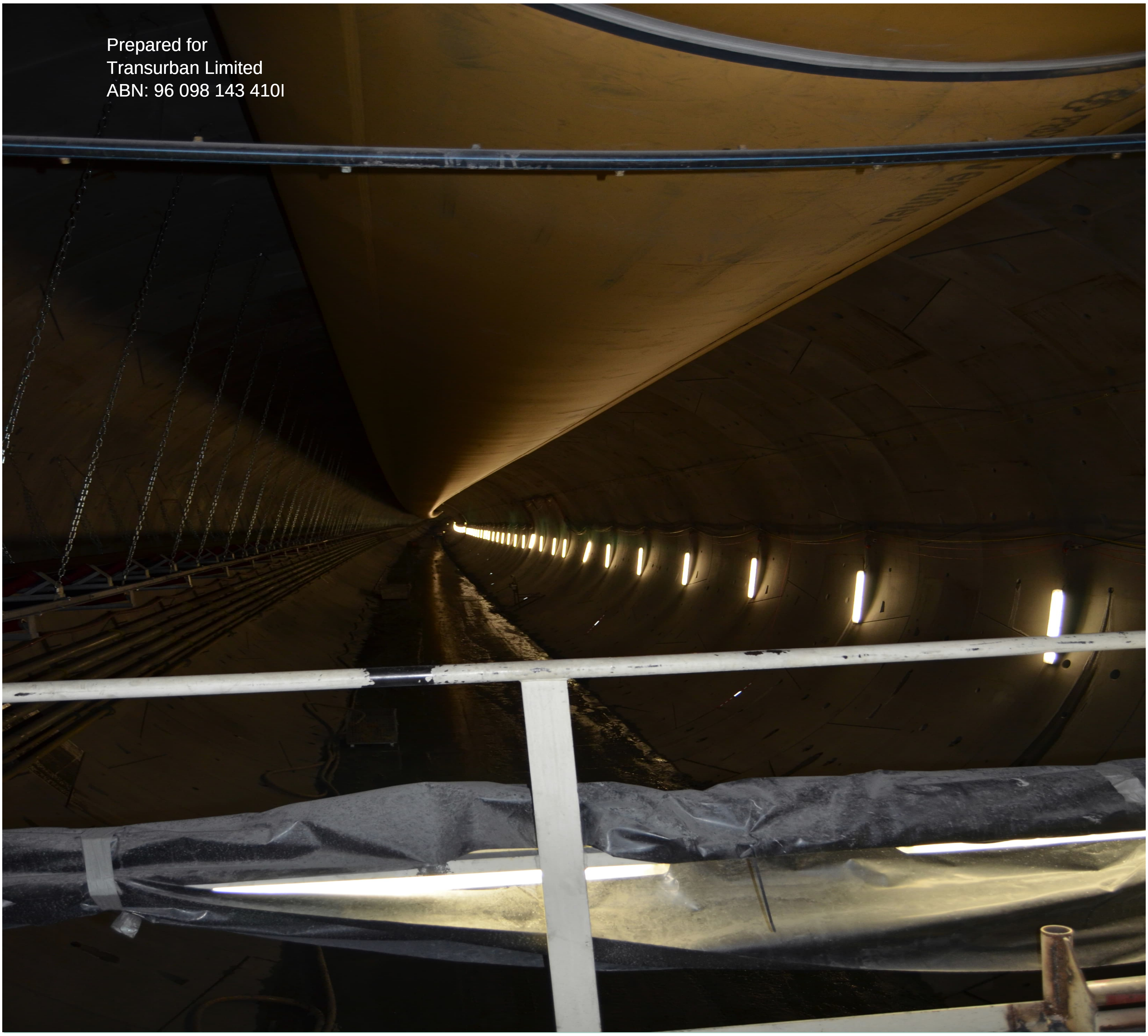

Legacy Way Tunnel

Groundwater Level Monitoring (August 2025)

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Legacy Way Tunnel

Groundwater Level Monitoring (August 2025)

Client: Transurban Limited

ABN: 96 098 143 410

Prepared by

AECOM Australia Pty Ltd

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23-Sep-2025

Groundwater Level Monitoring

Job No.: 60558039

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1.0 Introduction

Construction of the Legacy Way Tunnel started in April 2011, and the tunnel opened to traffic on 25 June 2015. Transurban Limited (Transurban) is, as part of the approval conditions for the Legacy Way Tunnel, required to monitor groundwater levels in select monitoring bores along the tunnel alignment.

Groundwater ingress into the tunnel is also monitored to ensure compliance with tunnel operational specifications.

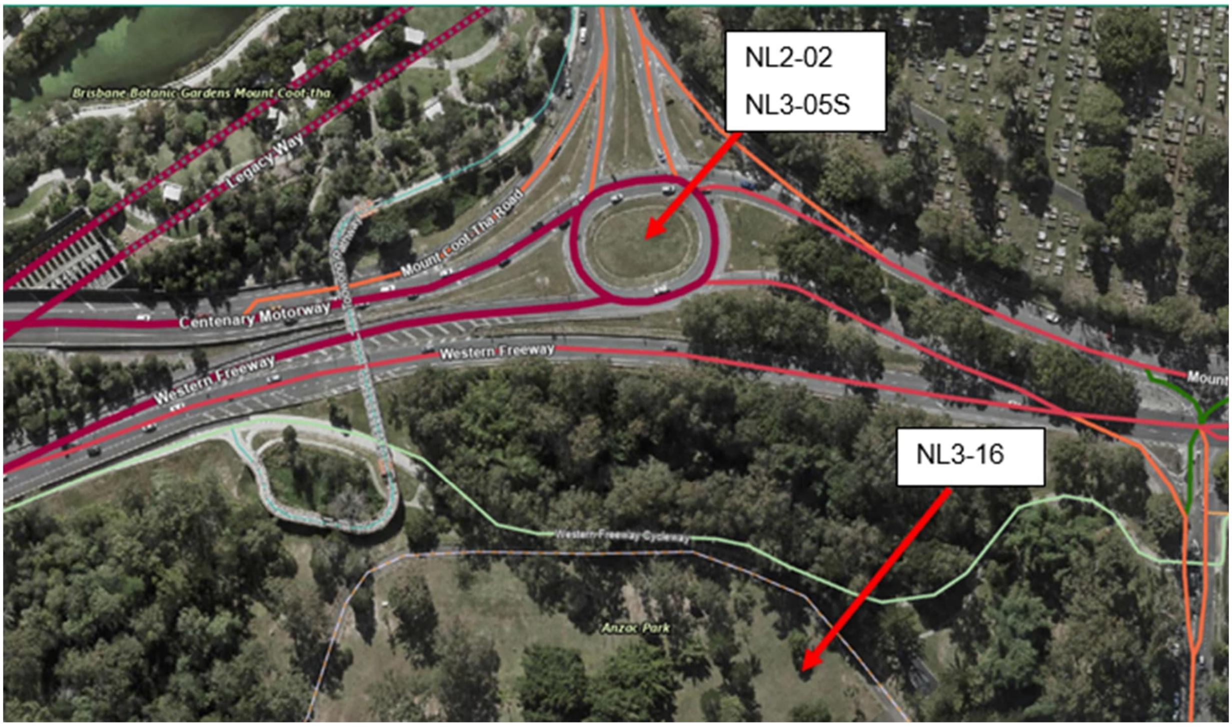
Transurban commissioned AECOM Australia Pty Ltd (AECOM) to assess the monthly groundwater level monitoring data compiled from the monitoring bore network (**Figure 1**). The original groundwater monitoring bore network comprised twenty (20) monitoring bores. A review of the groundwater monitoring data conducted in October 2024 identified that the groundwater levels in most of the monitoring bores had recovered to pre-construction levels. Transurban reduced the number of groundwater monitoring bores required for on-going monitoring (December 2024 onwards) to only those bores where the groundwater levels had not recovered to pre-construction levels.

These five (5) groundwater monitoring bores include:

- NL2-02 (Toowong traffic island)
- NL3-05S (Toowong traffic island)
- BH108 (Toowong Cemetery)
- BH320 (Toowong Cemetery)
- NL4-HG10 (Gregory Park).

NL2-02 and NL3-05S are located within a traffic island (**Plate 1**), which requires traffic control to access these bores safely. Due issues with the traffic control permits these monitoring bores were inaccessible due to safety concerns in the August 2025 monitoring event.

Plate 1 - Traffic island and Legacy Way western portal (QGlobe)



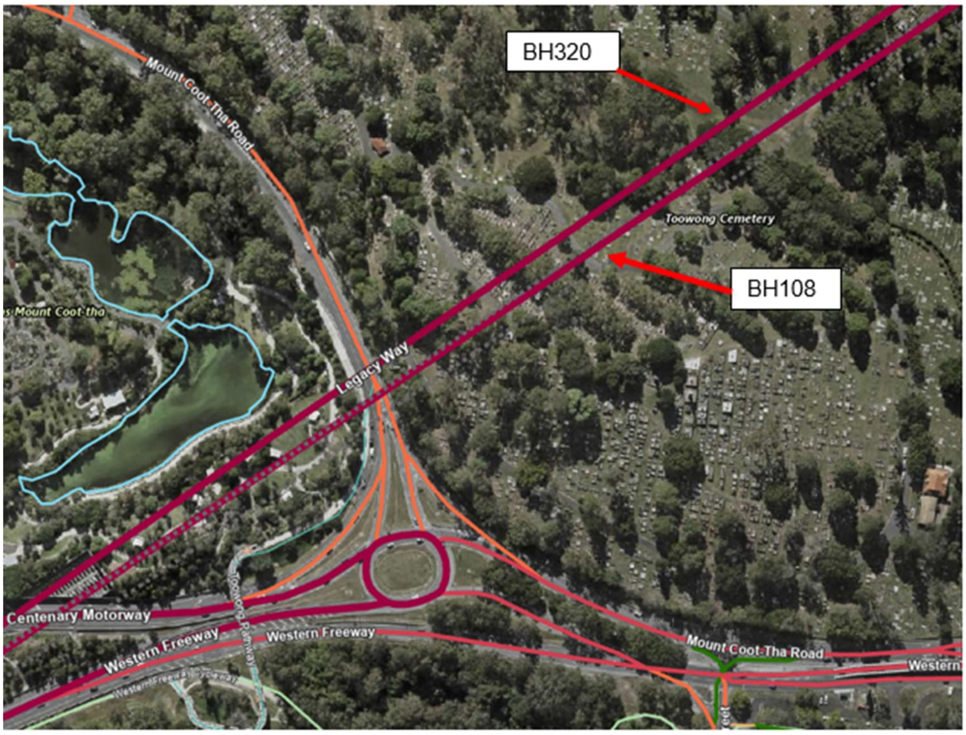
Taking into consideration these permitting issues are outside of the control of Transurban and their sampling specialists, Scientific Analytical Services (SAS), only three of the five groundwater monitoring bores were accessible during the August 2025 monitoring event.

The objective of the groundwater level monitoring was, as per the original Legacy Way tunnel approval conditions, to assess groundwater level trends and identify if any drawdown in the surrounding area is occurring because of groundwater ingress into the tunnel, including the potential for inflow to occur from the Brisbane River. The review of the groundwater monitoring data conducted in October 2024 indicated that the tunnel had little or no on-going impacts on the groundwater resources and no potential for induced flow from the Brisbane River.

The groundwater monitoring data indicated that the tunnel only directly impacted on NL2-02 and NL3-05S (**Plate 1**) due to reduction in groundwater throughflow immediately downgradient of the western portal. It is noted that monitoring bore NL3-16 (Plate 1), further downgradient of the western portal, had recovered to pre-construction levels. This indicates the extent of influence of the western portal on groundwater levels is limited.

The groundwater levels at the cemetery, due to limited recharge within the competent low permeable phyllite outcrop, continue to recover in BH108 and BH320 albeit slowly (**Plate 2**).

Plate 2 - Toowong Cemetery adjacent to the Western Portal (QGlobe)



Groundwater level fluctuation at NL4-HG10 indicates rapid rise during high rainfall events, where groundwater levels have historically exceeded pre-construction levels. The groundwater levels then decline due to limited aquifer effective storage and enhanced evapotranspiration (in the park). Water level trend analysis indicate the water levels in the alluvium was drawn down during construction but overall, the trend data indicated water level recovery (**Appendix D**).

Background information regarding the tunnel construction is summarised in **Appendix A**.

This monthly groundwater level monitoring report presents data collected 29 August 2025, discusses trends through a 12-month period, and includes all groundwater level measurements for the five selected groundwater monitoring bores compiled to date (**Appendix C**).

Groundwater levels are, after 14 years of monthly monitoring, considered sufficient to allow for the assessment of groundwater level recovery and reflect seasonal variation.

Figure 1 Legacy Way Tunnel groundwater level monitoring bore locations

Table 1 Summary of groundwater level measurements (29 August 2025)

Alignment	West		Main Tunnel Alignment		
Bore ID	NL2-02	NL3-05S	BH108	BH320	NL4- HG10
Geological Unit	Bedrock	Alluvium	Bedrock	Bedrock	Alluvium
Top Of Casing (mAHD)	25.78	25.01	23.65	47.00	2.20
29 August 2025					
Water Level (mBTOC)	NT	NT	3.68	25.4	1.41
Water Elevation (mAHD)	NT	NT	19.97	21.6	0.79
Measured Bore Depth (mBTOC)	NT	NT	20.2	39.6	5.31
Level Logger Download	NT	NT	OK	OK	ND

mAHD: metres Australian Height Datum
mBTOC: metres below top of casing
NT: Not Tested, noted to be inaccessible due to permitting issues
ND: No data, SAS noted that data could not be downloaded.
OK: Data logger successfully downloaded

2.0 Groundwater Level Monitoring

Groundwater level data is collected by SAS on behalf of Transurban. SAS measures the standing water level (depth-to-water) in each selected monitoring bore each month, where possible. SAS also download the groundwater level measurements, recorded automatically (at a maximum of 12-hour intervals), from the groundwater level dataloggers installed in each of the monitoring bores, where possible.

Due to complications with traffic permits required to access the groundwater monitoring bores within the traffic island at the Western Portal, SAS were only able to access three of the five monitoring bores during the August 2025 monitoring event.

2.1 Standing Water Levels

Of the five selected monitoring bores, three monitoring bores were accessed and had manual groundwater level readings recorded on 29 August 2025, which are included in **Table 1**.

The location and spatial distribution of the groundwater level monitoring bores are included in **Figure 1**.

The SAS field records of the manual water level measurements are included in **Appendix B**.

Available historical standing water level data have been collated and are presented, with available datalogger data, in **Appendix C**.

2.2 Manual Water Level Comments

Manual depth-to-water level measurements were obtained for three of the five monitoring bores on 29 August 2025.

All manual measurements made this monitoring round are representative, as they reflect the historic water level response to wet/dry conditions. This seasonal fluctuation is reflected in the historical data included in **Appendix C**.

3.0 Groundwater Level Datalogger Results

After each manual depth-to-water measurement the groundwater level dataloggers are retrieved from the monitoring bores and the data downloaded (confirmation or otherwise as recorded in **Table 1**).

Time series water level hydrographs (in mAHD) plus daily rainfall measurements for the past 12 months are shown in **Figure 2** to **Figure 6**, were available.

The rainfall records were obtained from the Mt Coot-Tha weather station (Bureau of Meteorology [BoM] station 040976). Daily rainfall data for the period between the previous monitoring event (29 July 2025) and the most recent event (29 August 2025), are included in **Appendix E**.

Hydrographs of historic groundwater elevations and daily rainfall measurements from pre-construction through to present are included in **Appendix C**.

3.1 Datalogger Comments

During the August 2025 groundwater monitoring event, data was downloaded from two of the five groundwater level dataloggers, providing data from when these loggers were last accessed.

Data was not provided for the following loggers:

- NL2-02 and NL3-05S: could not be safely accessed by SAS due to issues with traffic control permits.
- NL4-HG10: data was not downloaded; SAS have previously noted issues connecting and downloading data from the logger. As this logger has had repeated issues with connection and registering erroneous data when downloading has been possible, it is recommended that this logger is replaced to allow for accurate data to be collected.

Data could not be retrieved from the barometric pressure logger installed in NL2-02 (NL2-02 Upper) as it has previously been removed due to connection issues. It is not known (unreported) as to whether the barometric pressure logger has been fixed or replaced and if, due to the location within the traffic island, it cannot be readily accessed. As NL2-02 is the only barometric logger available during monitoring, the downloaded water level data for the August 2025 monitoring event could not be compensated for barometric pressure changes.

The accuracy of the water level patterning and interpretation has been reduced; however, this is not expected to have a marked influence on groundwater level trends based on site conditions and historical data.

It is recommended that a working barometric pressure logger be installed at a more accessible bore prior to the next groundwater monitoring event.

3.2 Mid Tunnel

Groundwater level measurements for the past 12 months for monitoring bores within the alluvial sediments and bedrock aquifers in the middle of the tunnel alignment are shown in **Figure 2** and **Figure 3**, respectively. This section of the tunnel includes monitoring bores NL4-HG10, BH108, and BH320.

The groundwater levels within these mid-tunnel bores are recognised to show relatively stable and repetitive fluctuation trends in response to wet and dry conditions, within the long-term historic monitoring data (**Appendix C**).

Historically, the groundwater elevations within the mid tunnel alluvium bores BH313A, NL4-HG6A, and NL4-HG10 (**Figure 2**) and mid-tunnel bedrock bores NL2-06 and NL2-09 show natural water level fluctuations (albeit muted in NL2-06) in response to rainfall recharge and gradual decline because of aquifer throughflow (indicating limited effective storage within the hydrostratigraphic units intersected in these bores).

Recent observations and the trend analysis for NL4-HG10, BH108, and BH320 (**Appendix D**), indicate:

- Trend fluctuations due to seasonal fluctuation is evident in NL4-HG10. Continued high rainfall events in March and April 2025, resulted in an increasing trend following the cumulative rainfall departure (CRD) curve[1], a tool used to analyse rainfall patterns and their effects on groundwater. This indicates the groundwater resources at NL4-HG10 are associated with an unconfined aquifer.
- Trend analyses for BH108 and BH320 indicate muted response to the continued rainfall through to April 2025 but indicate an ongoing increasing trend through to August 2025; the most recent monitoring round shows a decline in groundwater elevation in delayed response to the seasonal 2025 dry period.

  This trend, for both monitoring bores, does not readily match the CRD curve as they both intersect confined aquifers.

Water levels measured in the alluvium bores (BH313A, NL4-HG6A, and NL4-HG10) are reflective of historic seasonal trends (**Figure 2** and **Appendix C**). This is evident in the water levels, which indicate a rapid increase in these bores in response to prolonged and/or heavy rainfall events. These rainfall recharge responses are muted for May 2024 to September 2024 data due to reduced rainfall events. The June to August 2025 monitoring data shows reduced groundwater elevation (with minor recovery in July 2025) due to reduced rainfall during the period, after an extended 2024/2025 wet season,

Figure 3 indicates BH320 and BH108 have an increasing trend in groundwater level (datalogger and manual readings) since July 2023. Long-term trends for these bores in **Appendix C** and **Appendix D**, indicate ongoing long duration groundwater recovery. Groundwater fluctuation, contrary to wet and dry conditions, is also evident suggesting possible recharge in the area enveloping these bores at the cemetery. This trend relates to slow and variable recharge into the phyllite outcrop, which forms the hills in the cemetery area and is unlikely due to the Legacy Way Tunnel operations.

[1] A Cumulative Rainfall Departure (CRD) curve is a graph that plots the cumulative difference between actual rainfall and average rainfall over time. It helps visualise rainfall trends and their impact on groundwater levels or other hydrological systems. Specifically, the CRD is calculated by subtracting the average rainfall from each rainfall data point and then accumulating these departures over time. A positive CRD (above average rainfall) can indicate groundwater recharge, while a negative CRD (below average rainfall) may suggest declining groundwater level.

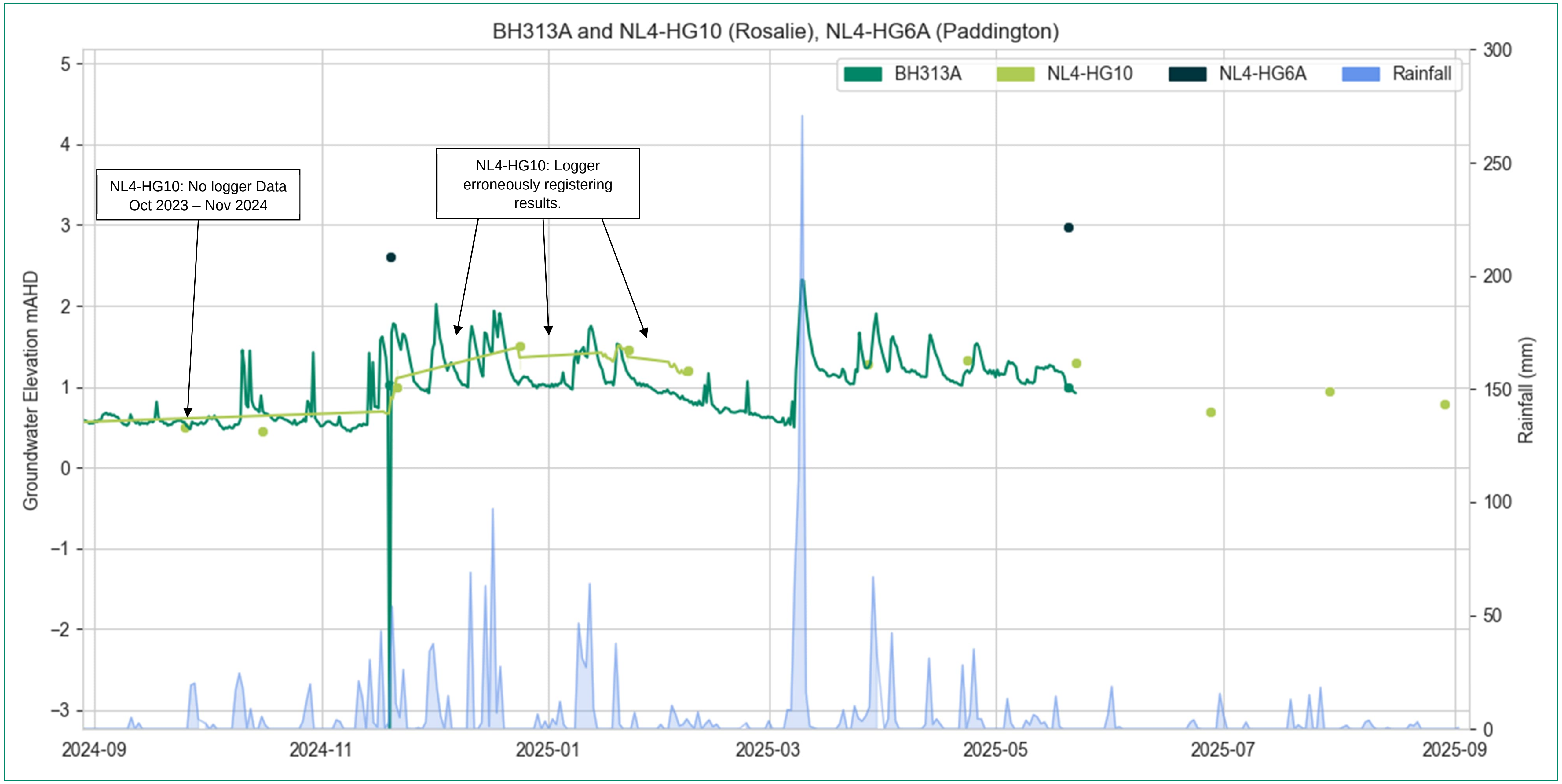


Figure 2 **Groundwater elevations within alluvium along the Mid Tunnel portion of the Legacy Way alignment**

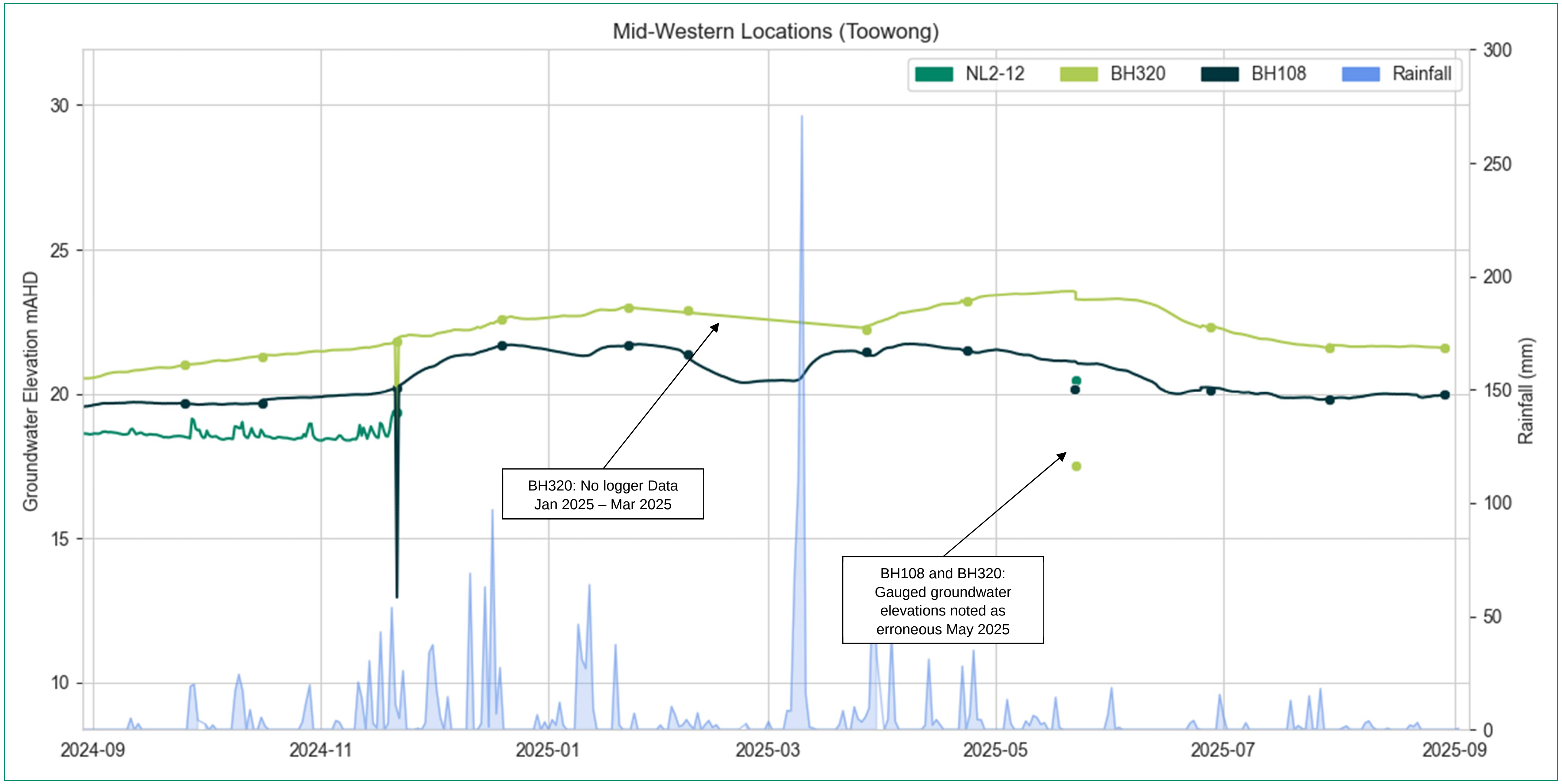


Figure 3 Groundwater elevations within bedrock along the Mid Tunnel portion of the Legacy Way alignment

3.3 Western Portal

Historical similarities in trends between bedrock monitoring bore NL2-02 and alluvium monitoring bores NL3-05S and NL3-16, indicate recharge and discharge in response to wet and dry conditions at these locations (**Figure 4**).

The decline of water levels in these bores during the dry season occurs due to limited effective storage within the hydrostratigraphic units intersected in these bores. This is observed in the historic dry seasons (**Appendix C**).

NL3-16 responded readily to rainfall recharge in November 2024 due to the increase in rainfall, which is enhanced by the downslope of topographically elevated areas and where surface water and drainage lines occurs (i.e., rainfall recharge is enhanced through seepage from local creeks and storages such as the Mount Coot-Tha quarry and Brisbane Botanic Garden ponds).

It is noted that the groundwater monitoring within the traffic island adjacent to the Western Portal, NL2-02 and NL3-05S (a bedrock and an alluvium monitoring bore, respectively), has historically responded in the same way to rainfall even though there is limited hydraulic connection (as recognised in the continuous difference in depth-to-water in these two monitoring bores) between these two hydrostratigraphic units. The difference in water level elevations historically had indicated a downward vertical gradient from alluvium to bedrock in the Western Portal area (in both the wet and dry seasons).

Water level data from October 2022 onwards (**Appendix C**) indicates that this gradient has reversed on occasion. It is considered that this may be related to the lack of barometric pressure data (not available post-October 2022 download), which allows for the barometric pressure changes correction of the datalogger water level data.

It is noted that there is insufficient data being compiled at NL2-02 and NL3-05S to further assess the influence of the Western Portal on the groundwater resources.

3.4 Groundwater Recovery Trends

Where new data are available, trend analysis has been performed to assess the long-term behaviour of groundwater elevations (**Appendix D**).

BH108, BH320, and NL4-HG10 all show ongoing recovery trends based on the most recent data, supporting findings in the assessment made in October 2024.

Monitoring bores BH108 and BH320 are showing continued steady long-term recovery trends, indicating groundwater levels are returning to pre-construction levels, albeit slowly after completion of the tunnel.

The long-term trend in NL4-HG10 is less predictable due to its marked response to rainfall, being situated in a low-lying area, and intersecting the unconfined alluvium aquifer. The groundwater elevations at this location show declines during long periods of low to moderate rainfall (most evident in 2019 and 2020) and recovery during periods of high rainfall (most evident in 2022 and early 2025). This seasonal trend is also considered to be influenced by surrounding land use, Gregory Park (**Plate 3**), due to enhanced evapotranspiration. Though this monitoring bore is responsive to wet/dry conditions, post-construction, a long-term recovery trend is evident.

Plate 3 – NL4-HG10 located within Gregory Park (QGlobe)

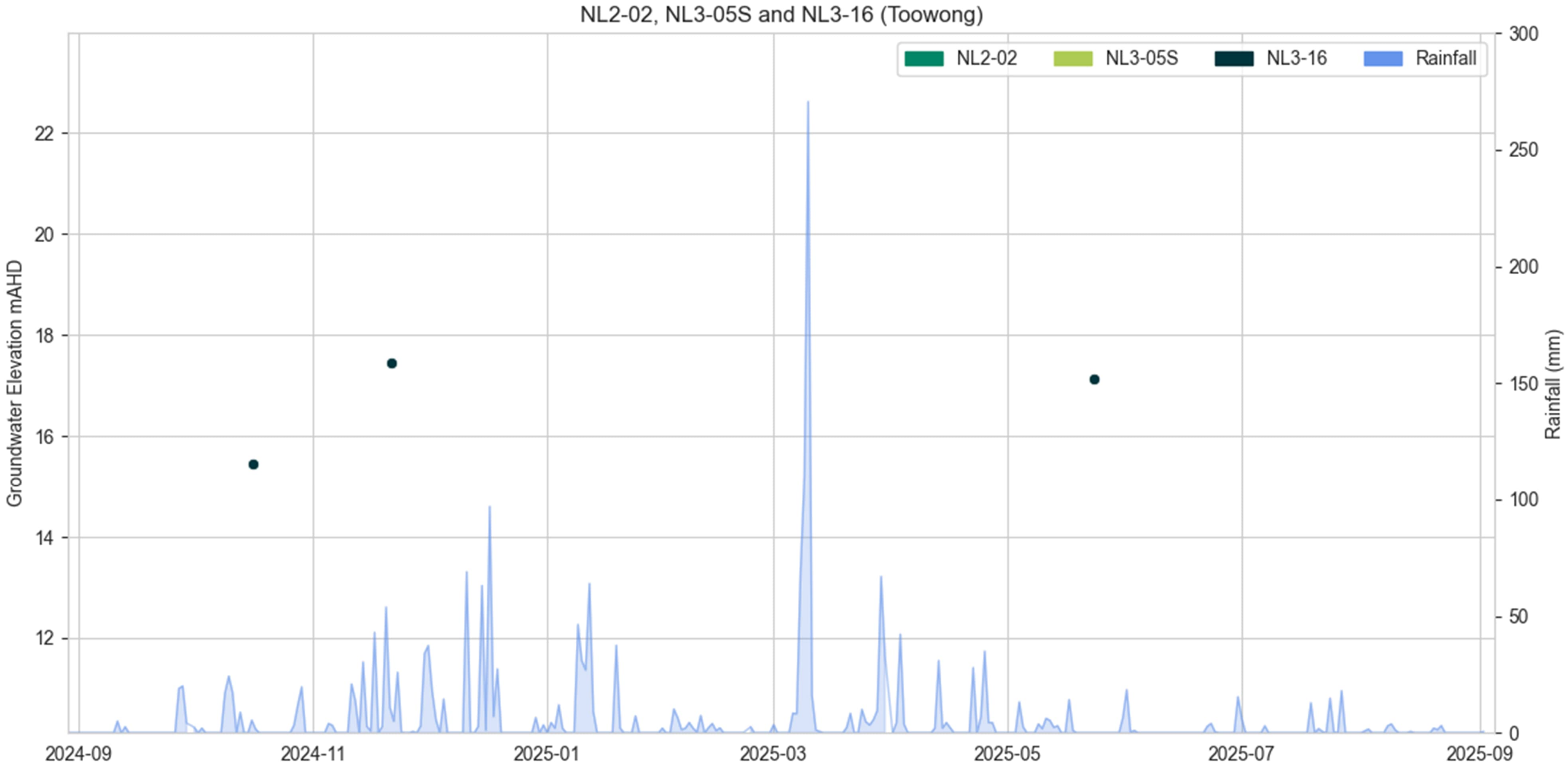


Figure 4 Groundwater elevations within bedrock and alluvium along the western extent of Legacy Way alignment

3.5 Brisbane River

To assess whether there is the potential for water from the Brisbane River to enter the tunnel, during ongoing operations, an evaluation of groundwater levels compared to the Brisbane River level was included in the monitoring data assessments.

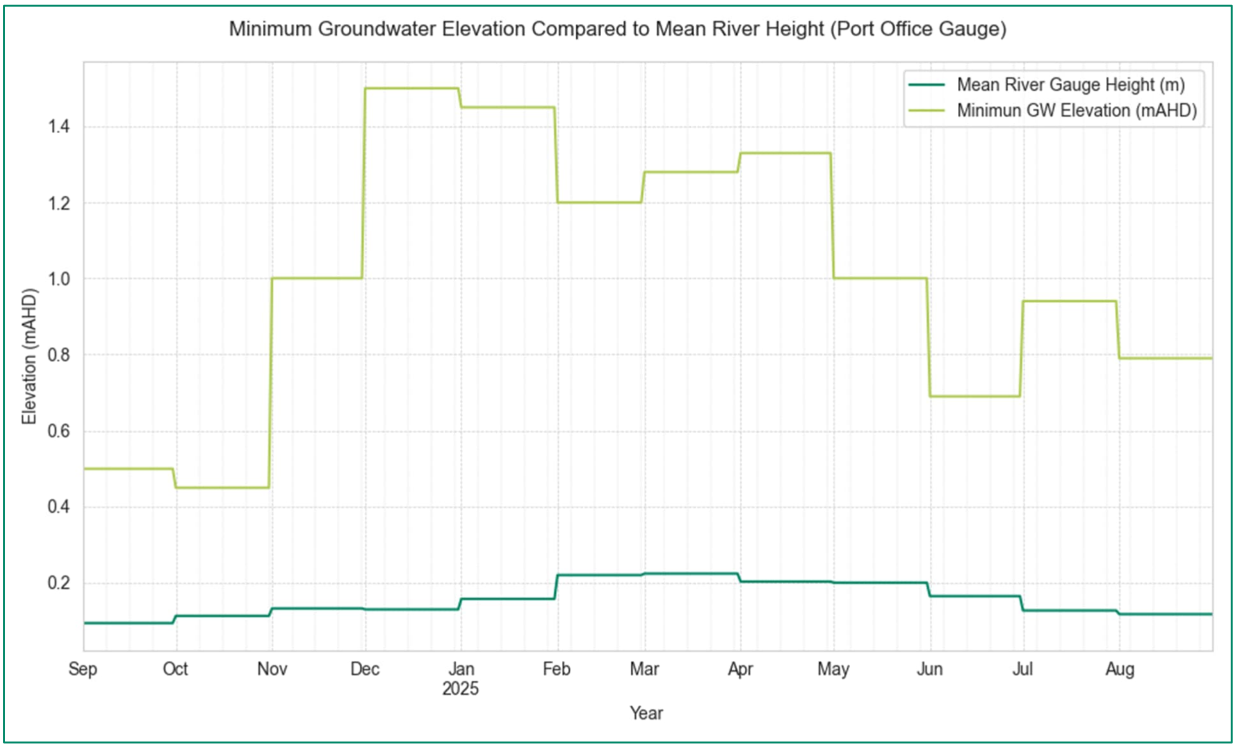
To assess the Brisbane River water level, daily water level measurement data was compiled from the BoM Brisbane River Port Office Gauge (station: BNA855/540684) near the tunnel alignment. The dataset consists of river gauge measurements taken at approximately 5-to-15-minute intervals between 6 June 2015 and 30 June 2023. These data were used to provide an evaluation of typical river water height, considering tidal and seasonal variation, within the Brisbane City area. These data are included in **Appendix E**.

Based on the sinusoidal tidal nature of the water level measurements, the mean water level was considered for the comparison to the groundwater level data. During the month of August, the historic mean water elevation of Brisbane River was 0.118 mAHD.

All available manual groundwater level measurements in the August 2025 monitoring event were above 0.118 mAHD, with the lowest water elevation recorded at NL4-HG10 with a standing water level of 0.790 mAHD (**Figure 5**). NL4-HG10 is situated in a naturally low-lying area, and the bore responds seasonally to wet and dry conditions, therefore, the shallow depth is not related to tunnel operation.

In the August 2025 monitoring event, there is no evidence to indicate a change to historic observations of groundwater level that indicate flow across the tunnel alignment was towards the Brisbane River (0.118 mAHD in August). The gradient of the potentiometric surface in the alluvium and fractured rock aquifer is towards the river due to a zone of elevated groundwater between the tunnel and the Brisbane River (as measured in NL4-HG10).

Figure 5 Minimum observed groundwater elevation for each month compared to monthly mean river height of Brisbane River (BoM Brisbane River Port Office Gauge [station: BNA855/540684])



Appendix E presents a comparison of historic lowest groundwater elevations recorded across the monitoring bore network compared to monthly average river height during the period which data are available from the Port Office Gauge to ensure representativeness and appropriateness of aggregating for comparison.

4.0 Conclusions

The temporal and spatial trends in groundwater elevations along the Legacy Way Tunnel alignment, and relationships with rainfall and groundwater flow patterns and fluctuations, within the alluvium and bedrock, are consistent (where data is available) with the past year's observations.

The natural water level fluctuations in response to rainfall recharge and gradual decline because of aquifer throughflow during dry periods, are recognised to have occurred historically as depicted in the Mid Tunnel alluvium monitoring bores **(Figure 6**). The muted confined bedrock hydrostatic unit responses, post-construction, are recognised to match historic water level responses (**Figure 6**).

The inflow of surface water from the Brisbane River into the aquifer(s) and subsequently to the tunnel because of groundwater drawdown during the operation of the tunnel is unlikely to have occurred during August 2025 as the water levels in monitoring bores measured were above 0.118 mAHD (mean water height within the Brisbane River during August). As such, no mitigation measures are currently required to minimise surface water inflow to the tunnel.

Groundwater levels indicate ongoing recovery in BH108, BH320, and NL4-HG10 (**Appendix D**).

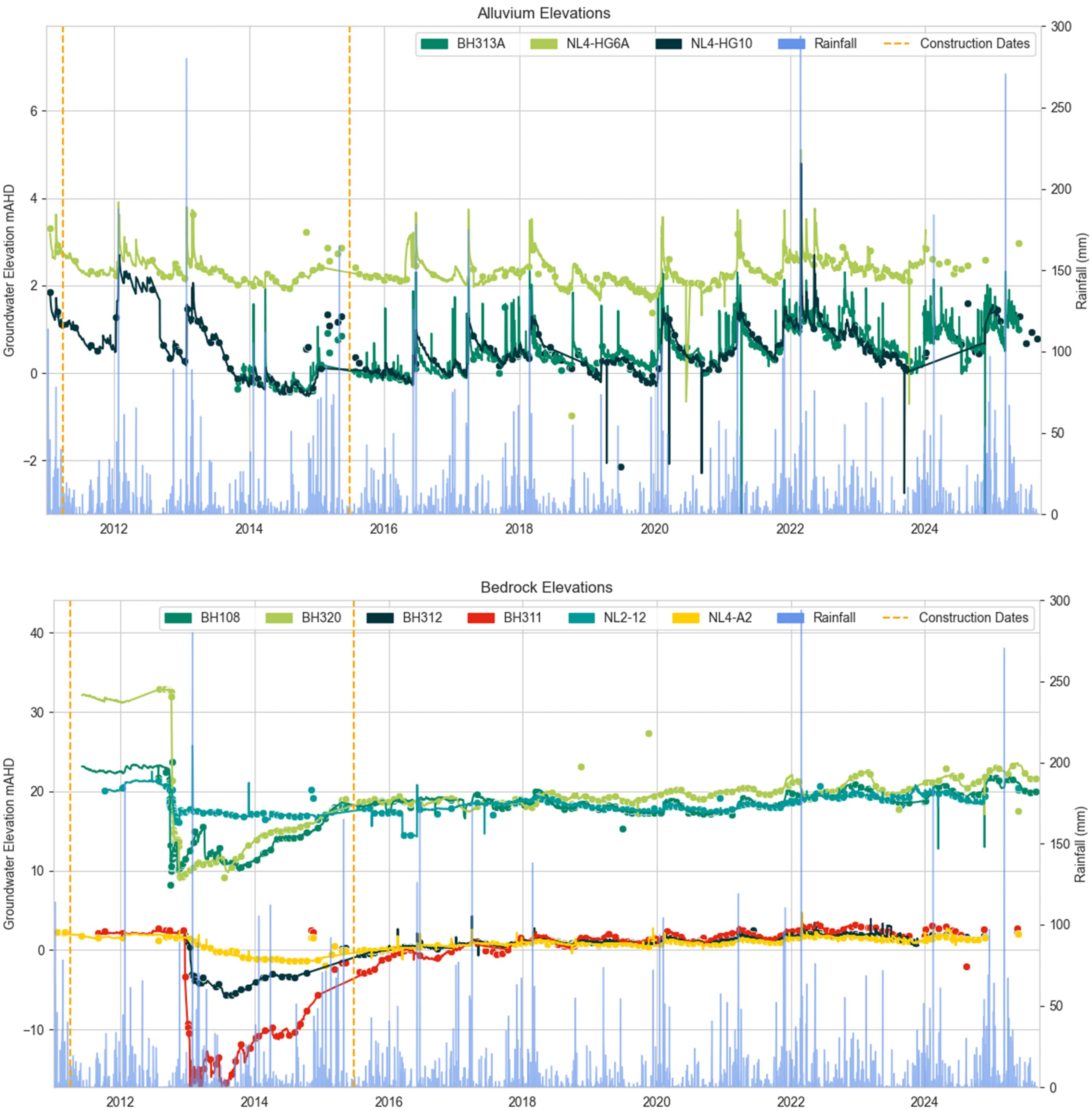


Figure 6 **Historic groundwater elevations within confined bedrock along the Legacy Way alignment**

5.0 Standard Limitations

AECOM Australia Pty Ltd (AECOM) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Transurban Limited and only those third parties who have been authorised in writing by AECOM to rely on this Report.

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Appendix A

Background Information

Appendix A Background Information

Existing Environment

The Legacy Way Tunnel is situated below the inner western suburbs of Brisbane, which includes the suburbs of Toowong, Auchenflower, Milton, Paddington, Red Hill, Kelvin Grove, and Herston.

Topography

The topography of the surrounding and overlying tunnel area is characterised by a series of steep ridges and spurs dissected by linear valleys. The ground surface elevations range from approximately 70 metres above Australian Height Datum (mAHD) near the intersection of Musgrave Road and Kelvin Grove Road (near the eastern tunnel portal) and 50 mAHD near the intersection of Frederick Street and Birdwood Terrace (near the western tunnel portal). The lowest point is mid-tunnel (< 5 mAHD) at Gregory Park, Rosalie.

Along the tunnel alignment, the ground surface is higher in the west and northwest and falls toward the east and southeast (i.e. to the Brisbane River).

Surface Drainage

The Legacy Way Tunnel is located within two sub-basins, informally referred to as the Brisbane and Enoggera Creek sub-catchments. Most of the tunnel alignment is located within the Brisbane sub-basin, with the eastern most extent of the tunnel located within the Enoggera Creek sub-basin. These sub-catchment areas are drained by several small creeks that drain into the Brisbane River. The sub-basins are part of the Lower Brisbane River Catchment that hosts several surface water tributaries, including Bellbowrie, Breakfast, Bulimba, Cubberla, Enoggera and Toowong creeks. Within the immediate vicinity of the tunnel, most surface waters are drained via Toowong Creek and Enoggera Creek.

Rainfall

The Brisbane area is characterised by a sub-tropical climate. Rainfall occurs predominantly throughout the summer months (December to March). Rainfall data is collected from the Bureau of Meteorology station 040976 located at the Brisbane Botanic Gardens, Mt Coot-tha.

Geology

The geology intersected within the Legacy Way Tunnel comprises two low grade metamorphic rock units, namely the Bunya Phyllite and the Neranleigh-Fernvale Beds. The Bunya Phyllite occupies the area along the alignment up to approximately Musgrave Road at the Normanby Fiveways. Further east, the alignment lies within the Neranleigh-Fernvale Beds.

The Bunya Phyllite formation consists of phyllite, minor arenites and basic volcanics regionally metamorphosed to greenschist grade. The phyllites are usually dark blue to black and consist principally of quartz, albite, muscovite and chlorite.

The Neranleigh-Fernvale Beds overlies the Bunya Phyllite, and comprises shale, chert, jasper, feldspathic and lithic arenite, conglomerate, and basic volcanics. Typical arenites consist of sericite, chlorite, quartz and epidote with accessory zircon.

Near the of the tunnel portals, minor surficial deposits of Quaternary-aged alluvium are present consisting of undifferentiated gravel, sand, silt, mud and clay. Based on exposed road cuttings, soils within the vicinity of the tunnel are thin and largely derived from the Bunya Phyllite.

Groundwater

Groundwater resources are associated with the following hydrostratigraphic units:

- Bunya Phyllite
- Neranleigh-Fernvale Beds
- Unconsolidated alluvium sediments.

Pre-construction depth to groundwater was generally between 3 metres below ground level (mBGL) and 10 mBGL within the Bunya Phyllite and Neranleigh-Fernvale beds. Depths to water table of greater than 10 metres (m) was recorded at locations of elevated topography (e.g., at NL2-06 and NL2-14).

Groundwater levels within the basement rock aquifers were measured to respond rapidly to rainfall recharge downslope of topographically elevated areas and where deep drainage from water supply infrastructure (i.e. mains, stormwater) and drainage lines occur.

Groundwater levels measured within the alluvium were (pre-construction) relatively shallow (< 9 mBGL). Groundwater recharge to these areas is likely to be relatively rapid following rainfall events (unconfined aquifers) and is expected to gradually decline following cessation due to evapotranspiration and limited effective storage.

Level loggers

The groundwater level data was derived from automated groundwater level loggers (Solinst) and manual water level measurements (i.e., static groundwater levels). The groundwater level monitoring locations are summarised in **Table A** and shown in **Figure 1** .

The groundwater level loggers measure the total pressure acting on a transducer at their zero point/sensor. The total pressure is a combination of the column of water lying above the logger pressure sensor (i.e. height of water column) and the atmospheric (barometric) pressure acting on the water surface.

The groundwater level logger data is barometrically, and temperature compensated to obtain true height of water column measurements. All groundwater level logger data was converted to groundwater elevations in mAHD, utilising the measured depth of deployment of the logger, the recorded water column level, and the measured depth to water below well casing.

Table A Summary of groundwater level monitoring locations

Alignment	Location	Bore ID	Geological Unit
West	**Traffic Island, Western Mt Coot-Tha Rd, Toowong**	**NL2-02**	**Bedrock**
	Roundabout end, Western Freeway, Toowong	**NL3-05S**	**Alluvium**
	Anzac Park near bike track and creek, Toowong	NL3-16	Alluvium
Main	**Cemetery - bottom, Toowong**	**BH108**	**Bedrock**
	Cemetery, Toowong	**BH320**	**Bedrock**
	Thorpe Street, Toowong	NL2-12	Bedrock
	Birdwood Terrace, Auchenflower	NL2-14	Open Bore – Bedrock and Alluvium
	Road outside of Civic Video, Rosalie	BH309	Bedrock
	Baroona Road bus stop, Rosalie	BH311	Bedrock
	Elizabeth Street, Rosalie	BH312	Bedrock
	Baroona Road across from school (next to BH313A), Rosalie	BH313	Bedrock
	Baroona Road across from school (next to BH313), Rosalie	BH313A	Alluvium
	Gregory Park, Rosalie	**NL4- HG10**	**Alluvium**
	Ellena St, Paddington	NL4- HG6A	Alluvium
	Ellena St, Paddington	NL4-5	Bedrock
	Gregory Park, Rosalie	NL4-A2	Bedrock

Alignment	Location	Bore ID	Geological Unit
	Upper Clifton Terrace, Red Hill	NL2-06	Bedrock
	Lower Clifton Terrace, Red Hill	NL2-09	Bedrock
East	Victoria Park Road, Kelvin Grove	BH221	Bedrock
	Inner City Bypass	BH222	Bedrock

Appendix B

Field Documentation

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ABN 86 673 835 011

Accreditation Number 11085

SASLaboratory
A QUEENSLAND URBAN UTILITIES BUSINESS

LABORATORY REPORT

Client:	Casey Gunnourie Transurban Queensland 1 Clarence Road Kedron QLD 4031
Job Name:	Legacy Way Monthly Groundwater
Sampled By:	SAS Laboratory
Sampling Method:	Field Test / Grab
Sample Matrix:	Aqueous
Batch Number:	25/05604
Registration Date:	1 September 2025
Date of Report:	1 September 2025

NATA
WORLD RECOGNISED ACCREDITATION
Accredited for compliance with ISO/IEC 17025 - Testing

Authorised Signatories:

Nick Chesterfield, Kerrod Bate, Kandula Jayakody, Gavin Williams

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4. Method with * indicates NATA accreditation does not cover the performance of this service.
5. ^ Analysed by sub-contracted laboratory, please see attached report for results and accreditation details.
6. # Calculated result derived from NATA accredited test method/s.

Client: Transurban Queensland
Job Name: Legacy Way Monthly Groundwater

Batch Number: 25/05604
Report Date: 1/09/25

Method	Test	Units	LOR	25/05604/1 NL2-02 (Toowong Traffic Island)	25/05604/2 NL3-05S (Toowong Roundabo ut)	25/05604/3 BH108 (Toowong Cemetery Bottom) 29/08/2025 08:30	25/05604/4 BH320 (Toowong Cemetery Top) 29/08/2025 08:10	25/05604/5 NL4-HG10 (Gregory Park) 29/08/2025 07:55
	Hire - Traffic Control			Complete	[NR]	[NR]	[NR]	[NR]
Misc. *	Groundwater Level	m	0.1	[NT]	[NT]	3.68	25.4	1.41
Misc. *	Groundwater Bore Depth	m	0.1	[NT]	[NT]	20.2	39.6	5.31
	Download loggers			[NT]	[NT]	Complete	Complete	[NT]
	Sequential Number			[NT]	[NT]	2,126,294	2,150,321	[NT]

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

PLEASE NOTE:
1. Analysis of sample(s) collected and submitted by client shall be performed as received. Results relate only to the sample(s) tested.
2. All sampling performed by SAS is in accordance with In-house Method F.001. Results relate only to the sample(s) tested.
3. This document shall not be reproduced except in full, without written approval from SAS Laboratory.
4. Method with * indicates NATA accreditation does not cover the performance of this service.
5. ^ Analysed by sub-contracted laboratory, please see attached report for results and accreditation details.
6. # Calculated result derived from NATA accredited test method/s.

Appendix C

Historical Water Levels

Appendix C Historical Water Levels

Historical water level data has been collated from Transcity JV data and combined with the water level data made available from Transurban. Long duration transient groundwater level data for each monitoring bore has been compiled.

In some instances, the data logger data has not been provided and is noted to be missing. However, the static water level measurements provide additional water level measurement information from preconstruction through to present day.

Figure C. 1: Historic Western Alluvium Elevations - Toowong

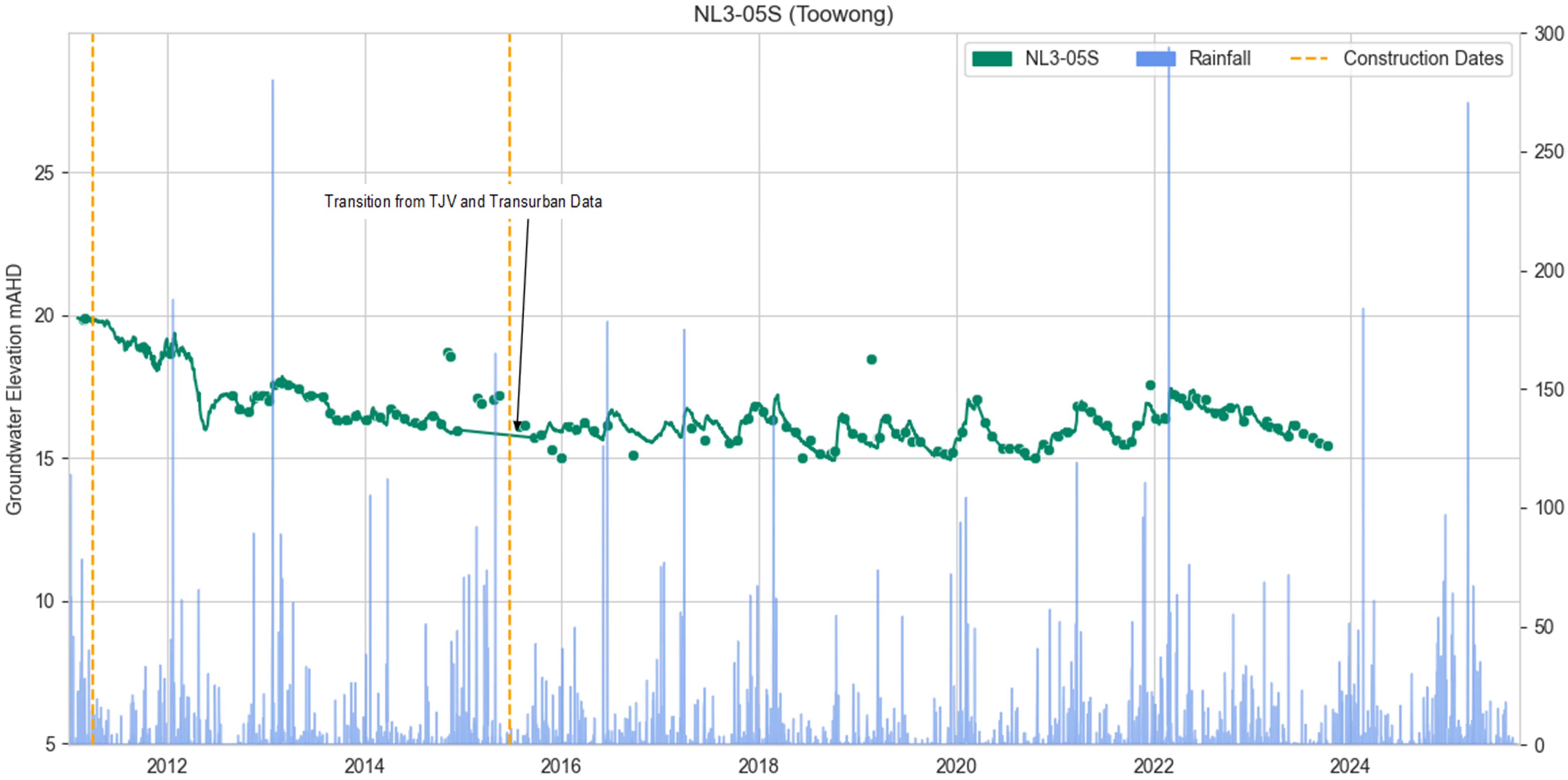


Figure C.2: Historic Western Bedrock Elevations – Toowong

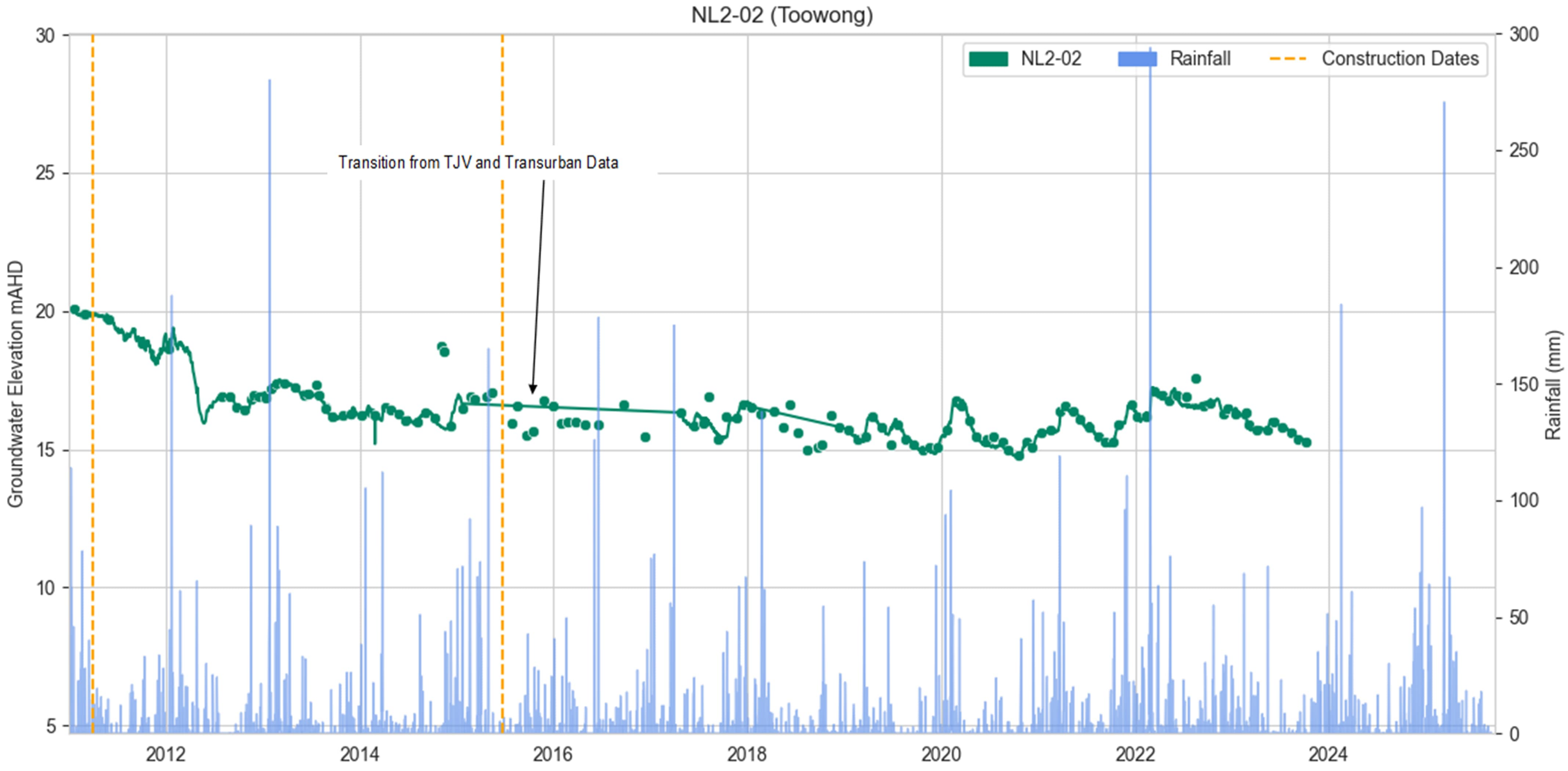


Figure C.3: Historic Mid-Tunnel Bedrock Elevations – Toowong

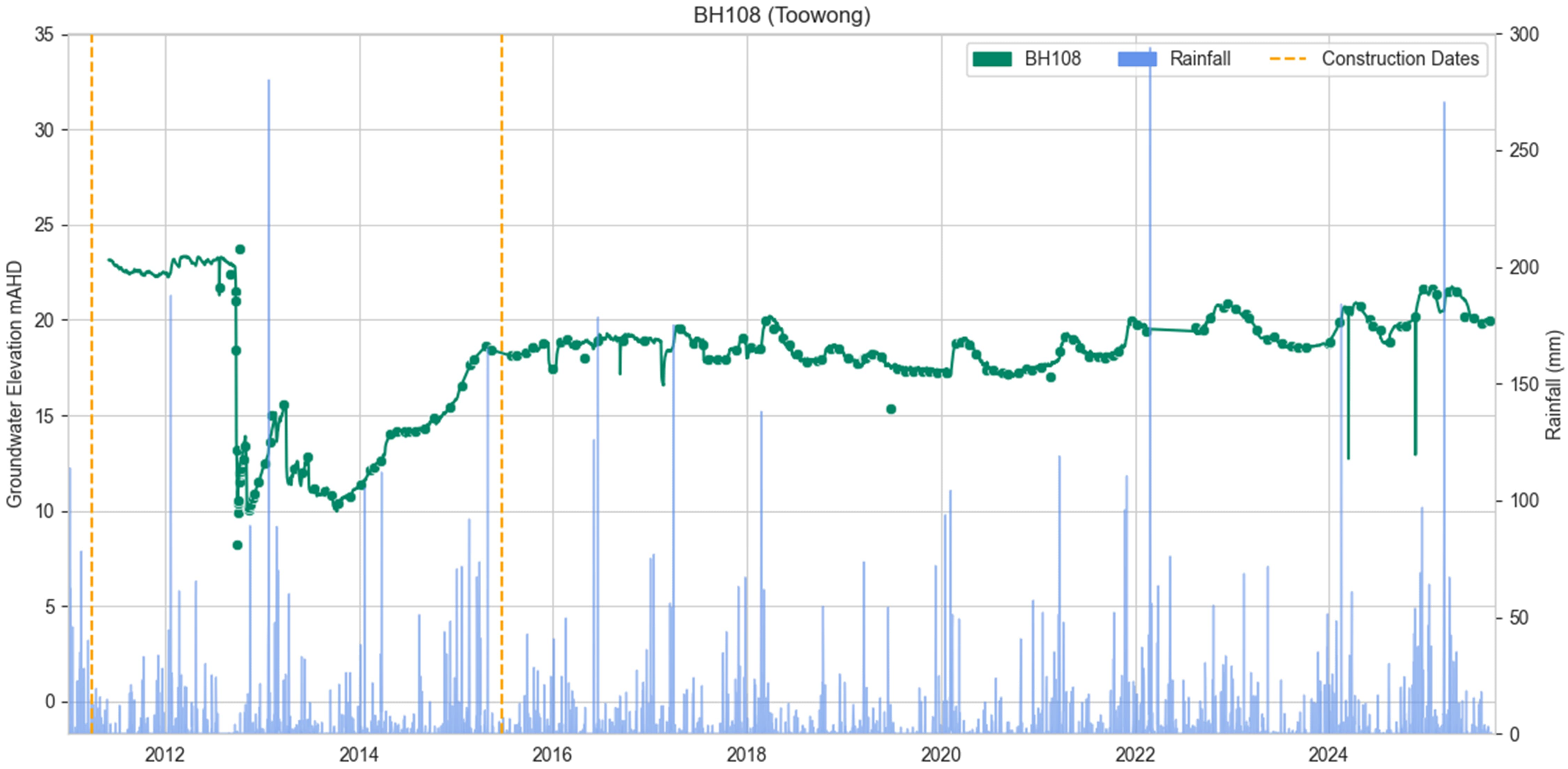


Figure C.4: Historic Mid-Tunnel Bedrock Elevations – Toowong

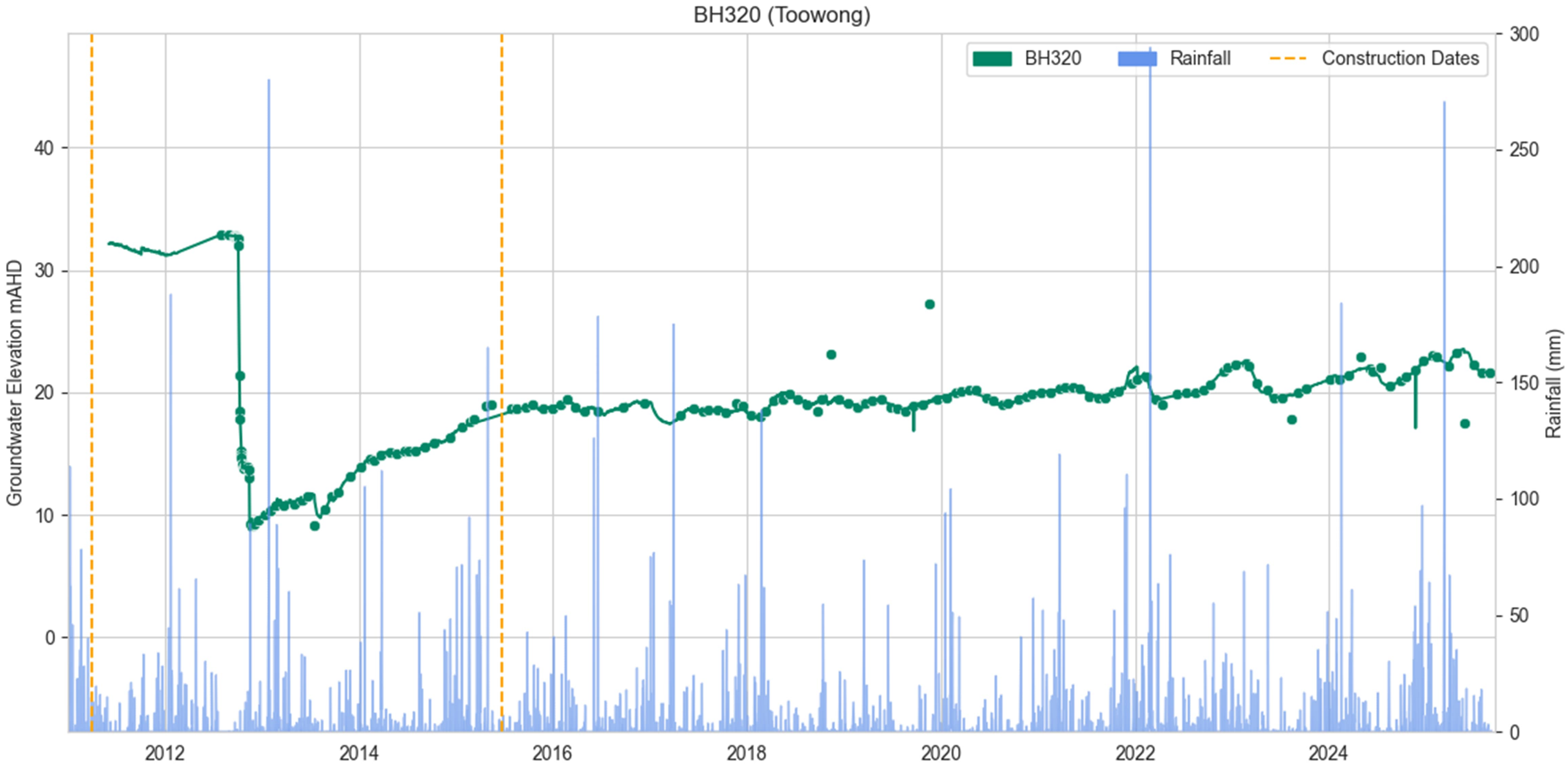
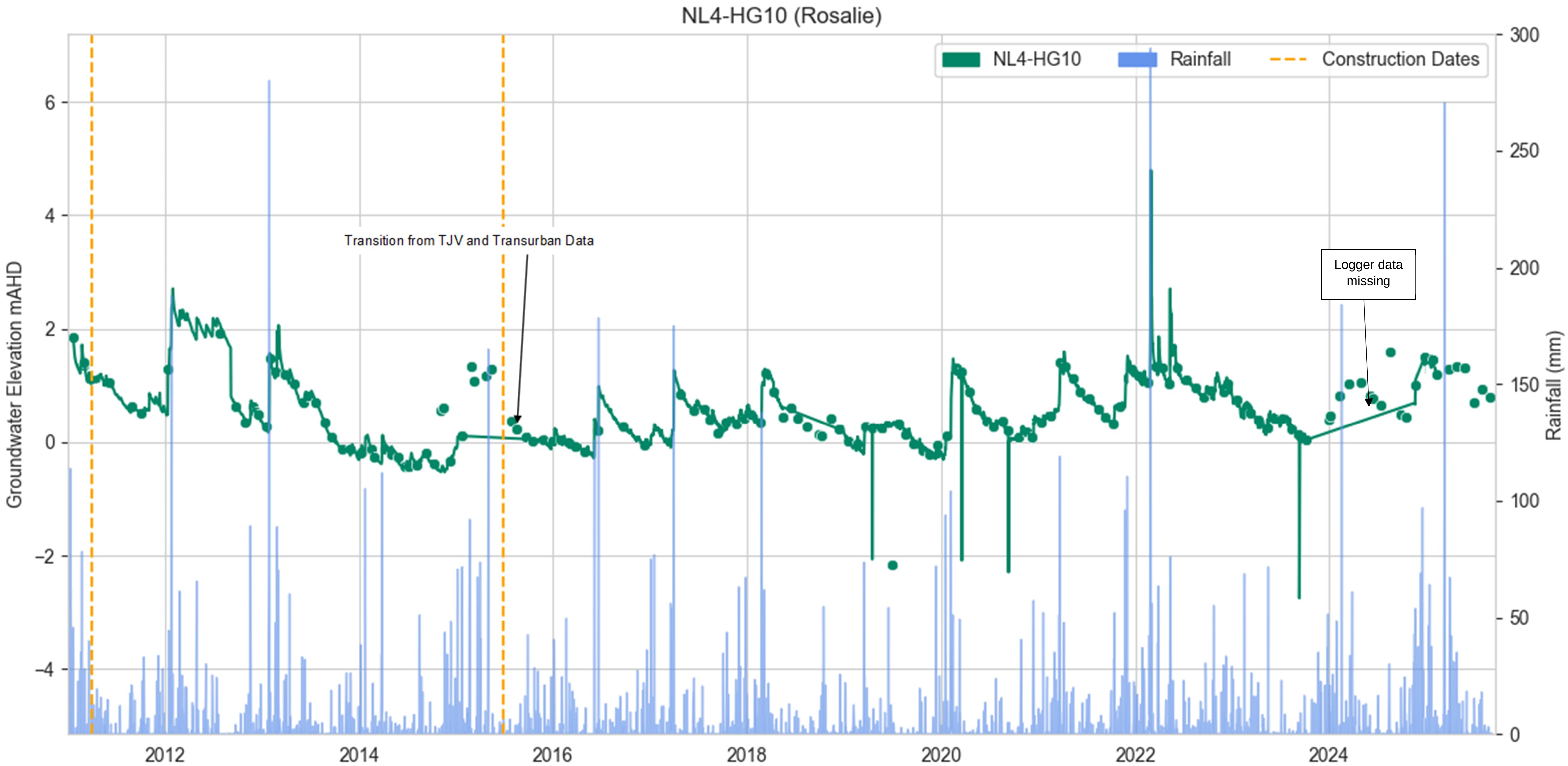


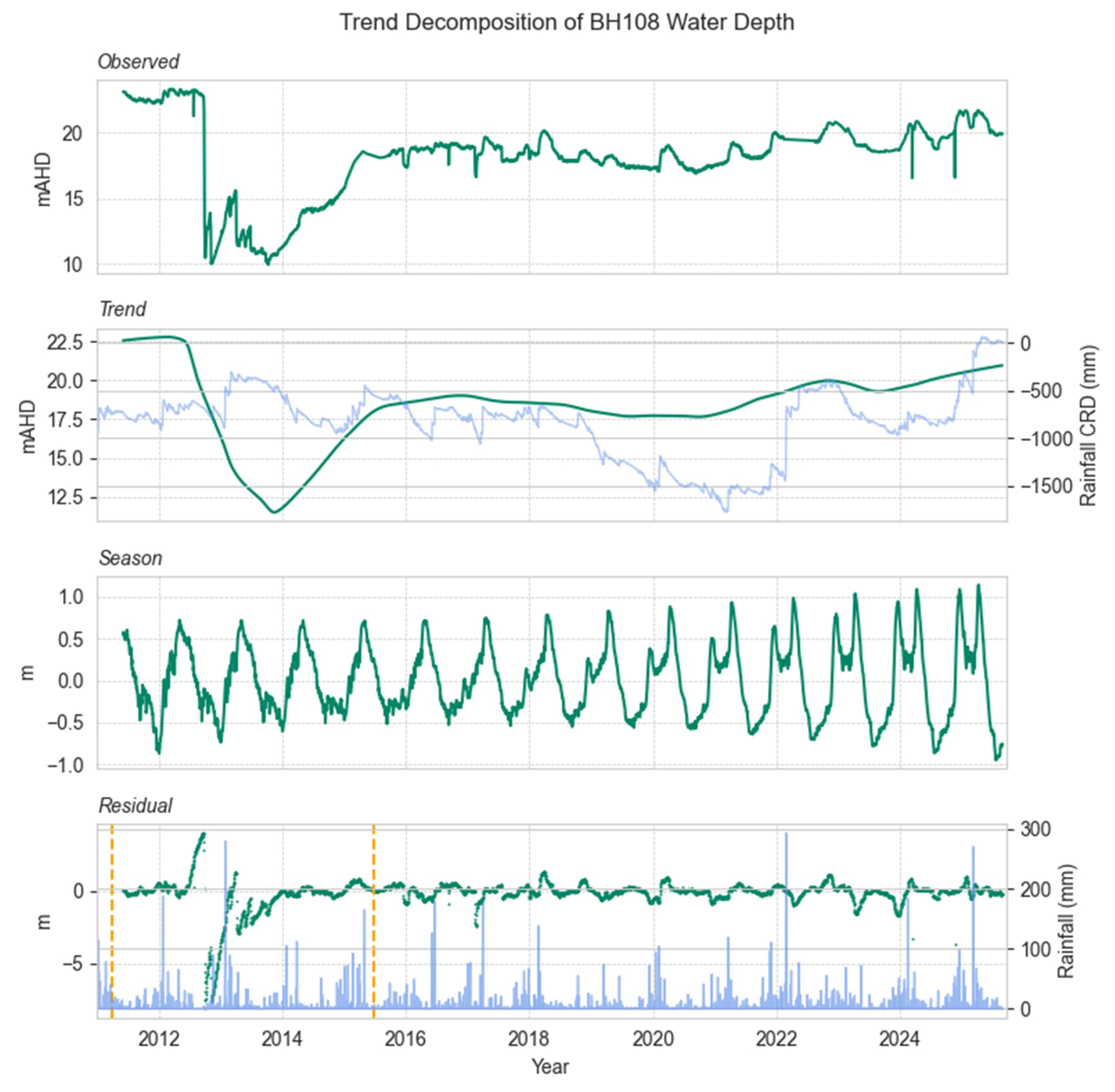
Figure C. 4: Historic Mid-Tunnel Alluvium Elevations – Rosalie & Paddington



Appendix D

Trend Analysis

Figure D.1: Seasonal Trend Decomposition and Regression analysis of groundwater elevations at BH108



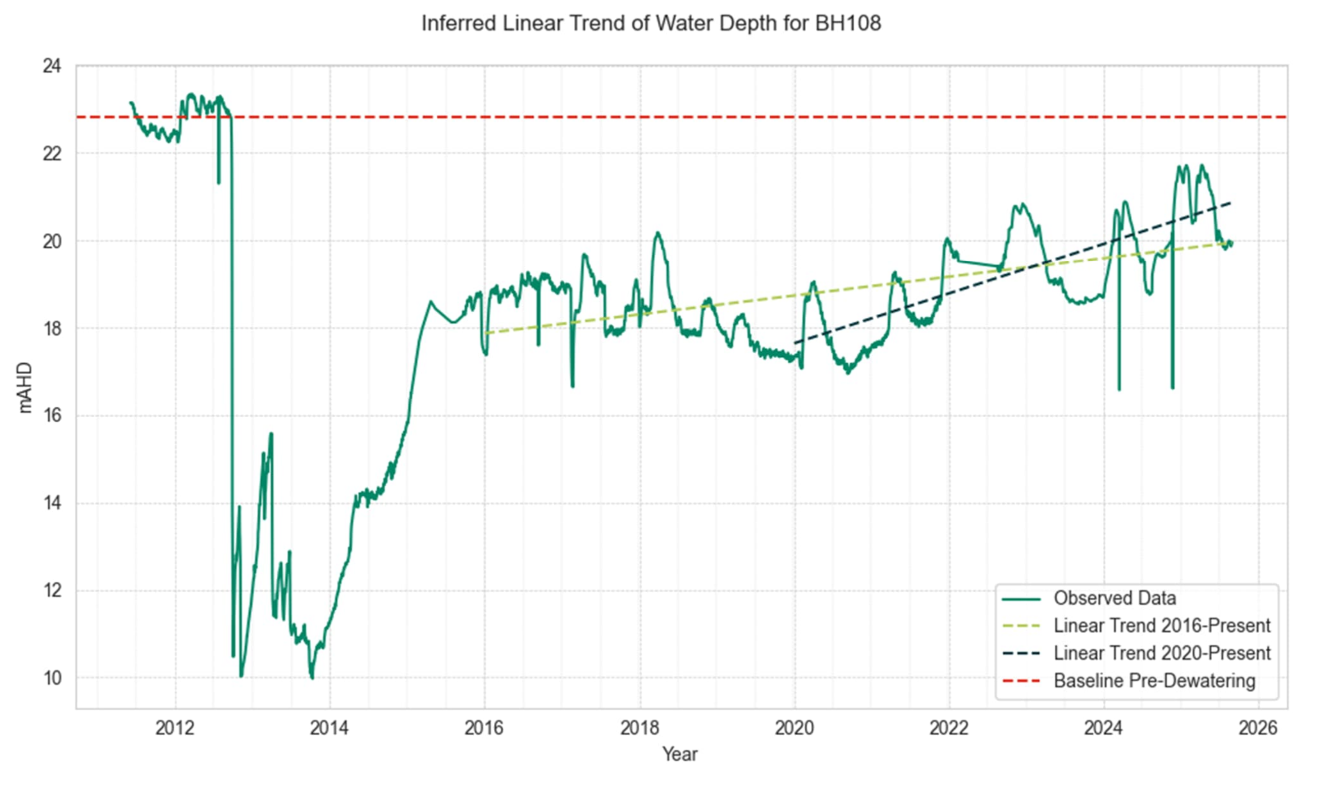
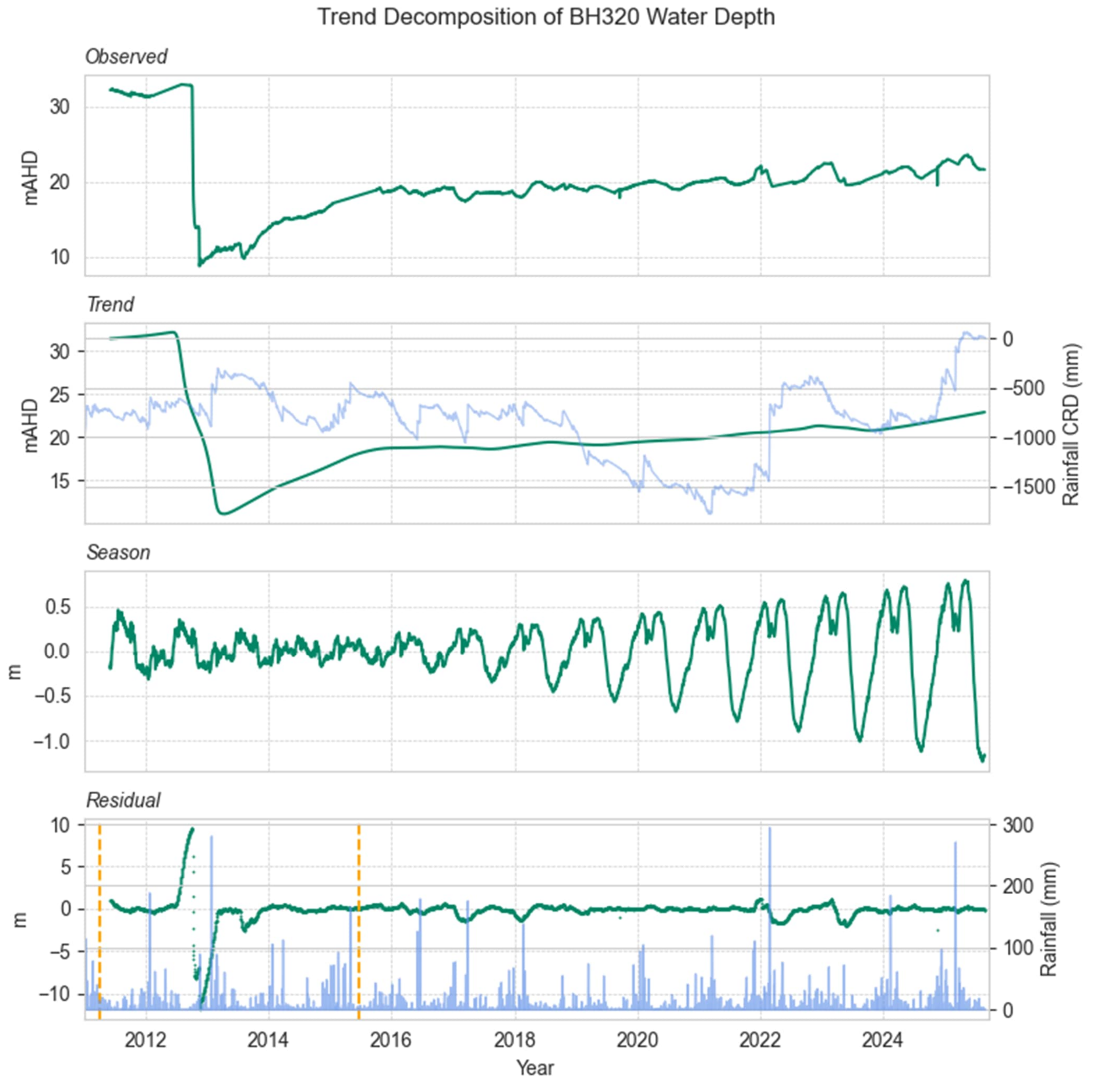


Figure D.2: Seasonal Trend Decomposition and Regression analysis of groundwater elevations at BH320



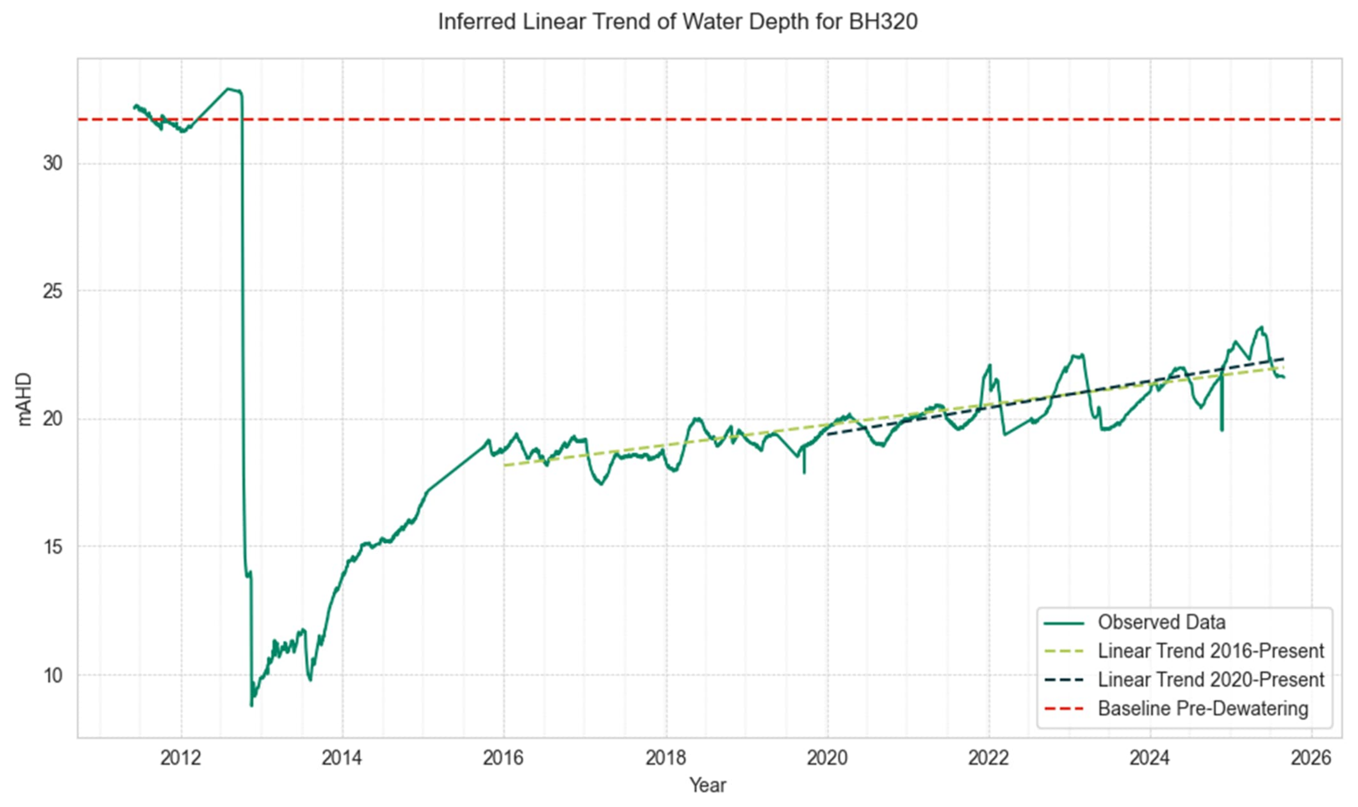
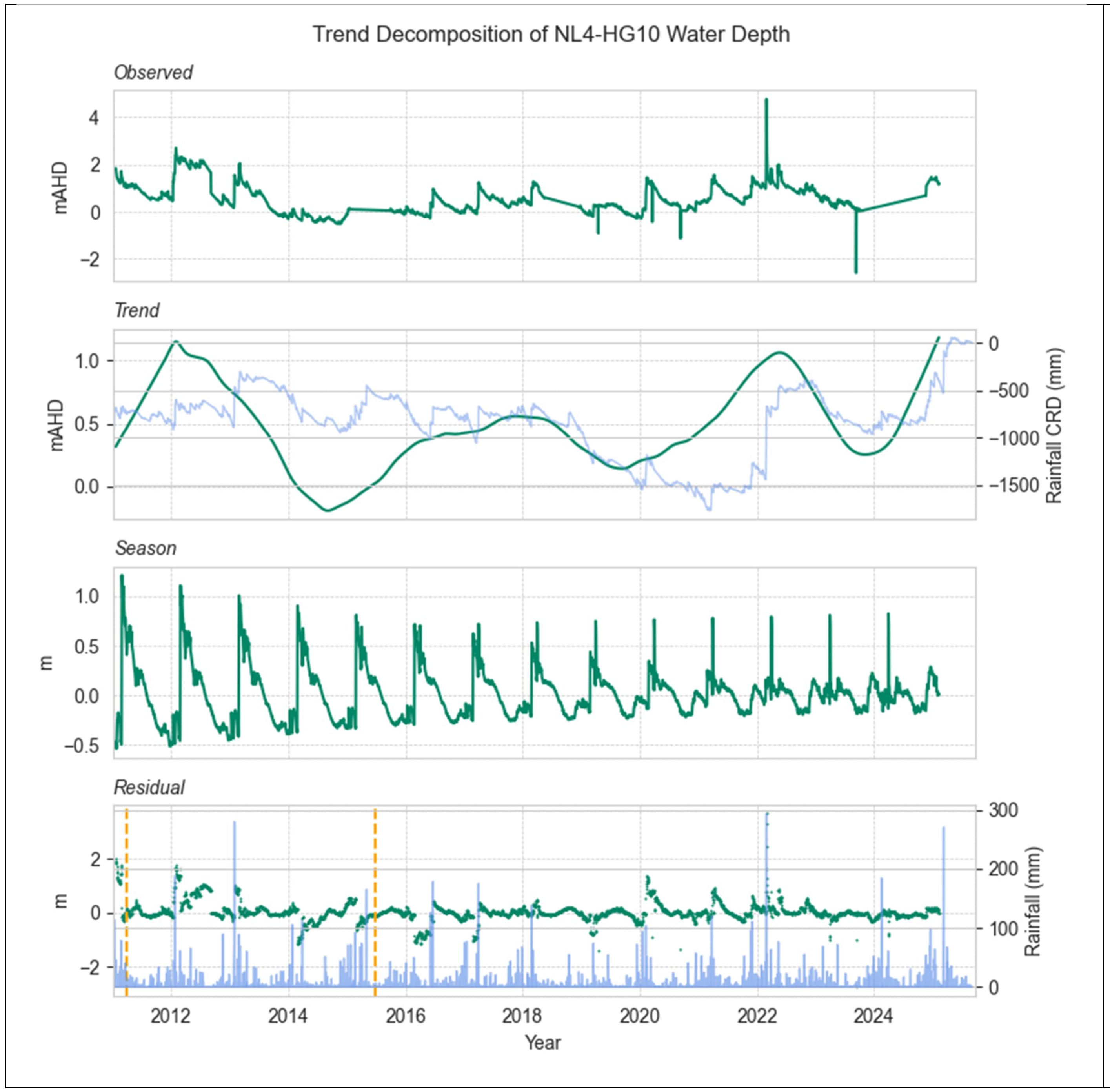
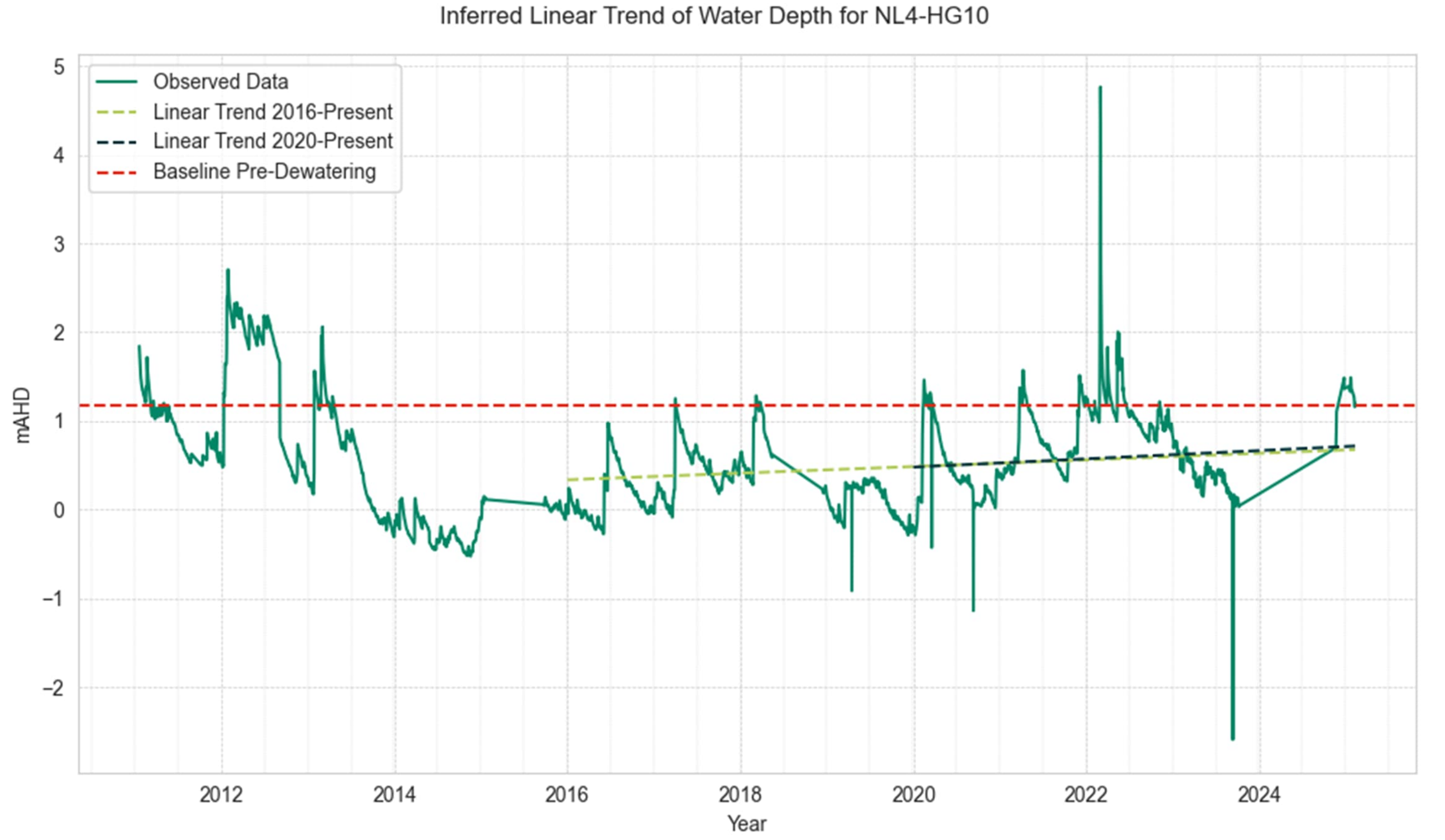


Figure D.3: Seasonal Trend Decomposition and Regression analysis of groundwater elevations at NL4-HG10

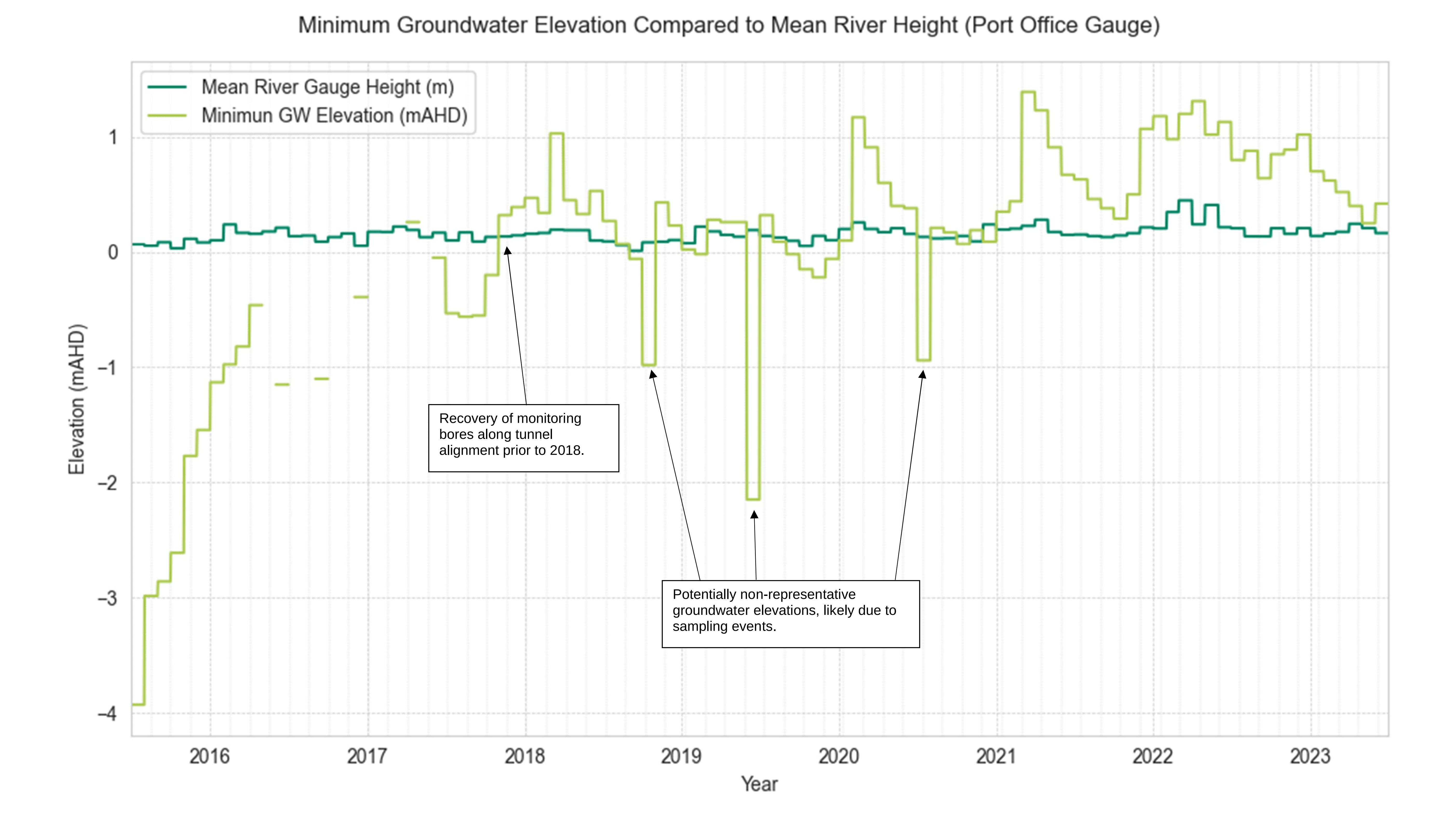




Appendix E

Brisbane River Height Comparison

Figure E.1: Observed minimum groundwater elevations of the original monitoring bore network consisting of 20 bores from June 2015 to June 2023 period compared to monthly mean Brisbane River height at Port Office Gauge (BNA885/540684). Since groundwater recovery stabilisation circa 2018, minimum groundwater elevations are typically greater than the mean river height. It is noted that though the minimum groundwater elevation was typically lower than the river height prior to 2018, these measurements were in monitoring bores along the tunnel alignment; monitoring bores closer to the river were not affected by drawdown to the same extent and it was determined that inflow from the Brisbane River was not occurring.



Appendix F

Daily Rainfall Data

Appendix F Daily Rainfall Data

Daily rainfall data obtained from BoM weather station 40976 – Brisbane Botanic Gardens Mt Coot-Tha.

Date	Rainfall Amount (mm)
30/07/2025	0
31/07/2025	0
1/08/2025	0
2/08/2025	0.8
3/08/2025	1.6
4/08/2025	0
5/08/2025	0
6/08/2025	0
7/08/2025	0
8/08/2025	3
9/08/2025	3.8
10/08/2025	1.2
11/08/2025	0
12/08/2025	0
13/08/2025	0
14/08/2025	0.6
15/08/2025	0
16/08/2025	0
17/08/2025	0
18/08/2025	0
19/08/2025	0
20/08/2025	2
21/08/2025	1.4
22/08/2025	3.1
23/08/2025	0
24/08/2025	0
25/08/2025	0
26/08/2025	0
27/08/2025	0
28/08/2025	0
29/08/2025	0