1</b>

# Memorandum

**APPENDIX B**  
**AVERAGE DAILY FLOW FOR TOWN HOUSE CALCULATIONS**

**DIANNA ISAAC - RETIREMENT VILLAGE**  
**Average Daily Flow Town Houses**

JOB NO. 60847

BY BJD

DATE 17/02/2016

1.3 Pop'n/Town House

Chamber No.	Average Daily Flow	Town Houses / Chamber	Equiv. People / Chamber	Avg Daily flow / Person
Chamber 01	1018.5	5	6.5	157
Chamber 02	1387.3	6	7.8	178
Chamber 03	1562.9	5	6.5	240
Chamber 05	614.6	6	7.8	79
Chamber 08	1088.8	5	6.5	168
Chamber 09	1703.4	7	9.1	187
Chamber 11	447.8	3	3.9	115
Chamber 13	491.7	3	3.9	126
Chamber 14	1633.2	7	9.1	179
Chamber 15	763.9	5	6.5	118
Chamber 16	2054.6	6	7.8	263
Chamber 17	1018.5	6	7.8	131
Chamber 18	755.1	5	6.5	116
Chamber 19	746.3	4	5.2	144
Chamber 21	2028.3	13	16.9	120
Chamber 22	395.1	2	2.6	152
Chamber 23	1580.5	7	9.1	174
Chamber 24	1053.7	6	7.8	135
Chamber 25	1071.2	6	7.8	137
Chamber 26	2836.1	8	10.4	273
Chamber 28	1606.8	6	7.8	206
Chamber 29	1642.0	8	10.4	158
Chamber 30	1387.3	6	7.8	178
Chamber 31	939.5	8	10.4	179
	922.0			
Chamber 32	878.0	9	11.7	152
	895.6			
Chamber 33	728.8	7	9.1	156
	693.7			
Chamber 36	254.6	6	7.8	33
Chamber 37	763.9	5	6.5	118
Chamber 38	456.6	6	7.8	119
	474.1			
Chamber 39	1483.9	9	11.7	191
	746.3			
Chamber 40	1167.8	6	7.8	150
Chamber 41	1560.7	8	10.4	175
	263.4			
Chamber 42	1312.7	6	7.8	168
Chamber 43	535.6	8	10.4	106
	562.0			
Total Avg Daily Flow	43527.1	*Total POP'n	276.9	
		<b>Avg Daily Flow</b>		<b>155</b> l/p/d

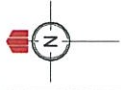
<b>Avg Design Flow for Town Houses</b>	<b>160</b>	<b>l/p/d</b>
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# Memorandum

## APPENDIX C

TOWN HOUSE KEY PLAN - LPS CHAMBER DATA USED FOR THIS ANALYSIS



MARK-UP OF LPS  
CHAMBERS USED FOR  
ANALYSIS.

EAST ELLINGTON DRIVE

PHILPOTTS ROAD

CHILTON

FORTUNE STREET



KEY:  
 (25) - CHAMBER NUMBER (LPS)  
 [Yellow Box] - TOWN HOUSE DATA USED IN ANALYSIS  
 19.02.2016 RJD

SCALE BAR (M)

0	15.0	30.0	75.0
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REVISION DETAILS	NAME	DATE	CLIENT
A. FOR CONSENT	MJV	18/03/2013	RYMAN HEALTHCARE
B. FOR CONSTRUCTION	SC	19/04/2013	
C. FOR CONSTRUCTION	SC	19/04/2013	



RYMAN  
HEALTHCARE

DIANA ISAAC VILLAGE EXTENSION

LOW PRESSURE SEWER KEY PLAN

CHRISTCHURCH CITY COUNCIL



WOODS  
Engineers, Surveyors, Planners.

DEMAND: MJV	ISSUED FOR CONSTRUCTION
CHECKED: MJV	DRAWN: TUB
APPROVED:	SURVEYED:
JOB NUMBER: 60847	SCALE: 1:1500 @ A3
ISSUED: APRIL 2013	DWG. NO. 027-RCL_S02-C0-040
	REV. C