LAND WEST OF MAGNA PARK

CROSS IN HAND

RUGBY

LEVELS AND VOLUMETRIC REVIEW

Shepherd Gilmour Infrastructure Ltd.

3rd Floor Phoenix House,

45 Cross Street,

Manchester,

M2 4JF

CONTENTS

INTRODUCTION

1.1 This Levels and Volumetric review has been prepared to support the preparation of an indicative masterplan to help promote the allocation of this site through a response to a call for sites. It has been commissioned by Nurton Developments (Lutterworth) Ltd.

1.2 The report reviews the proposed level changes onsite and the movement of material required to achieve the development plateaus and the SuDS required to support the development. It provides indicative Finished Floor Levels and estimates the impact in terms of cut and fill to achieve these proposed finished floor levels.

1.2 The site is 92.0 hectares in area and located in Warwickshire, approximately 4km west of Lutterworth. The site is bound by Coal Pit Lane to the North, and the Southeast boundary is made up of Lutterworth Road. Directly to the West of the site beyond the historically infilled railway line, is an area of land known as Newham Paddox.

SITE DESCRIPTION

Existing Site

1.3 The site is currently farmland. In recent history a section of the site along the Western edge, was traversed by a railway line which was infilled in the 1950's. To the North and East of the site is a well-established industrial development known as Magna Park.

Figure 3-1 Existing site (Map data from Google Earth 2023)

Existing Topography

1.4 The highest point of the site is located towards the Northeast boundary with an approximate elevation of 133m AOD. The levels generally fall in a Westerly direction to a minimum elevation of approximately 118.2m. A copy of the topographical survey is provided in Appendix A.

CUT AND FILL EXERCISE

1.5 Utilising Civils 3D software, SGi have created an indicative 3-dimensional model of the proposed site levels. The purpose of this exercise is to review the likely material movements both on and off the site and secondly the material movements within the confines of the site.

1.6 A drone based topographical survey was commissioned of the site and the results of the drone survey has been produced as a detailed topographical survey for the site. The results of the drone survey were verified onsite to ensure the accuracy of the base data.

1.7 The current design status is embryonic and as such assumptions have been made in relation to development construction thickness. Similarly, whilst a Phase 1 Geo Environmental Assessment is available, no intrusive investigation has been carried out to establish ground conditions. As such assumptions have been made in relation to Topsoil thickness. As this information becomes available the model will be adjusted.

TOPSOIL

1.8 As noted above there is no available intrusive investigation available for the site. Based on experience an assumption has been made that a 250mm layer of topsoil overlays the site. The assumed topsoil depth has been removed from the topographical survey and a volume of 188,625m^3 of topsoil will be generated as part of this initial site strip. This topsoil will be carefully stored in accordance with the Landscape Architects specification for subsequent reuse onsite in landscape areas. Once a detailed Landscape Strategy is available a contour plan of the landscaped bunds can be created, however at this stage it is envisaged that all the topsoil can be utilised onsite.

BUILDING FORMATION

1.9 Based on an assumed building and external works construction thickness of 500mm, plot formation plateaus have been created across each development plot. It is acknowledged that falls will be required in the final design, however for the current estimating exercise, the plots have been modelled at a single level.

1.10 The locations of the attenuation features have also been identified and the volumes of attenuation required to meet the SuDS requirement have been formed in the formation model.

1.11 This formation model has then been compared to the 'Stripped' Topographical survey model. This exercise demonstrates that approximately 477,195m^3 of cut is required and 543,575m^3 of fill is required to reshape the site into the formation model.

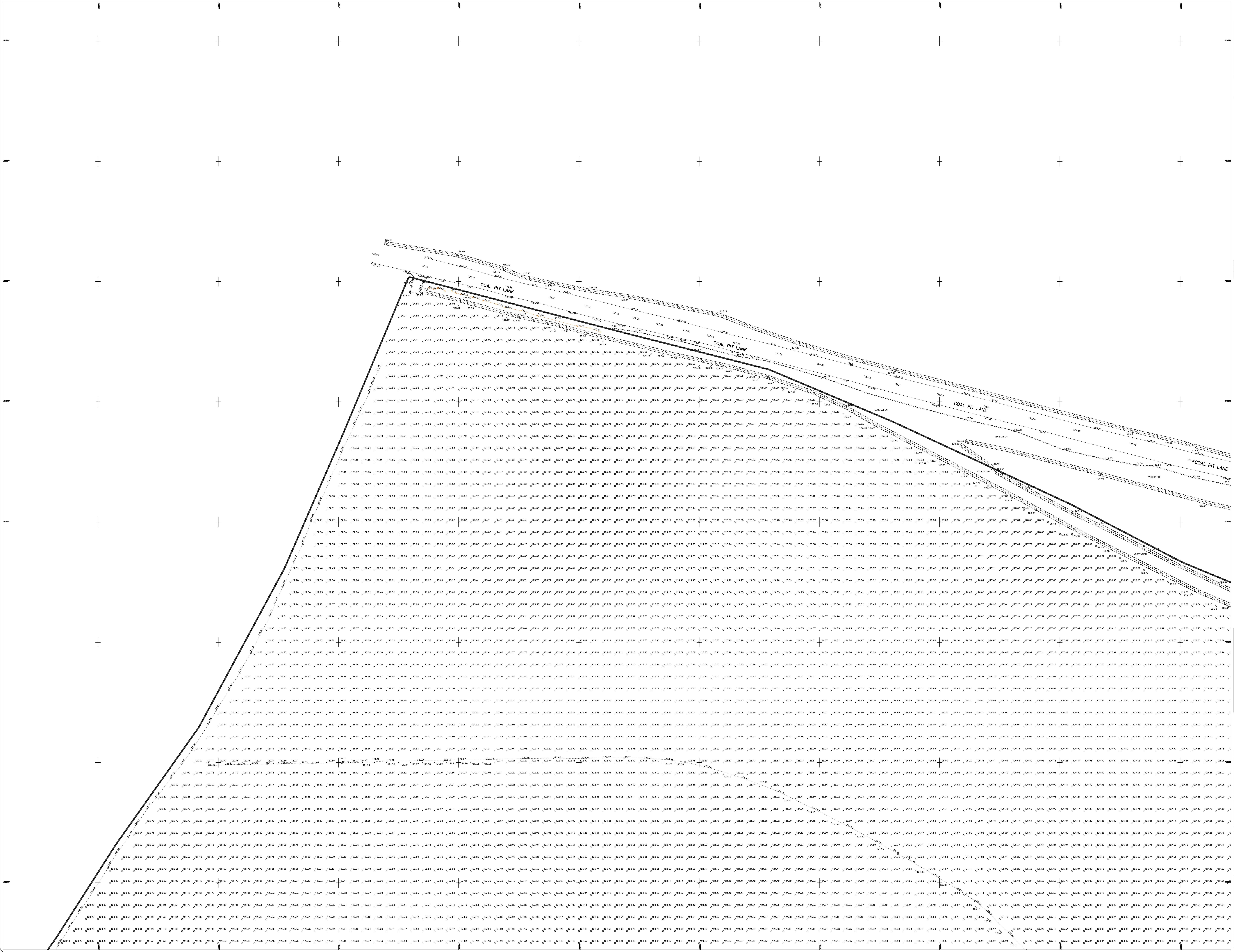
1.12 The net requirement of fill (66,379m^3) will be generated onsite from foundation, drainage, and services arisings. Small level adjustments can be carried out throughout the development process to ensure that an 'effective' cut and fill balance is achieved.

1.13 The results of this exercise are presented in drawing format in Appendix B. Areas coloured red indicate areas of cut and areas coloured green represent filled areas.

CONCLUSION

1.14 The volumetric assessment carried out onsite has demonstrated that the proposed redevelopment of this site can be undertaken without the need for any import and export of material. Careful consideration given to site design and the development phasing has ensured that the site minimises movement of material and ensures that the only material to be brought onto or taken offsite will be the construction materials required for the building structure and the external paved areas. This provides for the most sustainable and carbon friendly type of design.

APPENDIX A



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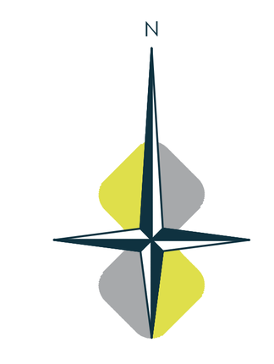

PLAN GRID NORTH

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BOL	BOLLARD	MKR	MARKER
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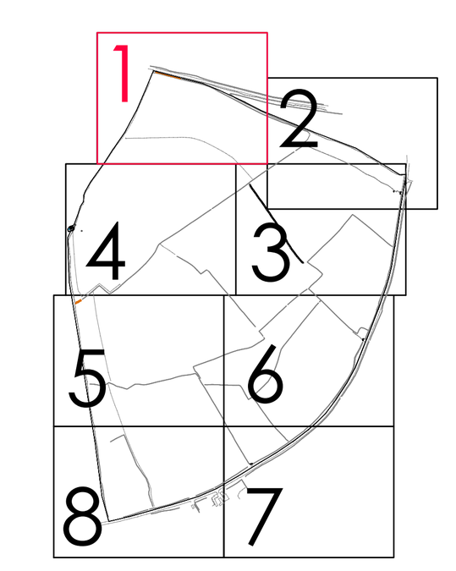
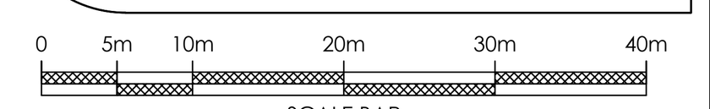


SHEET LAYOUT



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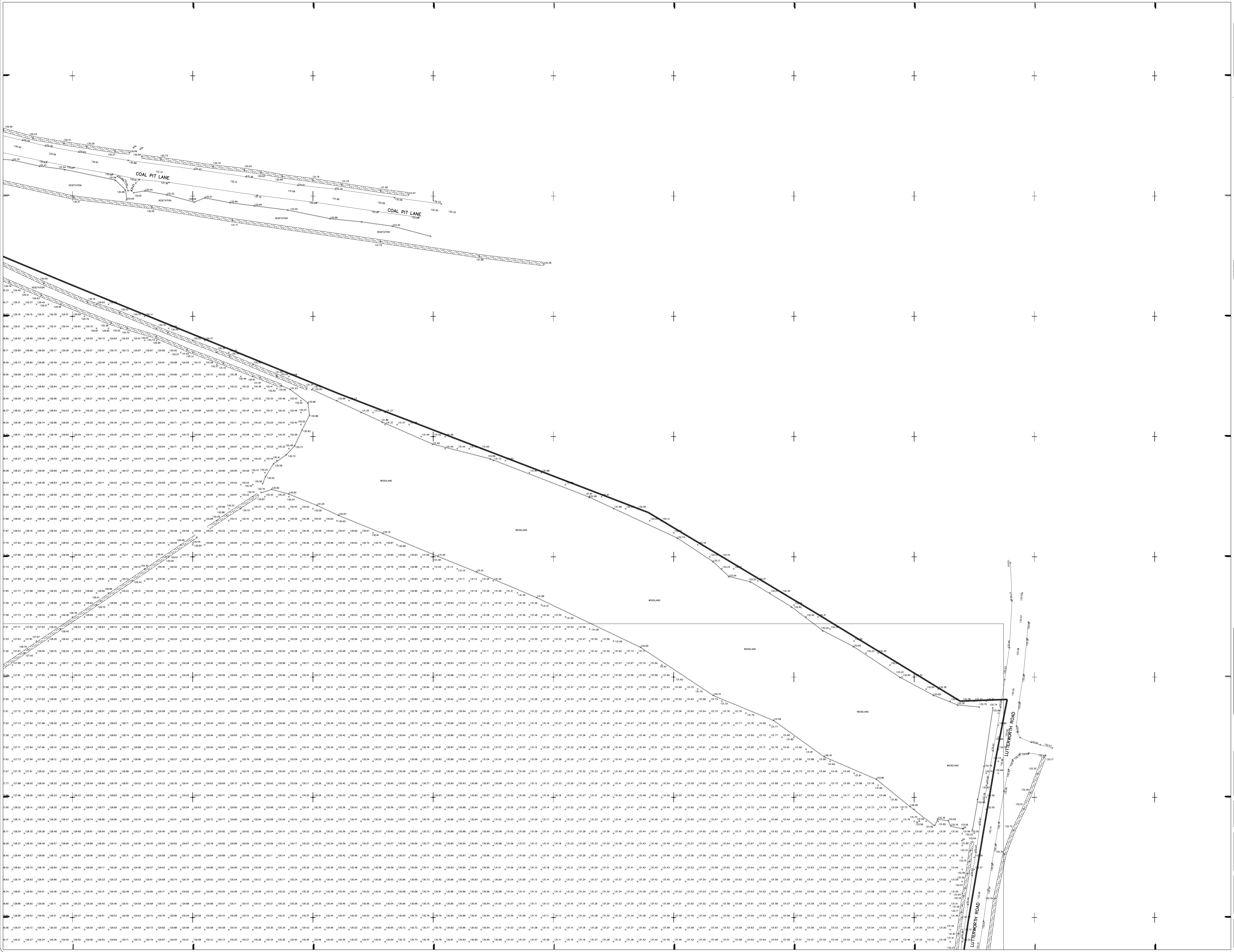

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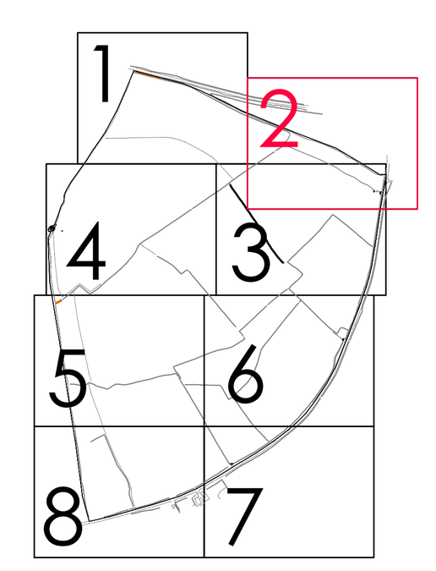

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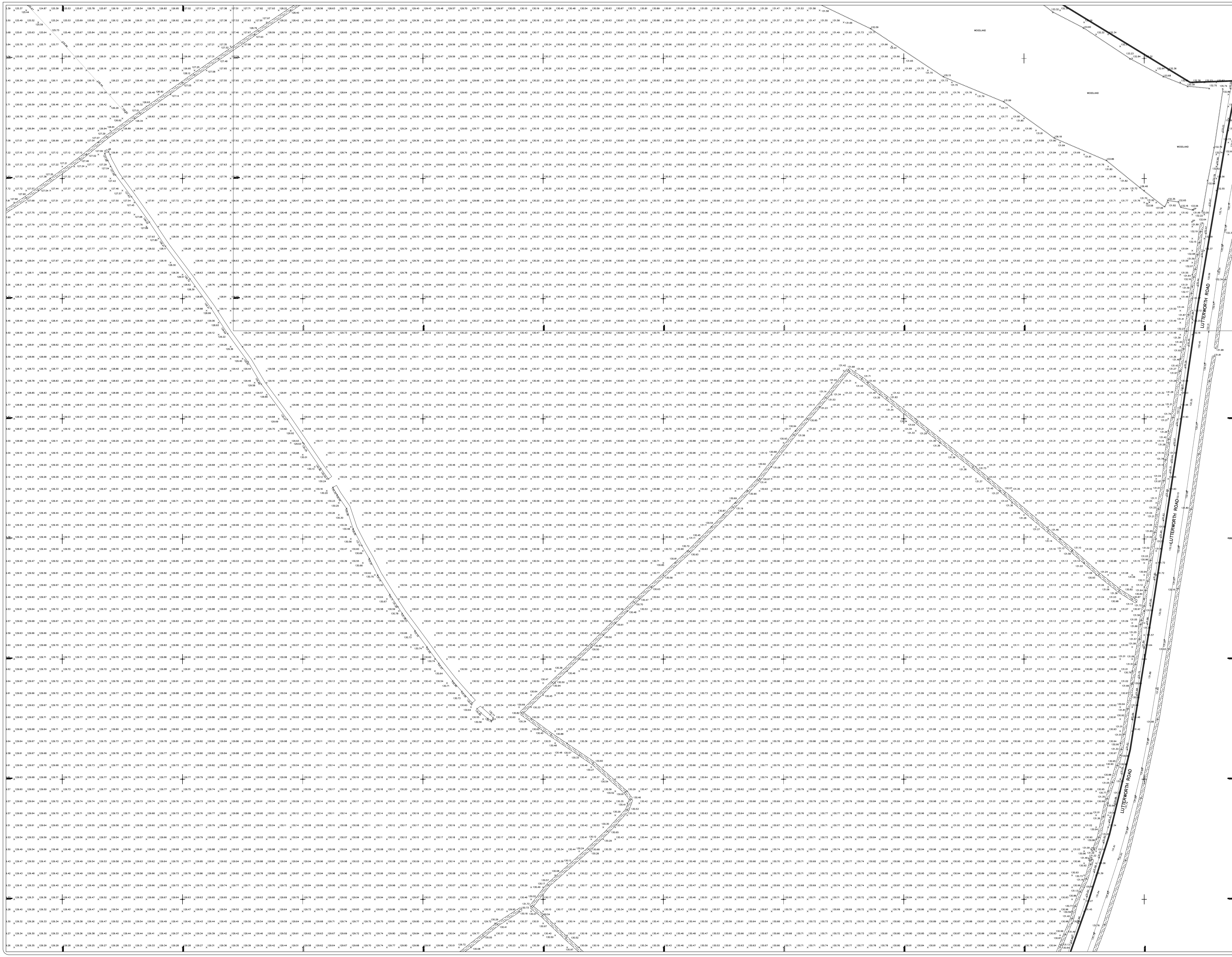

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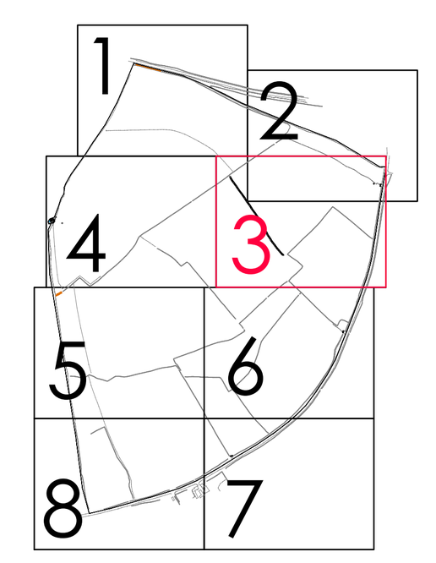

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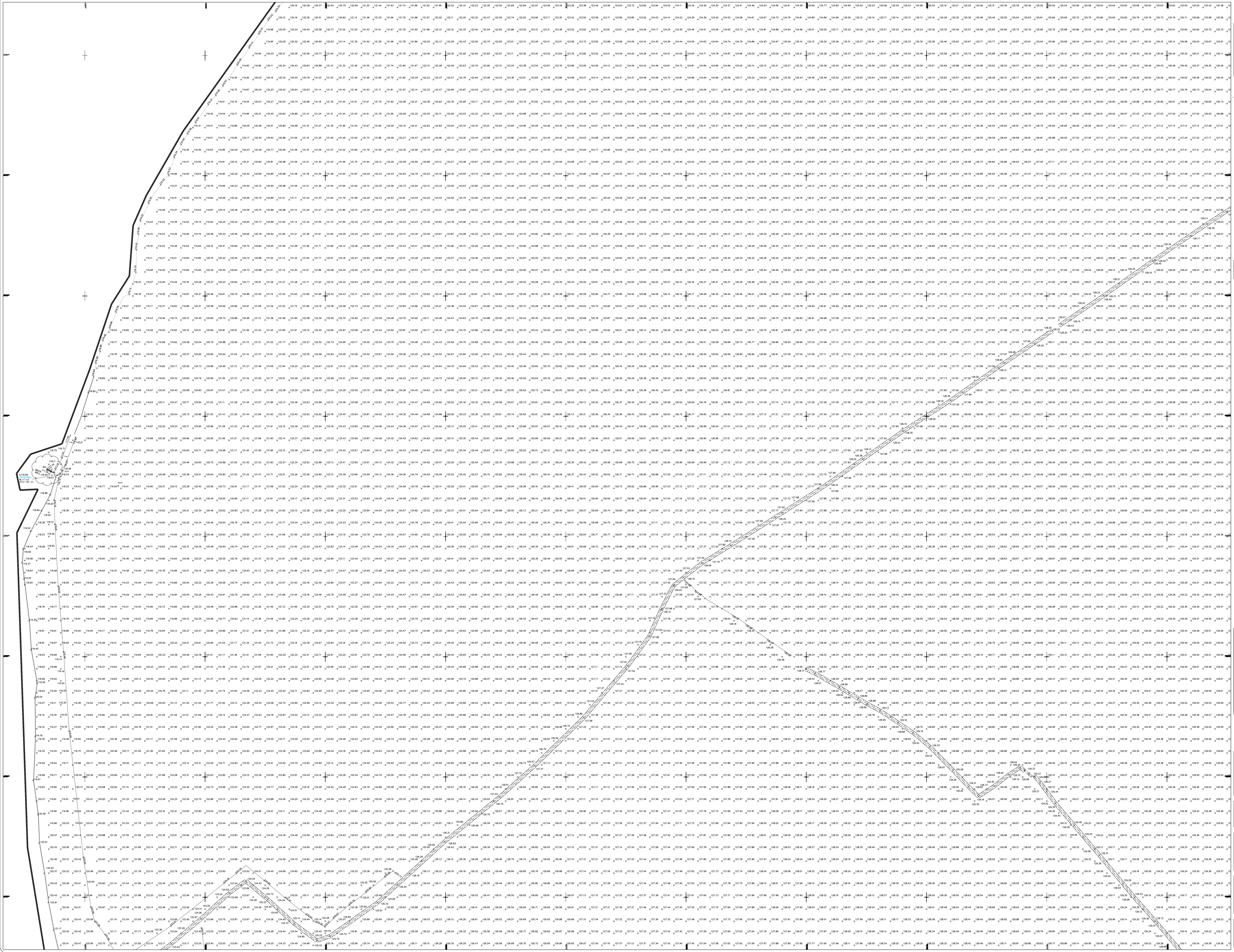

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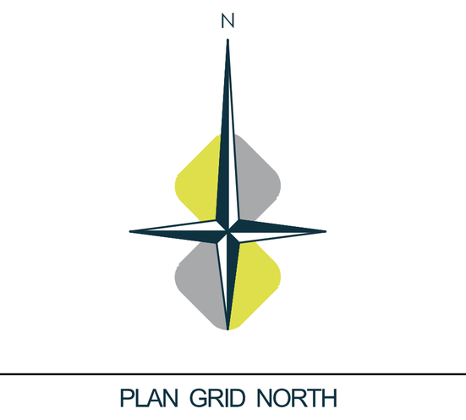

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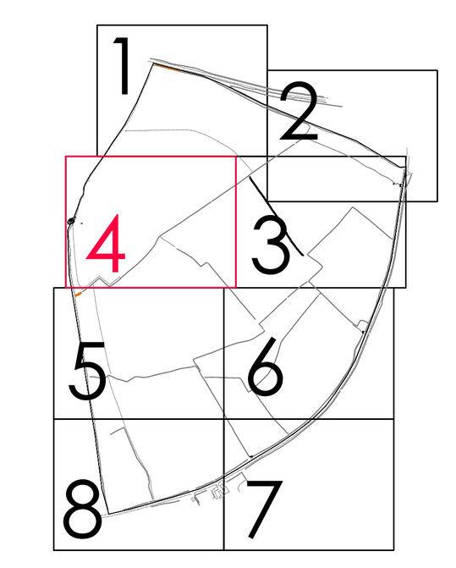

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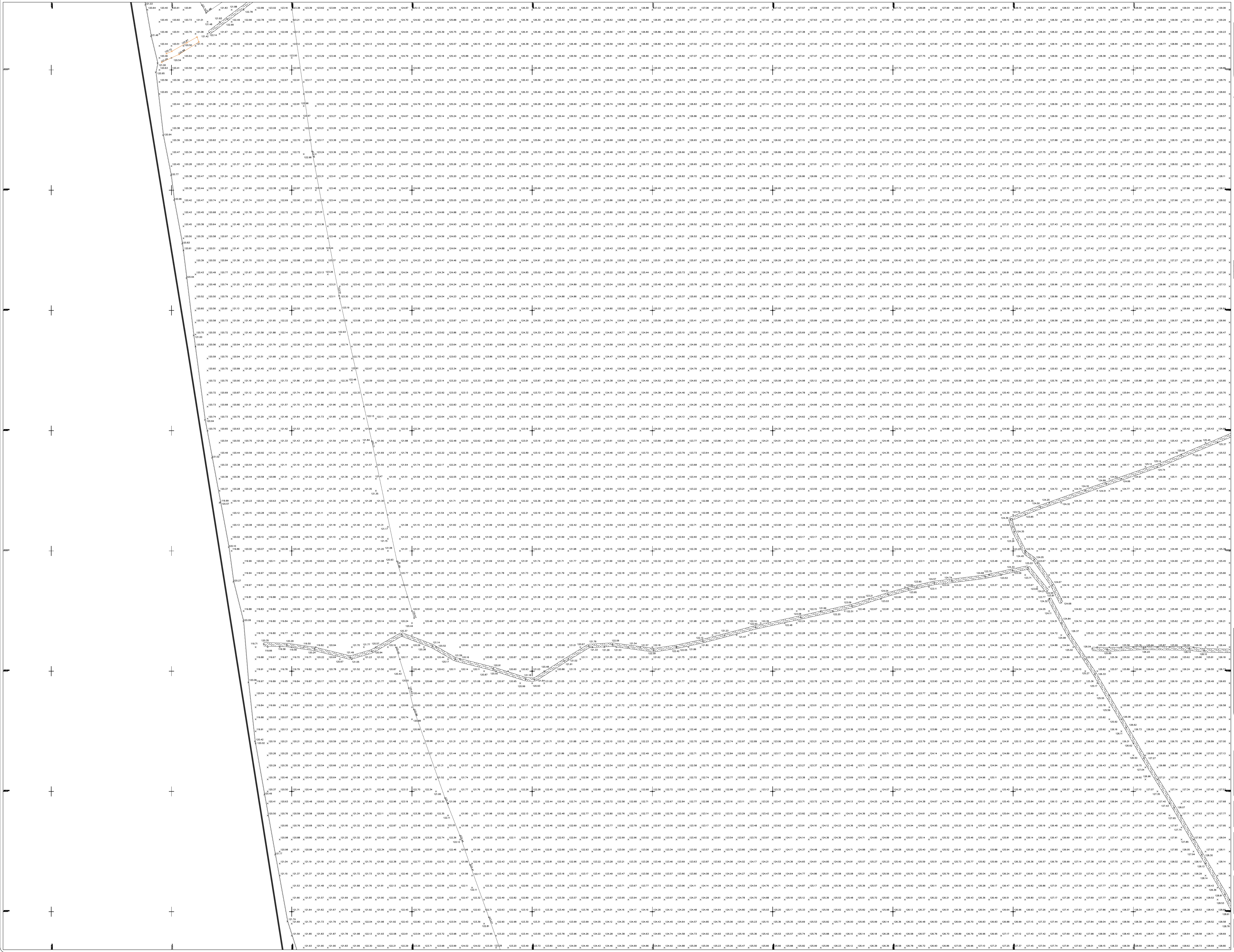

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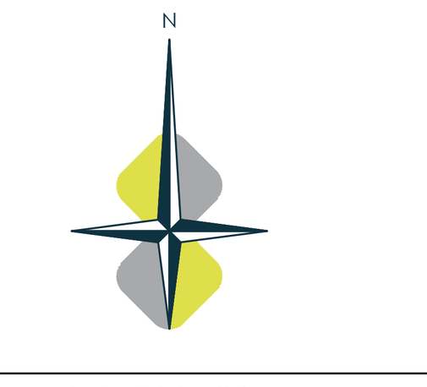

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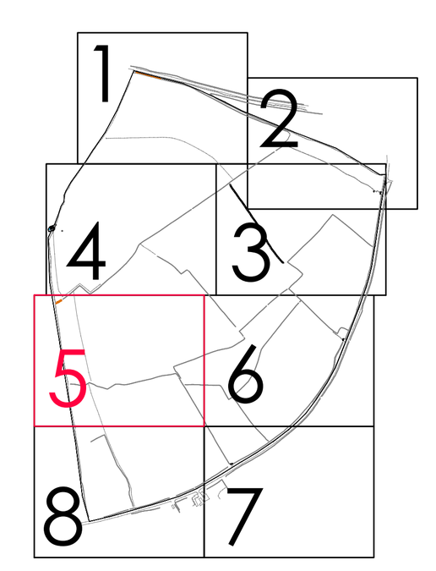
SEP1	449790.838	283627.369	118.540
SEP2	449813.823	283621.013	119.510



SHEET LAYOUT

0 5m 10m 20m 30m 40m
SCALE BAR

REV	DATE	DESCRIPTION

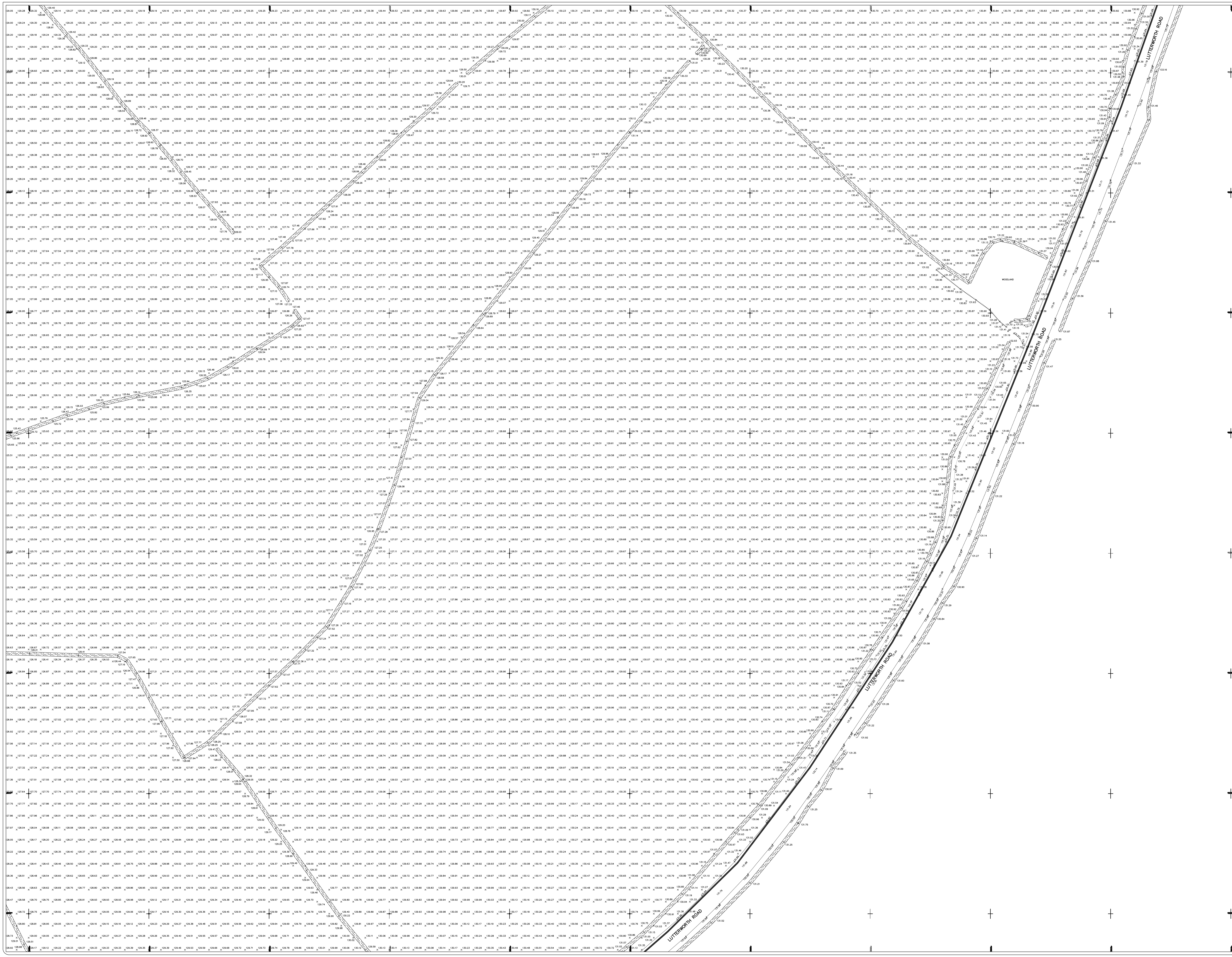
SURVEY & ENGINEERING PROJECTS

Client
Shepherd Gilmour Infrastructure Ltd
3rd Floor,
Phoenix House,
45 Cross Street,
Manchester,
M2 4JF

Project Title
Topographical Survey of Land at:
Streetfields Farm,
Lutterworth,
LE17 4HU

Surveyed	Drawn	Checked
M.Hayes	R.Jones	R.Critchley

Scale	Date	Drawing Ref.	No.	Size	Rev
1:500	Nov 23	S24831-T	05	A0	--



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N

PLAN GRID NORTH

File Name: S24831-T.dwg

LEGEND

AV	AIR VALVE	LBY	LIFEBUOY
BB	BELISHA BEACON	MH	MANHOLE
BOL	BOLLARD	MKR	MARKER
BH	BORE HOLE	MS	MILE STONE
BIN	BIN	MP	MOORING POINT
BM	BENCH MARK	MW	MONITORING WELL
BS	BUS STOP	OP	OUTFALL PIPE
BT	BT INSPECTION COVER	PB	POST OFFICE BOX
CB	CONTROL BOX	PN	PYLON
CCTV	CCTV CAMERA POST	PP	PETROL PUMP
COL	COLUMN	PT	POST
COM	COMMUNICATIONS COVER	RE	RODDING EYE
CST	CAR CHARGING STATION	RL	RIDGE LEVEL
CTV	CABLE TV COVER	RS	ROAD SIGN
DC	DRAINAGE CHANNEL	RTW	RETAINING WALL
DP	DOWN PIPE	RWP	RAINWATER PIPE
DR	DRAIN	SAP	SAPLING
EIC	ELEC INSPECTION COVER	SNP	NAME PLATE
EL	EAVES LEVEL	SP	SIGN POST
ELB	ELECTRIC BOX	SOF	SOFFIT LEVEL
ER	EARTH ROD	SV	STOP VALVE
EP	ELECTRICITY POLE	TB	TRAFFIC BOLLARD
FL	FINISHED FLOOR LEVEL	TCB	TELEPHONE CALL BOX
FH	FIRE HYDRANT	TIE	TIE WIRE
FP	FLAG POLE	TL	TRAFFIC LIGHT
G	GULLY	TLB	TRAFFIC LIGHT BOX
GLT	GROUND LIGHT	TM	TICKET MACHINE
GP	GATE POST	TP	TELEGRAPH POLE
GST	GAS TAP	VP	VENT PIPE
GSV	GAS VALVE	WM	WATER METER
IC	INSPECTION COVER	WO	WASH OUT
IL	INVERT LEVEL	WST	WATER STOP TAP
KO	KERB OUTLET	WSV	WATER STOP VALVE
LAD	LADDER	G0.8ø	TREE GIRTH (Dia.)
LD	LAND DRAIN	MG	TREE MULTI-GIRTH
LP	LAMP POST		

PAL	PALISADE
W/M	WIRE MESH
B/W	BARBED WIRE
C/P	CONC PANEL
P/W	POST AND WIRE
P/R	POST AND RAIL
I/R	IRON RAIL
C/B	CLOSE BOARDED
CH/L	CHAIN LINK
(99.99)	TOP OF FEATURE
(FR-HT99.99)	FLAT ROOF HEIGHT

GATE
STATION
BOREHOLE
BATTER

DRIP LINE
WATER COURSE
KERB
FENCE
SURFACE CHANGE
WALL
TOP BANK
BOTTOM BANK
BUILDING
BUILDING CANOPY
OVER HEAD ELECTRICAL
OVER HEAD TELECOM
HEDGE

NOTES:
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Survey plotted on a plane local grid, orientated to National Grid.

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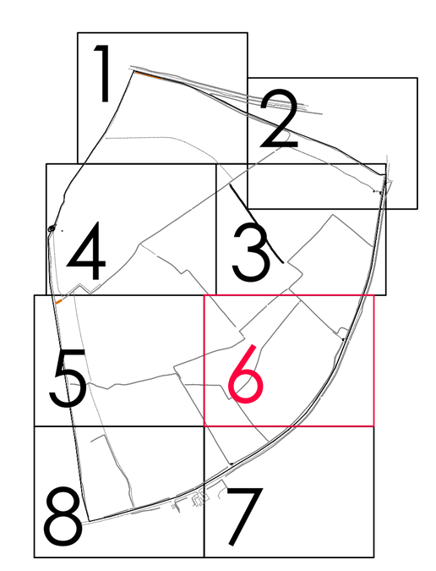

SHEET LAYOUT

0 5m 10m 20m 30m 40m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

Client
Shepherd Gilmour Infrastructure Ltd
3rd Floor,
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Project Title
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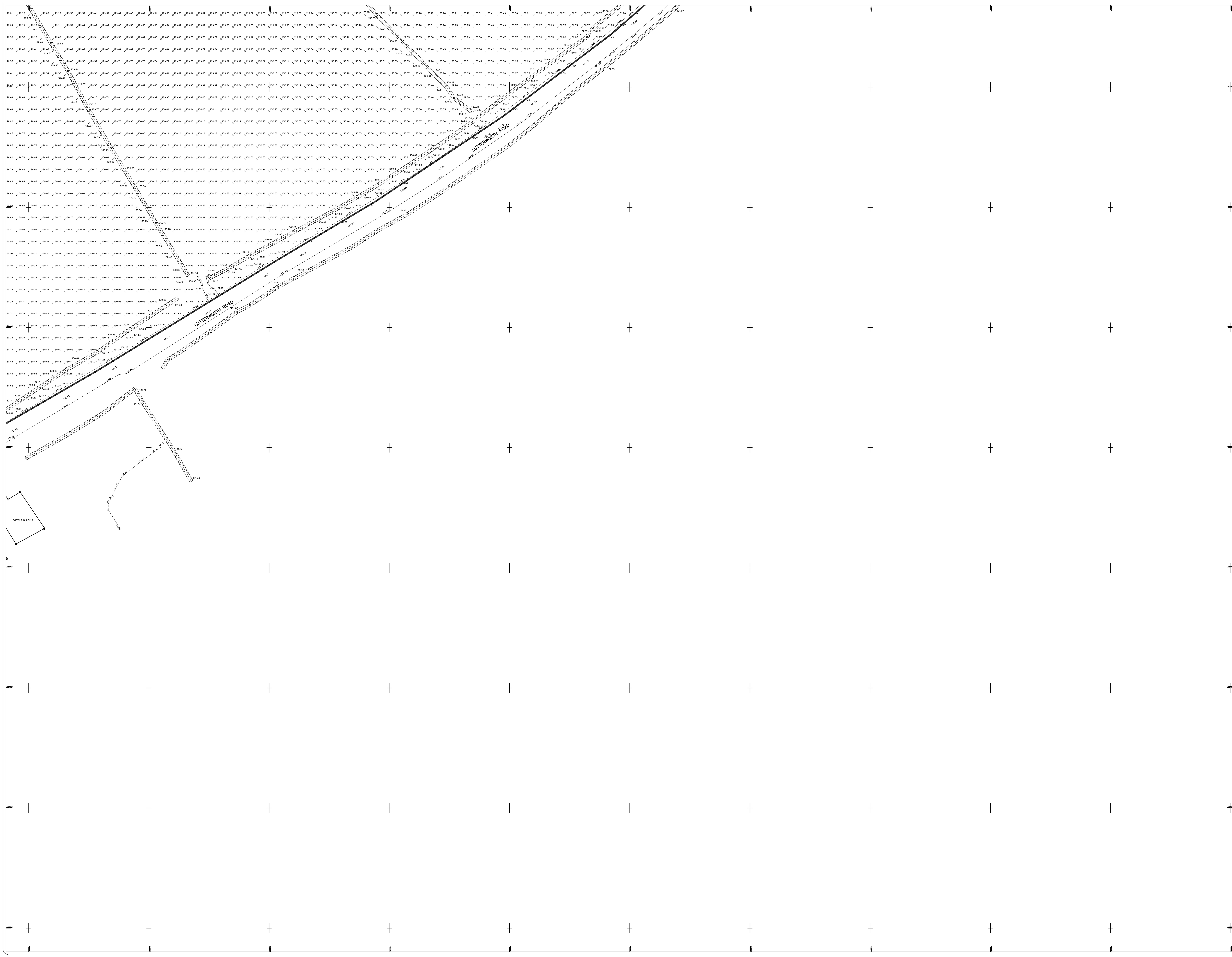
Surveyed	Drawn	Checked			
M.Hayes	R.Jones	R.Critchley			
Scale	Date	Drawing Ref.	No.	Size	Rev
1:500	Nov 23	S24831-T	06	A0	--



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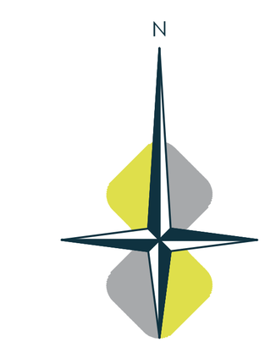

PLAN GRID NORTH

File Name: S24831-T.dwg

LEGEND

AV	AIR VALVE	LBY	LIFEBUOY
BB	BELISHA BEACON	MH	MANHOLE
BOL	BOLLARD	MKR	MARKER
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(99.99)	TOP OF FEATURE
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DRIP LINE
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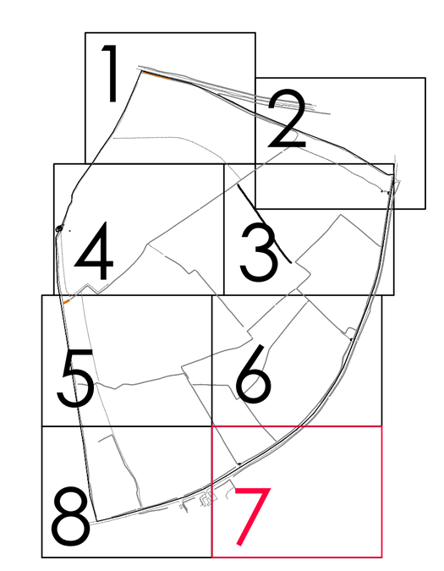

SHEET LAYOUT

0 5m 10m 20m 30m 40m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

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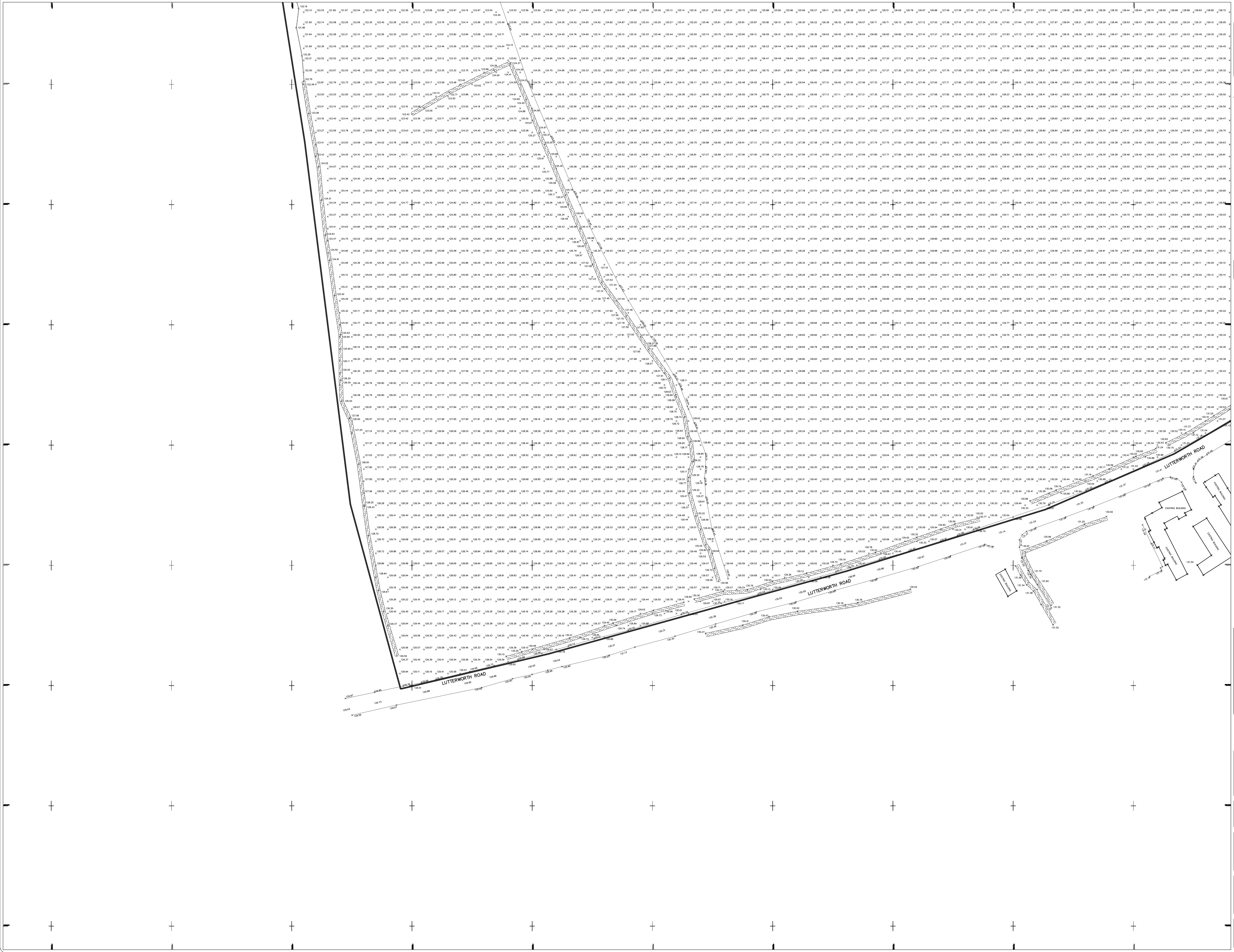
M.Hayes	R.Jones	R.Critchley

Scale	Date	Drawing Ref.	No.	Size	Rev
1:500	Nov 23	S24831-T	07	A0	--



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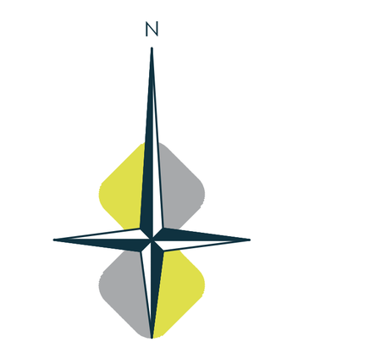

PLAN GRID NORTH

File Name: S24831-T.dwg

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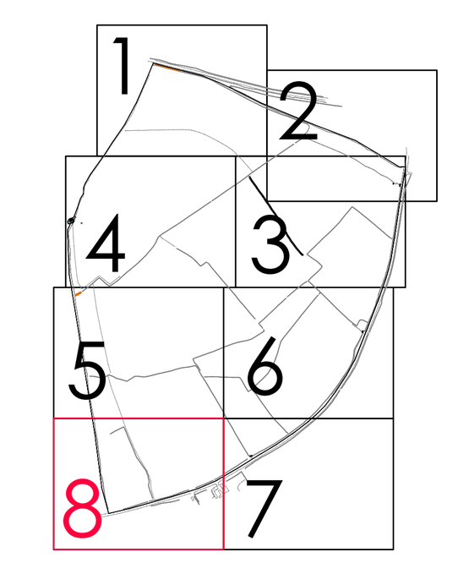
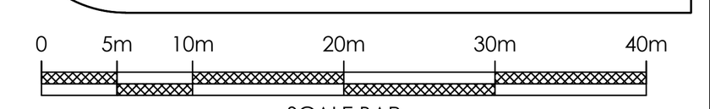


SHEET LAYOUT



SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

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M.Hayes	R.Jones	R.Critchley

Scale	Date	Drawing Ref.	No.	Size	Rev
1:500	Nov 23	S24831-T	08	A0	--

APPENDIX B

The isopachytes (contours) shown on this drawing illustrate the design depths of cut and fill on the enabling earthworks.
Shades of red are areas of cut
Shades of green are areas of fill.

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ALL DETAILS AND DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
3. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.

EARTHWORKS ANALYSIS NOTES

EARTHWORKS CALCULATIONS SHOWN IN VOLUME SUMMARY TABLE ARE BASED ON A COMPARISON OF THE FOLLOWING DATA SOURCES:

- EXISTING SITE TOPOGRAPHICAL SURVEY UNDERTAKEN BY SURVEY & ENGINEERING PROJECTS ON NOV. 2023.
- PROPOSED SITE FORMATION LEVELS BASED ON PROPOSED LEVELS BY SGI.
- THE RESULTS SHOWN IN VOLUME SUMMARY TABLE DO NOT ACCOUNT FOR THE FOLLOWING:

- PROPOSED PAVEMENT CONSTRUCTION
- ARISINGS
- BULKING FACTORS
- DRAINAGE (INCLUDING ATTENUATION)
- FOUNDATIONS
- TEMPORARY STRUCTURES

THE DESIGN SHOWN IS BASED ON THE FOLLOWING ASSUMPTIONS:

- ALL EARTH ACCOUNTED FOR IN THE CALCULATIONS IS OF REUSABLE QUALITY.
- EARTHWORKS BATTERS ARE AT A MAXIMUM GRADIENT OF 1 IN 3 U.N.O.

SITE STRIP REMOVAL

- SITE STRIP FIGURES ARE BASED ON A COMPARISON OF THE EXISTING TOPOGRAPHICAL SURVEY AND A TOPOGRAPHICAL SURVEY SURFACE REDUCED BY ASSUMED SITE STRIP DEPTH OF 250mm
- THE TOTAL VOLUME OF TOP SOIL TO BE REMOVED IS 188625.5m³

SITE CUT & FILL

- SITE CUT AND FILL FIGURES GIVEN IN THE VOLUME SUMMARY TABLE ARE BASED ON A COMPARISON OF THE SITE STRIP SURFACE MENTIONED ABOVE AND THE PROPOSED FORMATION SURFACE OF THE SITE. THE FORMATION SURFACE IS BASED ON THE PROPOSED FINISHED LEVELS WHICH HAVE THEN BEEN LOWERED BY ASSUMED AVERAGE CONSTRUCTION THICKNESS OF 500mm
- THE FORMATION DEPTH IS BASED ON A CBR VALUE OF 3%. CBR VALUE TO BE CONFIRMED WHICH COULD ALTER PAVEMENT CONSTRUCTION DEPTHS.

KEY

CUT CONTOUR

BALANCED CONTOUR

FILL CONTOUR

PROPOSED RETAINING WALL

Filename: K:\projects\JOB-Nos C1600-1699\C1602 Sheffields Farm Lutterworth\000 CIVILS DRAWINGS\C1602-SK101-P1-Preliminary Earthworks - Isopachytes NORTH.dwg
Plot Date/Time: 3/1/2024 2:18 PM

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Site Volume Earthwork	1.000	1.000	754502.393sq.m	477195.464 Cu. M.	543575.266 Cu. M.	66379.802 Cu. M.<Fill>
Totals			754502.393sq.m	477195.464 Cu. M.	543575.266 Cu. M.	66379.802 Cu. M.<Fill>

Rev.	Description	Rev. by	Date

Shepherd Gilmour
Consulting Engineers
3rd Floor Phoenix House,
45 Cross Street,
Manchester, M2 4JF
T: 0161 837 1500 W: www.sginfrastructure.co.uk

Client
NURTON DEVELOPMENTS

Architect
UMC ARCHITECTS

Project
CROSS IN HAND
LUTTERWORTH

Title
PRELIMINARY EARTHWORKS
PROPOSED ISOPACHYTES

Date 04-01-2024 Drawn By PMB
Size A1 Checked By DOR
Scale 1:2000 Approved By EAJ

Dwg. No. C1602-SK101
Rev P1