



Omnia
3 – 6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP
Tel: 01489 808 088
Email: info@omnia-consulting.co.uk
Web: www.omnia-consulting.co.uk

5th May 2023

ref: A11955/230405/L1

Georgina Naish
David Wilson Homes Southern
Norgate House
Tealgate
Charnham Park
Hungerford
Berkshire

By Email: Georgina.Naish@dwh.co.uk

Dear Georgina,

RE: Riverways Farm, Twyford, RG10 9RY – Winter Groundwater Monitoring

Omnia were commissioned by David Wilson Homes Southern to undertake winter groundwater monitoring within five (5no.) installed wells across the site in order to assist with the drainage strategy. The following letter report presents the information obtained from the winter groundwater monitoring works.

If you have any questions, please do not hesitate to contact us.

Yours Sincerely,
Omnia Consulting



Hannah Spurling
Geo Environmental Consultant



Olivia Maxwell
Senior Geo Environmental Consultant

Attachments:

- Attachment 1: Limitations
- Attachment 2: Drawings
- Attachment 3: Photographs
- Attachment 4: Groundwater Monitoring Graphs

Quality Assurance

Remarks	Draft
Date	May 2023
Prepared by	H. Spurling
Signature	
Checked by	L. Burnett
Signature	
Checked and authorised by	O. Maxwell
Signature	
Project number	A11955
Comments	

North Office

Office 4, No.3 Fulwood,
3 Caxton Road
Preston
PR2 9ZZ

01772 963 024

Midlands Office

12 High Pavement,
Lace Market,
Nottingham,
NG1 1HN

0115 7043 492

South Office

3-6 The Quarterdeck,
Port Solent,
Portsmouth,
PO6 4TP

01489 808088

www.omnia-consulting.co.uk

We are a UK wide, truly joined up and fully collaborative multi-disciplinary engineering and environmental consultancy.



Ecology



Geo-environmental



Acoustics



Air Quality



Geotechnical

Site Name	Riverways Farm, Twyford, RG10 9RY
National Grid Reference	478100, 176940
Site Area	16.2ha

1 Background

It is understood that David Wilson Homes Southern intend to redevelop the above site to comprise up to 230no. residential dwellings with associated infrastructure and soft landscaping. It is understood an Outline Application has been submitted for the proposed development, but a decision has not yet been made (ref: [223455](#)). A period of winter groundwater monitoring is required to assist with the proposed drainage strategy.

1.1 Site Description

At the time of winter groundwater monitoring the site was an irregularly shaped site, which was accessed from the south off New Bath Road. The north and western boundary of the site was an active fruit farm which consisted of horticultural polytunnels with associated sprinkler systems throughout. Access was only permitted on the tracks in between each polytunnel and the main access route from the south to the northwestern corner. Additionally within the northwestern corner was a car park and accommodation. The south-eastern corner of the site was an active chicken farm with shelter barns and an area of open green space.

1.2 Site Topography

A review of EA LiDAR data indicates that the site is located on the floor of a river valley and slopes gently from northeast towards the southwest and the River Loddon. A marked break of slope is present toward the southwestern corner of the site where ground elevation sharply decreases by approximately 4.0m.

1.3 Scope of Works

Five (5no.) window sampler boreholes were advanced to a maximum depth of 5.00m bgl across the site and completed as groundwater monitoring points to facilitate winter groundwater monitoring.

Dataloggers were placed within all five (5no.) monitoring wells across the site, allowing the collection of a continuous dataset with groundwater measurements taken at hourly intervals. Continuous monitoring data was downloaded at monthly intervals at which point each well was manually dipped with an electronic dip-tape to confirm that the dataloggers were operating within the expected parameters.

Winter groundwater monitoring was undertaken between 11th November 2022 and 4th April 2023.

The results of Omnia's latest site investigation and all groundwater monitoring data is presented within this factual report.

1.4 Change to Scope

WS102- WS105 were terminated due to an SPT refusal. These locations were installed at the refusal depth ranging between 1.45m bgl with WS102 and 1.96m bgl within WS104.

On the fourth monthly visit during February to download the groundwater data, monitoring position WS104 had been damaged and the datalogger in the wrong position, which was unable to be corrected due to the damage. Following discussions with the client, it was decided that this location could be excluded from winter groundwater monitoring. Therefore, there is no data from this location throughout March- April.

2 **Geology & Hydrogeology**

The British Geological Survey (BGS) map for the site (Reading, Sheet 268, 1:50,000, Solid and Drift dated 2000), indicates that the site is underlain by the geological sequence summarised in Table 2.1 overleaf.

Table 2.1 - Geological Succession

Geological Unit	Formation Name	Description	Aquifer Classification
Superficial	Kempton Park Gravel Member	Sand & Gravel	Secondary A
	Taplow Gravel Member (southwestern area only)	Sand & Gravel	Secondary A
Bedrock	Seaford & Newhaven Chalk Formations (Undifferentiated)	Chalk	Principal

Five (5no.) monitoring points to facilitate winter groundwater monitoring were installed at the site.

Exploratory logs from this investigation recorded silty sand within all five (5no.) locations. Four (4no.) locations (WS102-WS105) were terminated due to the barrel refusing. One (1no.) location within the southern extent of the site (WS101) recovered structureless chalk composed of off white slightly gravelly SILT. Gravel is medium to coarse subrounded flint. Presumed Grade Dm. The Dm chalk was recovered from 2.50m bgl, which was considered to be the weathered Seaford Chalk Formation.

Groundwater was not encountered during the drilling phase of the intrusive works undertaken in November 2022.

Following discussions with the client about the shallow refusal of the four (4no.) boreholes (WS102-WS105) further intrusive works with a Cable Percussion rig would be required if extended depth was required. It was decided by the client that deeper boreholes would not be required, and therefore no further investigation was carried out.

2.1 **Groundwater Monitoring Results**

2.1.1 *Spot Monitoring*

Results of the groundwater spot monitoring undertaken between 11/11/2022 to 04/04/2023 for all available monitoring wells has been summarised and included in Table 2.2 below.

Table 2.2 – Groundwater monitoring results

Location	Date	Depth to Groundwater (m bgl)	Depth to base (m bgl)
WS101	11/11/2022	Dry	4.88
	23/12/2022	Dry	4.90
	13/01/2023	Dry	4.90

Location	Date	Depth to Groundwater (m bgl)	Depth to base (m bgl)
	26/01/2023	Dry	4.89
	24/02/2023	Dry	4.89
	04/04/2023	4.53	4.90
WS102	11/11/2022	Dry	1.53
	23/12/2022*	-	-
	13/01/2023*	-	-
	26/01/2023	1.36	1.55
	24/02/2023	Dry	1.51
	04/04/2023	Dry	1.53
WS103	11/11/2022	Dry	1.88
	23/12/2022*	-	-
	13/01/2023*	-	-
	26/01/2023	1.39	1.89
	24/02/2023	1.75	1.88
	04/04/2023	1.30	1.88
WS104	11/11/2022	Dry	2.06
	23/12/2022*	-	-
	13/01/2023*	-	-
	26/01/2023	1.97	2.08
	24/02/2023*	-	-
	04/04/2023*	-	-
WS105	11/11/2022	Dry	2.07
	23/12/2022	Dry	2.11
	13/01/2023	1.95	2.08
	26/01/2023	1.91	2.08
	24/02/2023	Dry	2.10
	04/04/2023	Dry	2.08

*The locations installed within the active fruit farm (WS102-WS104) were unable to be spot monitored during December and January as access was not permitted.

* No spot monitoring data is available for WS104 from 26/01/2023 due to damage to the borehole preventing data collection.

2.1.2 Continuous Groundwater Monitoring Results

Continuous groundwater monitoring was undertaken for a period of five (5no.) months utilising LevelScout Levelloggers which were deployed at locations WS101-WS105 across the site. The pressure transducers within the Levelloggers measure total pressure (water column pressure & atmospheric pressure), and in order to measure changes in water level only, fluctuations in atmospheric pressure need to be compensated for with a Baroscout barometric pressure logger, which was deployed in location WS105 to facilitate this.

Monitoring was undertaken from 11th November 2022 with monitoring set at hourly intervals for both the groundwater and for atmospheric pressure.

The depths at which the levelloggers were installed are summarised in Table 2.21 below:

Table 2.2 - Datalogger Deployment Depths

Location	Levellogger Depth (m bgl)
WS101	4.78
WS102	1.43

WS103	1.75
WS104	1.87
WS105	1.97

Locations of the groundwater monitoring installations have been denoted on Figure 3.0 appended to this report.

The minimum and maximum groundwater levels recorded have been summarised in Table 2.32 below:

Table 2.3 – Summary of Minimum and Maximum Winter Groundwater Levels

Location	Shallowest Groundwater Level (m bgl)	Deepest Groundwater Level (m bgl)	Date of Shallowest Groundwater Level	Date of Deepest Groundwater Level
WS101	4.58	5.32	16/11/2022	05/02/2023
WS102	1.24	1.51	17/01/2023	11/2022-03/2023
WS103	1.21	1.75	17/01/2022	26/03/2023
WS104*	1.97	1.97	11/2022-04/2023	11/2022-04/2023
WS105	1.94	1.97	13/01/2023	11/2023, 02/2023-04/2023

*It should be noted that no data is available for WS104 from 26/01/2023 due to the borehole being damaged.

+ It should be noted that where boreholes were recorded dry during the spot monitoring from November to April, the water level was recording below the levellogger depth, and therefore data provided by the level logger is estimated.

3 Discussion

A review of groundwater levels across the five (5no.) locations shows the shallowest depth that groundwater has been recorded was 1.21m bgl within WS103 in January 2023. Review of the data indicates that the groundwater was at its shallowest between November and January. The data for all five (5no.) boreholes positively correlates with rainfall records (<https://environment.data.gov.uk/flood-monitoring/assets/demo/index.html>) [Accessed on 05/05/2023] Station: 274918TP) within the location of the site.

Attachment 1

Limitations

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between OEC and the Client as indicated in Section 1.0.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. OEC cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by OEC is owned by them and no such plans or documents may be reproduced, published, or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by OEC in this connection without their explicit written agreement there to by OEC.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

Attachment 2

Drawings

Key

— Site Boundary



Scale
1:30,000

Paper Size	A4
------------	----

Contains OS data © Crown copyright and database right 2021. Contains Environment Agency Lidar Data available under the Open Government Licence (OGL). © OpenStreetMap contributors

The client must not amend any drawing, design or other intellectual property produced by Omnia without permission in writing from Omnia in advance of any amendments being made.

In the event that such written permission is not obtained in advance of the amendments being made Omnia shall not be liable for any damage and/or losses incurred as a result of the amended drawing, design or intellectual property.

Omnia Consulting, 3-6 The Quarterdeck, Port Solent,
Portsmouth, Hampshire, PO6 4TP
T: (01489) 808 088
E: info@omnia-consulting.co.uk
W: www.omnia-consulting.co.uk



Job Title:
Riverways Farm, Twyford

Client:
David Wilson Homes
Southern

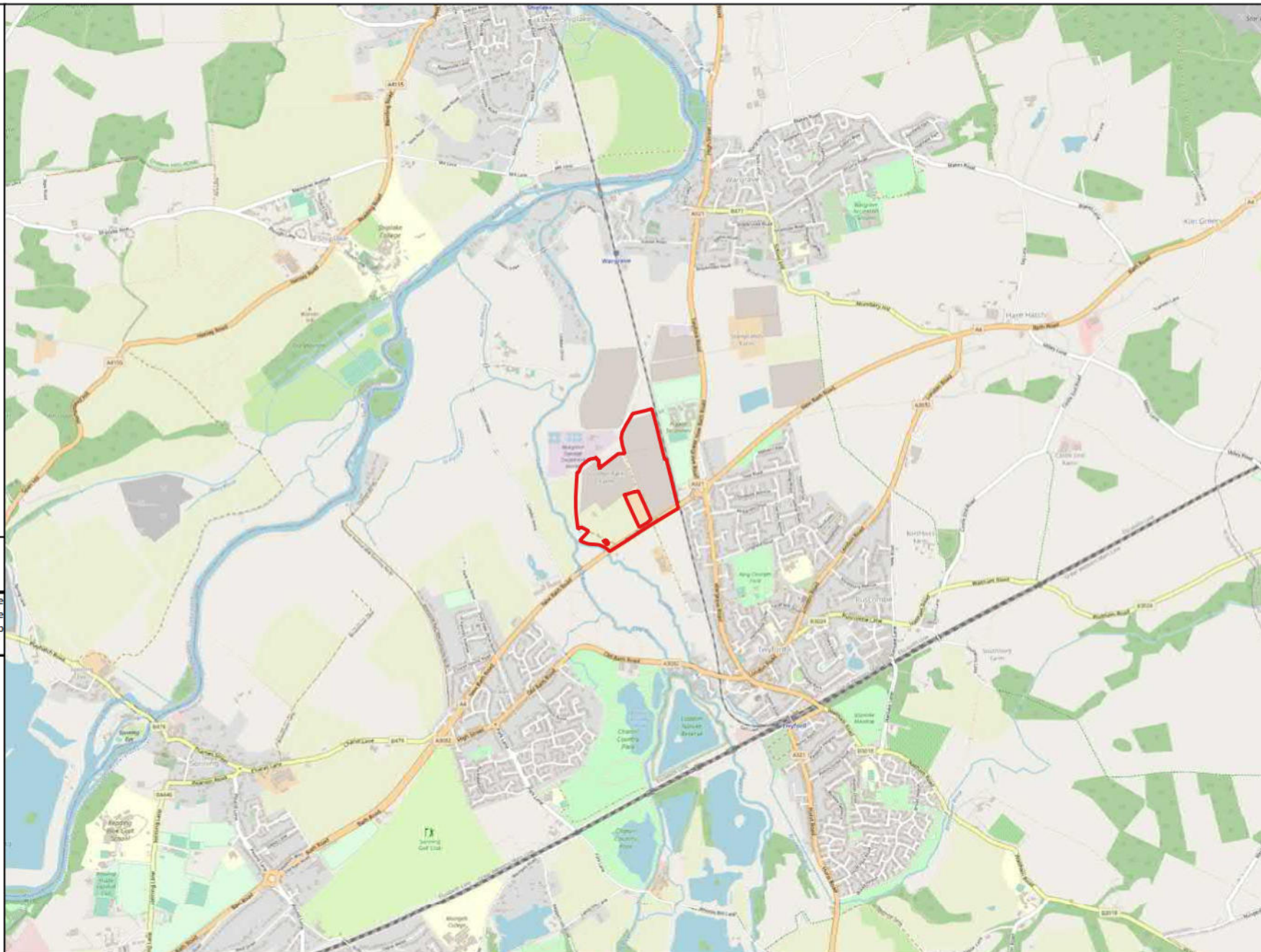
Project Number:
A11955

Drawn By:
H. Spurling

Date:
05/04/2023

Authorised By:
O. Maxwell

Drawing Title:
Figure 1.0
Site Location Plan



Key

— Site Boundary



0 0.1 0.2 km

Scale
1:4,600

Paper Size
A4

Contains OS data © Crown copyright and database right 2021. Contains Environment Agency Lidar Data available under the Open Government Licence (OGL). © OpenStreetMap contributors

The client must not amend any drawing, design or other intellectual property produced by Omnia without permission in writing from Omnia in advance of any amendments being made.

In the event that such written permission is not obtained in advance of the amendments being made Omnia shall not be liable for any damage and/or losses incurred as a result of the amended drawing, design or intellectual property.

Omnia Consulting, 3-6 The Quarterdeck, Port Solent,
Portsmouth, Hampshire, PO6 4TP
T: (01489) 808 088
E: info@omnia-consulting.co.uk
W: www.omnia-consulting.co.uk



Job Title:
Riverways Farm, Twyford

Client:
David Wilson Homes
Southern

Project Number:
A11955

Drawn By:
H. Spurling

Date:
05/04/2023

Authorised By:
O. Maxwell

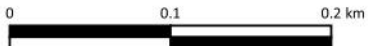
Drawing Title:
Figure 2.0
Proposed Development Plan



Key



- Groundwater Monitoring Locations
- Site Boundary



Scale
1:4,700

Paper Size
A4

Contains Contains OS data © Crown copyright and database right 2021. Contains Environment Agency Lidar Data available under the Open Government Licence (OGL). © OpenStreetMap contributors

The client must not amend any drawing, design or other intellectual property produced by Omnia without permission in writing from Omnia in advance of any amendments being made.

In the event that such written permission is not obtained in advance of the amendments being made Omnia shall not be liable for any damage and/or losses incurred as a result of the amended drawing, design or intellectual property.

Omnia Consulting, 3-6 The Quarterdeck, Port Solent, Portsmouth, Hampshire, PO6 4TP
T: (01489) 808 088
E: info@omnia-consulting.co.uk
W: www.omnia-consulting.co.uk



Job Title:
Riverways Farm, Twyford

Client:
David Wilson Homes
Southern

Project Number:
A11955

Drawn By:
H. Spurling

Date:
12/01/2023

Authorised By:
O. Maxwell

Drawing Title:
Figure 3.0
Intrusive Location Plan



Attachment 3

Photographs

Photograph 1 – WS103 location within fruit farm (facing west)



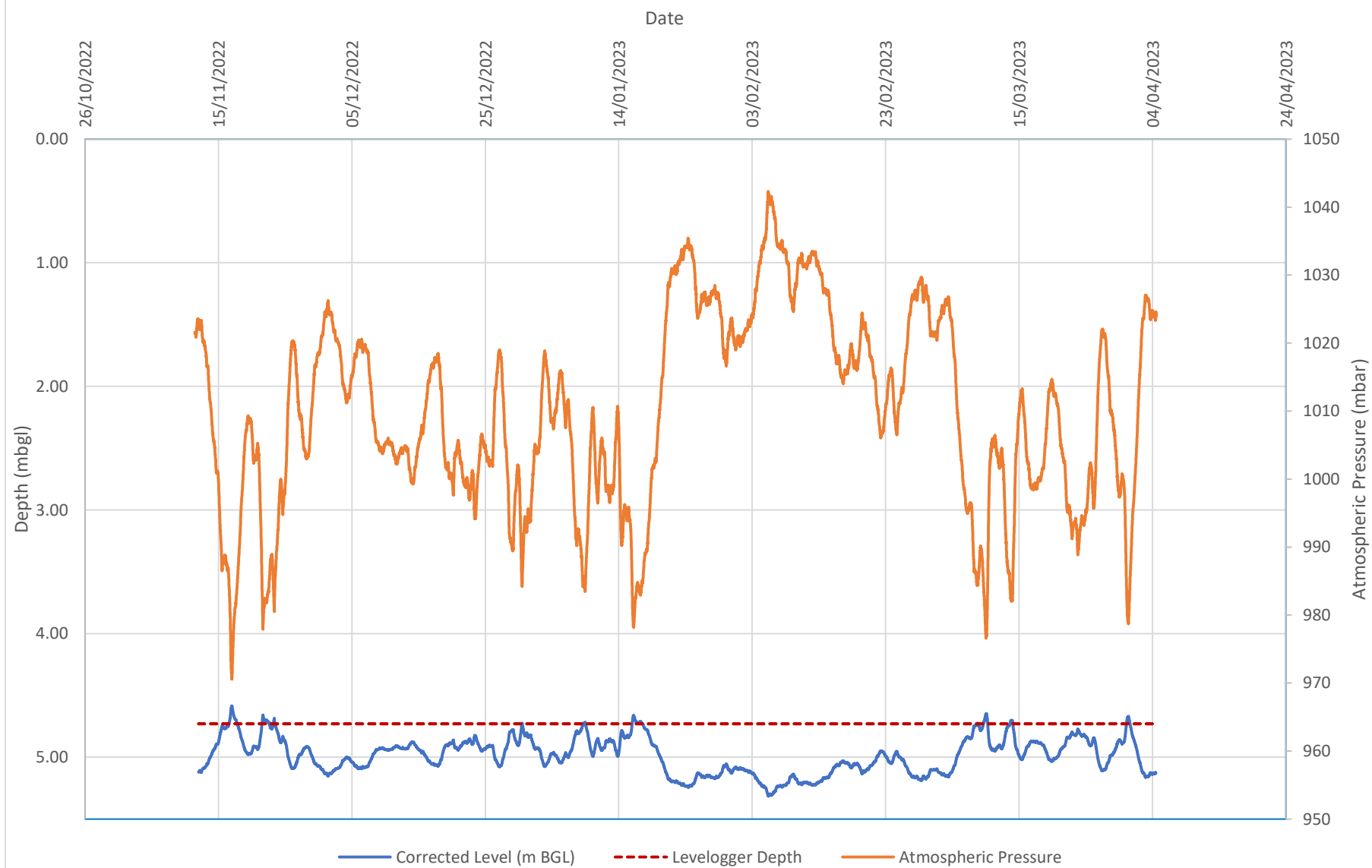
Photograph 2 – Fruit farm polytunnels (facing east)



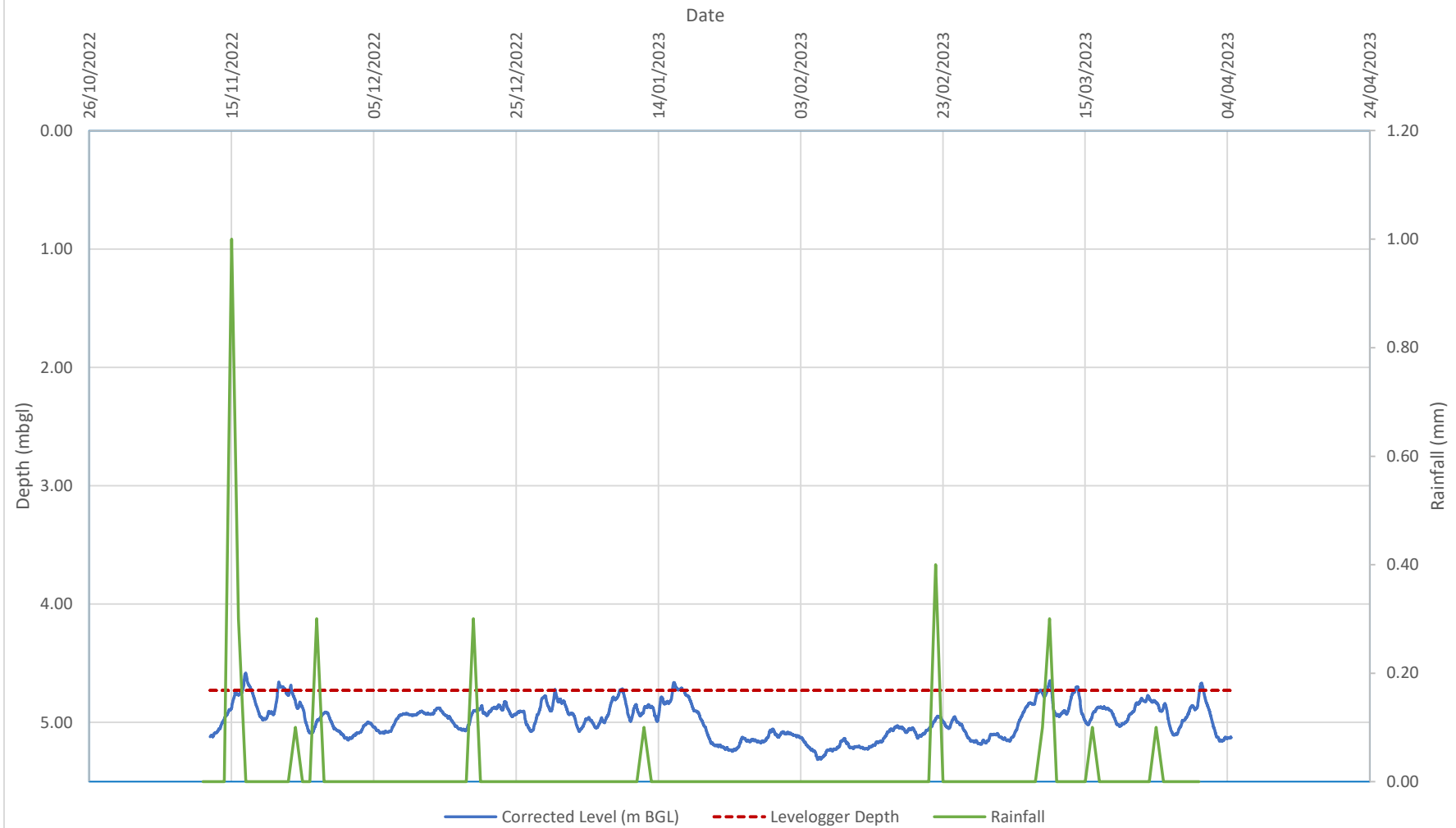
Attachment 4

Groundwater Monitoring Graphs

WS101 Groundwater Level (mbgl)

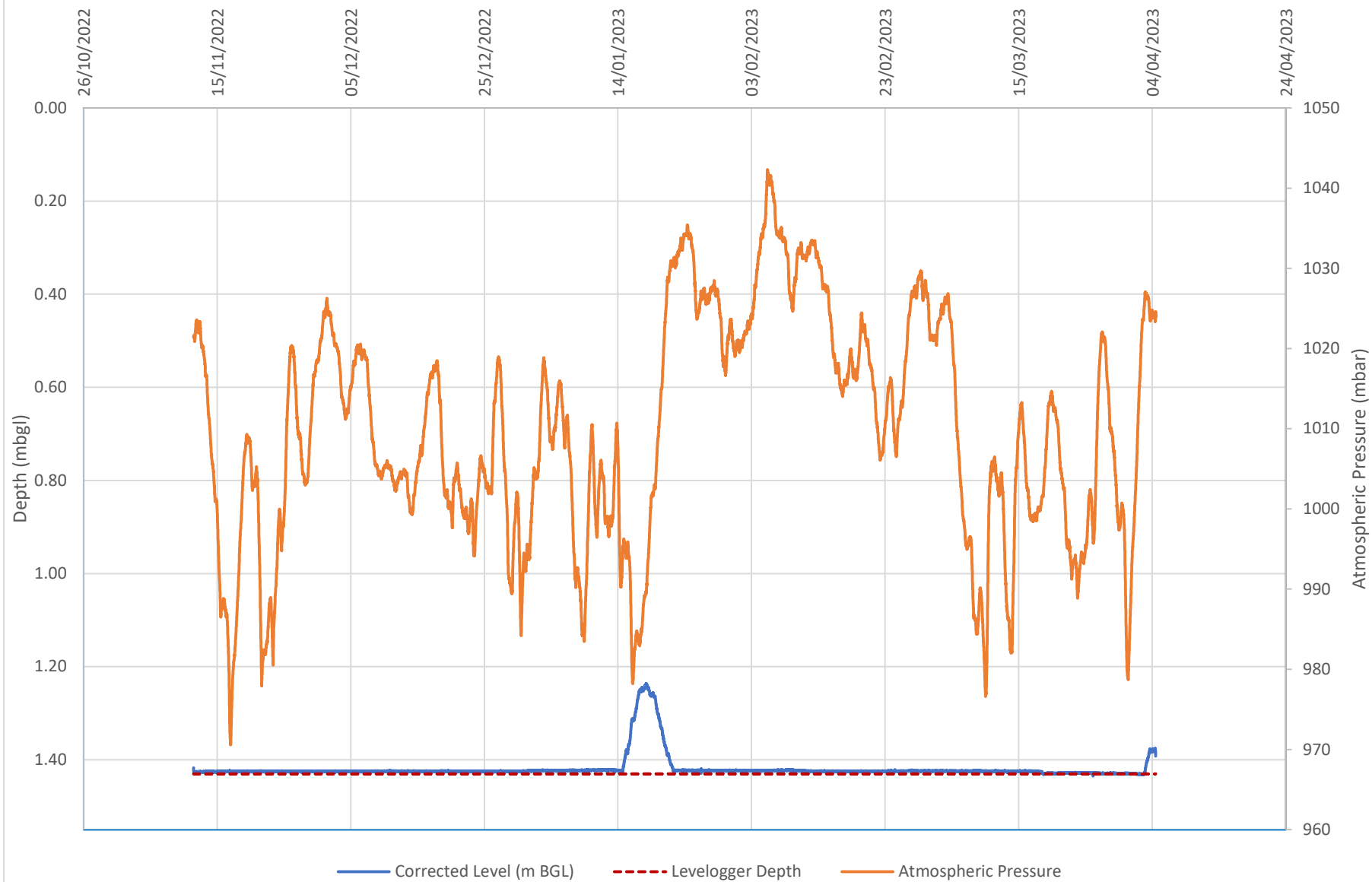


WS101 Groundwater Level (mbgl)

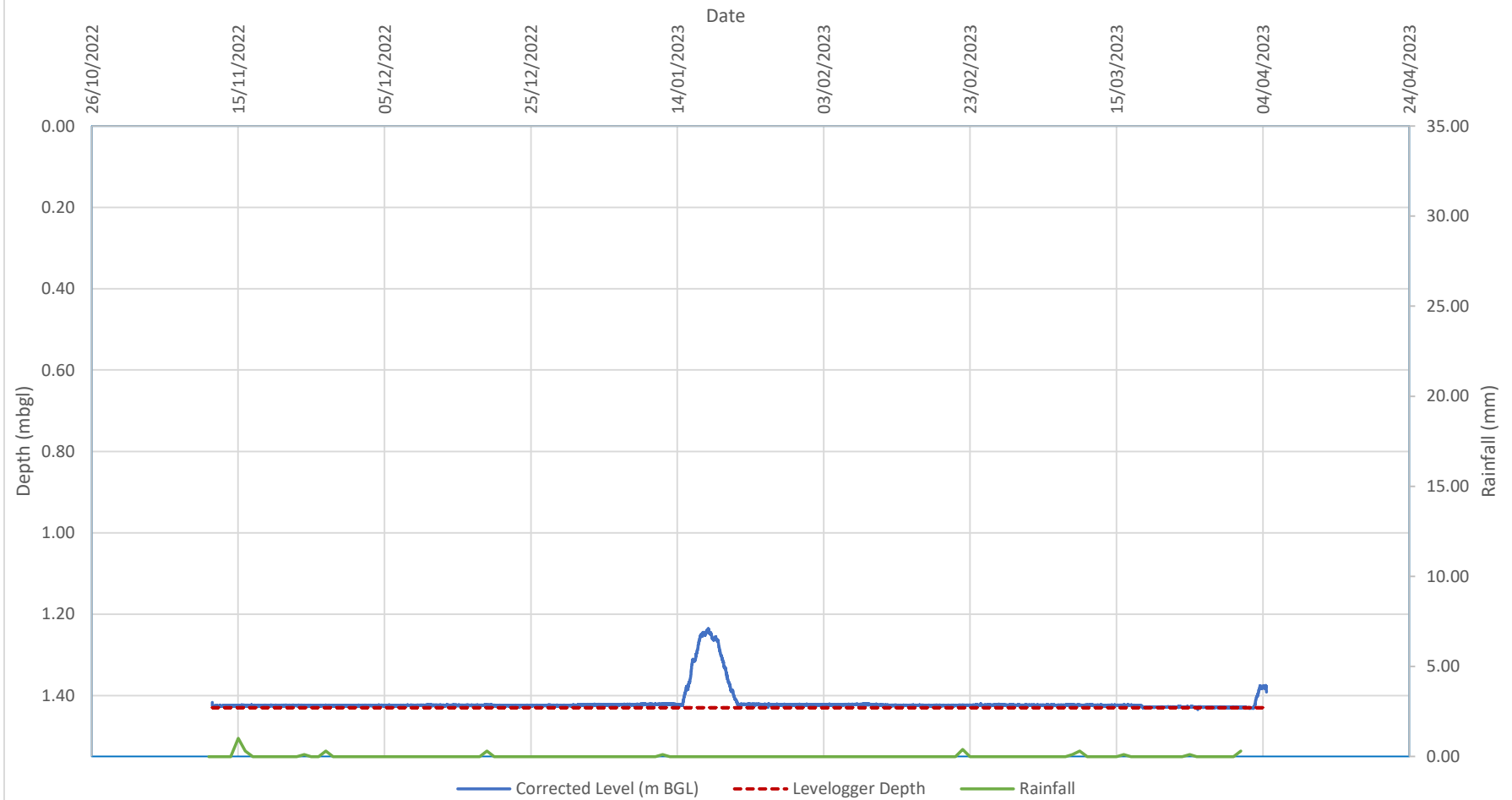


WS102 Groundwater Level (mbgl)

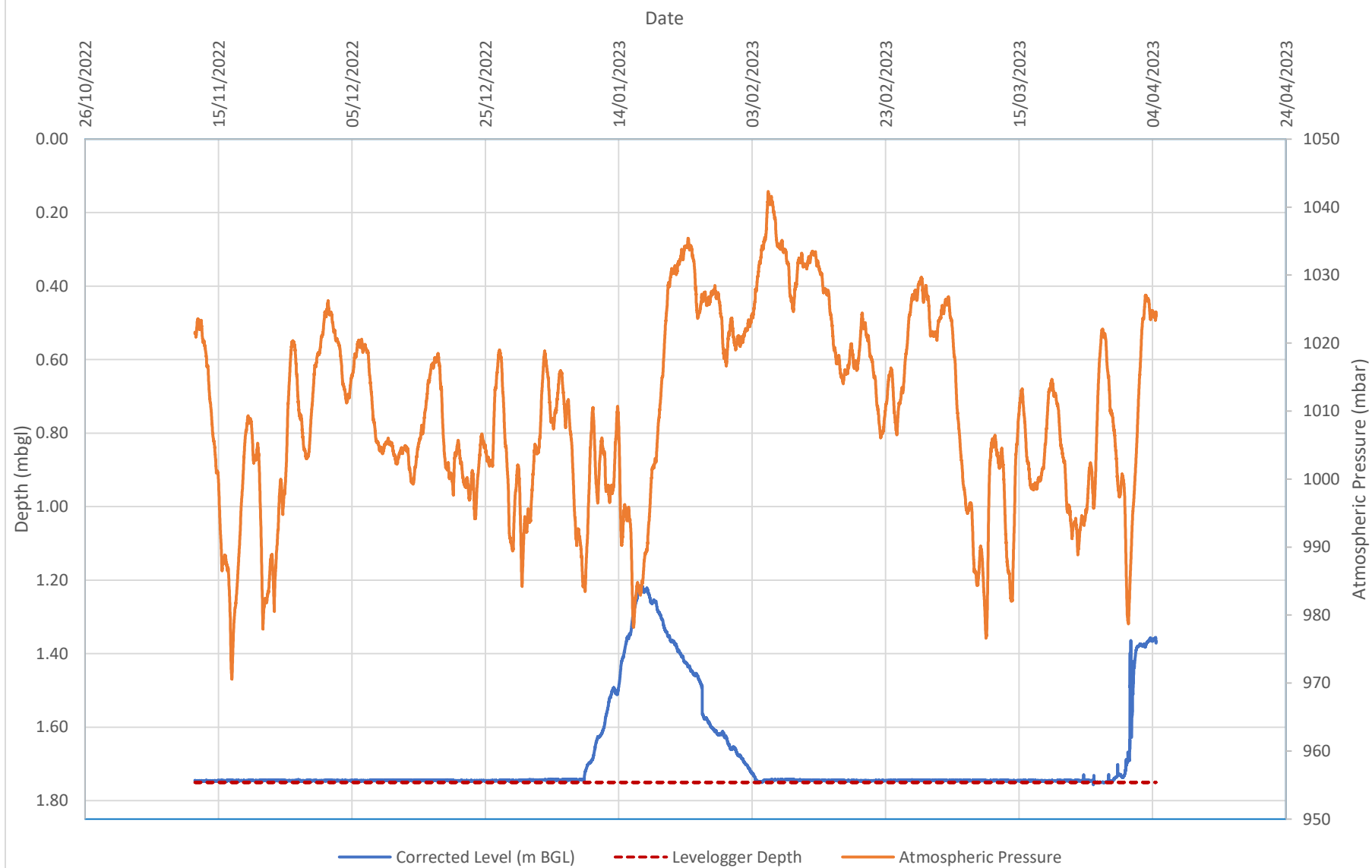
Date



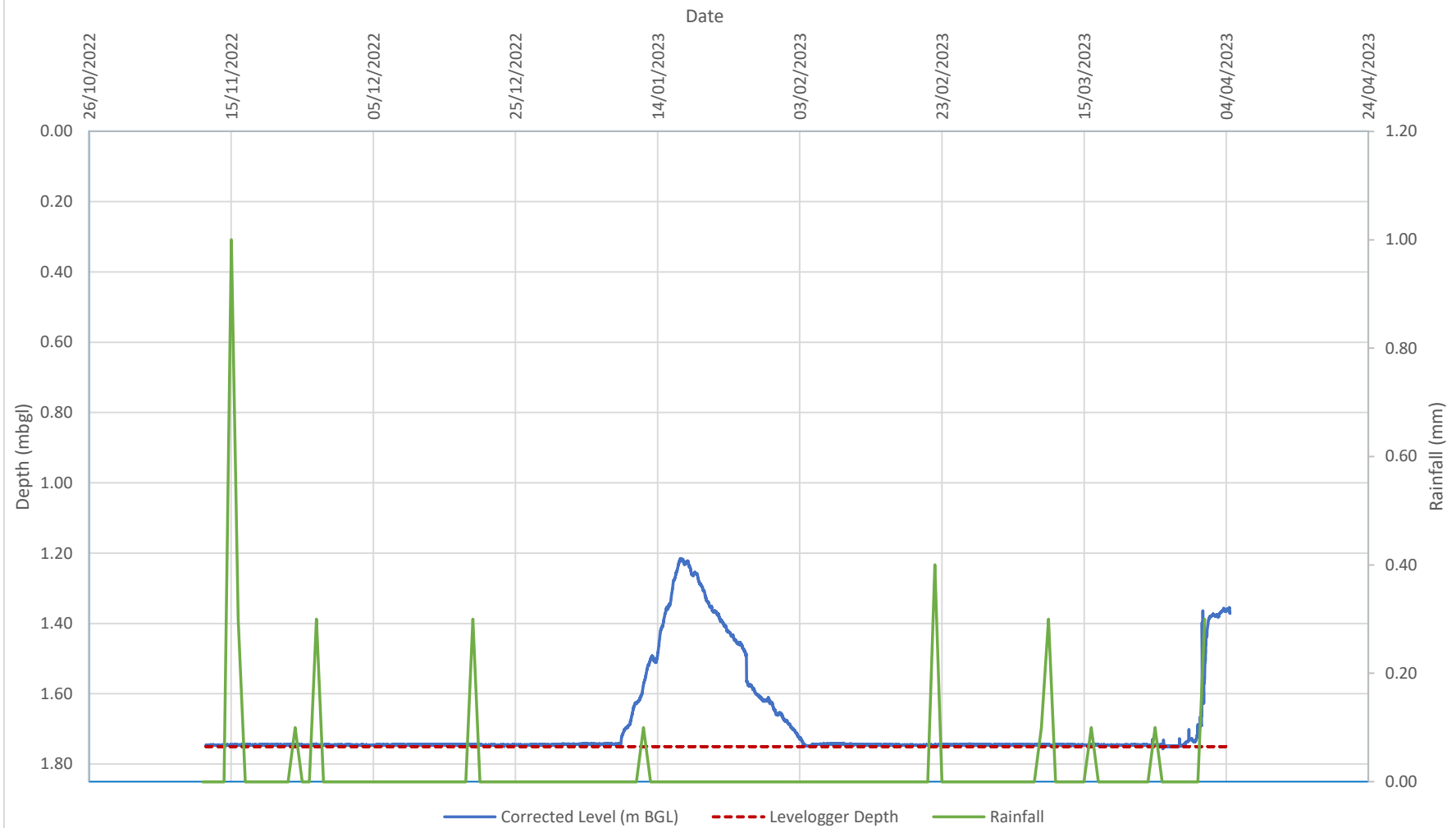
WS102 Groundwater Level (mbgl)



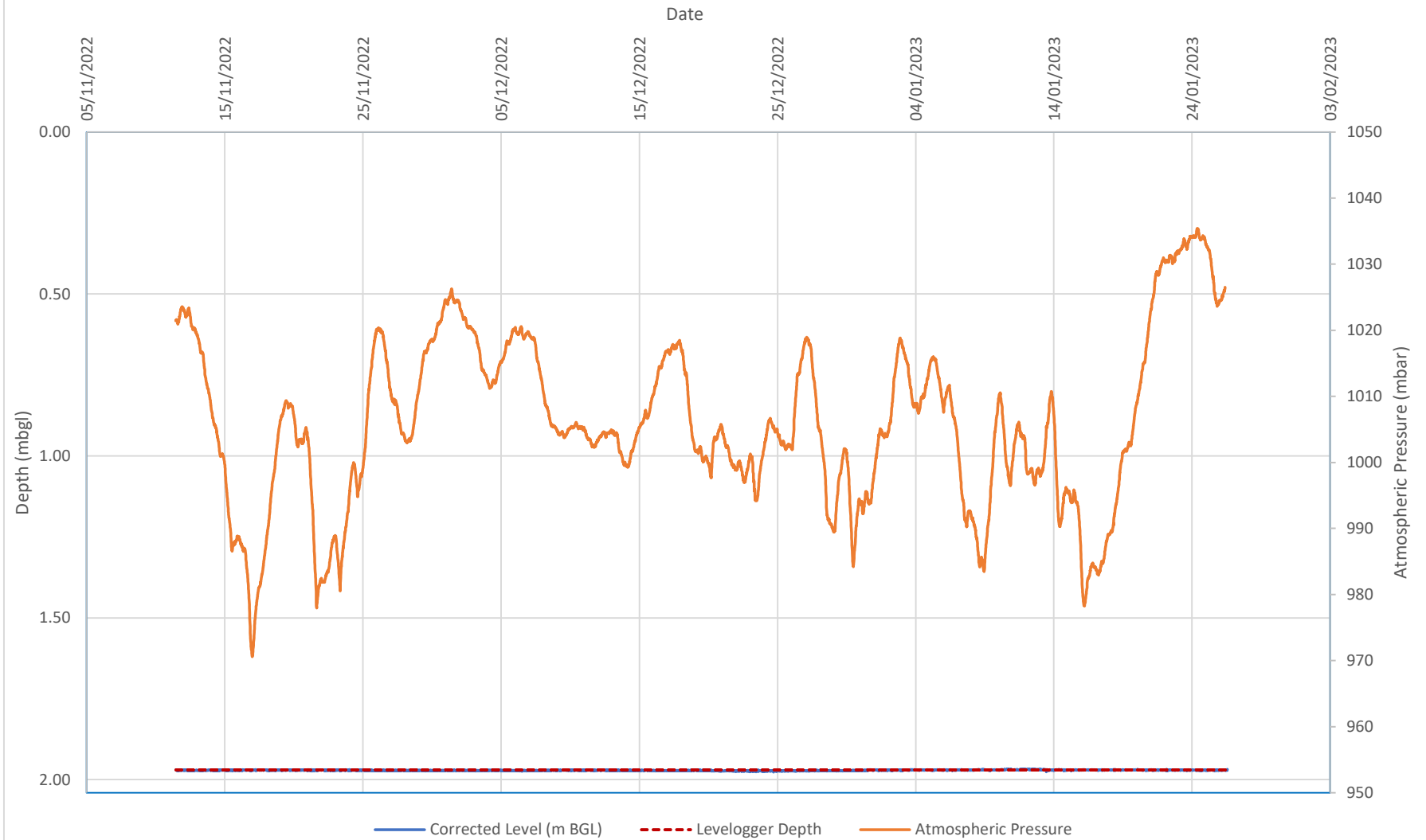
WS103 Groundwater Level (mbgl)



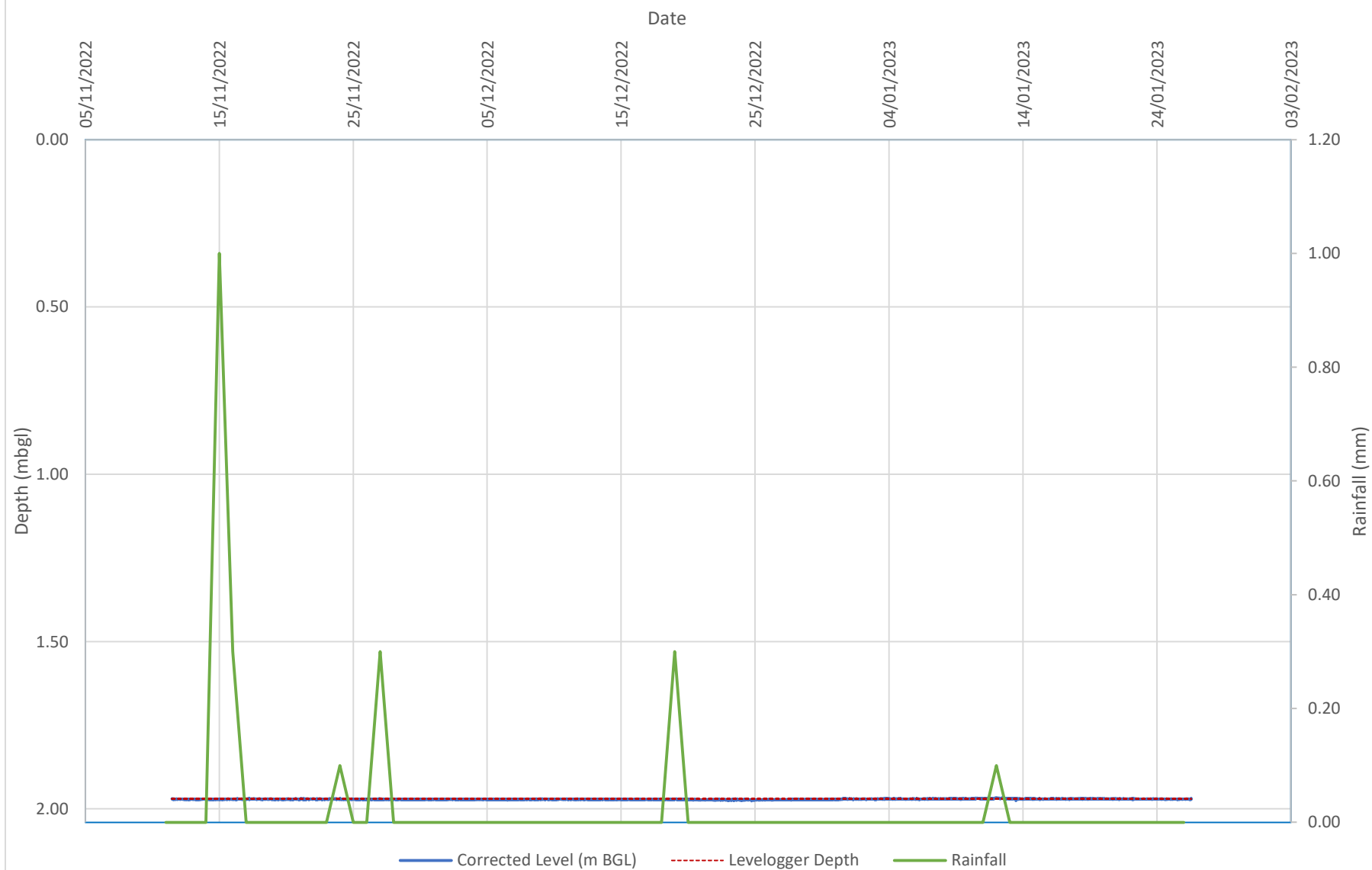
WS103 Groundwater Level (mbgl)



WS104 Groundwater Level (mbgl)

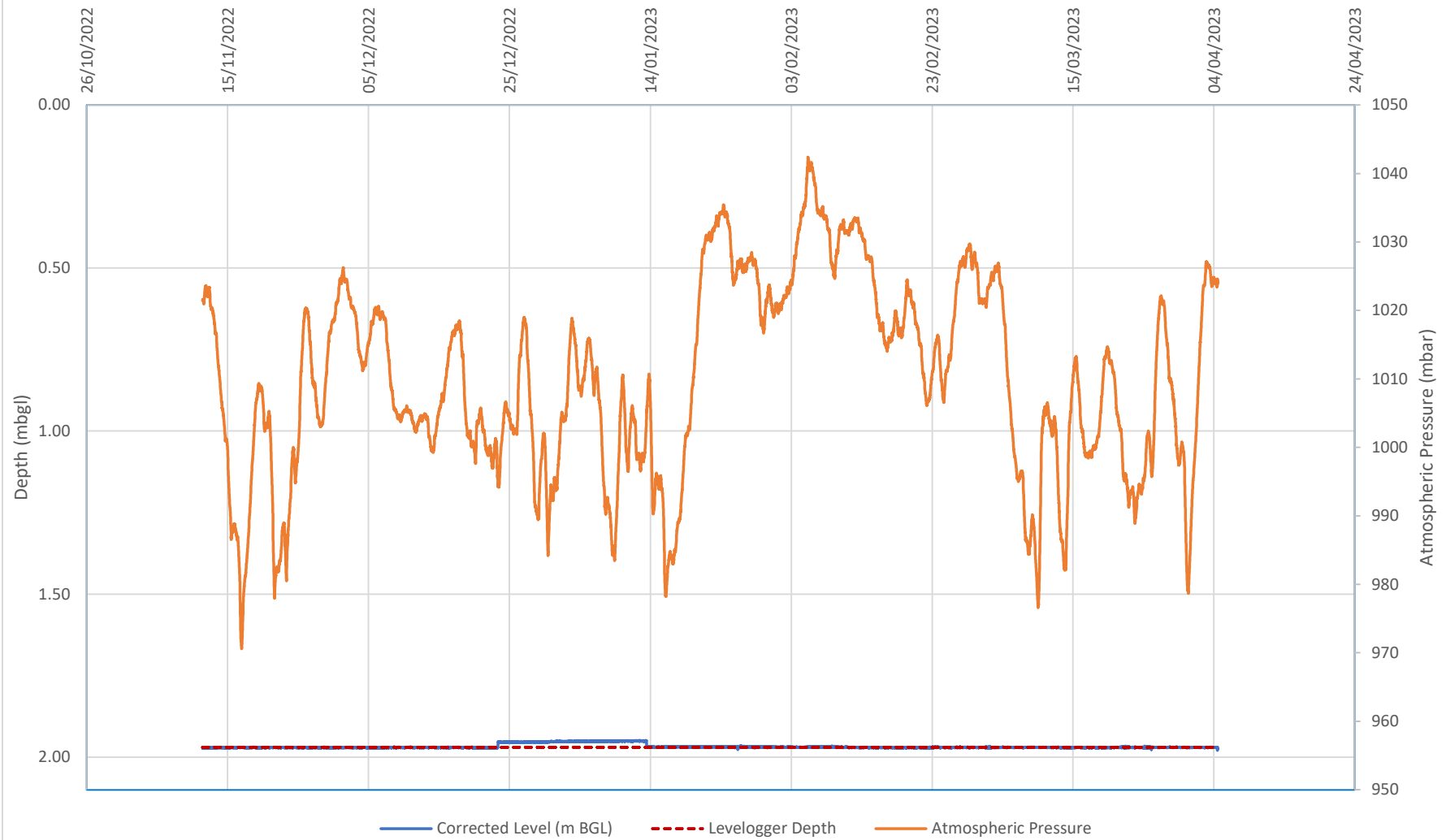


WS104 Groundwater Level (mbgl)



WS105 Groundwater Level (mbgl)

Date



WS105 Groundwater Level (mbgl)

