

SILENT VALLEY LANDFILL SITE
Permit Number MP3835SV
ANNUAL REPORT
January to December
2014

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REVISIONS

REV.	DATE	COMMENTS

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REPORTING REQUIREMENTS

The Reporting requirements are contained in Section 4 of the Landfill Permit. A review of these conditions follows and are referenced by their Permit Condition number:-

4 Reporting
4.1.1 All reports and written and or oral notifications required by this Permit and notifications required by Regulation 16 of the PPC Regulations shall be made or sent to the Agency using the contact details notified in writing to the Operator by the Agency.
<i>All returns required under the permit sent (including electronic correspondence) to:- Environment Agency, Plas Yr Afon, St Mellons Business Park, Fortran Road, St Mellons, Cardiff. CF3 OEY</i>
4.1.2 The Operator shall, unless otherwise agreed in writing, submit reports of the monitoring and assessment carried out, as follows:-
In respect of the parameters and emission and monitoring points specified in Schedule 2.
<i>See Schedule 2 and 3 Reports in this document</i>
For the reporting periods specified in Schedule 2 and using the forms specified in Table S3 to Schedule 3;
<i>See Schedule 2 and 3 Reports in this document</i>
Giving the information from such results and assessments as may be required by the forms specified in those Tables and to the Agency within 28 days of the end of the reporting period.
<i>See Schedule 2 and 3 Reports in this document</i>
4.1.3 The Operator shall submit to the Agency a report on the performance of the Permitted Installation over the previous year, by 31 January each year, providing the information listed in Tables S4.1-2 of Schedule 4, assessed at any frequency specified therein.
<i>See Schedule 4 Report in this document</i>
4.1.4 The Operator shall review fugitive emissions, having regard to the application of the most appropriate measures to prevent pollution, on an annual basis, or such other period as shall be agreed in writing by the Agency, and a summary report on this review shall be sent to the Agency detailing such releases and the measures taken to reduce them within 3 months of the end of such period.
<i>Annual report attached as Appendices K1 and K2.</i>
4.1.5 Where the Operator has a formal environmental management system applying to the Permitted Installation which encompasses annual improvement targets the Operator shall, not later than 31 January in each year, provide a summary report of the previous year's progress against such targets.
<i>The Company does not operate a documented or accredited Environmental Management System.</i>

4.1.6 The Operator shall, within 6 months of receipt of written notice from the Agency, submit to the Agency a report assessing whether all appropriate preventive measures continue to be taken against pollution at the installation. The report shall consider any relevant published technical guidance current at the time of the notice which is either supplied with or referred to in the notice, and shall assess the costs and benefits of applying techniques described in that guidance, or otherwise identified by the Operator, that may provide environmental improvement

Ongoing in accordance with the Improvement Programme for Engineering Mitigation Measures at the site. Regular updates on performance and continued improvements to the system are provided in Quarterly monitoring reports, together with the Section B Closure Reports submitted to the NRW On 31st March 2011, Interim Section A report submitted to the NRW 01st December 2011 and the Interim GW9 and Nant Merddog Monitoring Report submitted September 2014.

4.1.7 The Operator shall, within two months of the date of this permit, submit a detailed Site Protection and Monitoring Programme, in accordance with and using the appropriate template format given in the Land Protection Guidance. The Operator shall implement and maintain the Site Protection and Monitoring Programme (SPMP) submitted under this condition, and shall carry out regular reviews of it at a minimum frequency of every 2 years. The results of such reviews and any changes made to the SPMP shall be reported to the Agency within 1 month of the review or change.

The SPMP was reviewed as part of the Interim Section A Closure report dated 01st December 2011 which was submitted to the NRW. Changes to the SPMP are identified within that report.

4.1.8 The Operator shall review the monitoring results for waste characterisation, landfill gas, leachate, surface and groundwater against the relevant emission limits, assessment limits, control and trigger levels specified in the permit on a three monthly basis and shall submit a summary report of this review, to the Agency within one month of the end of each three month period.

Review of waste characterisation is attached to this document as Appendix C1. Review of landfill gas despatched to NRW on 20th December 2006 - see Appendix H1. A review of landfill gas, leachate, surface water and groundwater is undertaken quarterly see Appendix I1. A review of the Golder's document is also undertaken as part of the Interim Section A Closure Report submission.

4.1.9 The Operator shall review all monitoring data required by this permit on an annual basis and shall submit a summary report to the Agency within three months of the end of each year.

Review of monitoring data to be forwarded by 31st March 2015 as part of the Annual Monitoring Report.

4.1.10 The Operator shall submit to the Agency a report setting out the types and quantities of waste disposed of at the landfill on a three monthly basis i.e. for the periods 1 April - 30 June; 1 July – 30 September; 1 October - 31 December and 1 January - 31 March, such report to be received within 1 month from the end of each period.

In accordance with the Closure Notice served in 2011, no waste has been received for disposal at the facility since 22nd August 2011. For the sake of completeness zero waste return reports have been completed and despatched to the NRW within the required timescales. A summary of these zero waste returns for January to December 2014 is attached to this document, again for completeness, see Appendix C1.

PREAMBLE

The landfill site ceased receiving waste on 22nd August 2011 thus ensuring compliance with the Closure Notice dated 15th June 2011 and issued by the Environment Agency Wales (previously) now Natural Resources Wales (NRW).

The landfill has now entered the aftercare phase and the Company in pursuit of Definitive Closure has submitted to NRW the following documents:-

- the Section B Closure Report (on 01st August 2011); and
- the Interim Section A Closure Report (on 01st December 2011)
- the Section A Closure Report (on 11th June 2013)

A response to the latter was received from NRW on 21st November 2013, the commentary therein seeks additional supporting information and or further clarification of certain aspects of the June 2013 submission. The Company together with its Consultant Arup (Cardiff), is currently working through the issues raised and the following documents has been since been submitted to NRW:-

- Interim GW9 and Nant Merddog Monitoring Report (29th September 2014).

An application to vary the Conditions of the site's Planning Consent, in respect of the approved final landform, was made to the Local Planning Authority in April 2012 and subsequently approved in September 2012. The amended Consent authorises the landform that had been raised by deposition of waste up to the 22nd August 2011 and allows the placement of restoration material on top.

In June 2012 the Company engaged a Contractor to complete the permanent capping and restoration of the Phase 1A landfill site. The Works were completed in April 2013. Integral to the restoration was the reprofiling of certain parts of the site prior installation of the cap itself, thus ensuring adequate drainage falls for surface water and landfill gas collection, in some places this involved placement of additional inert material to provide a suitable formation for the capping construction.

In August 2014 work commenced to install a LLDPE and geocomposite drainage capping system with restoration soils on the flanks of Blaenau Gwent County Borough Council's (BGCBC) Phase 1 landfill. These works having been determined necessary following investigation and testing which revealed that capping soils placed in 2001 did not provide adequate impermeability. Improved capping to around 60,000m² are scheduled for completion in April 2015.

SCHEDULE 1

1. Annual Summary of Reports Prepared in Accordance with Schedule 1.

1.1 Notification of abnormal emissions and significant adverse environmental effects.
Standard forms for Schedule 1 Reports are included in the Landfill Permit. There were no Schedule 1 events during the reporting period.

1.2 Complaints registered with the Operator

In most instances complainants report any site or operational issues to NRW's incident hotline. Throughout the operational life there have been few occasions when incidents are reported directly to the Company and on such occasions the Company has reported the details to NRW and will continue to do so during the aftercare period. During this reporting period there were no complaints received directly by the Operator.

1.3 Complaints recorded by the Environment Agency

When NRW receives complaints relating to the landfill site the Operator is notified of the complaint details. NRW does not release the specific details of each complaint thus ensuring anonymity.

A log is produced identifying the nature of the complaint. There were no complaints of any nature received during 2014 as was the case in 2013 and 2012. For completeness a copy of this log is shown in Appendix A1.

Odour complaints were first received during 2007, the total number of complaints for each year are shown in the table below:-

Period	Nr of Odour Related Complaints
Jan - Dec 2014	0
Jan - Dec 2013	0
Jan - Dec 2012	0
Jan - Dec 2011	5
Jan - Dec 2010	20
Jan - Dec 2009	23
Jan - Dec 2008	63
Jan - Dec 2007	136

The potential for odour nuisance has been significantly reduced by installation of permanent / temporary capping and additional gas extraction. Work to complete capping of the Phase 1A landfill was finished in April 2013 and Phase 1 landfill capping works are scheduled for completion in April 2015.

Additionally pneumatic reclaimer type pumps were installed in 7 number gas wells towards the end of December 2012 - see proposal submitted to NRW on 12th September 2012. The pumps lift perched water accumulating in these gas wells thus lowering water levels generally and creating the potential for the landfill gas collection system to extract greater volumes of gas.

SCHEDULE 2

2. Schedule 2 - Reporting of monitoring data and Schedule 3 - Forms to be used.

2.1 Emissions to air monitoring results in accordance with Table 2.2.2 and Table S2 of the Landfill Permit

The reporting timescales and reporting formats are contained in Schedules 2 and 3 respectively. Table 2.2.2 of the Landfill Permit has been used for reporting purposes and is completed below:-

Table 2.2.2: Emission limits to air and monitoring

Emission point reference	Parameter	Limit (including Reference Period) mg/m3	Monitoring frequency	Monitoring method	Value Recorded
Flare	Nitrogen Oxides (NOx)	150	Annually See note 1 below	Chemiluminescence	Limit not exceeded. See note 1 below
Flare	Carbon Monoxide (CO)	100 if flare commissioned before 31 Dec 2003; 50 if afterwards,	Annually See note 1 below	Non-Dispersive Infrared analysis	Limit not exceeded. See note 1 below
Flare	Total Volatile Organic Compounds (VOC's)	10	Annually See note 1 below	Extractive sampling and FID analysis	Limit not exceeded. See note 1 below
Flare	Non Methane Volatile Organic Compounds (NMVOCs)	5	Annually	EA guidance amended confirming no suitable method available for monitoring NMVOCs	Testing no longer required in accordance with EA guidance

Note 1. Flare emission monitoring is only undertaken if engine downtime for the previous reporting year exceeds 10%. Therefore due to the downtime on the engine being greater than 10% for the reporting period of 2013 then monitoring of flare emissions were undertaken on 22nd April 2014. The flare emission reports are attached to this document as Appendices K1 and K2.

The engine availability for the reporting period is shown in the following table:-

	Engine Availability January to December 2014			
Actual from meter readings 2nr engines (hours)	Total possible (hours)	Engine availability (%)	Gas engine downtime (hours)	Engine downtime (%)
14,987	2nrx24x365 days = 17,520	85.5	2,533	14.5

A more detailed report is attached as Appendix G1.

The above table indicates engine downtime for 2014 is greater than 10% therefore initiating the requirement for testing to be undertaken during 2015 as per Table 2.2.2. Note 1.

2.2 Groundwater

Groundwater monitoring results have been recorded in accordance with Table 2.2.8 and Table S2 of the Landfill Permit. Results are made available to the Agency as part of the Quarterly Monitoring Report submissions. The final Quarterly Report October - December 2014 is currently being produced and should be submitted to NRW by 31st January 2015.

2.3 Sub-surface Landfill Gas

Sub surface landfill gas monitoring results in accordance with Table 2.10.11 and Table S2 of the Landfill Permit. Results are made available to the Agency as part of the Quarterly Monitoring Report submissions.

The actual results for the year including graphical representations are found in Appendices B1 and B2 respectively.

2.4 Leachate

Leachate monitoring results in accordance with Table 2.10.12 and Table S2 of the Landfill Permit. Results are made available to the Agency as part of the Quarterly Monitoring Report submissions. The final Quarterly Report October - December 2014 is currently being produced and should be submitted to NRW by 31st January 2015.

2.5 Surface Water

Surface water monitoring results in accordance with Section 3.1.3 of the Hydrogeological Risk Assessment (attached to the Permit application) and Table S2 of the Landfill Permit. Results are made available to the Agency as part of the Quarterly Monitoring Report submissions. The final Quarterly Report October - December 2014 is currently being produced and should be submitted to NRW by 31st January 2015.

SCHEDULE 3

3. Additional Monitoring in accordance with Table S2 of the Landfill Permit

3.1 Annually

3.1.1 Calculation of remaining capacity in cubic metres accounting for settlement

Existing Model	Proposed Model	Volumetric Analysis by	Volume of Fill between Models (m3)
n/a	3D Model of Final Finished Contours	Prismoidal Method	site is now closed
n/a	3D Model of Final Finished Contours	Grid Method	site is now closed
Average Void space remaining at 22 August 2011			site is now closed

3.1.2 Record of the structure and composition of the landfill body and surveying of the settling behaviour of the landfill during the operating and after care phases

The annual topographical survey was undertaken in April 2014, a plan of the survey is attached as Appendix D2. A plan showing settlement levels between April 2013 and April 2014 is attached as Appendix D3 and a settlement report of the stability monitoring stations is attached as Appendix D4, **note that these stability monitoring stations are now obsolete as a result of the capping of the Phase 1 landfill (BGCBC), new stations will be re-established on completion of the works and will serve as future reference points for stability / movement monitoring of the southern flank.**

The composition of the filled void space for reporting period is shown by the Table contained in Appendix C1 and confirms zero waste input.

A summary report of landfill body monitoring data is shown in 3.1.3

3.1.3 Volume and composition of waste deposited in the previous 12 months

The volume of waste received at the site was zero for the reporting period subsequently there is no void utilisation or volumetric modelling results to report

Appendix C1 contains details of waste totals and composition and confirms zero waste input.

Summary Report of Landfill body monitoring data	
Parameter	Value
Surface area occupied by waste (m2) in previously active landfill area - Cell 5 north and Cell 5 south	33,000 m2
Volume of waste deposited in the installation (m3)	0 m3
Remaining void capacity (m3)	the landfill is now closed
The settling behaviour of the level of landfill body active fill areas (m)	See para. 3.1.2 above
Movement monitoring stations southern access road southern flank	There is minimal lateral and vertical movement at the slope stability monitoring stations is less than 20mm and 40mm respectively. See table showing monitoring station co-ordinates Appendix E1

The Composition of the waste received is shown in the table in Appendix D and confirms Zero waste input.

3.2 Quarterly

3.2.1 Quantity of waste deposited

Quarterly Period	Waste Received for Disposal in Tonnes	Cumulative Tonnes
Jan - Mar	0	0
Apr - Jun	0	0
Jul - Sep	0	0
Oct - Dec	0	0

3.2.2 Ambient air monitoring

Ambient air monitoring readings are attached as Appendix B3 along with the relevant meteorological data presented as graphs in Appendices B4 and B5.

3.3 Monthly

3.3.1 Leachate Levels

Results are made available to the Agency as part of the Quarterly Monitoring Report submissions. The final Quarterly Report October - December 2014 is currently being produced and should be submitted to NRW by 31st January 2015.

3.3.2 Basal elevation as mAOD

Excavation to basal contours was completed early 2004 and fill has taken place over the entire area of landfill basal.

3.3.3 Waste volume

Monthly waste volumes using the industry recognised standard of 1t = 1m³ compacted, are shown by the following table:-

Month	Waste Received in Tonnes (t)	Multiplying Ration for Tonnes (t) to Cubic Metres (m ³)	Volume of Waste Received in Cubic Metres (m ³)
January	0	1	0
February	0	1	0
March	0	1	0
April	0	1	0
May	0	1	0
June	0	1	0
July	0	1	0
August	0	1	0
September	0	1	0
October	0	1	0
November	0	1	0
December	0	1	0
	0		0

3.3.4 Stable, permanent survey control stations

Survey stations have been re-established for the control of all survey work around the site. The stations are referenced to Ordnance Survey National Grid co-ordinates, the grid alignment is within +/-1 metre and levels are referenced to Ordnance Datum. The accuracy of horizontal control is not less than 1:20 000. The level values of adjacent stations agree to less than or equal to 0.005 metres. The station co-ordinates, levels and locations are shown on the drawing in Appendix D2 and also Appendix E1 where the permanent and temporary survey station values are also shown in tabular layout. The topographic survey was carried out in April 2014 the contours and features are shown on the drawing in Appendix D2.

SCHEDULE 4

4. Schedule 4 - Reporting of performance data

4.1 Table S4.1: Annual Production/Treatment

For the Period January to December	
Leachate: Disposed of offsite; Disposed of to any onsite effluent treatment plant.	0 t/yr 302,968 m3/yr = 302,968 t/yr
Surface water and/ or groundwater: Disposed of offsite; Disposed of to any onsite effluent treatment plant.	0 t/yr 0 t/yr
Landfill gas: Disposed of by flare; Burnt in gas engine; Utilised by brickworks.	1,570,460 m3/yr (see Appendix G1) 4,582,572 m3/yr (see Appendix G1) 0 t/yr

4.2 Table S4.2: Performance parameters

For the Period January to December		
	Frequency of assessment	Annual average
Potable water use	Annually	301 x 18.9 litre bottles = 5,688.9 litres = 5.7 m3
Energy used	Annually	263,846 kWh See Appendix G2 for details
Non potable water use	Annually (31/12/13 to)*	meter readings (m3): 472 - 189 = 283m3
Energy generated	Annually	8,430 MWh annual See Appendix G1 for details
Waste Hazard Score (from H1)	Annually	not required for landfill disposal facilities - reference Agency e-mail 07th September 2009
Waste Disposal Score (from H1)	Annually	not required for landfill disposal facilities - reference Agency e-mail 07th September 2009

*new clock installed to replace existing clock failed 12th March 2013

APPENDIX A1

SUMMARY OF COMPLAINTS

Silent Valley Landfill Site Permit Nr MP3835SV
Summary of Landfill Complaints and Other Related Events 2014

Ref.	Date(s)	Address o f Complainant	Complainant's Comments	Actions
-	-	-	No Complaints were made, either directly to the Operator or to the EA during the Reporting Period January to December 2013.	-

Silent Valley Landfill Site Odour Complaint Occurrences 2013 and 2014

January																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
February																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
March																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
April																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
May																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
June																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
July																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
August																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
September																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
October																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
November																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
December																															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

	2014 complaint received if more than 1 actual number is shown 0 in total
	2013 complaint received if more than 1 actual number is shown 0 in total

APPENDIX A2

SCHEDULE 1 REPORTS

***No reportable events during the
reporting period***

APPENDIX B1

SUB-SURFACE LANDFILL GAS

MONITORING READINGS

METHANE AND CARBON DIOXIDE READINGS 2014

GMW1

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	1	1.3	1.2	0.1	0.7	0.8	1.1	0.8	0.5	0.6	0.5	0.1
CH4, Yellow Valve	24.8	2.7	1.5	18	27.9	29.7	22.1	25.5	20.5	38.8	1.1	13.8
CH4, White Valve	2.6	0	2.7	2.5	2.3	2.5	2.1	1.1	1.4	1.9	2.8	1.6
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	1.3	0.8	0.7	0.3	1	1.1	1.2	1.3	1.4	1.3	0.4	1.2
CO2, Yellow Valve	1.3	0.4	0.4	7.8	8.1	9.5	11.3	10.5	10.3	11.7	2.7	5.2
CO2, White Valve	0.4	0	0.3	0.9	0.7	0.9	1.4	1.4	1.4	1.3	1.3	0.9

GMW2

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	water	water	0	0	0	0	0	0.1	0	Water
CH4, Yellow Valve	0	water	water	water	0	0	0	0	0	0.1	0	0
CH4, White Valve	0	0	0.1	0	0	0	0	0.2	0	water	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	0	0	water	water	0	0	1.1	1	1.2	0.6	0.6	Water
CO2, Yellow Valve	0	water	water	water	0	0	1.1	0.6	0.8	0.2	0.2	0
CO2, White Valve	10.3	0	9.2	1.8	7.9	8.3	8.5	8.1	0.1	water	1.1	1.9

GMW3

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	0	0	0	0.1	0	0	0	0.1	0	0
CH4, Yellow Valve	0	0	0	0	0	0	0	0.1	0	0.1	0	0
CH4, White Valve	0.4	0.3	0	0.4	0	0.5	0	0	0	0.1	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	5.4	3.6	1.1	0.3	0.5	1.2	2.8	2.4	1.4	1.4	4.4	3.7
CO2, Yellow Valve	0	0	0	0	2.1	0	5.8	1.6	0.3	0	0	0
CO2, White Valve	23.5	11.2	0.8	18.8	7.1	14	3	1.6	6.3	0.1	22.3	15.9

GMW4

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CH4, Yellow Valve	0	0	0	0	0	0	0	0.1	0	0.1	0	0
CH4, White Valve	water	water	0	water	0	water	0	0	0	water	0	Water
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	0	0	0	0.1	0	0	0	0	0	0	0	0
CO2, Yellow Valve	0	0.1	0	0	0	0.1	0	0.1	0	0	0	0
CO2, White Valve	water	water	0	water	0	water	0	0.2	0.1	water	0	Water

GMW5

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CH4, Yellow Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CH4, White Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	6.6	6.6	0.6	6.1	5.8	5.3	4.1	6.6	6.6	6.8	7	6.7
CO2, Yellow Valve	2.4	2.5	0.7	1.5	1.7	0.2	0.1	0.5	0.9	1.4	1.7	1.9
CO2, White Valve	1.5	1.6	1	1	1.3	0.7	0.4	1.2	0.9	2.1	2.3	3.1

GMW6

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	water	water	0	0	0	0	0	0	0	water	0	0
CH4, Yellow Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CH4, White Valve	0	0	0	0	0	0	0.1	0	0	0.1	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	water	water	0	0	0	0	0.3	0.2	0.6	water	1.8	0.6
CO2, Yellow Valve	2.9	3.5	2.7	2.2	1.5	2.6	0.5	0.7	1.9	2.3	1.9	1.6
CO2, White Valve	0.8	2.1	1.7	1.9	1.8	1.6	1.8	1.1	1.1	1.4	1.9	2.3

GMW7

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Yellow Valve	0	0	0	0	0	0	nt	0	0	0.1	0	NT
CH4, Yellow Valve	0	0	0	11.2	0	0	nt	0	0	0.1	0	NT
CARBON DIOXIDE (% by Volume)												
CO2, Yellow Valve	0.1	0.1	0	0.2	0.1	1.4	nt	1.2	1.4	0.4	0	NT
CO2, White Valve	0.1	0.1	0	13.7	0.1	1.5	nt	1.4	1.3	0.5	0.2	NT

GMW8

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Yellow Valve	7.2	10.9	11.8	0	11.1	12.2	10.6	8.1	6.5	5.5	7	8
CH4, White Valve	0	0.1	0.1	0	0.1	0	0	0	0	0.1	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Yellow Valve	16.5	16	14.9	5.5	13.7	13.1	13.6	14.4	14.8	15.6	15.2	14.9
CO2, White Valve	6.5	6.3	5.5	2.1	5.2	5.2	3.5	5.8	5.9	6.6	7.5	7.3

GMW9

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0.1	0	0	50.6	0	0	0.1	0.1	0	0.1	0	0
CH4, Yellow Valve	59.1	59.9	59.8	0.1	51.4	42	45.2	49	0	53	56.2	0
CH4, White Valve	0.1	0.1	0.2	61.3	0.2	0.1	0.9	0.1	50.6	0.2	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	2.3	2.3	2.2	22.1	1.8	1.7	1.8	2	2	2.1	2.1	2.1
CO2, Yellow Valve	24.9	23	20.7	0.2	24.4	22.9	24.5	26.7	0.2	27.6	22.2	0.1
CO2, White Valve	0.4	0.1	0.2	12.5	0.1	0.2	0.7	0.2	27.1	0.3	0.3	0

GMW10

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	54.1	45.8	61.1	54.7	47.2	9.9	9.3	9.6	13.8	21.6	0
CH4, Yellow Valve	0	63.3	51.6	42	56.1	52.9	14.4	11.9	13	18.7	36.3	0
CH4, White Valve	0	43.7	31.1	0	39.1	30.3	0.2	0.9	0.3	0.2	19	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	4.6	9.8	8.2	12.6	13.1	11	5.5	5.8	5.3	6.6	4.4	3.3
CO2, Yellow Valve	5.4	10.9	8.8	9.5	13.1	12.3	6.1	6.7	6	7.6	7.8	3.9
CO2, White Valve	3.9	8.4	5.8	0.1	9.8	7.7	3.2	4	2.6	3.6	4.6	3.3

GMW12

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CH4, Yellow Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CH4, White Valve	0	0	0	0	0	0	0	0	0	0.1	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	0.1	0.1	0.1	0.1	0.1	0	0	0.7	0.1	0.2	0.1	0.2
CO2, Yellow Valve	0.1	0.1	0.1	0	0.1	0	0	0.8	0.1	0.2	0.1	0.1
CO2, White Valve	0.1	0.2	0.2	0.1	0.1	0	0	0.8	0.1	0.1	0.1	0.1

GMW13

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	0	1.8	0	0	0	0	0	0.1	0	0
CH4, Yellow Valve	0	0.6	1	0	0.6	0.6	0.1	0.1	0	0.1	0.5	0.9
CH4, White Valve	0	0	0	0	0	0	nt	0	0	0.1	0	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	2.3	1.3	1.2	8.4	2.1	1.7	2	1.7	2.2	2.3	1.4	1.8
CO2, Yellow Valve	0.3	10.6	9.7	3	7.3	9.5	7.1	9.9	10.1	10.3	11.1	10
CO2, White Valve	4	1.8	3.6	0.2	3.1	3.6	nt	0.9	4	4.5	4	3.3

GMW14

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	nt	nt	0	nt	nt	nt	nt	nt	nt	nt	nt	NT
CH4, Yellow Valve	nt	nt	0	nt	nt	nt	nt	nt	nt	nt	nt	NT
CH4, White Valve	nt	nt	0	nt	nt	nt	nt	nt	nt	nt	nt	NT
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	nt	nt	0	nt	nt	nt	nt	nt	nt	nt	nt	NT
CO2, Yellow Valve	nt	nt	0	nt	nt	nt	nt	nt	nt	nt	nt	NT
CO2, White Valve	nt	nt	0	nt	nt	nt	nt	nt	nt	nt	nt	NT

GMW17

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Red Valve	0	0	0	0	0	0.2	0	0	0	0.1	nt	0
CH4, Yellow Valve	0	0	0	0	0.1	0.3	0	0	0	0.1	nt	0
CH4, White Valve	0	0	0	0	0	0	0	0	0	0.1	nt	0
CARBON DIOXIDE (% by Volume)												
CO2, Red Valve	0.1	1.1	0	0	0	0	1.1	1.3	1.3	0.1	nt	0
CO2, Yellow Valve	0	0	0	0	0	0	7.5	7.4	6.9	0.3	nt	1.5
CO2, White Valve	0	2.8	0	0.2	0	0	3.5	3.7	4.1	0	nt	1.7

GMW18

METHANE (% by Volume)	08-Jan-14	04-Feb-14	27-Feb-14	08-Apr-14	14-May-14	19-Jun-14	25-Jul-14	27-Aug-14	25-Sep-14	22-Oct-14	28-Nov-14	19-Dec-14
CH4, Yellow Valve	0	0	0	0	0	0	0	0	0	0.1	0.2	0
CH4, White Valve	0	0	0	0	0	0	0	0	0	0.1	0.1	0
CARBON DIOXIDE (% by Volume)												
CO2, Yellow Valve	9.4	0.1	0.3	6.8	0	0	1	7.6	0.1	2.3	1.1	0.1
CO2, White Valve	10.3	8.5	8.7	6.8	6.2	7.7	5.2	5.7	6.9	0	0.1	0

nt - reading not taken

water - Water in well reading abandoned

nt - GMW17 due to cattle feeding area at location of the well

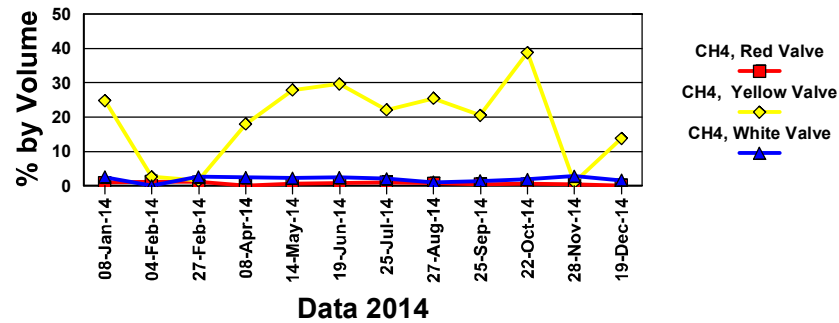
nt - GMW14 due to cattle quarantine paddock around well location

nt - GMW7 due to capping contract soil stockpile machinery working above well location

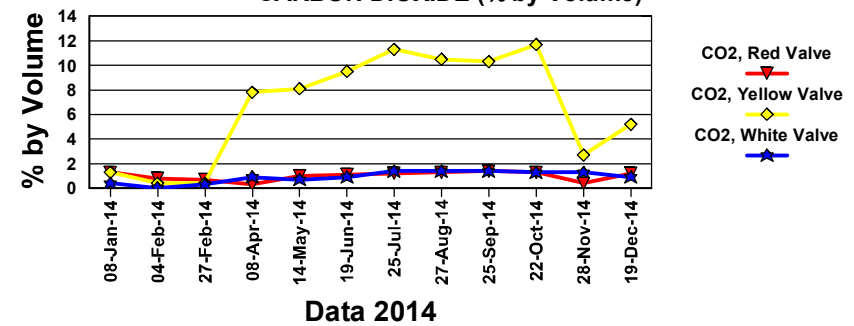
APPENDIX B2

METHANE AND CARBON DIOXIDE GRAPHS

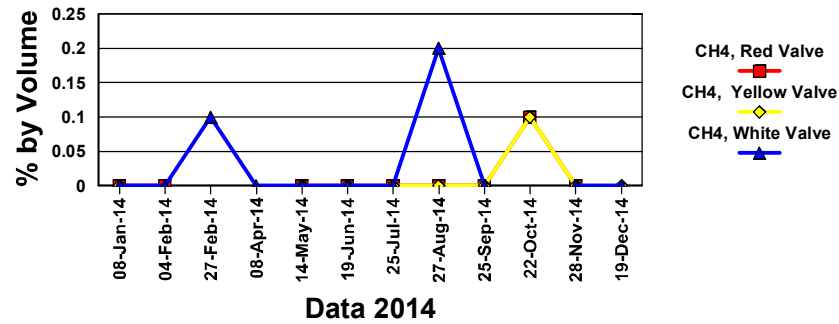
GMW1
METHANE (% by Volume)



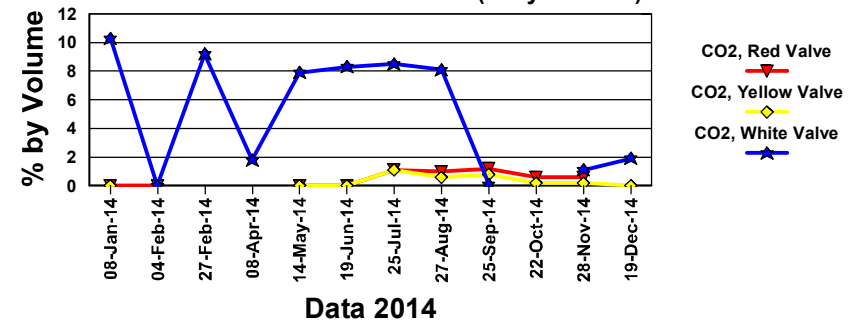
GMW1
CARBON DIOXIDE (% by Volume)



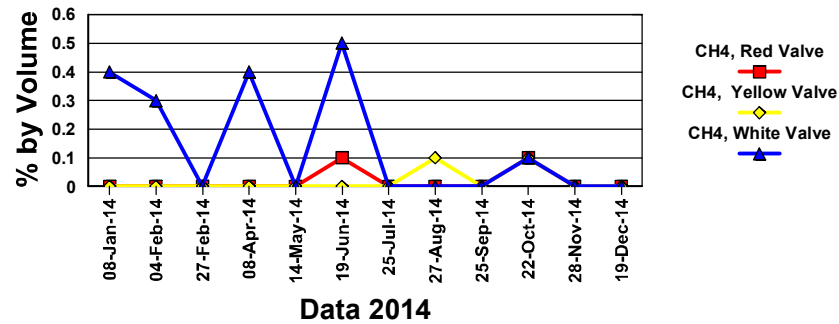
GMW2
METHANE (% by Volume)



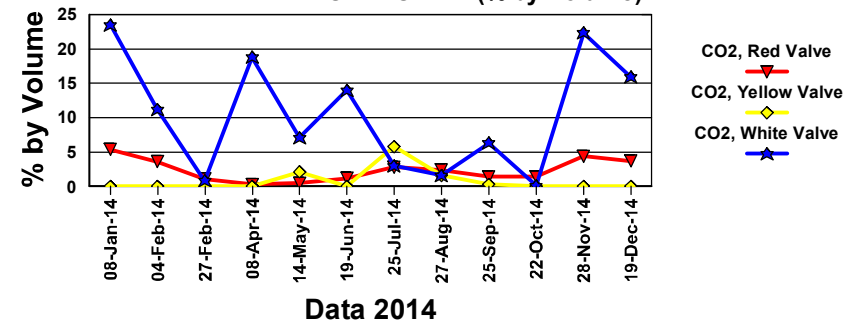
GMW2
CARBON DIOXIDE (% by Volume)



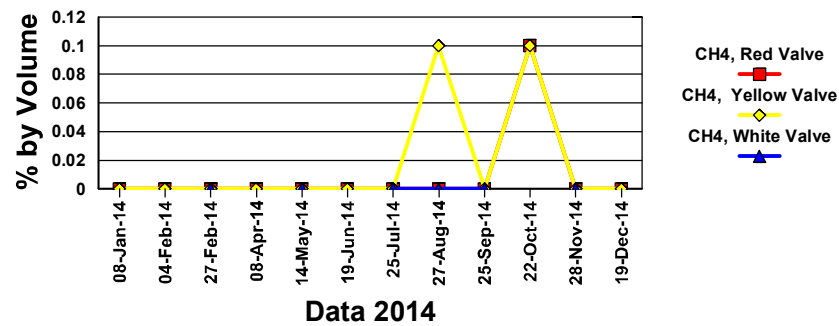
GMW3
METHANE (% by Volume)



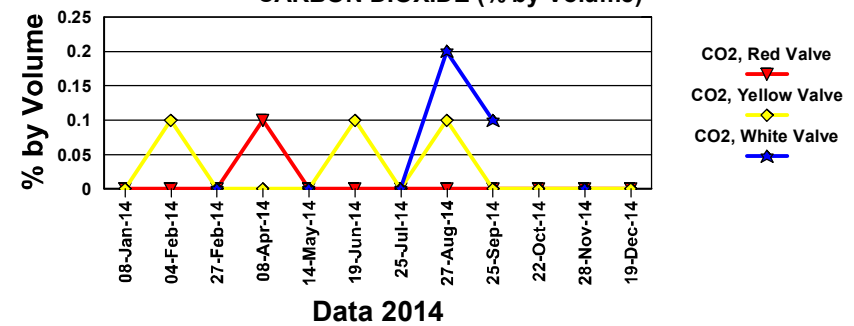
GMW3
CARBON DIOXIDE (% by Volume)



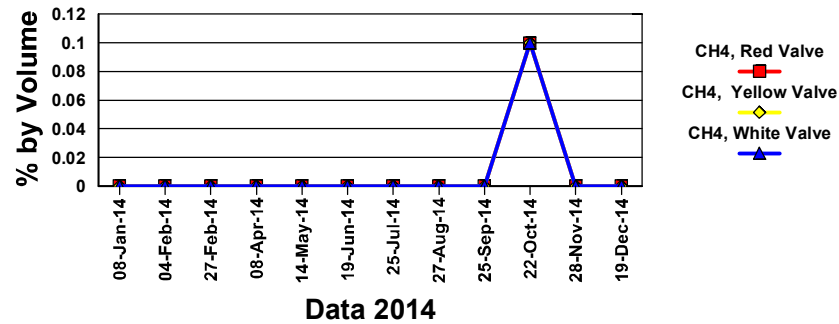
GMW4
METHANE (% by Volume)



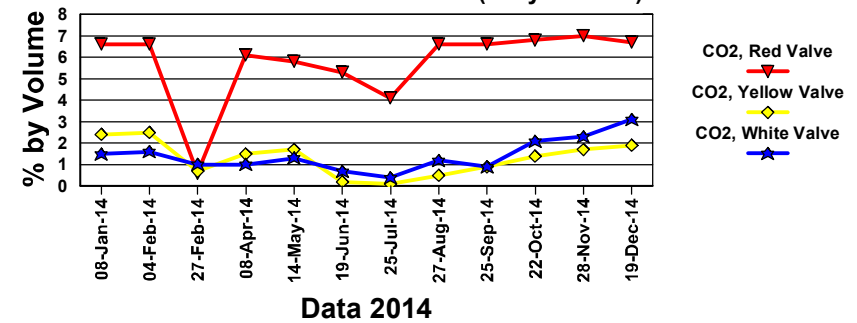
GMW4
CARBON DIOXIDE (% by Volume)



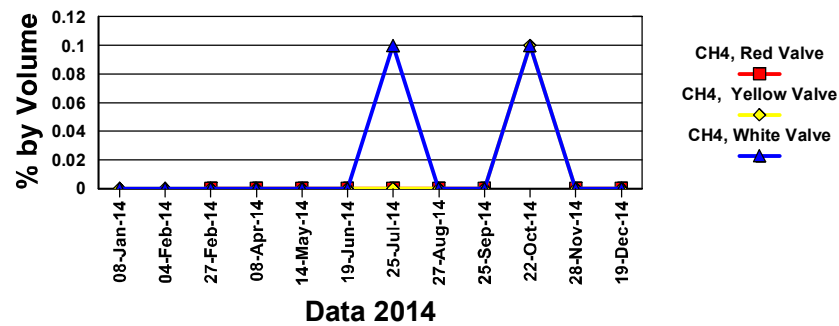
GMW5
METHANE (% by Volume)



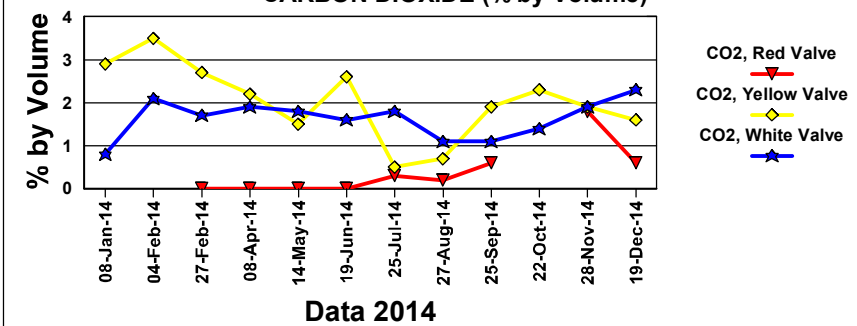
GMW5
CARBON DIOXIDE (% by Volume)



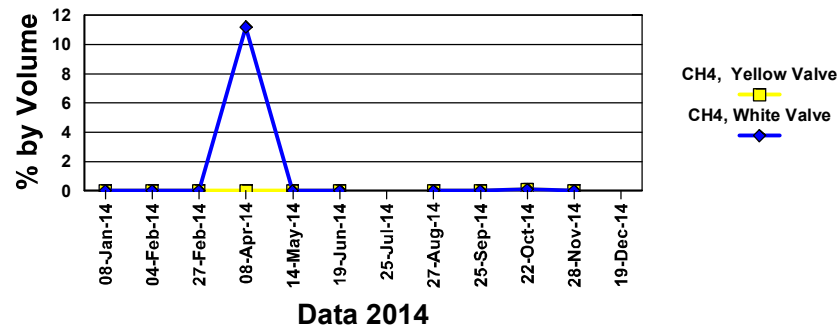
GMW6
METHANE (% by Volume)



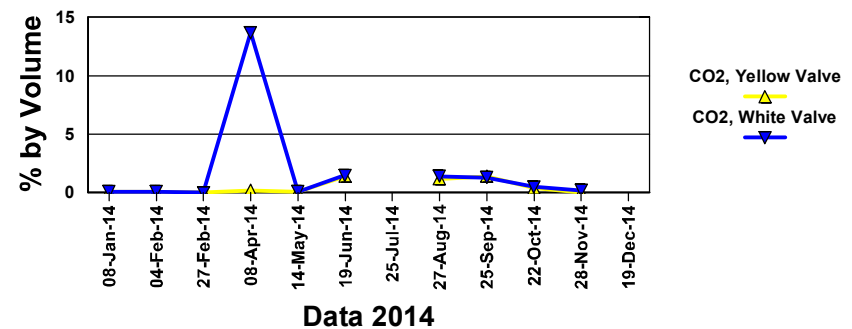
GMW6
CARBON DIOXIDE (% by Volume)



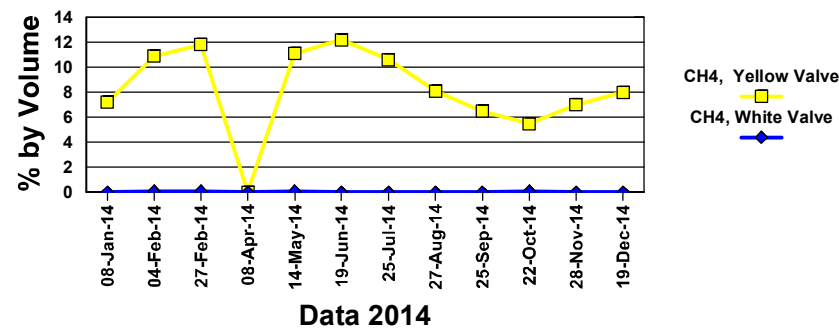
GMW7
METHANE (% by Volume)



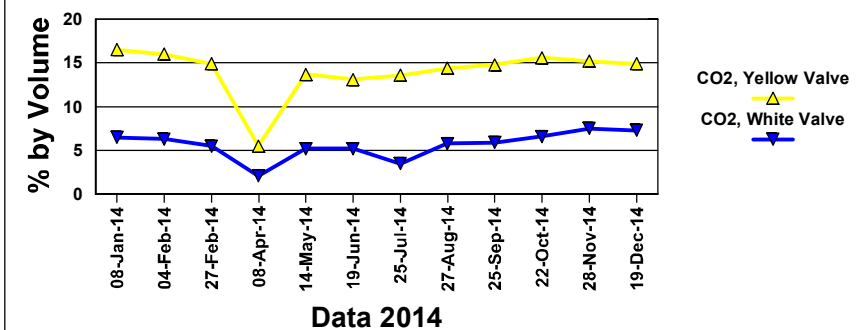
GMW7
CARBON DIOXIDE (% by Volume)



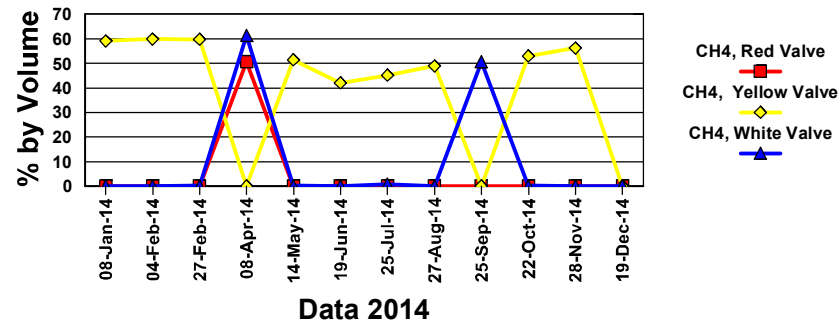
GMW8
METHANE (% by Volume)



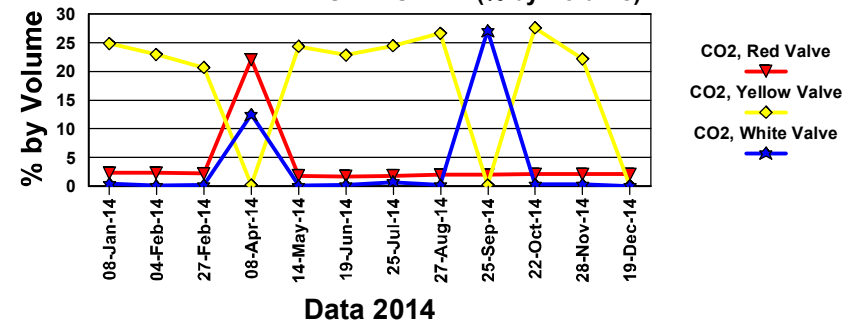
GMW8
CARBON DIOXIDE (% by Volume)



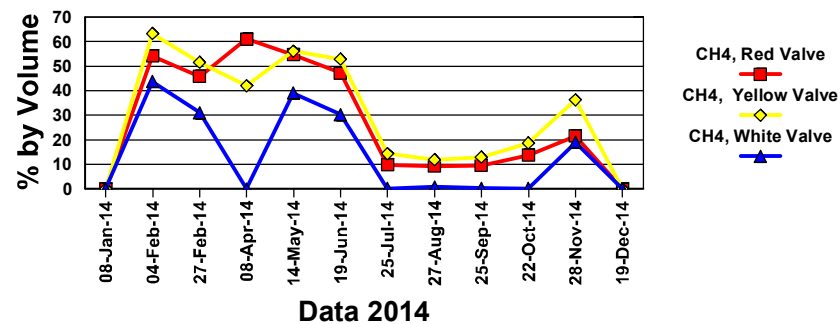
GMW9
METHANE (% by Volume)



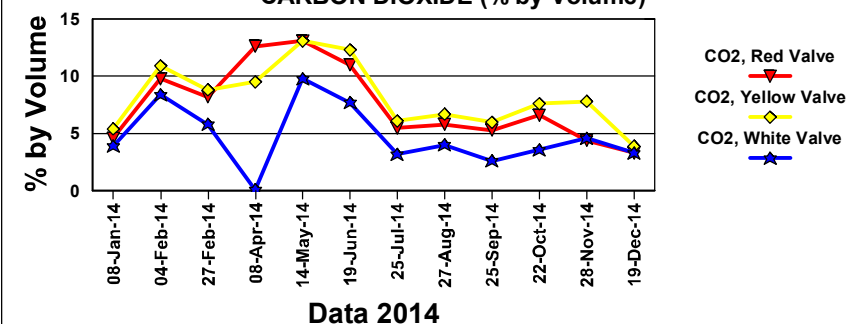
GMW9
CARBON DIOXIDE (% by Volume)



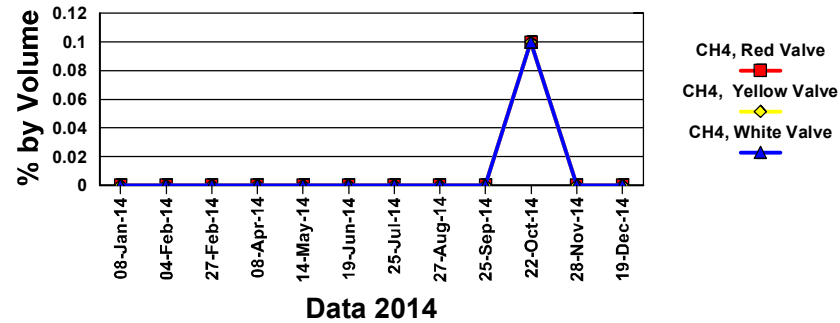
GMW10
METHANE (% by Volume)



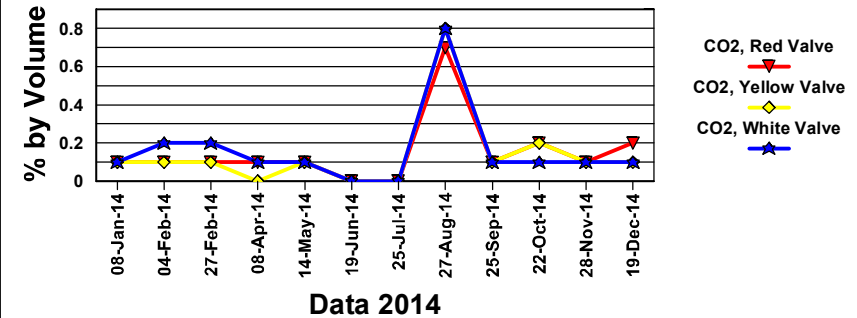
GMW10
CARBON DIOXIDE (% by Volume)



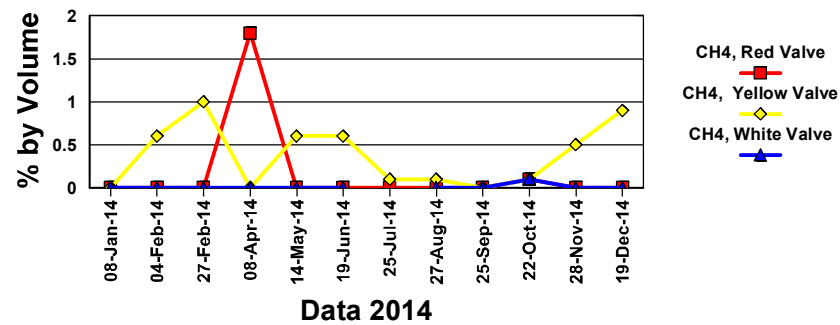
GMW12
METHANE (% by Volume)



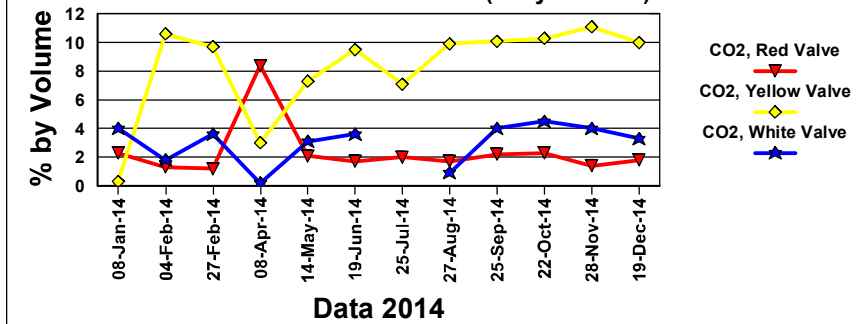
GMW12
CARBON DIOXIDE (% by Volume)



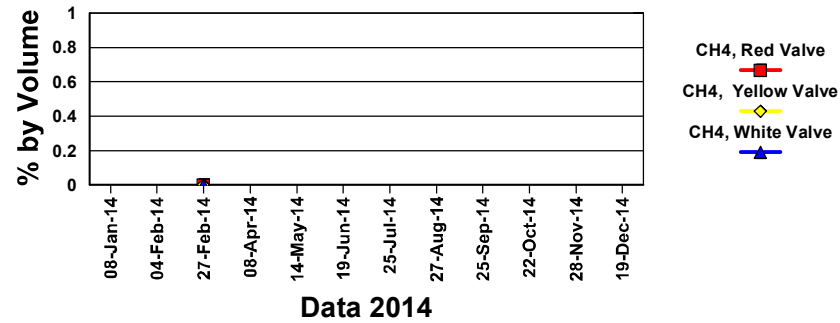
GMW13
METHANE (% by Volume)



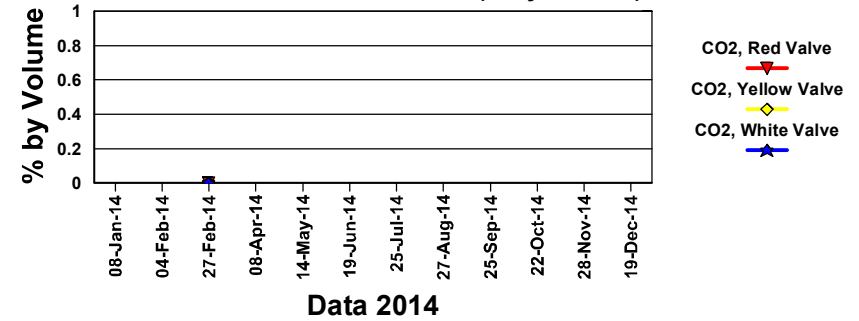
GMW13
CARBON DIOXIDE (% by Volume)



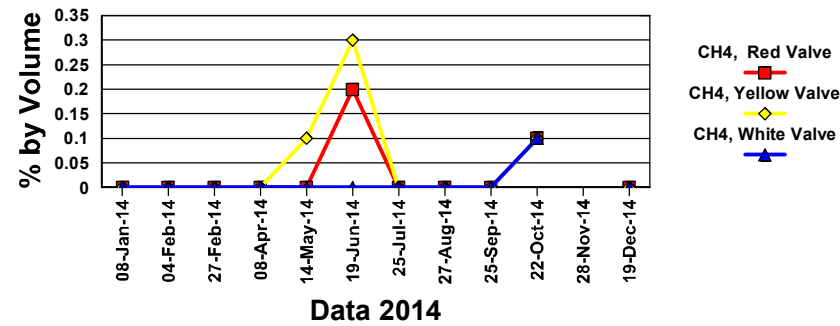
GMW14
METHANE (% by Volume)



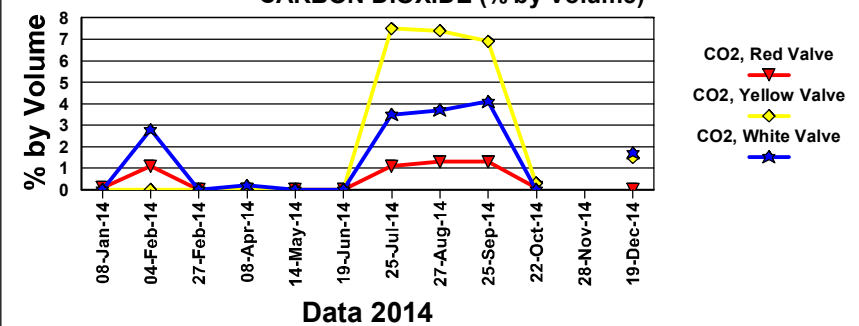
GMW14
CARBON DIOXIDE (% by Volume)

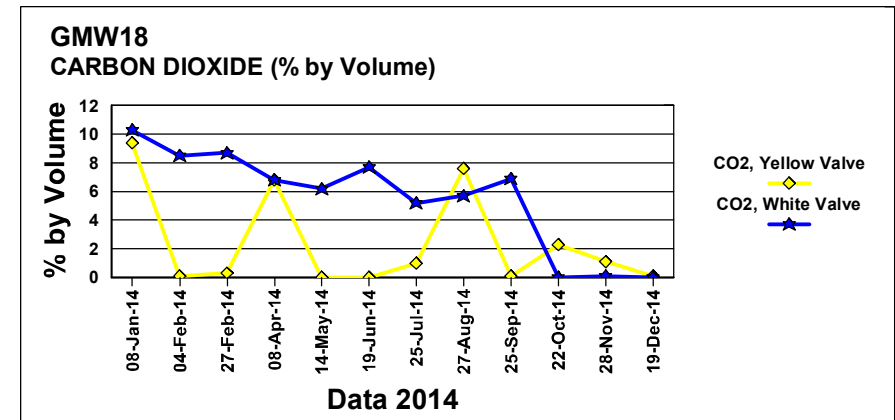
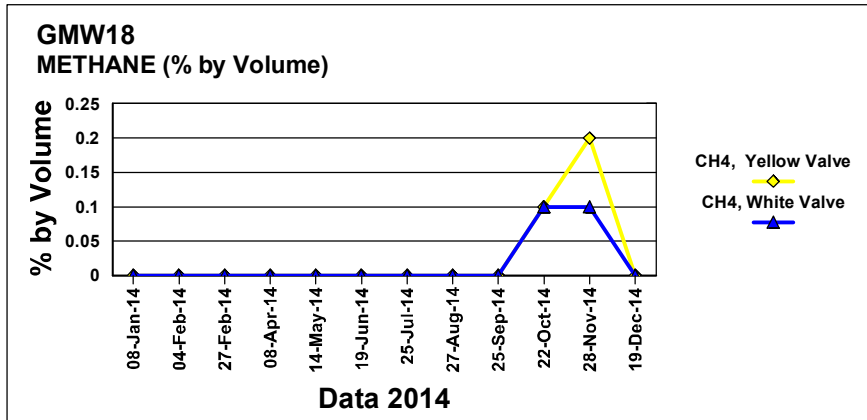


GMW17
METHANE (% by Volume)



GMW17
CARBON DIOXIDE (% by Volume)





APPENDIX B3

**QUARTERLY AMBIENT AIR MONITORING
READINGS**

QUARTERLY AMBIENT AIR MONITORING POINTS 2014

North (GMW1)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt		19/06/2014 09:24	25/09/2014 09:06	19/12/2014 08:34
Methane (% by Volume)	nt		0.00	0.00	0.00
Carbon Dioxide (% by Volume)	nt		0.00	0.00	0.00
Oxygen (% by Volume)	nt		20.20	21.20	21.50
Balance (% by Volume)	nt		79.80	0.00	78.50
Barometric Pressure (bar)	nt		979.00	975.00	967.00
Carbon Monoxide (ppm)	nt		0.00	0.00	0.00
Hydrogen Sulphide (ppm)	nt		0.00	0.00	0.00
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

North East (GMW2)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt		19/06/2014 09:37	25/09/2014 09:22	19/12/2014 08:50
Methane (% by Volume)	nt		0.00	0.00	0.00
Carbon Dioxide (% by Volume)	nt		0.00	0.00	0.00
Oxygen (% by Volume)	nt		20.70	21.30	21.80
Balance (% by Volume)	nt		79.30	78.70	78.20
Barometric Pressure (bar)	nt		980.00	976.00	969.00
Carbon Monoxide (ppm)	nt		0.00	0.00	0.00
Hydrogen Sulphide (ppm)	nt		0.00	0.00	0.00
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

East (GMW3)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt		19/06/2014 09:52	25/09/2014 09:36	19/12/2014 09:11
Methane (% by Volume)	nt		0.00	0.00	0.00
Carbon Dioxide (% by Volume)	nt		0.00	0.00	0.00
Oxygen (% by Volume)	nt		20.70	21.30	21.60
Balance (% by Volume)	nt		79.30	78.70	78.40
Barometric Pressure (bar)	nt		980.00	977.00	970.00
Carbon Monoxide (ppm)	nt		0.00	1.00	0.00
Hydrogen Sulphide (ppm)	nt		0.00	0.00	0.00
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

South East (GMW5)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt		19/06/2014 10:22	25/09/2014 10:05	19/12/2014 09:39
Methane (% by Volume)	nt		0.00	0.00	0.00
Carbon Dioxide (% by Volume)	nt		0.00	0.00	0.00
Oxygen (% by Volume)	nt		21.00	21.10	21.80
Balance (% by Volume)	nt		79.00	0.00	78.20
Barometric Pressure (bar)	nt		984.00	980.00	974.00
Carbon Monoxide (ppm)	nt		0.00	0.00	0.00
Hydrogen Sulphide (ppm)	nt		0.00	0.00	0.00
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

QUARTERLY AMBIENT AIR MONITORING POINTS 2013

South (GMW6)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt	19/06/2014 11:03	25/09/2014 10:53	19/12/2014 09:56	
Methane (% by Volume)	nt	0.00	0.00	0.00	
Carbon Dioxide (% by Volume)	nt	0.00	0.00	0.00	
Oxygen (% by Volume)	nt	20.20	21.10	21.70	
Balance (% by Volume)	nt	79.80	0.00	78.30	
Barometric Pressure (bar)	nt	986.00	982.00	976.00	
Carbon Monoxide (ppm)	nt	0.00	0.00	0.00	
Hydrogen Sulphide (ppm)	nt	0.00	0.00	0.00	
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

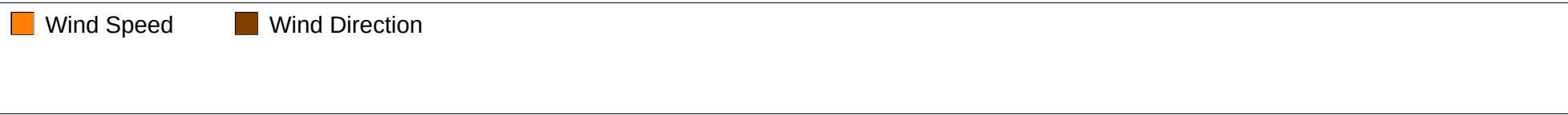
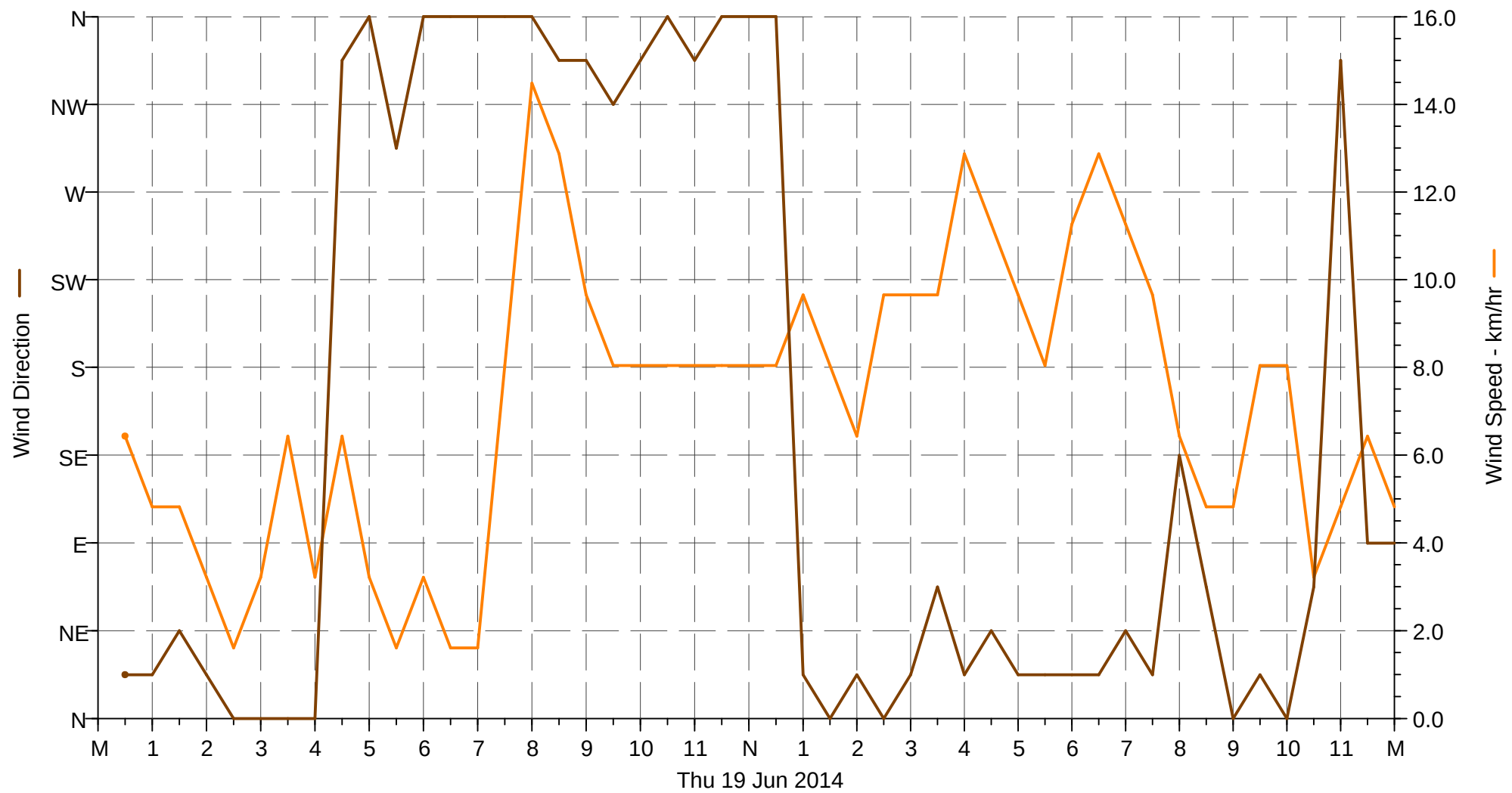
South West (GMW7)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt	19/06/2014 11:13	25/09/2014 10:31	19/12/2014 10:27	
Methane (% by Volume)	nt	0.00	0.00	0.00	
Carbon Dioxide (% by Volume)	nt	0.00	0.00	0.00	
Oxygen (% by Volume)	nt	20.30	20.90	21.30	
Balance (% by Volume)	nt	79.70	0.00	78.70	
Barometric Pressure (bar)	nt	984.00	980.00	972.00	
Carbon Monoxide (ppm)	nt	0.00	0.00	0.00	
Hydrogen Sulphide (ppm)	nt	0.00	0.00	0.00	
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

West (GMW8)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt	19/06/2014 11:22	25/09/2014 11:31	19/12/2014 10:32	
Methane (% by Volume)	nt	0.00	0.00	0.00	
Carbon Dioxide (% by Volume)	nt	0.00	0.00	0.00	
Oxygen (% by Volume)	nt	20.50	20.90	21.10	
Balance (% by Volume)	nt	79.50	0.00	78.90	
Barometric Pressure (bar)	nt	982.00	978.00	972.00	
Carbon Monoxide (ppm)	nt	0.00	0.00	0.00	
Hydrogen Sulphide (ppm)	nt	0.00	0.00	0.00	
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

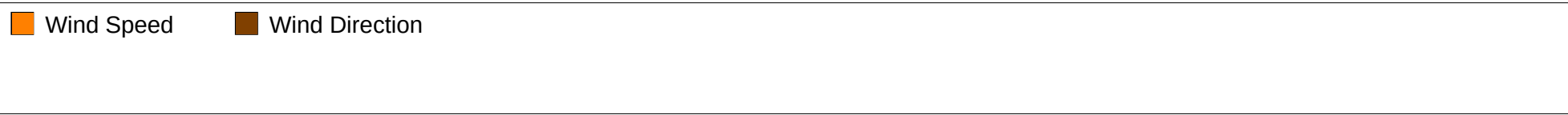
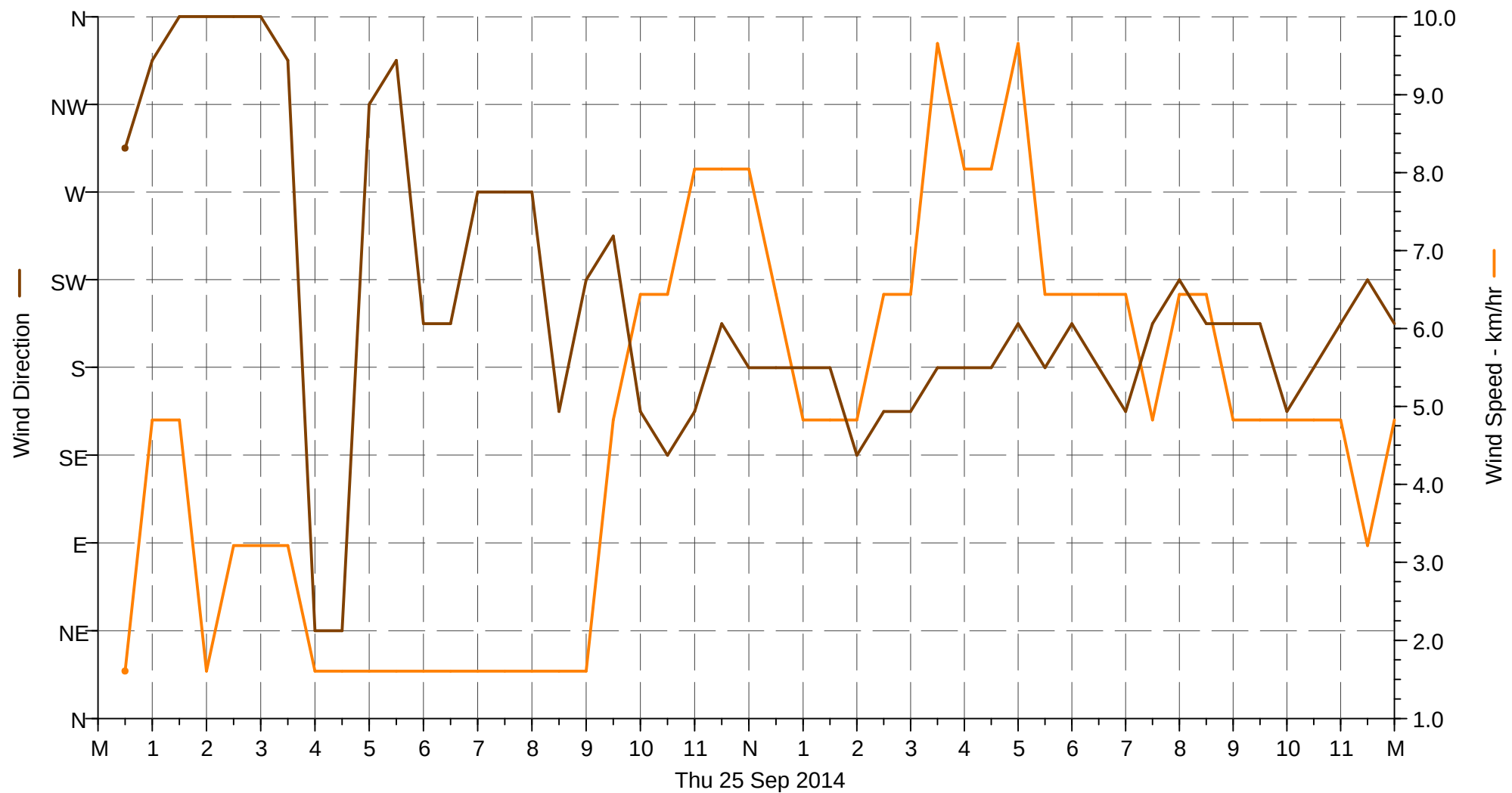
North West (GMW9)		Q1	Q2	Q3	Q4
Date and Time of monitoring	nt	19/06/2014 11:42	25/09/2014 11:47	19/12/2014 10:41	
Methane (% by Volume)	nt	0.00	0.00	0.00	
Carbon Dioxide (% by Volume)	nt	0.00	0.00	0.00	
Oxygen (% by Volume)	nt	20.40	20.90	20.80	
Balance (% by Volume)	nt	79.60	0.00	79.20	
Barometric Pressure (bar)	nt	980.00	977.00	971.00	
Carbon Monoxide (ppm)	nt	0.00	0.00	0.00	
Hydrogen Sulphide (ppm)	nt	0.00	0.00	0.00	
Wind Direction	See	graph	attached		
Wind Speed	See	graph	attached		
Air Temperature	See	graph	attached		

APPENDIX B4
WIND SPEED AND WIND
DIRECTION GRAPHS
(To be read with ambient air
monitoring readings)

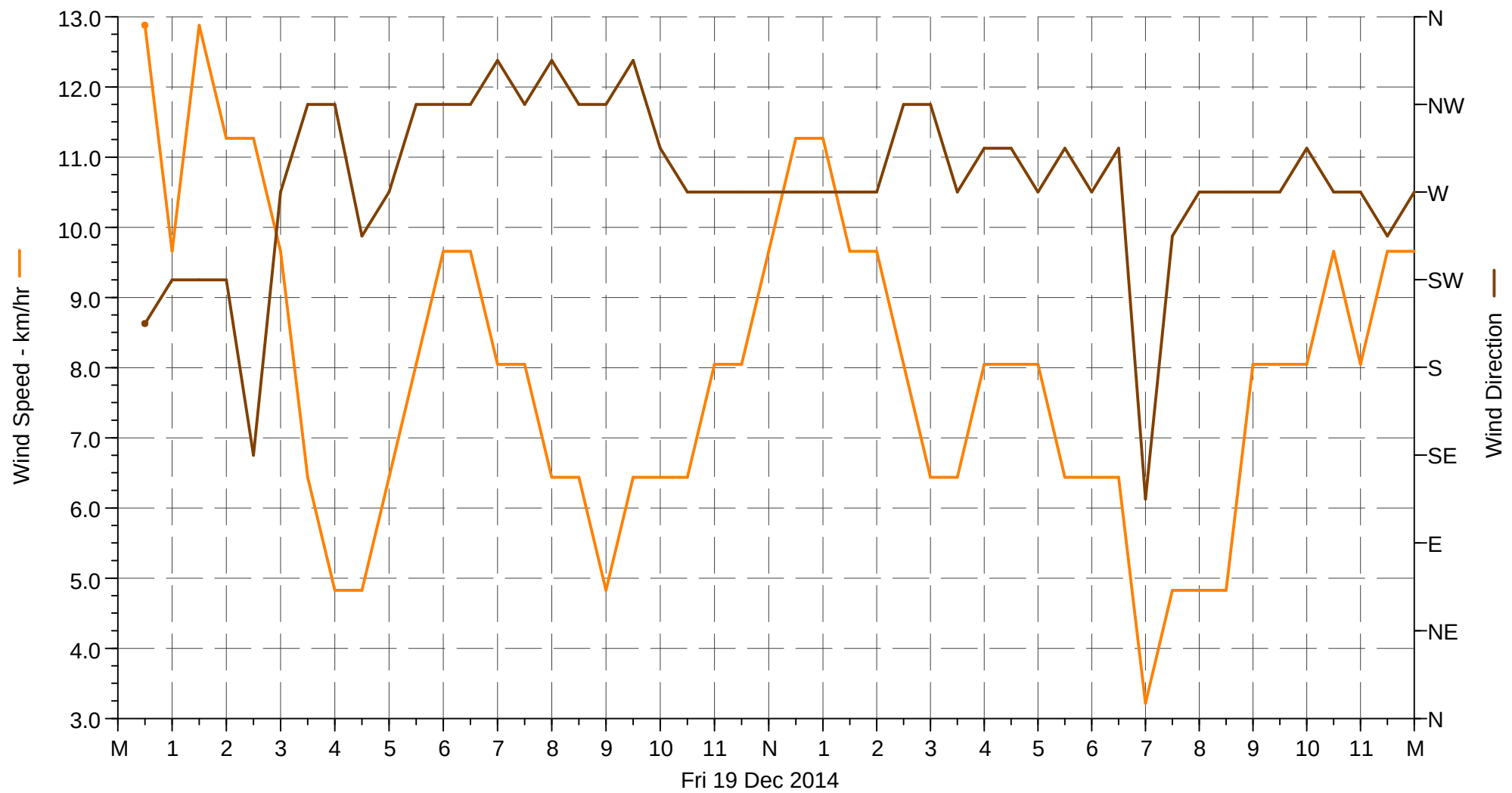
Beechwood House



Beechwood House



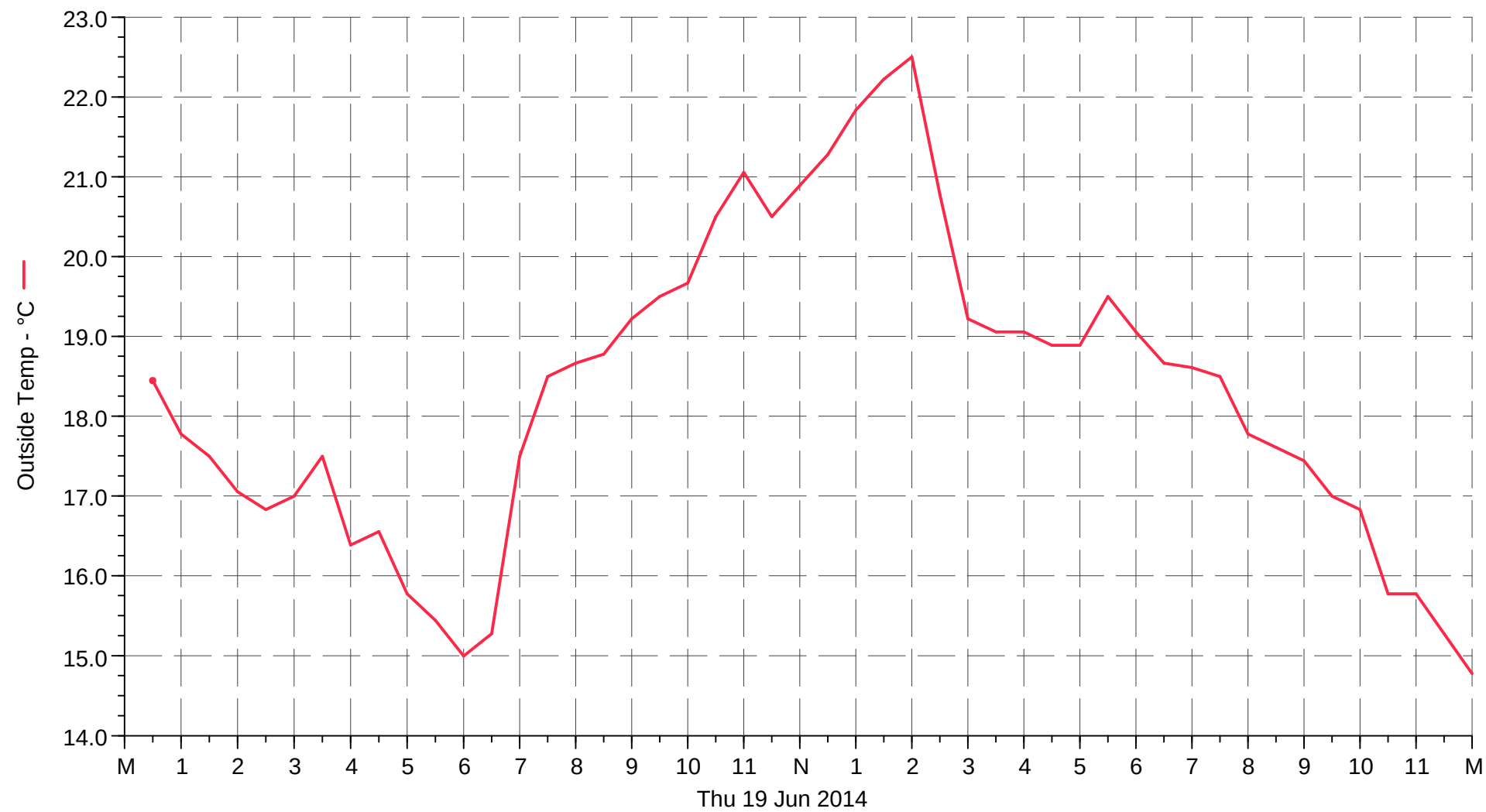
Beechwood House



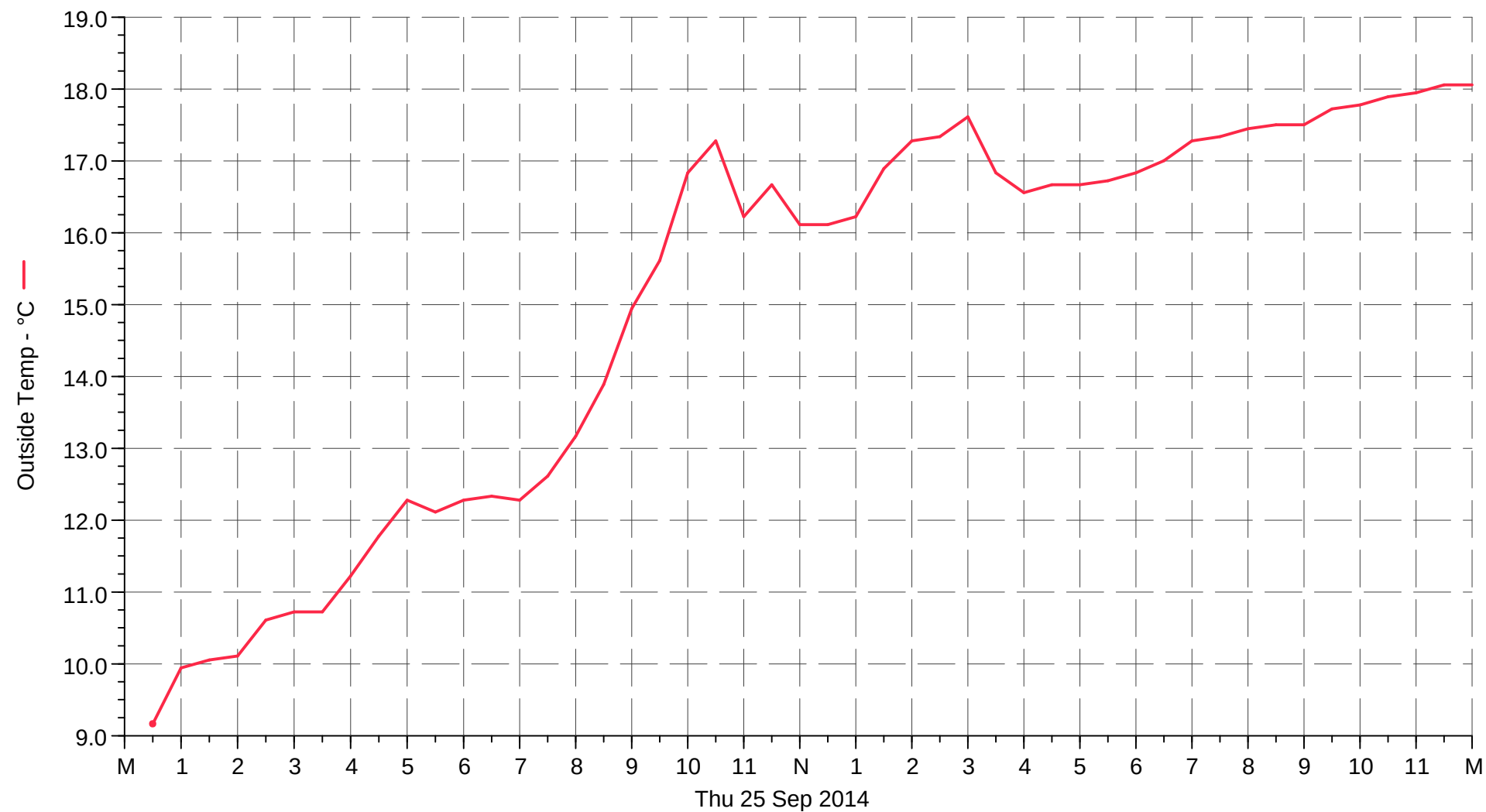
Wind Speed Wind Direction

APPENDIX B5
AIR TEMPERATURE
AND AIR PRESSURE GRAPHS
(To be read with ambient
air monitoring readings)

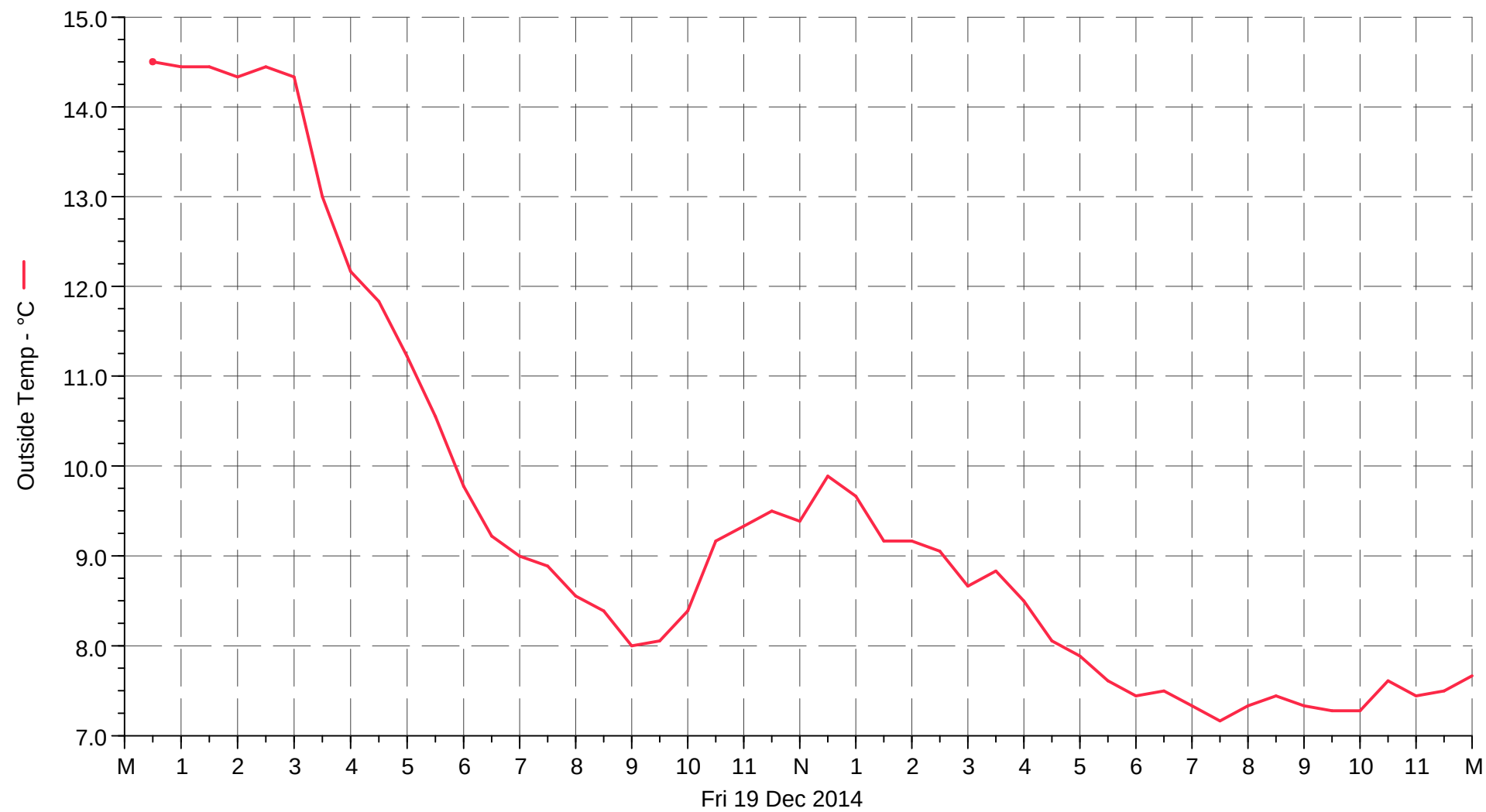
Beechwood House



Beechwood House



Beechwood House



■ Outside Temp

APPENDIX C1

WASTE COMPOSITION REPORT

Form WPPCS1 Part A

Silent Valley Landfill Site Permit Number MP3835SV

Jan - Dec 2014

WASTE RECEIVED ON SITE

Note: Landfill site ceased to receive waste 22 Aug 2011 onwards

Origin	EWC Waste Code	Municipal Source (Y/N)	Bio-degradable (Y/N)	State	Amount in Tonnes			
					Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Blaenau Gwent UA	170904	N	N	Solid	0	0	0	0
Herefordshire UA	170904	N	N	Solid	0	0	0	0
Rhondda,Cynon, Taff UA	170904	N	N	Solid	0	0	0	0
Torfaen UA	170904	N	N	Solid	0	0	0	0
Blaenau Gwent UA	200138	Y	N	Solid	0	0	0	0
Caerphilly UA	200138	Y	Y	Solid	0	0	0	0
Blaenau Gwent UA	200140	Y	N	Solid	0	0	0	0
Blaenau Gwent UA	200201	Y	Y	Solid	0	0	0	0
Blaenau Gwent UA	200202	Y	Y	Solid	0	0	0	0
Caerphilly UA	200202	Y	Y	Solid	0	0	0	0
Monmouthshire UA	200202	Y	Y	Solid	0	0	0	0
Torfaen UA	200202	Y	Y	Solid	0	0	0	0
Blaenau Gwent UA	200203	Y	Y	Solid	0	0	0	0
Caerphilly UA	200203	Y	Y	Solid	0	0	0	0
Blaenau Gwent UA	200301	Y	Y	Solid	0	0	0	0
Bridgend UA	200301				0	0	0	0
Caerphilly UA	200301	Y	Y	Solid	0	0	0	0
Torfaen UA	200301	Y	Y	Solid	0	0	0	0
Monmouthshire UA	200301	Y	Y	Solid	0	0	0	0
Blaenau Gwent UA	200303	Y	Y	Solid	0	0	0	0
Caerphilly UA	200303	Y	Y	Solid	0	0	0	0
Torfaen UA	200303	Y	Y	Solid	0	0	0	0
					0	0	0	0

Silent Valley Landfill Site Licence Number CPA22 / Permit Number MP3835SV

WASTE REMOVED FROM SITE

Jan - Dec 2014

Destination	EWC Waste Code	Municipal Source (Y/N)	State	Amount in Tonnes			
				Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
	200140	Y	solid	0	0	0	0

APPENDIX C2

RAW MATERIAL RETURN REPORT

Form WPPCS1 - Reporting of Waste / Raw Material Returns in Accordance with Schedule 3

Form WPPCS1 PART B 2014

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2014	0
White Diesel		0

2013

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2013	0
White Diesel		0

2012 (for comparison only)

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2012	49,377*
White Diesel		35,767

*excludes BGCBC leachate lagoon pumps

2011 (for comparison only)

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2011	135,865
White Diesel		34,818

2010 (for comparison only)

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2010	173,159
White Diesel		43,290

2009 (for comparison only)

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2009	215,993
White Diesel		46,869

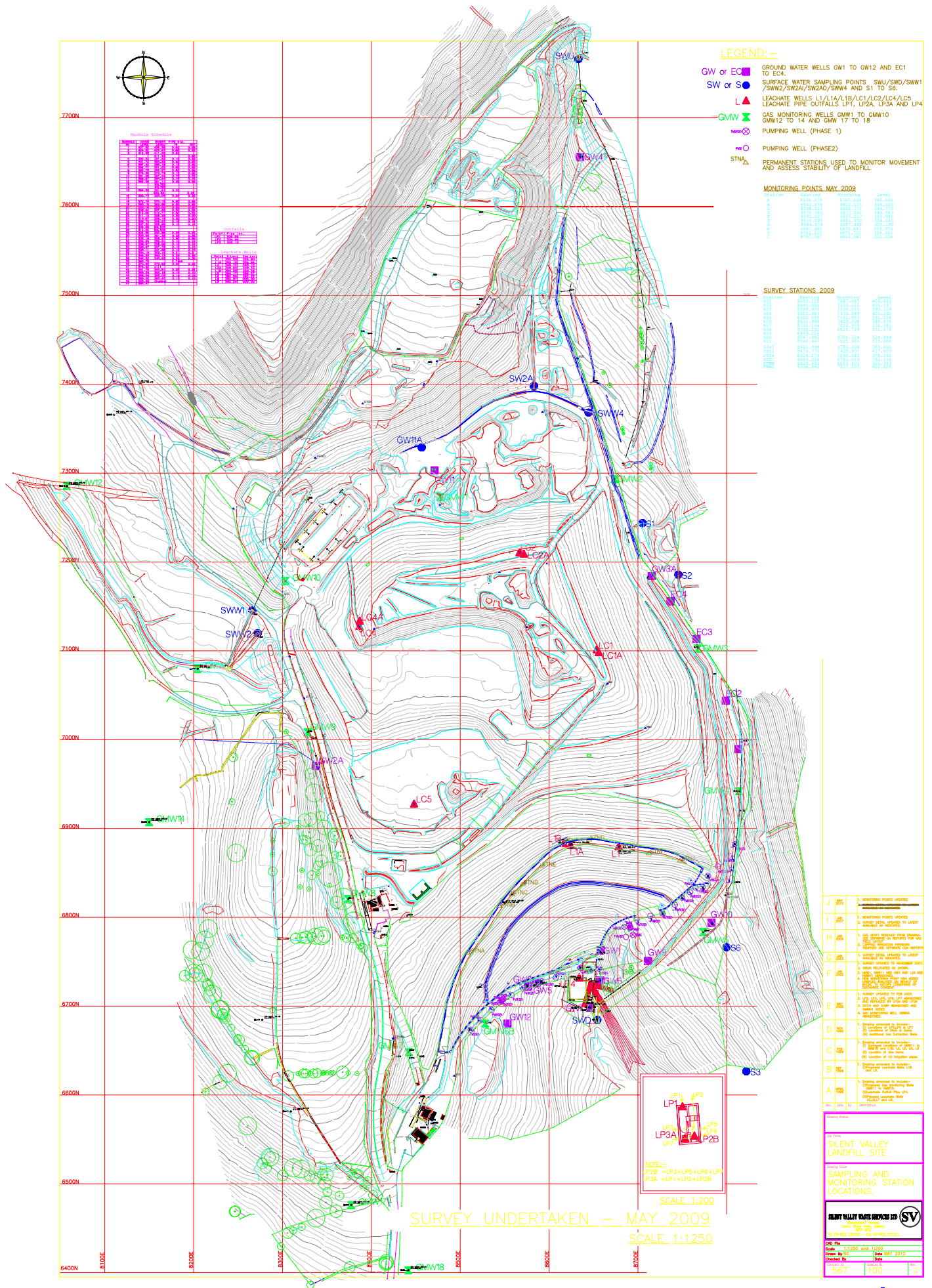
2008 (for comparison only)

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2008	196,385
White Diesel		53,562

2007 (for comparison only)

Waste / Raw Material Return		
Parameter	Reporting Period	Quantity Used (litres)
Red Diesel	01st January to 31 st December 2007	176,201
White Diesel		53,946

APPENDIX D1
DRAWING nr 567/100



APPENDIX D2
TOPOGRAPHICAL SURVEY DRAWING
APRIL 2014

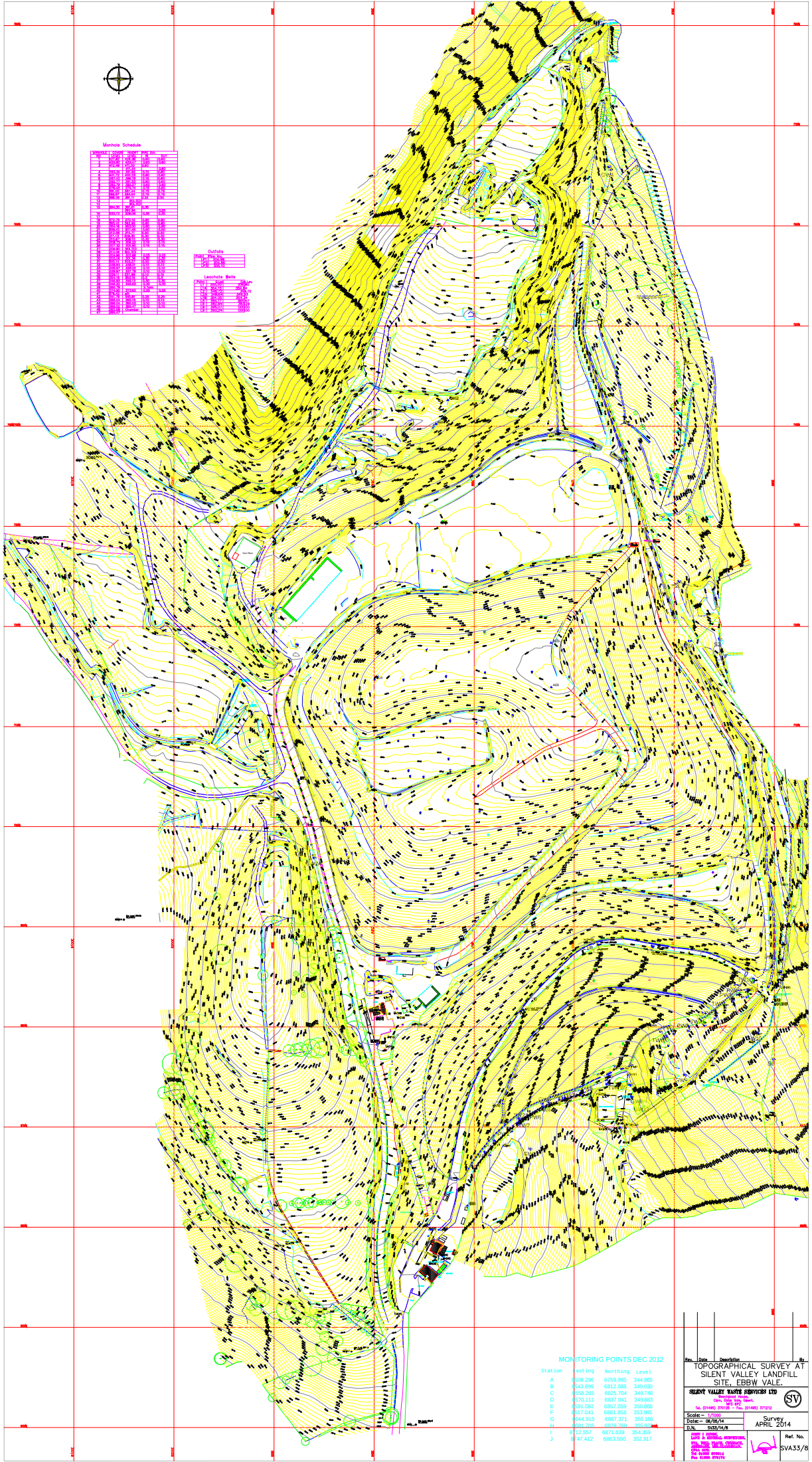


Manhole Schedule

Manhole No.	Station	Level	Notes
1	10+00	345.000	
2	10+50	345.000	
3	11+00	345.000	
4	11+50	345.000	
5	12+00	345.000	
6	12+50	345.000	
7	13+00	345.000	
8	13+50	345.000	
9	14+00	345.000	
10	14+50	345.000	
11	15+00	345.000	
12	15+50	345.000	
13	16+00	345.000	
14	16+50	345.000	
15	17+00	345.000	
16	17+50	345.000	
17	18+00	345.000	
18	18+50	345.000	
19	19+00	345.000	
20	19+50	345.000	
21	20+00	345.000	
22	20+50	345.000	
23	21+00	345.000	
24	21+50	345.000	
25	22+00	345.000	
26	22+50	345.000	
27	23+00	345.000	
28	23+50	345.000	
29	24+00	345.000	
30	24+50	345.000	
31	25+00	345.000	
32	25+50	345.000	
33	26+00	345.000	
34	26+50	345.000	
35	27+00	345.000	
36	27+50	345.000	
37	28+00	345.000	
38	28+50	345.000	
39	29+00	345.000	
40	29+50	345.000	
41	30+00	345.000	
42	30+50	345.000	
43	31+00	345.000	
44	31+50	345.000	
45	32+00	345.000	
46	32+50	345.000	
47	33+00	345.000	
48	33+50	345.000	
49	34+00	345.000	
50	34+50	345.000	
51	35+00	345.000	
52	35+50	345.000	
53	36+00	345.000	
54	36+50	345.000	
55	37+00	345.000	
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57	38+00	345.000	
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63	41+00	345.000	
64	41+50	345.000	
65	42+00	345.000	
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67	43+00	345.000	
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73	46+00	345.000	
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75	47+00	345.000	
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93	56+00	345.000	
94	56+50	345.000	
95	57+00	345.000	
96	57+50	345.000	
97	58+00	345.000	
98	58+50	345.000	
99	59+00	345.000	
100	59+50	345.000	

Spot Levels

Station	Level
10+00	345.000
10+50	345.000
11+00	345.000
11+50	345.000
12+00	345.000
12+50	345.000
13+00	345.000
13+50	345.000
14+00	345.000
14+50	345.000
15+00	345.000
15+50	345.000
16+00	345.000
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98+00	345.000
98+50	345.000
99+00	345.000
99+50	345.000
100+00	345.000



MONITORING POINTS DEC 2012

Station	Easting	Northing	Level
A	6508.206	6759.995	344.985
B	6543.899	6812.088	345.030
C	6508.206	6825.704	345.748
D	6570.111	6837.041	349.683
E	6591.082	6857.059	350.868
F	6517.041	6881.858	351.985
G	6644.915	6887.371	355.150
H	6644.915	6879.562	355.325
I	6512.557	6871.539	354.395
J	6547.412	6863.000	352.917

Rev	Date	Description	By

TOPOGRAPHICAL SURVEY AT
SILENT VALLEY LANDFILL
SITE, EBBW VALE.

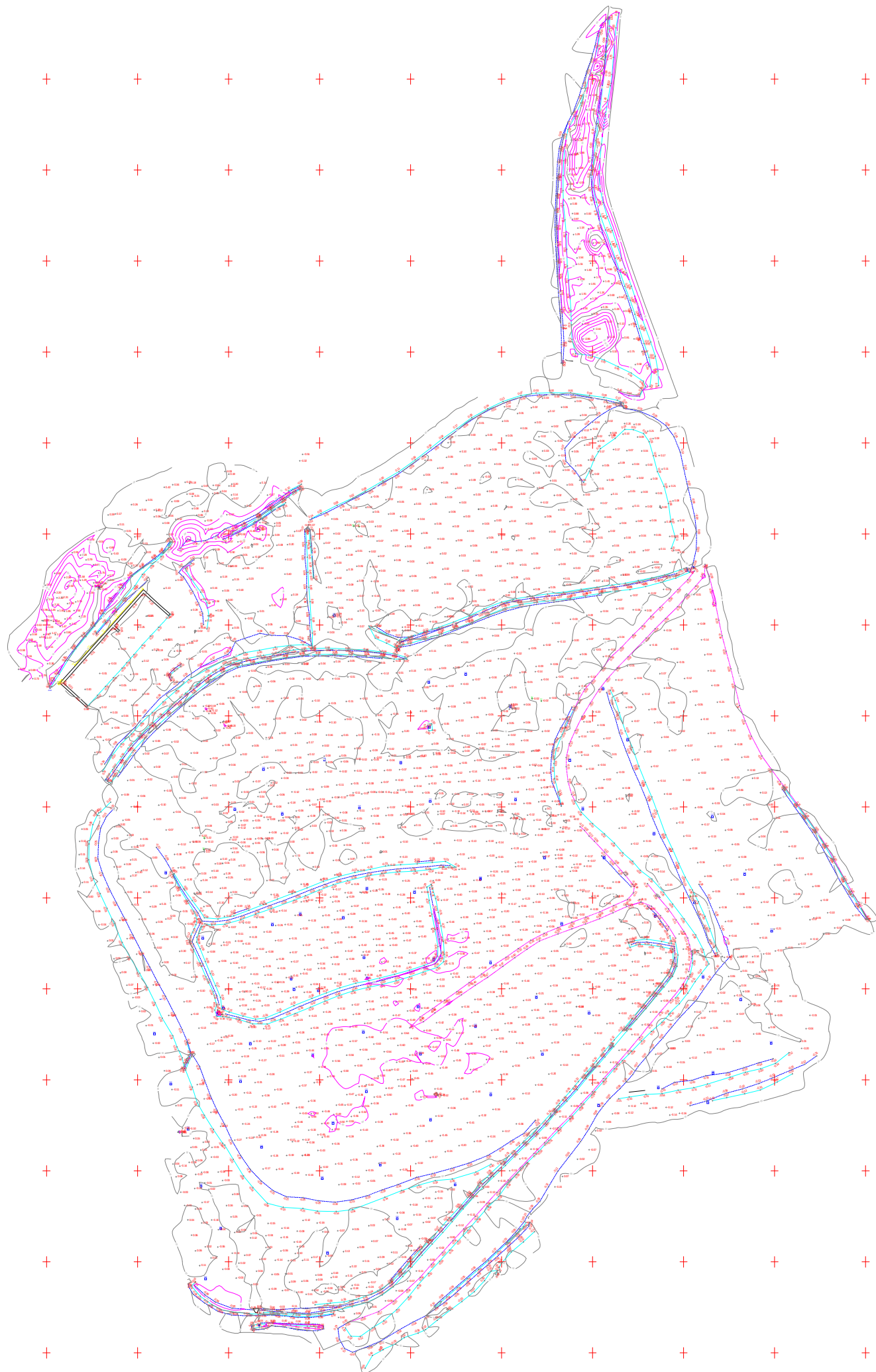
SILENT VALLEY LANDFILL LTD

Scale: 1:1000
Date: 06/09/14
D.N. SVS/14/8

Survey
APRIL 2014

Ref. No.
SVA33/8

APPENDIX D3
SETTLEMENT LEVELS DRAWING
APRIL 2013 TO APRIL 2014



APPENDIX D4
STABILITY MONITORING STATIONS
REPORT APRIL 2014

SILENT VALLEY PIN MOVEMENTS

MAY 02 - MAY 05

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.247	6760.082	345.097
CURRENT	8508.267	6760.059	345.089
DIF START	0.001	-0.016	-0.015
DIF LAST	0.020	-0.023	-0.008
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.823	6812.183	349.067
CURRENT	8543.851	6812.156	349.066
DIF START	0.013	-0.016	0.027
DIF LAST	0.028	-0.027	-0.001
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.160	6825.871	349.870
CURRENT	8558.201	6825.833	349.861
DIF START	-0.020	0.029	-0.028
DIF LAST	0.041	-0.038	-0.009
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.013	6837.177	350.055
CURRENT	8570.044	6837.147	350.041
DIF START	-0.123	0.084	-0.044
DIF LAST	0.031	-0.030	-0.014
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8590.988	6857.201	351.064
CURRENT	8591.021	6857.165	351.040
DIF START	0.061	-0.082	-0.070
DIF LAST	0.033	-0.036	-0.024
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8616.964	6881.979	354.171
CURRENT	8616.999	6881.946	354.153
DIF START	-0.015	0.108	-0.075
DIF LAST	0.035	-0.033	-0.018
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.849	6887.497	355.363
CURRENT	8644.887	6887.457	355.340
DIF START	0.003	0.107	-0.081
DIF LAST	0.038	-0.040	-0.023
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.651	6878.898	356.116
CURRENT	8681.685	6878.848	356.094
DIF START	0.003	-0.134	-0.064
DIF LAST	0.034	-0.050	-0.022
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.502	6871.770	354.490
CURRENT	8712.541	6871.715	354.483
DIF START	-0.001	-0.134	-0.018
DIF LAST	0.039	-0.055	-0.007
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.381	6863.643	353.005
CURRENT	8747.410	6863.572	353.000
DIF START	-0.026	0.068	-0.026
DIF LAST	0.029	-0.071	-0.005

SILENT VALLEY PIN MOVEMENTS

MAY 02 TO APRIL 06

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.267	6760.059	345.089
CURRENT	8508.256	6760.036	345.050
DIF START	-0.010	-0.039	-0.058
DIF LAST	-0.011	-0.023	-0.039
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.851	6812.156	349.066
CURRENT	8543.844	6812.130	349.036
DIF START	0.006	-0.042	-0.003
DIF LAST	-0.007	-0.026	-0.030
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.201	6825.833	349.861
CURRENT	8558.192	6825.806	349.811
DIF START	-0.029	0.002	-0.078
DIF LAST	-0.009	-0.027	-0.050
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.044	6837.147	350.041
CURRENT	8570.035	6837.119	349.991
DIF START	-0.132	0.056	-0.094
DIF LAST	-0.009	-0.028	-0.050
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.021	6857.165	351.040
CURRENT	8591.004	6857.144	350.986
DIF START	0.044	-0.103	-0.124
DIF LAST	-0.017	-0.021	-0.054
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8616.999	6881.946	354.153
CURRENT	8616.975	6881.926	354.096
DIF START	-0.039	0.088	-0.132
DIF LAST	-0.024	-0.020	-0.057
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.887	6887.457	355.340
CURRENT	8644.852	6887.450	355.277
DIF START	-0.032	0.100	-0.144
DIF LAST	-0.035	-0.007	-0.063
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.655	6878.848	356.094
CURRENT	8681.657	6878.843	356.049
DIF START	-0.025	-0.139	-0.109
DIF LAST	-0.028	-0.005	-0.045
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.541	6871.715	354.483
CURRENT	8712.513	6871.712	354.428
DIF START	-0.029	-0.137	-0.073
DIF LAST	-0.028	-0.003	-0.055
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.410	6863.572	353.000
CURRENT	8747.388	6863.578	352.958
DIF START	-0.048	0.074	-0.068
DIF LAST	-0.022	0.006	-0.042

SILENT VALLEY PIN MOVEMENTS

MAY 02 - MAY 07

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.256	6760.036	345.050
CURRENT	8508.265	6760.020	345.044
DIF START	-0.001	-0.055	-0.064
DIF LAST	0.009	-0.016	-0.006
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.844	6812.130	349.036
CURRENT	8543.856	6812.113	349.034
DIF START	0.018	-0.059	-0.005
DIF LAST	0.012	-0.017	-0.002
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.192	6825.806	349.811
CURRENT	8558.219	6825.771	349.807
DIF START	-0.002	-0.033	-0.082
DIF LAST	0.027	-0.035	-0.004
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.035	6837.119	349.991
CURRENT	8570.056	6837.085	349.977
DIF START	-0.111	0.022	-0.108
DIF LAST	0.021	-0.034	-0.014
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.004	6857.144	350.986
CURRENT	8591.027	6857.112	350.969
DIF START	0.067	-0.135	-0.141
DIF LAST	0.023	-0.032	-0.017
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8616.975	6881.926	354.096
CURRENT	8616.994	6881.900	354.070
DIF START	-0.020	0.062	-0.158
DIF LAST	0.019	-0.026	-0.026
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.852	6887.450	355.277
CURRENT	8644.880	6887.409	355.253
DIF START	-0.004	0.059	-0.168
DIF LAST	0.028	-0.041	-0.024
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.657	6878.843	356.049
CURRENT	8681.670	6878.805	356.036
DIF START	-0.012	-0.177	-0.122
DIF LAST	0.013	-0.038	-0.013
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.513	6871.712	354.428
CURRENT	8712.528	6871.676	354.429
DIF START	-0.014	-0.173	-0.072
DIF LAST	0.015	-0.036	0.001
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.388	6863.578	352.958
CURRENT	8747.395	6863.544	352.948
DIF START	-0.041	0.040	-0.078
DIF LAST	0.007	-0.034	-0.010

SILENT VALLEY PIN MOVEMENTS

MAY 02 TO APRIL 08

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.265	6760.020	345.044
CURRENT	8508.275	6760.019	345.030
DIF START	0.009	-0.056	-0.078
DIF LAST	0.010	-0.001	-0.014
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.856	6812.113	349.034
CURRENT	8543.868	6812.114	349.042
DIF START	0.030	-0.058	0.003
DIF LAST	0.012	0.001	0.008
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.219	6825.771	349.807
CURRENT	8558.232	6825.759	349.788
DIF START	0.011	-0.045	-0.101
DIF LAST	0.013	-0.012	-0.019
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.056	6837.085	349.977
CURRENT	8570.068	6837.084	349.946
DIF START	-0.099	0.021	-0.139
DIF LAST	0.012	-0.001	-0.031
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.027	6857.112	350.969
CURRENT	8591.036	6857.108	350.931
DIF START	0.076	-0.139	-0.179
DIF LAST	0.009	-0.004	-0.038
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8616.994	6881.900	354.070
CURRENT	8617.000	6881.901	354.038
DIF START	-0.014	0.063	-0.190
DIF LAST	0.006	0.001	-0.032
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.880	6887.409	355.253
CURRENT	8644.878	6887.412	355.218
DIF START	-0.006	0.062	-0.203
DIF LAST	-0.002	0.003	-0.035
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.670	6878.805	356.036
CURRENT	8681.666	6878.812	356.005
DIF START	-0.016	-0.170	-0.153
DIF LAST	-0.004	0.007	-0.031
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.528	6871.676	354.429
CURRENT	8712.524	6871.687	354.400
DIF START	-0.018	-0.162	-0.101
DIF LAST	-0.004	0.011	-0.029
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.395	6863.544	352.948
CURRENT	8747.384	6863.553	352.941
DIF START	-0.052	0.049	-0.085
DIF LAST	-0.011	0.009	-0.007

SILENT VALLEY
PIN MOVEMENTS
MAY 02 - APRIL 09

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.275	6760.019	345.030
CURRENT	8508.279	6760.029	345.000
DIF START	0.013	-0.046	-0.108
DIF LAST	0.004	0.010	-0.030
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.868	6812.114	349.042
CURRENT	8543.859	6812.125	349.020
DIF START	0.021	-0.047	-0.019
DIF LAST	-0.009	0.011	-0.022
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.232	6825.759	349.788
CURRENT	8558.213	6825.771	349.773
DIF START	-0.008	-0.033	-0.116
DIF LAST	-0.019	0.012	-0.015
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.068	6837.084	349.946
CURRENT	8570.060	6837.092	349.943
DIF START	-0.107	0.029	-0.142
DIF LAST	-0.008	0.008	-0.003
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.036	6857.108	350.931
CURRENT	8591.027	6857.127	350.945
DIF START	0.067	-0.120	-0.165
DIF LAST	-0.009	0.019	0.014
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8617.000	6881.901	354.038
CURRENT	8616.995	6881.930	354.045
DIF START	-0.019	0.092	-0.183
DIF LAST	-0.005	0.029	0.007
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.878	6887.412	355.218
CURRENT	8644.874	6887.448	355.190
DIF START	-0.010	0.098	-0.231
DIF LAST	-0.004	0.036	-0.028
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.666	6878.812	356.005
CURRENT	8681.660	6878.841	355.979
DIF START	-0.022	-0.141	-0.179
DIF LAST	-0.006	0.029	-0.026
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.524	6871.687	354.400
CURRENT	8712.510	6871.720	354.361
DIF START	-0.032	-0.129	-0.140
DIF LAST	-0.014	0.033	-0.039
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.384	6863.553	352.941
CURRENT	8747.367	6863.581	352.928
DIF START	-0.069	0.077	-0.098
DIF LAST	-0.017	0.028	-0.013

SILENT VALLEY
PIN MOVEMENTS
MAY 02 TO APRIL 10

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.279	6760.029	345.000
CURRENT	8508.268	6760.042	344.990
DIF START	0.002	-0.033	-0.118
DIF LAST	-0.011	0.013	-0.010
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.859	6812.125	349.020
CURRENT	8543.857	6812.141	349.008
DIF START	0.019	-0.031	-0.031
DIF LAST	-0.002	0.016	-0.012
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.213	6825.771	349.773
CURRENT	8558.223	6825.792	349.749
DIF START	0.002	-0.012	-0.140
DIF LAST	0.010	0.021	-0.024
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.060	6837.092	349.943
CURRENT	8570.061	6837.108	349.904
DIF START	-0.106	0.045	-0.181
DIF LAST	0.001	0.016	-0.039
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.027	6857.127	350.945
CURRENT	8591.033	6857.125	350.883
DIF START	0.073	-0.122	-0.227
DIF LAST	0.006	-0.002	-0.062
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8616.995	6881.930	354.045
CURRENT	8616.983	6881.925	353.986
DIF START	-0.031	0.087	-0.242
DIF LAST	-0.012	-0.005	-0.059
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.874	6887.448	355.190
CURRENT	8644.863	6887.438	355.170
DIF START	-0.021	0.088	-0.251
DIF LAST	-0.011	-0.010	-0.020
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.660	6878.841	355.979
CURRENT	8681.660	6878.852	355.968
DIF START	-0.022	-0.130	-0.190
DIF LAST	0.000	0.011	-0.011
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.510	6871.720	354.361
CURRENT	8712.510	6871.724	354.353
DIF START	-0.032	-0.125	-0.148
DIF LAST	0.000	0.004	-0.008
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.367	6863.581	352.928
CURRENT	8747.380	6863.599	352.877
DIF START	-0.056	0.095	-0.149
DIF LAST	0.013	0.018	-0.051

SILENT VALLEY
PIN MOVEMENTS
MAY 02 - JANUARY 11

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.268	6760.042	344.990
CURRENT	8508.272	6759.980	344.999
DIF START	0.006	-0.095	-0.109
DIF LAST	0.004	-0.062	0.009
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.857	6812.141	349.008
CURRENT	8543.877	6812.070	349.020
DIF START	0.039	-0.102	-0.019
DIF LAST	0.020	-0.071	0.012
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.223	6825.792	349.749
CURRENT	8558.255	6825.733	349.751
DIF START	0.034	-0.071	-0.138
DIF LAST	0.032	-0.059	0.002
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.061	6837.108	349.904
CURRENT	8570.072	6837.002	349.899
DIF START	-0.095	-0.061	-0.186
DIF LAST	0.011	-0.106	-0.005
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.033	6857.125	350.883
CURRENT	8591.055	6857.101	350.870
DIF START	0.095	-0.146	-0.240
DIF LAST	0.022	-0.024	-0.013
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8616.983	6881.925	353.986
CURRENT	8617.029	6881.847	353.990
DIF START	0.015	0.009	-0.238
DIF LAST	0.046	-0.078	0.004
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.863	6887.438	355.170
CURRENT	8644.900	6887.360	355.168
DIF START	0.016	0.010	-0.253
DIF LAST	0.037	-0.078	-0.002
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.660	6878.852	355.968
CURRENT	8681.690	6878.766	355.941
DIF START	0.008	-0.216	-0.217
DIF LAST	0.030	-0.086	-0.027
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.510	6871.724	354.353
CURRENT	8712.542	6871.648	354.365
DIF START	0.000	-0.201	-0.136
DIF LAST	0.032	-0.076	0.012
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.380	6863.559	352.877
CURRENT	8747.402	6863.520	352.920
DIF START	-0.034	0.016	-0.106
DIF LAST	0.022	-0.079	0.043

SILENT VALLEY
PIN MOVEMENTS
MAY 02 TO JANUARY 12

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.272	6759.980	344.999
CURRENT	8508.280	6759.985	345.010
DIF START	0.014	-0.090	-0.098
DIF LAST	0.008	0.005	0.011
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.877	6812.070	349.020
CURRENT	8543.882	6812.074	349.030
DIF START	0.044	-0.098	-0.009
DIF LAST	0.005	0.004	0.010
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.255	6825.733	349.751
CURRENT	8558.265	6825.695	349.756
DIF START	0.044	-0.109	-0.133
DIF LAST	0.010	-0.038	0.005
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.072	6837.002	349.899
CURRENT	8570.094	6837.031	349.895
DIF START	-0.073	-0.032	-0.190
DIF LAST	0.022	0.029	-0.004
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.055	6857.101	350.870
CURRENT	8591.069	6857.048	350.883
DIF START	0.109	-0.199	-0.227
DIF LAST	0.014	-0.053	0.013
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8617.029	6881.847	353.990
CURRENT	8617.025	6881.843	353.998
DIF START	0.011	0.005	-0.230
DIF LAST	-0.004	-0.004	0.008
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.900	6887.360	355.168
CURRENT	8644.901	6887.352	355.172
DIF START	0.017	0.002	-0.249
DIF LAST	0.001	-0.008	0.004
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.690	6878.766	355.941
CURRENT	8681.698	6878.767	355.949
DIF START	0.016	-0.215	-0.209
DIF LAST	0.008	0.001	0.008
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.542	6871.648	354.365
CURRENT	8712.545	6871.617	354.365
DIF START	0.003	-0.232	-0.136
DIF LAST	0.003	-0.031	0.000
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.402	6863.520	352.920
CURRENT	8747.400	6863.470	352.922
DIF START	-0.036	-0.034	-0.104
DIF LAST	-0.002	-0.050	0.002

SILENT VALLEY
PIN MOVEMENTS
MAY 02 TO DECEMBER 12

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.280	6759.985	345.010
CURRENT	8508.296	6759.995	344.965
DIF START	0.030	-0.080	-0.143
DIF LAST	0.016	0.010	-0.045
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.882	6812.074	349.030
CURRENT	8543.899	6812.088	349.030
DIF START	0.061	-0.084	-0.009
DIF LAST	0.017	0.014	0.000
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.265	6825.695	349.756
CURRENT	8558.285	6825.704	349.748
DIF START	0.064	-0.100	-0.141
DIF LAST	0.020	0.009	-0.008
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.094	6837.031	349.895
CURRENT	8570.111	6837.041	349.883
DIF START	-0.056	-0.022	-0.202
DIF LAST	0.017	0.010	-0.012
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.069	6857.048	350.883
CURRENT	8591.082	6857.059	350.868
DIF START	0.122	-0.188	-0.242
DIF LAST	0.013	0.011	-0.015
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8617.025	6881.843	353.998
CURRENT	8617.041	6881.858	353.985
DIF START	0.027	0.020	-0.243
DIF LAST	0.016	0.015	-0.013
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.901	6887.352	355.172
CURRENT	8644.915	6887.371	355.160
DIF START	0.031	0.021	-0.261
DIF LAST	0.014	0.019	-0.012
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.698	6878.767	355.949
CURRENT	8681.705	6878.760	355.932
DIF START	0.023	-0.222	-0.226
DIF LAST	0.007	-0.007	-0.017
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.545	6871.617	354.365
CURRENT	8712.557	6871.639	354.359
DIF START	0.015	-0.210	-0.142
DIF LAST	0.012	0.022	-0.006
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.400	6863.470	352.922
CURRENT	8747.412	6863.500	352.917
DIF START	-0.024	-0.004	-0.109
DIF LAST	0.012	0.030	-0.005

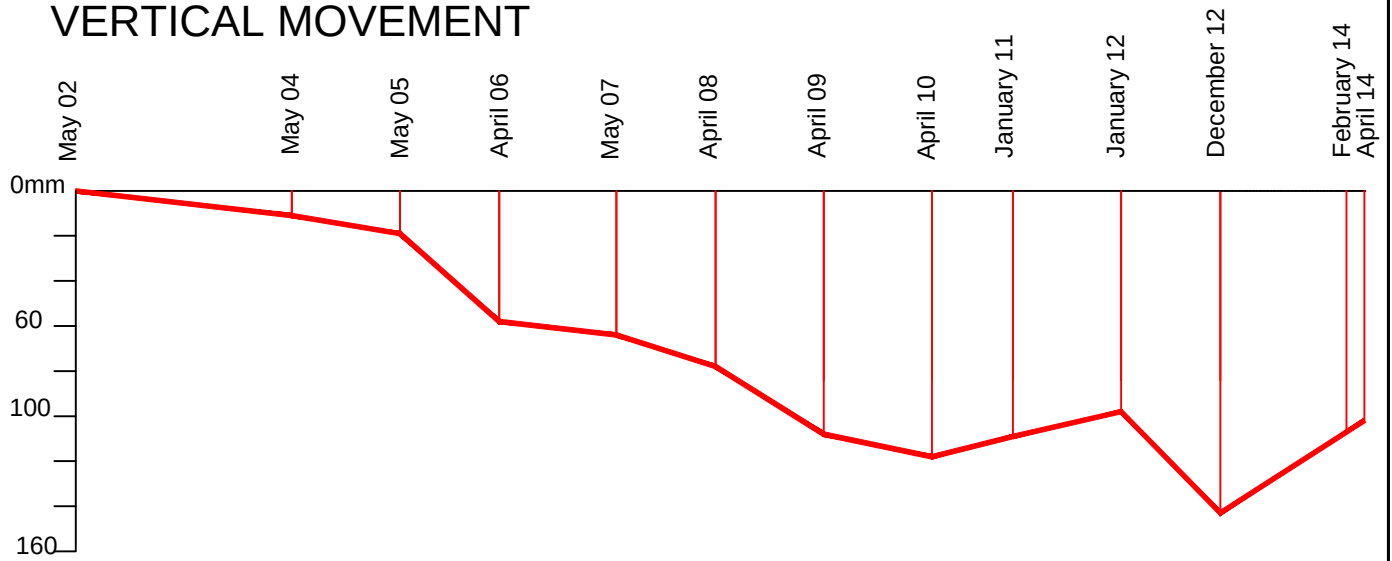
SILENT VALLEY
PIN MOVEMENTS
MAY 02 TO FEBRUARY 14

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.296	6759.995	344.965
CURRENT	8508.286	6760.004	345.001
DIF START	0.020	-0.071	-0.107
DIF LAST	-0.010	0.009	0.036
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.899	6812.088	349.030
CURRENT	8543.898	6812.087	349.017
DIF START	0.060	-0.085	-0.022
DIF LAST	-0.001	-0.001	-0.013
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.285	6825.704	349.748
CURRENT	8558.292	6825.686	349.730
DIF START	0.071	-0.118	-0.159
DIF LAST	0.007	-0.018	-0.018
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.111	6837.041	349.883
CURRENT	8570.115	6837.038	349.867
DIF START	-0.052	-0.025	-0.218
DIF LAST	0.004	-0.003	-0.016
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.082	6857.059	350.868
CURRENT	8591.084	6857.051	350.853
DIF START	0.124	-0.196	-0.257
DIF LAST	0.002	-0.008	-0.015
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8617.041	6881.858	353.985
CURRENT	8617.037	6881.857	353.981
DIF START	0.023	0.019	-0.247
DIF LAST	-0.004	-0.001	-0.004
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.915	6887.371	355.160
CURRENT	8644.908	6887.368	355.146
DIF START	0.024	0.018	-0.275
DIF LAST	-0.007	-0.003	-0.014
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.705	6878.760	355.932
CURRENT	8681.708	6878.756	355.922
DIF START	0.026	-0.226	-0.236
DIF LAST	0.003	-0.004	-0.010
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.557	6871.639	354.359
CURRENT	8712.552	6871.629	354.349
DIF START	0.010	-0.220	-0.152
DIF LAST	-0.005	-0.010	-0.010
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.412	6863.500	352.917
CURRENT	8747.404	6863.483	352.907
DIF START	-0.032	-0.021	-0.119
DIF LAST	-0.008	-0.017	-0.010

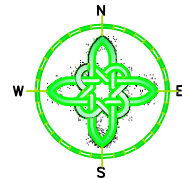
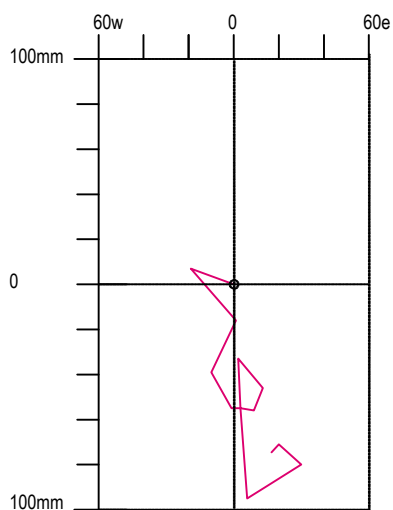
SILENT VALLEY
PIN MOVEMENTS
MAY 02 TO APRIL 14

A	Easting's	Northing's	Level
START	8508.266	6760.075	345.108
LAST TIME	8508.286	6760.004	345.001
CURRENT	8508.283	6760.000	345.006
DIF START	0.017	-0.075	-0.102
DIF LAST	-0.003	-0.004	0.005
B	Easting's	Northing's	Level
START	8543.838	6812.172	349.039
LAST TIME	8543.898	6812.087	349.017
CURRENT	8543.898	6812.086	349.025
DIF START	0.060	-0.086	-0.014
DIF LAST	0.000	-0.001	0.008
C	Easting's	Northing's	Level
START	8558.221	6825.804	349.889
LAST TIME	8558.292	6825.686	349.730
CURRENT	8558.295	6825.691	349.730
DIF START	0.074	-0.113	-0.159
DIF LAST	0.003	0.005	0.000
D	Easting's	Northing's	Level
START	8570.167	6837.063	350.085
LAST TIME	8570.115	6837.038	349.867
CURRENT	8570.219	6837.036	349.866
DIF START	0.052	-0.027	-0.219
DIF LAST	0.104	-0.002	-0.001
E	Easting's	Northing's	Level
START	8590.960	6857.247	351.110
LAST TIME	8591.084	6857.051	350.853
CURRENT	8591.081	6857.054	350.855
DIF START	0.121	-0.193	-0.255
DIF LAST	-0.003	0.003	0.002
F	Easting's	Northing's	Level
START	8617.014	6881.838	354.228
LAST TIME	8617.037	6881.857	353.981
CURRENT	8617.037	6881.857	353.983
DIF START	0.023	0.019	-0.245
DIF LAST	0.000	0.000	0.002
G	Easting's	Northing's	Level
START	8644.884	6887.350	355.421
LAST TIME	8644.908	6887.368	355.146
CURRENT	8644.908	6887.332	355.146
DIF START	0.024	-0.018	-0.275
DIF LAST	0.000	-0.036	0.000
H	Easting's	Northing's	Level
START	8681.682	6878.982	356.158
LAST TIME	8681.708	6878.756	355.922
CURRENT	8681.705	6878.754	355.925
DIF START	0.023	-0.228	-0.233
DIF LAST	-0.003	-0.002	0.003
I	Easting's	Northing's	Level
START	8712.542	6871.849	354.501
LAST TIME	8712.552	6871.629	354.349
CURRENT	8712.554	6871.628	354.348
DIF START	0.012	-0.221	-0.153
DIF LAST	0.002	-0.001	-0.001
J	Easting's	Northing's	Level
START	8747.436	6863.504	353.026
LAST TIME	8747.404	6863.483	352.907
CURRENT	8747.464	6863.481	352.909
DIF START	0.028	-0.023	-0.117
DIF LAST	0.060	-0.002	0.002

VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



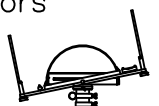
SILENT VALLEY PIN DISPLACEMENT

PIN A

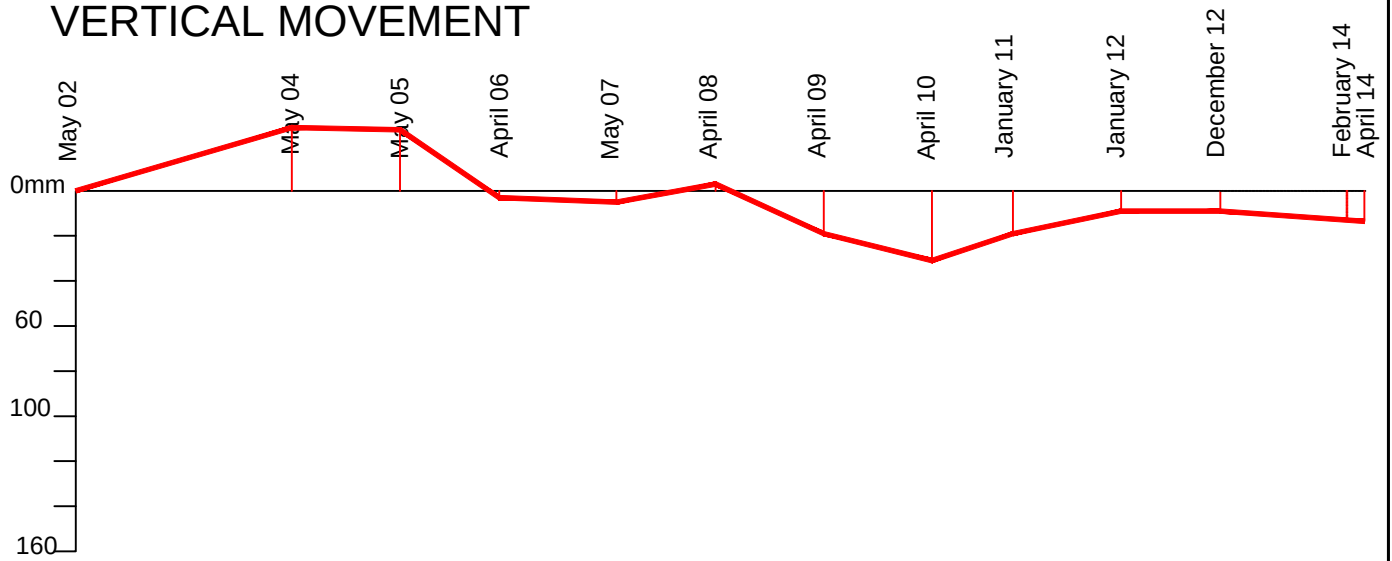
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

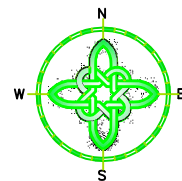
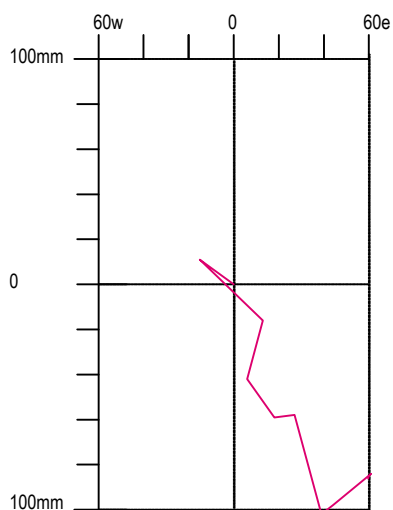
Tel. 01685 876014, Mob. 07768288347
E-Mail johnijones@btinternet.com



VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



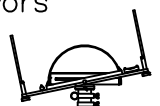
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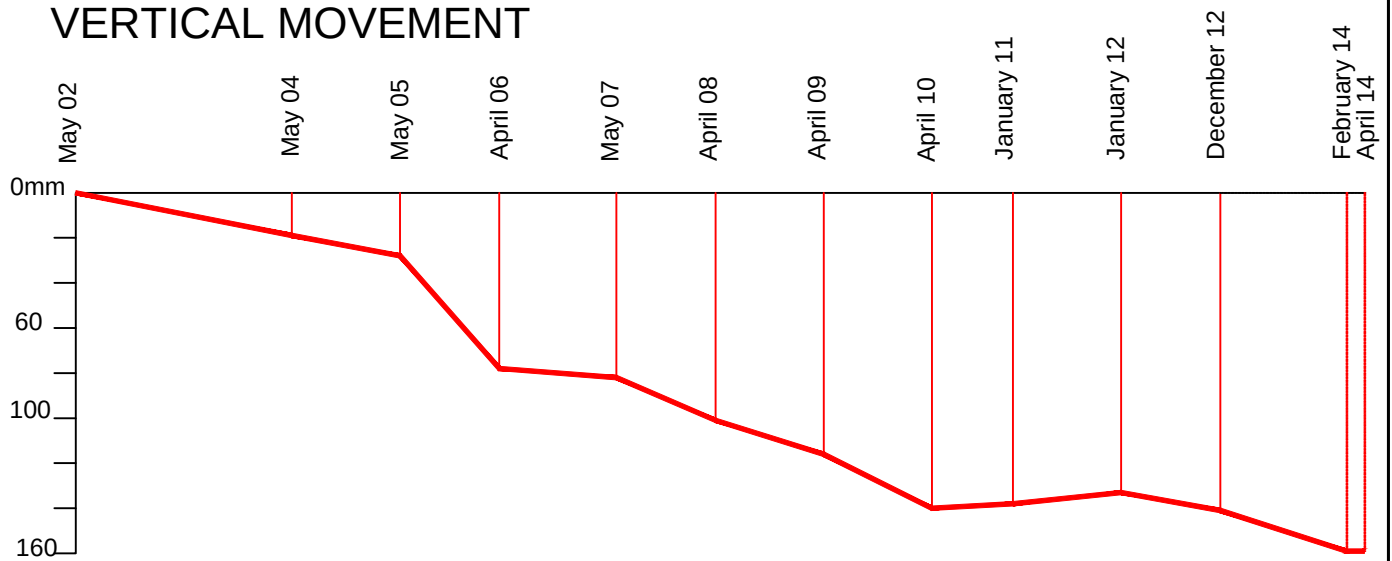
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

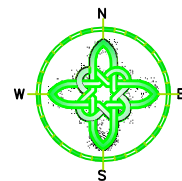
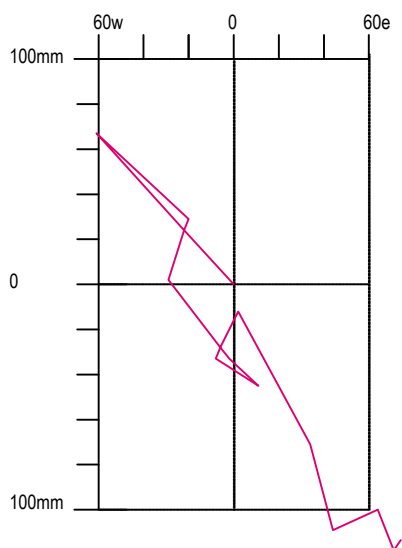
Tel. 01685 876014, Mob. 07768288347
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VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



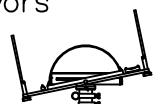
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PIN DISPLACEMENT**

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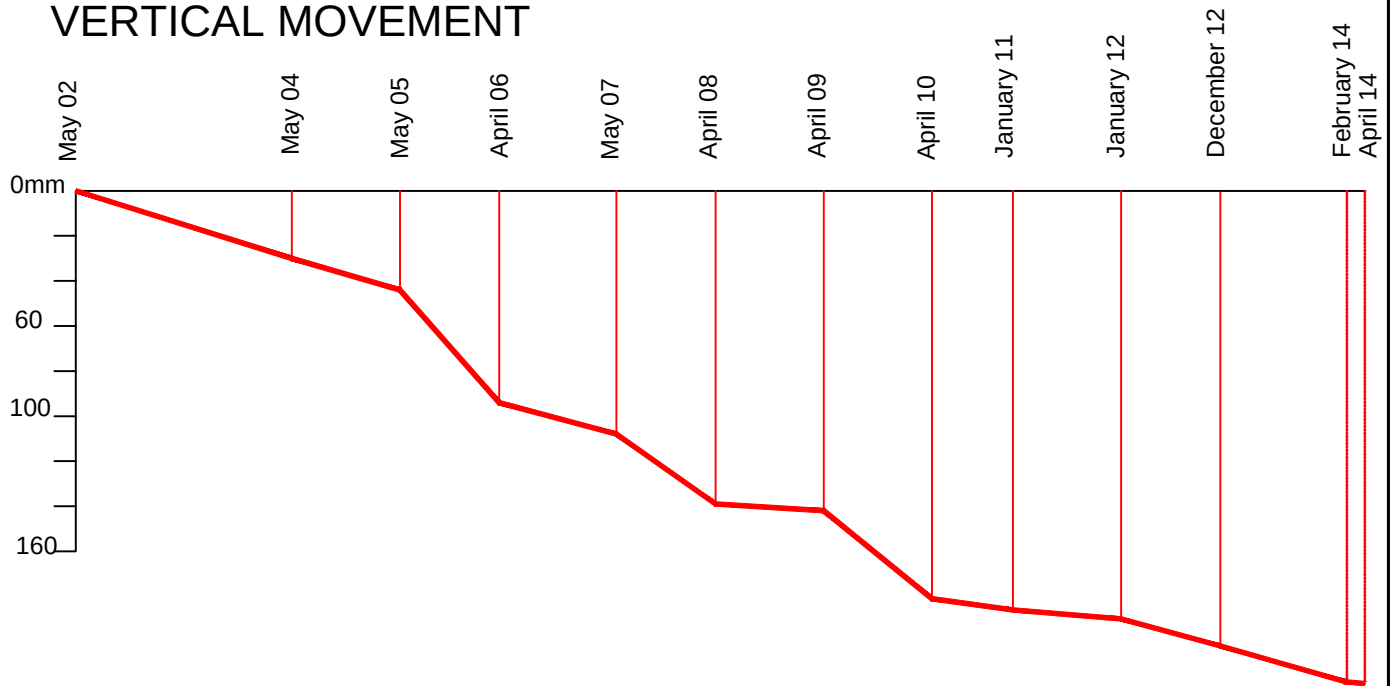
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

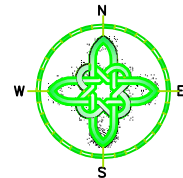
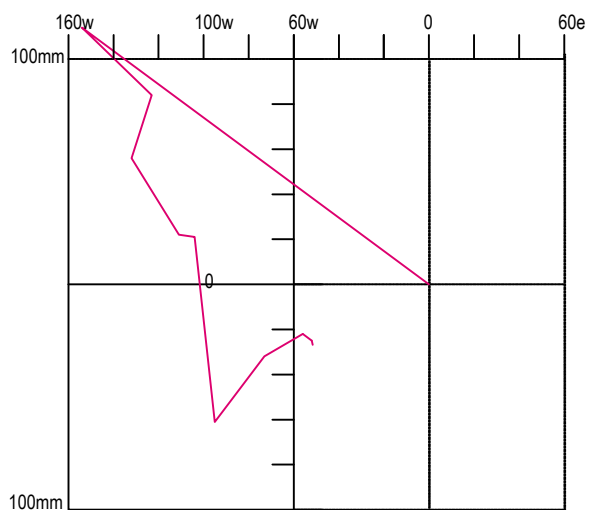
Tel. 01685 876014, Mob. 07768288347
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VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



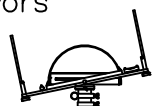
SILENT VALLEY PIN DISPLACEMENT

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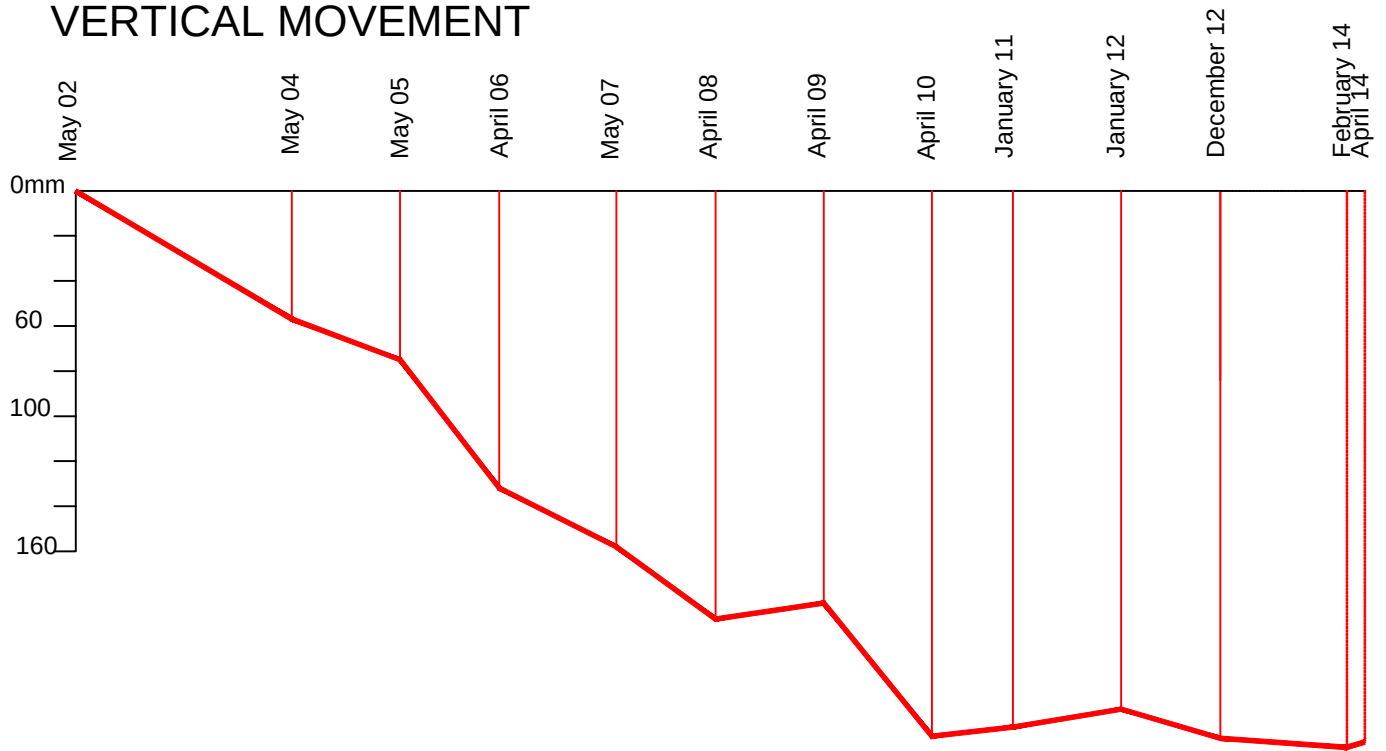
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

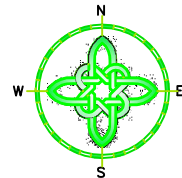
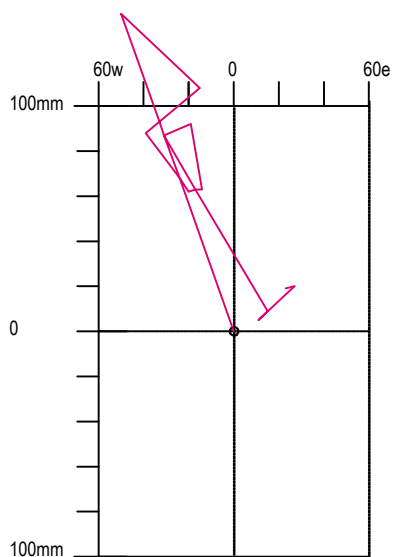
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VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



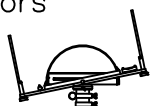
**SILENT VALLEY
PIN DISPLACEMENT**

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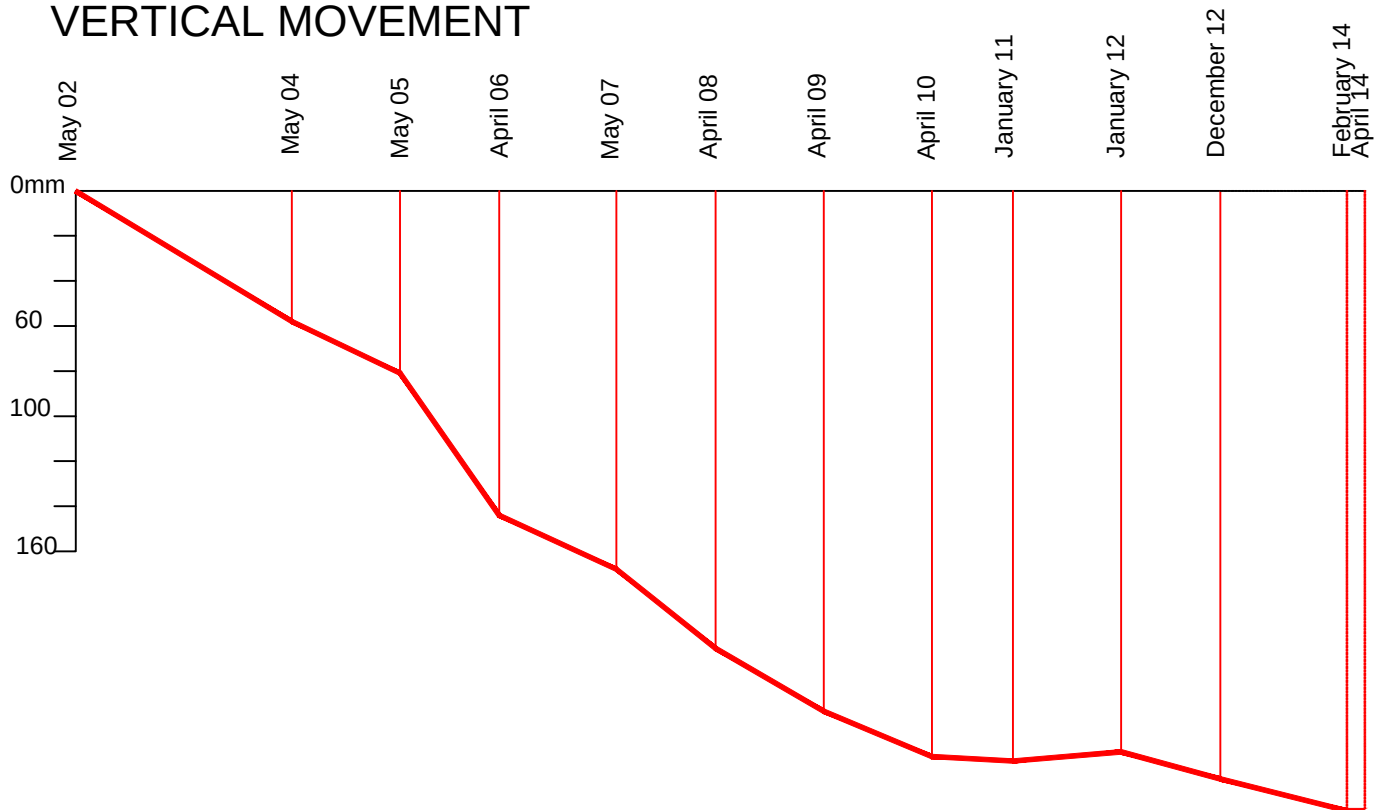
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

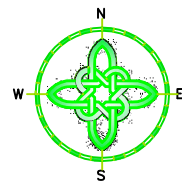
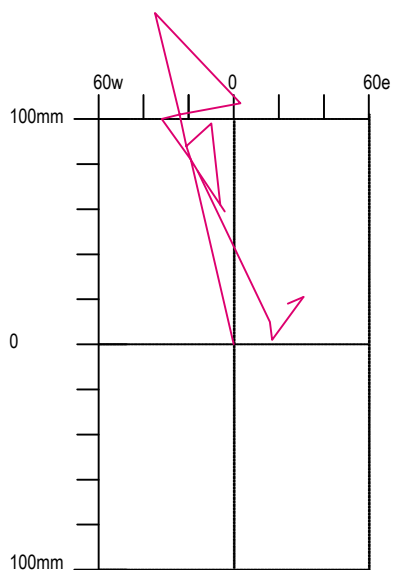
Tel. 01685 876014, Mob. 07768288347
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VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



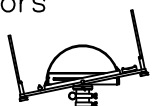
**SILENT VALLEY
PIN DISPLACEMENT**

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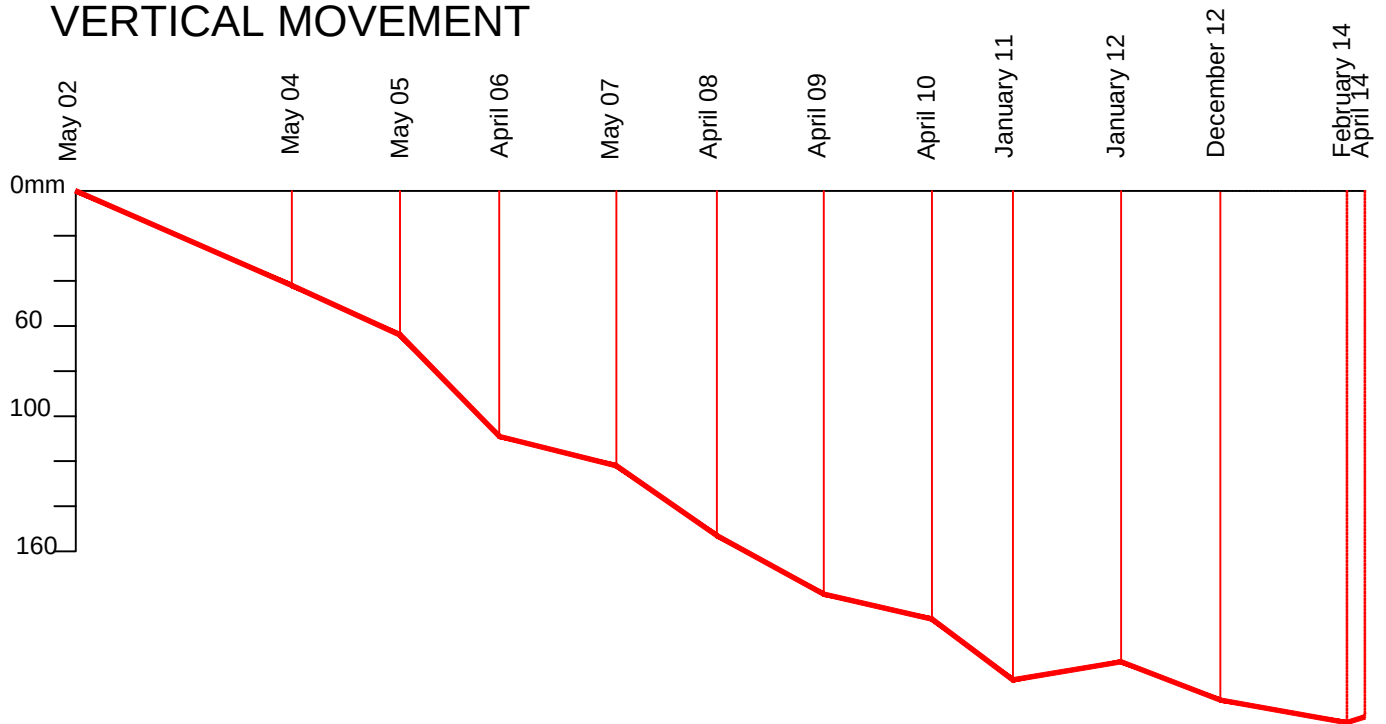
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

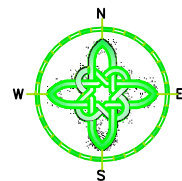
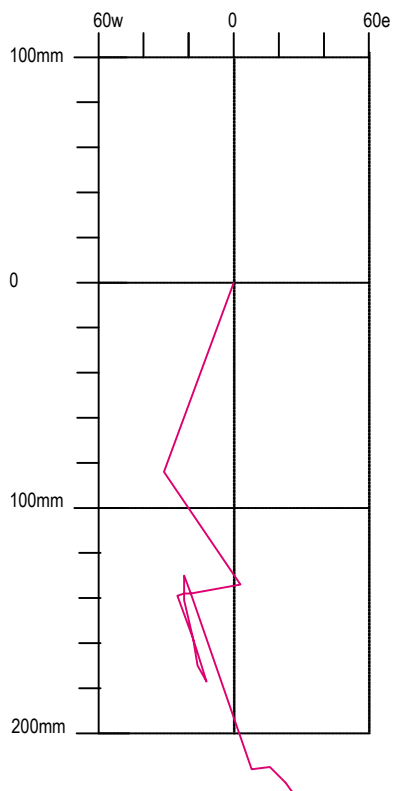
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VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



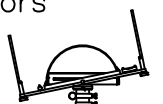
SILENT VALLEY PIN DISPLACEMENT

PIN H

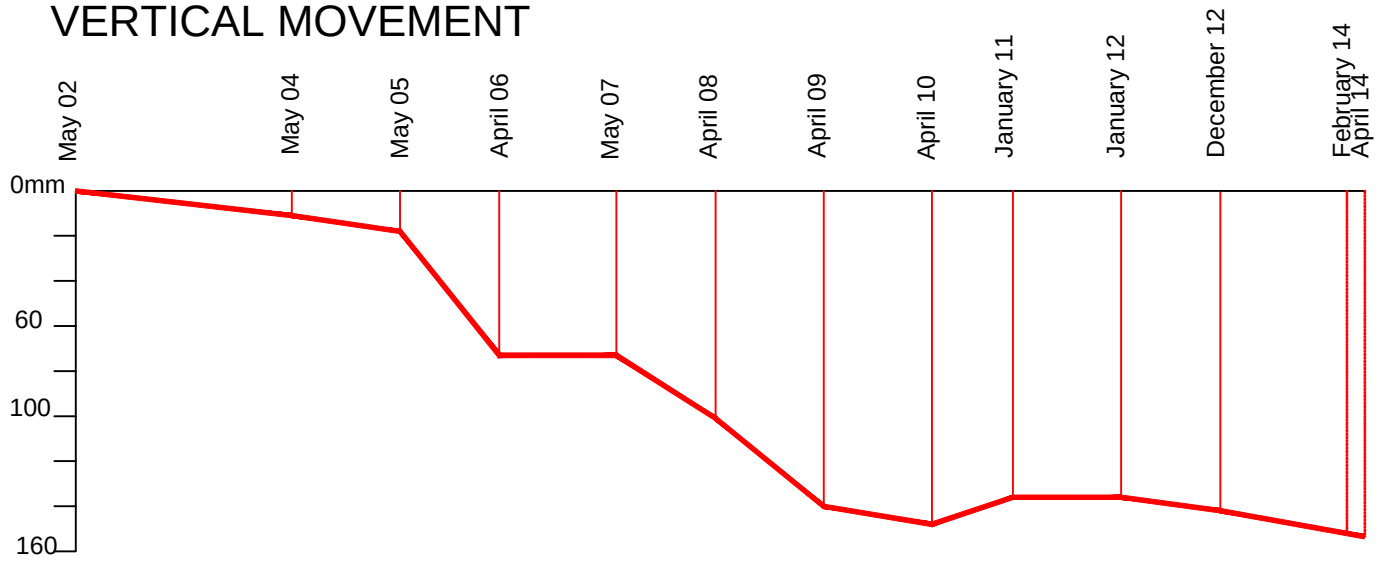
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

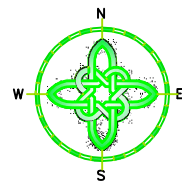
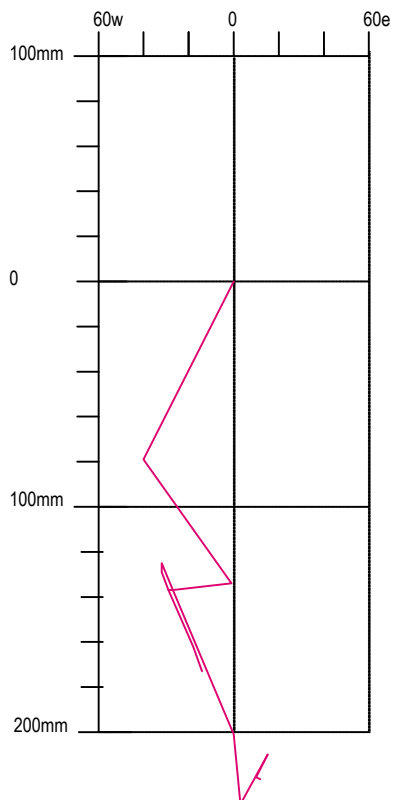
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VERTICAL MOVEMENT



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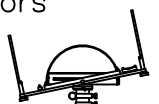
SILENT VALLEY PIN DISPLACEMENT

PIN I

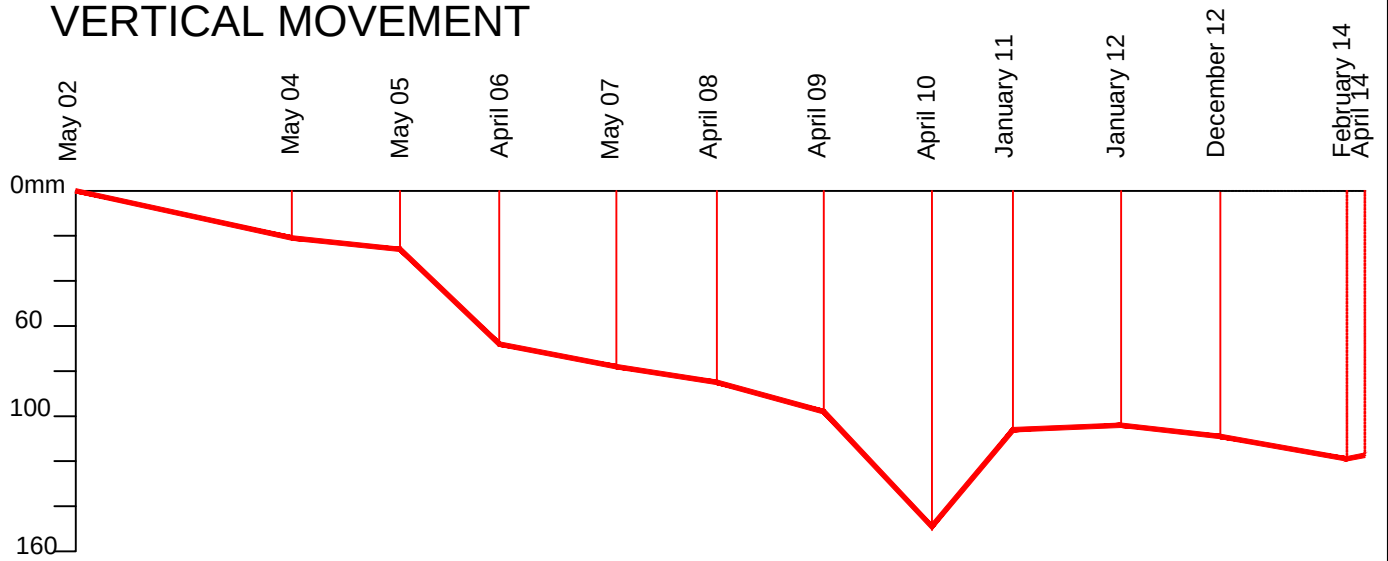
John I Jones
Land & Mineral Surveyors

27a well Place, Cwmbach,
Aberdare, Mid Glamorgan,
CF44 0PB.

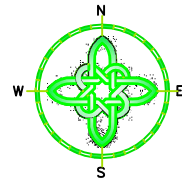
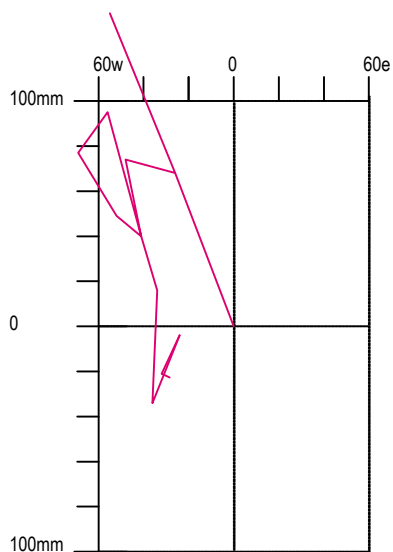
Tel. 01685 876014, Mob. 07768288347
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VERTICAL MOVEMENT



HORIZONTAL MOVEMENT



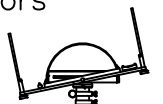
SILENT VALLEY PIN DISPLACEMENT

PIN J

John I Jones
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APPENDIX E1

SURVEY STATION VALUES

Permanent Survey Stations 2014

Station	Easting	Northing	Level
601	8592.225	7087.083	406.443
602	8641.002	7102.211	401.197
603	8699.920	7036.015	390.124
604	8315.483	7339.689	405.140
605	8300.556	7161.905	391.256
606	8631.988	7429.298	388.939
607	8703.164	7202.978	376.081
608	8798.250	6824.729	351.376
609	8493.226	6621.615	338.148
610	8547.085	6706.324	324.894
611	8342.447	7025.936	378.066
FENO	8336.842	7317.150	400.526
SJ07	8402.998	6783.004	365.091
SS12	8473.775	7425.937	417.409
ST04	8324.276	7046.345	378.240
ST07	8403.028	6783.019	365.134
STWW	8424.420	6663.405	355.393

Monitoring movement of landfill body REVISION A

Displacement of Temporary Stations between December 2012 and February 2014

[illegible]

APPENDIX F1
LEACHATE LEVELS
(See Quarterly Monitoring Reports and
Annual Monitoring Review)

APPENDIX G1

GAS UTILISATION PLANT PERFORMANCE

SILENT VALLEY LANDFILL GAS UTILISATION PLANT JANUARY TO DECEMBER 2014

Annual Reporting of Other Performance Indicators			
Installation:	Silent Valley Landfill Gas Utilisation Plant	Permit Reference:	ZP3535SQ
Parameter	Jan - Dec 2014	Units	
Gas engine downtime hours	2,533	hrs	
Gas engine operation hours	14,987	hrs	
Volume of landfill gas combusted	1,570,460	m3 (treated by flare)	
	4,582,572	m3 (treated by engines)	
	6,153,052	m3 (total treated by engines & flare)	

Annual Production/Treatment (MWh)	
Total production of energy (energy generated)	8,430

APPENDIX G2

ENERGY USAGE

Silent Valley Landfill Site Energy Used

January to December 2014

Site	Date	Meter Reading	Day Usage kWh	Night Usage kWh
Weighbridge Building	09-Jan-14	78906 Day	90776	36104
		30987 Night		
Weighbridge Building	05-Dec-14	169682 Day		
		67091 Night		
Beechwood House	16-Jan-14	95088 Day	28188	13905
		43624 Night		
Beechwood House	12-Dec-14	123276 Day		
		57529 Night		
Old Weighbridge Building	16-Dec-13	728330 Day	60948	33925
		366088 Night		
Old Weighbridge Building	17-Dec-14	789278 Day		
		400013 Night		
			179912	83934
				179912
			Total kWh	263846

APPENDIX H1

**SUMMARY REPORT OF REVIEW OF
LANDFILL GAS**

**(See Quarterly Monitoring Reports and
Annual Monitoring Review)**

APPENDIX I1

**SUMMARY REPORT OF REVIEW OF
LEACHATE, SURFACE WATER AND
GROUNDWATER**

**(See Quarterly Monitoring Reports and
Annual Monitoring Review)**

APPENDIX J1

DAILY METEOROLOGICAL MONITORING SUMMARIES

MONTHLY CLIMATOLOGICAL SUMMARY for JAN. 2014

NAME: Beechwood House CITY: STATE:
ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	10.3	13.6	15:00	7.6	1:30	8.1	0.0	26.4	20.8	69.2	9:30	SSE
2	9.7	12.9	23:00	8.3	3:00	8.7	0.0	5.1	13.2	64.4	21:30	SSE
3	8.2	12.4	0:30	6.4	23:00	10.1	0.0	15.0	20.9	77.2	13:00	S
4	7.1	8.7	10:30	4.6	21:30	11.2	0.0	3.3	5.0	37.0	0:30	SSE
5	8.9	14.4	20:30	5.0	6:30	9.4	0.0	16.0	17.5	77.2	20:30	SSE
6	10.8	11.7	12:30	9.9	00:00	7.4	0.0	1.8	28.0	77.2	18:00	S
7	9.7	10.6	14:00	7.9	5:00	8.6	0.0	8.6	21.7	69.2	17:30	S
8	10.3	12.9	21:30	9.0	9:00	8.1	0.0	10.4	12.6	53.1	3:00	SSW
9	8.0	11.5	0:30	6.6	21:00	10.3	0.0	4.8	4.8	43.5	3:00	W
10	8.8	10.7	23:30	6.4	4:00	9.5	0.0	2.3	10.6	46.7	20:00	S
11	6.4	10.3	0:30	3.4	19:00	11.9	0.0	1.0	1.4	29.0	2:00	W
12	7.7	11.8	19:30	3.9	0:30	10.6	0.0	6.6	17.4	57.9	19:00	SE
13	7.8	10.2	0:30	5.8	00:00	10.6	0.0	6.9	9.5	41.8	16:00	SSE
14	7.0	11.4	00:00	4.3	9:00	11.3	0.0	3.3	5.5	41.8	17:30	SSE
15	11.9	13.2	15:30	10.7	00:00	6.4	0.0	4.3	15.0	57.9	9:30	S
16	9.6	11.6	0:30	8.3	6:00	8.7	0.0	3.3	16.3	43.5	2:00	SSE
17	9.2	10.9	17:30	7.4	3:30	9.2	0.0	20.8	7.1	40.2	0:30	S
18	10.2	11.9	12:00	8.5	00:00	8.2	0.0	18.8	16.4	61.2	13:00	SSE
19	7.4	9.3	0:30	5.4	8:00	10.9	0.0	0.3	4.0	27.4	15:30	S
20	7.7	10.7	11:00	6.3	4:30	10.6	0.0	0.3	0.8	16.1	12:00	NNW
21	8.5	11.2	23:30	5.8	7:30	9.8	0.0	6.6	12.7	49.9	15:00	SSE
22	9.9	11.9	15:00	8.2	00:00	8.4	0.0	0.8	1.8	24.1	5:00	W
23	8.4	10.6	8:00	6.5	23:00	9.9	0.0	1.0	4.5	37.0	8:30	W
24	9.7	13.4	00:00	6.7	0:30	8.6	0.0	5.3	5.8	29.0	9:00	SSE
25	9.8	13.3	0:30	5.6	00:00	8.5	0.0	1.8	7.2	72.4	14:30	SSW
26	7.4	12.9	12:30	4.6	23:00	10.9	0.0	10.9	11.4	54.7	22:00	W
27	6.9	8.3	23:30	4.3	3:30	11.4	0.0	6.9	7.6	48.3	3:30	SW
28	8.3	9.3	14:30	7.8	23:30	10.0	0.0	6.9	9.5	51.5	6:00	SSW
29	7.2	8.8	13:00	5.4	23:30	11.2	0.0	7.4	10.6	53.1	21:00	NNE
30	5.2	6.7	1:00	4.7	10:00	13.2	0.0	0.3	13.2	49.9	1:00	NNE
31	8.3	12.1	21:30	4.4	2:30	10.1	0.0	15.5	17.9	57.9	10:30	SSE
	8.6	14.4	5	3.4	11	301.7	0.0	222.5	11.3	77.2	3	S

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 26.42 ON 01/01/14

Days of Rain: 31 (> .2 mm) 23 (> 2 mm) 2 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for FEB. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	7.7	10.2	0:30	4.4	6:00	10.6	0.0	16.8	17.5	82.1	19:30	S
2	8.8	10.0	23:30	6.7	8:30	9.6	0.0	4.1	10.9	45.1	1:30	S
3	8.4	9.9	1:00	6.2	23:30	9.9	0.0	5.6	26.7	67.6	9:30	SSE
4	7.8	9.6	23:30	6.2	2:30	10.6	0.0	11.4	21.6	78.9	21:30	SSE
5	9.6	11.8	13:30	8.0	6:30	8.7	0.0	19.3	25.4	80.5	9:30	SSE
6	7.8	9.2	0:30	6.7	23:30	10.5	0.0	12.7	12.9	54.7	1:00	ENE
7	7.7	10.4	00:00	5.1	3:00	10.7	0.0	13.5	16.6	62.8	21:00	SSE
8	8.1	11.6	1:00	6.2	7:30	10.2	0.0	19.6	26.6	83.7	13:30	S
9	6.6	9.0	2:30	4.2	22:00	11.8	0.0	15.0	11.7	74.0	6:00	SW
10	6.5	9.9	13:00	4.5	3:30	11.8	0.0	1.8	6.0	35.4	21:00	SSE
11	6.3	9.7	7:30	3.8	17:30	12.0	0.0	15.0	11.1	61.2	5:30	SSE
12	6.9	10.4	10:30	3.8	2:30	11.4	0.0	20.1	19.6	90.1	14:30	SSE
13	5.3	7.3	13:30	3.3	7:00	13.1	0.0	6.6	8.0	51.5	19:00	SW
14	8.4	13.1	14:30	4.9	1:00	9.9	0.0	12.4	24.8	98.2	22:30	S
15	7.7	9.2	14:00	5.3	00:00	10.7	0.0	8.1	12.4	82.1	6:00	W
16	6.9	9.4	23:00	4.6	1:30	11.4	0.0	0.0	6.0	35.4	00:00	SSE
17	10.1	11.4	15:30	8.5	0:30	8.2	0.0	11.2	20.6	53.1	11:30	SSE
18	10.1	12.0	16:30	9.2	7:30	8.2	0.0	2.3	2.1	25.7	6:30	S
19	11.4	13.7	00:00	9.6	1:30	6.9	0.0	1.5	0.0	0.0	---	---
20	10.8	14.2	3:30	7.9	21:00	7.5	0.0	5.6	0.0	0.0	---	---
21	8.0	9.2	15:00	6.7	7:00	10.3	0.0	2.0	0.0	0.0	---	---
22	9.6	11.6	00:00	8.5	6:00	8.7	0.0	1.5	0.0	0.0	---	---
23	12.2	13.1	6:30	11.1	00:00	6.2	0.0	1.3	0.0	0.0	---	---
24	10.4	11.6	5:00	8.5	7:30	7.9	0.0	6.9	0.0	0.0	---	---
25	9.4	11.6	1:30	8.2	11:30	8.9	0.0	1.8	0.0	0.0	---	---
26	8.7	12.2	14:30	7.4	11:00	9.7	0.0	1.5	0.0	1.6	14:30	W
27	8.3	11.6	4:00	6.1	22:00	10.1	0.0	7.4	0.0	0.0	---	---
28	7.2	9.5	13:30	5.5	00:00	11.2	0.0	5.6	0.0	0.0	---	---

	8.5	14.2	20	3.3	13	276.6	0.0	230.4	10.0	98.2	14	SSE

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 20.07 ON 12/02/14

Days of Rain: 27 (> .2 mm) 21 (> 2 mm) 1 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for MAR. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	7.1	10.3	13:00	3.8	7:30	11.2	0.0	0.0	0.0	0.0	---	---
2	9.9	12.7	14:00	7.3	0:30	8.4	0.0	8.1	26.2	143.2	16:00	SSW
3	7.7	9.9	14:00	5.7	00:00	10.6	0.0	1.0	38.0	165.8	7:30	NE
4	8.5	14.5	13:00	5.7	0:30	9.8	0.0	0.8	7.6	127.1	12:00	W
5	9.1	11.1	10:00	6.4	3:00	9.3	0.0	0.0	6.9	45.1	00:00	WNW
6	11.6	13.3	17:00	9.4	0:30	6.8	0.0	1.3	12.9	33.8	3:00	WNW
7	12.6	17.5	12:30	7.1	21:00	5.7	0.0	3.6	8.9	51.5	7:00	WNW
8	11.3	14.6	14:30	9.3	3:30	7.0	0.0	0.3	17.5	41.8	6:30	W
9	11.6	15.9	14:30	8.7	6:30	6.7	0.0	0.0	6.1	32.2	16:00	WNW
10	9.4	11.4	14:00	5.2	00:00	8.9	0.0	0.0	18.8	49.9	9:30	SE
11	7.2	9.9	16:00	4.1	2:00	11.2	0.0	0.0	19.2	49.9	3:00	S
12	9.7	15.3	12:30	5.3	6:30	8.6	0.0	0.0	3.2	24.1	0:30	WNW
13	10.4	15.3	10:30	6.7	2:30	7.9	0.0	0.0	4.2	22.5	13:30	E
14	9.8	16.4	13:30	6.0	3:00	8.6	0.0	0.0	5.6	43.5	22:30	ESE
15	11.3	14.8	16:00	8.7	4:30	7.0	0.0	0.0	8.2	46.7	19:30	ESE
16	11.9	16.9	13:30	8.2	7:00	6.4	0.0	0.0	6.6	51.5	4:00	ESE
17	8.9	13.3	14:30	6.7	7:00	9.4	0.0	0.0	4.2	27.4	16:00	NE
18	9.4	12.1	16:00	7.9	0:30	8.9	0.0	0.5	7.7	53.1	11:30	NNE
19	9.3	12.3	14:00	7.5	1:00	9.0	0.0	0.0	8.9	37.0	18:00	NW
20	9.3	12.2	13:00	6.7	00:00	9.0	0.0	6.1	16.1	53.1	12:30	NW
21	7.1	9.3	13:00	4.9	21:00	11.3	0.0	5.1	11.4	62.8	21:00	NW
22	6.2	9.6	15:30	4.5	10:00	12.2	0.0	3.3	6.8	48.3	13:00	NW
23	6.3	9.3	14:00	2.3	00:00	12.1	0.0	0.5	7.9	40.2	9:30	E
24	5.6	9.5	00:00	1.4	2:00	12.8	0.0	5.3	17.1	54.7	14:30	W
25	8.9	11.2	12:00	7.2	6:30	9.4	0.0	1.5	13.2	43.5	15:30	ESE
26	6.8	9.1	15:00	4.2	00:00	11.6	0.0	0.0	14.2	35.4	19:00	SE
27	5.1	7.7	15:30	3.7	6:00	13.2	0.0	0.3	11.4	38.6	21:30	SE
28	7.4	9.9	13:30	5.2	0:30	10.9	0.0	7.9	15.3	53.1	7:00	SE
29	11.8	16.1	14:00	8.2	4:00	6.5	0.0	1.8	17.7	51.5	6:30	W
30	13.1	16.4	16:30	10.2	4:30	5.0	0.0	0.0	10.0	38.6	16:00	WSW
31	11.9	14.1	11:30	9.9	7:30	6.4	0.0	7.1	7.1	30.6	11:30	W
	9.2	17.5	7	1.4	24	281.7	0.0	54.4	11.6	165.8	3	WNW

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 8.13 ON 02/03/14

Days of Rain: 17 (> .2 mm) 8 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for APR. 2014

NAME: Beechwood House CITY: STATE:
ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	11.8	14.6	9:30	8.4	5:30	6.5	0.0	1.3	8.2	41.8	22:30	ESE
2	13.4	15.3	17:30	11.9	10:00	4.9	0.0	3.0	15.3	46.7	16:30	E
3	13.2	15.7	12:30	11.6	7:00	5.1	0.0	5.6	5.3	25.7	0:30	NNW
4	12.0	14.3	16:00	10.2	00:00	6.3	0.0	0.3	4.2	24.1	14:30	S
5	13.9	17.3	18:30	9.9	1:00	4.4	0.0	1.8	11.9	33.8	15:00	SSE
6	16.1	17.3	14:00	15.1	23:30	2.2	0.0	10.9	15.8	54.7	13:00	S
7	14.8	17.3	13:30	11.3	22:00	3.6	0.0	13.0	12.1	49.9	14:30	SSE
8	11.1	14.5	14:30	8.7	4:30	7.3	0.0	1.3	6.3	37.0	3:00	W
9	12.2	16.2	12:00	9.4	7:00	6.2	0.0	0.0	4.0	22.5	15:30	W
10	10.8	14.8	12:00	8.1	00:00	7.5	0.0	0.3	4.0	19.3	16:30	NNW
11	11.3	16.2	15:00	7.3	2:30	7.0	0.0	0.0	7.9	30.6	8:30	NNW
12	9.6	11.6	22:30	6.6	5:30	8.8	0.0	0.0	4.7	33.8	16:30	WSW
13	10.9	15.9	16:00	7.2	6:30	7.4	0.0	0.0	6.3	24.1	9:00	NNW
14	10.5	14.5	17:00	6.9	7:30	7.8	0.0	0.0	10.8	45.1	5:00	N
15	9.7	13.2	17:00	6.7	00:00	8.6	0.0	0.0	12.9	38.6	1:00	ESE
16	8.9	13.8	17:30	4.2	6:30	9.4	0.0	0.0	9.0	32.2	17:00	SSE
17	9.6	13.1	14:30	6.4	7:00	8.7	0.0	0.0	5.8	27.4	18:00	NNW
18	8.8	12.2	15:30	4.9	6:00	9.5	0.0	0.0	10.3	38.6	9:30	NNE
19	6.8	10.3	16:30	3.7	5:00	11.6	0.0	0.0	10.9	48.3	23:00	N
20	8.9	13.2	17:00	5.8	3:30	9.4	0.0	17.5	28.6	69.2	12:30	N
21	12.5	17.0	15:30	9.4	4:00	5.8	0.0	1.5	11.9	40.2	20:00	SE
22	12.2	14.2	16:30	10.4	5:30	6.2	0.0	3.0	7.4	27.4	3:30	S
23	13.1	15.3	16:00	11.1	00:00	5.3	0.0	6.3	10.1	41.8	12:30	SSE
24	12.7	16.6	14:30	9.7	2:30	5.7	0.0	0.3	4.3	25.7	21:00	SSE
25	12.1	14.3	17:00	10.7	6:30	6.3	0.0	0.5	8.2	30.6	00:00	NE
26	11.5	13.7	15:30	9.5	23:00	6.8	0.0	7.9	23.7	54.7	15:30	SSE
27	11.9	14.4	18:30	9.7	0:30	6.4	0.0	6.6	15.8	48.3	10:00	N
28	13.7	16.7	17:00	11.9	5:00	4.6	0.0	1.3	11.4	33.8	13:00	NNE
29	13.7	16.7	14:30	11.2	1:30	4.7	0.0	0.0	4.8	27.4	13:30	NE
30	13.1	15.7	17:00	10.4	6:30	5.3	0.0	0.5	6.0	29.0	16:30	SSE
	11.7	17.3	6	3.7	19	199.2	0.0	82.8	9.9	69.2	20	SSE

Max >= 32.0: 0
Max <= 0.0: 0
Min <= 0.0: 0
Min <= -18.0: 0

Max Rain: 17.53 ON 20/04/14

Days of Rain: 19 (> .2 mm) 9 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for MAY. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	14.1	17.3	14:00	12.4	5:00	4.3	0.0	9.9	7.4	46.7	23:00	SSE
2	11.8	13.3	15:00	10.1	7:00	6.5	0.0	0.3	12.7	41.8	1:00	NNE
3	10.3	13.8	14:00	7.3	6:30	8.0	0.0	0.0	4.2	24.1	1:30	S
4	11.1	14.8	16:30	8.2	3:30	7.2	0.0	0.0	6.3	29.0	14:30	SSE
5	11.6	15.7	14:30	8.1	5:00	6.7	0.0	2.5	14.0	49.9	13:30	SSE
6	13.2	16.1	15:00	11.4	22:30	5.2	0.0	3.3	8.0	40.2	15:00	S
7	11.8	13.5	12:00	10.4	4:30	6.5	0.0	5.3	7.9	40.2	14:00	S
8	14.6	17.4	14:30	11.4	0:30	3.7	0.0	4.6	7.7	38.6	11:30	S
9	13.7	16.1	16:30	11.4	21:30	4.7	0.0	3.0	10.3	54.7	13:30	SW
10	13.0	15.4	5:30	11.4	1:00	5.3	0.0	9.9	13.8	56.3	14:00	S
11	11.7	14.2	15:30	10.2	6:00	6.6	0.0	5.1	9.2	53.1	1:00	SW
12	12.1	15.7	14:00	9.7	6:00	6.2	0.0	2.3	5.5	30.6	15:00	SW
13	12.3	17.0	16:00	9.6	3:30	6.1	0.0	0.3	7.1	29.0	10:00	NNW
14	13.2	17.8	15:00	8.9	3:30	5.2	0.0	0.0	6.9	27.4	14:00	NNW
15	14.6	19.8	18:00	9.0	4:30	3.7	0.1	0.0	3.2	19.3	22:30	NNW
16	16.3	19.7	12:30	12.3	6:00	2.2	0.2	0.0	4.0	20.9	1:00	N
17	15.7	20.9	15:00	9.8	6:30	3.1	0.4	0.0	3.7	27.4	16:30	S
18	14.7	18.9	16:00	11.1	5:00	3.7	0.0	0.0	8.7	37.0	16:00	SSE
19	15.6	20.3	15:00	11.8	3:00	2.9	0.2	5.8	9.8	37.0	5:30	SSE
20	14.3	16.2	14:00	11.6	00:00	4.0	0.0	4.3	12.2	38.6	4:00	SSE
21	13.6	18.3	15:00	8.2	5:30	4.7	0.0	0.0	6.9	30.6	00:00	N
22	11.8	13.7	18:00	10.1	6:30	6.5	0.0	22.6	12.7	41.8	13:00	N
23	13.2	15.4	15:30	11.4	8:30	5.1	0.0	21.8	15.9	53.1	12:00	N
24	14.3	15.3	12:00	13.6	22:00	4.1	0.0	14.5	7.6	37.0	11:30	SE
25	15.1	17.0	15:30	13.7	0:30	3.3	0.0	4.6	11.4	33.8	10:30	SSE
26	15.7	18.3	13:30	13.6	6:00	2.7	0.0	0.0	4.8	20.9	1:00	SSE
27	15.6	19.1	14:00	13.5	00:00	2.7	0.0	5.1	6.9	27.4	10:30	N
28	14.4	17.3	14:30	12.3	3:00	3.9	0.0	1.5	16.3	33.8	17:00	N
29	16.3	18.9	18:30	14.7	1:00	2.1	0.0	3.6	16.7	38.6	0:30	N
30	16.3	17.9	0:30	14.9	8:00	2.0	0.0	3.3	12.1	40.2	3:30	NNE
31	17.4	20.9	18:00	14.1	00:00	1.5	0.5	0.0	3.7	22.5	15:00	NNW
	13.9	20.9	17	7.3	3	140.3	1.3	133.6	9.0	56.3	10	SSE

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 22.61 ON 22/05/14

Days of Rain: 21 (> .2 mm) 18 (> 2 mm) 2 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for JUN. 2014

NAME: Beechwood House CITY: STATE:
ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	15.8	19.7	14:30	12.7	4:00	2.7	0.2	0.0	4.3	25.7	15:30	S
2	16.3	20.2	17:00	12.7	1:30	2.2	0.1	0.8	4.3	20.9	19:00	S
3	16.3	19.1	14:30	13.4	00:00	2.1	0.0	0.3	3.1	20.9	14:30	SW
4	12.9	14.2	8:00	11.7	17:00	5.4	0.0	18.8	2.3	20.9	16:30	NNW
5	14.8	18.5	13:30	11.4	00:00	3.5	0.0	0.3	4.0	27.4	12:00	SSW
6	15.9	20.5	17:30	10.6	3:00	2.9	0.5	0.0	14.3	49.9	22:30	SE
7	16.3	18.9	16:00	13.2	23:00	2.1	0.0	8.1	8.5	45.1	1:00	S
8	16.2	19.5	14:30	14.0	0:30	2.2	0.1	5.8	10.1	40.2	15:00	SSE
9	17.2	21.2	15:00	13.6	00:00	1.6	0.4	1.0	7.1	37.0	8:00	S
10	14.1	17.3	12:30	12.1	1:30	4.2	0.0	7.1	8.7	38.6	14:30	S
11	16.7	20.2	16:00	13.8	00:00	1.9	0.3	1.3	6.1	37.0	4:30	SSW
12	17.2	22.6	16:30	11.4	6:00	2.0	0.9	0.0	4.7	22.5	13:00	S
13	18.3	24.1	16:30	13.6	5:30	1.5	1.5	0.0	6.6	35.4	23:00	N
14	17.9	22.4	17:30	14.0	5:00	1.2	0.8	0.0	13.2	32.2	22:30	N
15	17.8	21.0	15:30	15.5	2:30	1.1	0.5	0.0	6.4	29.0	17:30	NNE
16	15.8	18.3	13:00	12.6	23:00	2.5	0.0	0.0	9.5	33.8	14:30	NNE
17	15.4	18.6	13:30	11.1	5:00	2.9	0.0	0.0	16.3	45.1	00:00	N
18	18.4	22.4	17:00	15.4	4:30	0.9	0.9	0.0	10.8	45.1	0:30	N
19	18.3	22.6	14:30	14.8	00:00	0.8	0.8	0.0	7.2	32.2	16:00	N
20	16.6	21.8	17:00	12.6	4:30	2.3	0.6	0.0	5.0	24.1	22:30	NNW
21	15.1	20.5	18:00	10.1	4:30	3.5	0.3	0.0	5.8	24.1	00:00	NNW
22	16.9	21.1	17:00	11.4	5:00	2.1	0.6	0.0	4.3	19.3	17:00	SSE
23	17.6	21.6	11:30	13.5	6:30	1.4	0.7	1.0	4.2	25.7	00:00	S
24	16.8	21.1	15:00	12.6	6:30	2.1	0.6	0.3	10.0	30.6	17:30	N
25	14.9	18.9	16:30	12.1	7:30	3.4	0.0	0.0	7.7	32.2	1:30	ESE
26	14.1	17.1	14:00	12.3	5:00	4.3	0.0	1.0	8.4	38.6	12:00	SE
27	15.1	18.2	18:00	12.3	00:00	3.3	0.0	7.9	4.7	25.7	10:30	SSE
28	14.7	18.2	14:00	12.0	1:30	3.7	0.0	7.4	6.9	30.6	14:00	NNE
29	14.7	18.1	17:00	12.4	6:30	3.7	0.0	0.3	8.4	30.6	1:30	N
30	14.8	17.6	13:30	11.3	4:30	3.5	0.0	0.0	6.6	24.1	12:30	SE
	16.1	24.1	13	10.1	21	76.7	9.7	61.2	7.3	49.9	6	N

Max >= 32.0: 0
Max <= 0.0: 0
Min <= 0.0: 0
Min <= -18.0: 0

Max Rain: 18.80 ON 04/06/14

Days of Rain: 15 (> .2 mm) 6 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for JUL. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	15.9	20.1	16:00	12.5	4:30	2.5	0.1	0.0	6.8	33.8	11:00	NNE
2	16.3	20.1	12:30	11.9	5:00	2.4	0.4	0.0	5.1	33.8	13:00	S
3	15.9	18.2	11:00	13.3	3:00	2.4	0.0	0.0	8.4	33.8	12:00	S
4	17.2	19.7	12:30	15.7	3:00	1.2	0.1	2.3	12.9	45.1	13:00	S
5	17.8	21.3	14:00	12.8	23:30	1.0	0.5	4.3	6.1	27.4	1:00	S
6	14.7	19.5	13:30	10.7	4:00	3.6	0.0	0.0	4.3	30.6	14:00	NNW
7	13.8	16.4	10:00	10.7	4:00	4.5	0.0	8.9	3.1	17.7	10:30	SSE
8	14.8	17.9	11:30	13.2	00:00	3.5	0.0	4.8	7.9	33.8	15:30	N
9	15.2	19.1	15:30	11.8	3:30	3.2	0.1	0.0	14.2	41.8	5:30	NNW
10	16.7	21.6	15:30	12.5	5:00	2.2	0.5	0.0	12.2	35.4	7:00	NNW
11	18.5	23.3	16:30	14.6	4:30	1.1	1.3	0.0	6.8	24.1	14:30	NNW
12	17.6	21.3	12:30	14.2	5:00	1.2	0.4	0.0	3.9	22.5	14:00	S
13	17.2	19.9	6:00	11.9	00:00	1.2	0.1	0.3	8.0	32.2	14:30	NNW
14	15.6	19.4	21:30	10.7	5:00	2.8	0.0	0.5	7.1	41.8	17:30	S
15	17.7	21.2	14:30	14.0	00:00	1.1	0.5	0.0	4.5	22.5	0:30	S
16	17.3	21.3	15:00	13.1	3:00	1.5	0.4	0.3	5.5	33.8	14:00	S
17	20.2	24.1	18:30	14.8	6:00	0.6	2.5	0.5	6.4	53.1	23:30	NNW
18	19.8	21.8	17:30	18.3	5:30	0.0	1.4	3.3	11.1	48.3	5:00	SSE
19	20.2	23.3	16:30	18.1	00:00	0.0	1.9	12.2	3.9	25.7	8:30	NNW
20	19.3	24.7	15:00	16.2	5:30	0.4	1.4	0.0	6.3	24.1	13:00	N
21	19.4	24.3	16:00	15.8	3:30	0.6	1.7	0.0	8.5	25.7	0:30	NNW
22	20.0	23.7	12:30	15.4	4:30	0.6	2.3	0.0	4.3	27.4	23:30	NNW
23	20.4	24.1	17:30	16.6	5:30	0.3	2.4	0.0	13.0	49.9	23:00	N
24	20.4	23.9	18:30	16.1	7:00	0.2	2.3	0.0	12.9	40.2	00:00	N
25	20.2	24.4	17:00	15.1	5:30	0.4	2.3	0.0	10.6	40.2	1:00	NNE
26	20.4	25.0	17:30	15.9	6:30	0.3	2.4	0.0	4.7	24.1	1:00	S
27	17.2	21.0	14:00	13.5	23:00	1.6	0.4	0.0	8.0	32.2	3:00	N
28	16.7	20.9	16:00	13.6	6:00	2.1	0.4	0.8	9.7	27.4	14:00	N
29	17.0	20.6	13:30	13.4	6:00	1.8	0.4	0.0	7.9	27.4	18:30	N
30	16.8	21.7	16:00	13.0	5:30	2.3	0.7	0.0	4.2	22.5	19:00	SW
31	17.1	19.7	11:00	14.2	2:30	1.3	0.1	4.8	4.0	32.2	13:00	SW

	17.7	25.0	26	10.7	6	48.1	27.2	42.9	7.5	53.1	17	N

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 12.19 ON 19/07/14

Days of Rain: 12 (> .2 mm) 7 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for AUG. 2014

NAME: Beechwood House CITY: STATE:
ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	18.3	21.1	13:30	17.2	3:00	0.4	0.3	4.3	8.2	30.6	13:00	S
2	17.9	21.0	12:30	13.7	00:00	0.9	0.4	12.4	10.8	43.5	15:00	S
3	16.6	19.5	13:30	13.7	0:30	1.9	0.1	4.3	6.6	41.8	12:30	S
4	16.9	20.8	16:00	14.0	23:00	1.8	0.4	0.3	3.2	29.0	16:30	SSW
5	17.9	22.9	16:30	13.6	1:30	1.3	0.8	16.8	8.0	33.8	21:30	SSE
6	19.8	22.6	16:00	17.0	00:00	0.1	1.6	4.1	6.3	32.2	5:00	S
7	17.7	20.8	14:30	13.4	23:00	1.3	0.6	0.0	5.6	20.9	14:00	NNW
8	16.6	20.7	15:00	12.7	5:00	2.2	0.5	0.0	3.4	17.7	15:30	WNW
9	15.5	19.1	11:30	13.3	4:30	2.8	0.0	3.3	6.0	38.6	15:00	S
10	15.4	18.3	15:30	13.5	21:30	2.9	0.0	27.4	11.4	43.5	16:00	SE
11	15.2	18.5	13:30	13.6	3:30	3.2	0.0	2.8	6.9	35.4	10:30	S
12	14.4	16.7	14:30	13.3	2:30	3.9	0.0	4.6	6.8	45.1	13:30	S
13	15.9	20.2	14:00	13.3	5:30	2.6	0.2	0.3	4.3	29.0	14:00	SW
14	15.7	18.8	12:00	13.3	23:00	2.7	0.0	10.4	6.3	30.6	12:30	N
15	14.6	18.9	17:30	11.8	5:00	3.8	0.0	0.0	9.5	29.0	19:30	N
16	13.9	16.7	9:30	11.6	5:00	4.4	0.0	0.0	5.1	32.2	19:30	SW
17	14.3	17.3	12:00	11.4	23:30	4.1	0.0	1.5	5.8	33.8	3:30	NNW
18	13.1	17.5	13:30	9.4	23:30	5.2	0.0	0.3	6.4	33.8	12:00	NNW
19	11.4	14.9	16:30	9.2	6:00	6.9	0.0	2.3	6.1	30.6	17:00	N
20	11.4	14.5	15:00	8.5	23:30	6.9	0.0	0.3	6.6	30.6	12:30	NNW
21	11.7	14.9	13:30	7.7	3:00	6.7	0.0	0.5	5.0	33.8	17:30	S
22	13.3	16.7	13:30	9.4	00:00	5.1	0.0	0.8	5.1	25.7	10:00	N
23	11.8	16.1	14:30	8.7	6:00	6.5	0.0	0.0	5.6	25.7	18:00	NNW
24	11.9	15.1	15:30	8.7	2:30	6.4	0.0	0.3	6.1	24.1	17:00	SSE
25	16.9	20.8	18:00	12.4	0:30	1.6	0.2	11.7	8.7	32.2	3:30	SE
26	18.0	19.5	3:30	15.9	00:00	0.4	0.1	14.2	16.3	64.4	13:00	N
27	17.3	19.9	23:00	14.8	6:00	1.3	0.3	3.3	14.6	43.5	21:00	SE
28	18.9	20.9	2:00	16.8	21:00	0.3	0.8	2.5	9.0	40.2	15:00	S
29	17.8	19.7	22:30	16.3	7:00	0.7	0.2	6.3	9.5	45.1	15:00	S
30	17.4	19.7	12:00	15.0	5:00	1.1	0.2	2.0	5.0	32.2	1:30	WSW
31	17.6	21.1	14:30	14.7	6:00	1.4	0.6	0.0	4.3	24.1	13:00	N
	15.7	22.9	5	7.7	21	90.6	7.3	136.9	7.2	64.4	26	S

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 27.43 ON 10/08/14

Days of Rain: 25 (> .2 mm) 17 (> 2 mm) 1 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for SEP. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	18.8	22.4	14:30	14.0	00:00	0.7	1.2	0.5	8.5	35.4	20:30	NNW
2	16.4	19.5	13:30	12.8	6:30	2.1	0.2	0.0	8.7	27.4	9:00	NNE
3	18.4	20.6	14:00	16.3	7:00	0.6	0.6	0.0	6.9	29.0	19:30	E
4	16.9	20.4	17:30	14.8	6:00	1.6	0.2	0.0	8.2	33.8	10:30	NNE
5	17.6	20.7	14:30	14.8	5:30	1.2	0.4	0.0	2.3	11.3	10:00	SSE
6	17.3	20.8	12:30	13.8	00:00	1.3	0.3	1.3	3.5	24.1	20:00	NNE
7	14.9	18.8	15:00	12.3	23:30	3.4	0.0	0.0	6.1	20.9	8:00	NE
8	14.8	19.4	15:30	9.9	7:00	3.6	0.1	0.0	3.7	19.3	9:30	NW
9	15.2	19.2	13:30	10.6	7:00	3.3	0.1	0.0	2.9	24.1	14:30	NE
10	15.4	19.1	14:30	11.7	7:00	3.0	0.0	0.0	4.0	24.1	14:00	SE
11	14.1	16.7	14:30	11.4	5:00	4.3	0.0	0.0	5.3	33.8	14:30	ESE
12	14.8	17.5	17:00	12.1	2:00	3.6	0.0	0.0	6.4	25.7	14:00	SE
13	15.1	17.3	15:30	13.3	12:00	3.3	0.0	0.0	9.7	38.6	21:30	N
14	14.7	18.3	16:30	11.8	7:30	3.7	0.0	0.0	12.9	51.5	00:00	N
15	15.1	17.3	17:00	12.6	7:00	3.3	0.0	0.0	12.1	43.5	0:30	NNE
16	17.8	20.3	17:30	14.8	3:30	0.9	0.5	1.5	10.1	37.0	15:00	NE
17	17.3	19.6	16:00	15.3	8:00	1.1	0.1	0.0	15.9	49.9	6:30	N
18	19.1	21.6	17:30	16.6	0:30	0.5	1.2	1.5	15.1	45.1	12:30	NE
19	18.9	20.9	14:30	17.7	7:30	0.1	0.7	1.5	9.2	33.8	8:00	NE
20	19.3	21.3	15:30	17.3	22:30	0.1	1.1	0.0	9.3	32.2	19:00	N
21	15.0	17.6	15:00	11.1	00:00	3.3	0.0	0.0	13.4	40.2	2:30	NNE
22	13.6	19.1	12:30	9.9	5:30	4.8	0.0	0.0	3.1	17.7	17:00	NNW
23	13.2	16.6	15:30	9.7	2:30	5.1	0.0	0.5	4.2	27.4	17:00	S
24	13.8	17.1	14:00	8.7	00:00	4.5	0.0	0.8	7.4	35.4	13:30	NNW
25	15.1	18.2	23:30	8.6	0:30	3.3	0.0	0.0	4.7	29.0	15:30	SSW
26	18.1	20.3	14:30	15.5	00:00	0.6	0.4	0.8	3.9	24.1	2:00	SW
27	16.9	19.3	13:00	14.8	3:30	1.5	0.1	0.0	2.3	19.3	14:00	SSE
28	17.8	21.4	12:30	14.7	7:30	1.1	0.6	0.0	1.9	16.1	14:30	SSE
29	17.4	20.5	11:30	14.9	00:00	1.1	0.2	0.0	4.3	22.5	14:00	S
30	17.6	20.4	16:00	14.7	1:30	1.1	0.3	0.3	7.2	35.4	20:30	S
	16.3	22.4	1	8.6	25	67.8	8.3	8.6	7.1	51.5	14	N

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 1.52 ON 19/09/14

Days of Rain: 9 (> .2 mm) 0 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for OCT. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	17.0	19.4	16:00	15.0	7:30	1.3	0.1	3.8	3.7	24.1	21:00	SSW
2	15.7	18.9	14:00	13.7	9:00	2.7	0.0	0.3	4.8	29.0	16:00	S
3	17.2	20.6	15:00	14.6	0:30	1.4	0.2	0.0	11.7	37.0	16:00	S
4	13.7	17.7	1:00	8.6	22:00	4.6	0.0	5.8	7.7	45.1	5:00	NNW
5	11.9	15.3	13:30	7.9	6:30	6.4	0.0	0.0	8.2	45.1	23:30	SSE
6	13.3	17.2	13:00	9.2	23:30	5.1	0.0	26.7	12.4	66.0	5:00	SSE
7	10.7	13.4	12:00	8.3	6:30	7.7	0.0	11.4	5.6	37.0	13:00	SSE
8	13.3	16.7	12:30	10.3	1:00	5.1	0.0	9.9	10.9	56.3	15:30	SSE
9	13.6	14.5	19:00	12.1	13:00	4.8	0.0	13.5	13.2	59.5	9:00	S
10	14.1	16.9	12:30	12.4	5:30	4.2	0.0	2.0	8.2	41.8	11:30	S
11	13.6	16.3	12:30	11.4	22:00	4.8	0.0	3.8	2.7	24.1	14:00	SSE
12	12.9	15.1	11:30	10.6	4:00	5.4	0.0	1.0	12.2	53.1	21:00	N
13	13.4	14.0	14:00	12.8	21:30	4.9	0.0	9.9	33.6	74.0	6:00	N
14	13.8	14.8	14:00	12.8	2:00	4.5	0.0	7.6	15.0	38.6	6:30	NNW
15	15.8	18.1	18:00	14.3	1:30	2.5	0.0	3.8	10.1	38.6	13:30	ESE
16	17.8	19.5	16:00	16.1	6:00	0.8	0.3	2.5	8.0	30.6	16:00	SSE
17	19.2	20.8	23:30	17.9	1:30	0.1	1.0	10.2	16.4	57.9	23:30	SSE
18	20.3	21.0	2:30	19.1	23:30	0.0	1.9	0.5	15.3	49.9	3:30	SSE
19	18.3	19.8	2:00	16.7	20:30	0.4	0.4	1.0	12.2	51.5	13:00	S
20	16.0	17.7	12:30	15.3	14:00	2.3	0.0	3.0	7.1	49.9	23:30	S
21	13.5	18.1	5:00	9.4	00:00	4.8	0.0	6.3	11.6	74.0	4:30	S
22	11.8	13.7	17:00	9.2	0:30	6.6	0.0	0.0	5.6	35.4	17:30	SW
23	15.8	17.9	00:00	13.1	1:30	2.5	0.0	1.0	9.5	40.2	14:30	S
24	16.8	18.9	12:30	13.3	00:00	1.6	0.1	2.8	5.8	30.6	7:00	S
25	14.5	16.4	14:00	12.5	2:00	3.8	0.0	0.5	6.1	35.4	14:30	SSW
26	15.2	16.3	14:30	14.2	7:00	3.1	0.0	0.3	14.3	46.7	11:00	S
27	17.8	18.9	21:30	16.2	0:30	0.6	0.1	0.0	10.5	41.8	8:00	SSE
28	18.8	20.8	14:00	16.8	4:30	0.3	0.8	0.5	8.5	35.4	14:30	SSE
29	15.5	18.9	23:30	13.0	9:00	2.8	0.0	1.5	6.3	27.4	8:30	NE
30	19.2	20.2	16:30	18.2	0:30	0.0	0.8	1.0	11.4	40.2	7:30	SSE
31	20.1	22.4	14:00	17.9	00:00	0.0	1.7	0.3	15.3	43.5	22:30	SSE

	15.5	22.4	31	7.9	5	95.2	7.4	131.1	10.5	74.0	13	S

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 26.67 ON 06/10/14

Days of Rain: 27 (> .2 mm) 16 (> 2 mm) 1 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for NOV. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	15.8	17.9	0:30	14.8	18:00	2.5	0.0	7.9	15.6	67.6	23:30	S
2	13.6	16.8	1:30	10.3	21:00	4.7	0.0	9.7	10.8	54.7	0:30	S
3	9.4	11.4	12:30	8.1	8:00	8.9	0.0	22.4	6.8	41.8	2:00	S
4	8.1	11.1	12:30	5.8	7:30	10.2	0.0	0.8	6.6	30.6	15:00	N
5	8.2	11.1	12:30	5.4	21:30	10.1	0.0	0.0	9.7	32.2	5:30	N
6	10.8	15.1	23:00	6.1	0:30	7.5	0.0	3.6	16.3	54.7	18:30	SSE
7	11.9	14.8	1:30	8.7	12:00	6.4	0.0	16.8	9.7	51.5	11:00	S
8	11.2	13.6	14:00	8.7	23:00	7.2	0.0	8.1	11.6	57.9	14:00	SSE
9	10.1	12.4	9:30	8.2	1:30	8.3	0.0	16.3	3.1	25.7	22:00	S
10	11.7	13.6	00:00	8.7	6:00	6.7	0.0	11.9	12.9	53.1	20:00	SSE
11	14.1	15.0	18:00	13.3	7:30	4.3	0.0	13.2	23.0	49.9	17:30	SE
12	12.9	14.4	0:30	11.9	19:30	5.4	0.0	4.8	14.5	49.9	1:30	SSE
13	13.6	15.3	14:30	12.2	0:30	4.7	0.0	2.0	23.2	80.5	13:30	SE
14	12.6	14.7	0:30	10.6	00:00	5.8	0.0	8.6	16.7	64.4	3:30	SE
15	11.1	13.9	14:00	9.5	8:30	7.3	0.0	0.5	6.9	30.6	22:00	SSE
16	11.3	12.3	13:30	10.4	2:00	7.0	0.0	0.5	14.8	37.0	3:30	NNE
17	10.2	11.6	13:30	9.4	18:00	8.1	0.0	2.5	16.7	53.1	16:30	N
18	10.2	11.8	12:30	8.8	6:00	8.1	0.0	0.0	11.9	40.2	4:30	N
19	10.6	12.0	12:30	9.8	0:30	7.7	0.0	0.3	14.5	37.0	13:00	ESE
20	10.2	10.9	1:30	8.9	00:00	8.2	0.0	0.0	10.3	38.6	22:00	E
21	9.8	13.6	00:00	7.7	7:00	8.6	0.0	0.3	15.9	49.9	3:30	ESE
22	14.2	16.8	13:00	11.6	23:30	4.1	0.0	0.0	7.2	35.4	6:30	S
23	8.9	12.2	0:30	4.7	00:00	9.4	0.0	0.0	9.5	30.6	12:00	N
24	5.8	10.7	13:00	4.1	21:30	12.6	0.0	0.0	2.1	16.1	14:00	NNW
25	5.9	7.2	00:00	4.1	2:00	12.4	0.0	1.5	10.3	38.6	23:00	NNE
26	8.6	9.6	15:30	7.1	0:30	9.7	0.0	0.8	7.1	32.2	1:30	NNW
27	9.9	11.8	00:00	8.8	9:00	8.4	0.0	1.0	7.7	37.0	16:30	NW
28	12.1	12.9	16:30	11.4	9:00	6.3	0.0	0.0	20.6	54.7	16:00	NNE
29	12.3	14.2	12:30	11.2	19:00	6.0	0.0	0.0	6.4	43.5	2:00	SSE
30	11.8	13.7	13:00	9.9	21:30	6.5	0.0	0.5	11.4	38.6	21:30	NNW

	10.9	17.9	1	4.1	24	223.0	0.0	133.9	11.8	80.5	13	SSE

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 0

Min <= -18.0: 0

Max Rain: 22.35 ON 03/11/14

Days of Rain: 22 (> .2 mm) 13 (> 2 mm) 1 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

MONTHLY CLIMATOLOGICAL SUMMARY for DEC. 2014

NAME: Beechwood House CITY: STATE:
 ELEV: 340 m LAT: LONG:

TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/h)

DAY	MEAN TEMP	HIGH	TIME	LOW	TIME	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	9.4	10.4	1:30	8.9	17:30	8.9	0.0	0.0	8.5	32.2	1:00	N
2	6.2	9.5	2:30	1.8	00:00	12.1	0.0	0.0	25.1	53.1	4:00	N
3	4.2	6.2	13:30	1.7	0:30	14.2	0.0	0.0	16.4	37.0	18:00	N
4	4.7	5.1	13:00	4.3	3:00	13.7	0.0	0.0	11.6	33.8	2:30	N
5	4.7	7.3	13:30	2.5	4:30	13.7	0.0	0.0	8.5	37.0	11:30	NNW
6	6.3	9.2	00:00	2.9	0:30	12.1	0.0	0.0	6.6	24.1	3:30	N
7	7.4	11.6	7:30	3.3	23:30	10.9	0.0	7.4	7.4	46.7	2:30	W
8	4.4	6.9	13:30	3.3	4:00	13.9	0.0	4.8	6.0	35.4	13:30	NW
9	8.1	13.3	21:30	3.5	1:00	10.3	0.0	6.3	13.5	64.4	16:30	S
10	6.5	10.8	0:30	5.1	7:30	11.8	0.0	1.0	10.9	56.3	1:30	W
11	6.9	8.7	19:30	4.3	9:00	11.4	0.0	18.0	12.1	61.2	2:30	WSW
12	5.9	10.9	3:00	2.5	20:30	12.4	0.0	11.9	8.0	59.5	0:30	W
13	4.3	7.0	13:00	2.4	8:00	14.0	0.0	0.0	4.2	25.7	6:00	NNW
14	8.4	11.2	19:30	4.6	1:30	9.9	0.0	8.6	9.3	48.3	13:30	S
15	7.2	9.4	13:00	5.4	20:30	11.1	0.0	0.8	4.0	30.6	3:30	WSW
16	7.5	11.3	00:00	5.3	2:00	10.8	0.0	2.8	5.8	45.1	22:00	S
17	13.6	14.6	21:30	11.3	0:30	4.7	0.0	8.4	7.4	61.2	1:00	W
18	14.4	14.8	12:00	14.1	10:00	3.9	0.0	5.8	13.0	57.9	14:30	SW
19	9.4	14.6	0:30	7.2	19:30	8.9	0.0	5.6	7.9	45.1	1:00	W
20	7.9	8.7	14:30	7.3	1:30	10.4	0.0	0.0	6.1	35.4	7:00	W
21	10.8	13.2	21:00	8.2	0:30	7.5	0.0	0.0	10.6	54.7	14:30	SW
22	12.7	13.3	4:00	12.2	23:00	5.7	0.0	3.0	12.4	61.2	13:30	SW
23	11.8	13.1	00:00	10.9	16:30	6.5	0.0	4.8	14.8	54.7	8:30	S
24	8.1	13.4	1:00	5.2	23:30	10.3	0.0	1.5	5.5	41.8	2:00	NW
25	5.9	8.5	13:00	4.1	22:30	12.4	0.0	0.0	3.9	25.7	15:00	W
26	6.1	11.3	21:00	3.3	1:00	12.2	0.0	6.9	9.3	56.3	00:00	SSE
27	4.7	6.7	11:00	3.4	19:00	13.7	0.0	0.3	13.7	53.1	1:00	N
28	2.9	5.6	13:00	0.2	22:30	15.4	0.0	0.3	13.2	48.3	5:30	N
29	2.7	6.8	12:30	-0.4	3:30	15.6	0.0	0.0	1.9	11.3	8:00	NNW
30	5.3	7.9	13:00	1.6	0:30	13.1	0.0	0.3	2.9	27.4	15:00	SW
31	7.9	10.4	00:00	4.2	1:00	10.4	0.0	0.3	8.7	38.6	16:00	S
	7.3	14.8	18	-0.4	29	341.9	0.0	98.8	9.3	64.4	9	N

Max >= 32.0: 0

Max <= 0.0: 0

Min <= 0.0: 1

Min <= -18.0: 0

Max Rain: 18.03 ON 11/12/14

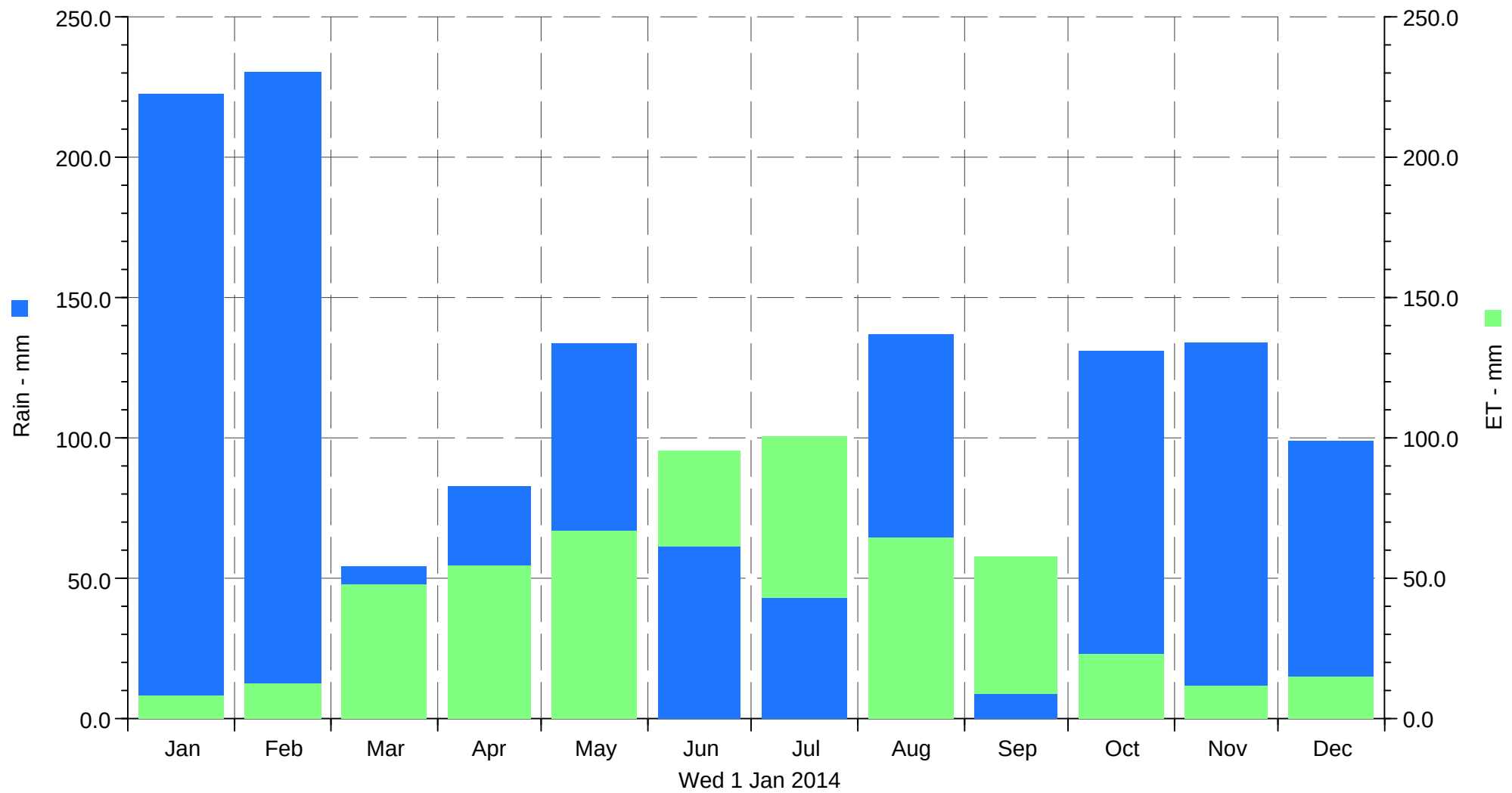
Days of Rain: 20 (> .2 mm) 13 (> 2 mm) 0 (> 20 mm)

Heat Base: 18.3 Cool Base: 18.3 Method: Integration

APPENDIX J2

MONTHLY RAINFALL AND EVAPOTRANSPIRATION GRAPHS

Beechwood House

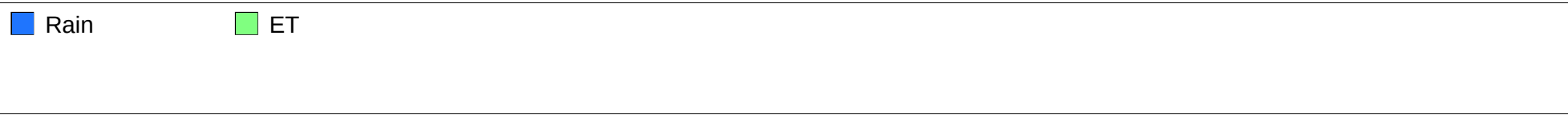
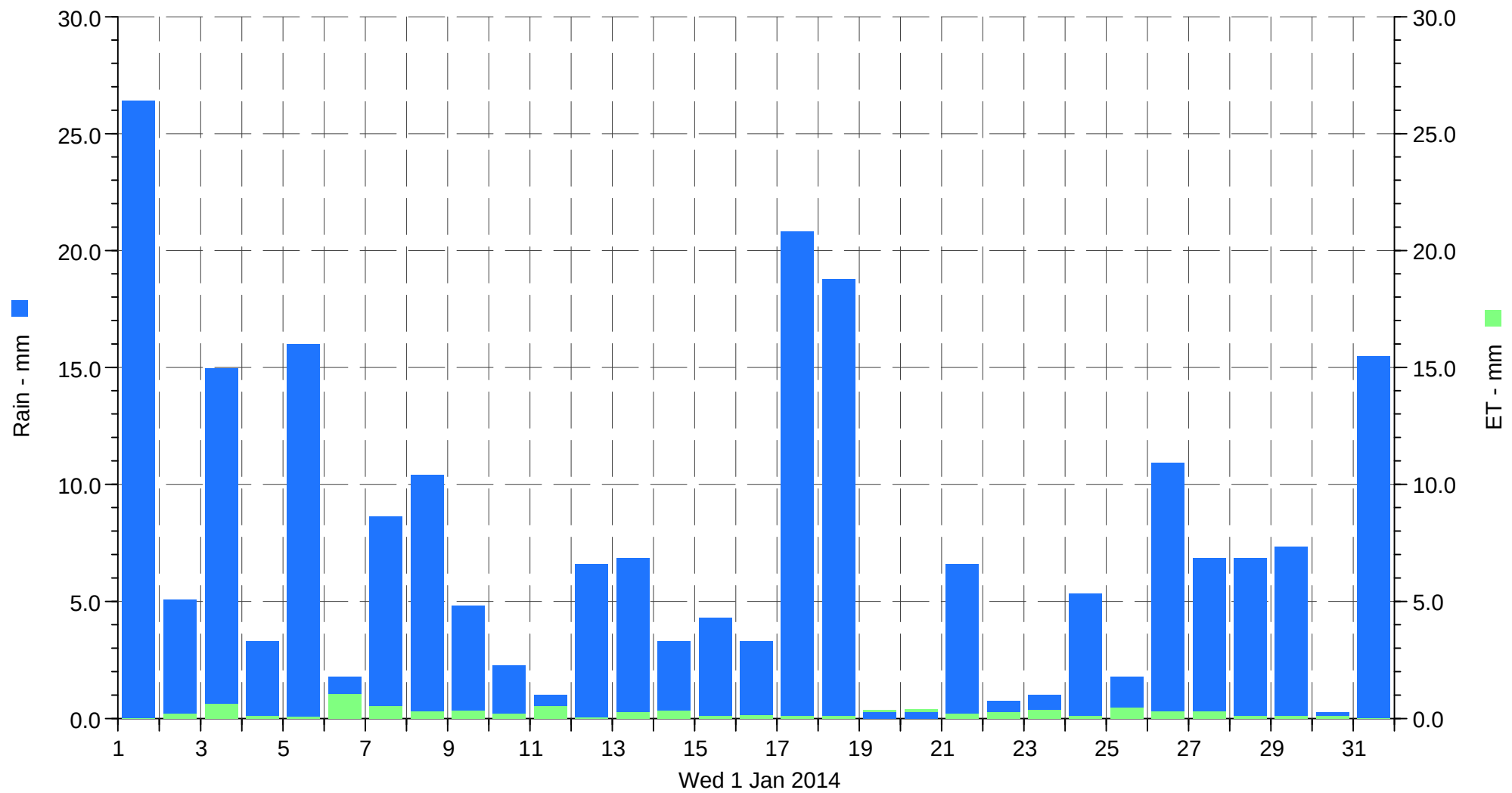


■ Rain ■ ET

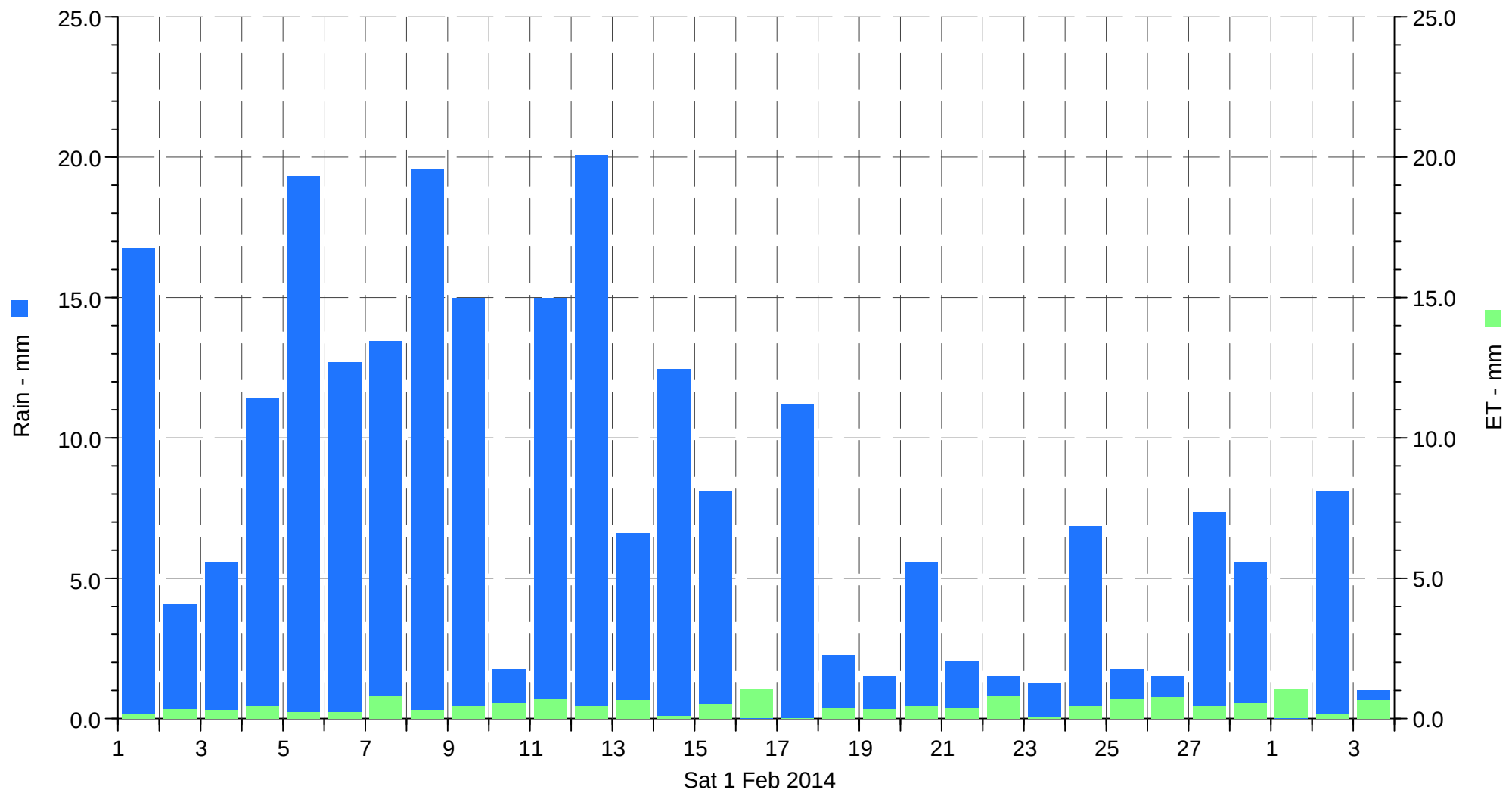
APPENDIX J3

**DAILY RAINFALL AND
EVAPOTRANSPIRATION GRAPHS**

Beechwood House

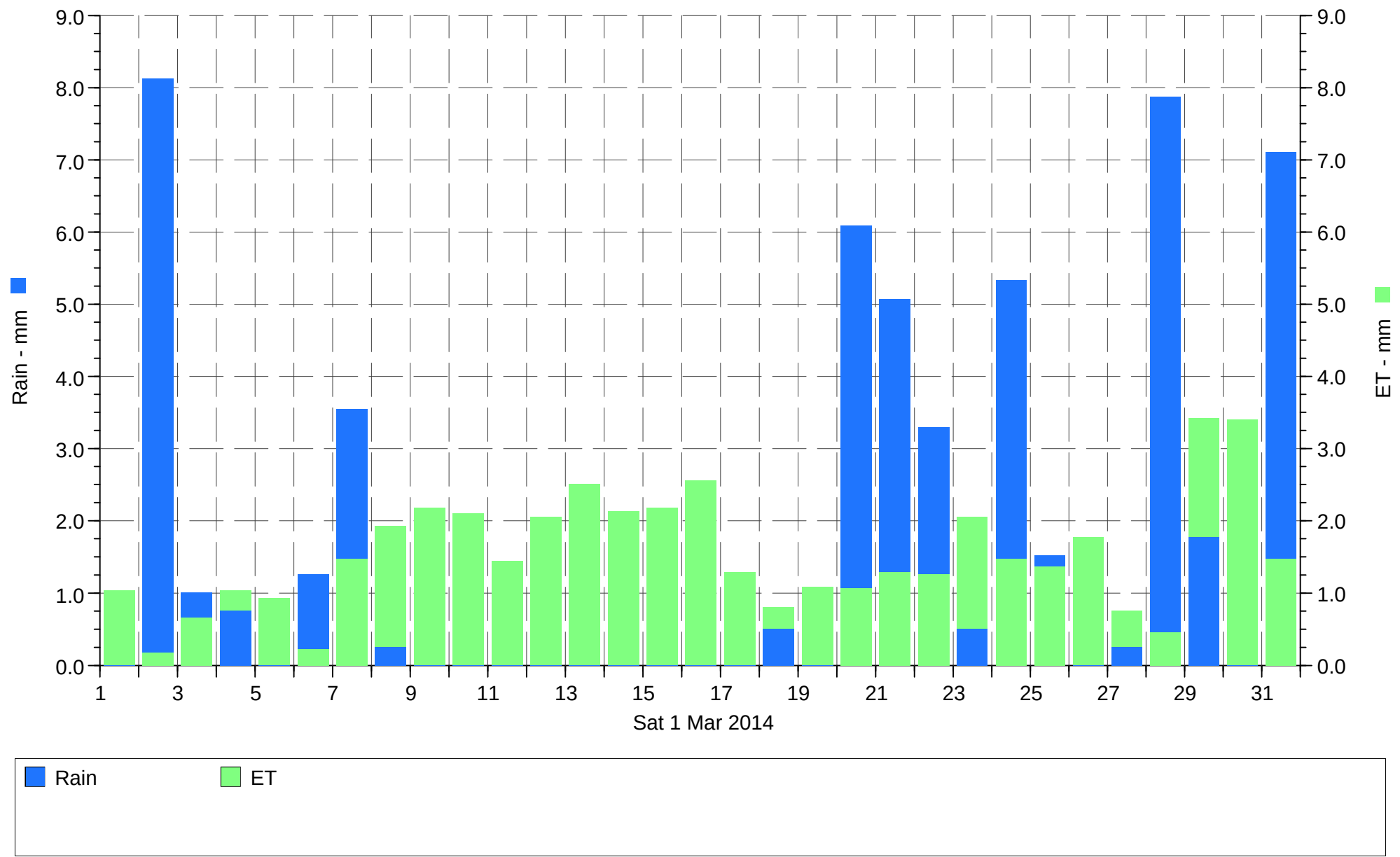


Beechwood House

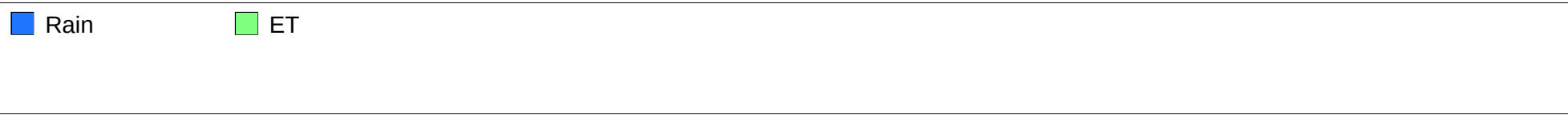
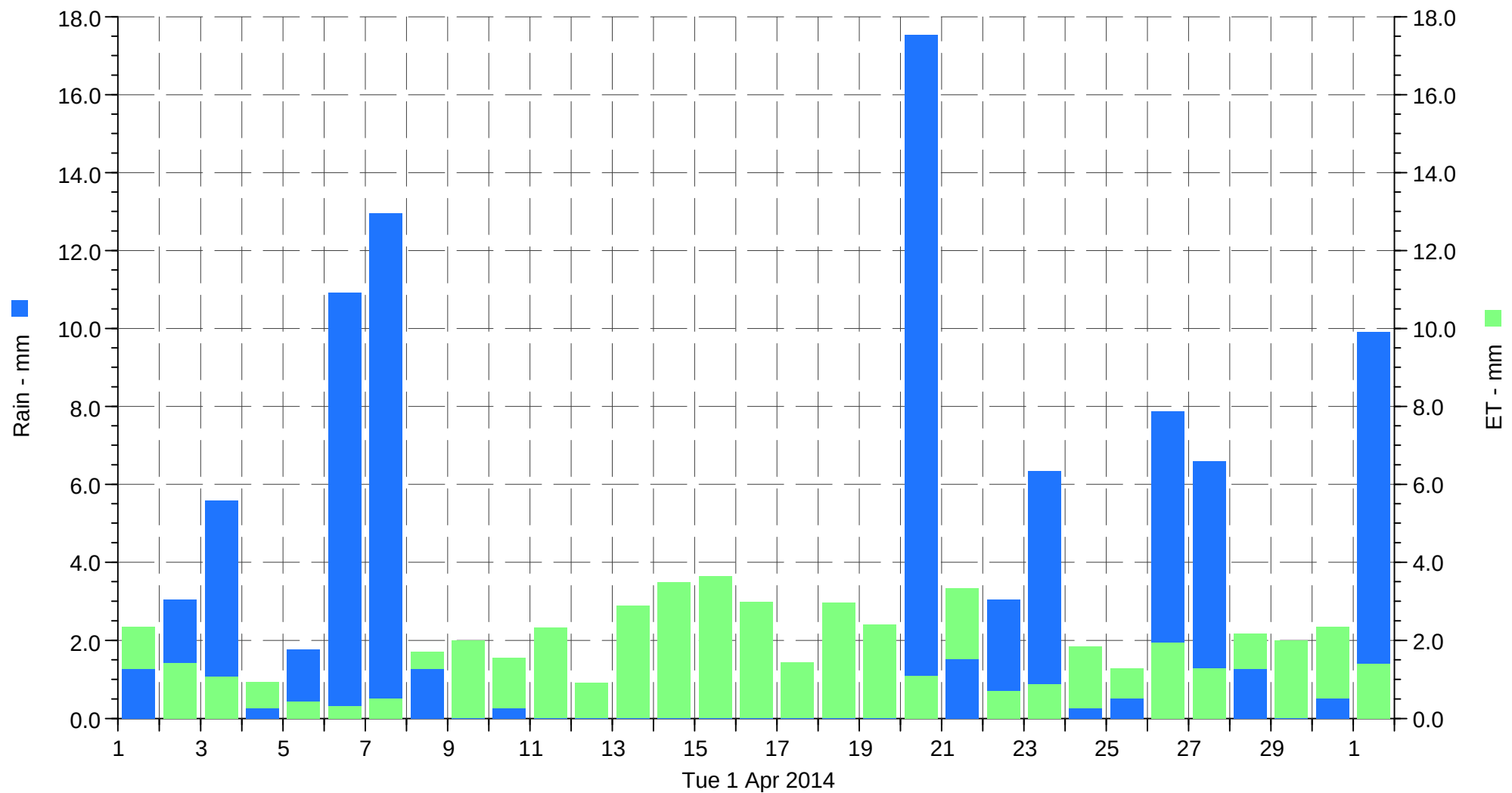


■ Rain ■ ET

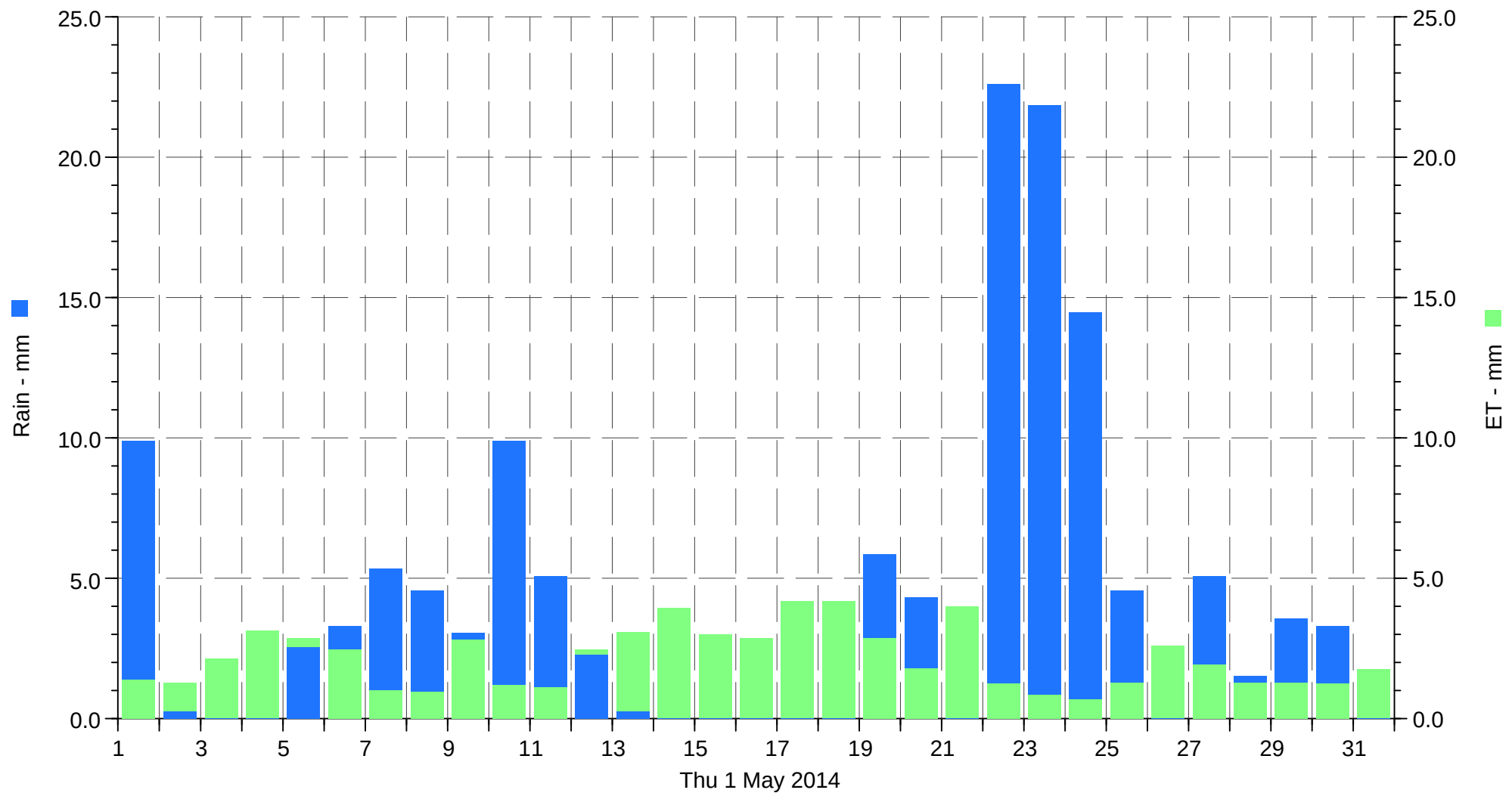
Beechwood House



Beechwood House

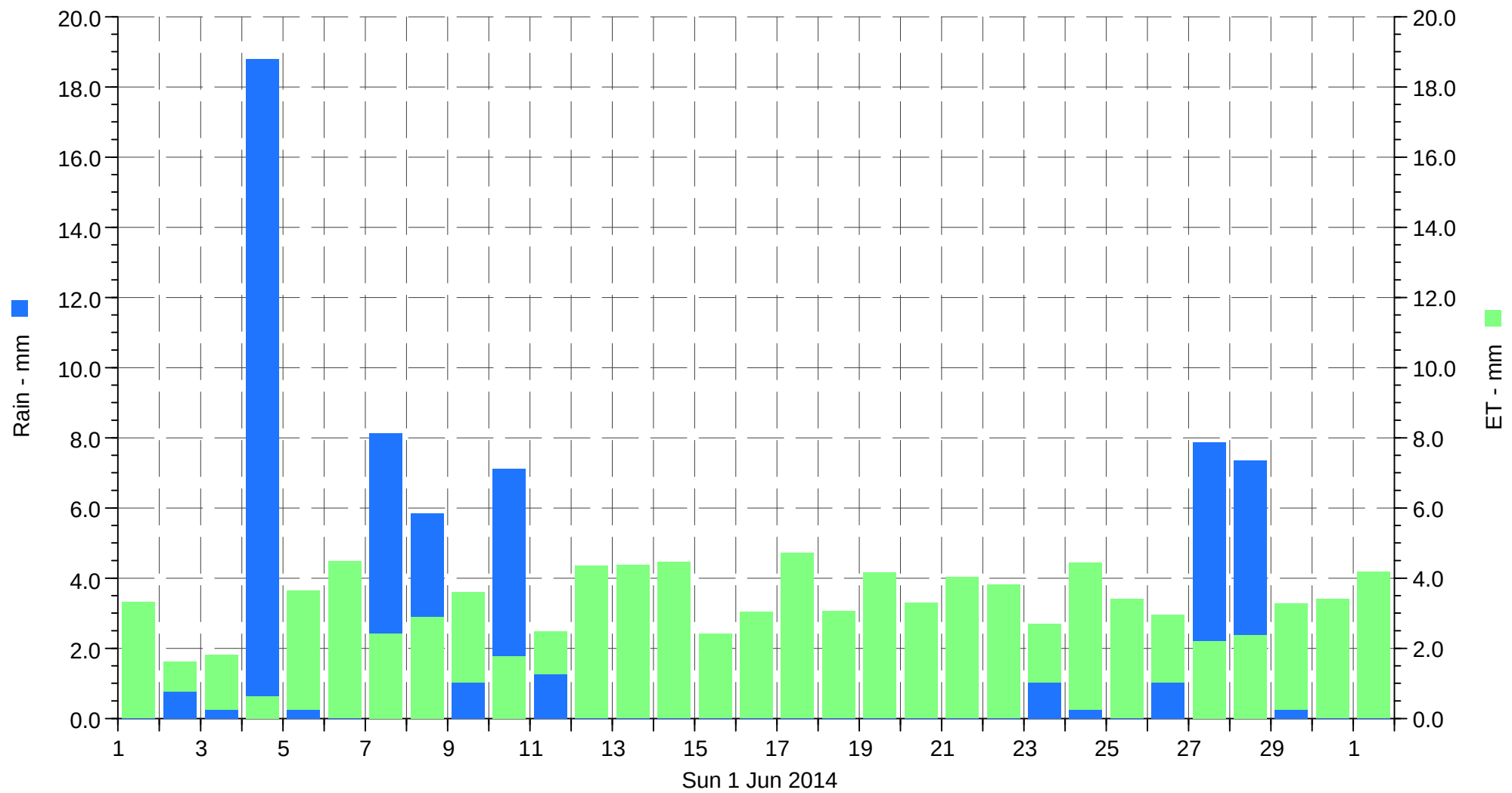


Beechwood House



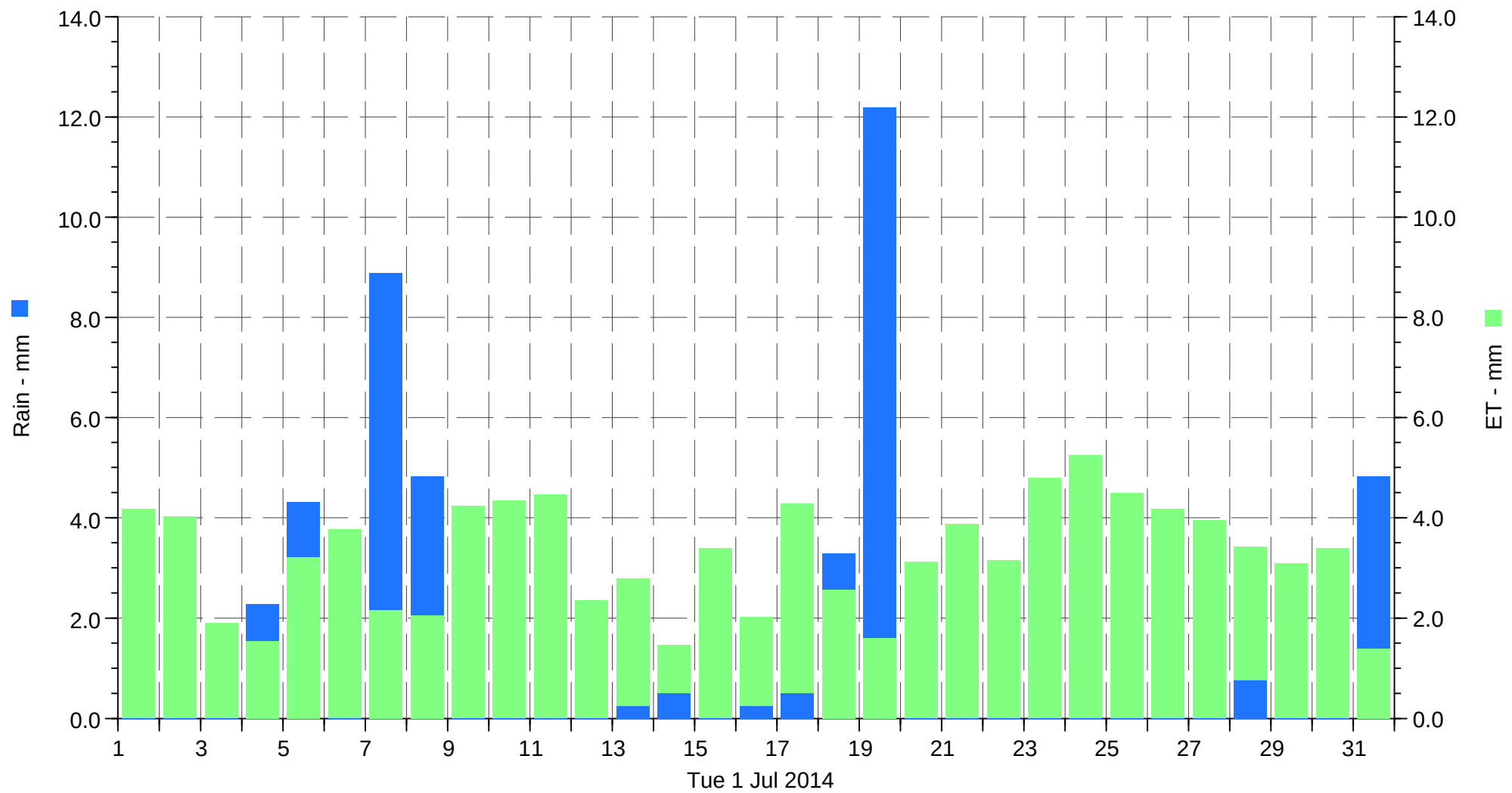
Rain ET

Beechwood House



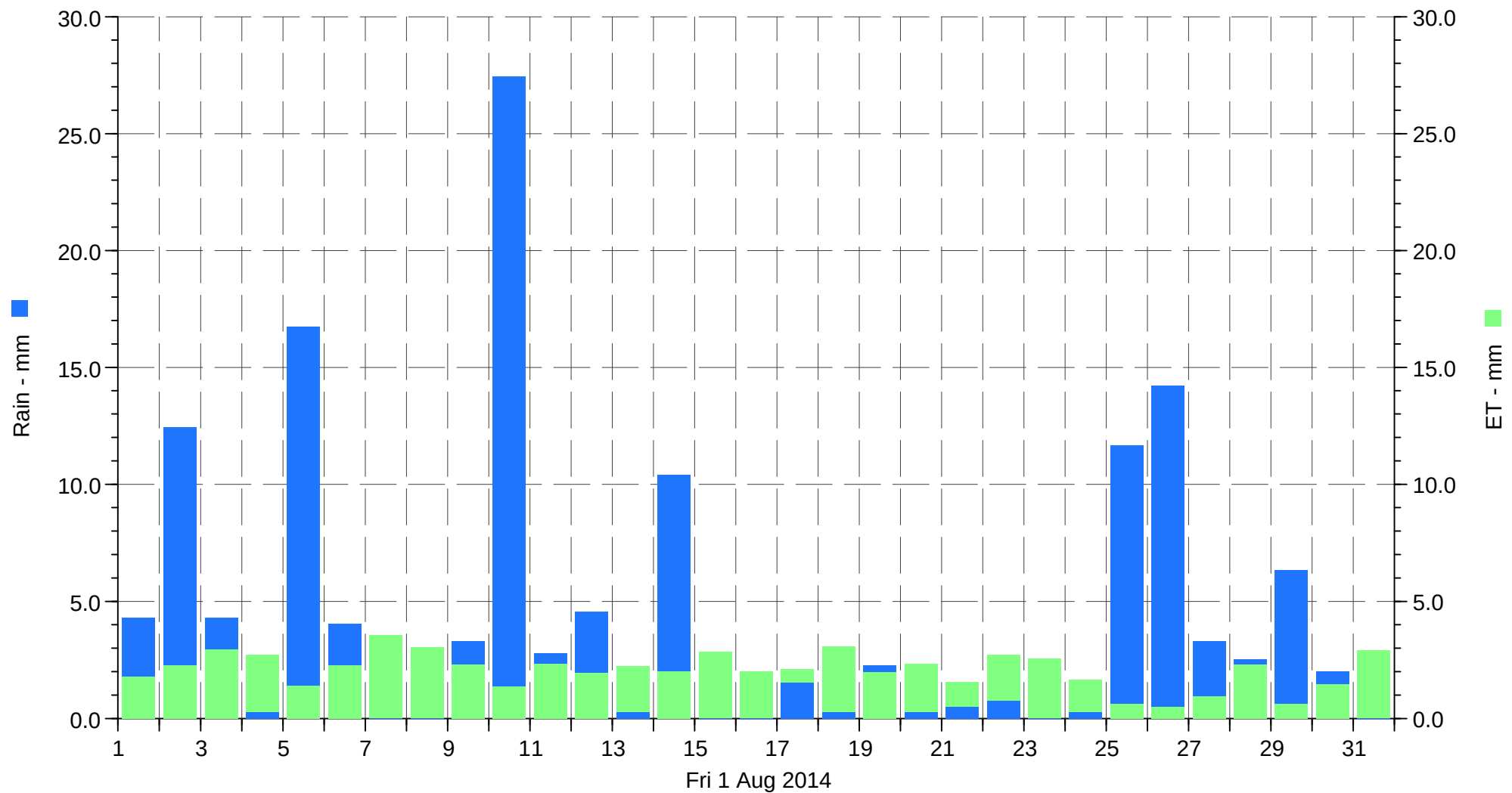
Rain ET

Beechwood House



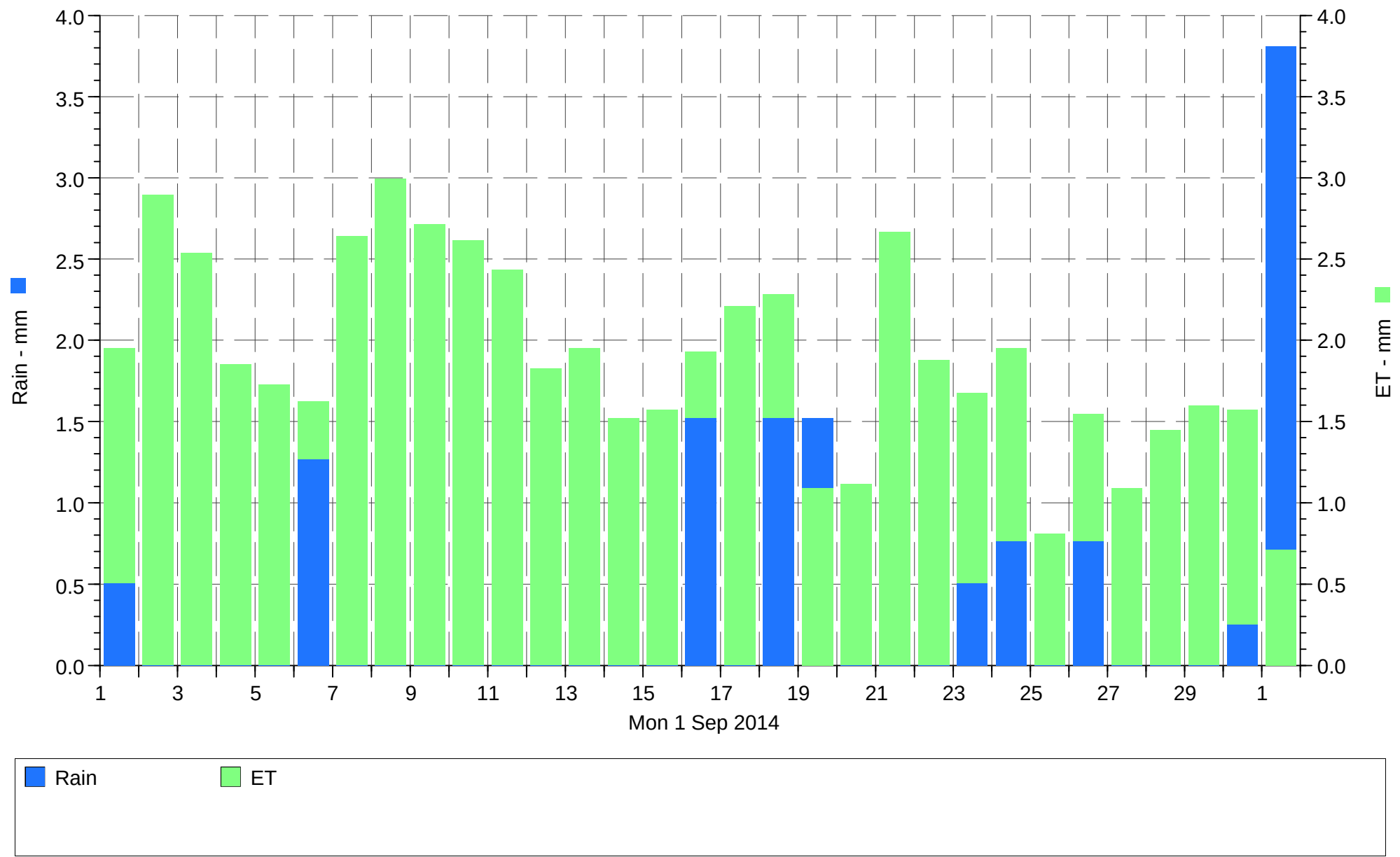
Rain ET

Beechwood House

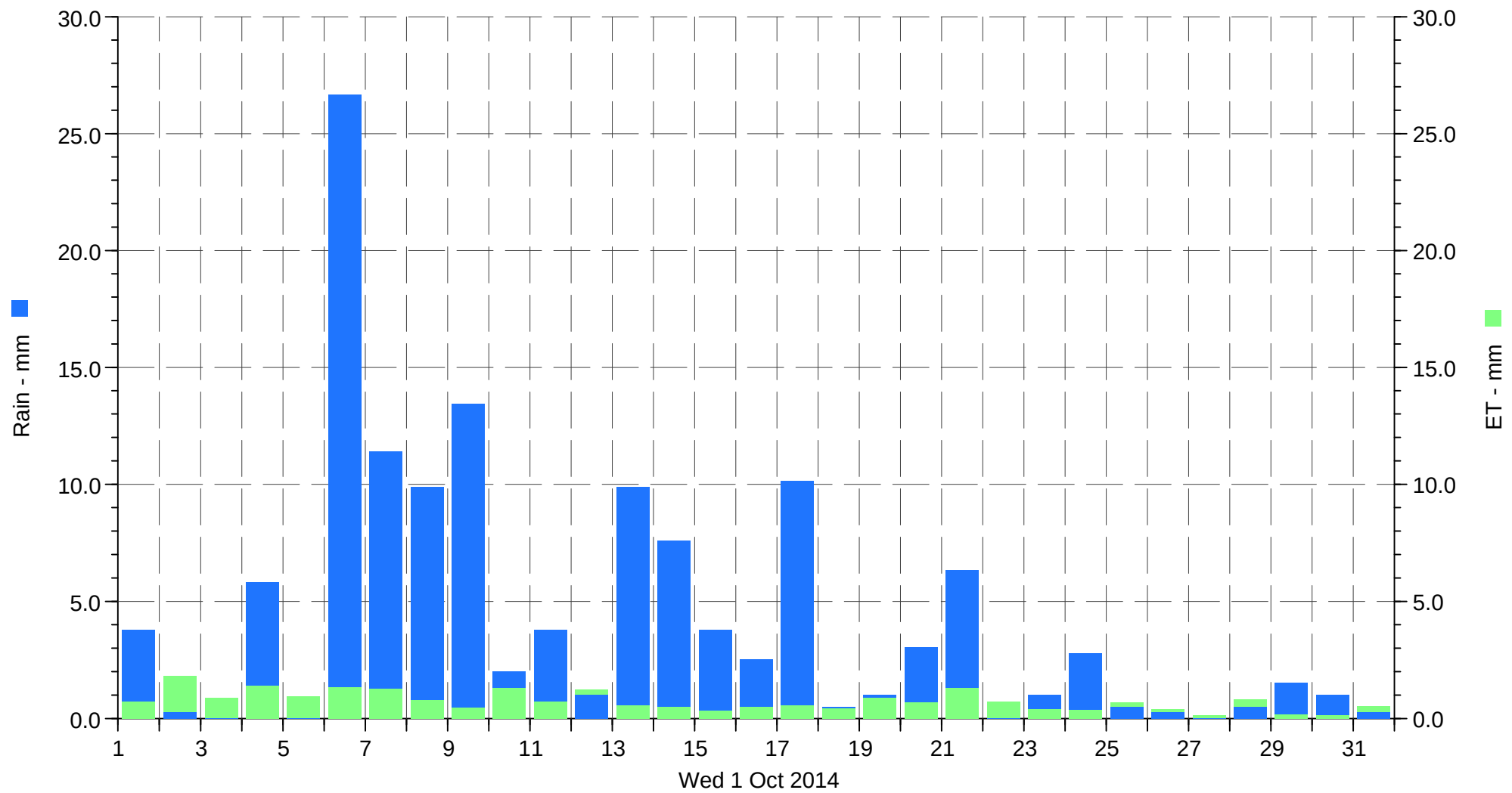


Rain ET

Beechwood House

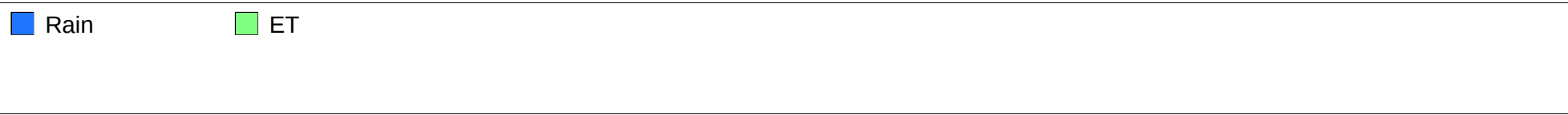
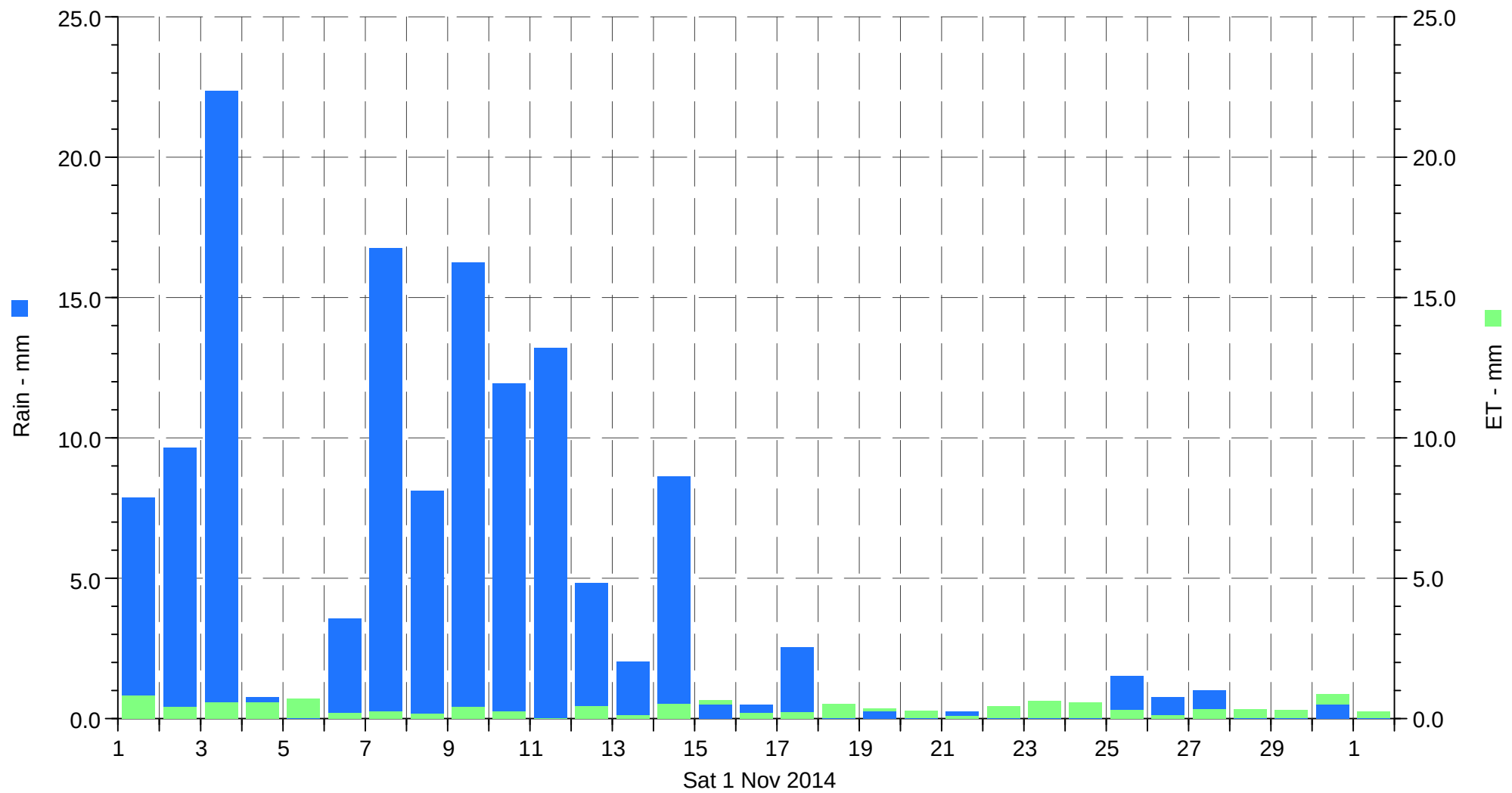


Beechwood House

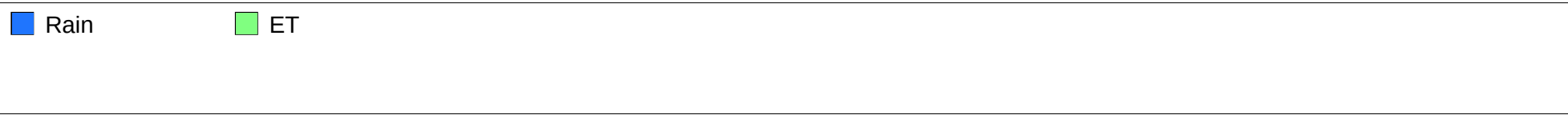
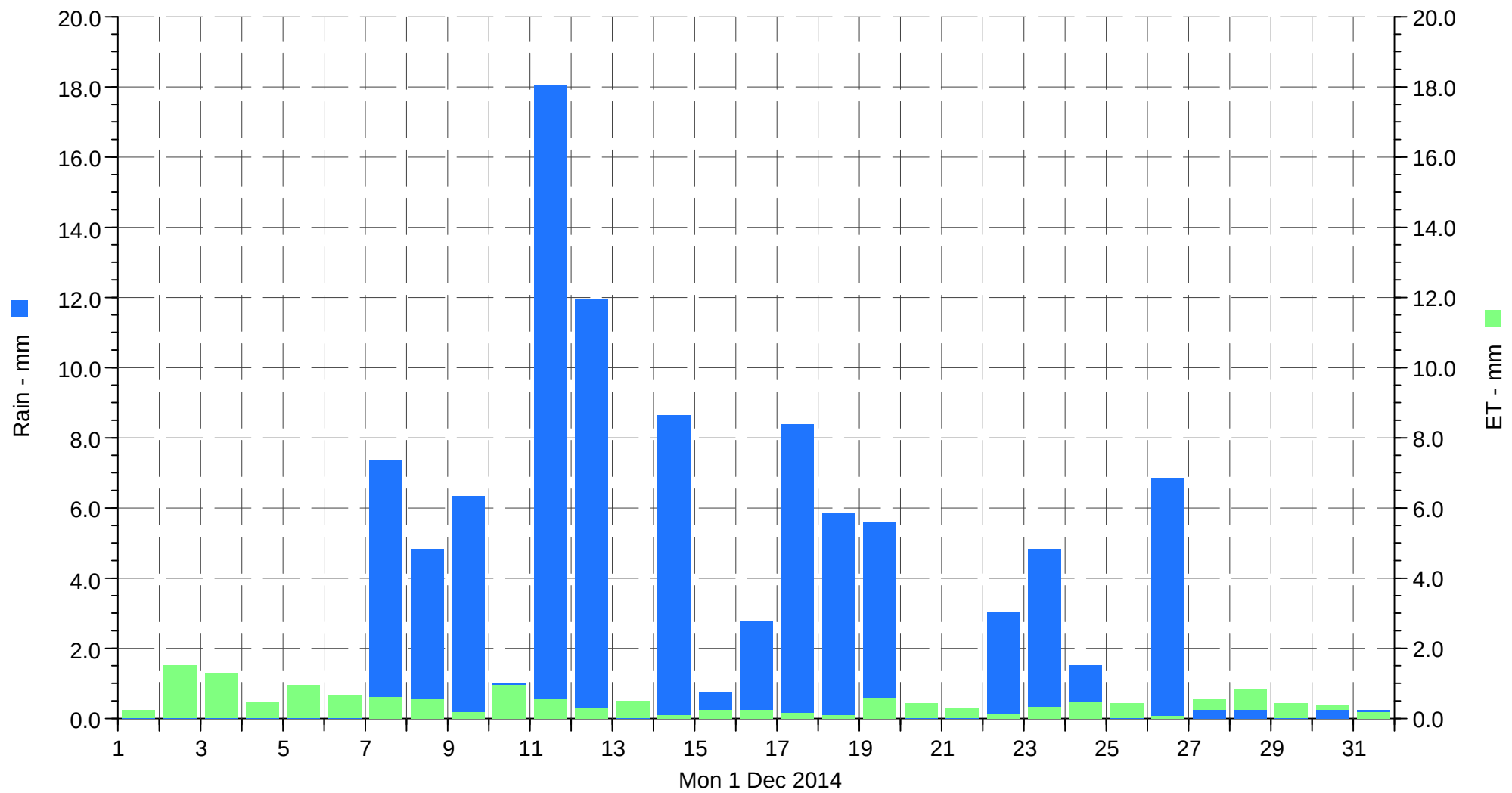


Rain ET

Beechwood House



Beechwood House



APPENDIX J4

**DAILY METEOROLOGICAL MONITORING
RECORDS RECORDED AT HALF HOUR
INTERVALS**

APPENDIX K1

FLARE MONITORING REPORT

Site: Silent Valley

Permit: MP3835SV

Reporting period: 8th November 2013 - 8th November 2013

Date of test: 22nd April 2014.

Flare Emission Data

Flare	Species	Method description		Measurement uncertainty (+ or - %)	Average measured emission concentration (mg/Nm3)	LFTGN05 overall uncertainty (+ or - %)	Maximum emission including uncertainty (mg/Nm3)	Minimum emission including uncertainty (mg/Nm3)	Permit emission standard (mg/Nm3)
	NOx	Chemiluminescence	BS EN 14792	39	71.0	30	92.3	49.7	150
	CO	IR	BS EN 15058	40	10.0	20	12.0	8.0	100
	TVOC	FID	BS EN 13526	33	3.0	40	4.2	1.8	10

Note 1 All data is expressed as mg/Nm3 at 273K, 101.3kPa, dry gas, corrected to an oxygen content of 3%. Average measured emissions concentration is calculated from data collected over a one hour period.

Note 2 The monitoring and reporting were carried out by ESG, an MCERTS accredited contractor. ESG staff attending: J Ward Team Leader Level 2 with TE1, TE2, TE3 and TE4. C Elsey Technician Level 1

Note 3 Measurement uncertainty is shown. Overall site uncertainty could not be deduced from available data - maximum uncertainty values set out in LFTGN05 have therefore been applied.

Note 4 Emissions from the flare are compliant with the standard.

APPENDIX K2

INLET MONITORING REPORT

Infinis Energy Services Limited

Periodic monitoring of raw landfill gas

Silent Valley Landfill Site

Report	140405-TG
Date	13 May 2014
Version	2





PERIODIC MONITORING OF RAW LANDFILL GAS

SILENT VALLEY LANDFILL SITE

Report prepared for

Infinis Energy Services Limited
500 Pavilion Drive
Northampton Business Park
Northamptonshire
NN4 7YJ

Report prepared by

Environmental Scientifics Group Limited
Unit D, Acacia Building
Vantage Point Business Village
Mitcheldean
Gloucestershire
GL17 0DD

Approved Dr N Ford

N Ford

Issue history

Version	Date	Approved	
140405-TG, 1	12 May 2014	N Ford	N Ford
First issue			
140405-TG, 2	13 May 2014	N Ford	N Ford
Revised report format			

1 Introduction

Infinis Energy Services Limited (Infinis) contract Environmental Scientifics Group (ESG) to undertake monitoring of the landfill gas supply to its combustion operations at the Silent Valley Landfill site.

2 Test methodology

Infinis requested that duplicate samples of landfill gas be collected and analysed for the priority trace components (LFGTGN08, Table 1.1) specified in Environment Agency guidance (Guidance for monitoring trace components in landfill gas – LFGTGN08 v3.0, 2010). The test methodology should be in accordance with that specified within LFGTGN08.

Based on LFGTGN08 the priority trace gas components are sampled using a combination of four sampling media as shown in Table 1.

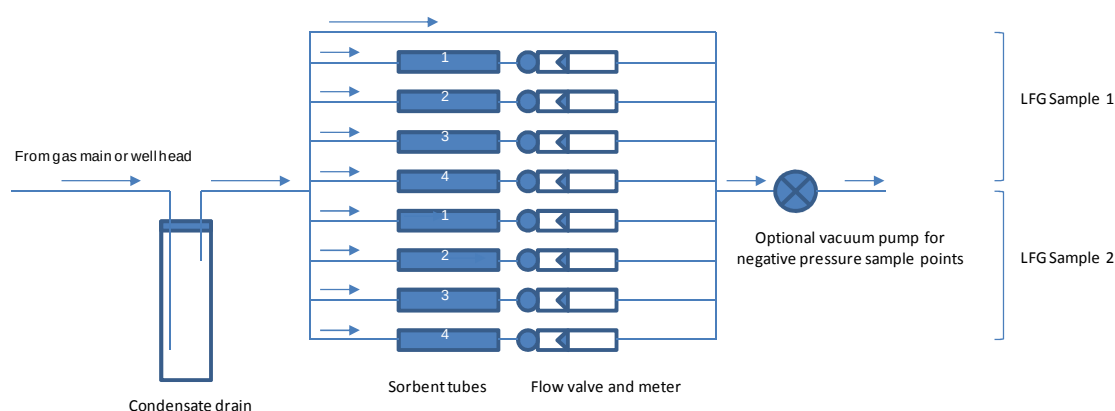
Table 1 Sampling media and analytical methods

Trace component	CAS number	Sampling method	Analytical method
1,1-dichloroethane	75-34-3	Multiple solid sorbent	ATD-GC-MS
1,2-dichloroethane	107-06-2	Multiple solid sorbent	ATD-GC-MS
1,1-dichloroethene	75-35-4	Multiple solid sorbent	ATD-GC-MS
1,2-dichloroethene	540-59-0	Multiple solid sorbent	ATD-GC-MS
1,3-butadiene	106-99-0	Multiple solid sorbent	ATD-GC-MS
1-butanethiol	109-79-5	Multiple solid sorbent	ATD-GC-MS
1-pentene	109-67-1	Multiple solid sorbent	ATD-GC-MS
1-propanethiol	107-03-9	Multiple solid sorbent	ATD-GC-MS
2-butoxyethanol	111-76-2	Multiple solid sorbent	ATD-GC-MS
Arsenic (as As)	7440-38-2	Charcoal	ICP-MS/AAS
Benzene	71-43-2	Multiple solid sorbent	ATD-GC-MS
Butyric acid	107-92-6	Multiple solid sorbent	ATD-GC-MS
Carbon disulphide	75-15-0	Multiple solid sorbent	ATD-GC-MS
Chloroethane	75-00-3	Multiple solid sorbent	ATD-GC-MS
Chloroethene (vinyl chloride)	75-01-4	Multiple solid sorbent	ATD-GC-MS
Dichloromethane	75-09-2	Multiple solid sorbent	ATD-GC-MS
Dimethyl disulphide	624-92-0	Multiple solid sorbent	ATD-GC-MS
Dimethyl sulphide	75-18-3	Multiple solid sorbent	ATD-GC-MS
Ethanal (acetaldehyde)	75-07-0	Silica gel/2,4 DNPH	HPLC
Ethanethiol	75-08-1	Multiple solid sorbent	ATD-GC-MS
Ethyl butyrate	105-54-4	Multiple solid sorbent	ATD-GC-MS
Furan (1,4-epoxy-1,3-butadiene)	110-00-9	Multiple solid sorbent	ATD-GC-MS
Hydrogen sulphide	7783-06-4	Charcoal or gas bag	IC/GC-MS
Methanal (formaldehyde)	50-00-0	Silica gel/2,4 DNPH	HPLC
Methanethiol	74-93-1	Multiple solid sorbent	ATD-GC-MS
Styrene	100-42-5	Multiple solid sorbent	ATD-GC-MS
Tetrachloromethane	56-23-5	Multiple solid sorbent	ATD-GC-MS
Toluene	108-88-3	Multiple solid sorbent	ATD-GC-MS
Trichloroethene	79-01-6	Multiple solid sorbent	ATD-GC-MS

ATD – automated thermal desorption, GC-MS – gas chromatography and mass spectrometry
 ICP-MS/AAS – inductively couple plasma/mass spectrometry/atomic absorption spectroscopy
 HPLC – high performance liquid chromatography, IC – ion chromatography

Sampling for all components is undertaken simultaneously using a multiple stream sampler as shown in Figure 1.

Figure 1 Landfill gas sampling arrangement



A sample is taken from either the gas main or well head and passed through a condensate drain to remove excess moisture. The sample gas is then split to pass through a series of eight regulated rotameters arranged in two banks of four. There is also a bypass stream for excess sample. This allows the duplicate simultaneous sampling at regulated flow rates onto four sampling media. The flow rates and sampling duration are set in accordance with LFGTGN08 requirements as summarised in Table 2.

Table 2 Sampling media and analytical methods

Media	Target species	Sampling rate (ml/min)	Sampling duration (min)	Sample volume (l)
Triple solid sorbent (Tenax TA/Spherocarb)	VOCs	20	10	0.2
Silica gel and 2,4 DNPH (SKC 226-119)	Aldehydes	20	50	1.0
Activated carbon 1 (SKC 226-09)	Arsenic	100	50	5.0
Tedlar bag	Hydrogen sulphide	-	-	0.5

In the case of negative pressure sources it is necessary to employ a vacuum pump at the sampler's common outlet. This is not normally required with positive pressure systems

This results in two duplicate samples of landfill gas with each sample comprising the four sub-samples above covering all of the priority trace components within Table 1.

The samples are subject to the analytical procedures described in Table 1 to provide a mass or concentration on the collected sample which can then be related to the volume of gas sampled to provide a component concentration in the sampled landfill gas.

The sampling followed internal procedure GAS15 and is accredited under test certificate 1015.

3 Site information

Sample point details			
Date	22 April 2014	Site	Silent Valley landfill site
Ambient temperature	12 °C	Atmospheric pressure	100.4 kPa
Monitoring organisation	ESG UKAS 1015	Analytical laboratory	SAL UKAS 1618
Location of sampling point	Gas main to compound	Area of influence of collection system sampled	All
Type of sample point	1/4" Tefen	Temperature of gas	Not recorded
Vacuum on sample point	Not recorded	Type of waste	Not recorded
Status of gas system	Active	Age of waste	Not recorded

4 Preliminary checks and field measurements

Parameter	Concentration
Methane %	-
Carbon dioxide %	-
Oxygen %	-
Nitrogen %	-
Hydrogen sulphide ppmv	-
Carbon monoxide ppmv	-

Preliminary bulk gas measurements were not undertaken on this occasion.

5 Results of landfill gas analysis

The results of the sampling and analysis are summarised in Table 3 below.

Table 3 Priority trace component measurement results

Parameter		Concentration ($\mu\text{g}/\text{m}^3$, STP)
1 Pentene	*	<53
1,1-Dichloroethane	*	<53
1,1-Dichloroethylene	*	<53
1,2-Dichloroethane		<53
1,2-Dichloroethylene	*	<158
1,3-Butadiene	*	<53
1,4 epoxy 1,3 butadiene		<53
1-Propanethiol	*	<53
2-butoxyethanol		<53
Benzene	*	2265
Butyric acid		<53
Carbon disulphide		<53
Carbon tetrachloride	*	<53
Chloroethane		<158
Dichloromethane		<53
Dimethyl disulphide		<53
Dimethyl sulphide	*	169
Ethyl butyrate		<132
Ethyl mercaptan		<53
Hydrogen sulphide		<316
Methyl mercaptan		<158
N-Butyl mercaptan	*	<53
Styrene		74
Toluene		737
Trichloroethylene	*	<53
Vinyl chloride monomer	*	<53
Arsenic	*	211
Hydrogen sulphide		101642
Acetaldehyde		1791
Formaldehyde		1791

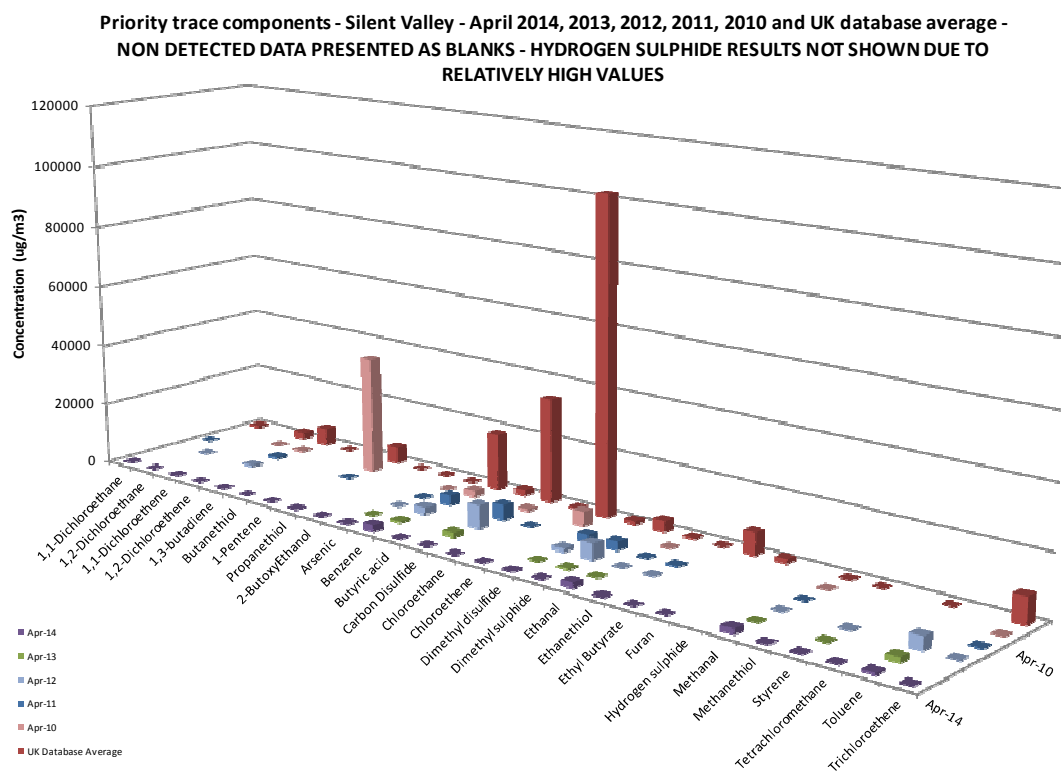
* indicates result is UKAS accredited

< indicates result is below the method limit of detection

The above reported results are the maximum concentrations measured for each parameter in two samples.

The maximum results of the current analyses are compared with historical data and the UK database average in Figure 2.

Figure 2 Historical priority trace component analysis results at Silent Valley



6 NOTES

Sampling of landfill gas was undertaken in accordance with ESG procedure GAS15 and is UKAS accredited under certificate 1015.

Analysis of collected samples was undertaken by SAL. The analytical results which fall within SAL's scope of accreditation under certificate 1618 are identified in Table 3.

The priority component measurements which can be considered to be within the scope of UKAS accreditation are identified in Table 3.

Any interpretations and opinions expressed are outside of the scope of UKAS accreditation.

END OF REPORT

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