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**Email:** info@ndt-piletesting.com
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**Non Destructive Testing Services Ltd**
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Longhedge Lane, Orston
Nottingham, NG13 9PL

**Client Address**
Bachy Soletanche Ltd
Henderson House
Langley Place
Higgins Lane
Burscough
Lancashire
L40 8JB

**Site Address**
550 Wilmslow Road
Didsbury
Manchester
Greater Manchester
M20 4BX

# Pile Integrity Test Report

**(Sonic Echo)**

**Job Number: 524031-2058**

**Report Number: RPT/68580**

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## Pile Integrity Test Report

| | |
|---|---|
| **Job Number:** | 524031-2058 |
| **Report Number:** | RPT/68580 |
| **Client:** | Bachy Soletanche Ltd, Henderson House, Langley Place, Higgins Lane, Burscough, Lancashire, L40 8JB |
| **Site:** | 550 Wilmslow Road, Didsbury, Manchester, Greater Manchester, M20 4BX |
| **Date Of Test:** | 13/04/2026 |
| **Total Piles Tested:** | 4 |
| **Piles Tested:** | P/001, P/002, P/003, P/004 |

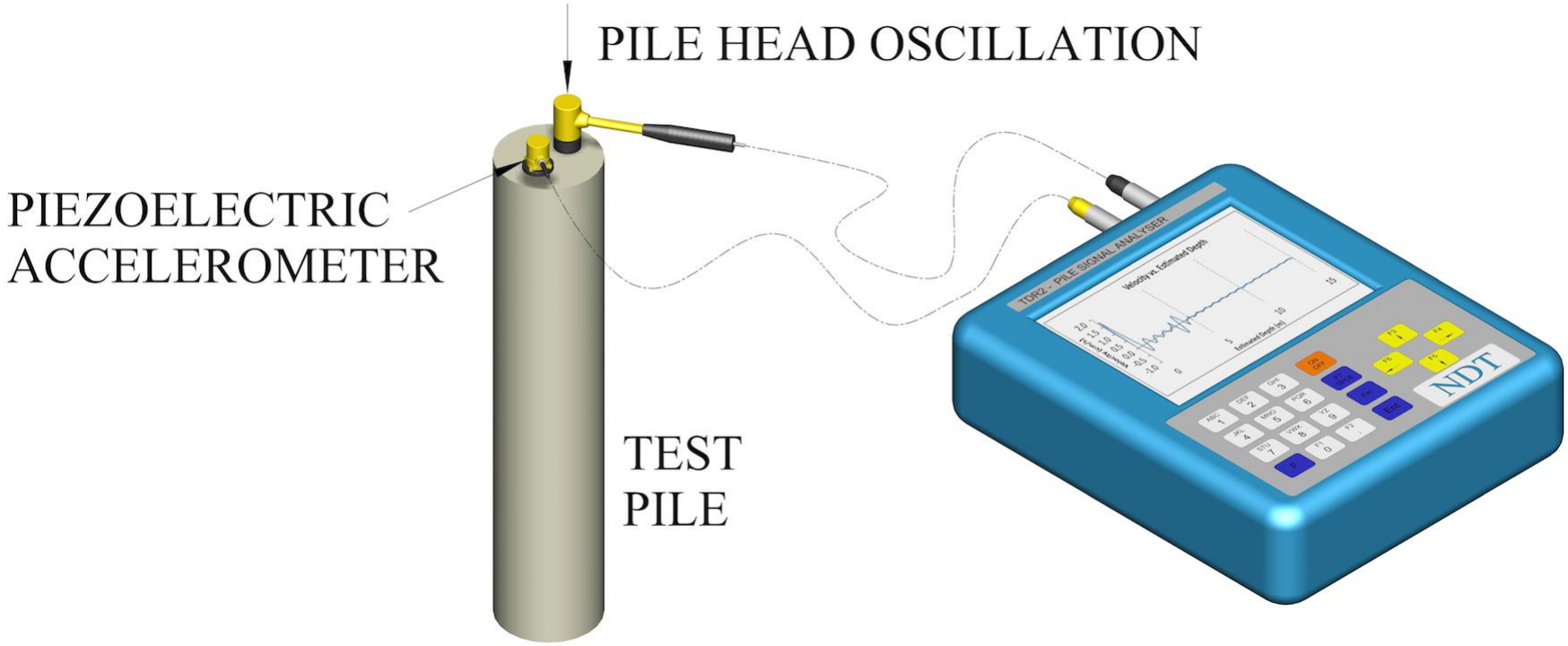
Pile integrity testing was carried out by NDT Services Ltd. at the above site on the date stated. An assessment of the integrity of the piles listed has been achieved in accordance with current ICE specifications / ISO 9001:2008 requirements using the methods described in the following pages.

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## Test Method

Pile Integrity Testing is used for the purpose of investigating the structural soundness of piles which have been constructed below ground level. On site testing is carried out using the Pile Integrity Test Sonic Echo system in accordance with ICE Specification for Piling & Embedded Retaining Walls B13.1 - B13.9 The basic principle requires the pile head to be excited by a hammer blow which results in pile head oscillation and a longitudinal wave propagation along the pile shaft. The reflected signal is received by means of a piezoelectric accelerometer held in firm contact with the pile head. The response can then be stored and downloaded onto the site pile test analyser. Each pile is tested at several points to ensure that a consistent signal is being obtained. The engineer conducting the test can therefore view each signal and carry out a first line inspection. Any potential discontinuities can be identified immediately. If appropriate, remedial action can be carried out and a retest applied. Further analysis is carried out off site and a full report is issued containing copies of all test signals obtained. All site tests carried out by NDT Services Ltd. are retained for future reference



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## Signal Analysis

The integrity tests carried out on each pile produce a stress-wave signal which can be viewed in the form of a sine wave decay. All piles tested can be analysed by the test engineer immediately.

The test identifies variations in the acoustical impedance within the pile shaft. This can be defined as a product of the pile density, sonic wave velocity and horizontal pile sectional area. Variations in impedance or reflections from significant discontinuities such as the toe seat of the pile, a concrete/air interface or changes in cross sectional area produce distinctive changes in the received signal. Dependant upon the type of defect, changes in the stresswave amplitude and frequency allow the anomaly to be identified. In the case of a fully voided pile the test would indicate a complete loss of signal.

Further analysis can identify at what point along the pile shaft the discontinuity occurs. The pile test analyser calculates in milliseconds the exact point of the change in amplitude/frequency within the received stress-wave. Using a factor representing the sonic velocity within the body of the pile a calculation can now identify at what point within the pile shaft the discontinuity may occur. It can be seen that this method of testing allows the type of defect and its position to be identified. The pile toe seat reflection results in a similar but distinctive change in stress-wave amplitude/frequency. Therefore a secondary feature of the test allows estimation of pile length to be calculated.

The equation L = tc/2 is used where:
L = calculated pile length
t = toe seat reflection time (milliseconds)
c = sonic velocity propagation within pile material

The above calculation uses a factor of 4000 m/sec to represent sonic velocity propagation within the pile material. As it is possible for this figure to vary due to the pile material by +/- 0.5klm/sec it can be seen that all figures quoted for lengths are estimates. All figures quoted contain a tolerance of +/- 10% of the pile cast length. In cases where the pile length/diameter ratio exceeds 40D exact toe seat reflection figures may not be obtainable and estimates may be given.

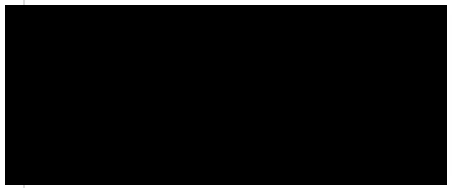
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## Report Conclusion

| | |
|---|---|
| **Notes:** | All piles tested appear satisfactory with no distinguishable defects apparent within the pile shaft. |
| **Piles Tested At Cut Off Level:** | P/001, P/002, P/003, P/004 |
| **Piles Tested At Cast Level:** | None |
| **Retest Piles:** | None |
| **Anomalies:** | None |

**Signed...**



Andrzej Zarzycki

**Approved...**



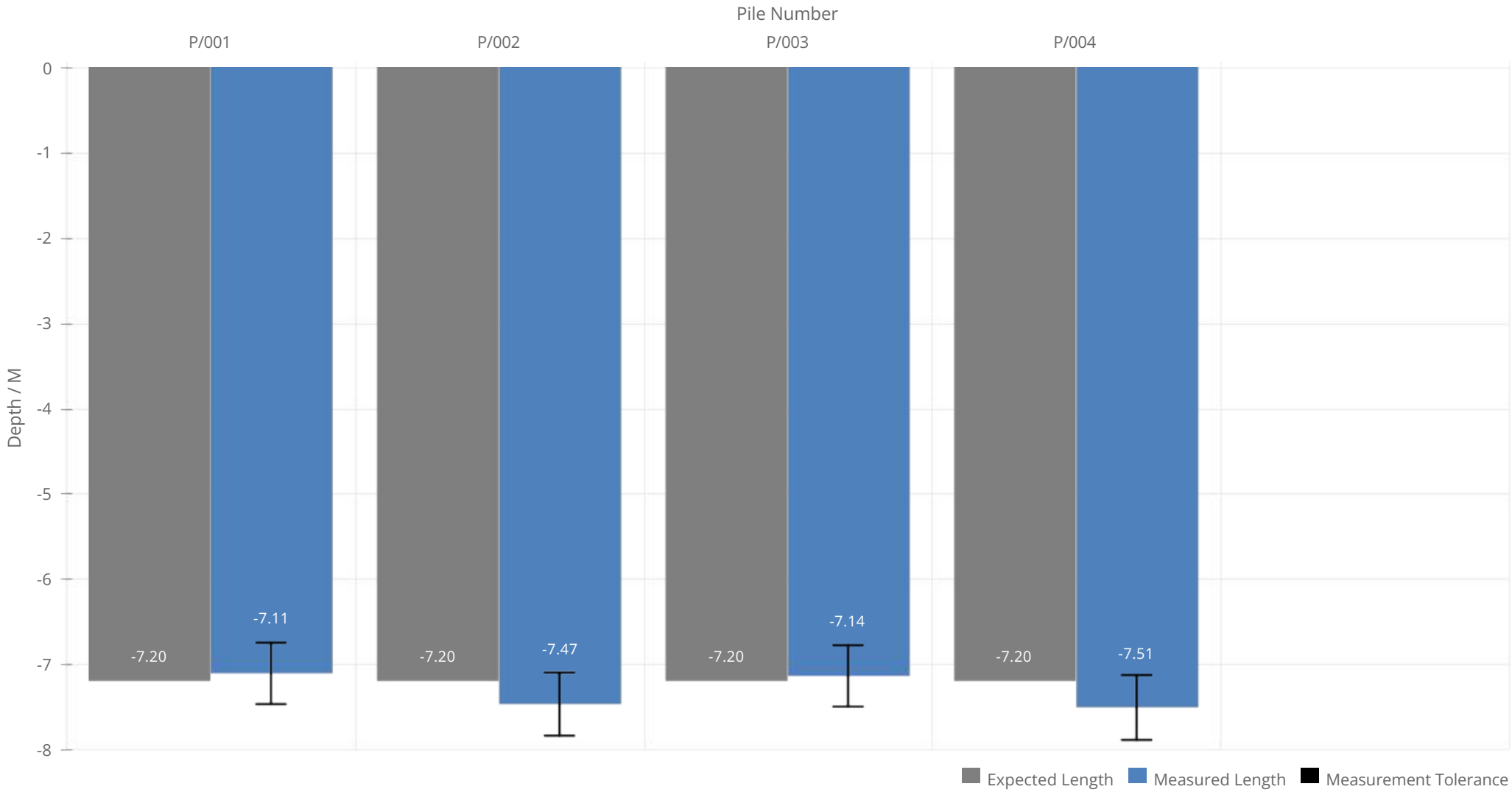
Redford Purser

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## Site Overview Chart



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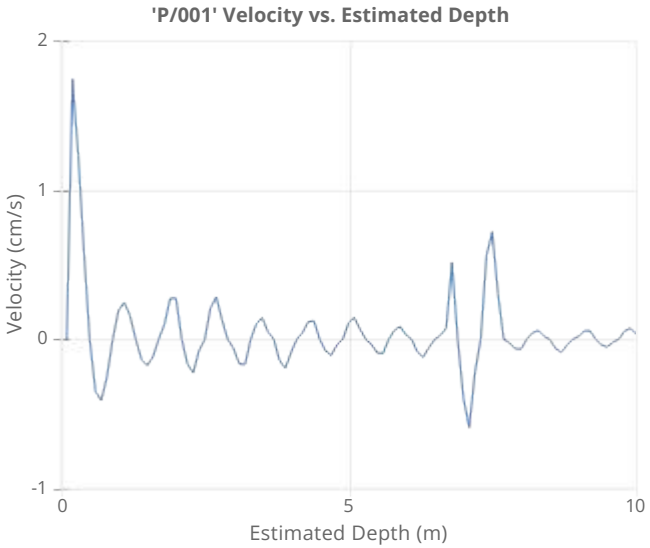
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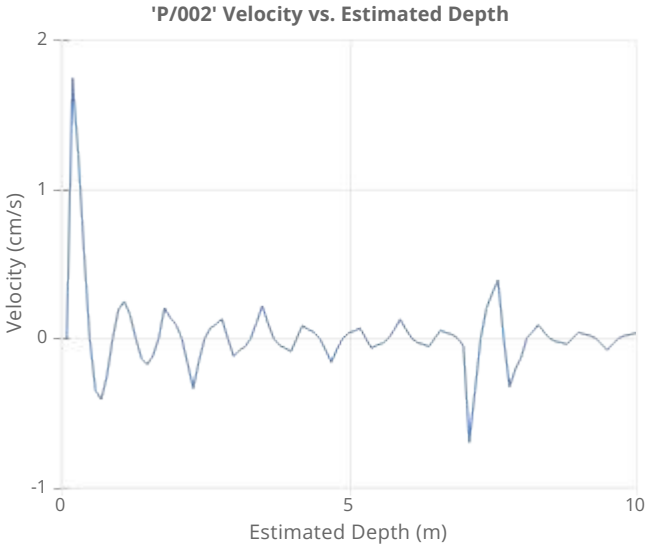
The charts on the following pages represent the readings from each individual pile test. The purpose of the testing was to establish the construction integrity of the piles listed, this report contains our test signal result, interpretations and conclusions.

For clarity the x-axis shown is an estimated depth, rather than TSRT (Toe Seat Reflection Time). A standard response will indicate a visible change of impedence within +/- 10% of the true pile length.

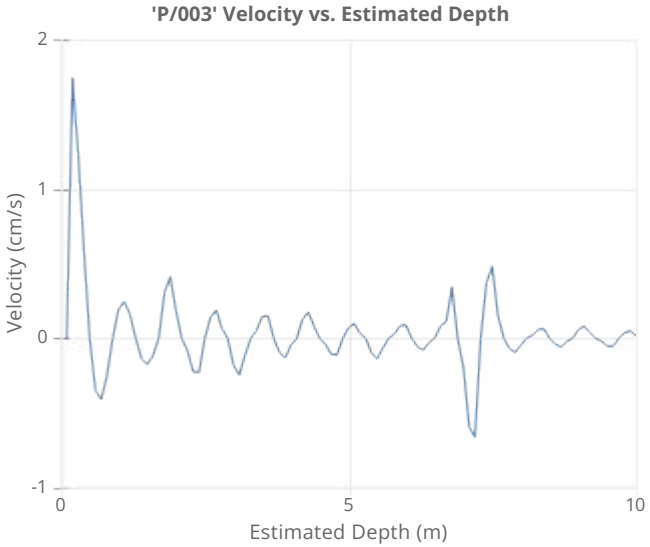
Where an anomalous or non standard signal response is recorded, the type of anomaly and position within the pile shaft will be indicated.




**Pile Number: P/001**
Date of Test: 13/04/2026
Bachy Soletanche Ltd
Job Number: 524031-2058
Diameter = 450mm
TSRT = 3.56ms
Velocity = 4000 m / s
**Depth = 7.11 ± 10%**




**Pile Number: P/002**
Date of Test: 13/04/2026
Bachy Soletanche Ltd
Job Number: 524031-2058
Diameter = 450mm
TSRT = 3.74ms
Velocity = 4000 m / s
**Depth = 7.47 ± 10%**

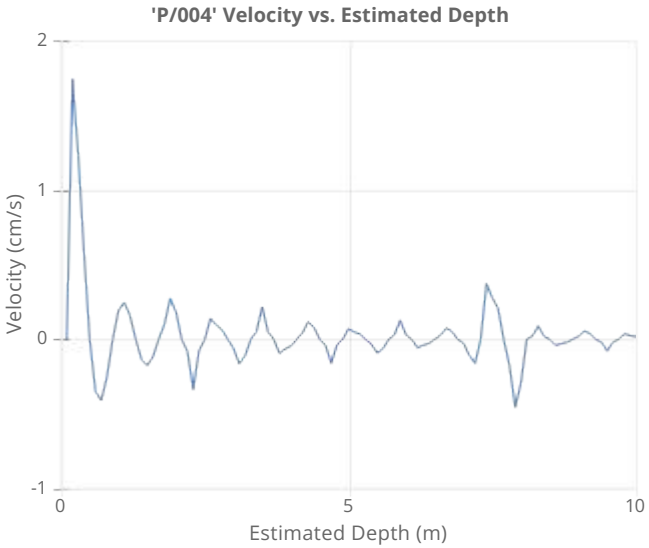



**Pile Number: P/003**
Date of Test: 13/04/2026
Bachy Soletanche Ltd
Job Number: 524031-2058
Diameter = 450mm
TSRT = 3.57ms
Velocity = 4000 m / s
**Depth = 7.14 ± 10%**

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**Pile Number: P/004**
Date of Test: 13/04/2026
Bachy Soletanche Ltd
Job Number: 524031-2058
Diameter = 450mm
TSRT = 3.76ms
Velocity = 4000 m / s
**Depth = 7.51 ± 10%**