



**MANCHESTER
CITY COUNCIL**

Manchester City Council

Northeast Gateway Cycle Bridge

Ashton Canal, New Islington, Manchester

Ground Conditions Assessment



Prepared by: Wilde Consultants Ltd

Date: August 2021

Reference: 651-197-GC01-A Ground Conditions Assessment

Revision: A

Structure Name: North East Gateway Cycleway Bridge (TBC)

Route Crossed: Ashton Canal

Location: (E 385452, N 398300)
SJ 85452 98300

Structure Type: Pedestrian/Cycling Bridge

REPORT CONTROL SHEET

Version	Date	Status	Prepared By	Checked	Approved
A	August 2021	First Issue	J Hughes	M Goble CEng MICE	M Goble CEng MICE

INTRODUCTION

This Phase 1 Geo-Environmental Desktop Appraisal accompanies an application for Full Planning Permission and Listed Building Consent, submitted by Manchester City Council (MCC), for a new pedestrian bridge over Ashton Canal in New Islington.

Improvement works are proposed by Manchester City Council Major Projects to install a new walking and cycling bridge and provide an additional connection across the Ashton Canal. This is part of a wider strategy to facilitate better connections needed as a result of recent and planning activity taking place in the Ancoats and New Islington area, and is an aspiration of the Beelines network, Strategic Regeneration Frameworks relevant to the area, and the city more broadly.

The Site is located on Ashton Canal in New Islington in Manchester, 200m to the north east of Great Ancoats Street, 75m west of Pollard Street and close to the New Islington Tram Stop, as identified on the site plan (Figure 1). The new bridge proposes to sit alongside the existing Grade II Listed canal lock (Lock No. 3), where existing pedestrian access is currently provided.

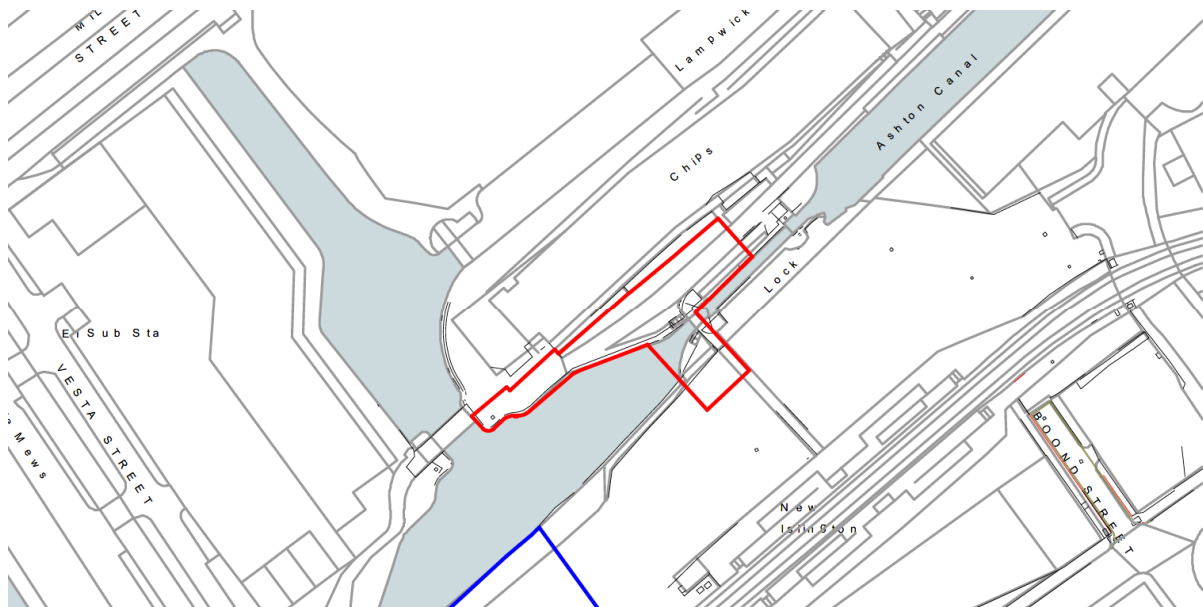


Figure 1 – Site Location Plan

The Site is seen as an essential connection to build on the transformative work that has taken place to date in the local area, which is planned to continue with the delivery of further residential and commercial properties nearby. The bridge is located within the Regional Centre, designed with the purpose of supporting the strategy to provide better and readily available car-free cycle routes into and around the city centre.

Infrastructure planning of this type has a critical role to play in supporting sustainable transport mode usage for accessing the city centre, which acts as a key driver of economic growth across sectors to enhance productivity for Manchester and the wider city region.

Proposals

The Proposed Development comprises a 3.6m wide pedestrian and cycle bridge with ramps, with works proposed to the Ashton Canal towpath in order to deliver the necessary ramping gradient to ensure maximum accessibility. Ramping and gradients, to get to the necessary levels and clearance over the existing canal, takes place on the Chips building side of the Ashton Canal, thereby allowing for level access onto the Pollard Street side of the Ashton Canal.

The bridge detailing includes a woven powder coated aluminium design for the balustrade and seeks to reflect the industrial heritage of the existing canal locks by adopting a design inspired by the traditional detailing of canal bridges. This woven design is complemented by a simple and elegant wooden handrail, which will be lit on the underside to improve both usability and safety during the evening and night-time by subtly lighting the new path.

The ramps leading up to the bridge crossing will be purposefully simple and robust to provide a complementary modern interpretation of existing materials, reduce ongoing maintenance cost and to recognise the adjacency to the existing canal lock and mooring on the existing canal coping stones. As such, the ramps will be clad in a stylised and textured pre-cast concrete treatment to complement the existing canal towpath.

Geo-Environmental Setting

Site History

The Ashton Canal was initially constructed in the late 1700s. It was built to allow Coal to be brought into Manchester city centre from the Oldham, Ashton and Hyde areas. The New Islington area immediately to the east of the proposed location was traditionally an industrial area, including factories, cotton mills and wharves for unloading goods. The area to the west of the canal was the Ancoat's Hospital from 1828 until 1989.

Currently the area to the east of the Ashton Canal is grassland before the New Islington Metrolink stop, although a development is planned.

The area to the west of the canal encompasses the towpath of the canal and the Chips building. The Chips building contains a mixture of office space and residential units.

Summary

Currently, intrusive geotechnical investigations have not been undertaken. Following Planning Approval, investigations are planned consisting of boreholes and trial pits on both sides of the Ashton Canal.

Using information from the British Geological Survey (BGS), previous boreholes in the vicinity identify made ground to depths of up to 2.5m followed by increasingly stiff layers of clay down to 8m where the boreholes were terminated for undisclosed reasons. Records of these boreholes can be seen in Appendix A.

The planned boreholes will aim to reach a depth of 20m or until bedrock is encountered. Tests will be performed to ascertain the properties of both the soil and the bedrock to permit the foundations to be designed appropriately. The boreholes will be positioned as shown in drawing "651-197-SK02 Borehole Location Plan" which is contained in Appendix B.

From the Envirocheck Report commissioned at the site, the area has either "Very Low" or "No" Hazard rating for ground dissolution, landslides, running sand or shrinking or swelling clay.

Desk summary and risk assessment

The key structural considerations for the foundations of both the bridge structure and western ramp are to avoid placing extra loading onto the washwalls of the Ashton Canal.

The foundations of both the abutments and the western approach ramp are likely to be reinforced concrete piles. The piles will be topped with reinforced concrete pile caps. The exact size and spacing will be dictated by the results of the geotechnical investigations.

Using a piled foundation will enable the loadings from the bridge, ramps and the pedestrians to be transferred to the bedrock and soil beneath the level of the washwalls of the Ashton Canal.

The ground is expected to be stable.

Potential contaminative sources

Given the areas industrial heritage it is likely that the soil will contain contaminants. The planned boreholes will undertake Waste Acceptance Criteria testing to determine which contaminants. The potential contaminants include, but are not limited to metals, heavy metals, sulphates, inorganic compounds, fuels, oils and petroleum hydrocarbons.

Receptors

Potential Receptors for contaminants include:

- Ashton Canal
- Groundwater
- Humans
- The Proposed Structure

Pathways

The walls of the Ashton Canal backed by a puddle clay layer of approximately 1.5m thickness. This puddle clay layer ensures that the canal is waterproof and ensures that groundwater cannot penetrate in to canal, and that canal water cannot escape from the watercourse. This significantly reduces the risk of any contaminants being able to enter the Ashton Canal.

The groundwater vulnerability in the location is described as secondary undifferentiated from the Envirocheck Report. The proposed construction taking place at the site will not increase the risk of existing contaminants entering groundwater sources.

If the soil is found to be contaminated, then all soil excavated during the proposed works will be disposed of in the appropriate manner. All areas of excavation will be surfaced over during construction. Therefore the risk to humans after construction will be minimal. Prior to construction the Contractor will be informed of any contaminants. The Contractor will have to provide their method statements to MCC on how they plan to deal with the contaminated ground.

The proposed ground investigation will include testing to check the levels of contaminants that could cause damage to concrete over a period of time (e.g. sulphates). The foundations of the structure will be designed appropriately for the long term conditions they are expected to operate in.

Conclusions

Risks

The proposed construction is not expected to increase the risks of any existing contaminants entering either the Ashton Canal or any groundwater sources.

The proposed reinforced concrete foundations may be at risk from contaminants in the soil, but further testing will confirm the levels of contaminants and the foundations will be designed to resist any potential chemical attacks.

Further work

As described above, following planning permission 3No. boreholes are planned with associated trial pits.

Testing will be undertaken to samples at all 3 boreholes to detail waste acceptance criteria as well as inform an appropriate foundation design.

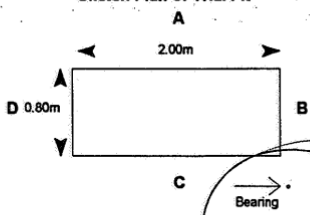
APPENDIX A
HISTORIC BOREHOLE RECORDS

Borehole Location Plan



 Norwest Holst Soil Engineering Ltd. TRIAL PIT LOG		Hole ID. TP5 Sheet 1 of 1			
Contract No.	F11459	Method	Machine Excavated	Coordinates	0.0 E
Project	Ancoats, Manchester	Equipment	JCB 3CX	Ground Level	0.0m AOD
Client	English Partnerships	Logged by	BJH	Date Started	02/08/1999
Consultant	Pell Frischmann Consultants Ltd			Date Completed	02/08/1999

Description of Strata	Legend	Depth Below G.L.	O.D. Level	Sampling	Notes
MADE GROUND: Tarmacadam.		0.06			
MADE GROUND: Yellowish brown sand with coarse subangular to rounded gravel sized fragments of sandstone.		0.50		GD 0.50	
Firm light grey mottled blue becoming brown with depth fissured CLAY with occasional fine to coarse subrounded to subangular gravels. —below 1.00m becoming stiff and more sandy				GD 1.50	
		2.50		GD 2.50	
Stiff brown mottled blue CLAY with some fine sand.				GD 3.50	
		4.00		D 4.00	
Trial pit complete at 4.00 m.					

Stability Stable Shoring No shoring used Groundwater Strike at 3.60m. Very slow seepage, but insufficient for sample to be taken Remarks	Sketch Plan of Trial Pit  Hand Vane Test Readings <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Depth</th> <th style="width: 15%;">HV Peak</th> <th style="width: 15%;">HV Remoulded</th> <th style="width: 55%;">Remarks</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Depth	HV Peak	HV Remoulded	Remarks																
Depth	HV Peak	HV Remoulded	Remarks																		

REMARKS - All depths in metres, all soil strengths in KPa. See legend sheet for key to symbols and abbreviations. All bearings given relate to magnetic north	Form ARIAL TP LOG Version 2.00 Revised 01/10/1998
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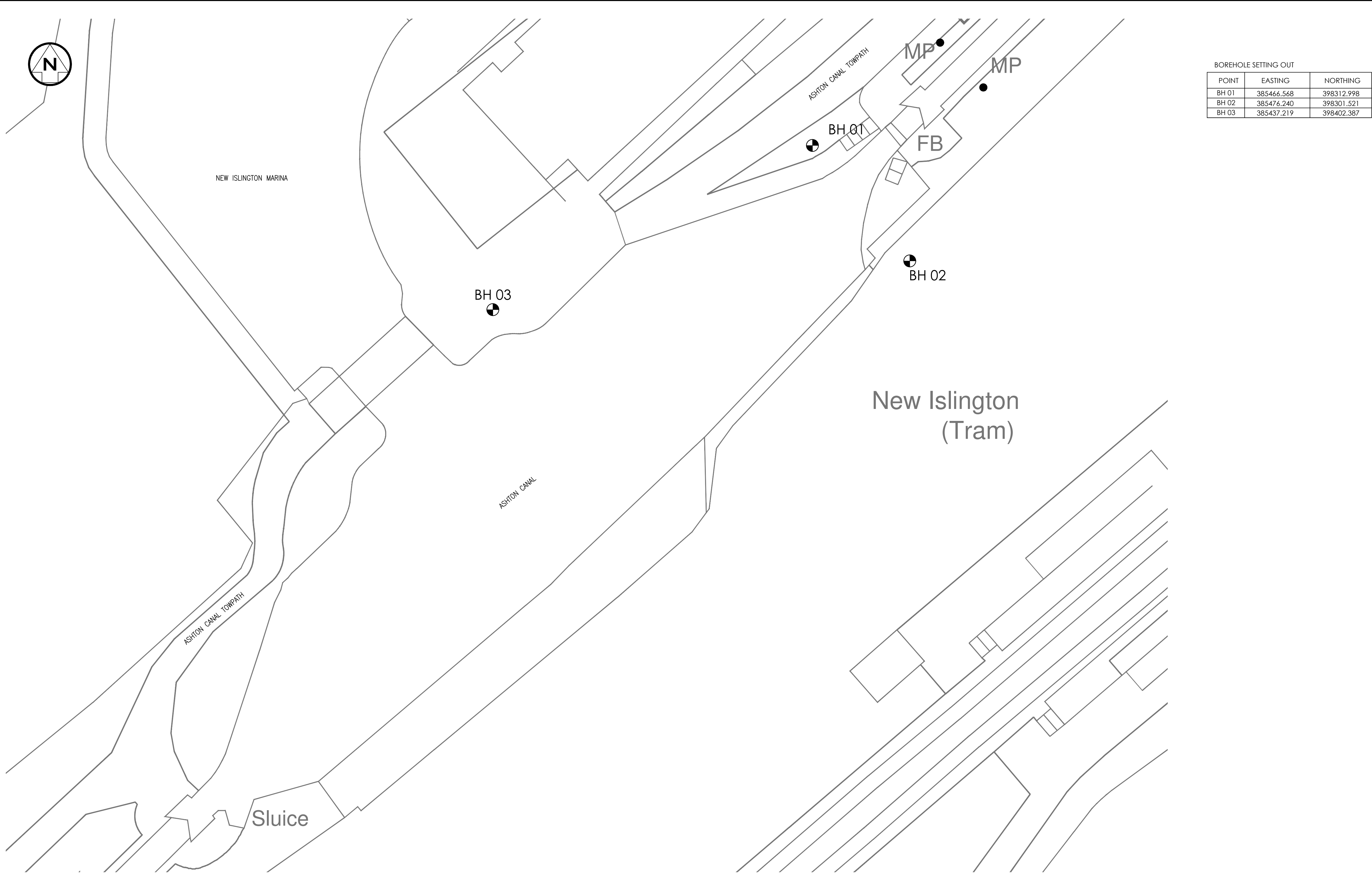
8589NE 8550 9821 695

GEO - RESEARCH LTD.										B/H No.		4			
CONTRACT										SHEET No.		1			
LOCATION										No. of sheets		1			
CLIENT										Ground Level		51.20m			
MANCHESTER CORPORATION										Commenced		15/1/72			
Weather										Completed		15/1/72			
Weather										GOOD					
STRATUM. (Scale: 20mm to 1 metre)										M.C. % Core Rec. %		Type of Test			
1. Thickness										2. Depth		3. Sample No.			
4. Blow Count (N) LL/PL/PI										5. Legend		6. 7. 8 Results of any other Tests			
9. Water										10. REMARKS					
Tarmac setts, clay and ash FILL (iii)										0.91		B1			
1.52										1.52					
Soft to firm brown mottled silty stony CLAY (Boulder Clay) (i)										1.22		2.74			
Stiff to hard brown silty sandy CLAY with pebbles (Boulder Clay) (i)										3.04		U1			
4.57										U2		39.14.25. (CI)			
6.09										U3					
7.61										D2					
7.62										U4					
5.34										8.08					
BOREHOLE										COMPLETE					
REMARKS:										M.C. % S.G.		C. B. R.		COMPACTION	
Sample Depth m										Air Voids		Type		TOP BOTTOM Value	
B1 0.91										2.65		8% Dynamic		0.1 0.2 0.1 0.2 7 8 4 5	
B2 1.52										2.65		8% Dynamic		8 7 4 5	
Copyright Reserved															

Borehole SJ89NE696

GEO - RESEARCH LTD.										B/H No. 5	
CONTRACT INNER RING ROAD, SECTION 2, PHASE I										SHEET No. 1	
LOCATION MANCHESTER										No. of sheets 1	
CLIENT MANCHESTER CORPORATION										Ground Level 49.98m	
Weather DRY										Commenced 14/12/71	
										Completed 14/12/71	
STRATUM. (Scale: 20mm to 1 metre)										TRIAXIAL TEST	
										WATER	
										REMARKS	

APPENDIX B
PROPOSED BOREHOLE LOCATIONS



BOREHOLE LOCATIONS
SCALE 1:200

BOREHOLE SETTING OUT

POINT	EASTING	NORTHING
BH 01	385466.568	398312.998
BH 02	385476.240	398301.521
BH 03	385437.219	398402.387

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE STATED IN METRES AND ARE RELATIVE TO LOCAL SURVEY DATUM.
3. NO DIMENSIONS OR LEVELS SHALL BE SCALED FROM THIS DRAWING.
4. THIS SKETCH IS BASED ON A TOPOGRAPHICAL SURVEY PROVIDED BY MCC.
5. ALL SECTIONS, MEMBER SIZES AND OVERALL ARRANGEMENT ARE INDICATIVE ONLY AND SUBJECT TO FURTHER INVESTIGATIONS AND DESIGN.
6. C&RT MINIMUM HEADROOM REQUIREMENT FROM CANAL WATER LEVEL TO BRIDGE SOFFIT IS 2.12m.
7. ALL FOUNDATIONS ARE SHOWN INDICATIVELY AND ARE SUBJECT TO FURTHER DESIGN.
8. THE INTERACTION BETWEEN CYCLISTS AND PEDESTRIANS WHEN USING THE APPROACH RAMP AND THE CONNECTED TOWPATH AND EXISTING FOOTBRIDGE IS TO BE DISCUSSED.

C	CH	JH	MG	11.06.21	PROPOSED BRIDGE REMOVED
B	SD	JH	MG	04.05.21	BOREHOLE LOCATIONS UPDATED
A	SD	JH	MG	25.08.20	FOR INFORMATION
REV	DRN	CHK	APP	DATE	DESCRIPTION



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Client MANCHESTER CITY COUNCIL				
Project NE GATEWAY CYCLEWAY BRIDGE FEASIBILITY				
Title BOREHOLE LOCATION PLAN				
Scale AS SHOWN	Drawn SD	Date 17.08.20	Chkd JH	Approved MG
Drawing No. 651-197-SK02				Revision C
Status INFORMATION				Sheet Size A1