

TITLE
<p data-bbox="595 302 992 358">Project Olympus</p> <p data-bbox="197 414 1396 465">WORKING PILE TEST LOAD REPORT WTP05-No600</p> <p data-bbox="325 521 1264 573">Asite Ref: LCY11-KTB-XX-XX-RP-C-00044</p> <p data-bbox="639 629 943 680">Revision: P01</p>

Comment
<p data-bbox="102 857 1481 936">Keltbray have reviewed the pile settlements in the attached report and these are in line with our design assumptions and comply with the project specification requirements</p>

Pile Load Test Report

SOC-FNDS-MLT-25-097.1

Contract Information

<i>SOCOTEC UK Reference</i>	FNDS-25-097	<i>Contract Reference</i>	BE0046
<i>Client</i>	Keltbray	<i>Client Contact</i>	Graham Smith
<i>Client Address</i>	St Andrew's House Portsmouth Road Esher Surrey KT10 9TA		
<i>Site Address</i>	54A North Woolwich Road Silvertown London E16 2AA		

Abstract

This report describes the load testing carried out by SOCOTEC UK at Project Olympus on WTP5-NO600. The data presented in this report represents a summary of the measured readings due to the volume obtained. Full data records can be provided upon request.

Summary

Increment	Load (kN)	Maximum Disp. (mm)	Residual Disp. (mm)
100% DVL	1555	1.47	0.26
100% DVL + 50% F _{REP}	2309	2.42	0.76

Revision History

Revision	Report Date	Issue Date	Author	Verifier	Revision Details
1	01/05/2025	01/05/2025	DM	MP	Initial Document

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Introduction

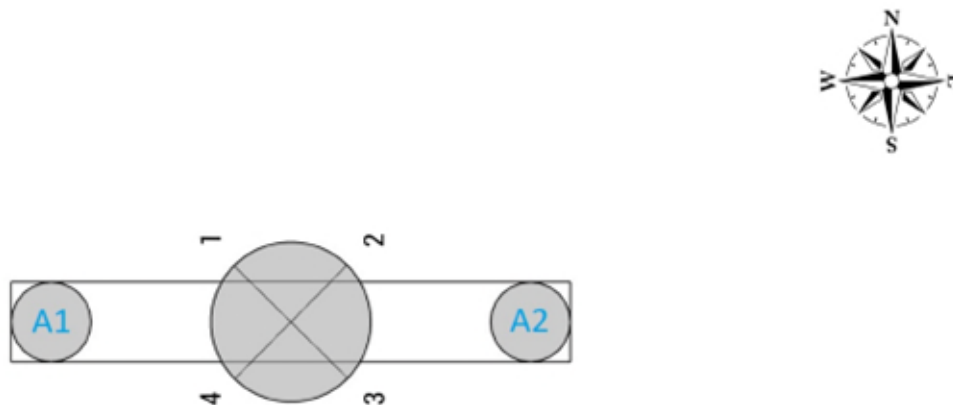
SOCOTEC UK were employed by Keltbray to undertake a Maintained Load Test at Project Olympus between the dates of 28/04/2025 and 29/04/2025. A 600 mm diameter pile designated WTP5-NO600 was installed to a depth of 25.36 m by Keltbray on 18/04/2025 using a rotary bored method. The pile was tested in vertical compression to a maximum load of 2,309 kN following ICE SPERW 3rd Edition.

SOCOTEC UK utilised an S300 reaction frame built above the test pile. Load was applied to the test pile using a 2800 kN hydraulic actuator and monitored using a 3000 kN strain gauge load cell calibrated with full traceability to national standards. Load control was performed using SOCOTEC UK's automated system, which maintains the applied load within 5 kN of the target.

Instrumentation – Pile Head

Pile displacement was monitored using four linear potentiometric displacement transducers mounted on a reference frame and connected to a Campbell Scientific CR1000 data logger.

Figure 1 – Pile Head Instrumentation Layout



Testing Schedule

The test was performed as described in ICE SPERW 3rd Edition following multiple loading cycles to 100% DVL + 50% F_{REP}. The loading increments are shown in Table 1.

DVL = 1,555 kN

F_{REP} = 1,507 kN

Table 1 – Loading Increments

Increment	DVL %	F _{REP} %	Load (kN)	Minimum Hold Time (min)
1	25	0	389	30
2	50	0	778	30
3	75	0	1166	30
4	100	0	1555	360
5	75	0	1166	10
6	50	0	778	10
7	25	0	389	10
8	0	0	0	60
9	100	0	1555	60
10	100	25	1932	60
11	100	50	2309	360
12	100	25	1932	10
13	100	0	1555	10
14	75	0	1166	10
15	50	0	778	10
16	25	0	389	10
17	0	0	0	60

Summary of Results – Pile Head

Table 2 – Pile Head Results Summary

Time	Increment	Load (kN)	Average Disp. (mm)	Disp. 1 (mm)	Disp. 2 (mm)	Disp. 3 (mm)	Disp. 4 (mm)	Temp. (°C)
28/04/2025 10:40	0% DVL	0	0.00	0.00	0.00	0.00	0.00	18.9
28/04/2025 10:42	25% DVL Start	388	0.04	0.04	0.06	0.04	0.02	18.9
28/04/2025 11:15	25% DVL End	392	0.11	0.10	0.13	0.11	0.08	19.0
28/04/2025 11:16	50% DVL Start	777	0.29	0.28	0.32	0.29	0.26	19.0
28/04/2025 11:55	50% DVL End	779	0.37	0.36	0.41	0.38	0.34	19.8
28/04/2025 11:56	75% DVL Start	1164	0.62	0.60	0.66	0.63	0.60	19.8
28/04/2025 12:45	75% DVL End	1166	0.79	0.77	0.83	0.81	0.76	21.3
28/04/2025 12:46	100% DVL Start	1556	1.01	0.98	1.06	1.03	0.98	21.3
28/04/2025 19:50	100% DVL End	1555	1.47	1.46	1.48	1.48	1.45	18.9
28/04/2025 19:50	75% DVL Start	1167	1.32	1.33	1.32	1.33	1.31	18.8
28/04/2025 20:05	75% DVL End	1168	1.28	1.29	1.27	1.28	1.27	18.3
28/04/2025 20:05	50% DVL Start	779	1.08	1.09	1.07	1.08	1.08	18.3
28/04/2025 20:20	50% DVL End	780	1.02	1.03	1.02	1.02	1.02	17.8
28/04/2025 20:20	25% DVL Start	392	0.72	0.74	0.71	0.72	0.72	17.8
28/04/2025 20:35	25% DVL End	391	0.65	0.67	0.64	0.64	0.64	17.4
28/04/2025 20:36	0% DVL Start	0	0.36	0.37	0.34	0.35	0.36	17.4
28/04/2025 21:40	0% DVL End	0	0.26	0.28	0.26	0.25	0.27	16.2
28/04/2025 21:43	100% DVL Start	1550	1.44	1.44	1.45	1.45	1.42	16.1
28/04/2025 22:45	100% DVL End	1555	1.51	1.51	1.52	1.53	1.49	15.1
28/04/2025 22:46	100% DVL + 25% F _{REP} Start	1930	1.74	1.75	1.77	1.75	1.71	15.1
28/04/2025 23:50	100% DVL + 25% F _{REP} End	1931	1.87	1.87	1.89	1.88	1.84	14.4

Time	Increment	Load (kN)	Average Disp. (mm)	Disp. 1 (mm)	Disp. 2 (mm)	Disp. 3 (mm)	Disp. 4 (mm)	Temp. (°C)
28/04/2025 23:51	100% DVL + 50% F _{REP} Start	2307	2.16	2.18	2.17	2.16	2.13	14.4
29/04/2025 05:55	100% DVL + 50% F _{REP} End	2308	2.42	2.45	2.41	2.42	2.39	10.6
29/04/2025 05:55	100% DVL + 25% F _{REP} Start	1935	2.40	2.45	2.38	2.38	2.39	10.6
29/04/2025 06:10	100% DVL + 25% F _{REP} End	1933	2.40	2.45	2.37	2.38	2.39	10.7
29/04/2025 06:10	100% DVL Start	1557	2.30	2.35	2.27	2.27	2.29	10.7
29/04/2025 06:25	100% DVL End	1558	2.29	2.34	2.26	2.27	2.28	10.9
29/04/2025 06:25	75% DVL Start	1165	2.07	2.12	2.06	2.05	2.06	10.9
29/04/2025 06:40	75% DVL End	1169	2.05	2.10	2.04	2.03	2.04	11.1
29/04/2025 06:40	50% DVL Start	778	1.74	1.77	1.73	1.73	1.72	11.1
29/04/2025 06:55	50% DVL End	779	1.70	1.72	1.70	1.69	1.68	11.4
29/04/2025 06:55	25% DVL Start	390	1.30	1.33	1.30	1.30	1.29	11.4
29/04/2025 07:10	25% DVL End	388	1.26	1.28	1.26	1.26	1.26	11.5
29/04/2025 07:11	0% DVL Start	0	0.89	0.91	0.89	0.90	0.87	11.6
29/04/2025 08:15	0% DVL End	0	0.76	0.77	0.76	0.78	0.73	13.1

Figure 2 – Load and Displacement vs. Time

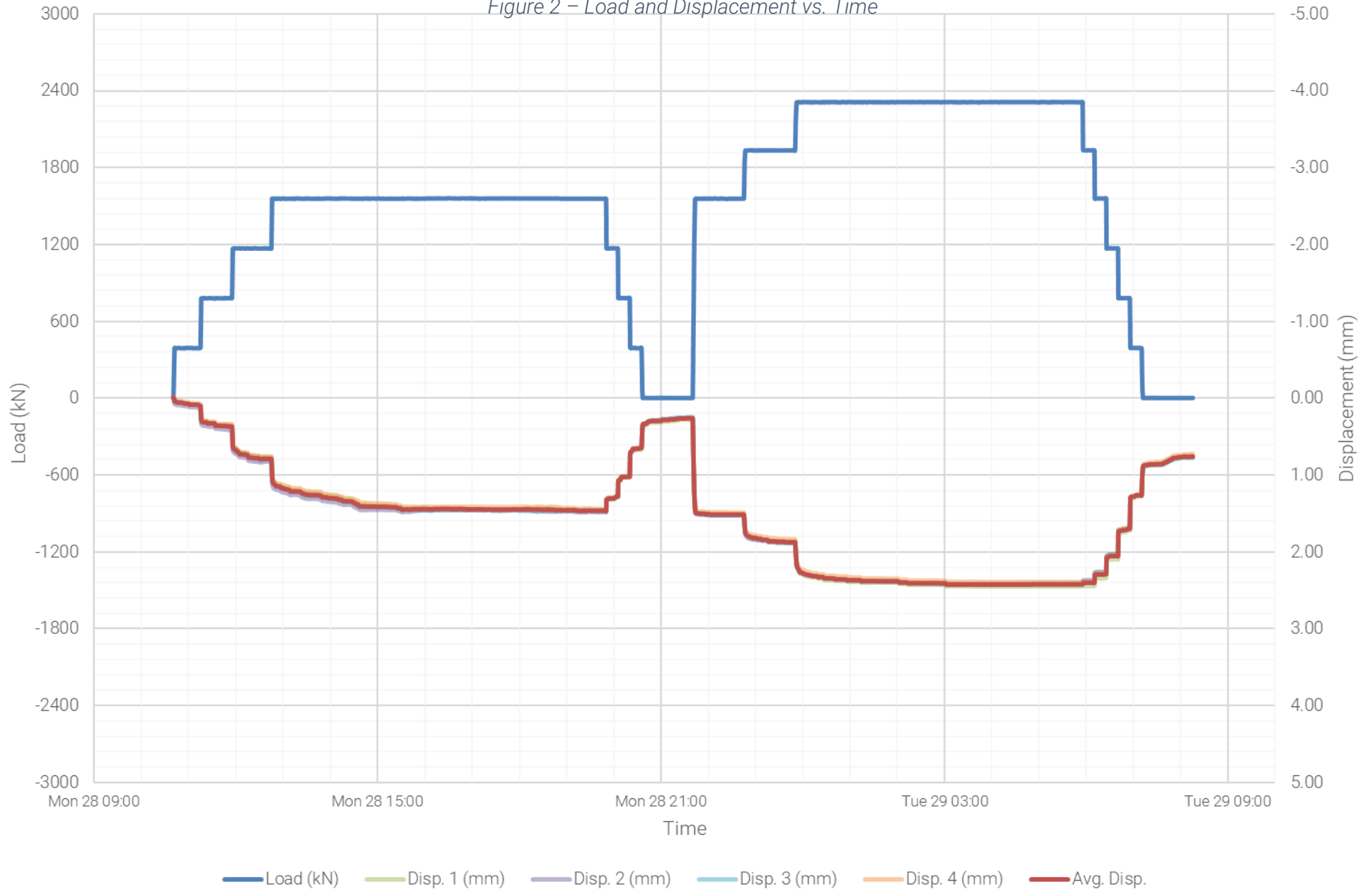
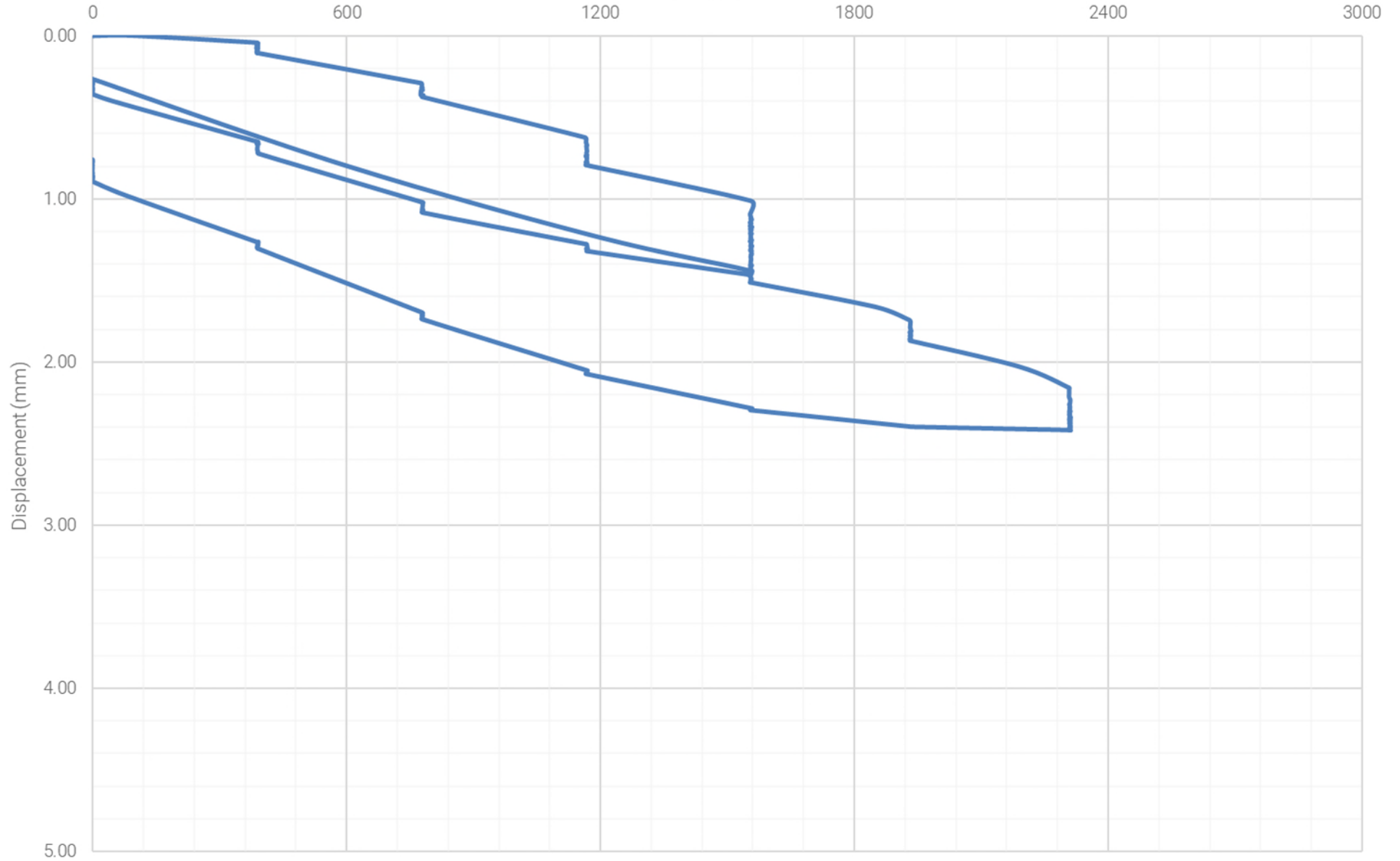


Figure 3 – Load vs. Displacement
Load (kN)



Appendix A. – Soil Strata

Material	Depth (m)
Made Ground	3.0
Alluvium/Peat	5.0
RTG	10.5
London Clay	16.5
Harwich Formation	17.5
Lambeth Sand/Gravel	23.0
Lambeth Clay	27.0
Thanet Sands	27.0+

These details are provided by Keltbray.

CALIBRATION CERTIFICATE

as per Documented In-House Technical Procedure MS90

Certificate Number: LCC-5189

Transducer Serial: PMC307

Equipment Type: Load Cell, Spherical Seat Platen

Digital Readout: 20103

Manufacturer: Woodland Weighing Systems

Date of Calibration: 26/06/2024

Date of Issue: 26/06/2024

Valid Until: 26/06/2025

CALIBRATION DATA

Reference Load (kN)	Indicated Load (kN)			Average (kN)	Uncertainty %
	Run 1	Run 2	Run 3		
0	0	0	0	0	0
300	304	305	305	305	1.09
600	605	605	604	605	1.07
900	905	905	904	905	1.07
1,200	1,206	1,205	1,206	1,206	1.07
1,500	1,504	1,506	1,507	1,506	1.07
1,800	1,803	1,805	1,806	1,805	1.07
2,100	2,102	2,103	2,102	2,102	1.07
2,400	2,400	2,402	2,401	2,401	1.07
2,700	2,699	2,700	2,698	2,699	1.07
3,000	2,997	2,999	2,997	2,998	1.07
0	0	0	0	0	0

Start Temperature: 23°C End Temperature: 23.5°C

CALIBRATION EQUIPMENT

Reference	Serial	Description	Calib. Due
Load	PMC 309	3 MN Master Load Cell	24/02/2025
Temperature	DT-19	Digital Thermometer	31/08/2025

FACTOR: 1375

OFFSET: 0

Calibrated by: Bart Sikora

Approved by: Michael Plummer




CONTROLLED DOCUMENT PMC90T .Results relate only to the item being calibrated

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
Calibration of measurement equipment is not included in the schedule of accreditation for UKAS laboratory number 0001.

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CALIBRATION CERTIFICATE

as per Documented In-House Technical Procedure MS91

Certificate Number: DTC-7384

Transducer Serial: TLP064 **Equipment Type:** Linear Potentiometric Displacement Transducer
Digital Readout: PMC1238 / 7132 **Manufacturer:** Variohm
Date of Calibration: 18/10/2024 **Date of Issue:** 18/10/2024 **Valid Until:** 18/10/2025

CALIBRATION DATA

Reference Disp.(mm)	Indicated Disp. (mm)			Average (mm)	Uncertainty (mm)
	Run 1	Run 2	Run 3		
0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.99	0.99	0.99	0.99	0.00
5.00	5.00	5.00	5.00	5.00	0.00
10.00	10.00	10.00	10.00	10.00	0.00
15.00	15.01	15.00	15.00	15.00	0.00
20.00	20.01	20.01	20.01	20.01	0.00
30.00	29.99	29.99	29.99	29.99	0.00
40.00	40.01	40.01	40.01	40.01	0.00
30.00	29.99	29.99	29.99	29.99	0.00
20.00	20.01	20.01	20.01	20.01	0.00
15.00	15.01	15.01	15.01	15.01	0.00
10.00	10.00	10.00	10.00	10.00	0.00
5.00	5.00	5.00	5.00	5.00	0.00
1.00	0.99	0.99	0.99	0.99	0.00
0.00	0.00	0.00	0.00	0.00	0.00

Start Temperature: 19.6°C End Temperature: 19.9°C

CALIBRATION EQUIPMENT

Reference	Serial	Description	Calib. Due
Displacement	M4	50 mm Digital Micrometer	27/09/2025
Temperature	70230	Digital Thermometer	28/10/2025

FACTOR: 52.0770

OFFSET: 0

Calibrated by: Stephen Williams

Approved by: Michael Plummer




CONTROLLED DOCUMENT PMC91T Results relate only to the item being calibrated

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
 Calibration of measurement equipment is not included in the schedule of accreditation for UKAS laboratory number 0001.

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CALIBRATION CERTIFICATE

as per Documented In-House Technical Procedure MS91

Certificate Number: DTC-7389

Transducer Serial: TLP100 **Equipment Type:** Linear Potentiometric Displacement Transducer
Digital Readout: PMC1238 / 7132 **Manufacturer:** Variohm
Date of Calibration: 23/10/2024 **Date of Issue:** 23/10/2024 **Valid Until:** 23/10/2025

CALIBRATION DATA

Reference Disp.(mm)	Indicated Disp. (mm)			Average (mm)	Uncertainty (mm)
	Run 1	Run 2	Run 3		
0.00	0.00	0.00	0.00	0.00	0.00
1.00	1.02	1.02	1.02	1.02	0.00
5.00	5.08	5.08	5.08	5.08	0.00
10.00	10.09	10.10	10.10	10.10	0.00
15.00	15.10	15.10	15.10	15.10	0.00
20.00	20.06	20.06	20.06	20.06	0.00
30.00	29.94	29.94	29.94	29.94	0.00
40.00	39.88	39.88	39.88	39.88	0.00
30.00	29.94	29.94	29.94	29.94	0.00
20.00	20.06	20.06	20.06	20.06	0.00
15.00	15.10	15.10	15.10	15.10	0.00
10.00	10.10	10.10	10.10	10.10	0.00
5.00	5.08	5.08	5.08	5.08	0.00
1.00	1.02	1.02	1.02	1.02	0.00
0.00	0.00	0.00	0.00	0.00	0.00

Start Temperature: 21.3°C End Temperature: 21.2°C

CALIBRATION EQUIPMENT

Reference	Serial	Description	Calib. Due
Displacement	M4	50 mm Digital Micrometer	27/09/2025
Temperature	70230	Digital Thermometer	28/10/2025

FACTOR: 51.777

OFFSET: 0

Calibrated by: Stephen Williams

Approved by: Michael Plummer




CONTROLLED DOCUMENT PMC91T Results relate only to the item being calibrated

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
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CALIBRATION CERTIFICATE

as per Documented In-House Technical Procedure MS91

Certificate Number: DTC-7396

Transducer Serial: TLP146 **Equipment Type:** Linear Potentiometric Displacement Transducer
Digital Readout: 13653 **Manufacturer:** Variohm
Date of Calibration: 13/12/2024 **Date of Issue:** 13/12/2024 **Valid Until:** 13/12/2025

CALIBRATION DATA

Reference Disp.(mm)	Indicated Disp. (mm)			Average (mm)	Uncertainty (mm)
	Run 1	Run 2	Run 3		
0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.99	0.99	0.99	0.99	0.00
5.00	4.98	4.98	4.98	4.98	0.00
10.00	9.97	9.97	9.97	9.97	0.00
15.00	14.98	14.98	14.98	14.98	0.00
20.00	19.98	19.98	19.98	19.98	0.00
30.00	30.02	30.01	30.01	30.01	0.00
40.00	39.87	39.87	39.87	39.87	0.00
30.00	30.01	30.01	30.01	30.01	0.00
20.00	19.98	19.98	19.98	19.98	0.00
15.00	14.98	14.98	14.97	14.98	0.00
10.00	9.97	9.97	9.97	9.97	0.00
5.00	4.98	4.98	4.98	4.98	0.00
1.00	0.99	0.99	0.99	0.99	0.00
0.00	0.00	0.00	0.00	0.00	0.00

Start Temperature: 20.4°C End Temperature: 20.6°C

CALIBRATION EQUIPMENT

Reference	Serial	Description	Calib. Due
Displacement	M4	50 mm Digital Micrometer	27/09/2025
Temperature	70230	Digital Thermometer	28/10/2025

FACTOR: 51.4098

OFFSET: 0

Calibrated by: Stephen Williams

Approved by: Michael Plummer




CONTROLLED DOCUMENT PMC91T Results relate only to the item being calibrated

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
 Calibration of measurement equipment is not included in the schedule of accreditation for UKAS laboratory number 0001.

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CALIBRATION CERTIFICATE

as per Documented In-House Technical Procedure MS91

Certificate Number: DTC-7432

Transducer Serial: TLP160 **Equipment Type:** Linear Potentiometric Displacement Transducer
Digital Readout: 13653 **Manufacturer:** Variohm
Date of Calibration: 14/03/2025 **Date of Issue:** 14/03/2025 **Valid Until:** 14/03/2026

CALIBRATION DATA

Reference Disp.(mm)	Indicated Disp. (mm)			Average (mm)	Uncertainty (mm)
	Run 1	Run 2	Run 3		
0.00	0.00	0.00	0.00	0.00	0.00
1.00	0.99	0.99	0.99	0.99	0.00
5.00	4.96	4.96	4.96	4.96	0.00
10.00	9.94	9.94	9.94	9.94	0.00
15.00	14.96	14.96	14.96	14.96	0.00
20.00	20.01	20.01	20.01	20.01	0.00
30.00	30.04	30.04	30.04	30.04	0.00
40.00	39.91	39.91	39.91	39.91	0.00
30.00	30.04	30.04	30.04	30.04	0.00
20.00	20.01	20.01	20.01	20.01	0.00
15.00	14.96	14.96	14.96	14.96	0.00
10.00	9.94	9.94	9.94	9.94	0.00
5.00	4.96	4.96	4.96	4.96	0.00
1.00	0.99	0.99	0.99	0.99	0.00
0.00	0.00	0.00	0.00	0.00	0.00

Start Temperature: 21.2°C End Temperature: 21.1°C

CALIBRATION EQUIPMENT

Reference	Serial	Description	Calib. Due
Displacement	M4	50 mm Digital Micrometer	27/09/2025
Temperature	70230	Digital Thermometer	28/10/2025

FACTOR: 51.75

OFFSET: 0

Calibrated by: Stephen Williams

Approved by: Michael Plummer




CONTROLLED DOCUMENT PMC91T Results relate only to the item being calibrated

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