

Norfolk Vanguard Offshore Wind Farm

Appendix 28.5

Onshore Geophysical Survey Results

FIGURES - PART 1

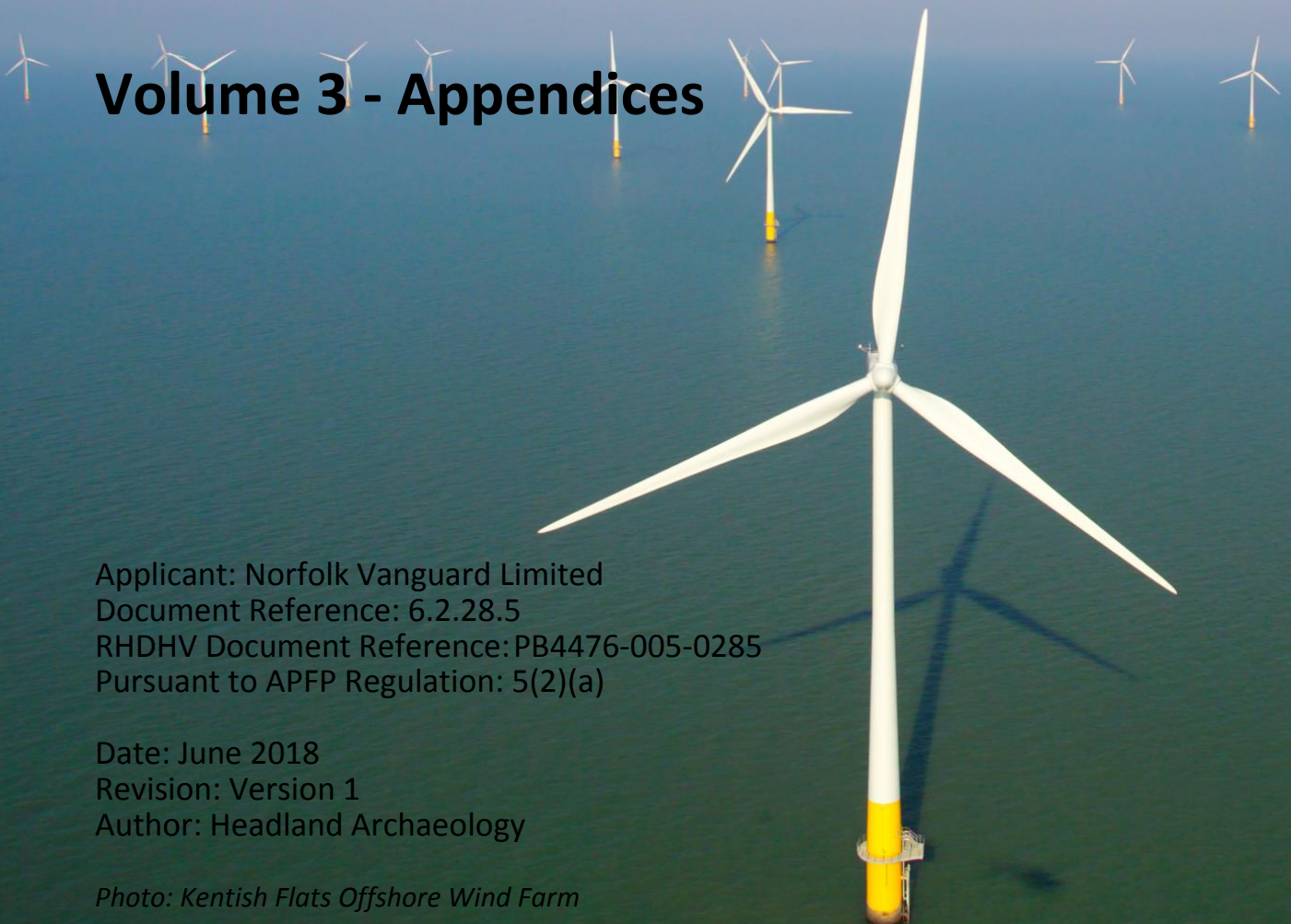
Environmental Statement

Volume 3 - Appendices

Applicant: Norfolk Vanguard Limited
Document Reference: 6.2.28.5
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Pursuant to APFP Regulation: 5(2)(a)

Date: June 2018
Revision: Version 1
Author: Headland Archaeology

Photo: Kentish Flats Offshore Wind Farm



Environmental Impact Assessment Environmental Statement

Document Reference: PB4476-005-0285

June 2018

For and on behalf of Norfolk Vanguard Limited

Approved by: Ruari Lean, Rebecca Sherwood

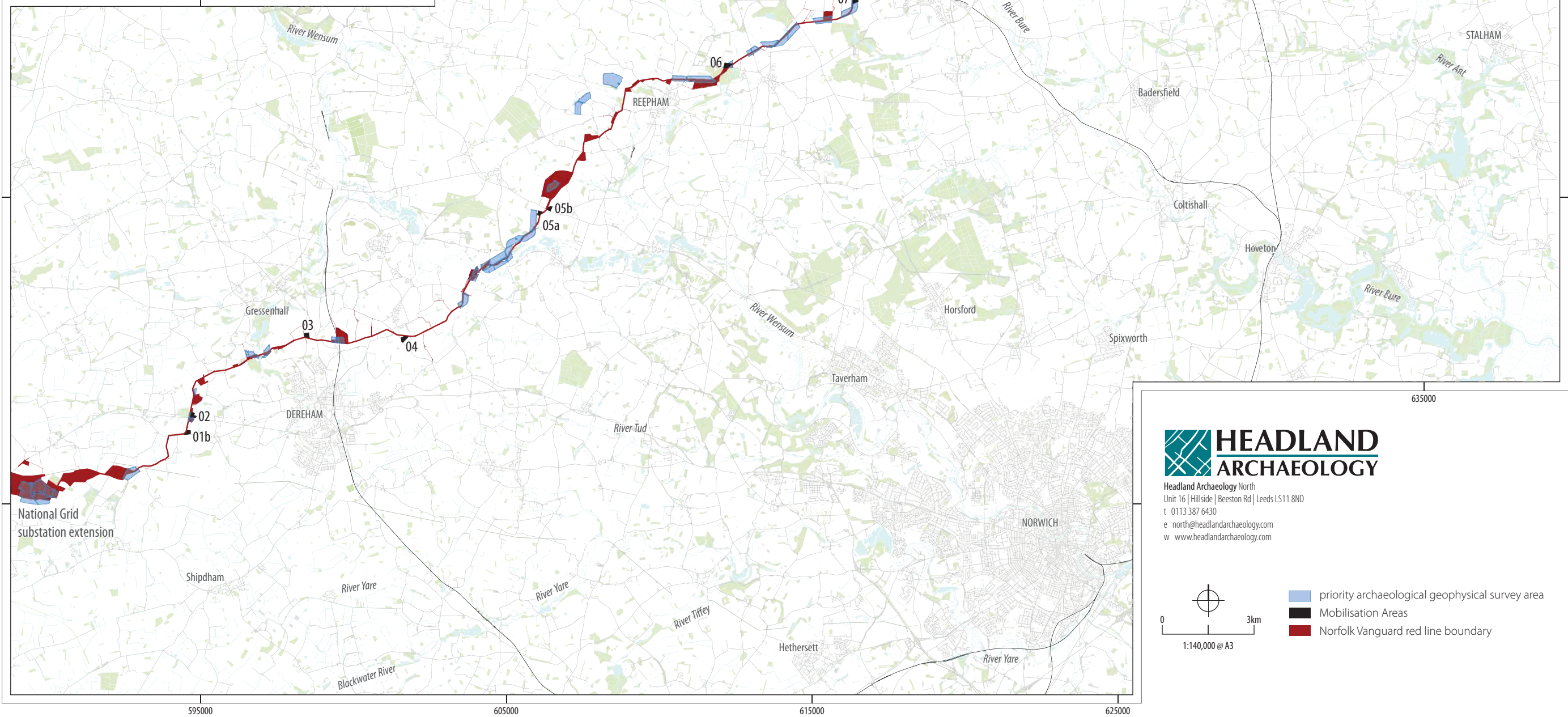
Signed:



Date: 8th June 2018

Priority Archaeological
Geophysical Survey
(Terrestrial Archaeology)
Norfolk Vanguard Offshore Wind Farm
Norfolk

0 200km
1:10,000,000 @ A3

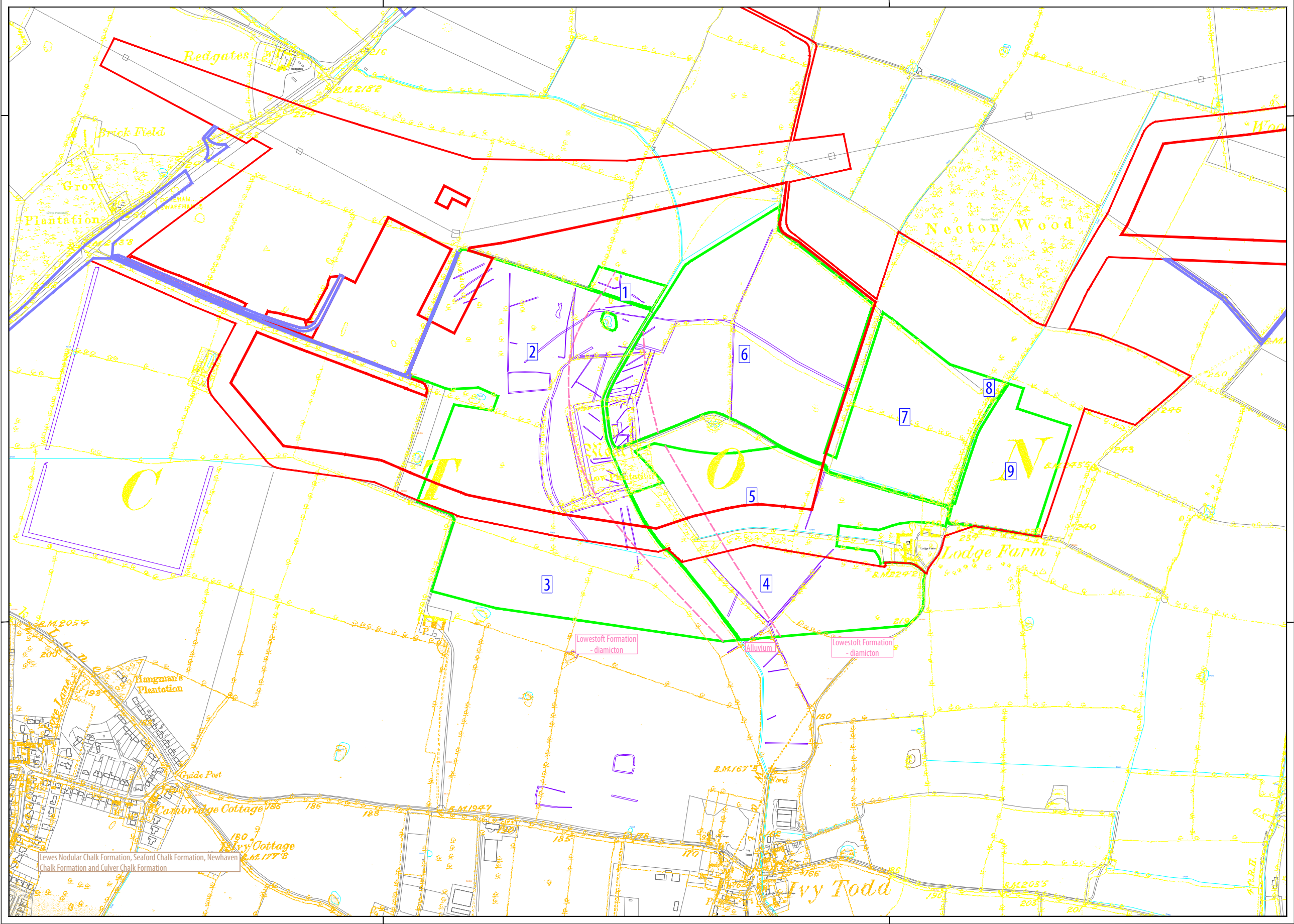


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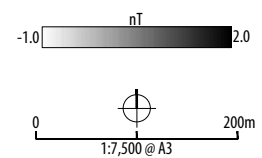
Headland Archaeology North
Unit 16 | Hillside | Beeston Rd | Leeds LS11 8ND
t 0113 387 6430
e north@headlandarchaeology.com
w www.headlandarchaeology.com

0 3km
1:140,000 @ A3

priority archaeological geophysical survey area
Mobilisation Areas
Norfolk Vanguard red line boundary



- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

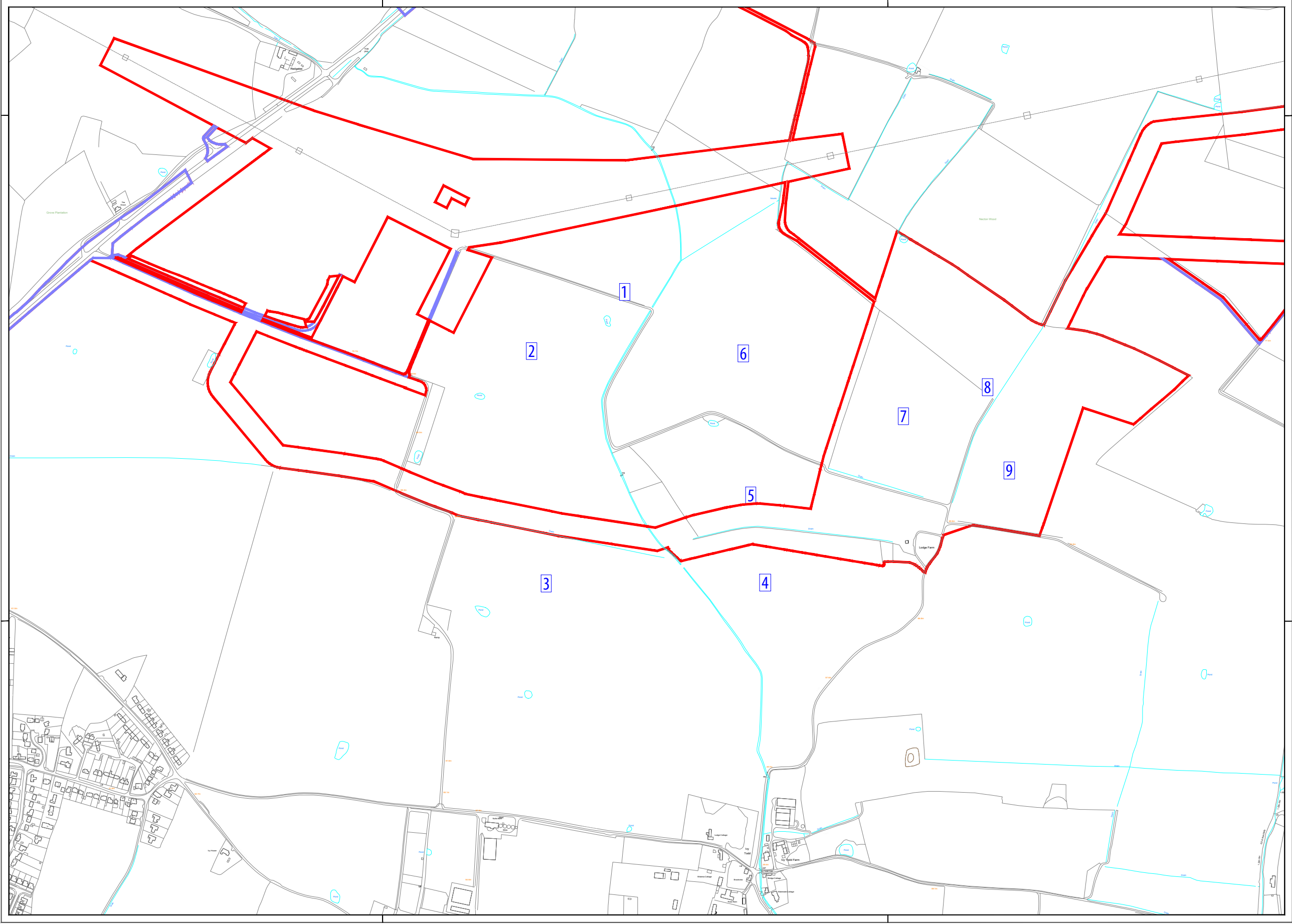


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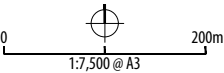
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 norfolk vanguard red line boundary

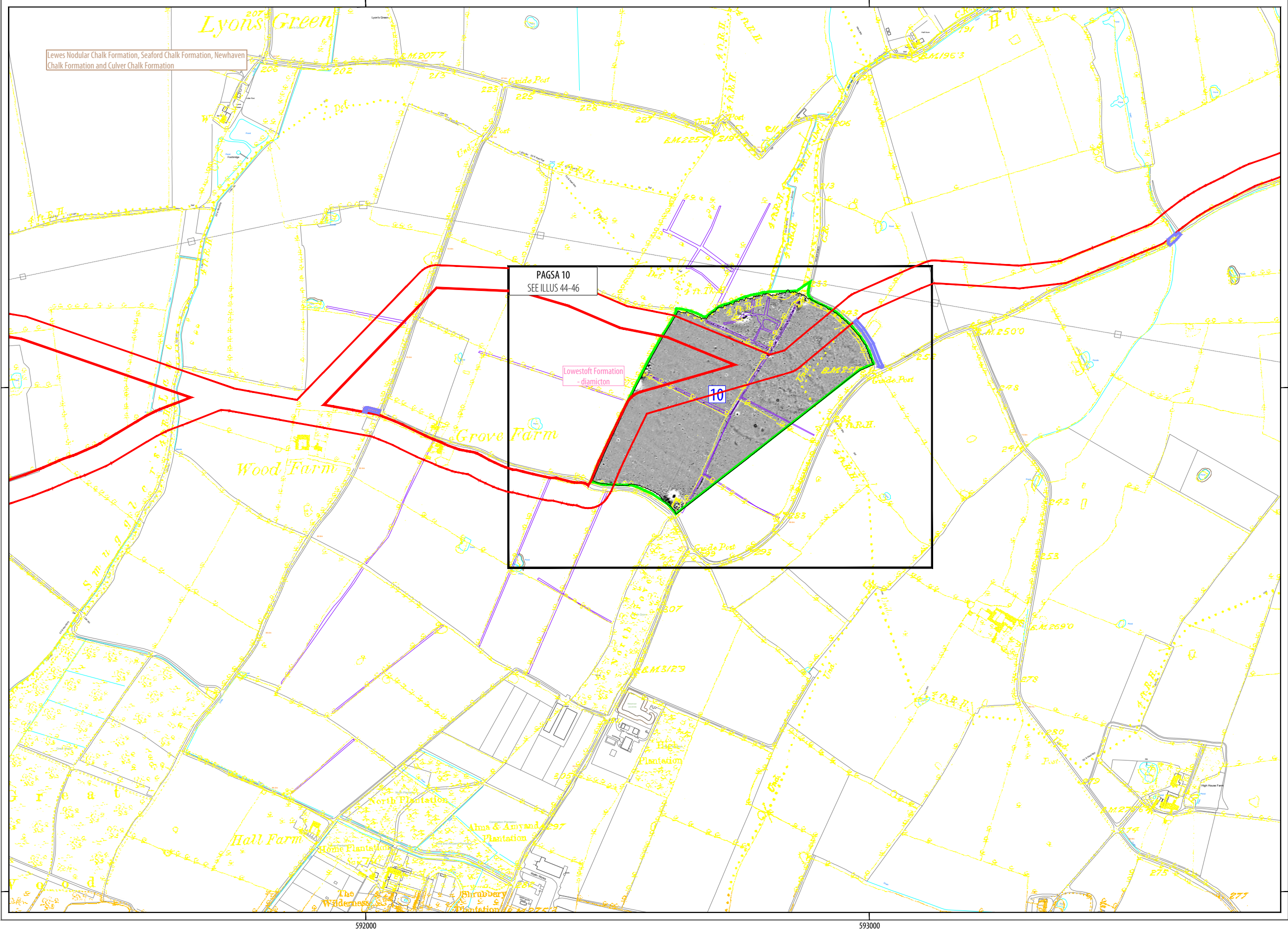


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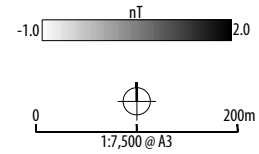


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ILLUS 4 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 10

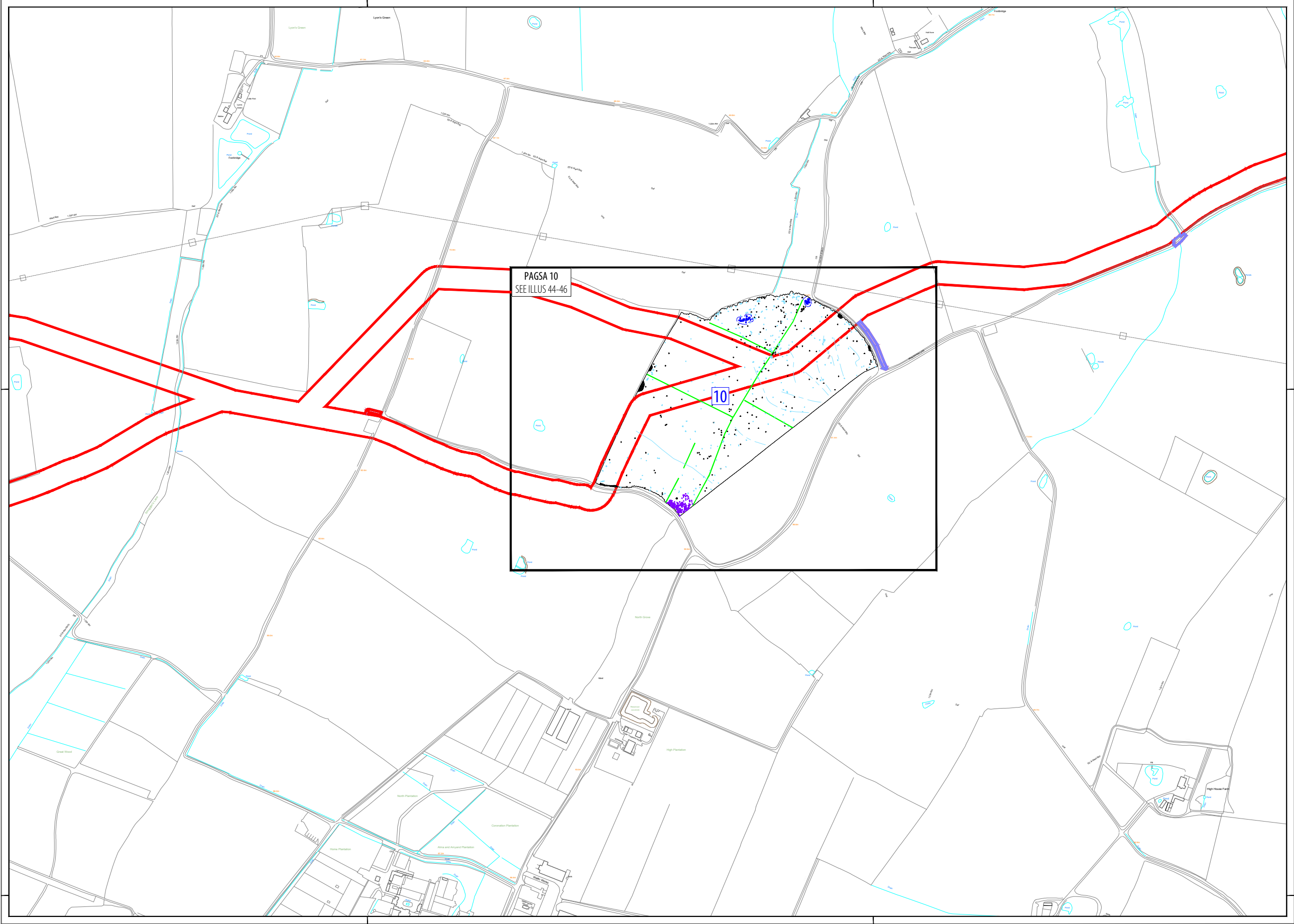
- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



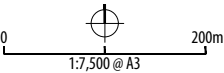
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TYPE OF ANOMALY		INTERPRETATION
●	dipolar isolated	ferrous material
●	magnetic disturbance	ferrous material
●	magnetic disturbance	modern
●	magnetic disturbance	former building
—	linear	former field boundary
—	linear trend	geology
●	magnetic enhancement	geology



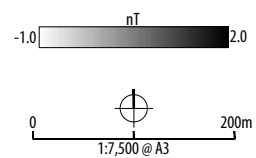
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ILLUS 5 Interpretation of magnetometer data; PAGSA 10

-  norfolk vanguard red line boundary
-  access route
-  priority archaeological geophysical survey area
-  mobilisation area
-  cropmark data
-  bedrock geology
-  superficial geology
-  first edition OS mapping 1888-1913
-  norfolk vanguard red line boundary



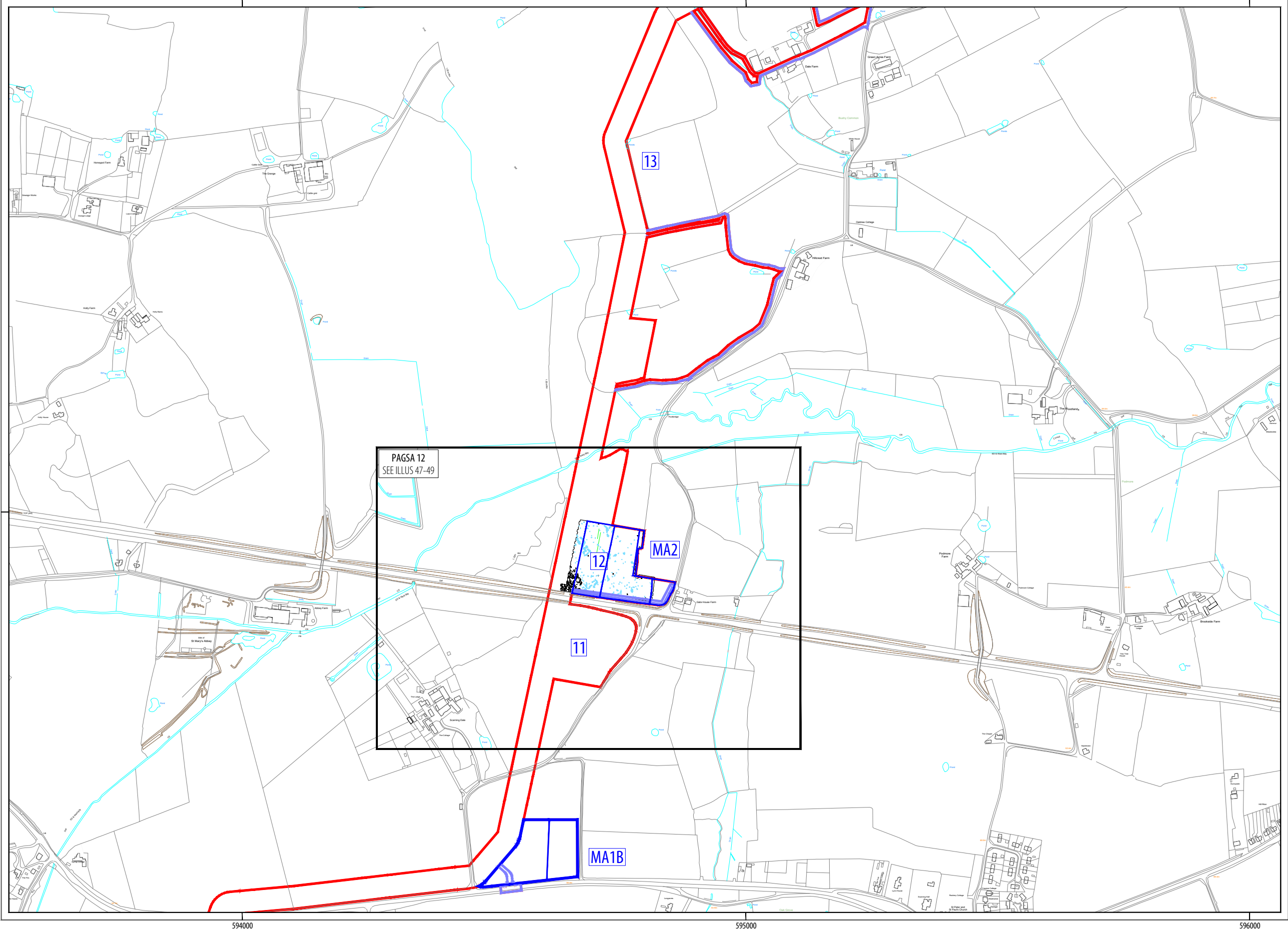
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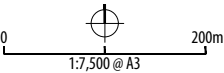

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ILLUS 6 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888–1913); PAGSA 11–13



- norfolk vanguard red line boundary
mobilisation area
access route
- | TYPE OF ANOMALY | INTERPRETATION |
|----------------------|------------------|
| dipolar isolated | ferrous material |
| magnetic disturbance | ferrous material |
| linear trend | agricultural |
| magnetic enhancement | geology |

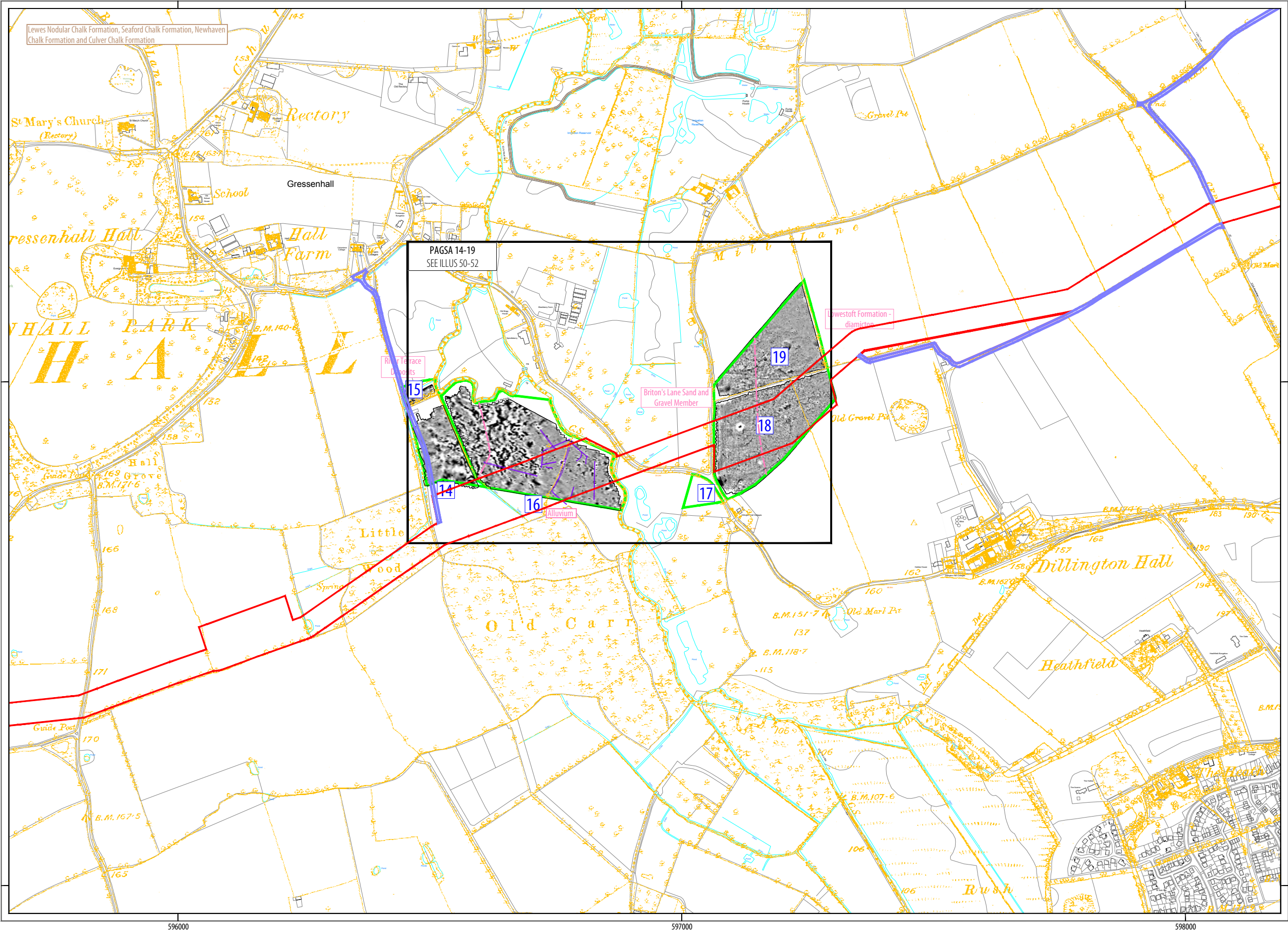


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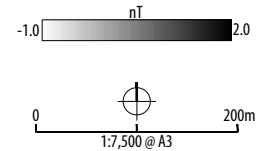
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ILLUS 8 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 14-19

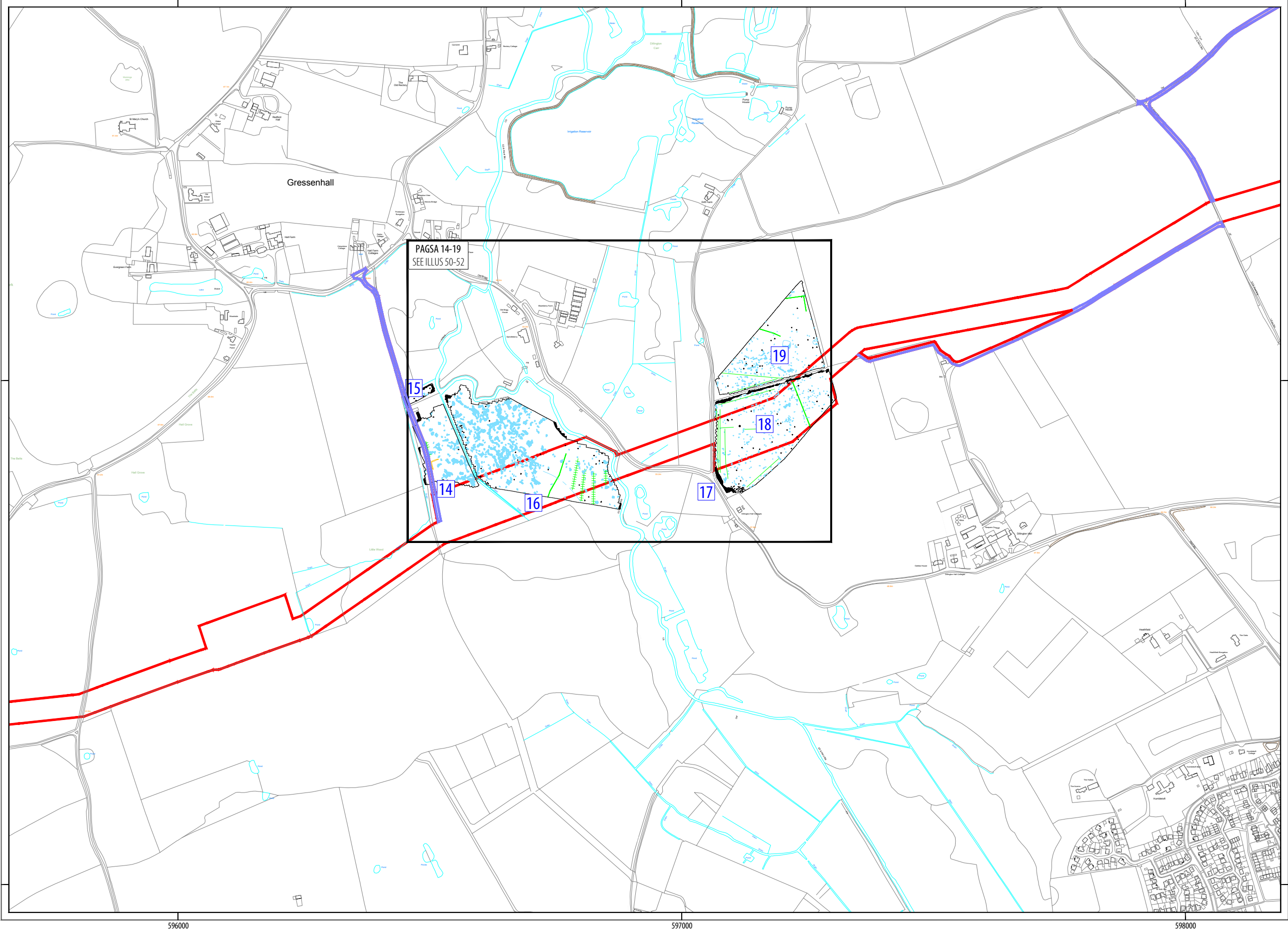
- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



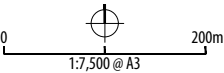
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TYPE OF ANOMALY		INTERPRETATION
●	dipolar isolated	ferrous material
●	magnetic disturbance	ferrous material
—	linear trend	agricultural
—	linear trend	field drain
—	linear	former field boundary
—	linear trend	geology
—	magnetic enhancement	geology

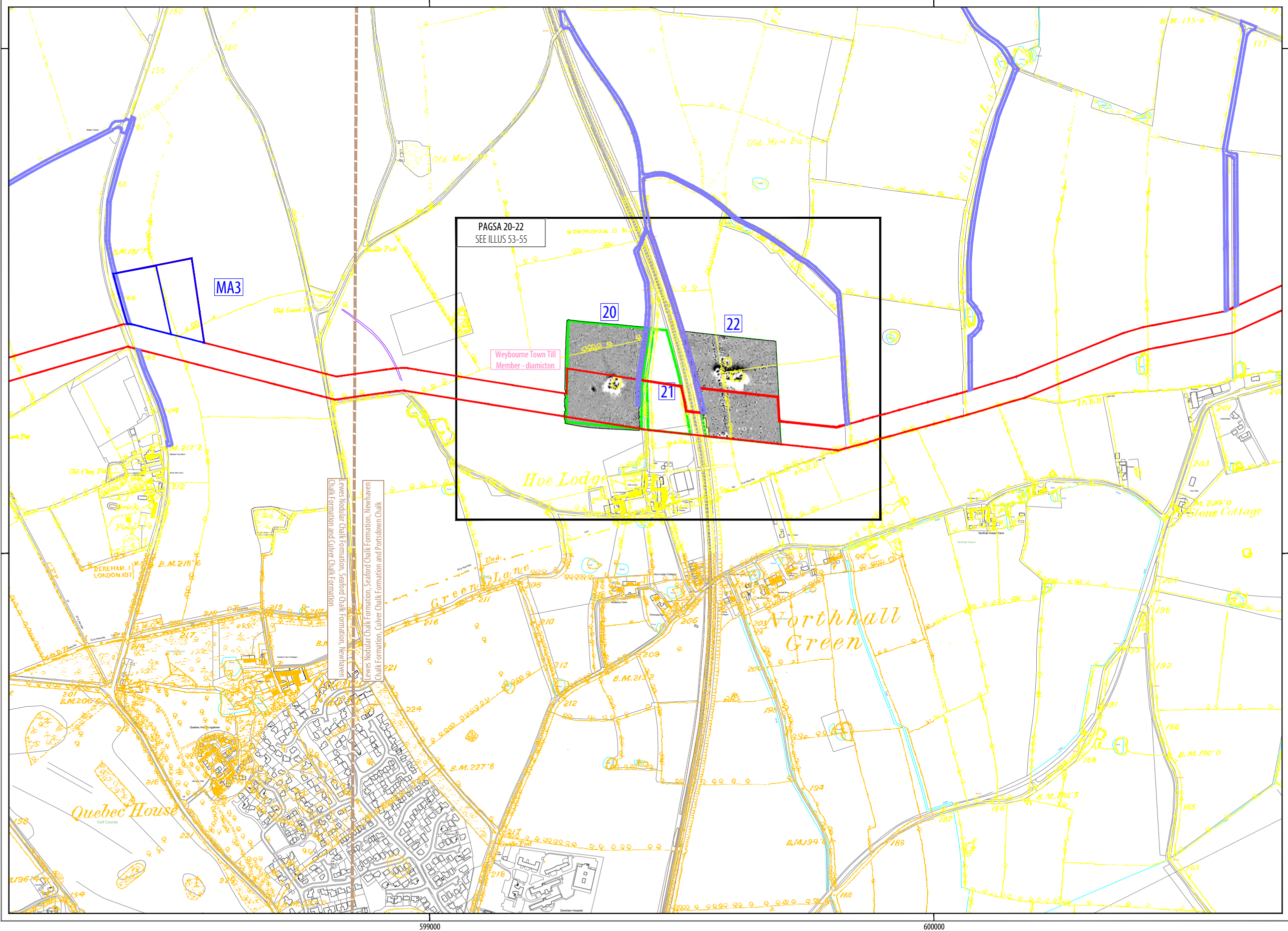


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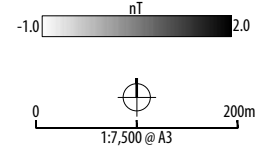
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ILLUS 9 Interpretation of magnetometer data; PAGSA 14-19

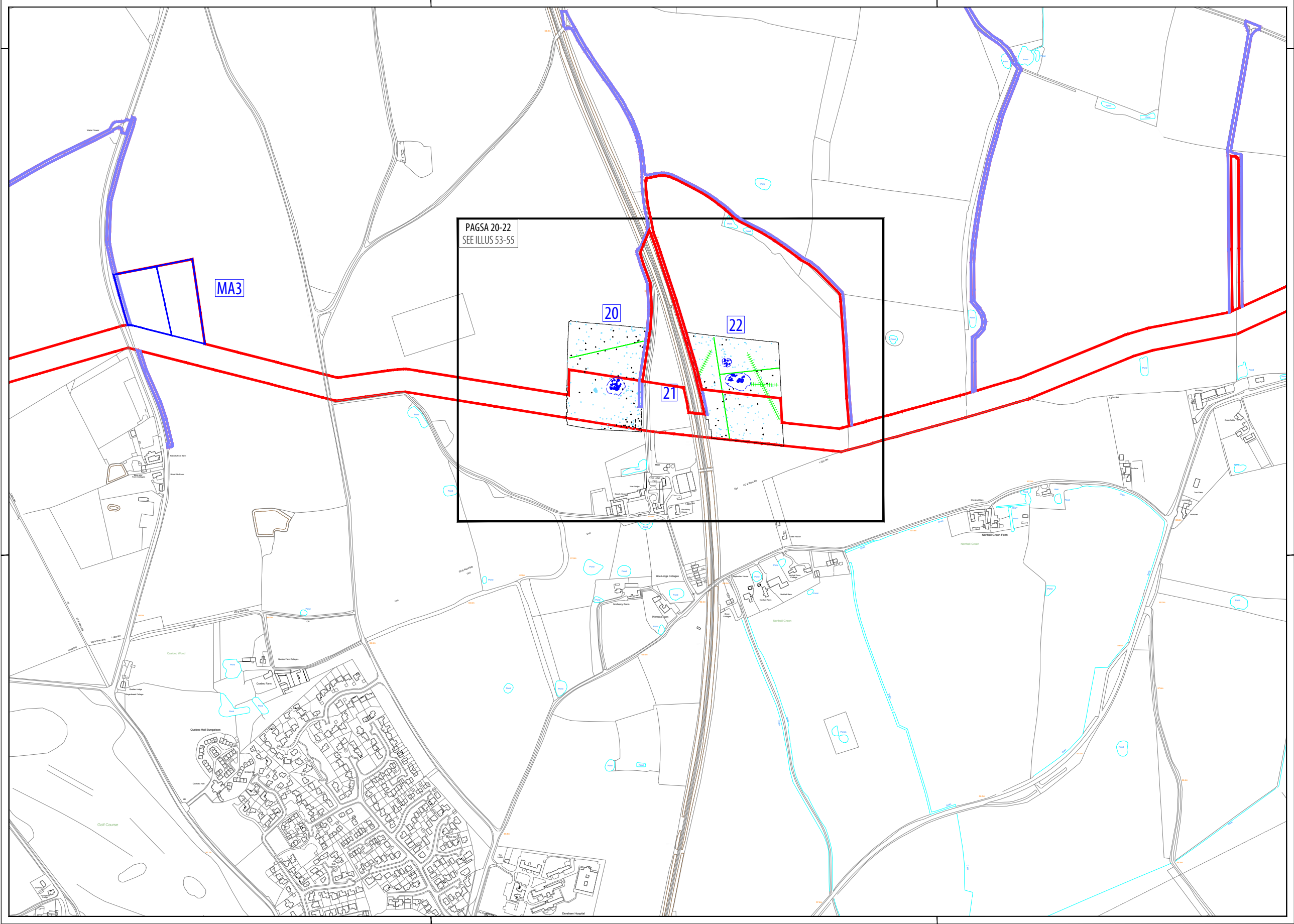


- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- mobilisation area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

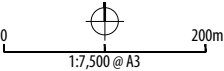


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ILLUS 10 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 20-22



- norfolk vanguard red line boundary
 - mobilisation area
 - access route
- | TYPE OF ANOMALY | INTERPRETATION |
|----------------------|-----------------------|
| dipolar isolated | ferrous material |
| magnetic disturbance | modern |
| linear trend | field drain |
| linear | former field boundary |
| magnetic enhancement | geology |



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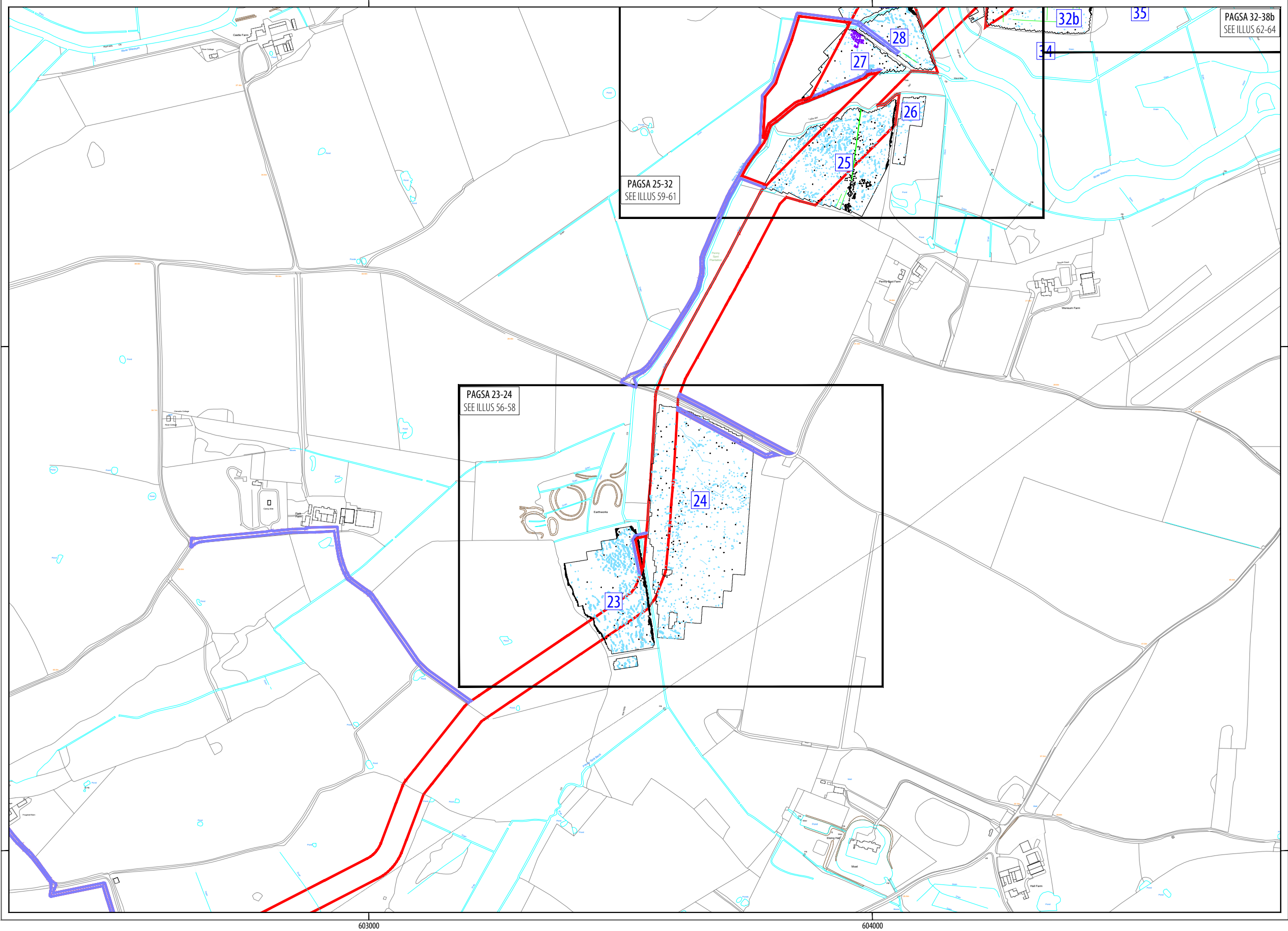
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ILLUS 11 Interpretation of magnetometer data; PAGSA 20-22

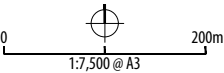
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- | | |
|-----------------|------------------------------------|
| | norfolk vanguard red line boundary |
| | access route |
| TYPE OF ANOMALY | |
| | dipolar isolated |
| | magnetic disturbance |
| | magnetic disturbance |
| | linear trend |
| | linear |
| | linear trend |
| | magnetic enhancement |
| INTERPRETATION | |
| | ferrous material |
| | ferrous material |
| | former building |
| | agricultural |
| | former field boundary |
| | geology |
| | geology |



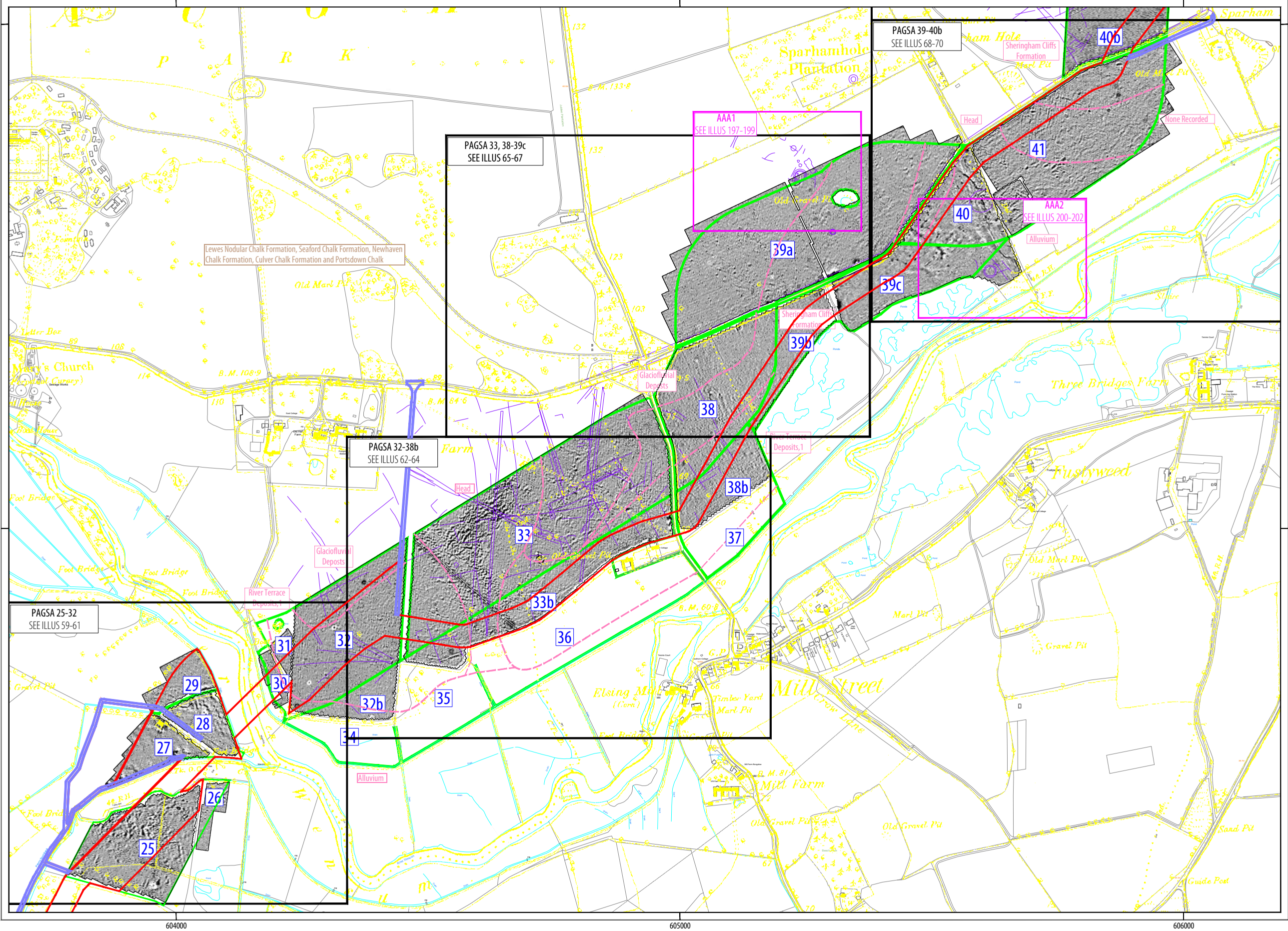
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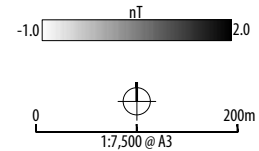


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ILLUS 13 Interpretation of magnetometer data; PAGSA 23-24



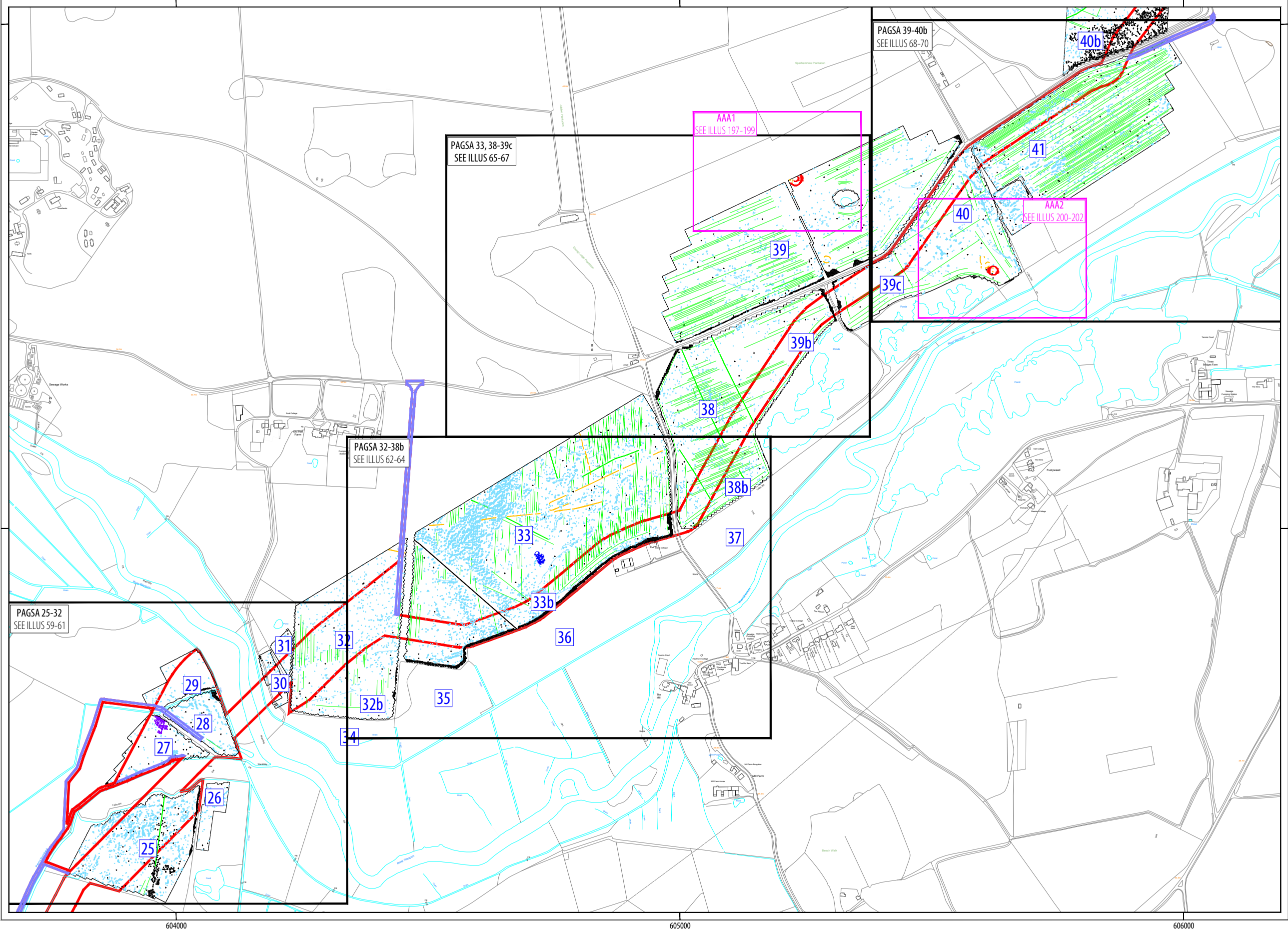
- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



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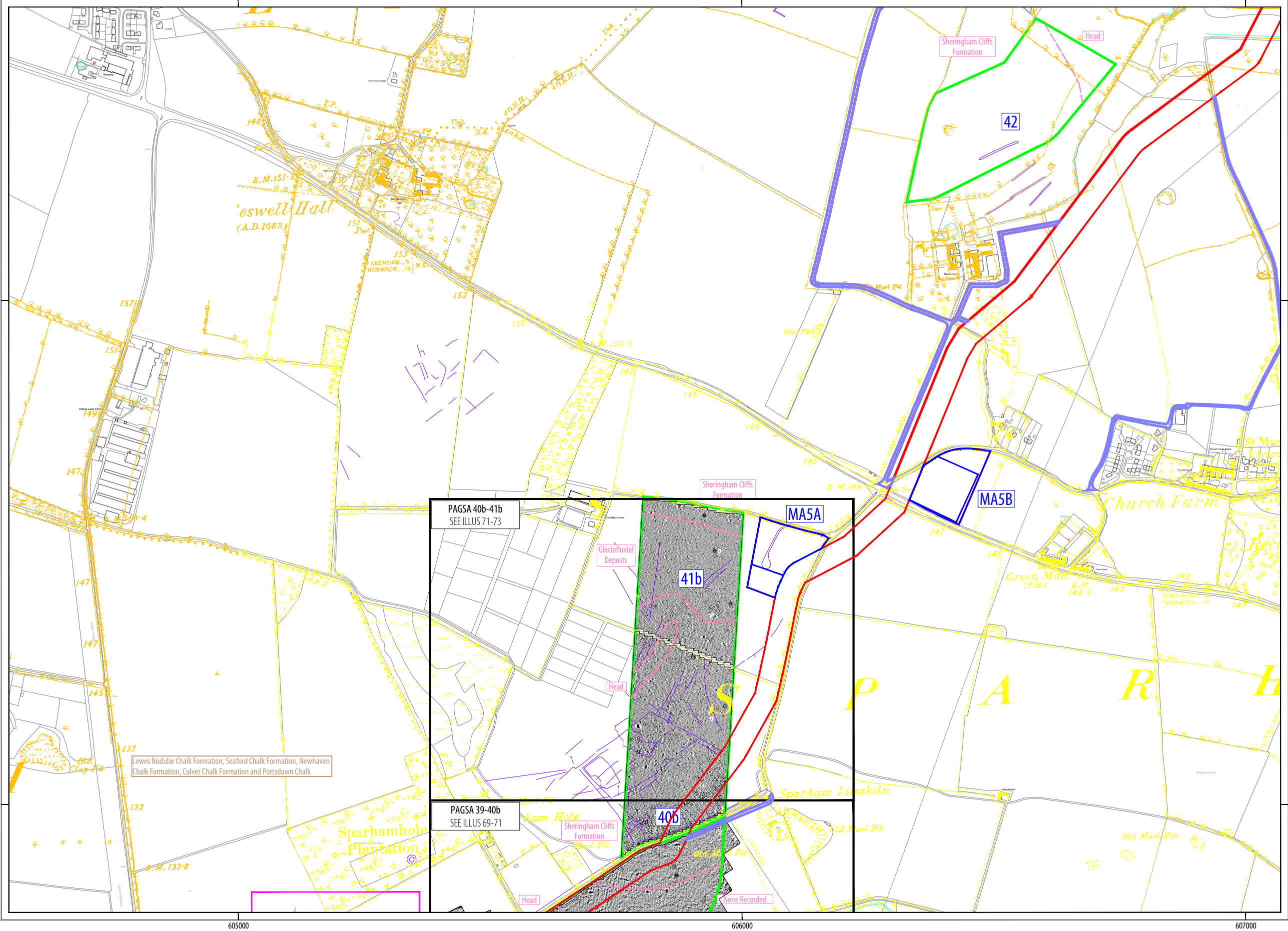
ILLUS 15 Interpretation of magnetometer data; PAGSA 25-41



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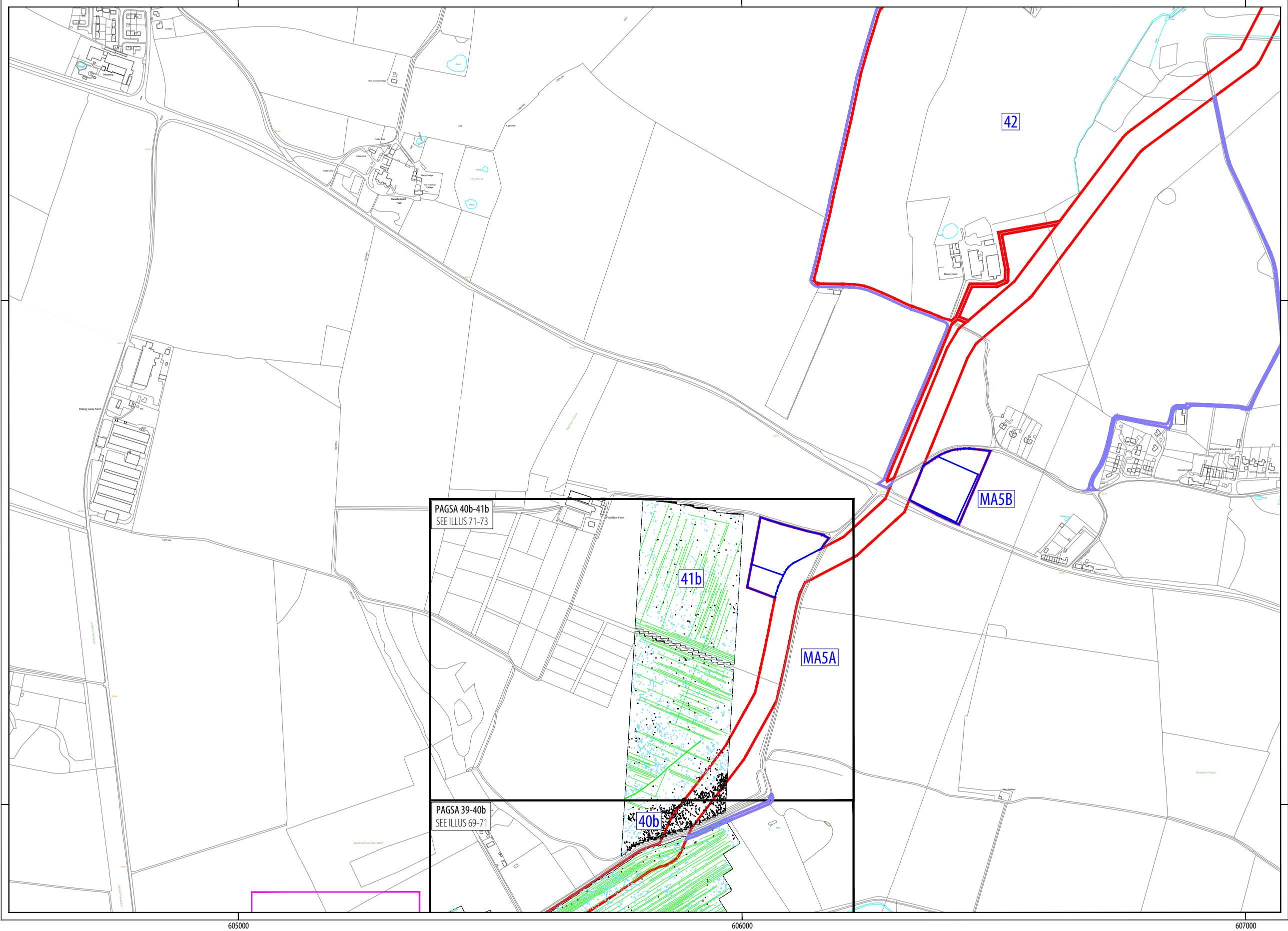
ILLUS 16 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 40b-42

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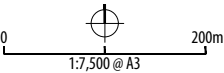
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	norfolk vanguard red line boundary
	mobilisation area
	access route
TYPE OF ANOMALY	
	dipolar isolated
	magnetic disturbance
	linear trend
	linear
	linear trend
	magnetic enhancement
INTERPRETATION	
	ferrous material
	ferrous material
	agricultural
	former field boundary
	geology
	geology



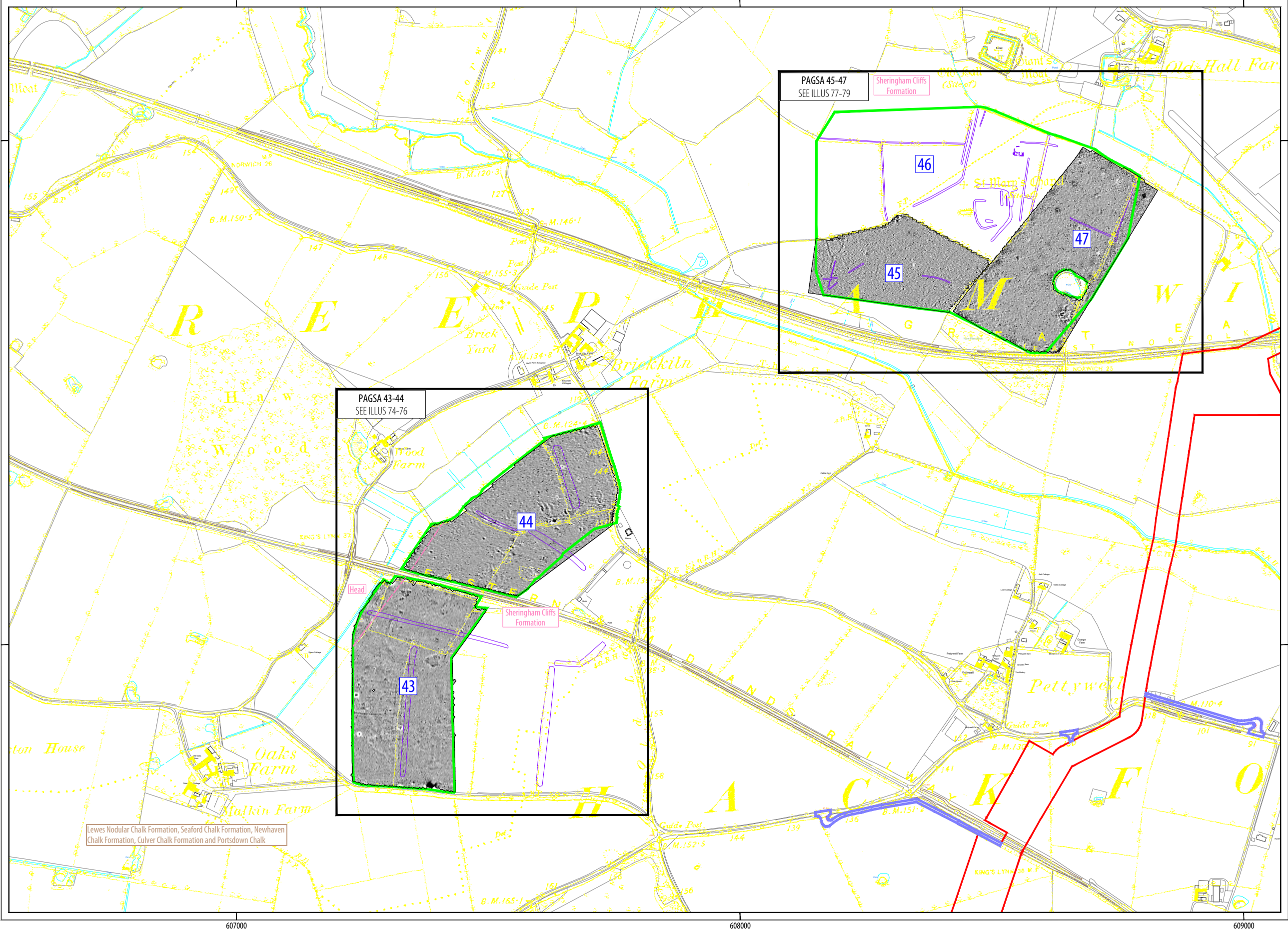
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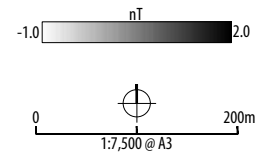


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ILLUS 17 Interpretation of magnetometer data; PAGSA 40b-42



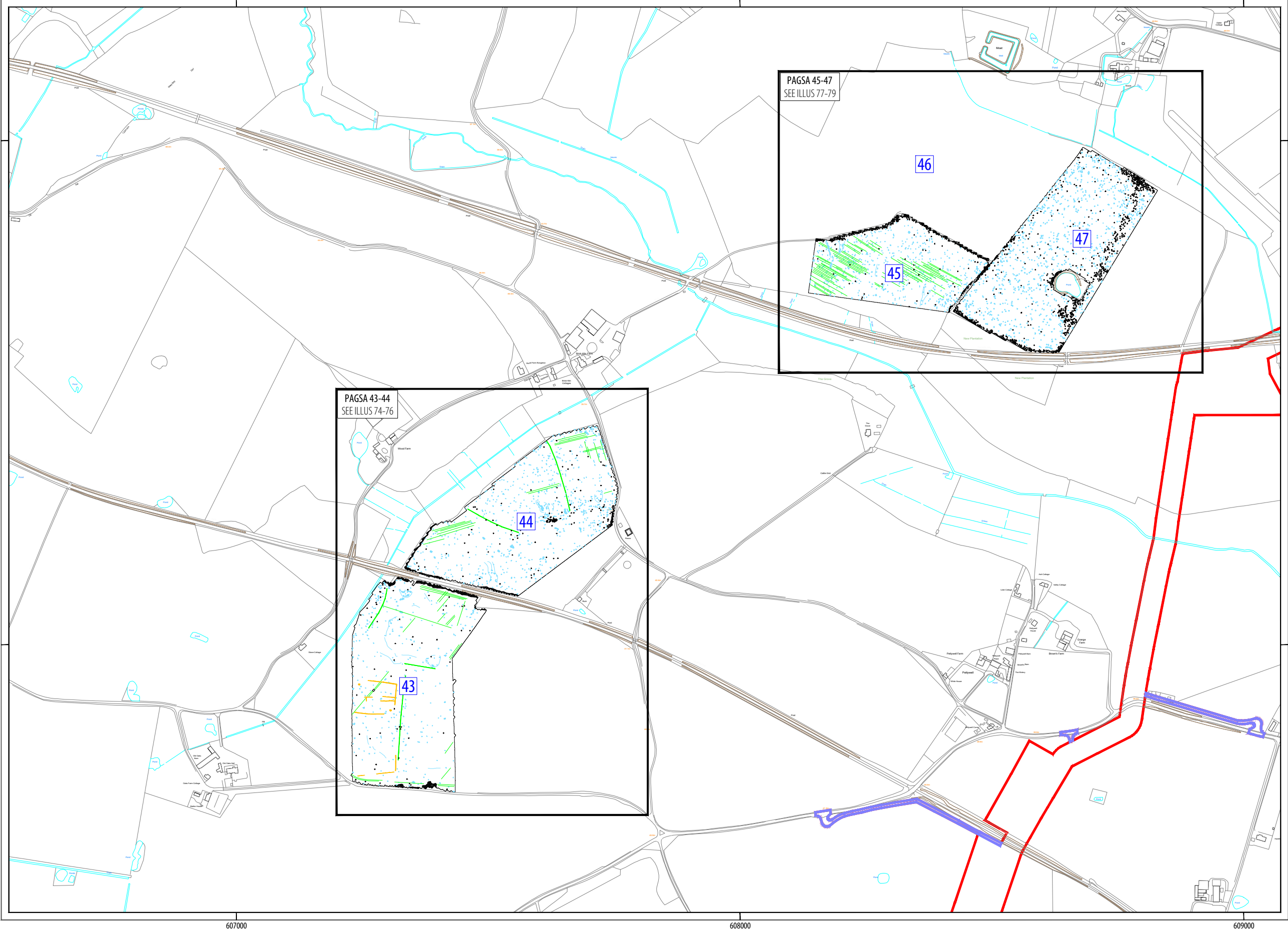
- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



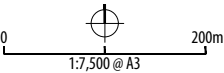
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TYPE OF ANOMALY		INTERPRETATION
●	dipolar isolated	ferrous material
●	magnetic disturbance	ferrous material
—	linear trend	agricultural
—	linear	former field boundary
—	linear trend	geology
●	magnetic enhancement	geology
●	magnetic enhancement	archaeology?



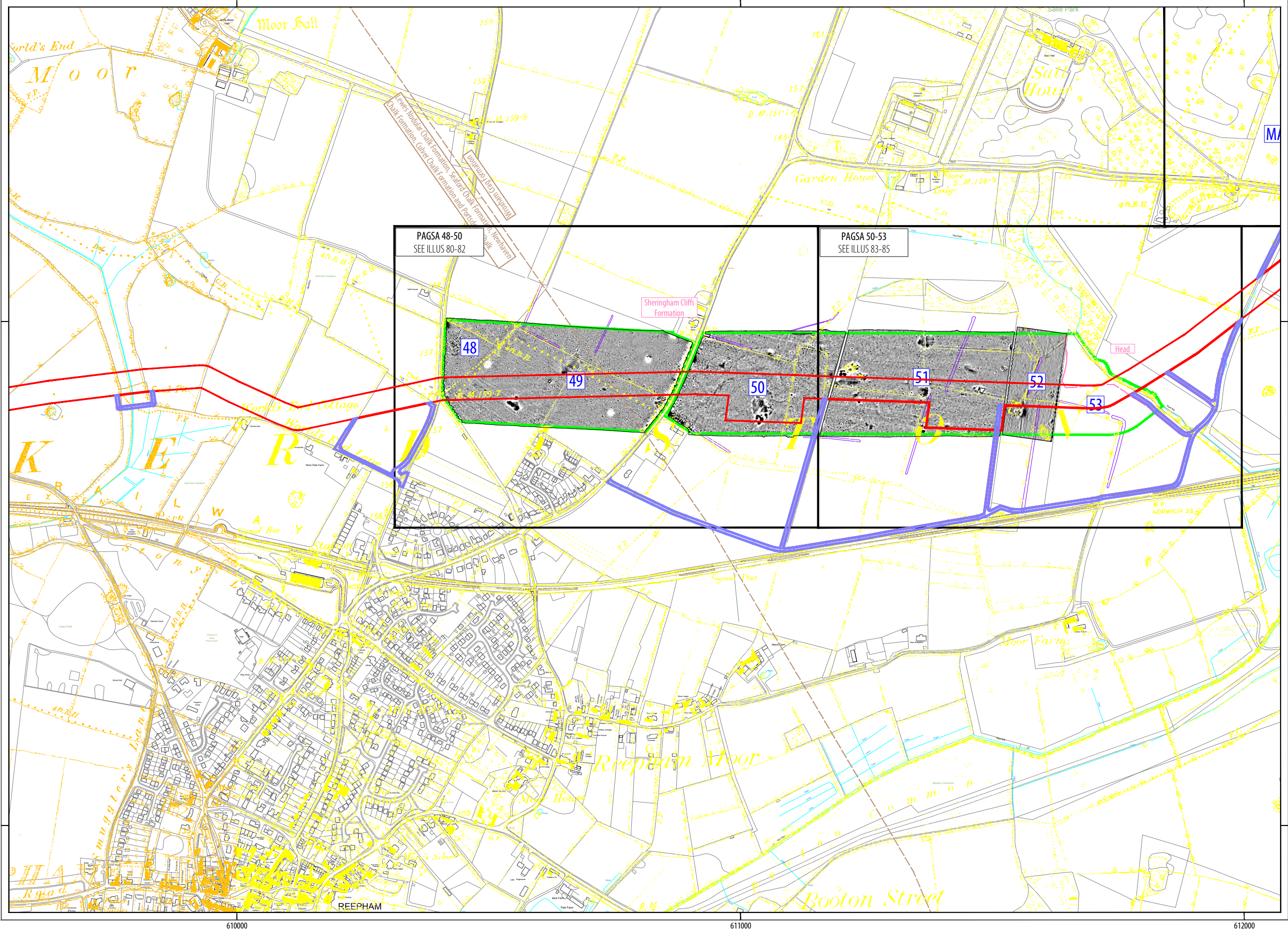
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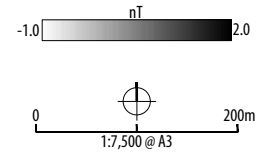


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ILLUS 19 Interpretation of magnetometer data; PAGSA 43-47



- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

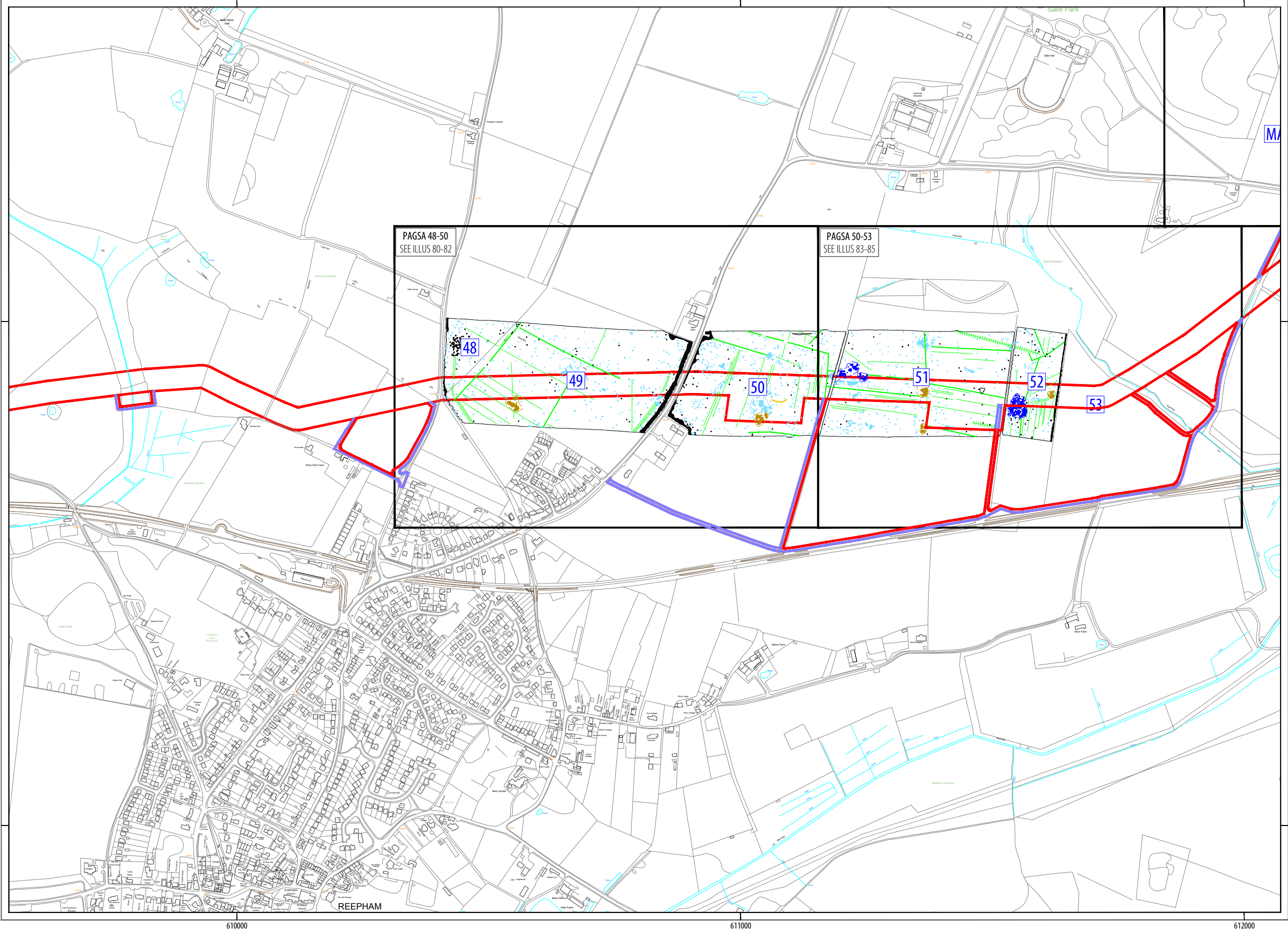


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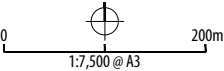
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TYPE OF ANOMALY		INTERPRETATION
●	dipolar isolated	ferrous material
●	magnetic disturbance	ferrous material
●	magnetic disturbance	modern
—	linear trend	agricultural
—	linear trend	field drain
—	linear	former field boundary
—	linear trend	geology
●	magnetic enhancement	geology
●	magnetic enhancement	quarrying
●	magnetic enhancement	archaeology?



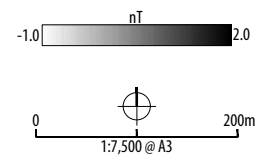
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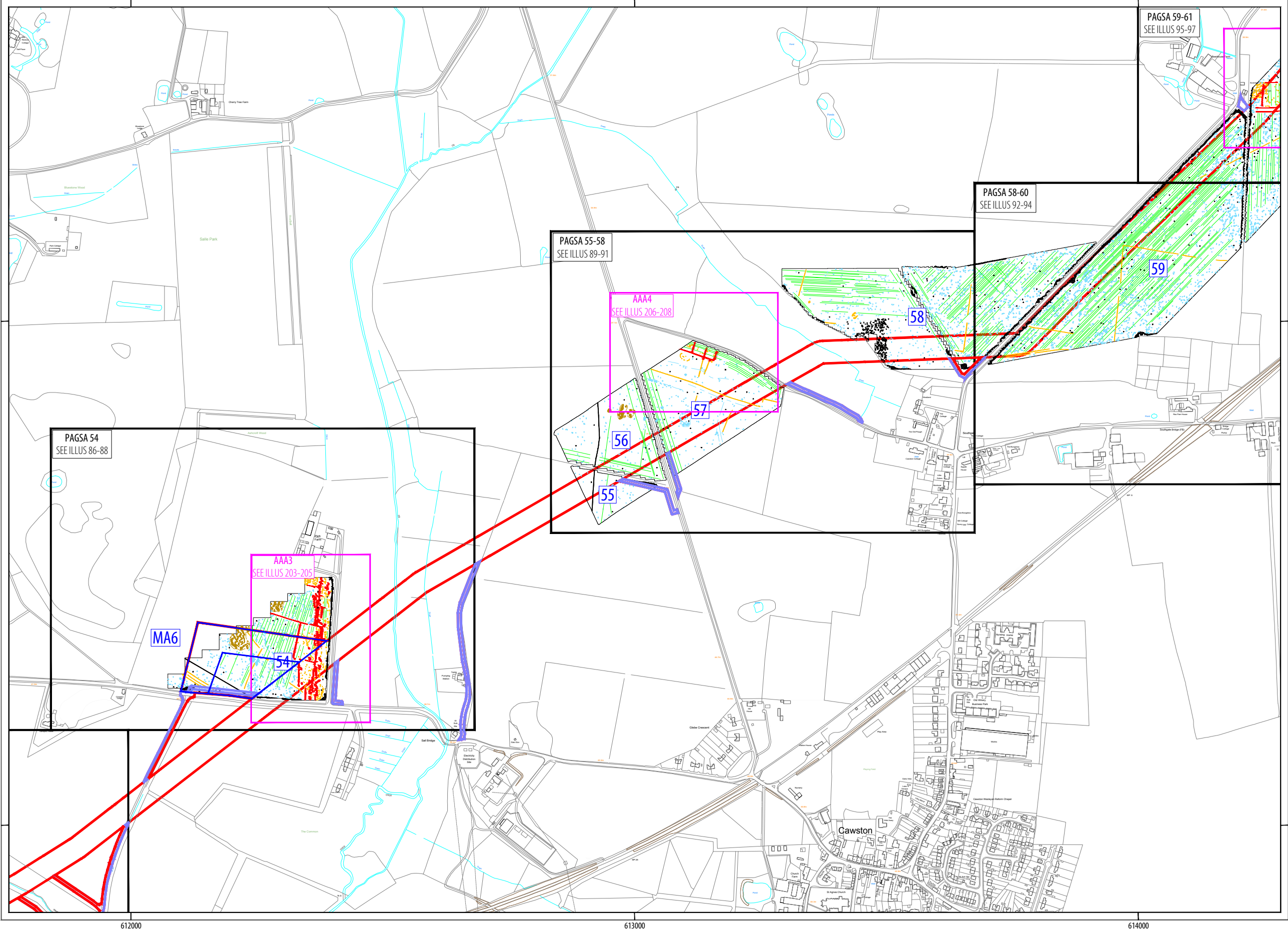


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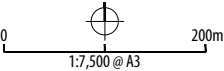
ILLUS 21 Interpretation of magnetometer data; PAGSA 48-53


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	norfolk vanguard red line boundary
	mobilisation area
	access route
TYPE OF ANOMALY	
	dipolar isolated
	magnetic disturbance
	dipolar linear
	linear trend
	linear trend
	magnetic enhancement
	magnetic enhancement
	magnetic enhancement
	magnetic enhancement
INTERPRETATION	
	ferrous material
	ferrous material
	service pipe
	agricultural
	geology
	geology
	quarrying
	archaeology?
	archaeology



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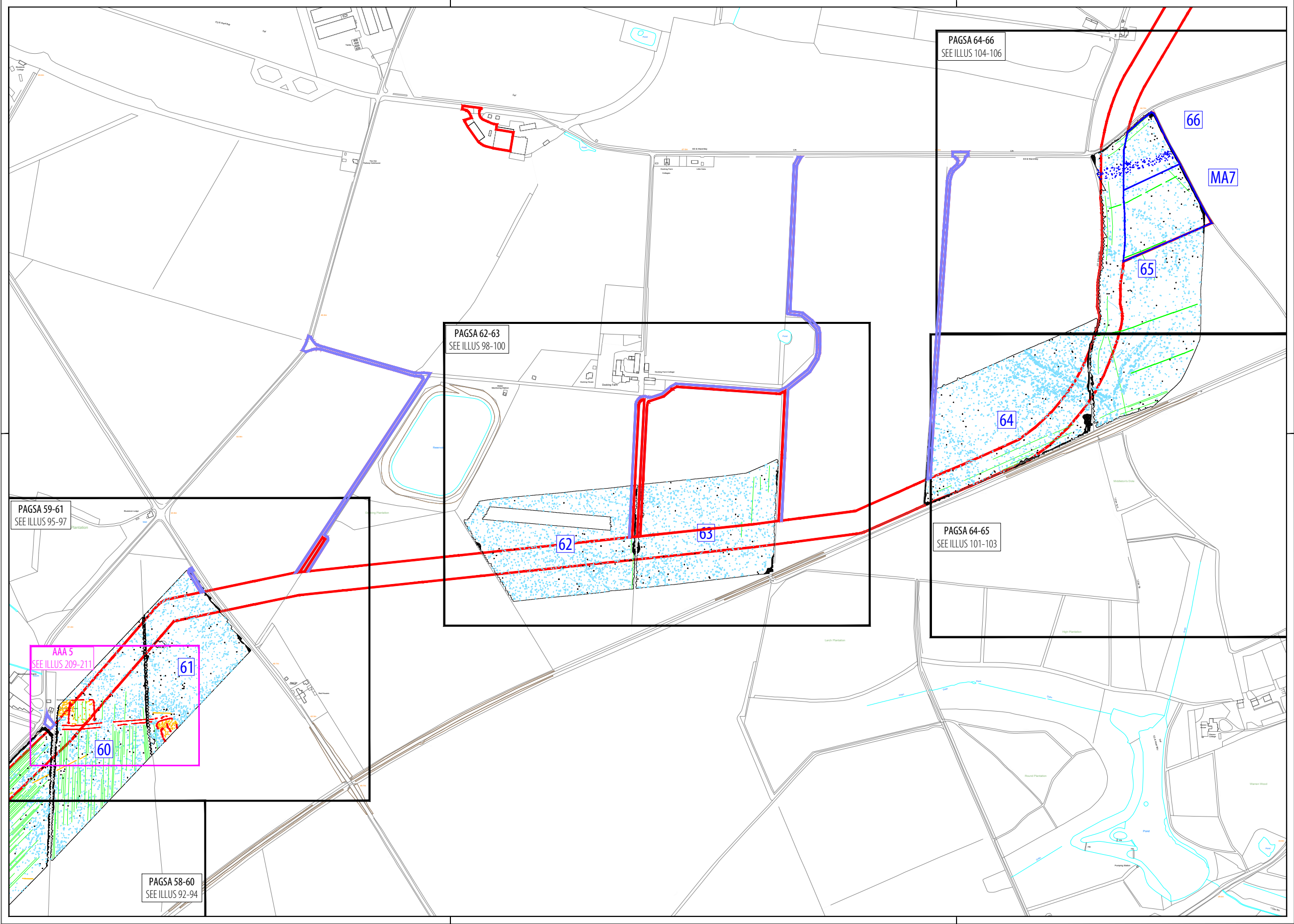
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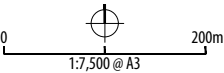
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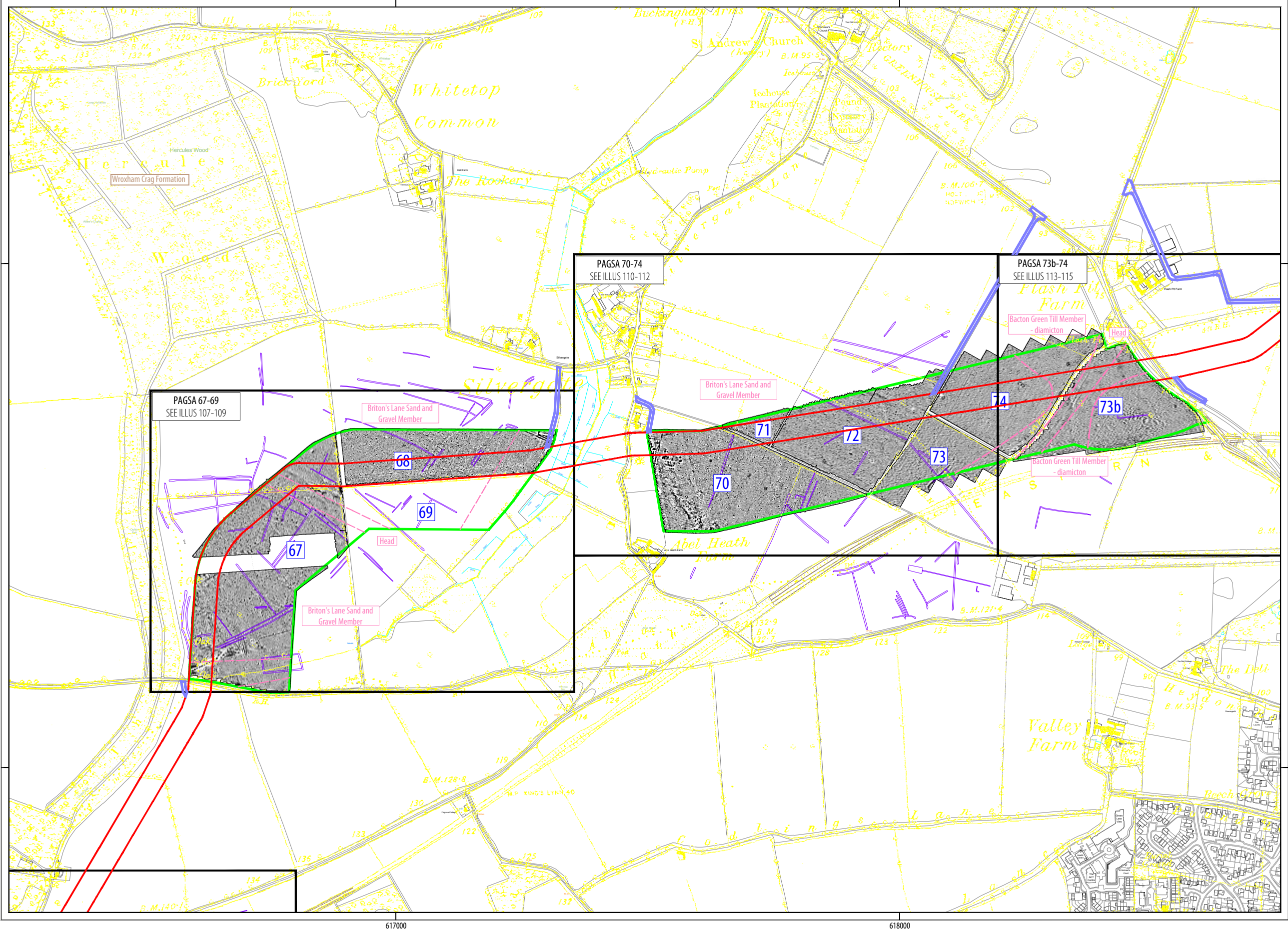
	norfolk vanguard red line boundary
	mobilisation area
	access route
TYPE OF ANOMALY	
	dipolar isolated
	magnetic disturbance
	magnetic disturbance
	linear trend
	linear
	linear
	linear trend
	magnetic enhancement
	magnetic enhancement
	magnetic enhancement
INTERPRETATION	
	ferrous material
	ferrous material
	modern
	agricultural
	former field boundary?
	former field boundary
	geology
	geology
	archaeology?
	archaeology



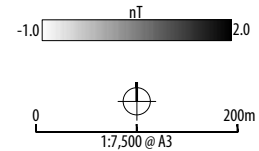
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- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

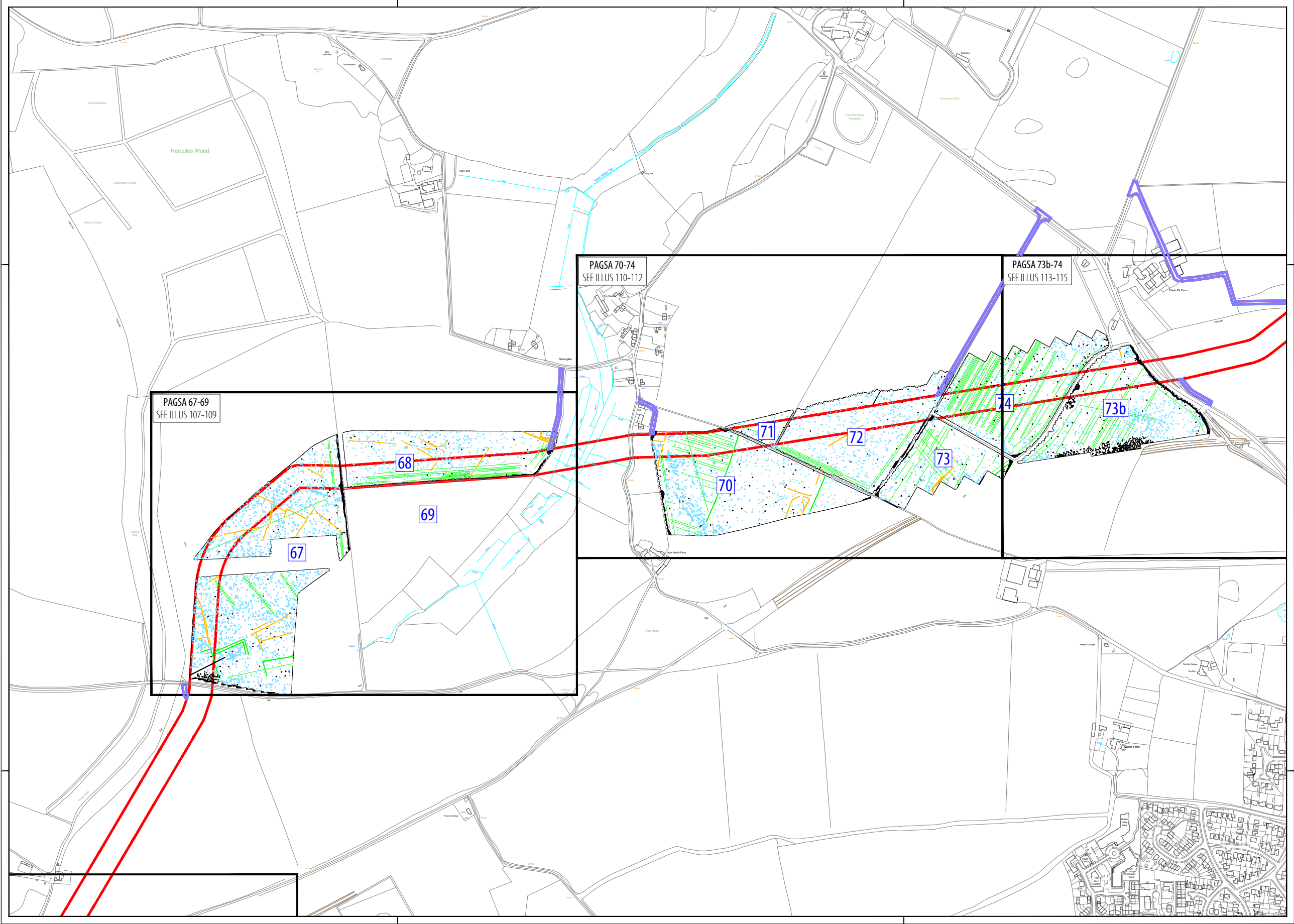


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Royal HaskoningDHV

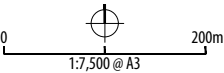
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ILLUS 26 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 67-74



TYPE OF ANOMALY		INTERPRETATION
	norfolk vanguard red line boundary	
	access route	
	dipolar isolated	ferrous material
	magnetic disturbance	ferrous material
	dipolar linear	service pipe
	linear trend	agricultural
	linear trend	field drain
	linear	former field boundary
	linear trend	geology
	magnetic enhancement	geology
	magnetic enhancement	archaeology?



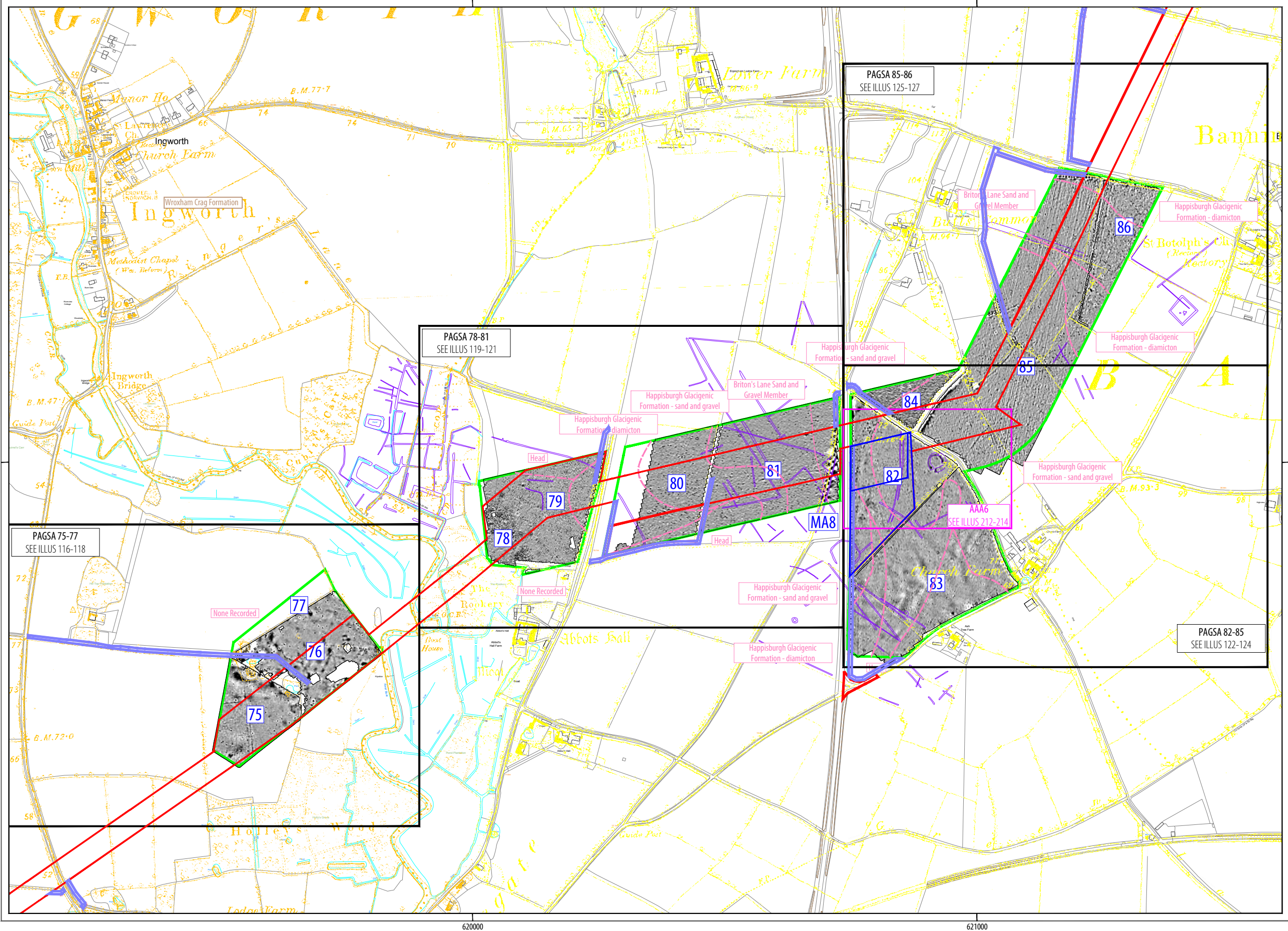
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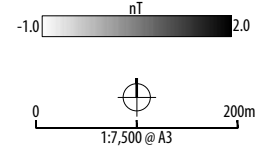
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ILLUS 27 Interpretation of magnetometer data; PAGSA 67-74



ILLUS 28 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 75-86

- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- mobilisation area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

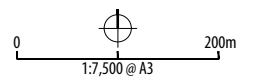
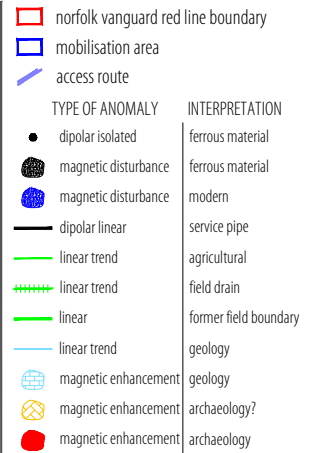


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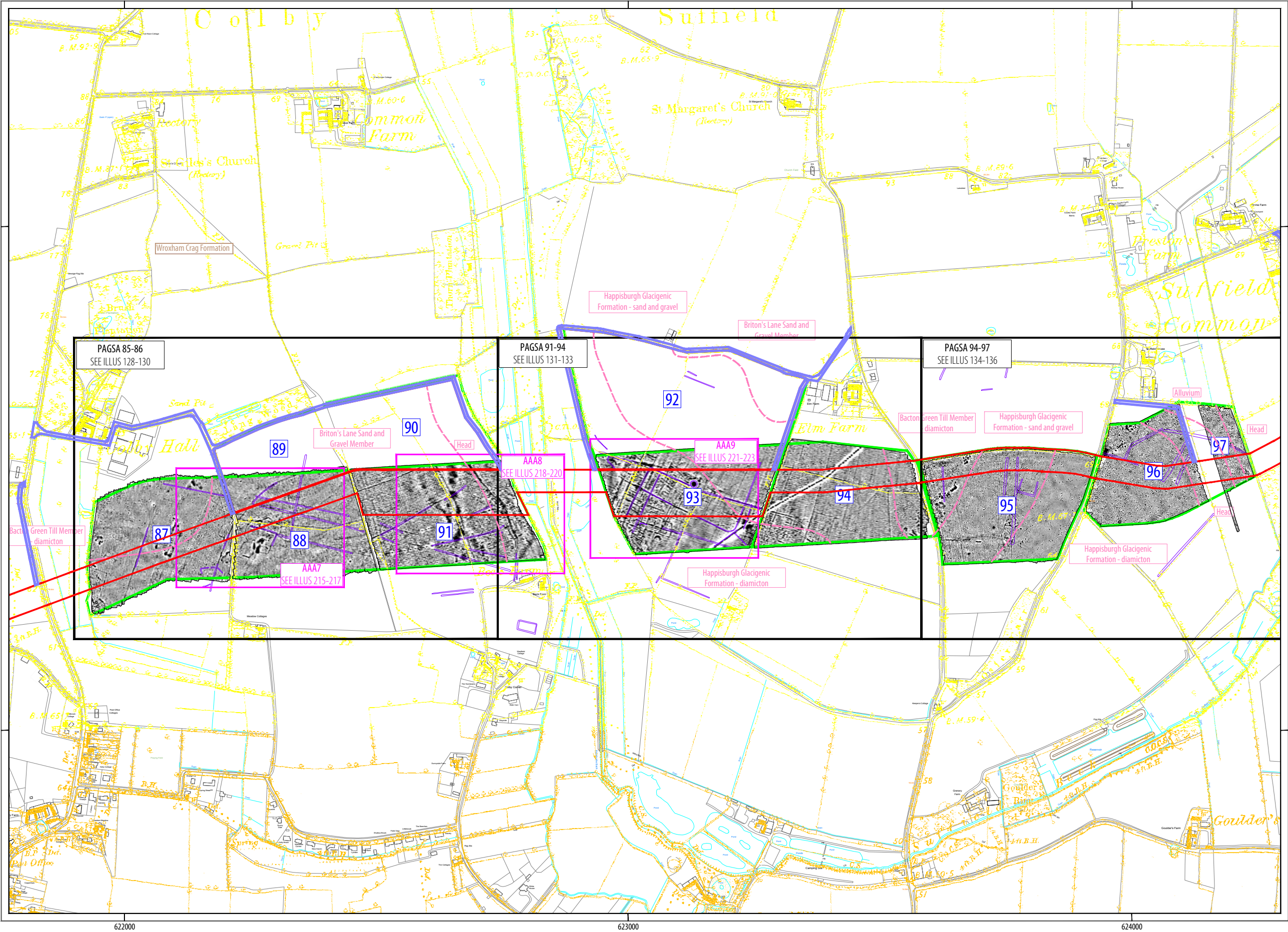


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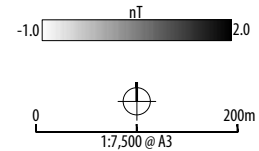
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- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

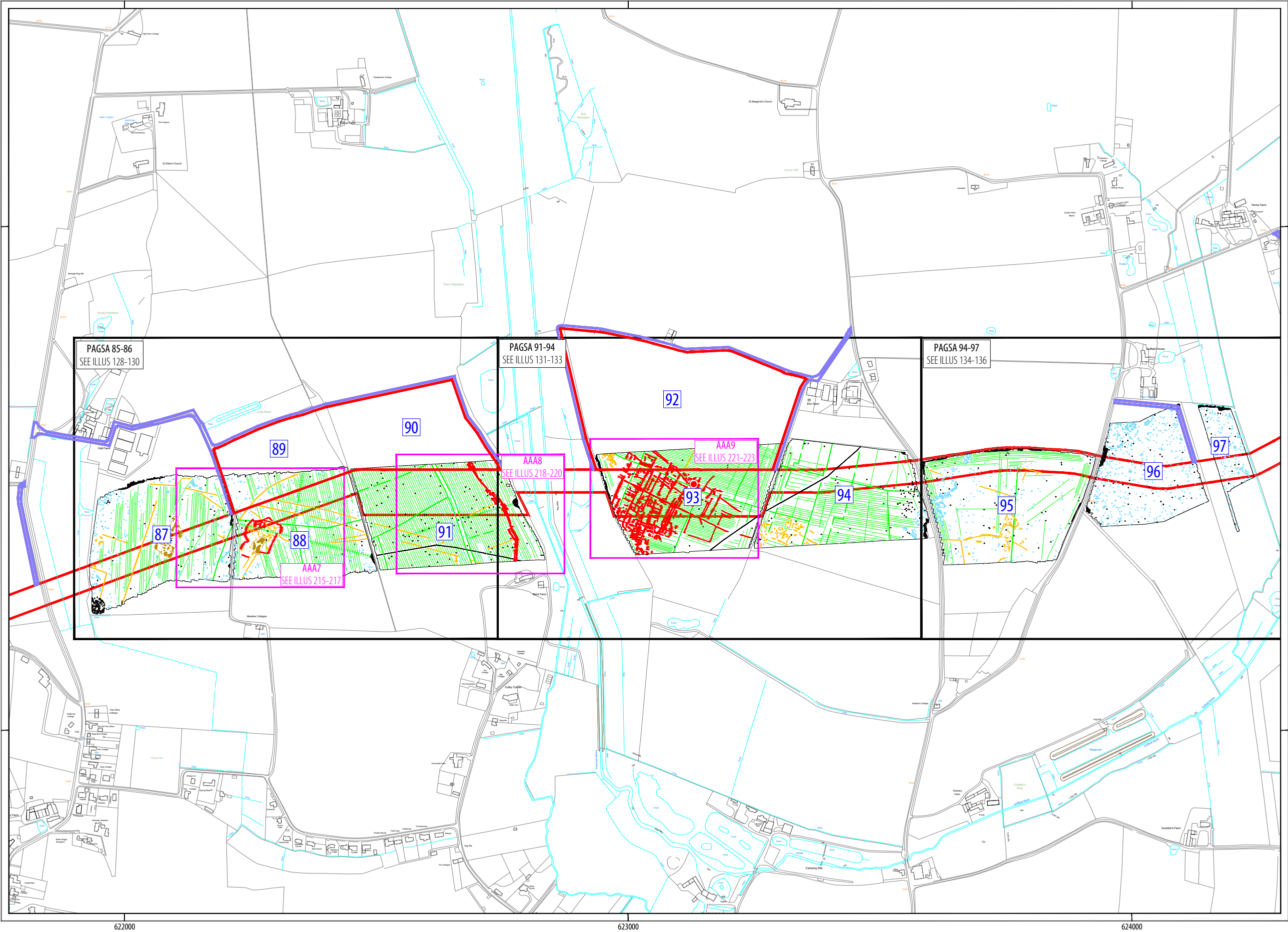


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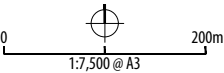
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ILLUS 30 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 87-97



TYPE OF ANOMALY		INTERPRETATION
	norfolk vanguard red line boundary	
	access route	
	dipolar isolated	ferrous material
	magnetic disturbance	ferrous material
	dipolar linear	service pipe
	linear trend	agricultural
	linear trend	field drain
	linear	former field boundary?
	linear	former field boundary
	linear trend	geology
	magnetic enhancement	geology
	magnetic enhancement	quarrying
	magnetic enhancement	archaeology?
	magnetic enhancement	archaeology

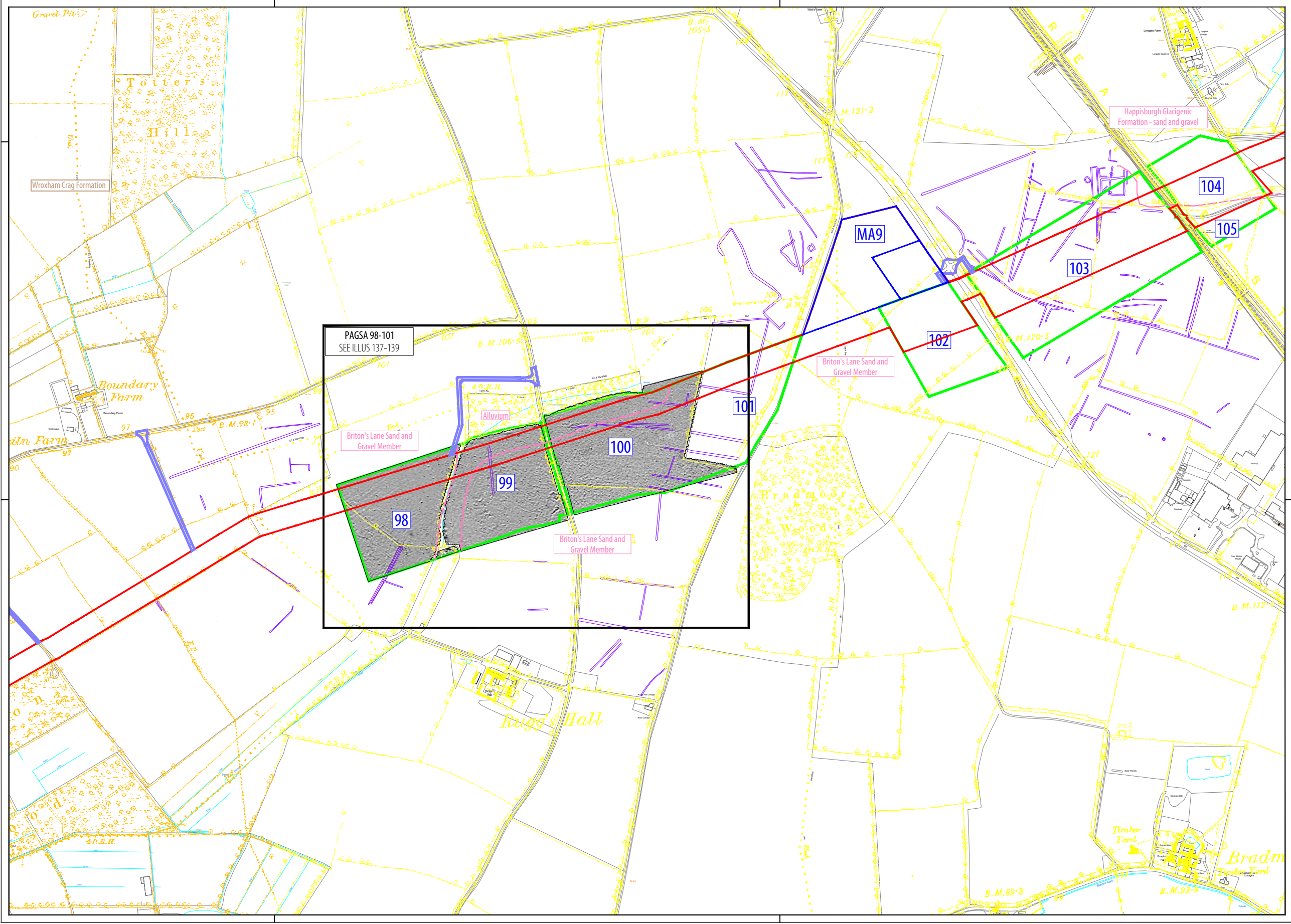


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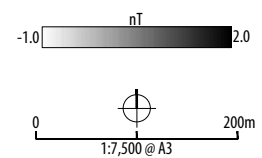
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ILLUS 31 Interpretation of magnetometer data; PAGSA 87-97



- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- mobilisation area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



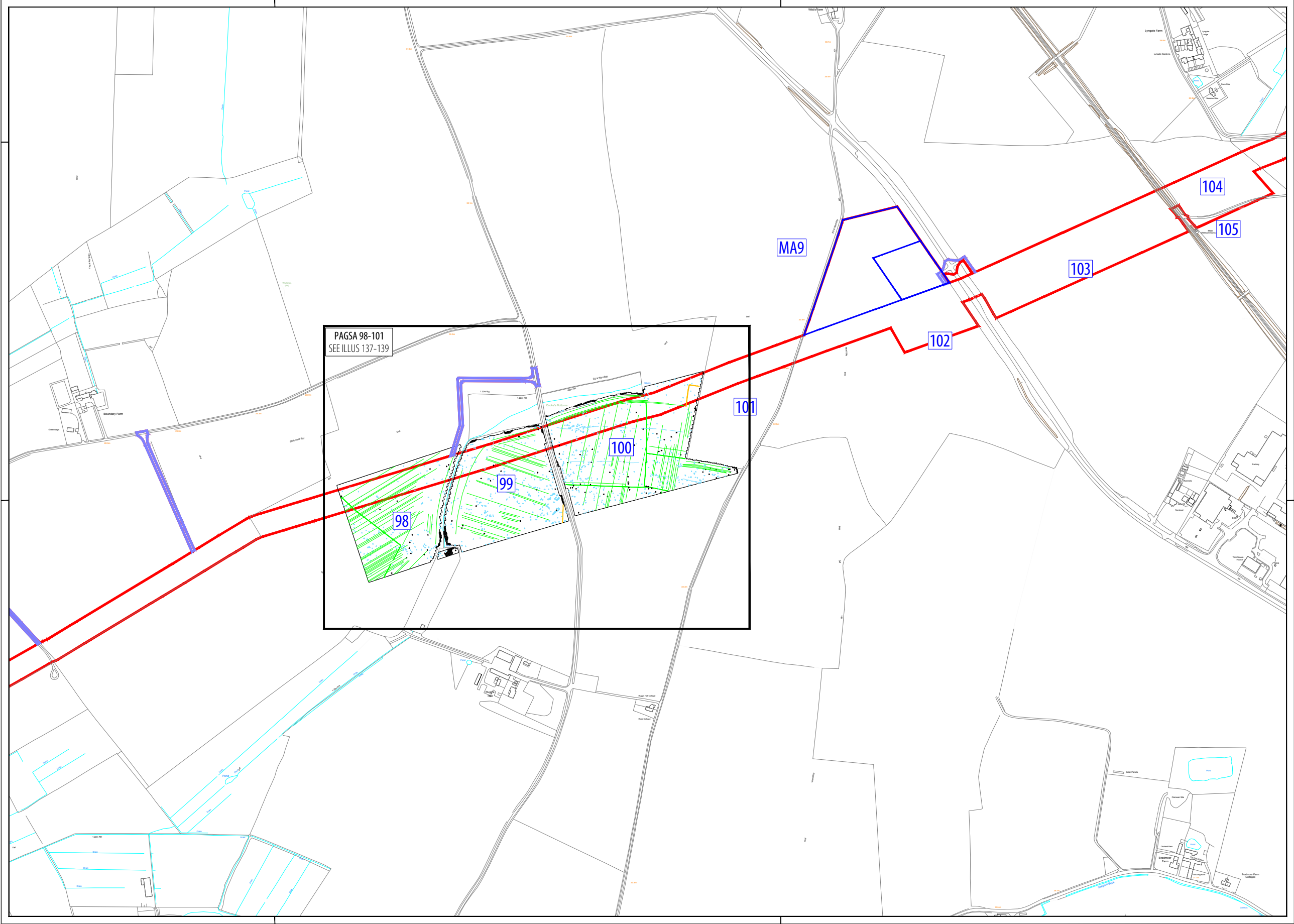
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ILLUS 32 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 98-105



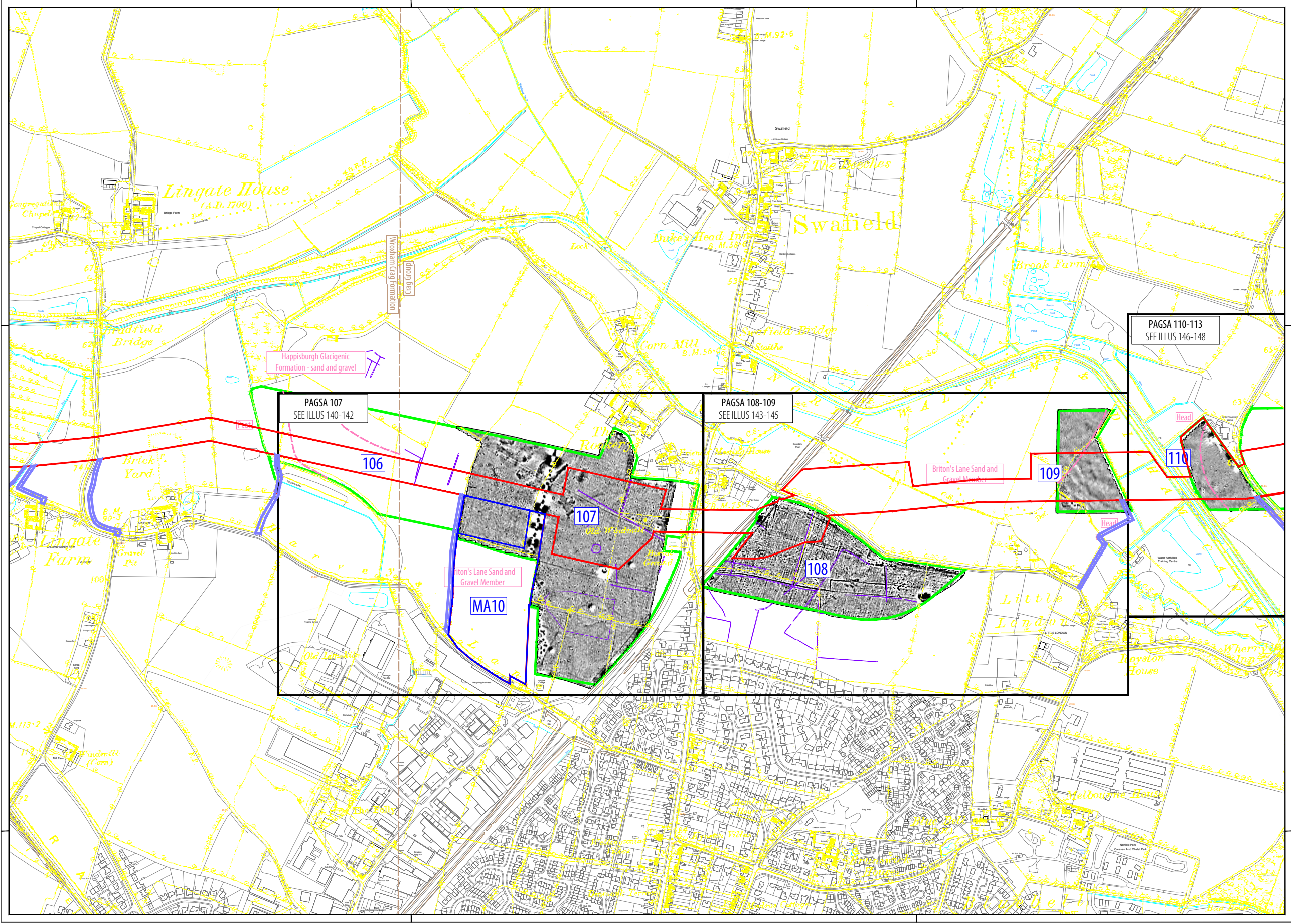
TYPE OF ANOMALY		INTERPRETATION
●	dipolar isolated	ferrous material
●	magnetic disturbance	ferrous material
—	linear trend	agricultural
—	linear	former field boundary
—	linear trend	geology
—	magnetic enhancement	geology
—	magnetic enhancement	archaeology?



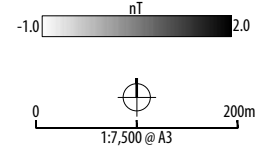
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- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- mobilisation area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



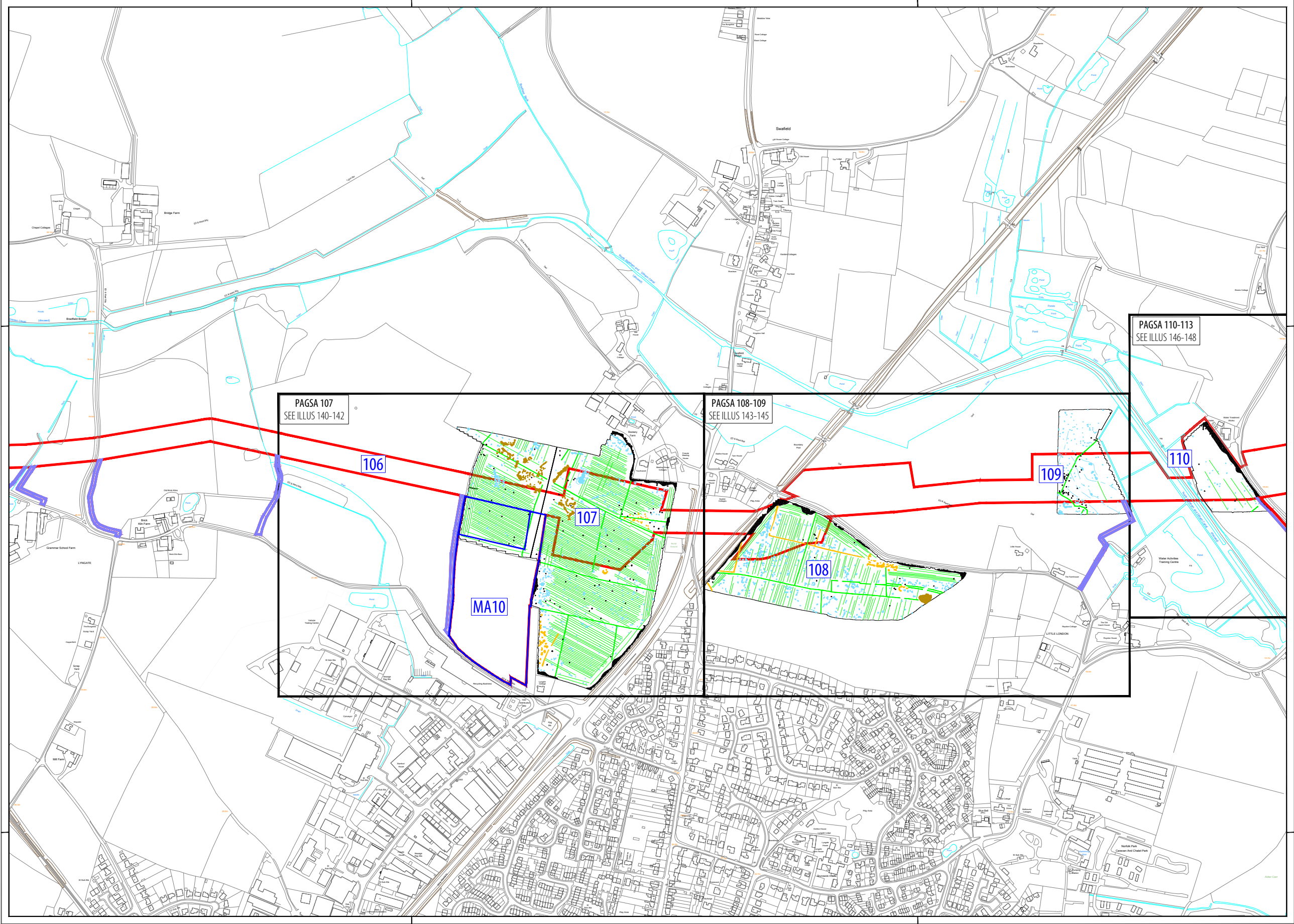
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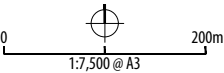
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ILLUS 34 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 106-110



	norfolk vanguard red line boundary
	mobilisation area
	access route
TYPE OF ANOMALY	
	dipolar isolated
	magnetic disturbance
	linear trend
	linear
	linear
	linear trend
	magnetic enhancement
	magnetic enhancement
	magnetic enhancement
INTERPRETATION	
	ferrous material
	ferrous material
	agricultural
	former field boundary?
	former field boundary
	geology
	geology
	quarrying
	archaeology?



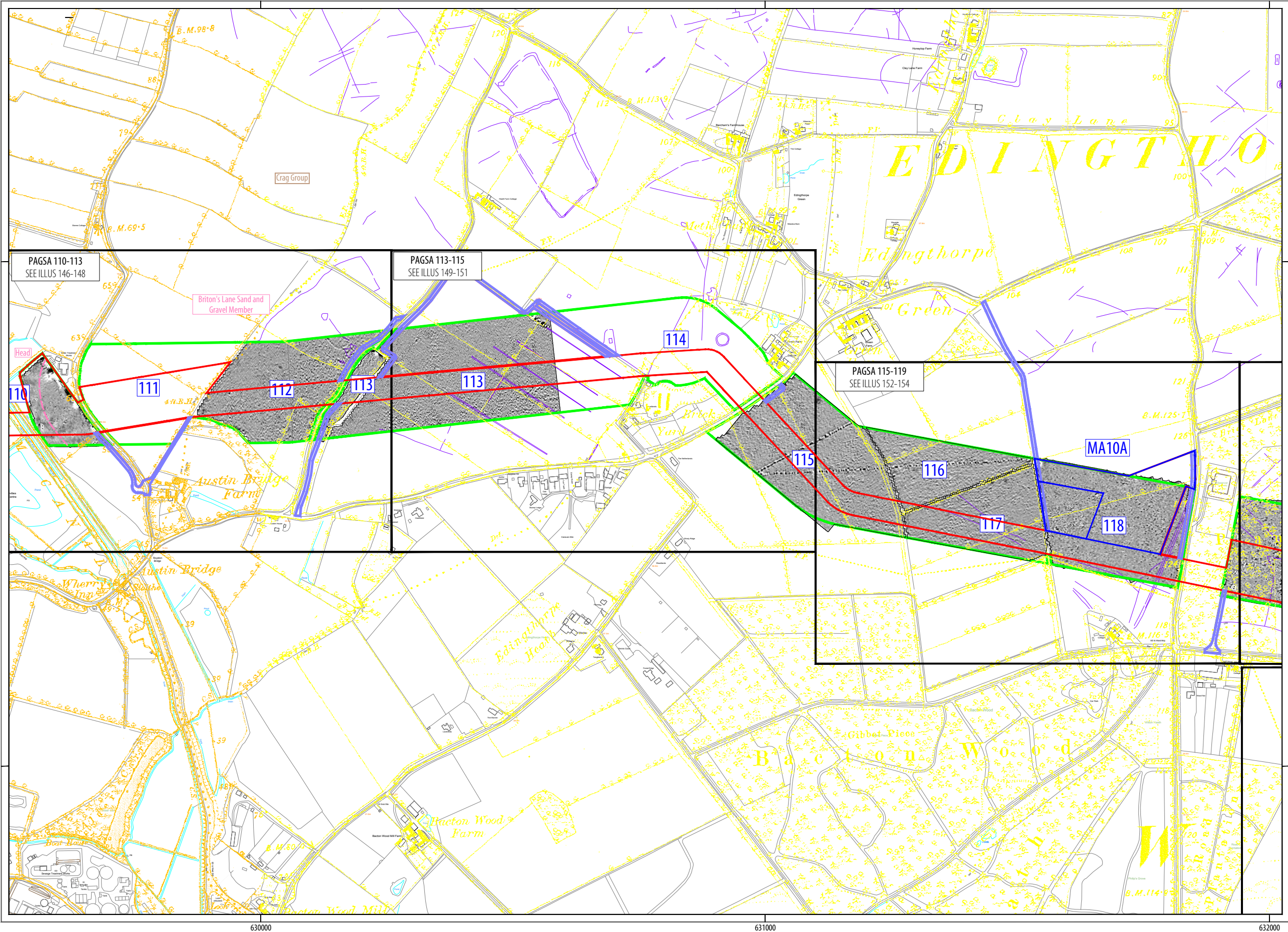
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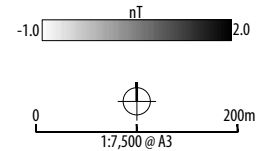
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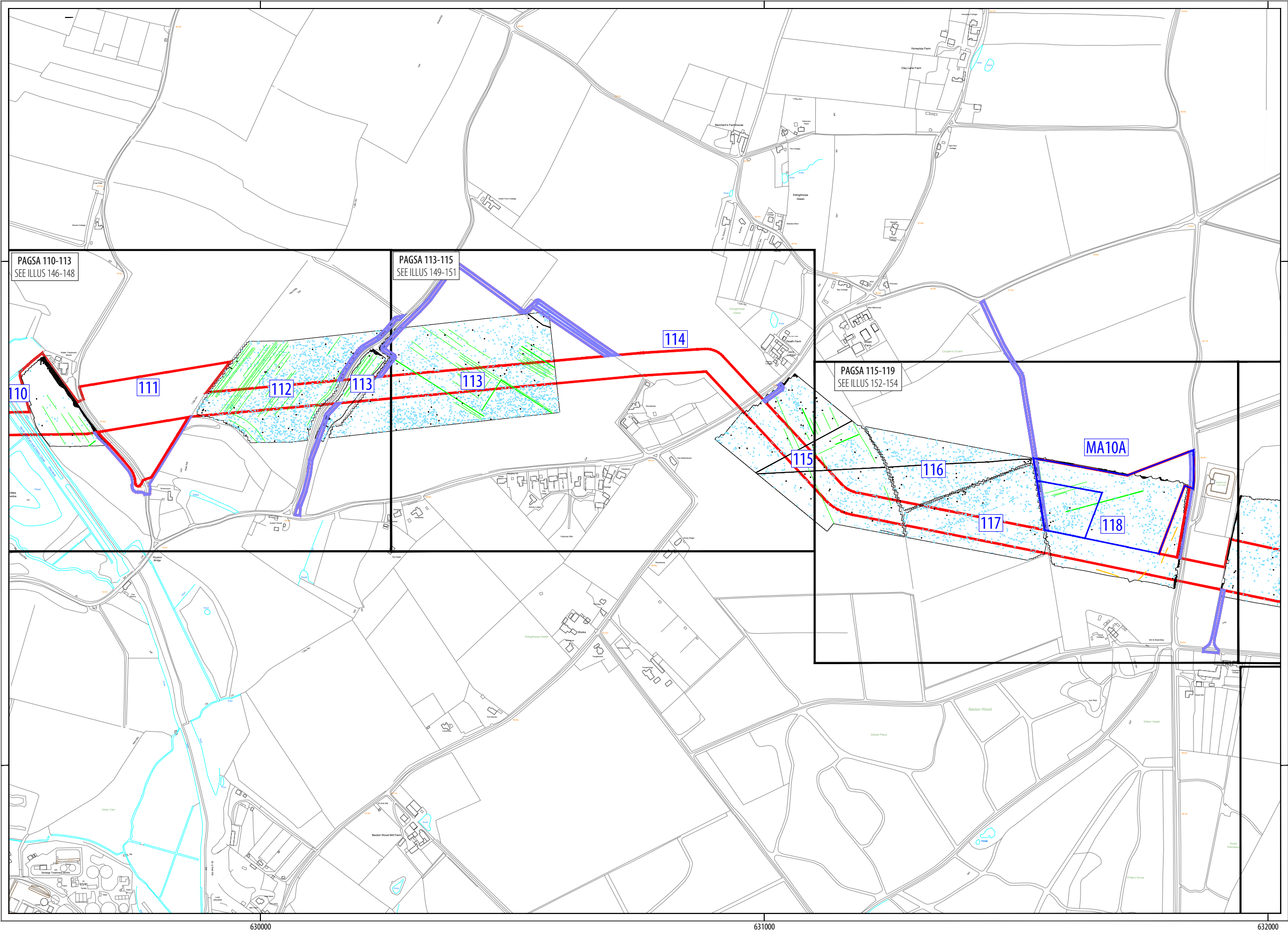
ILLUS 35 Interpretation of magnetometer data; PAGSA 106-110



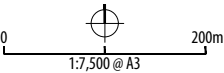
- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- mobilisation area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



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	norfolk vanguard red line boundary
	mobilisation area
	access route
TYPE OF ANOMALY	
	dipolar isolated
	magnetic disturbance
	dipolar linear
	linear trend
	linear
	linear trend
	magnetic enhancement
	magnetic enhancement
INTERPRETATION	
	ferrous material
	ferrous material
	service pipe
	agricultural
	former field boundary
	geology
	geology
	archaeology?



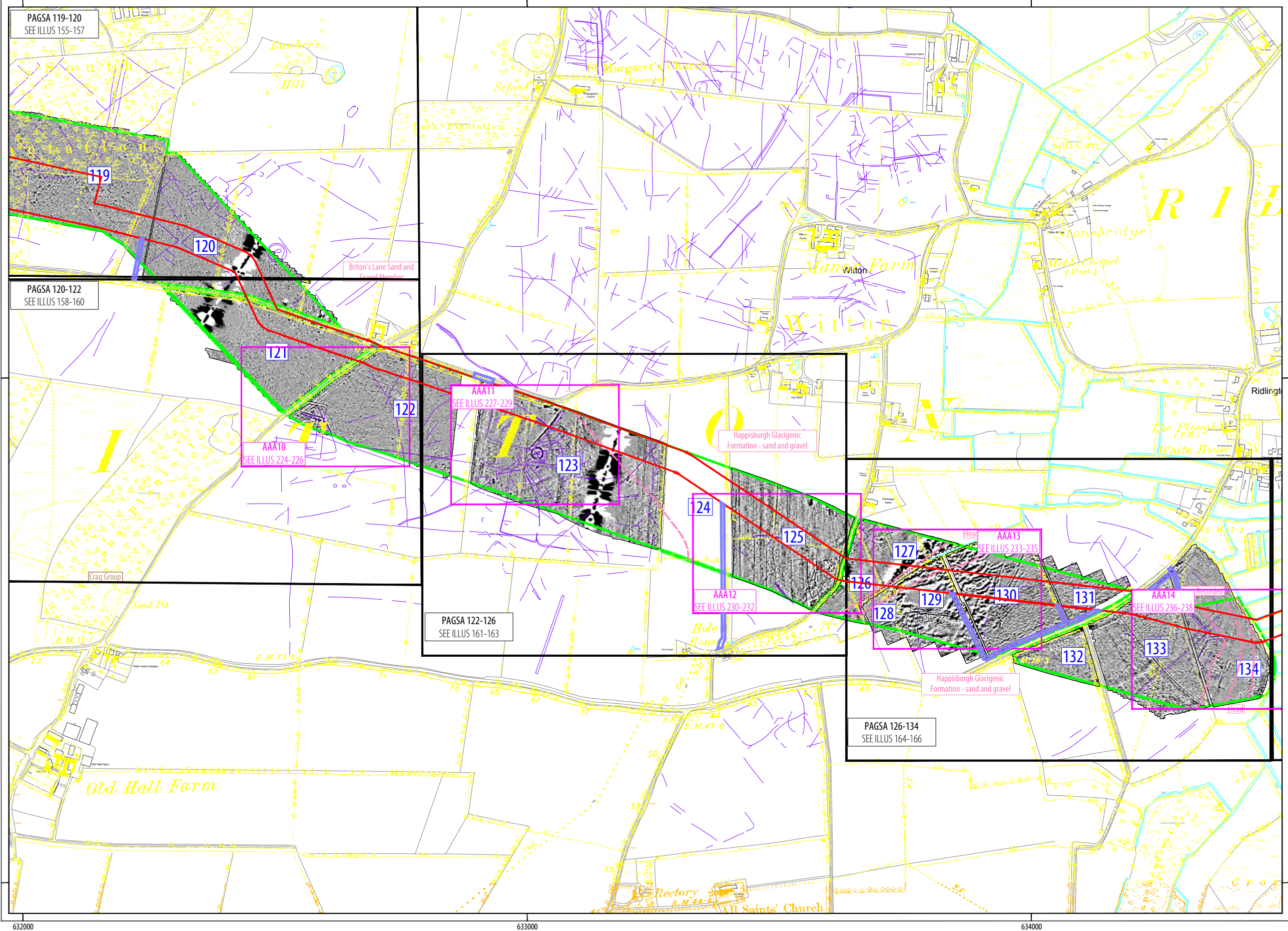
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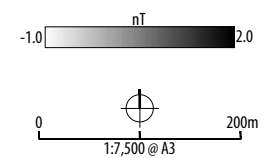
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ILLUS 37 Interpretation of magnetometer data; PAGSA 111-118



- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



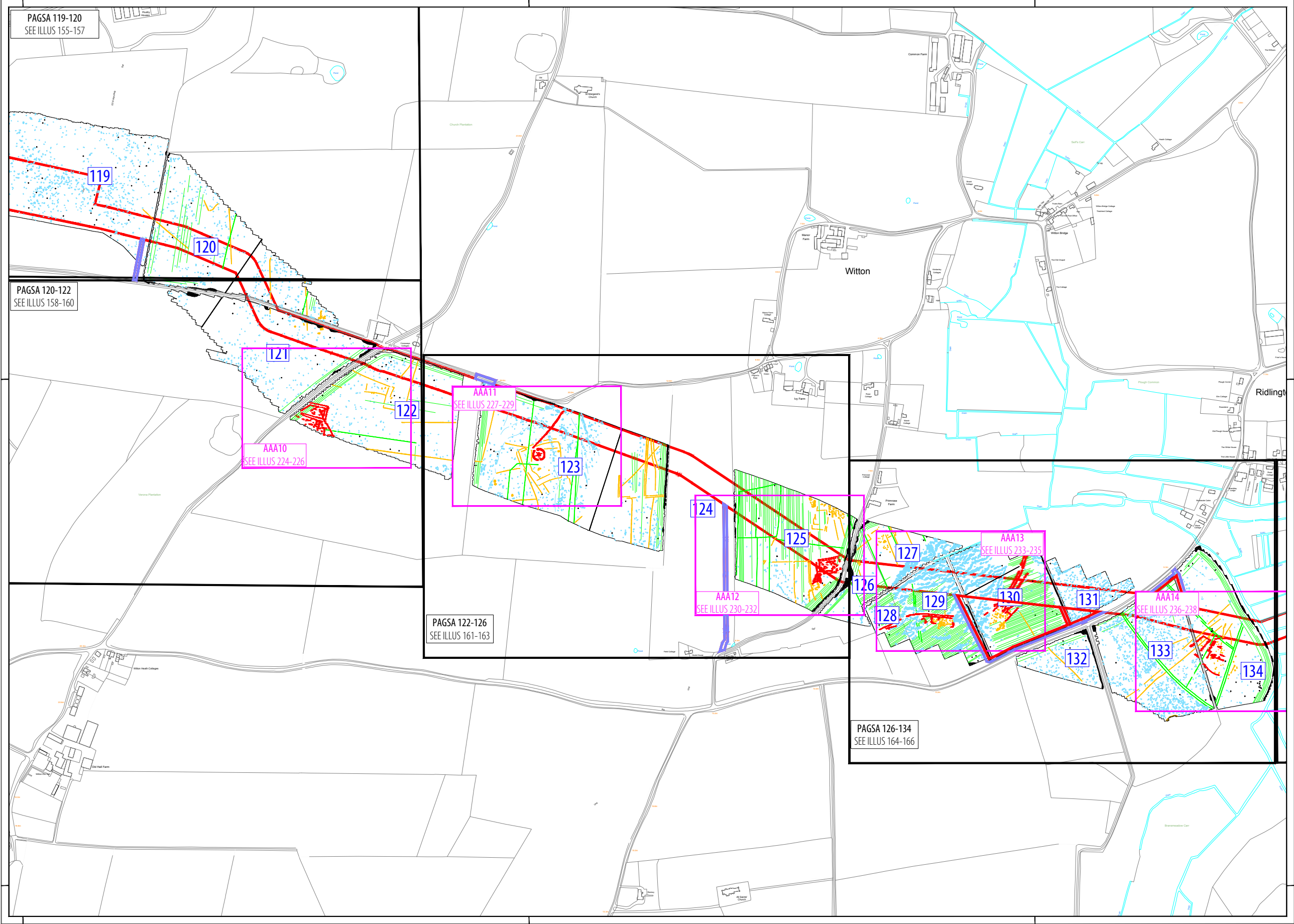
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ILLUS 38 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 119-134



ILLUS 39 Interpretation of magnetometer data; PAGSA 119-134

TYPE OF ANOMALY		INTERPRETATION
•	dipolar isolated	ferrous material
•	magnetic disturbance	ferrous material
—	dipolar linear	service pipe
—	linear trend	agricultural
—	linear	former field boundary?
—	linear	former field boundary
—	linear trend	geology
•	magnetic enhancement	geology
•	magnetic enhancement	archaeology?
•	magnetic enhancement	archaeology

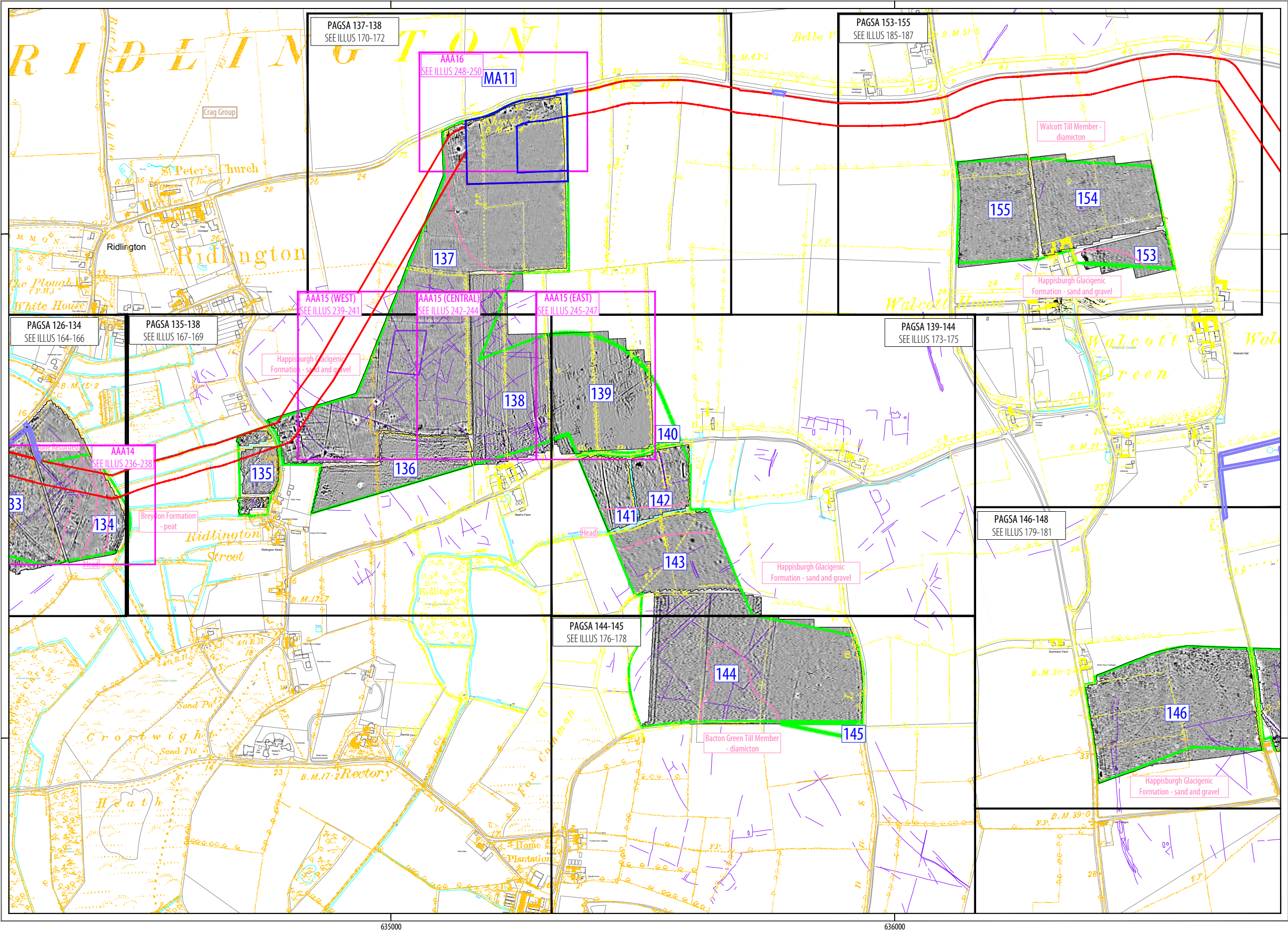


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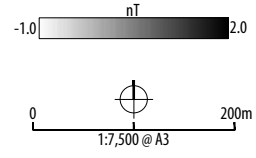
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- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- mobilisation area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913



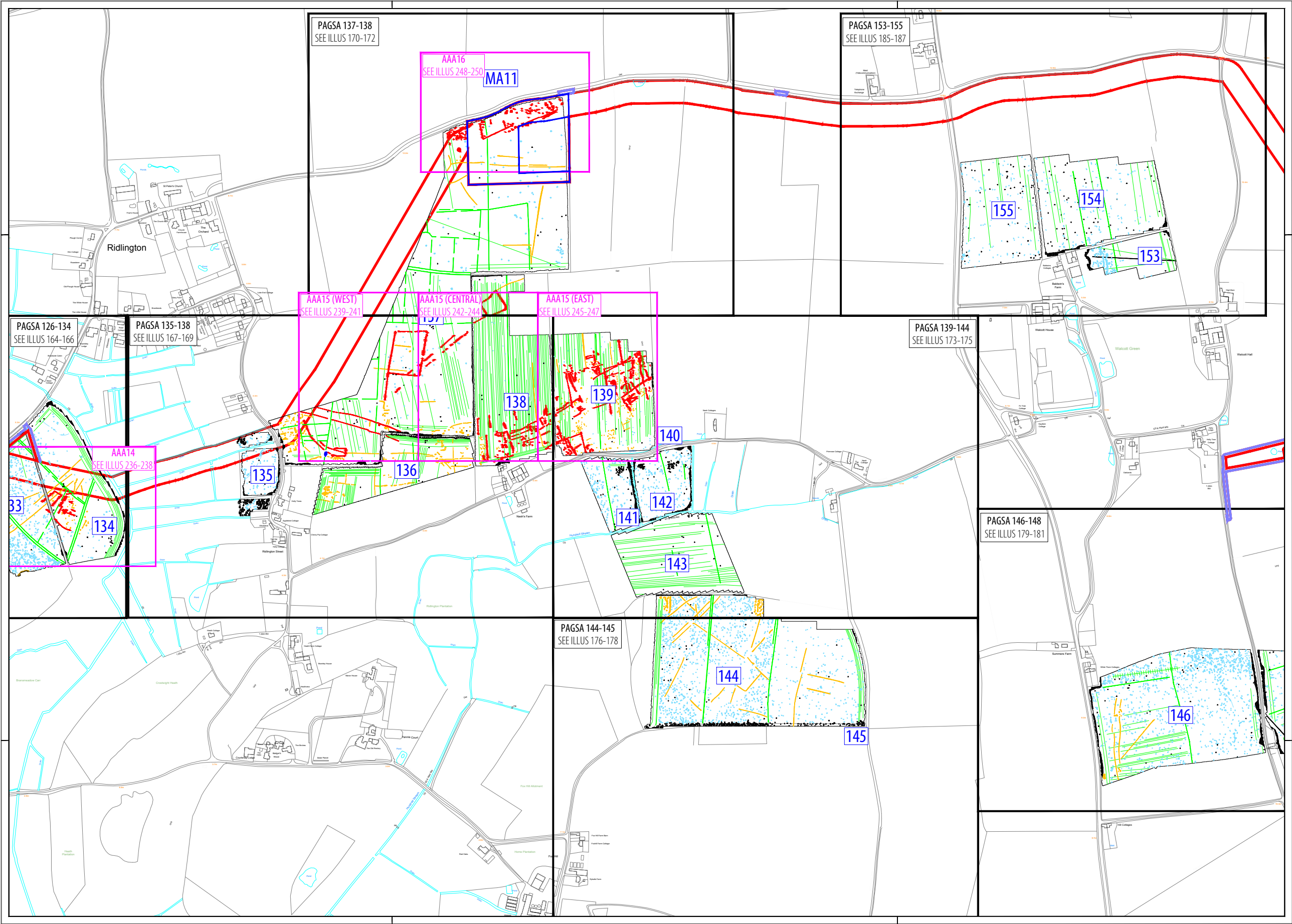
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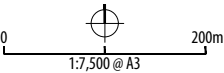
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ILLUS 40 Processed greyscale magnetometer data showing cropmarks, geology and first edition OS mapping (1888-1913); PAGSA 135-146



	norfolk vanguard red line boundary
	mobilisation area
	access route
TYPE OF ANOMALY	
	dipolar isolated
	magnetic disturbance
	magnetic disturbance
	linear trend
	linear trend
	linear
	linear
	linear trend
	magnetic enhancement
	magnetic enhancement
	magnetic enhancement
INTERPRETATION	
	ferrous material
	ferrous material
	modern
	agricultural
	field drain
	former field boundary?
	former field boundary
	geology
	geology
	archaeology?
	archaeology



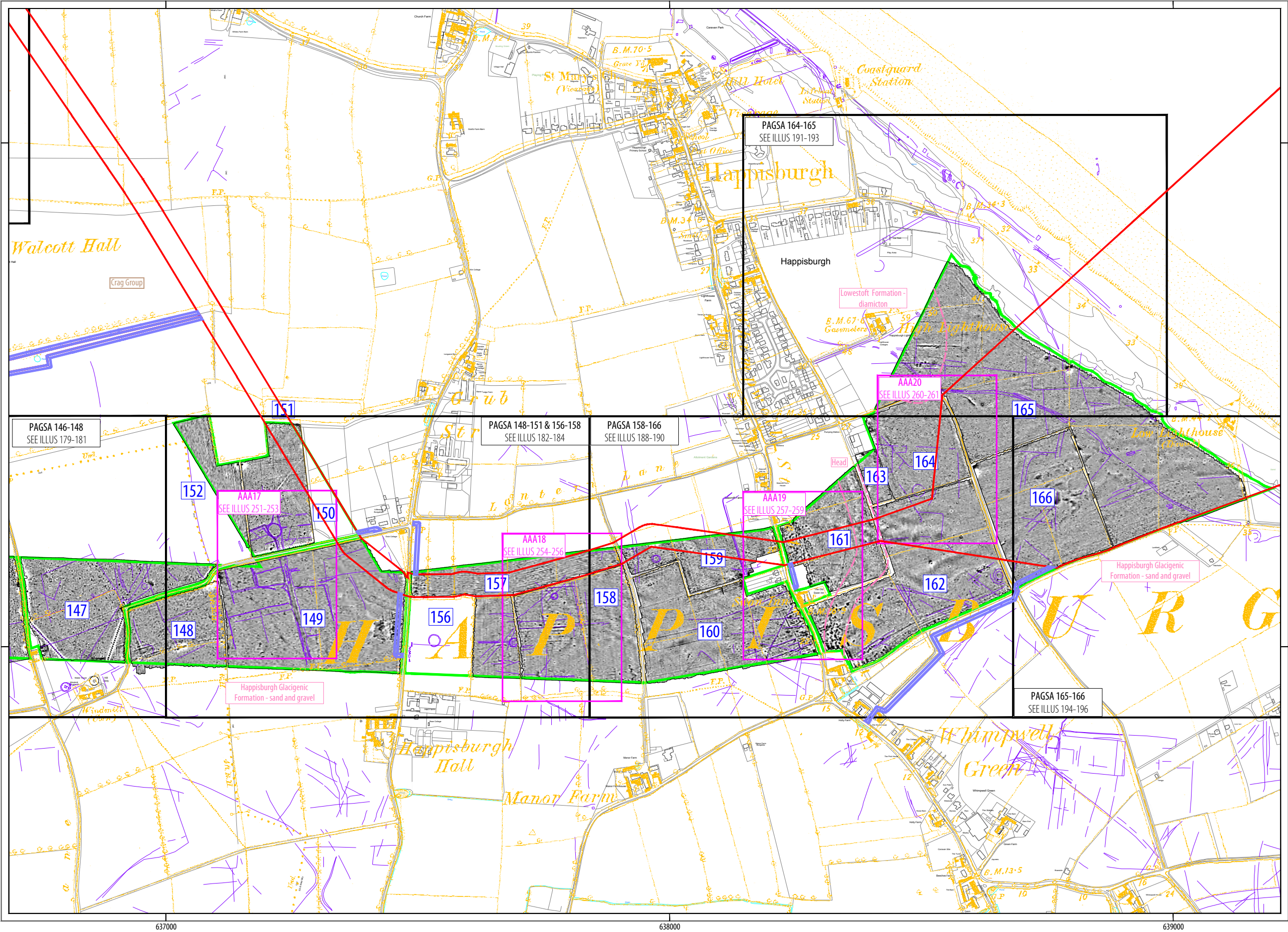
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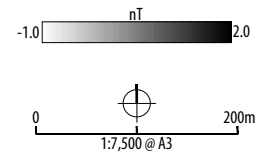


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ILLUS 41 Interpretation of magnetometer data; PAGSA 135-146



- norfolk vanguard red line boundary
- access route
- priority archaeological geophysical survey area
- cropmark data
- bedrock geology
- superficial geology
- first edition OS mapping 1888-1913

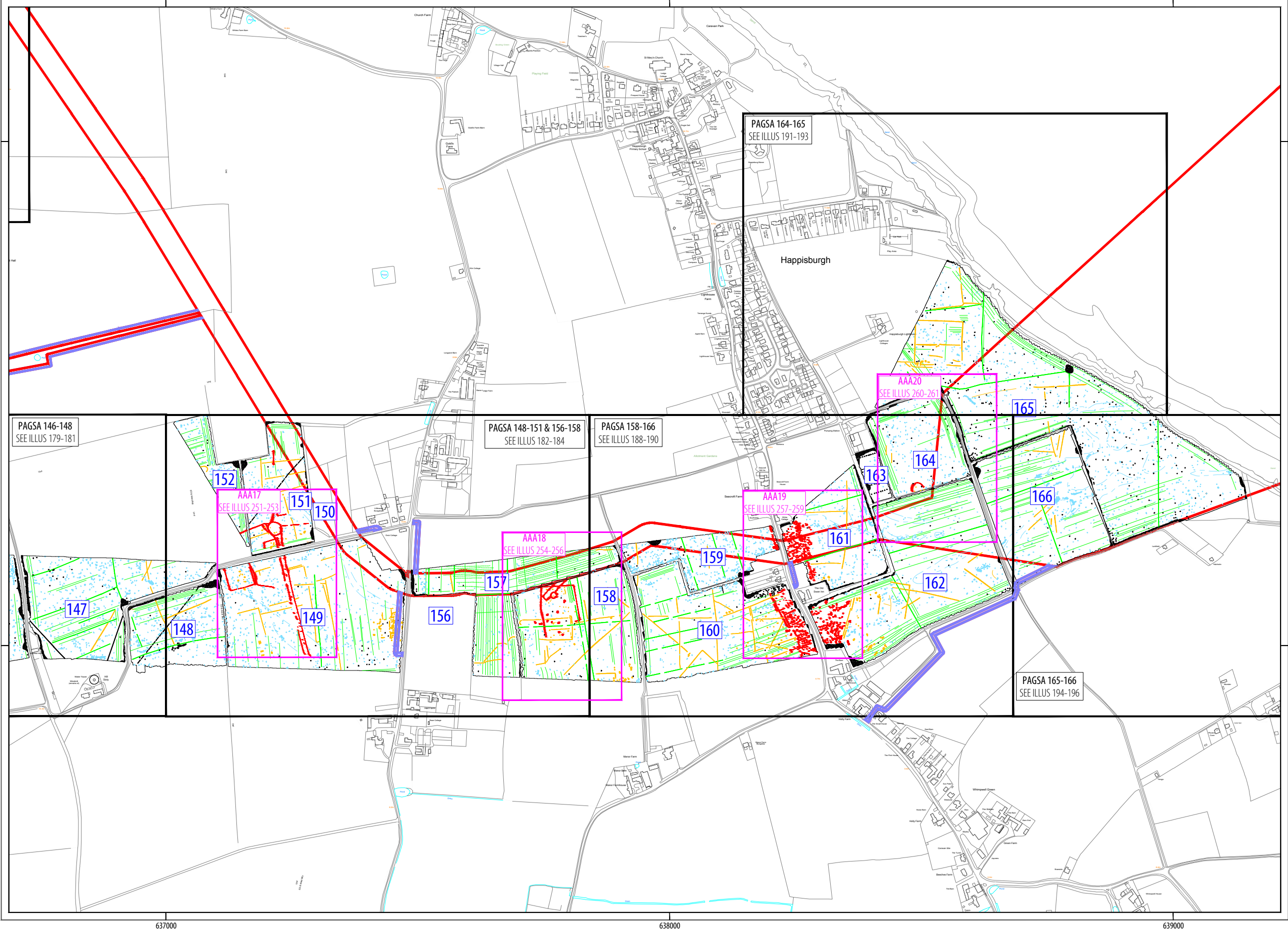


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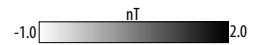
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ILLUS 43 Interpretation of magnetometer data; PAGSA 147-166



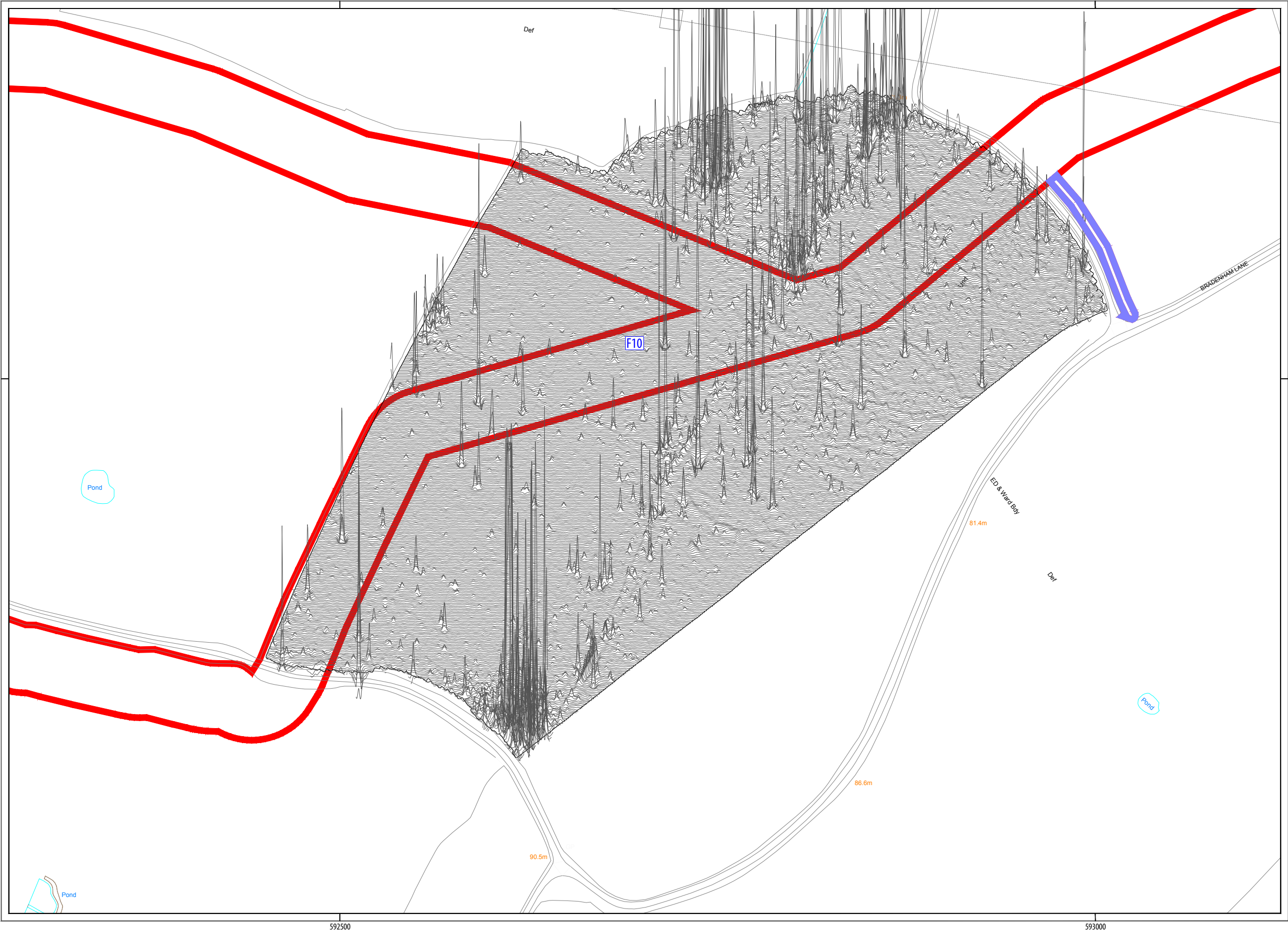
norfolk vanguard red line boundary
access route



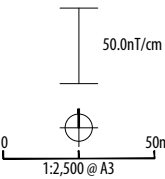
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norfolk vanguard red line boundary
access route

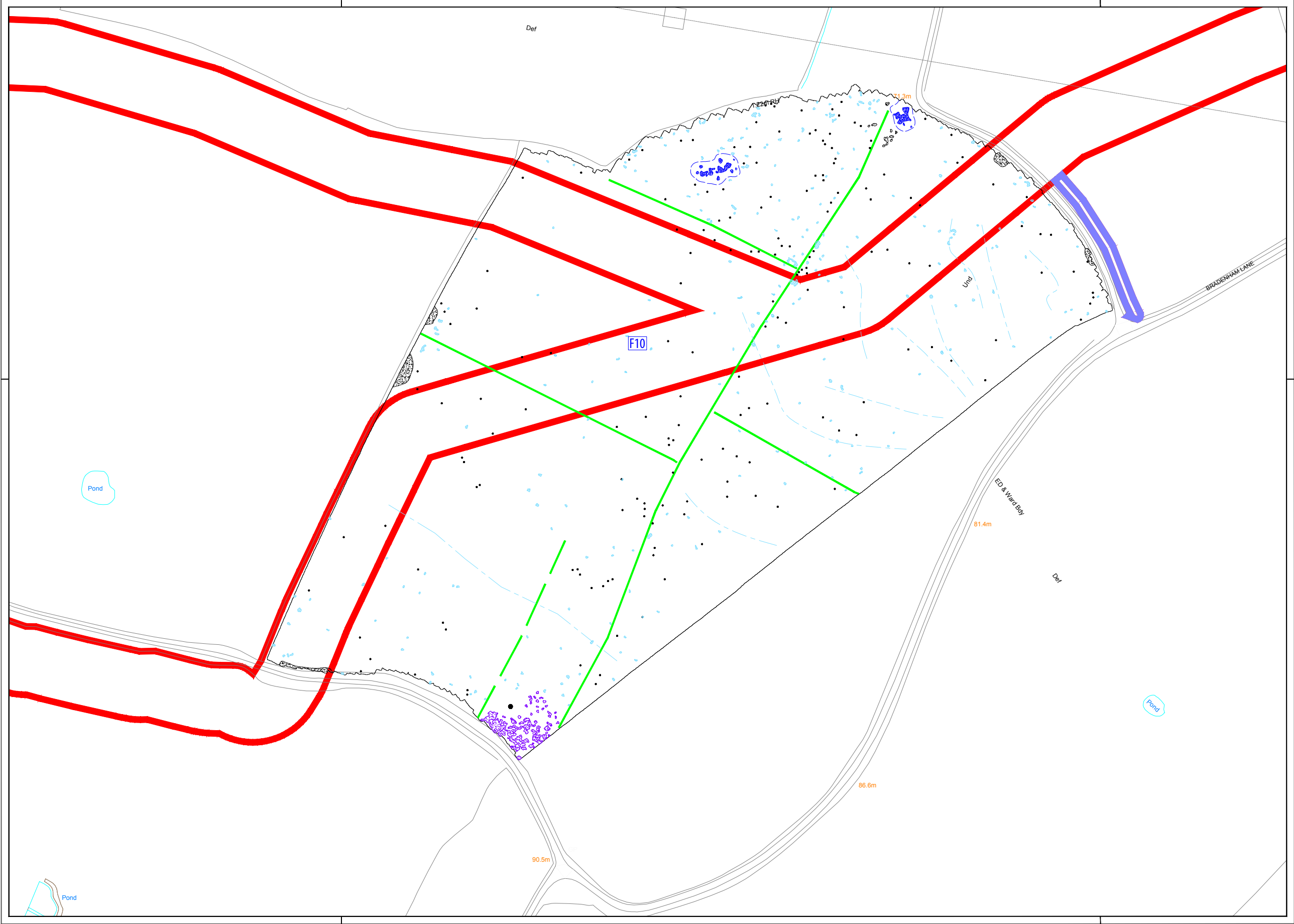


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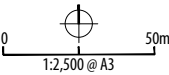
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TYPE OF ANOMALY		INTERPRETATION
	dipolar isolated	ferrous material
	magnetic disturbance	ferrous material
	magnetic disturbance	ferrous material
	magnetic disturbance	former building
	linear	former field boundary?
	linear	former field boundary
	linear trend	geology
	magnetic enhancement	geology

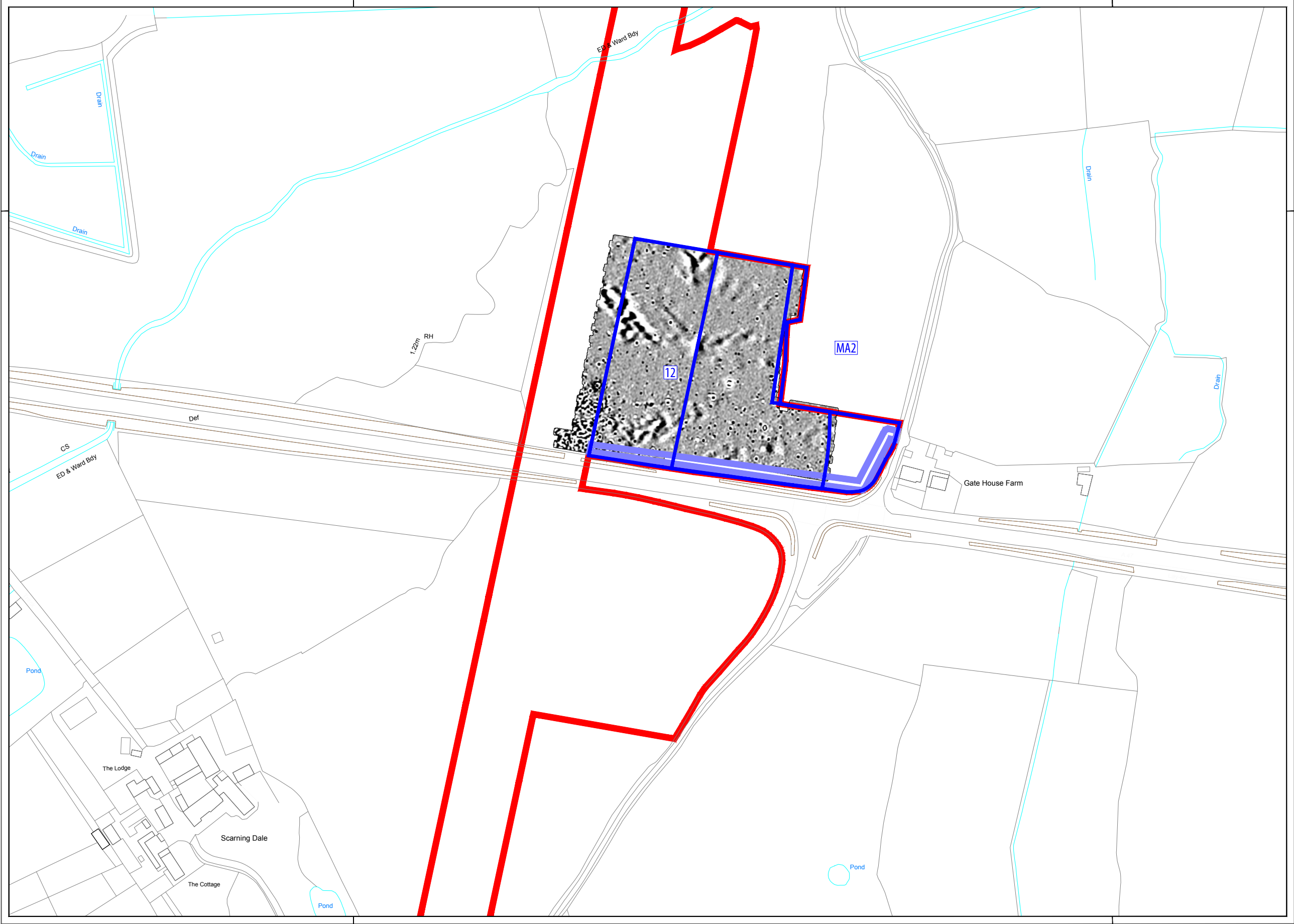


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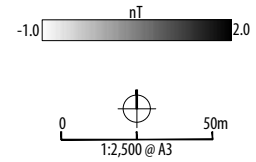
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norfolk vanguard red line boundary
mobilisation area
access route

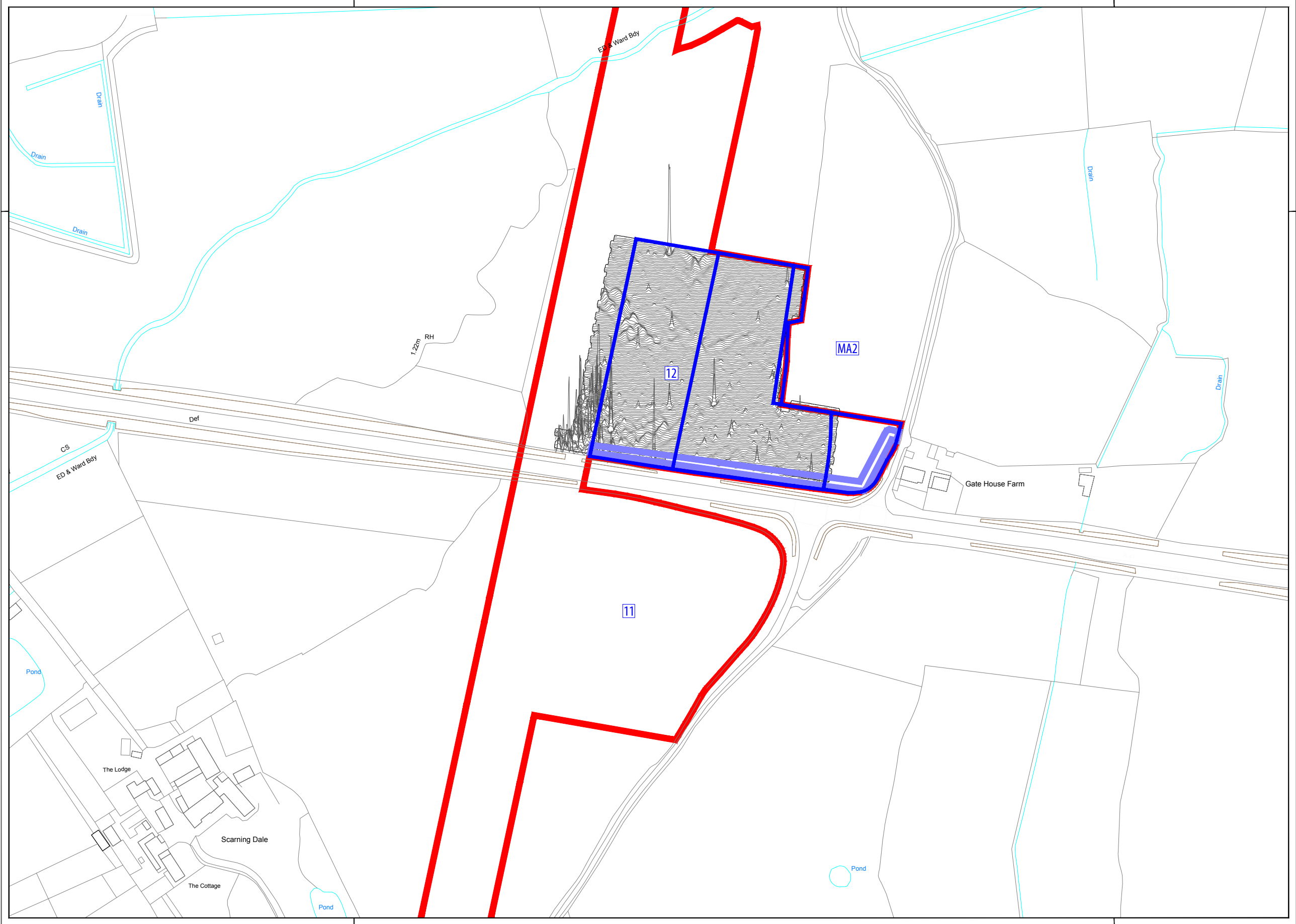


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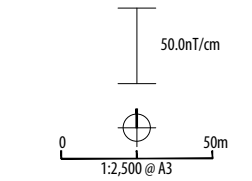
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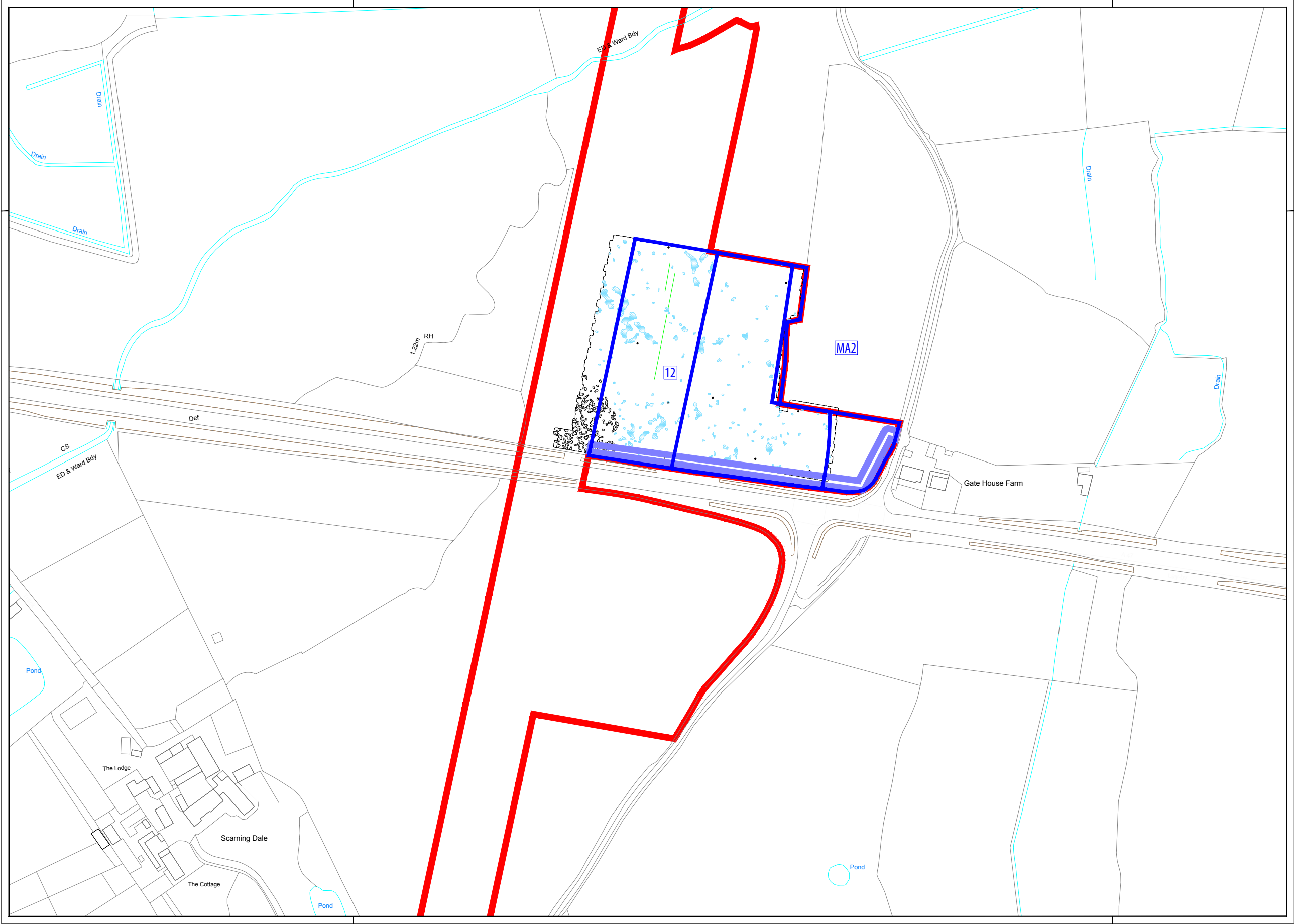
norfolk vanguard red line boundary
mobilisation area
access route



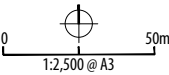
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- | | norfolk vanguard red line boundary |
|-----------------|------------------------------------|
| | mobilisation area |
| | access route |
| TYPE OF ANOMALY | |
| | dipolar isolated |
| | magnetic disturbance |
| | linear trend |
| | magnetic enhancement |
| INTERPRETATION | |
| | ferrous material |
| | ferrous material |
| | agricultural |
| | geology |



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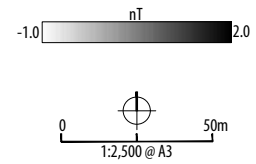
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norfolk vanguard red line boundary
access route

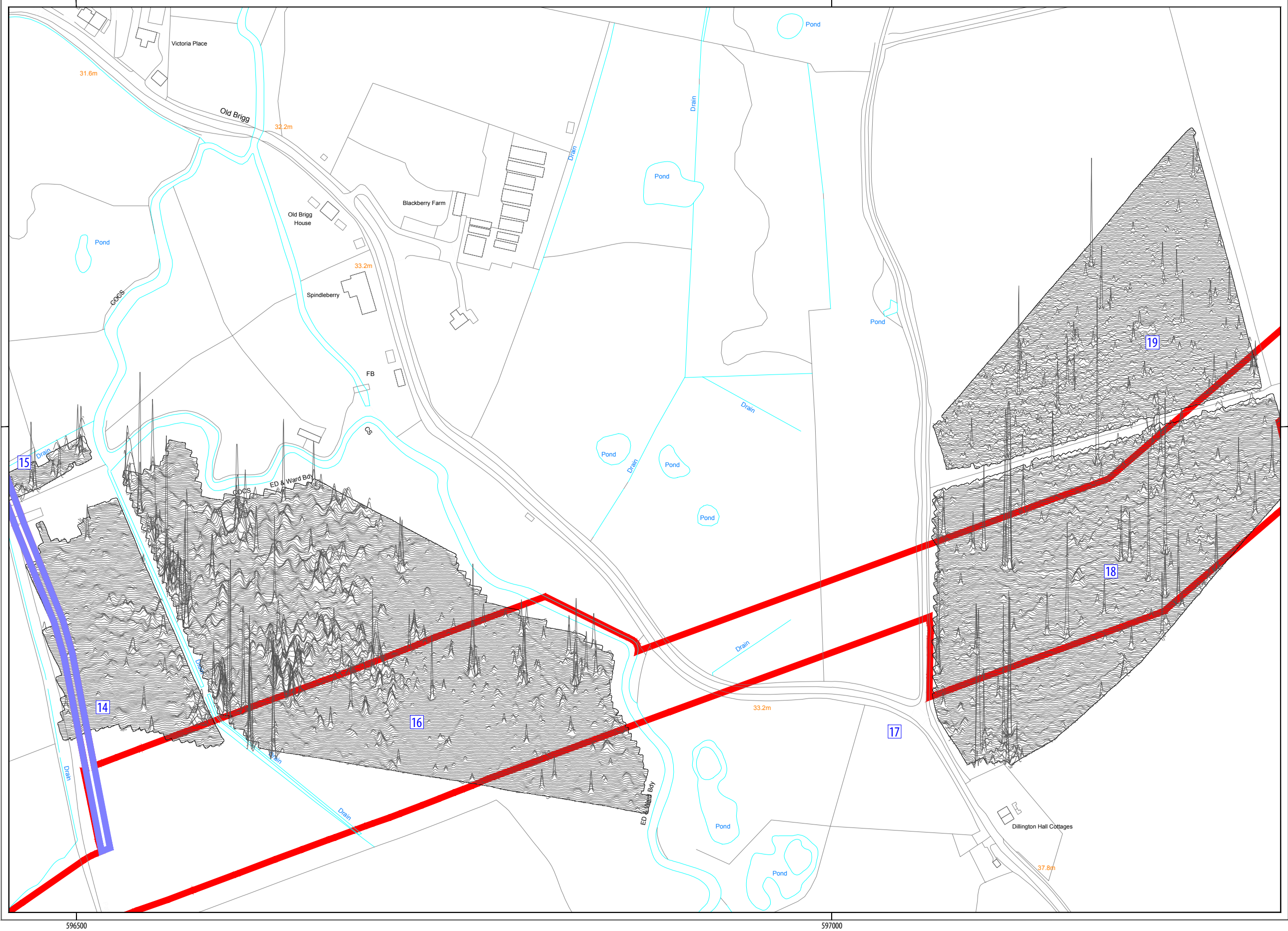


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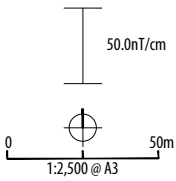
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norfolk vanguard red line boundary
access route

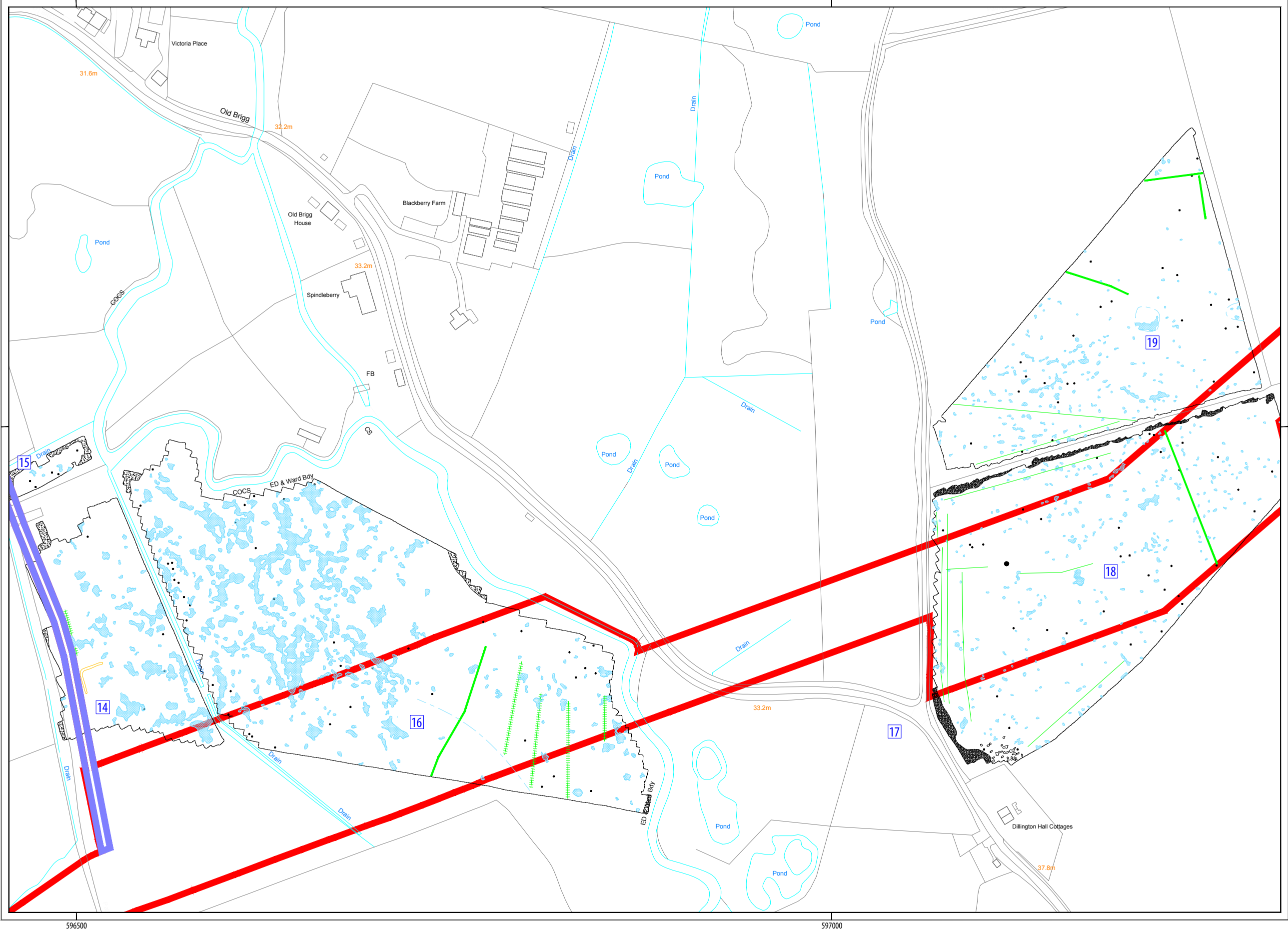


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Priority Archaeological Geophysical
Survey
(Terrestrial Archaeology)
Norfolk Vanguard Offshore Wind Farm
Royal HaskoningDHV

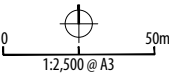
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TYPE OF ANOMALY		INTERPRETATION
	norfolk vanguard red line boundary	
	access route	
	dipolar isolated	ferrous material
	magnetic disturbance	ferrous material
	linear trend	drain
	linear trend	agricultural
	linear	former field boundary
	linear trend	geology
	magnetic enhancement	geology
	magnetic enhancement	archaeology?



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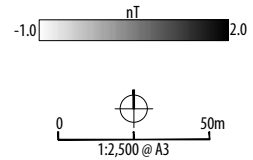
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norfolk vanguard red line boundary
access route



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