

Appendix 13.1C

Arklow Bridge GI Report 2019



**GROUND
INVESTIGATIONS
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Ground Investigations Ireland

Arklow Bridge, Co. Wicklow

Ground Investigation Report

DOCUMENT CONTROL SHEET

| | |
|----------------|-----------------------------|
| Project Title | Arklow Bridge, Co. Wicklow |
| Engineer | ByrneLooby |
| Project No | 8975-08-19 |
| Document Title | Ground Investigation Report |

| Rev. | Status | Author(s) | Reviewed By | Approved By | Office of Origin | Issue Date |
|-------------|---------------|------------------|--------------------|--------------------|-------------------------|---------------------|
| A | Final | S Mclaughlin | F McNamara | F McNamara | Dublin | 05 December 2019 |



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1.0 Preamble

On the instructions of ByrneLooby, a site investigation was carried out by Ground Investigations Ireland Ltd., between October and November 2019 at Arklow Bridge, Co. Wicklow.

2.0 Overview

2.1. Background

It is proposed to make changes to the original Arklow bridge design as part of new flood elevation scheme on the river Avoca in Arklow town, Co. Wicklow

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 3 No. Trial Pits to a maximum depth of 1.40m BGL
- Carry out 7 No. Foundation Inspection Pits to determine existing foundation details
- Factual Report

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Trial Pits

The trial pits were excavated using a 15T tracked excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by an Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

3.3. Foundation Pits

The foundation inspection pits were excavated at the locations shown in the exploratory hole location plan in Appendix 1. The exposed foundations were logged and sketched prior to backfilling and reinstatement. The logs and sketches are provided in Appendix 3 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were consistent across the site and are generally comprised;

- Concrete
- Made Ground
- Granular Deposits

CONCRETE: Concrete was encountered in all the exploratory holes and was present to depths of between of 0.3m to 0.7m BGL.

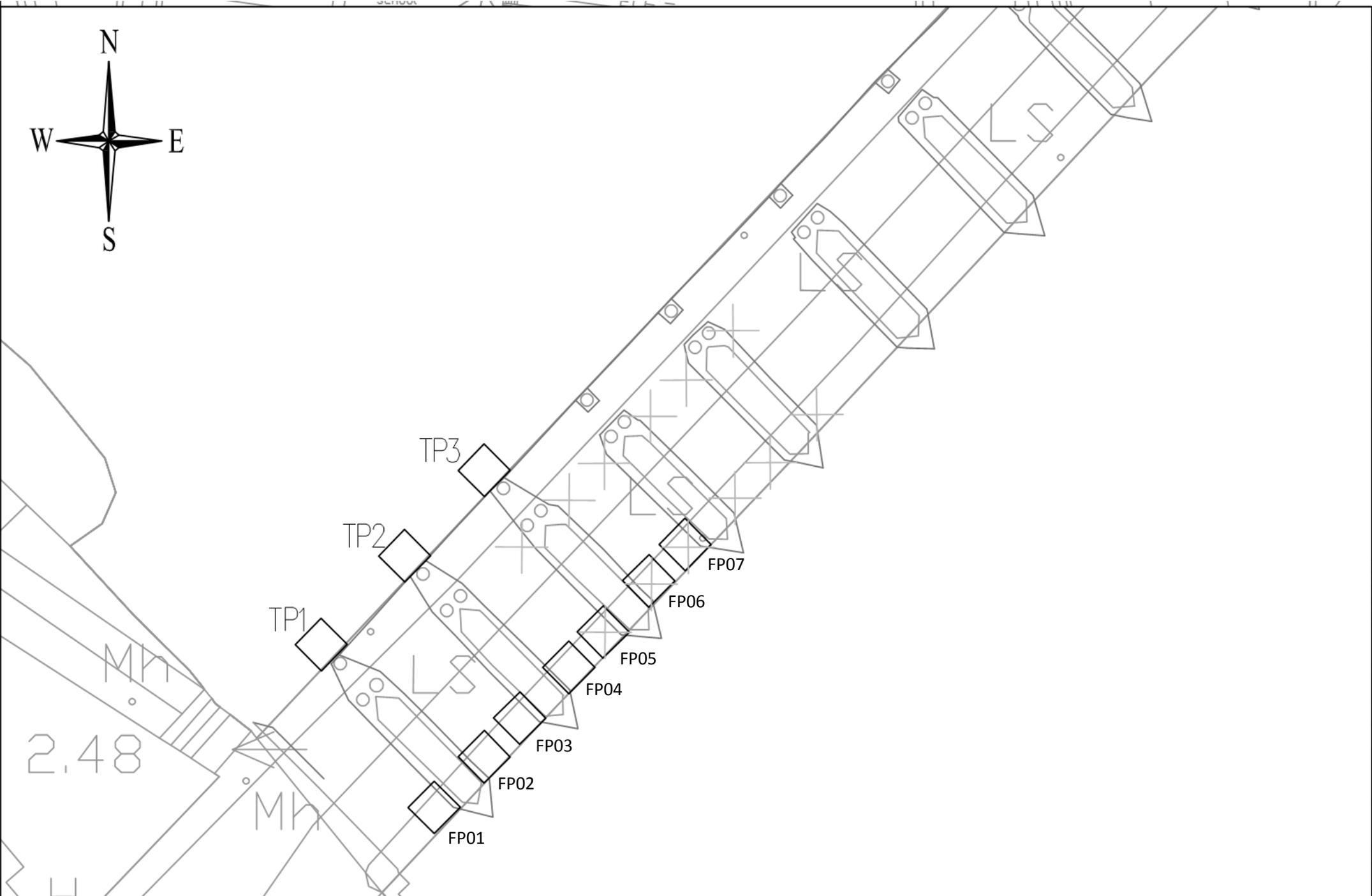
MADE GROUND: Made Ground deposits were encountered beneath the Concrete and was present to a relatively consistent depth of between 1.20m and 1.30m BGL. These deposits were described generally as *greyish brown sandy subrounded coarse Gravel with many cobbles and quartzite flagstones overlying a bluish grey slightly sandy Silt with wooden piles.*

GRANULAR DEPOSITS: The granular deposits were encountered below the concrete surfacing and were typically described as *Grey brown silty sandy subrounded fine to coarse GRAVEL with many cobbles.*

4.2. Groundwater

Groundwater was noted during the investigation however we would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the time of year, rainfall, nearby construction and other factors.

APPENDIX 1 - Site Location Plan



APPENDIX 2 – Trial Pit Records



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Site
Arklow Bridge

Trial Pit Number
TP01

| | | | | |
|--|-------------------|---|--|----------------------------------|
| Machine : 15 tonne excavator Method : Trial Pit | Dimensions | Ground Level (mOD) | Client Byrne Looby Partners | Job Number 8975B-08-19 |
| | Location | Dates 29/10/2019- 29/12/2019 | Project Contractor Ground Investigations Ireland | Sheet 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|-----------|----------------|-----------------|---------------|-------------|-----------------------|---|--------|-------|
| | | | | | | Concrete scour | | |
| | | | | | (0.70) | | | |
| | | | | | 0.70 | Grey blue silty sandy subrounded coarse GRAVEL with many subrounded cobbles | | |
| | | | | | (0.70) | | | |
| | | | | | 1.40 | Complete at 1.40m | | |

| | | | |
|---|---|---------------------------------------|--------------------------|
| Plan | Remarks Groundwater encountered Trial pit terminated due to instability Trial pit backfilled on completion | | |
| | <table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By SMcL</td> <td>Figure No. 8975B-08-19.TP01</td> </tr> </table> | Scale (approx) 1:25 | Logged By SMcL |
| Scale (approx) 1:25 | Logged By SMcL | Figure No. 8975B-08-19.TP01 | |



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Site
Arklow Bridge

Trial Pit Number
TP02

| | | | | |
|--|-------------------|---|--|----------------------------------|
| Machine : 15 tonne excavator Method : Trial Pit | Dimensions | Ground Level (mOD) | Client Byrne Looby Partners | Job Number 8975B-08-19 |
| | Location | Dates 29/10/2019- 29/12/2019 | Project Contractor Ground Investigations Ireland | Sheet 1/1 |

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|-----------|----------------|-----------------|---------------|-------------|-----------------------|---|--------|-------|
| | | | | | | Concrete scour | | |
| | | | | | (0.70) | | | |
| | | | | | 0.70 | | | |
| | | | | | (0.30) | Grey blue silty sandy subrounded coarse GRAVEL with many subrounded cobbles | | |
| | | | | | 1.00 | Complete at 1.00m | | |

| | | | |
|---|---|---------------------------------------|--------------------------|
| Plan | Remarks Groundwater encountered Trial pit terminated due to instability Trial pit backfilled on completion | | |
| | <table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By SMcL</td> <td>Figure No. 8975B-08-19.TP02</td> </tr> </table> | Scale (approx) 1:25 | Logged By SMcL |
| Scale (approx) 1:25 | Logged By SMcL | Figure No. 8975B-08-19.TP02 | |



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Site
Arklow Bridge

Trial Pit Number
TP03

Machine : 15 tonne excavator
Method : Trial Pit

Dimensions

Ground Level (mOD)

Client
Byrne Looby Partners

Job Number
8975B-08-19

Location

Dates
29/10/2019-
29/12/2019

Project Contractor
Ground Investigations Ireland

Sheet
1/1

| Depth (m) | Sample / Tests | Water Depth (m) | Field Records | Level (mOD) | Depth (m) (Thickness) | Description | Legend | Water |
|-----------|----------------|-----------------|---------------|-------------|-----------------------|---|--------|-------|
| | | | | | (0.50) | Concrete scour | | |
| | | | | | 0.50 | Grey blue silty sandy subrounded coarse GRAVEL with many subrounded cobbles | | |
| | | | | | (0.90) | | | |
| | | | | | 1.40 | Complete at 1.40m | | |

Plan

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| . | . | . | . | . | . | . | . | . | . |
| . | . | . | . | . | . | . | . | . | . |
| . | . | . | . | . | . | . | . | . | . |
| . | . | . | . | . | . | . | . | . | . |
| . | . | . | . | . | . | . | . | . | . |
| . | . | . | . | . | . | . | . | . | . |

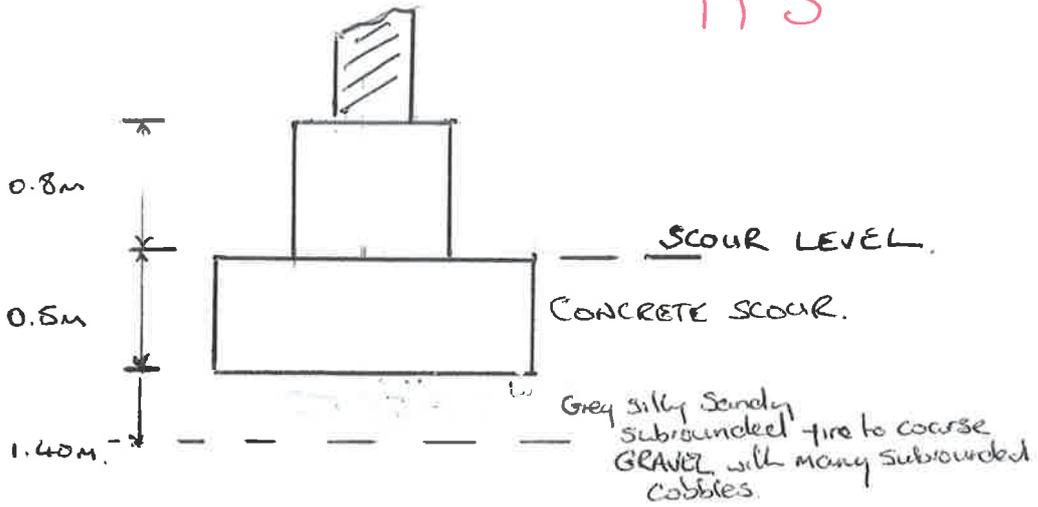
Remarks

Groundwater encountered
Trial pit terminated due to instability
Trial pit backfilled on completion

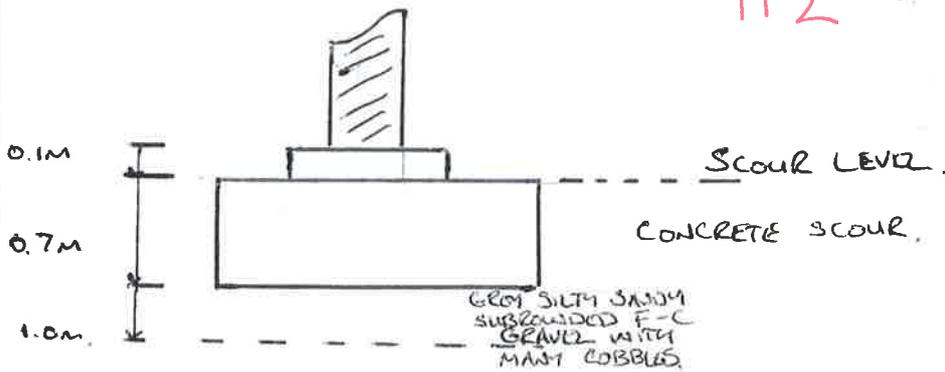
| | | |
|-------------------------------|--------------------------|---------------------------------------|
| Scale (approx) 1:25 | Logged By SMcL | Figure No. 8975B-08-19.TP03 |
|-------------------------------|--------------------------|---------------------------------------|

FOUNDATION SKETCH

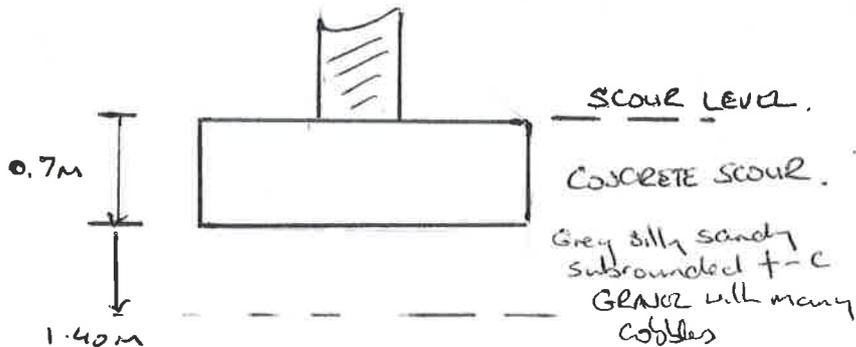
TP3



TP2



TP1



| | | |
|------------|-----------------------------------|--|
| Project: | Arklow Bridge | |
| Engineer: | ByrneLooby | |
| Contractor | Ground Investigations Ireland Ltd | |

Trial Pitting Photographs – Arklow Bridge







TP01/PIER 1



















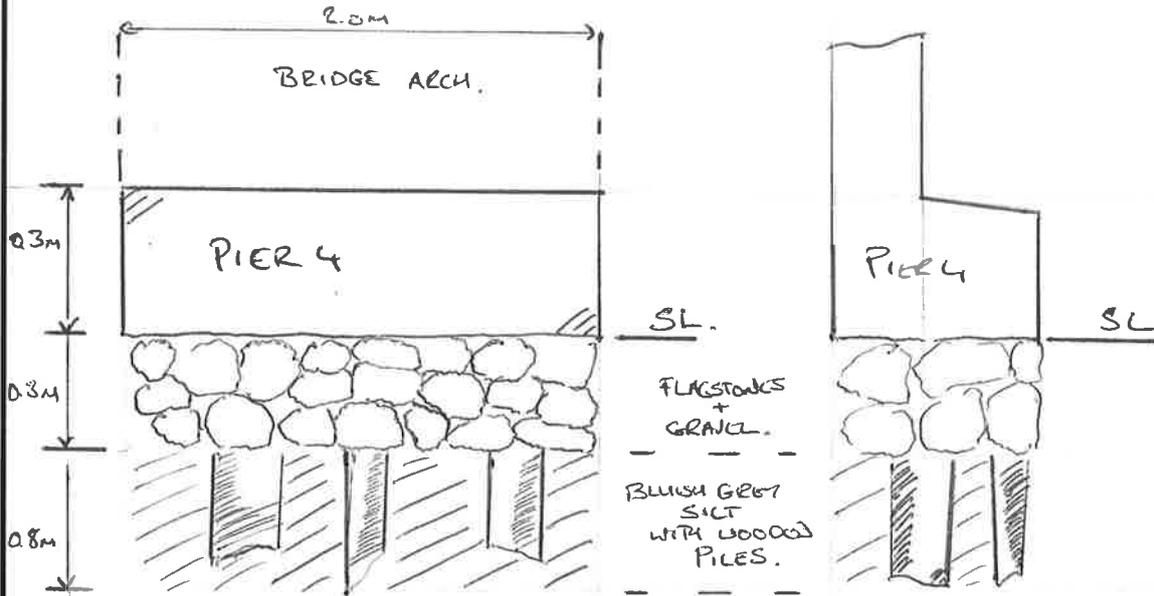
APPENDIX 3 – Foundation Pit Records

FPO7

FOUNDATION SKETCH

FRONT VIEW

SIDE VIEW



LOG.

SL(0)

0.0 - 0.3m

grey brown - angular
Quartzite flagstones
with subrounded,
gravel matrix.

0.30 - 0.8m

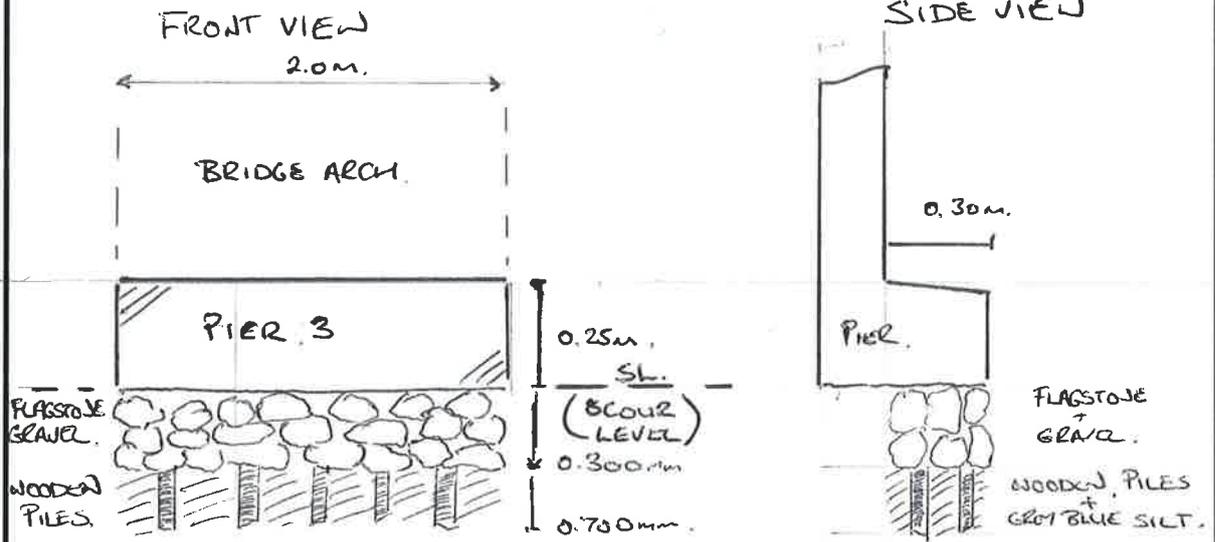
bluish grey sandy
silt with wooden
PILES.

FPO7

| | | |
|------------|-----------------------------------|--|
| Project: | Arklow Bridge | |
| Engineer: | Byrne/looby | |
| Contractor | Ground Investigations Ireland Ltd | |

FPO6

FOUNDATION SKETCH

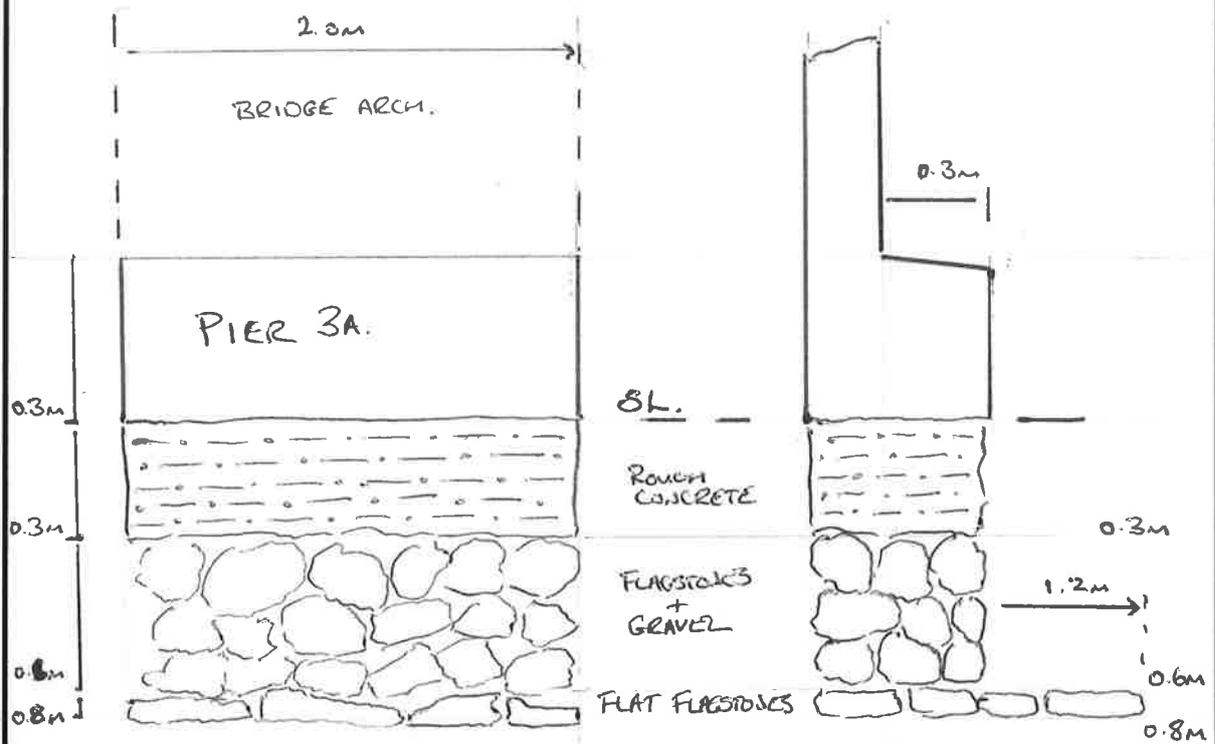


| LOG. | SCOUR LEVEL (0) |
|-------------|--|
| 0.0 - 0.3m | grey/brown angular FLAGSTONES (QUARTZITE) and subrounded gravel. |
| 0.3 - 0.70m | Bluish grey slightly sandy SILT with WOODEN PILES. |

FPO6

| | | |
|------------|-----------------------------------|--|
| Project: | Arklow Bridge | |
| Engineer: | ByrneLooby | |
| Contractor | Ground Investigations Ireland Ltd | |

FPO5 FOUNDATION SKETCH



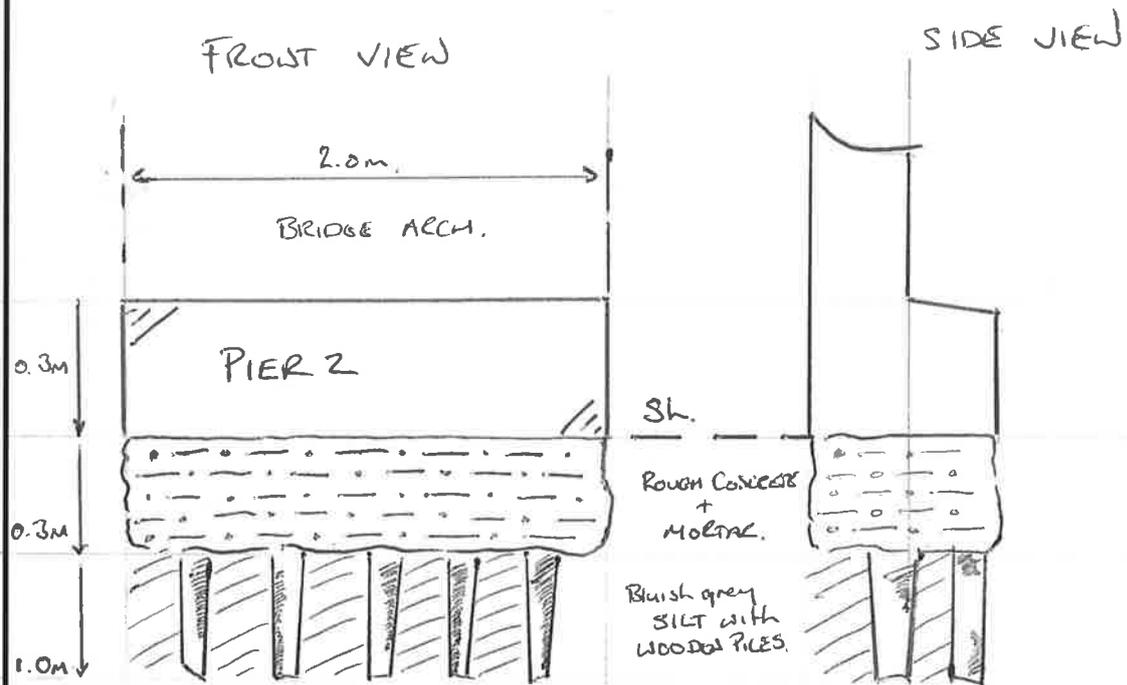
LOG. SL(0)

- 0.0 - 0.3m Rough Concrete
- 0.3 - 0.8m grey brown angular Quartzite flagstones with subrounded gravel matrix.

FPO5

| | | |
|-------------------|-----------------------------------|--|
| Project: | Arklow Bridge | |
| Engineer: | Byrneooby | |
| Contractor | Ground Investigations Ireland Ltd | |

FPO4 FOUNDATION SKETCH



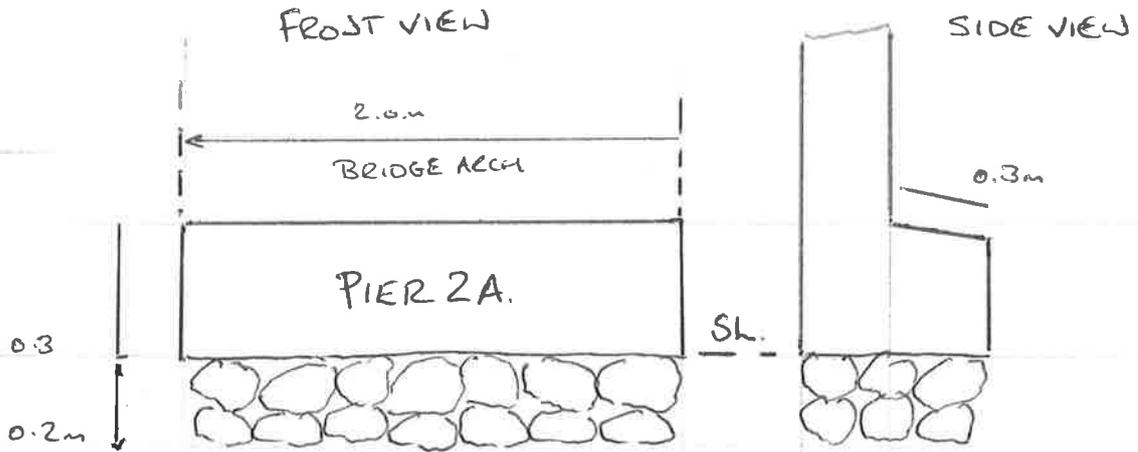
SCOUR LEVEL (SL)

LOG. SL(0)

- 0.0 - 0.3m grey rough concrete and mortar
- 0.3 - 1.0m Bluish grey slightly sandy SILT with wooden PILES.

| | | |
|--------------------|-----------------------------------|------|
| Project: | Arklow Bridge | FPO4 |
| Engineer: | Byrne Looby | |
| Contractor: | Ground Investigations Ireland Ltd | |

FP03 FOUNDATION SKETCH



SL.(0)
LOG.

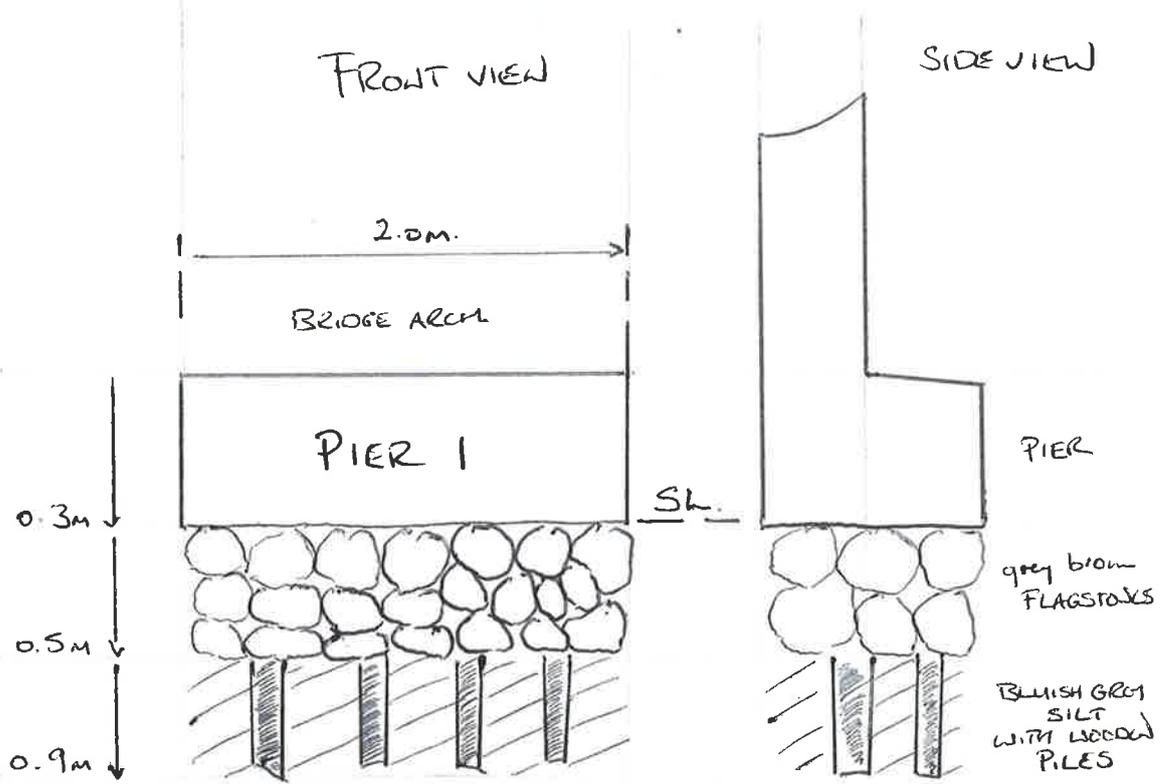
0.0 - 0.2 Grey brown angular quartzite flagstones
and sub-rounded gravel.

* NO BREAKER FOR EXCAVATOR ON SITE.

| | | |
|-------------------|-----------------------------------|------|
| Project: | Arklow Bridge | FP03 |
| Engineer: | Byrneooby | |
| Contractor | Ground Investigations Ireland Ltd | |

FPO2

FOUNDATION SKETCH



SL (0)

LOG.

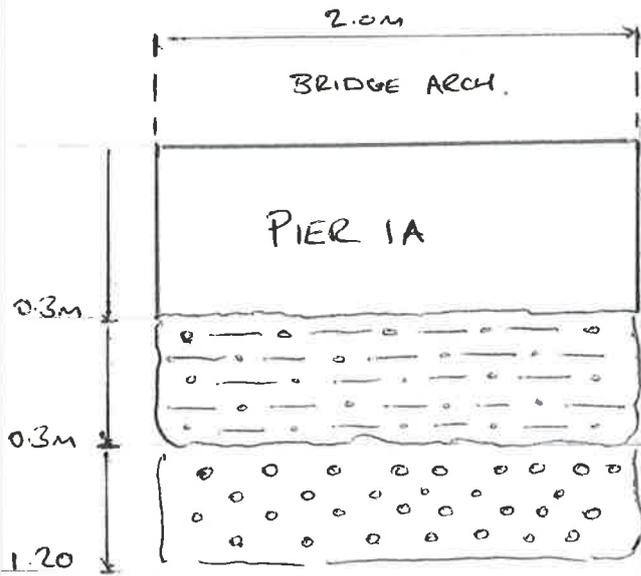
- 0.0 - 0.5 Grey brown angular quartzite flagstones and subrounded gravel.
- 0.5 - 0.9 Bluish grey sandy SILT with wooden PILES.

| | | |
|------------|-----------------------------------|------|
| Project: | Arklow Bridge | FPO2 |
| Engineer: | ByrneLooby | |
| Contractor | Ground Investigations Ireland Ltd | |

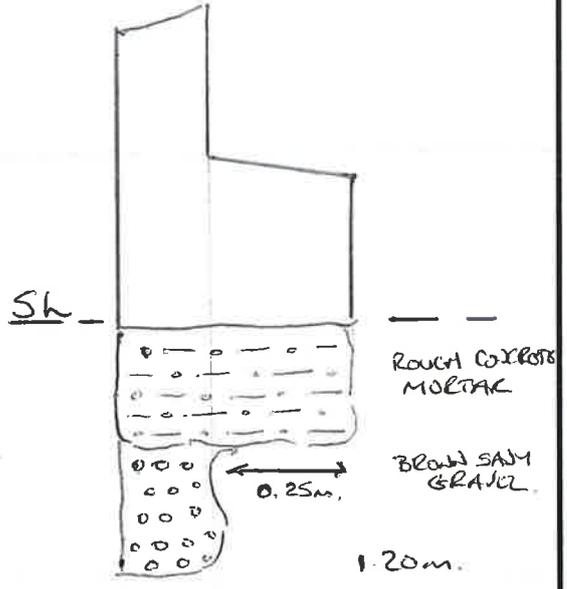
FPO1

FOUNDATION SKETCH

FRONT VIEW



SIDE VIEW



SCOUR LEVEL = SL (0)

LOG.

- 0.0 - 0.3m Grey concrete and mortar.
- 0.3 - 1.20m Brown subrounded sandy + c Gravel with angular cobbles of quartzite.

| | | |
|------------|-----------------------------------|------|
| Project: | Arklow Bridge | FPO1 |
| Engineer: | ByrneLooby | |
| Contractor | Ground Investigations Ireland Ltd | |

Foundation Pits Photographs – Arklow Bridge

FP01



Foundation Pits Photographs – Arklow Bridge

FP01



Foundation Pits Photographs – Arklow Bridge

FP02



Foundation Pits Photographs – Arklow Bridge

FP02



Foundation Pits Photographs – Arklow Bridge

FP02



Foundation Pits Photographs – Arklow Bridge

FP02



Foundation Pits Photographs – Arklow Bridge

FP03



Foundation Pits Photographs – Arklow Bridge

FP03



Foundation Pits Photographs – Arklow Bridge

FP03



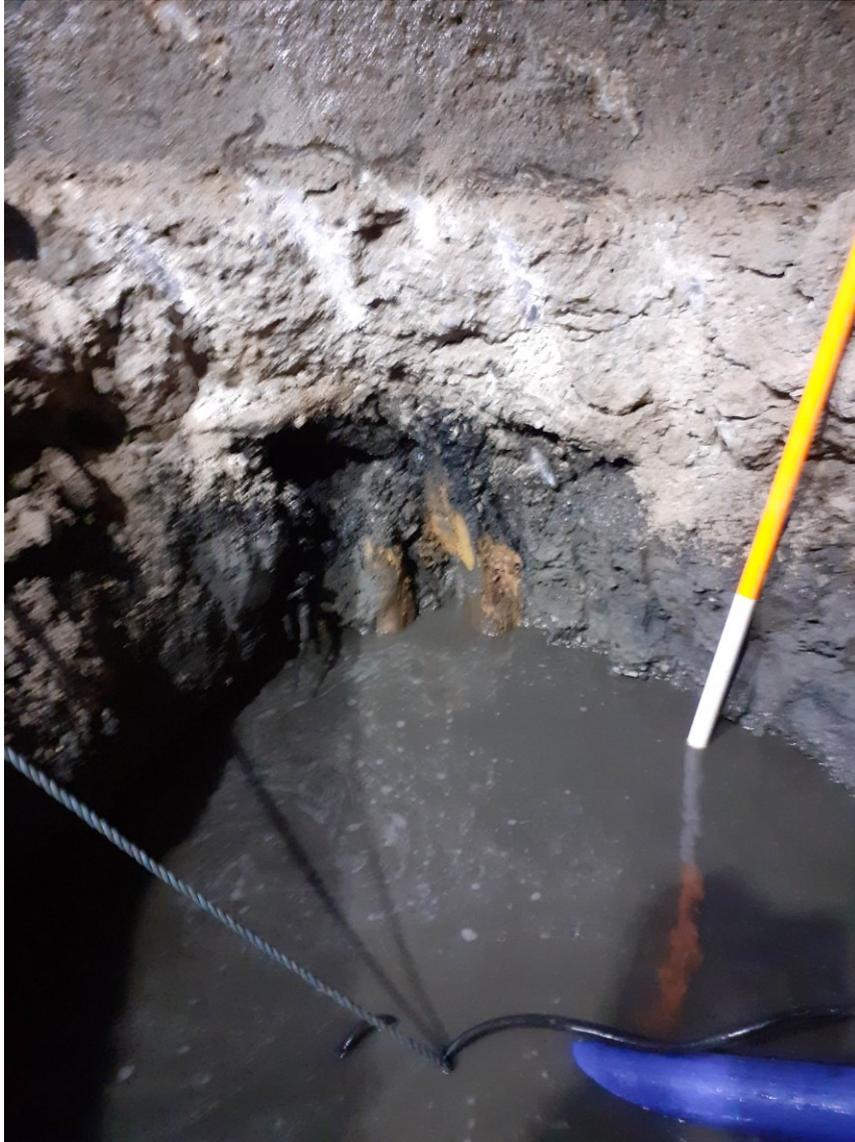
FP04



Grey Concrete

Grey SILT

FP04



FP04



FP04



FP05



FP05



FP05



FP05



Scour Profile





FP06



Wooden Pile Highlighted

FP06



FP06



FP06



FP06



FP07



FP07



FP07



FP07



FP07



Scour Profile



