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West Cumbria Water Supplies Project Williamsgate to Quarryhill Section

Archaeological Mitigation
Report No. 3563

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West Cumbria Water Supplies Project Williamsgate to Quarryhill Section

Archaeological Mitigation

Report No. 3563

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1. INTRODUCTION

1.1 General

This report presents the results of an archaeological watching brief and site surveys undertaken by CFA Archaeology Ltd (CFA) between March 2017 and August 2017 along the route of the Williamsgate to Quarryhill Section of the West Cumbria Water Supplies Project (NGR: NY 13613 34421 to NY 18957 39927) (Figs 1 & 2a-d). The work was commissioned by Farrans Ltd.

A Written Scheme of Investigation (WSI), dated April 2017, was produced by CFA Archaeology Ltd. The WSI was designed to meet the requirements of the Jeremy Parson of the Cumbria County Council Historic Environment Service (CCCHES).

The WSI contains reference numbers, which refer to gazetteer entries in the Cultural Heritage and Archaeology Chapter 12 of the Environmental Statement (ES) for the development (Jacobs, 2016). The site numbers shown in Figs. 2a-d also correspond to the gazetteer entries detailed in the same report (*ibid*). Where necessary, this report should be read in conjunction with the ES. An additional two sites requiring survey were added after the ES was submitted. These two sites have been labelled Mootal and Moota2.

1.2 Background

An Environmental Statement supported by walk-over survey, geophysical survey and trial trench evaluation was prepared and submitted for the West Cumbria Water Supplies Project. The mitigation required on the Williamsgate to Quarryhill section was based on the mitigation commitments identified in that report and on the requirements of CCCHES.

The landscape within the development area was characterised by predominantly undulating rural landform consisting of ridges and valleys. It had extensive managed pasture fields defined by hedgerows interspersed with native woodland or clusters of tree plantations. Small streams and rivers cut through the rolling topography. Hedgerows formed the predominant field boundary type with some dry stone walls. The majority of the working width was located in previously undeveloped open countryside and agricultural land, with agriculture constituting the predominant landuse. The local climate and topography meant that agriculture was predominantly based on livestock rather than horticulture or arable production.

1.3 Objectives

The objectives of the programme of mitigation works were:

- to carry out the programme of work to record the archaeological remains affected by the development to the standard required by CCCHES;
- To produce a report on the findings of the fieldwork, setting out the potential for any further work and dissemination of the results, as appropriate.

2. WORKING METHODS

2.1 General

CFA follows the Chartered Institute for Archaeologists' Standards and Guidance and Code of Conduct. Recording of all elements followed the established CFA methods, as detailed in the approved WSI.

The mitigation requirements were as follows:

Asset Number	Asset Name	Scope of Mitigation
WA30	Site of Bog Hall	Excavation prior to construction of an area measuring approximately 40m x 15m targeting grounds of former Bog Hall.
WA132	Earthworks (3)	Watching brief on the soil strip for the working easement and the excavation for the pipe trench in a c300m length of pipeline corridor between existing field boundaries.
WA187	Site of Settlement of Williamsgate	Topographic survey English Heritage Level 2 Survey on possible earthworks in the field; Watching brief on the soil strip for the working easement and the excavation for the pipe trench in a c100m length of pipeline corridor between existing field boundaries.
WA216	Ridge and Furrow (4)	Topographic survey English Heritage Level 2 Survey on earthworks of ridge and furrow in the field
WA218	Ridge and Furrow (5)	Topographic survey English Heritage Level 2 Survey on earthworks of ridge and furrow in the field
WA228	Ridge and Furrow (6)	Topographic survey English Heritage Level 2 Survey on earthworks of ridge and furrow in the field
Moota Quarry Ridge & Furrow 1*	Ridge and Furrow	Topographic survey English Heritage Level 2 Survey on earthworks of ridge and furrow in the field
Moota Quarry Ridge & Furrow 2*	Ridge and Furrow	Topographic survey English Heritage Level 2 Survey on earthworks of ridge and furrow in the field
WA508	Projected line of Roman Road	Watching brief on the soil strip for the working easement and the excavation for the pipe trench in a c70m length of pipeline corridor between existing field boundaries.
WA514	Ridge and Furrow (10)	Topographic survey English Heritage Level 2 Survey on earthworks of ridge and furrow in the field

2.2 Topographic Survey

Topographic survey of a number of assets was undertaken to a Level 2 specification (English Heritage 2007) The sites identified for topographic survey were only surveyed within the approximate width of the wayleave for the development as land access outwith the wayleave was not approved. However, in some locations the wayleave was not marked so survey slightly extended outwith the allowed wayleave.

Precision topographic mapping was achieved through the use of GNSS/GPS systems. The survey achieved real-time GNSS/GPS positioning accurate to 0.01m horizontal and 0.02m vertical, through the use of a Trimble R6 GNSS system with a TSC3 controller running Trimble Access surveying software. This equipment provides centimetre-accurate RTK corrections using the Trimble VRS Now RTK GNSS service to plot / stake-out features etc within Access.

A written description was made on pro forma recording sheets. The field record included:

1. The location of the site
2. The name of the compiler, the date of the investigation and reason(s) for the survey, and details of site ownership and present land use
3. A summary of the salient features
4. A concise description of the site, including information on plan, form, dimensions and area, function, age, developmental sequence and past land use
5. Consideration of the topographical setting of the monument and its relationship to other sites and landscapes and to historic buildings in the vicinity.

A photographic record was made of the site and its surroundings, including landscape setting as well as detailed images of individual features. Photography was undertaken using a digital camera with a minimum resolution of ten Megapixels, and JPEG files were generated. A record was kept of the subject, orientation, date and any other relevant information (Appendix 2).

Survey data was exported from Trimble Access on the TSC3 controller to dxf format, retaining individual point feature codes and associated attributes, and processed in AutoCAD 2013. Model space in CAD was in metres at 1:1 and standard CFA layers and feature codes were used.

2.3 Excavation

An excavation was required at the site of Boghall (WA30) as the wayleave crossed this area of sensitivity. The excavation area was stripped by a mechanical excavator equipped with a smooth-bladed ditching bucket under constant archaeological supervision in order to reveal the subsoil surface or surface of the first significant archaeological level. The stripped area was then inspected for archaeological features.

2.4 Watching Brief

A Watching Brief was required at sites WA132, WA187 and WA508. Topsoil and modern overburden were removed by a tracked 360° mechanical excavator equipped with a 1.8m wide smooth-bladed ditching bucket. All groundbreaking work was carried out under constant archaeological supervision.

All excavation and on-site recording was carried out according to CFA procedure, principally by photography, and by completing standard CFA record forms.

The stratification of all excavated areas was recorded whether or not significant archaeological deposits were identified.

3. ARCHAEOLOGICAL RESULTS

3.1 General

Numbers in bold refer to contexts, a full list of which is contained in Appendix 1.

3.2 Topographic Surveys

WA187 (NGR: NY 13613 34421) (Fig. 3 & 14a)

The possible site of the settlement of Williamsgate was located approximately 100m north-west of the A595 and just to the east of an access road leading to Millstone Moor. The land was improved pasture for horses with roughly level topography at a height of approximately 152m above Ordnance Datum (AOD). There were no visible upstanding remains or earthworks to survey.

WA216 (NGR: NY 13832 34602) (Fig. 4 & 14a)

Site WA216 was located approximately 50m north-west of the A595 and consisted of gently undulating land which sloped down to the north-west from the A595. The land use was improved pasture at a height of approximately 155m AOD. The surviving ridge-and-furrow was aligned north-west by south-east and had a wavelength of 6m on the western side of the site, increasing to approximately 10m on the eastern side. The furrows survived to a depth of 0.25m. The ridges became far harder to discern on the western side of the field and seemed to peter out towards the rocky outcrops at the south-east end of the field.

WA218 (NGR: NY 13937 34762) (Fig. 5 & 14a)

Site WA218 lay adjacent and to the east of WA216 and was similarly located to the north-west of the A595. The wayleave crossed the field where the height was approximately 155m AOD. The land sloped gently to the north-west and the land use was improved pasture. The ridge-and-furrow was aligned north-west to south-east and had a wavelength of approximately 10m. The furrows survived to a depth of c.0.5m. They were less discernible towards the north-western end of the field and in the north-eastern corner.

WA514 (NGR: NY 14025 34886) (Fig. 6 & 14a)

Site WA514 was located north-west of the A595 and was at a height of approximately 158m AOD. The topography was generally flat and the land use was improved pasture. The ridge-and-furrow was difficult to discern but was aligned north-west to south-east. The wavelength was approximately 9m with the furrows surviving to a depth of between 0.1m-0.2m.

WA228 (NY14627 35539) (Fig.7 & 14b)

Site WA228 was located on the north-western side of the A595 and was at a height of approximately 165m AOD. The topography was slightly undulating and the land use was improved pasture. The ridge-and-furrow was aligned north-west to south-east and had a wavelength of approximately 8-9m, with the furrows surviving to a depth of c.0.1m. The ridge-and-furrow was fairly indistinct when viewed at ground level and seemed to peter out towards the south-east corner of the field where it was not possible to identify it.

MOOTA 1 (NGR: NY 14730 35640) (Fig. 8 & 14b)

Site MOOTA 1 was located to the north-west of the A595 and was at a height of approximately 172m AOD. The topography was generally flat but sloped up to the north-west. The land use consisted of improved pasture. The ridge-and-furrow was aligned north-east to south-west and had a wavelength of approximately 4m. The furrows survived to a depth of between 0.1m-0.2m.

MOOTA2 (NGR: NY 14800 35720) (Fig. 9)

Site MOOTA2 was located to the north-west of the A595 and was at a height of approximately 178m AOD. The topography sloped gently up to the north-west and the land use consisted of improved pasture. The ridge-and-furrow was aligned north-west to south-east and had a wavelength of approximately 2m. The furrows survived to a depth of c.0.1m but were relatively easy to identify.

3.3 Excavation

WA30 (NGR: NY 18957 39927) (Figs. 2c & 10)

The site of Bog Hall was the location of the possible remains of a post-Medieval farmstead. An area of approximately 90m (north-east to south-west) by 22m (transversely) was stripped to reveal the clean natural subsoil. The topsoil consisted of 0.25m-0.35m light brown sandy silt to greyish dark brown sandy silt (**006**). This was overlying mottled mid-brown and grey silty subsoil in the western half of the site (**007**). The natural consisted of orangey brown sandy silt with flecks of manganese in the eastern half of the stripped area and light grey to light brown clayey silt (**008**). There were no upstanding remains visible on the surface prior to stripping activities and no features, deposits or artefacts of archaeological significance were identified.

3.4 Targeted Watching Brief

A Watching Brief was carried out on the following sites:

WA132 (NGR: NY 15666 36796) (Figs. 2b & 11)

Site WA132 was located approximately 150m to the north of the A595 on gently undulating improved pasture land. There were a number of depressions measuring between 7 to 10m in diameter. However, they proved to be natural depressions caused by sink holes in the underlying limestone bedrock. The topsoil consisted of greyish

brown silty clay topsoil (004) overlying mottled grey and yellow sandy clay to brownish silty clay natural (005). No features, deposits or artefacts of archaeological significance were identified.

WA187 (NGR: NY 13613 34421) (Figs. 2a & 12)

The site of Williamsgate was the location of a possible post-Medieval farmstead that was located approximately 100m to the north-west of the A595. It was located on flat, improved pasture land. The topsoil (001) consisted of mid-brown silty clay overlying mottled mid-grey silty clay with orange flecks (002). The natural (003) was light grey silty clay with occasional stones. No features, deposits or artefacts of archaeological significance were identified.

WA508 (NGR: NY 18640 39930) (Figs. 2c & 13)

This was the location of the projected line of a section of Roman road. The site was located 15m to the north-west of the A595 on relatively flat improved pasture land at a height of 105m AOD. The topsoil consisted of c.0.3m of dark brown silty clay (009) overlying orangey brown silty clay natural (010). No features, deposits or artefacts of archaeological significance were identified.

4. CONCLUSION

A programme of archaeological work was undertaken along the Williamsgate to Quarryhill section of the West Cumbria Water Supplies project. Level 2 archaeological topographic surveys of various sites were carried out. The surveys were carried out prior to any commencement of associated groundbreaking works. The survey mainly concentrated on the ridge-and-furrow form of agriculture which reflected the medieval strip field system that was present in the area. An area was stripped for excavation at the site of Bog Hall (WA30), but no features, deposits or artefacts of archaeological significance were identified. Watching briefs were conducted during the associated groundworks at various sites along the route (WA132, WA187 & WA508). No features, deposits or artefacts of archaeological significance were identified.

No further mitigation measures are recommended in relation to the area covered by this programme of works. However, it is recognised that the final decision on any mitigation required lies with the planning authority as advised by CCCHES.

The project archive, comprising all CFA record sheets, maps and reports, will be deposited with the appropriate repository and copies of reports will be lodged with the Cumbria County Council Sites and Monuments Record.

This work will also be reported on through *OASIS*.

5. REFERENCES

English Heritage (2007) *Understanding the Archaeology of Landscapes. A guide to good recording practice.*

Jacobs (2016) *West Cumbria Water Supplies Project – Thirlmere Transfer. Environmental Statement Volume 2.*

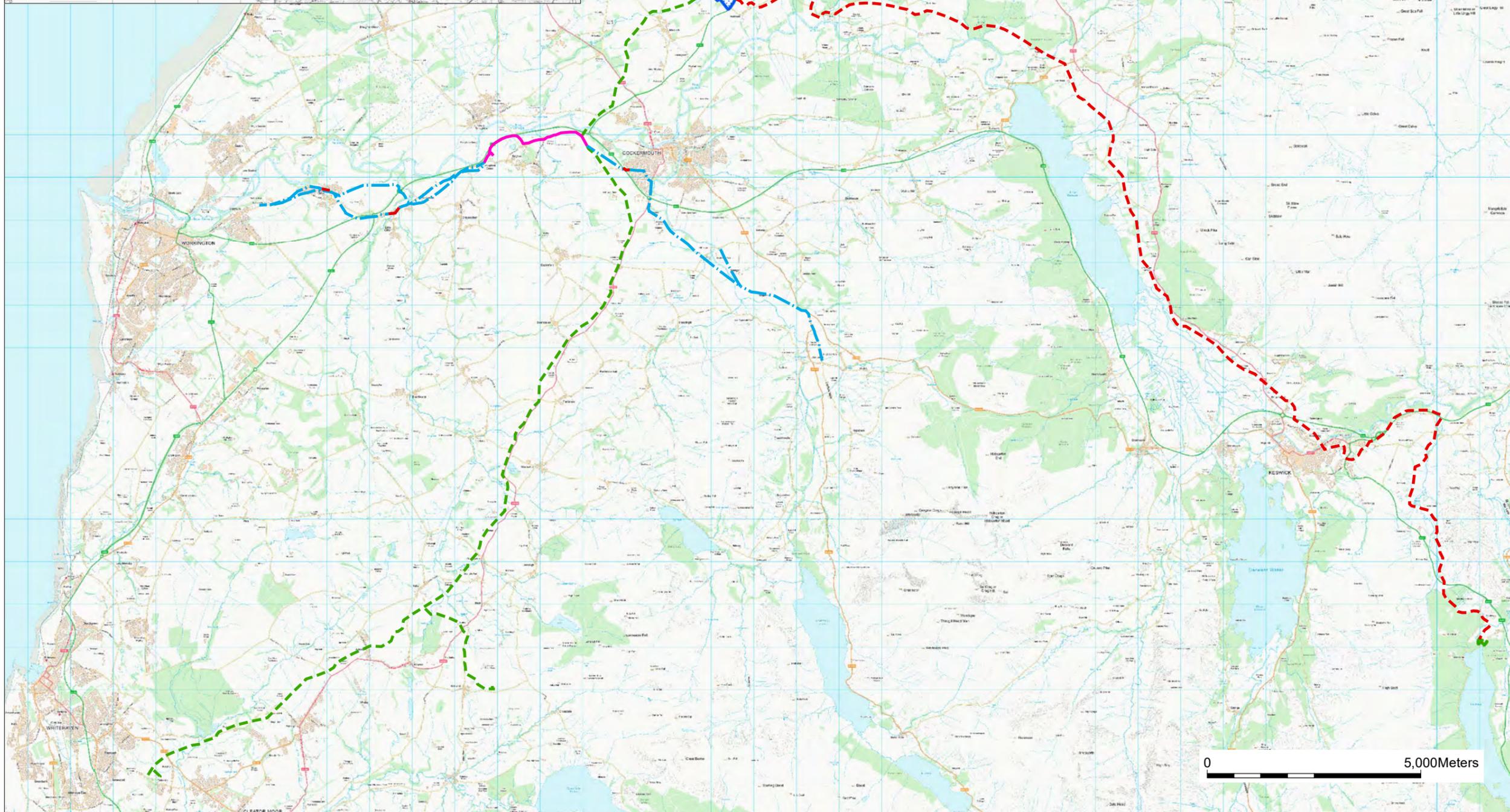
APPENDIX 1: Context Register

Context	Description
001	Topsoil at Williamsgate - mid brown silty clay 0.1m deep
002	Subsoil at Williamsgate - mid grey with orange flecks silty clay 0.15m deep
003	Natural at Williamsgate - light grey silty clay with small - medium rounded and angular stones changing to greyish light brown clay
004	Topsoil at WA132 - greyish brown silty clay
005	Natural at WA132 - mottled grey and yellow sandy clay to brownish silty clay
006	Topsoil at WA30 - brown sandy silt to greyish dark brown sandy silt
007	Subsoil at WA30 - mottled mid-brown and grey silty loam
008	Natural at WA30 - orangey brown sandy silt to light grey or light brown clayey silt
009	Topsoil at WA508 - dark brown silty clay
010	Natural at WA508 - orangey brown silty clay

APPENDIX 2: Photograph Register

Number	Description	From
1	WA508 Location of Roman Road	NE
2	WA508 Location of Roman Road	W
3	WA508 Access point into plot	W
4	WA508 General shot looking from edge of wayleave	SW
5	WA30 SW access point into field	NE
6	WA30 general of field	NE
7	WA30 Access point into field	W
8	WA132 from NE access point in field	NE
9	WA132 Example of natural hollow	E
10	WA132 Example of natural hollow	NE
11	General of field containing WA187	SW
12	General of field containing WA187	SW
13	General of field containing WA187	SW
14	General of field containing WA187	SW
15	General of field containing Site WA187 looking along wayleave	W
16	General of field containing Site WA187 looking along wayleave	E
17	General of field containing Site WA187 looking along wayleave	E
18	General of field containing WA187 looking across wayleave	NE
19	WA216 showing ridge and furrow perpendicular to wayleave	SW
20	WA216, ridge and furrow	SW
21	Example of ridge and furrow details (WA216)	SW
22	Rocky outcrop where ridge and furrow WA126 stops	W
23	Looking North from wayleave at ridge and furrow (WA216)	SW
24	Looking NW at WA216	SE
25	Looking along wayleave at WA216	NE
26	WA218 looking along wayleave	SW
27	WA218 looking along wayleave	SW
28	Examples of WA218 ridge and furrow	SW
29	WA218 looking across wayleave	SE
30	Rocky outcrops where ridge and furrow stops in WA218	NE
31	WA218, large modern mound	SW
32	Looking SW along wayleave at WA218	NE
33	WA514 looking along wayleave	SSW
34	WA514 looking along wayleave	NNE
35	WA514 from corner of field - ridge and furrow is not very visible	E
36	WA228 looking along wayleave with possible ridge and furrow running perpendicular to wayleave	NE

Number	Description	From
37	Ridge and furrow in WA228 showing denuded state	SE
38	WA228 possible end of ridge or field boundary running uphill	SE
39	WA228 looking along wayleave	SW
40	MOOTA 1 looking along wayleave shows poor state of survival of ridge and furrow	SW
41	Oblique shot of ridge and furrow at MOOTA 1 - clearer from this angle	S
42	MOOTA 1 looking along wayleave	NE
43	MOOTA 2 state of survival of ridge and furrow	S
44	MOOTA 2 example of ridge and furrow	SW
45	MOOTA 2 example of ridge and furrow	SE
46	Looking along wayleave at MOOTA 2	NE
47	Representative section of trench at Williamsgate	N
48	Detail of section of trench at Williamsgate	N
49	Looking NW along stripped area at Williamsgate	SE
50	Looking NE along stripped area at Williamsgate	SW
51	Looking NE along stripped area at Williamsgate	SW
52	Looking W along stripped area at Williamsgate	E
53	Area stripped on 24/07/17 at Williamsgate	NW
54	Area stripped on 24/07/17 at Williamsgate	W
55	Area stripped on 24/07/17 at Williamsgate	NE
56	Area stripped on 24/07/17 at Williamsgate	E
57	Pre ex of WA132	NW
58	Area stripped 25/07/17	NW
59	Area stripped 26/07/217	W
60	Area stripped 27/07/17	W
61	Boghall - post strip	S
62	Boghall - post strip	S
63	Boghall - post strip	NE
64	Boghall - post strip	NE
65	Boghall - post strip	NW
66	WA508 pre strip condition	ENE
67	WA508 post strip	ENE



- Key:**
- Williamsgate to Quarryhill Pipeline Route
 - Cockermouth to Broughton Cross
 - - - Raw Water Aqueduct (RWA)
 - - - Network - Slip-line Existing Main
 - Network - Open Cut
 - - - Sludge Main from Proposed WTW to Cockermouth
 - Proposed Water Treatment Works
 - Moota Hill Service Reservoir
 - Bridge End Connection

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Title:
Location map and site plan

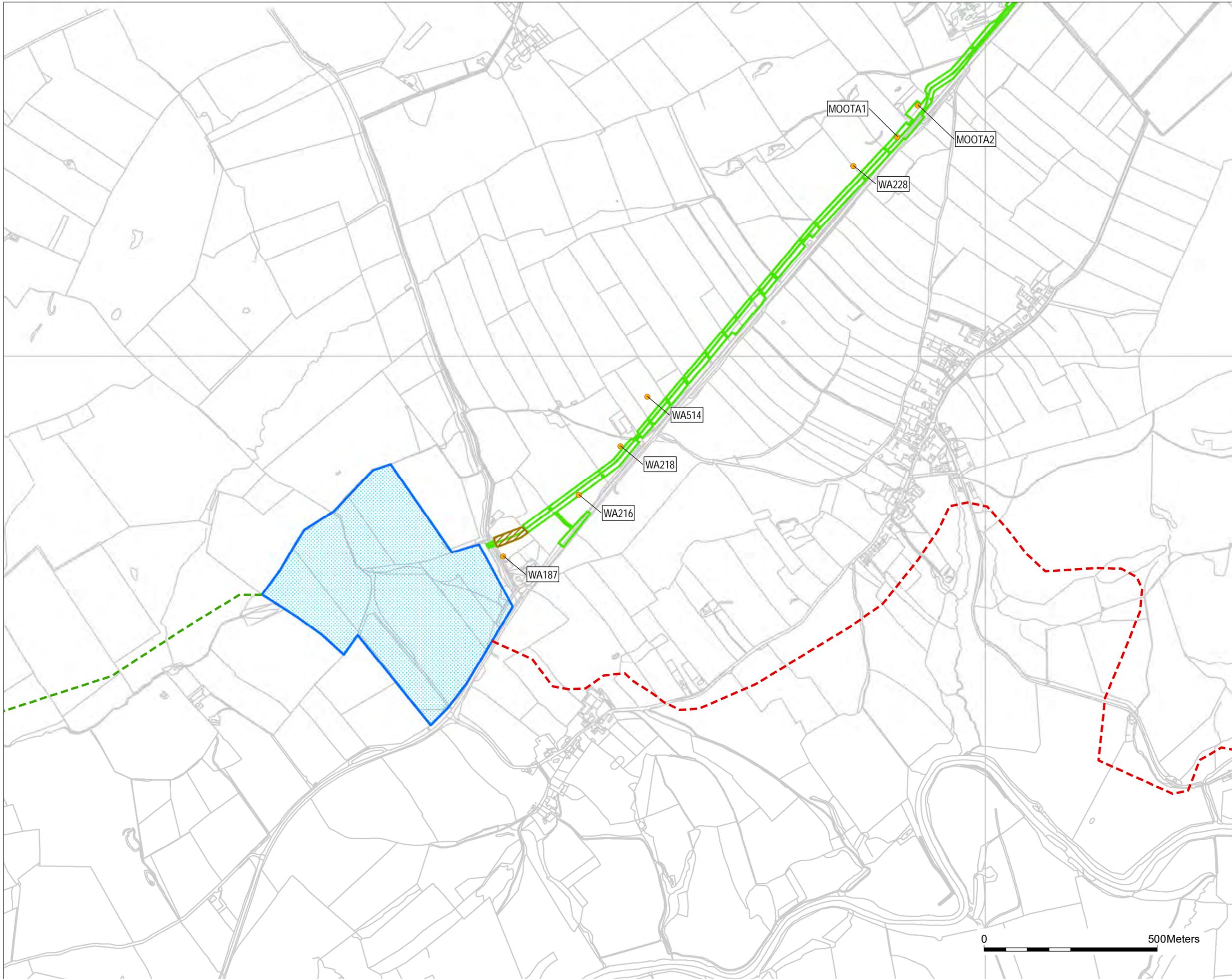
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**West Cumbria Water Supplies
 Project – Williamsgate to Quarryhill
 Section: Archaeological Mitigation**

Client:
Farrans Ltd

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- Key:**
-  Williamsgate to Quarryhill Pipeline Route
 -  Raw Water Aqueduct (RWA)
 -  Sludge Main from Proposed WTW to Cockermouth
 -  Proposed Water Treatment Works
 -  Moot Hill Service Reservoir
 -  Cultural Heritage Asset Requiring Mitigation
 -  Excavation Area
 -  Watching Brief

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Title:
Location of Cultural Heritage Assets

Project:
West Cumbria Water Supplies Project – Williamsgate to Quarryhill Section: Archaeological Mitigation

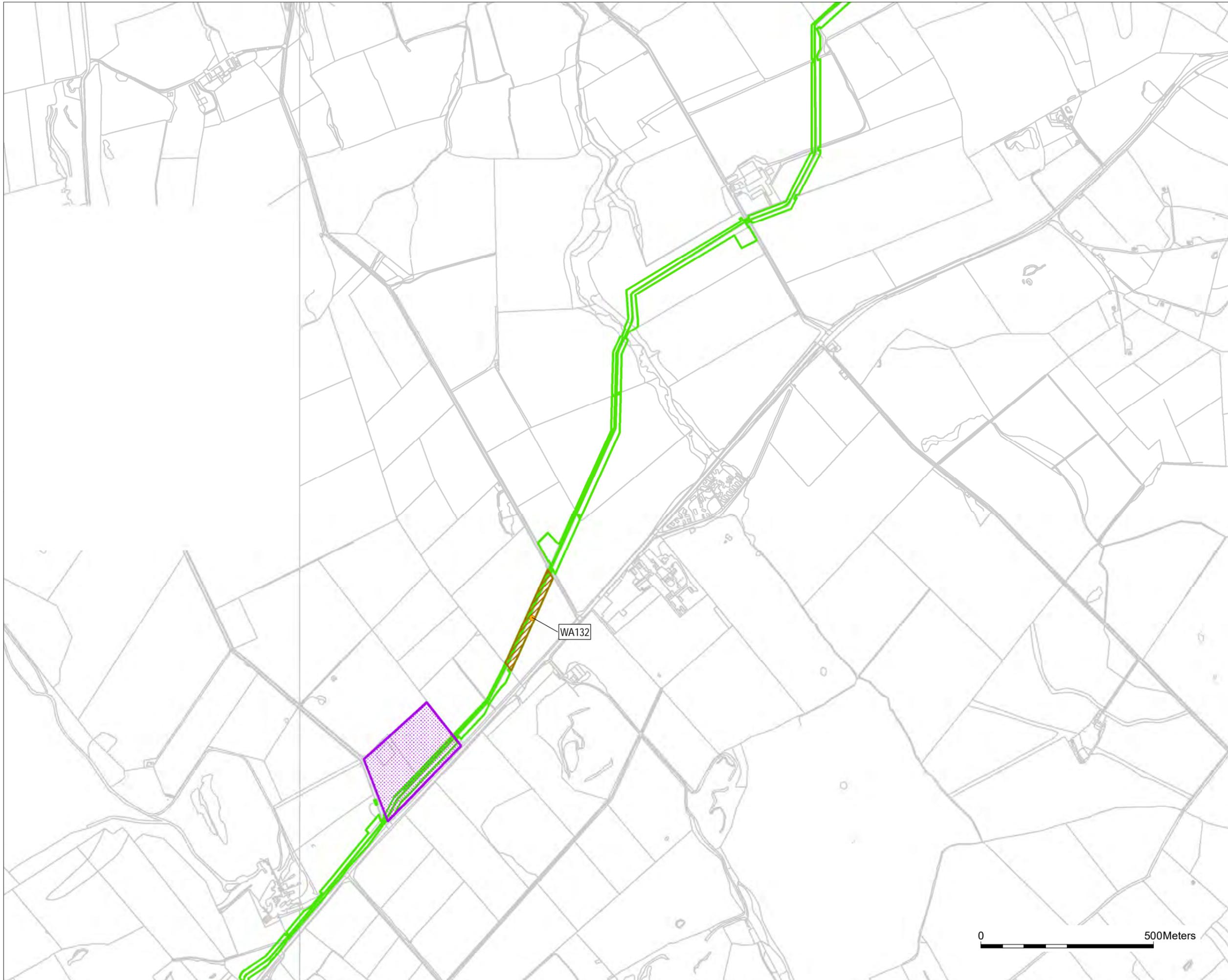
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- Key:**
- Williamsgate to Quarryhill Pipeline Route
 - - - Raw Water Aqueduct (RWA)
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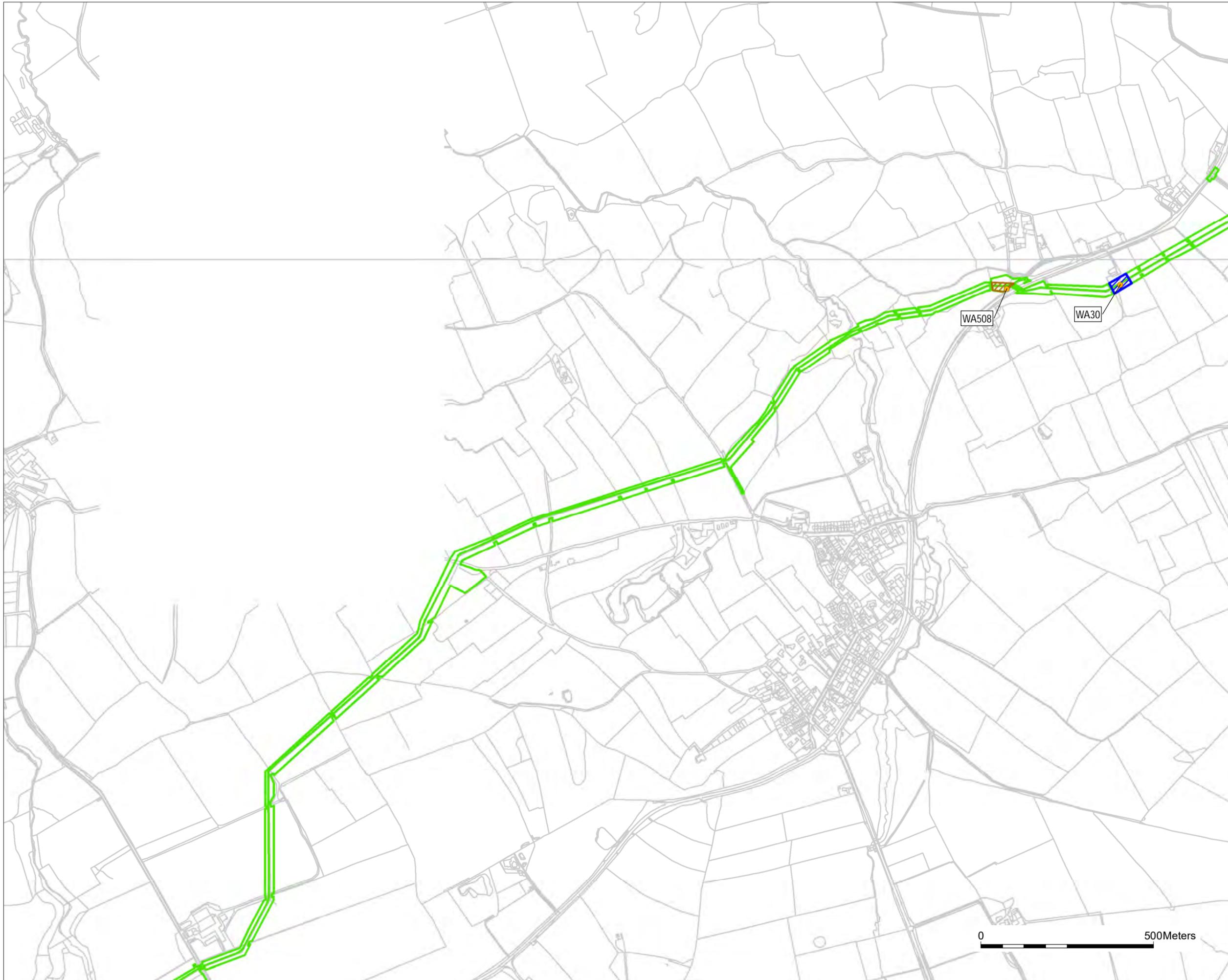
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- Key:**
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WA508

WA30

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Key:

-  Williamsgate to Quarryhill Pipeline Route
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Fig. 3 - Site WA187 looking east along the wayleave



Fig. 4 - Site WA216 looking north-east along the wayleave

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Fig. 5 - Site WA218, looking across the wayleave from the south-east



Fig. 6 - Site WA514, looking along the wayleave from the east

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Fig. 7 - Site WA228, looking along the wayleave from the north-east with the ridge-and-furrow running perpendicular



Fig. 8 - MOOTA 1, looking from the south with the ridge-and-furrow running parallel to the wayleave

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Fig. 9 - MOOTA 2, looking from the south with the ridge-and-furrow running perpendicular to the wayleave



Fig. 10 - WA30, looking from the north-east along the stripped area for the wayleave

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Fig. 11 - WA132, looking from the west along the stripped area for the wayleave



Fig. 12 - WA187, looking from the north-west along the stripped area for the wayleave

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Fig. 13 - WA508, looking from the east-north-east along the stripped area for the wayleave

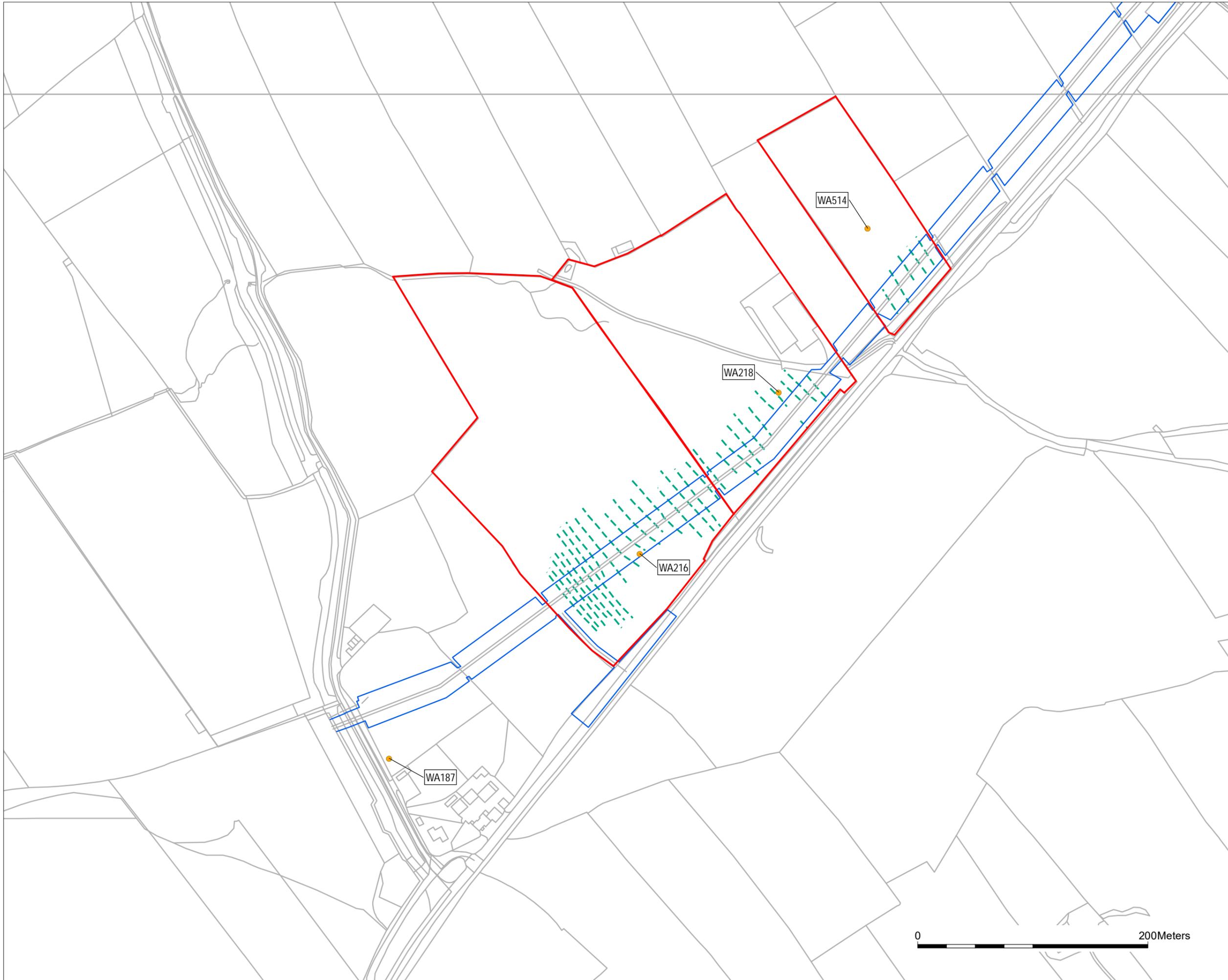
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Key:

- Field Boundary
- Cultural Heritage Asset Requiring Mitigation
- Williamsgate to Quarryhill Pipeline Route
- Ridge and Furrow



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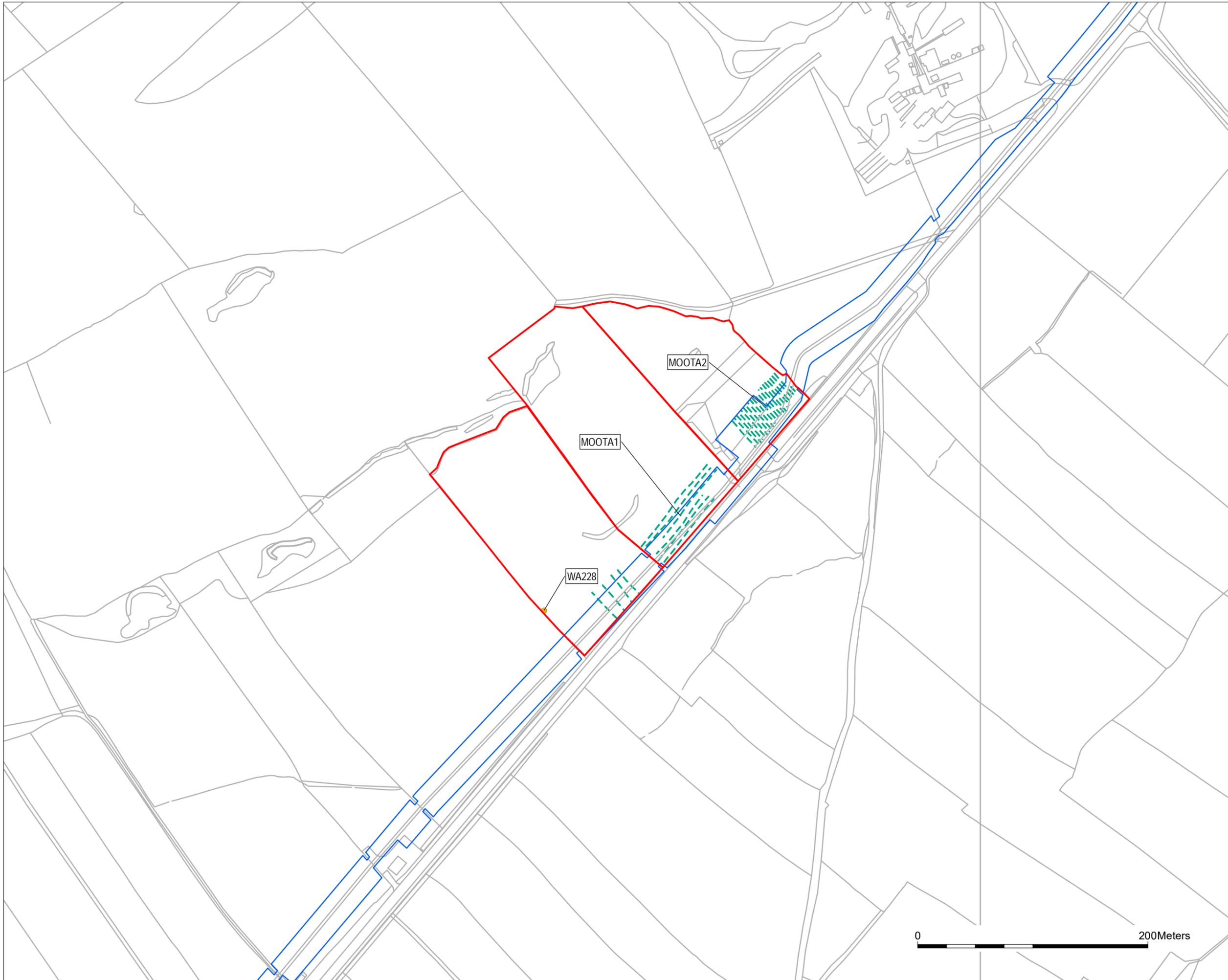
Client:
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Scale at A3:
1:3,000

Drawn by: MP	Checked: SW	Date: 04/12/2017
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Report No: 3563	Fig. No: 14a
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Key:

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Project – Williamsgate to Quarryhill
Section: Archaeological Mitigation**

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Scale at A3:
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Report No: 3563	Fig. No: 14b
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