



M5 Junction 12 Feasibility Study

Stage 2: Optioneering Report

Consultation Summary Report





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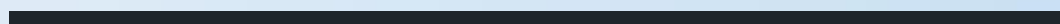
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Appendix A

GENERAL ARRANGEMENTS AND CONSTRAINTS PLANS

1

INTRODUCTION



1 INTRODUCTION

1.1.1 Overview

WSP was approached by Gloucestershire County Council (GCC) to undertake a Feasibility Study on the optioneering of design solutions for M5 Junction 12 as part of the Stroud District Council (SDC) Local Plan Examination.

The overall aim of the Feasibility Study was to explore three design options and identify a preferred design option for the M5 Junction 12 which will enable the proposed level of housing and employment coming forward in the SDC Local Plan.

In Stage 1 of the project WSP produced a Technical Note which formed the baseline to the optioneering work. The Stage 1 report consisted of:

- A review of the existing traffic models.
- A review of extant planning permissions and Local Development Plan (LDP) allocations both draft and adopted.
- Review of extant land use and ownership surrounding the junction to determine the land available for design solutions.
- Desktop environmental work.
- Review of extant design solutions.

1.1.2 Fundamental Principles and Baseline Objectives

In addressing the concerns with regards to the need for junction improvement works, the following fundamental principles form the rationale for the M5 Junction 12 Feasibility work:

- Junction improvement works are needed at M5 Junction 12.
- Uncertainty over how the improvement works will be funded and delivered during the Local Plan period to accommodate planned growth.
- Uncertainty over how the site allocations within the Local Plan can come forward in full without the junction improvements.

The aim of this Feasibility Study is to agree a preferred design option for M5 Junction 12 which can be delivered during the plan period, and which has been agreed through engagement with all key stakeholders.

To achieve this, the following baseline objectives of the study were discussed at the Principles/Objectives and Risk Workshop with National Highways (NH), GCC and SDC and have been agreed for the Feasibility work at the junction. The baseline objectives also align to the strategic objectives set out in the Joint Action Plan, and are to:

- Understand the current junction through a baselining exercise.

- Develop three variations of a concept design for M5 Junction 12.
- Progress to an agreed preferred option through engagement with all stakeholders (NH, GCC and SDC).
- Confirm the performance of the preferred option through forecast modelling of committed development and the SDC local plan site allocations.
- Provide an indication of cost to enable SDC to provide evidence that there is a reasonable prospect the scheme can be delivered.

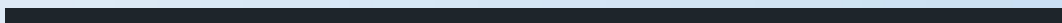
1.1.3 Structure of this document

The remaining sections of this report will cover the following:

- **Delivery Case:** Setting out the need for intervention and outlining the M5 Junction 12 scheme objectives.
- **Option Development and Appraisal:** Summarises the option identification and junction modelling appraisal undertaken to identify a preferred option for the junction.
- **Conclusions:** Summary, conclusions and recommendations to take the preferred option forward for M5 Junction 12.

2

DELIVERY CASE



2 DELIVERY CASE

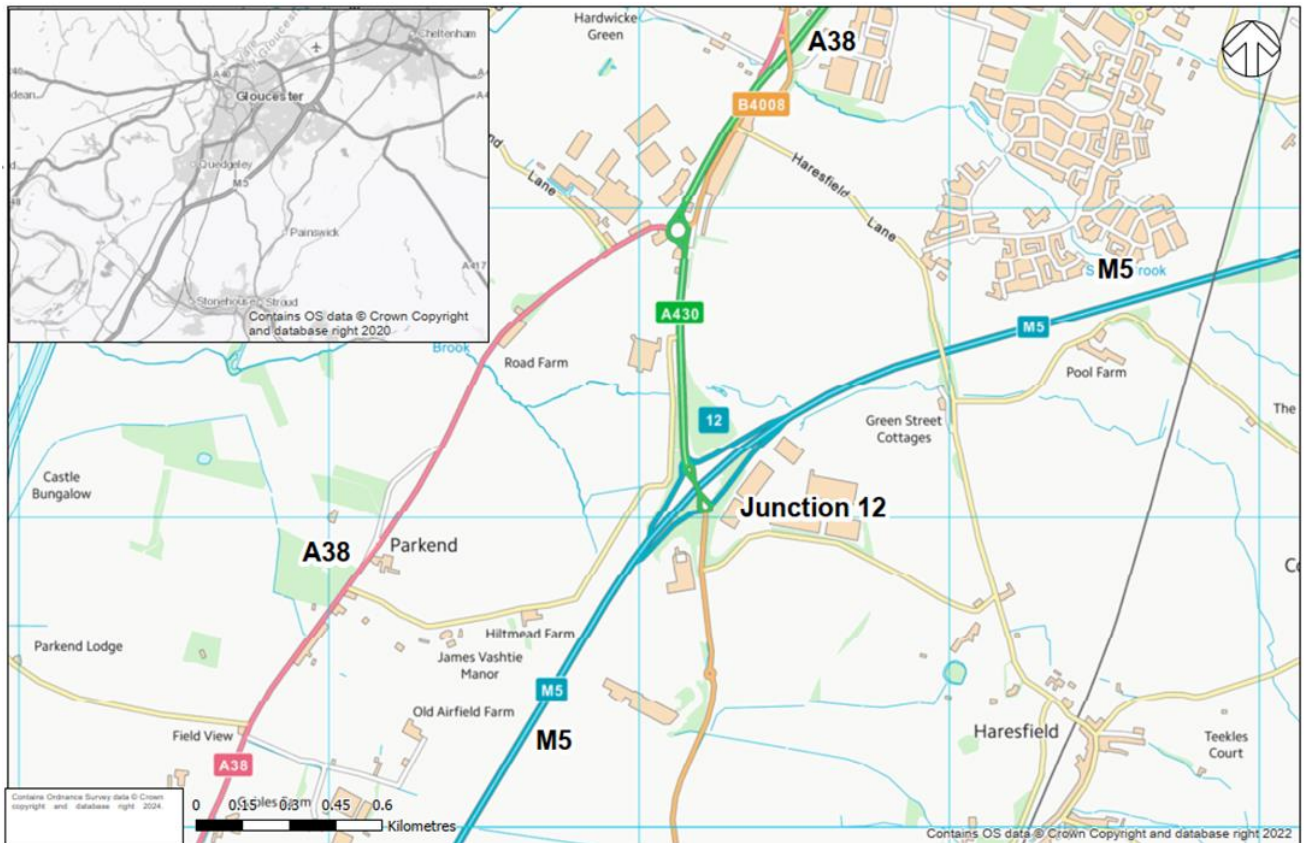
2.1.1 Introduction

This chapter sets out the current and future situation at the M5 Junction 12 to inform the need for intervention.

2.1.2 Context

Figure 2-1 illustrates the location of Junction 12 of the M5 in the context of the surrounding area. The junction is located south of Gloucester and to the northwest of Stroud. Whitstone Hundred Bridge carries the A430 over the M5 at Junction 12 and was constructed as a replacement for the previous junction.

Figure 2-1 - Study Area



2.1.3 Need for Intervention

The aim of this Feasibility Study is to identify a design option for the M5 Junction 12 to enable the proposed level of housing and employment set out in the SDC Local Plan to come forward as planned. The target set out in the Plan is to deliver at least 12,600 additional dwellings and 79 hectares of new employment land to meet the growth needs of the district over the next 20 years.

This level of growth will put additional pressure on the highway network, particularly at key network junctions within the district including M5 Junction 12.

The M5 Junction 12 already experiences congestion, and with significant development and growth planned in close proximity to the junction, it is likely to suffer from severe capacity and resilience issues within the next decade. This is supported by the GCC Multi-Modal Model (GC3M) which currently shows significant queuing on the westbound off-slip (from Cheltenham) which is likely to worsen over time. This evidence highlights the need for intervention and improvements at the junction to increase capacity, supporting the planned levels of growth.

2.1.4 Scheme Objectives

To address the identified challenges and to ensure the proposed scheme for M5 Junction 12 meets the planned growth the following scheme objectives have been developed:

- Accommodate increased traffic associated with the proposed housing and employment developments set out in the Local Plan.
- Reduce congestion and queuing at the M5 Junction 12 to support a free flowing highway network.
- Support economic growth and productivity through delivering enhancements at M5 Junction 12 to improve the overall resilience of the highway network.
- Improve air quality and the local environment through junction enhancements which support reduced congestion at M5 Junction 12.

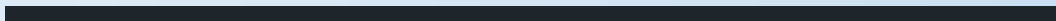
2.1.5 Outcomes

Reflecting on the need for intervention, the scheme objectives and the Local Plan strategic objectives, the desired outcomes of the proposed scheme at M5 Junction 12 include:

- Identify an optimum solution and design for M5 Junction 12 which mitigates both existing and anticipated future capacity and congestion constraints.
- Support and enable sustainable economic growth in line with the planned growth set out in the Local Plan.
- Support improved air quality and local environment through the delivery of junction improvements, helping to meet the 2030 net zero target for SDC and the wider GCC target of 2045.

3

OPTION DEVELOPMENT AND ASSESSMENT



3 OPTION DEVELOPMENT AND ASSESSMENT

3.1.1 Introduction

This section of the report sets out the approach undertaken to assess the longlist of options developed for M5 Junction 12. This includes reference to the option identification, development, prioritisation and assessment.

3.1.2 Option Identification

A robust Feasibility Study must demonstrate that the preferred solution is not only a solution to the identified issues but the 'right solution'. A range of options must therefore be considered, and an appropriate documented assessment process undertaken to establish the preferred solution.

3.1.2.1 Approach to Option Identification

The overall aim of this Feasibility Study was to identify three concept design options with increasing levels of intervention for the M5 Junction 12 and to sift, shortlist and prioritise them by undertaking cost estimates, modelling and a cost benefit analysis to identify a preferred solution for the junction.

Development of the three concept designs has been supported by a series of workshops held between WSP, GCC and key stakeholders including NH and SDC. At these workshops potential options have been tabled and discussed. This included several scenario options for the Do Something and Do Maximum designs. The longlist of options which have been considered in the optioneering process for junction are set out in Section 3.1.2.2.

In developing the options, the following were not considered in the selection process for the concept designs and will need to be picked up in the next stage of design:

- Traffic management
- Drainage
- Detailed design risks
- Impact of land acquisitions

3.1.2.2 Longlist of Options

Table 3-1 sets the long list of options which were explored for the M5 Junction 12 improvements as part of this Feasibility Study.

Table 3-1 - Long list of Options

Option	Description
Option 1	<ul style="list-style-type: none"> • Traffic lane reassignment through the delivery of additional approach lanes at the junction • Enhancements to walking and cycling provision
Option 2a	<ul style="list-style-type: none"> • Widened bridge to provide two lanes northbound
Option 2b	<ul style="list-style-type: none"> • Option 2a plus southern hamburger roundabout
Option 2c	<ul style="list-style-type: none"> • Option 2a plus signalised junction replacing northside roundabout
Option 2d	<ul style="list-style-type: none"> • Option 2a plus signalised junction north and south
Option 3a	<ul style="list-style-type: none"> • Two bridge roundabout
Option 3b	<ul style="list-style-type: none"> • Full gyratory plus link to A38

3.1.3 Scheme Costs

As part of the option assessment, scheme costs for the long list of options have been considered.

Direct Construction Costs

The direct construction costs have been developed from the designs produced for each of the options, which have been measured and then converted into cost estimates. Projects of a similar nature and cost data from internal databases have been used to build up the cost estimates. Table 3-2 outlines the initial high-level cost estimates that have been identified for the long list of options.



Table 3-2 – High Level Cost Estimates

	Option 1	Option 2a	Option 2b	Option 2c	Option 2d	Option 3a	Option 3b
Direct Construction Costs							
Base Construction Cost	£3,550,000	£23,450,000	£23,560,000	£23,550,000	£23,650,000	£33,600,000	£34,050,000
Indirect Construction Costs							
Contingency	£355,000	£2,345,000	£2,356,000	£2,355,000	£2,365,000	£3,360,000	£3,405,000
Main contractors, preliminaries, overheads and profit	£1,597,500	£10,552,500	£10,602,000	£10,597,500	£10,642,500	£15,120,000	£15,322,500
Traffic Management	£390,500	£3,869,250	£3,887,400	£3,885,750	£3,902,250	£5,544,000	£5,618,250
Fees	£1,767,900	£12,065,025	£12,121,620	£12,116,475	£12,167,925	£17,287,200	£17,518,725
Utilities	£1,178,600	£4,021,675	£4,040,540	£4,038,825	£4,055,975	£5,762,400	£5,839,575
Land	£0	£150,000	£150,000	£150,000	£150,000	£500,000	£500,000
Total excl. risk and inflation	£8,839,500	£56,453,450	£56,717,560	£56,693,550	£56,933,650	£81,173,600	£82,254,050
Risk	£5,197,626	£33,194,629	£33,349,925	£33,335,807	£33,476,986	£47,730,077	£48,365,381
Bond	£71,000	£469,000	£471,200	£471,000	£473,000	£672,000	£681,000
Committed Sum	£500,000	£2,500,000	£2,500,000	£2,500,000	£2,500,000	£5,000,000	£5,000,000
Total Cost (excluding inflation)	£14,608,126	£92,617,079	£93,038,685	£93,000,357	£93,383,636	£134,575,677	£136,300,431
Inflation	£8,229,967	51,422,138	£51,662,710	£51,640,839	£51,859,541	£72,302,072	£73,264,439
Total Cost (incl. risk and inflation)	£22,838,093	£144,039,216	£144,701,395	£144,641,197	£145,243,177	£206,877,749	£209,564,870

Indirect Construction Costs

The following assumptions have been made for the indirect construction costs:

- **Contingency:** A contingency has been added to the direct construction costs to account for any items that have not been measured or priced at this stage due to the current level of design. For this project it has been set at 10% of the direct construction costs.
- **Main Contractor's preliminaries, and overheads and profit:** Allowances would normally be made for main contractor's preliminaries and overheads within the delivery costs of a project. These allowances will vary depending on the demands made by the complexity and scale of the delivery on the Contractor's management and supervision resources, and the extent that delivery requires working in live carriageways / pedestrian areas. A figure of 45% is deemed to be suitable at this stage of the project.
- **Traffic management:** An uplift of 15% has been applied to the direct construction costs to account for any potential traffic management requirements for working on the live motorway, diversions, closure amongst other items that might be needed.
- **Fees:** Fees to include surveys, design, supervision, project management, client project management costs and any contractor ECI involvement for this stage of design.
- **Utilities:** It is important for the scope required to be broached with the various providers as soon as possible to inform the pricing and design as the costs associated with utilities can be disproportionately high in some situations. An allowance of 10% of delivery cost depending on the need for diversions and upgrades has been made.
- **Land:** A high-level assumption has been made on initial areas outlined for land take for the proposed works, with a rate applied that has been developed from other projects. This is an outline figure and could increase or decrease as the project and design progresses.
- **Risk:** A 58% risk has been applied to reflect the maturity of the design and is based around the recommended optimism bias figures for standard civil engineering and non-standard civil engineering designs of this nature.
- **Inflation:** Inflation has been developed based on 2041 delivery and will need to be updated if the delivery timescale changes. The inflation figure has been developed using BCIS percentages to 2029 when their figures run until, from there on an assumption of an average of the previous increases per period has been allowed for to account for potential increases.

Exclusions

The following exclusions were made to the scheme costs:

- Legal issues
- VAT
- Planning and approval changes
- Taxes and levies
- Licenses and all associated costs and fees
- Changes in legislation and any form of applicable standards
- Costs associated with invasive and/or protected species
- Traffic signals
- Drainage
- Road lighting
- Road signs

3.1.4 Shortlisted Options

A high level assessment was undertaken on the longlist of options, including alignment of the option to scheme objectives and the level of deliverability and feasibility of the option. Discussions with GCC, NH and SDC were also undertaken alongside the high level assessment and a set of shortlisted options were identified. The shortlisted options include:

- Option 1
- Option 2a
- Option 3a

General arrangement drawings and Constraints Plans for the shortlisted options are presented in Appendix A.

3.1.5 Junction Modelling

Base Vissim Model

An existing Vissim microsimulation model has been utilised for the operational assessment of scheme options at the M5 Junction 12.

The M5 Junction 12 base Vissim model was developed by AECOM, on behalf of NH, for assessing the operational impacts of proposed new development and potential infrastructure improvements in the vicinity of the junction. NH have provided this model to undertake the operational assessment of the proposed schemes at the M5 Junction 12.

The M5 Junction 12 Vissim model meets model calibration and validation requirements and therefore provides a reasonable representation of base conditions, meeting the threshold criteria set out in TAG.

The Vissim model extent, shown in Figure 3-1, covers the M5 Junction 12, Cross Keys Roundabout to the north and the B4008 / Stonehouse junction and B4008 / Javelin Park Roundabout to the south.

Figure 3-1 - Vissim Model Extents



Junction Modelling Results

Junction modelling was undertaken on the three shortlisted options using the Vissim model and the following results were identified:

- All three schemes show little congestion or delay at M5 Junction 12 for any of the scheme options in the evening peak.
- Congestion is observed at the M5 Junction 12 across the morning peak, most notably in Option 1.

- In both the morning and evening peaks delay is observed at Cross Keys Roundabout on the A38 southbound and eastbound approaches, blocking back past the model extent. This is also predicted with the addition of the proposed signalisation scheme at Cross Keys Roundabout, due to the expected traffic growth by 2041.
- The junction operational assessment of Option 1 predicts delay at M5 Junction 12 in the morning peak. Most notably, delay is predicted blocking back from M5 Junction 12 on the A430 through Cross Keys Roundabout. Furthermore, delay on the slip roads are predicted to impact the operation of the M5 mainline.
- Options 2a and 3a are predicted to operate broadly similarly, with queueing and delay largely reduced across the network, compared with Option 1. This is with exception to the B4008 northbound approach to M5 Junction 12, where increased delay and queueing is anticipated for Option 2a. This is as a result of increased throughput at the southern roundabout circulatory, making it more difficult for traffic on the B4008 to pull out. This delay is largely reduced for Option 3a, due to the provision of two northbound lanes on the B4008 between the proposed new roundabout junction and M5 Junction 12.

4

SUMMARY AND CONCLUSIONS



4 SUMMARY AND CONCLUSIONS

4.1 Conclusions

The three options considered include different levels of intervention at Junction 12 of the M5 with a view to overcome current constraints and allow the extent of development identified in the Local Plan to come forward.

Option 1 is the lowest cost option at £14.6m (excluding inflation), providing an incremental increase in capacity compared to the current arrangement. However, against the scheme objectives this option is unlikely to be able to deliver the extent Local Plan development. This is supported through the transport modelling workstream which identified concerning capacity issues and high levels of delay in the morning period. Queueing is observed to block back from the signal stop-line on the southbound overbridge, back through the northern circulatory, impacting traffic entering the roundabout from the A430 southbound and M5 northbound off-slip. Delay is also observed on the southbound off-slip, blocking back and impacting speeds on the M5 mainline. The benefits associated with unlocking the extent of development could also not reasonably be attributed to this option.

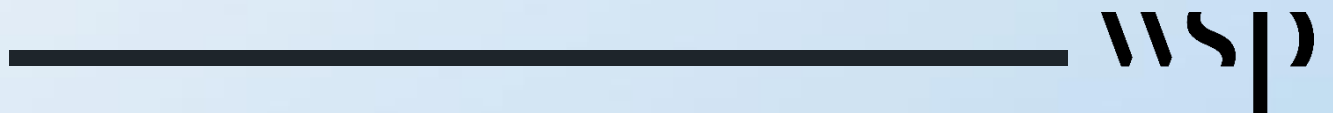
Option 2a includes a widened bridge to provide two lanes northbound, this results in an increase in cost to £92.6m (excluding inflation) compared to Option 1. This option delivers further capacity improvements which see reduced capacity issues and delay compared to Option 1. This option would support the objective of accommodating the increased travel demand associated with the Local Plan development but does demonstrate some remaining minor capacity constraints on the B4008 and Stonehouse Road.

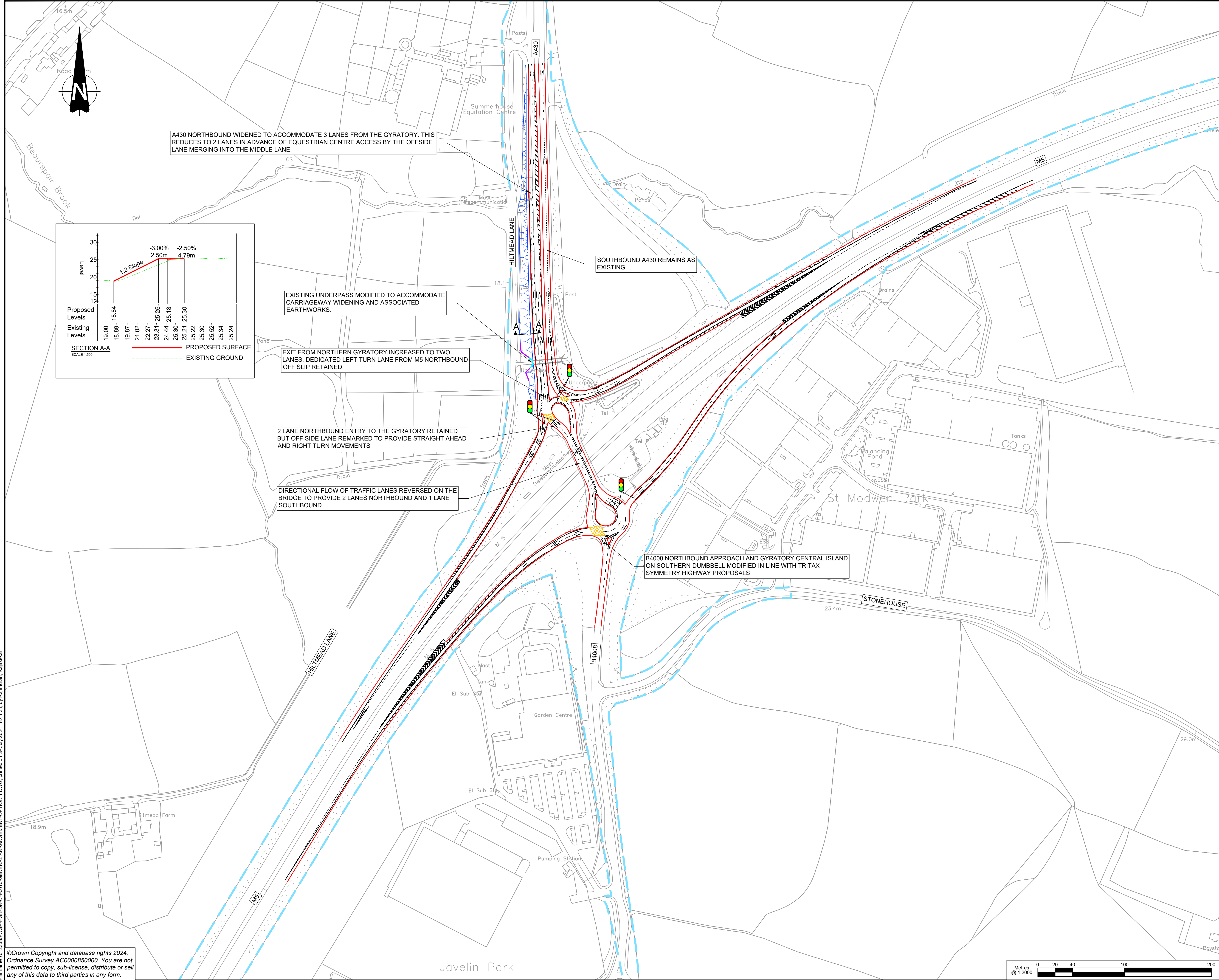
Option 3a includes the junction becoming a full gyratory. This is the highest cost option, with the cost potentially in the region of £134.5m (excluding inflation). This option delivers the greatest transport user benefits of the three options, including the delay on the B4008 being largely reduced due to the provision of two northbound lanes between the proposed new roundabout junction and M5 Junction 12.

It is therefore proposed that Options 2a and 3a are retained for further development. Going forwards, further consideration should be given to potential funding and financing strategies to provide confidence the options are affordable, increase the level of detail of the designs to identify further risks and constraints and build this into the cost estimates, understanding the impacts of the options in more detail including the level of development that each could unlock and identify further the buildability and maintainability constraints and opportunities.

Appendix A

GENERAL ARRANGEMENTS AND CONSTRAINTS PLANS





A430 NORTHBOUND WIDENED TO ACCOMMODATE 3 LANES FROM THE GYRATORY. THIS REDUCES TO 2 LANES IN ADVANCE OF EQUESTRIAN CENTRE ACCESS BY THE OFFSIDE LANE MERGING INTO THE MIDDLE LANE.

SOUTHBOUND A430 REMAINS AS EXISTING

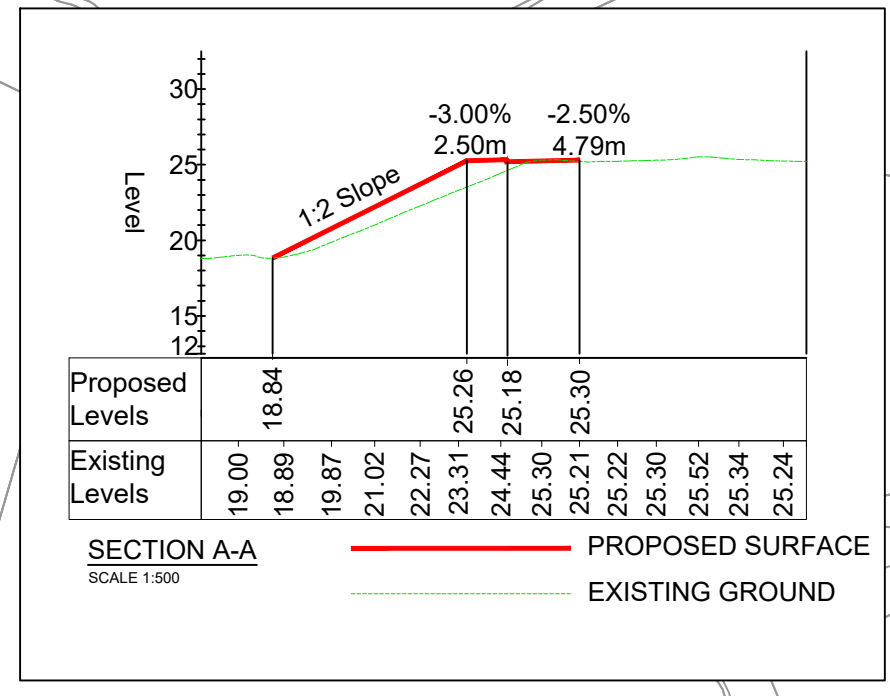
EXISTING UNDERPASS MODIFIED TO ACCOMMODATE CARRIAGEWAY WIDENING AND ASSOCIATED EARTHWORKS.

EXIT FROM NORTHERN GYRATORY INCREASED TO TWO LANES. DEDICATED LEFT TURN LANE FROM M5 NORTHBOUND OFF SLIP RETAINED.

2 LANE NORTHBOUND ENTRY TO THE GYRATORY RETAINED BUT OFF SIDE LANE REMARKED TO PROVIDE STRAIGHT AHEAD AND RIGHT TURN MOVEMENTS

DIRECTIONAL FLOW OF TRAFFIC LANES REVERSED ON THE BRIDGE TO PROVIDE 2 LANES NORTHBOUND AND 1 LANE SOUTHBOUND

B4008 NORTHBOUND APPROACH AND GYRATORY CENTRAL ISLAND ON SOUTHERN DUMBELL MODIFIED IN LINE WITH TRITAX SYMMETRY HIGHWAY PROPOSALS



- KEY:**
- HIGHWAY BOUNDARY
 - PROPOSED CARRIAGEWAY
 - PROPOSED ROAD MARKINGS
 - PROPOSED RETAINING WALL
 - WIDENED / NEW UNDERPASS
 - EXISTING UNDERPASS
 - PROPOSED EARTHWORK
 - SIGNAL CONTROLLED JUNCTION.

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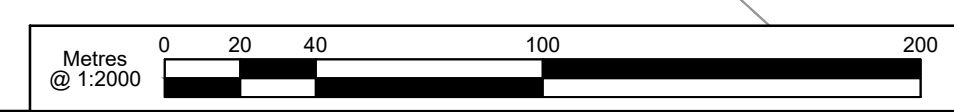
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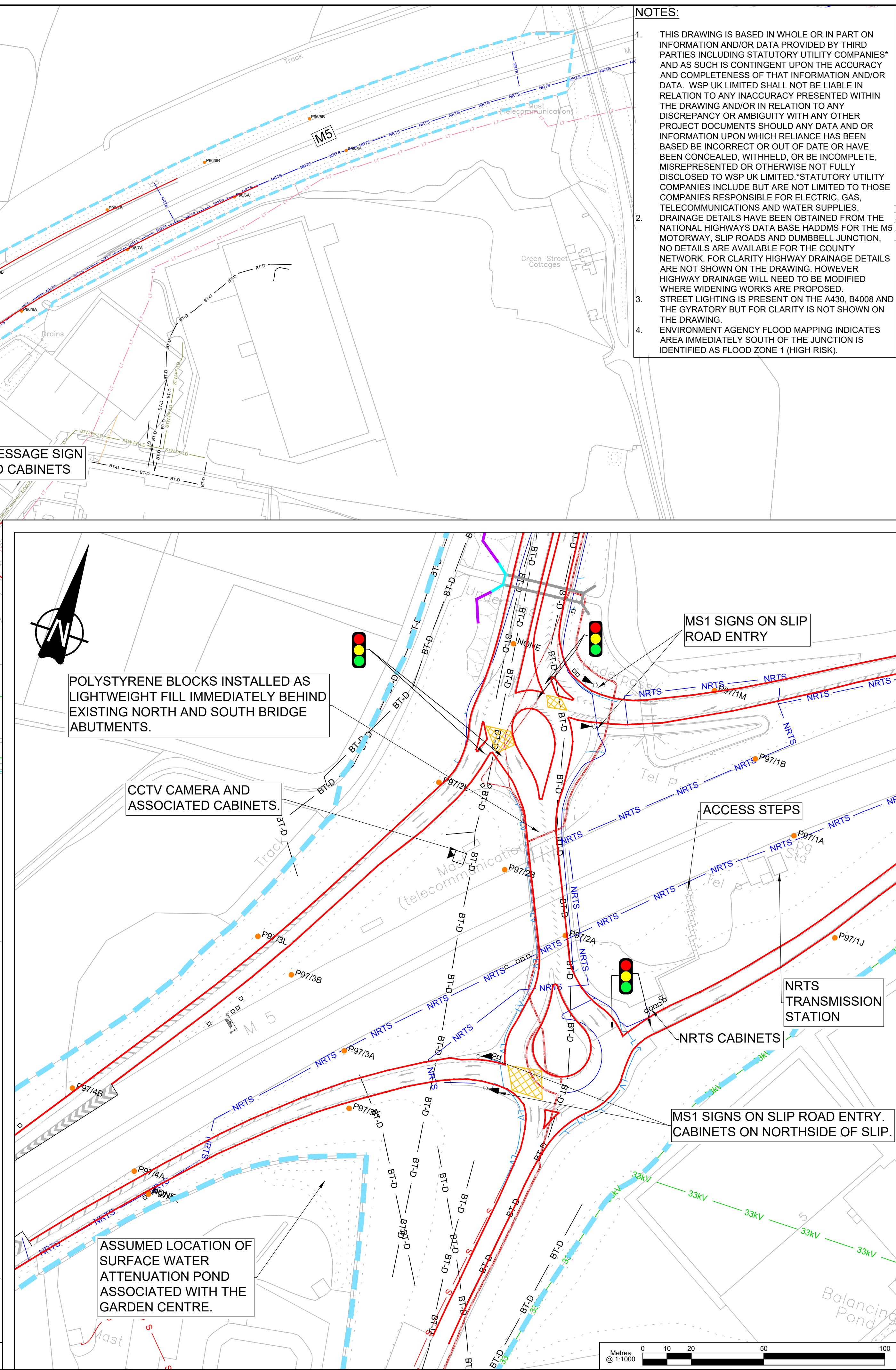
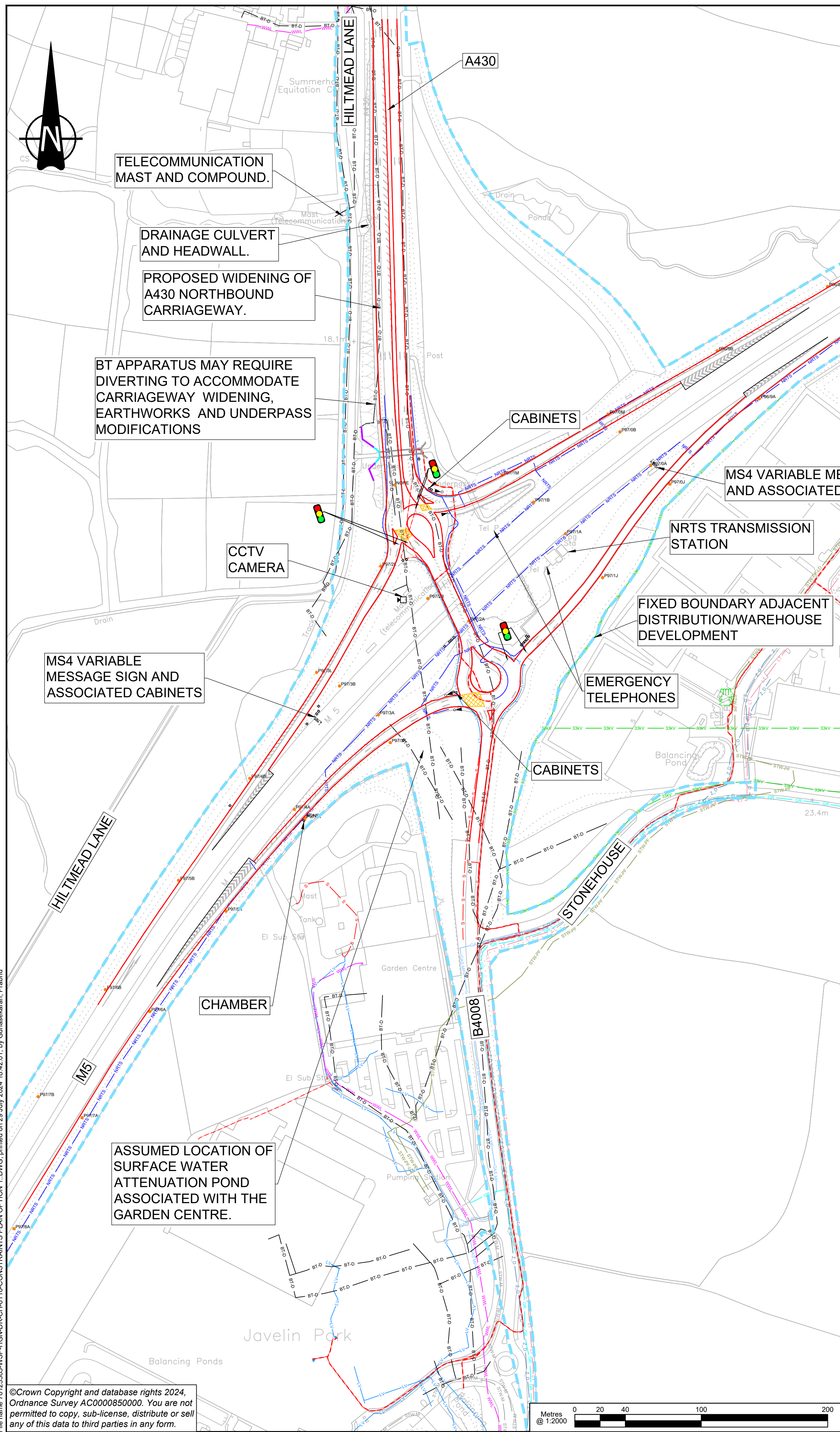
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- ENVIRONMENT AGENCY FLOOD MAPPING INDICATES AREA IMMEDIATELY SOUTH OF THE JUNCTION IS IDENTIFIED AS FLOOD ZONE 1 (HIGH RISK).

KEY:

- BT-D BT DUCT
- P-BT PROPOSED BT NETWORK
- VM-UG-U VIRGIN MEDIA
- VF-TP UNDERGROUND VODAFONE THIRD PARTY
- VF-O UNDERGROUND VODAFONE OWNED
- CF CITY FIBRE
- WW WALES & WEST LOW
- 11KV 11KV UNDERGROUND
- 33KV 33KV UNDERGROUND
- LV LV
- GR GIGACLEAR ROUTE
- NNU NEOS NETWORK UNDERGROUND
- S SERVICE
- CI_N COIT INFRASTRUCTURE NETWORK
- STW-PF-LD SEVERN-TRENT-PRESSURE FOUL LATERAL DRAIN
- STW-PF SEVERN-TRENT-PRESSURE FOUL
- STW-LD SEVERN-TRENT-LATERAL DRAIN
- STW-M SEVERN-TRENT-WATER MAIN
- GAS MP GAS-MEDIUM PRESSURE
- Z-D ZAYO DUCT
- LT LUMEN TECHNOLOGIES
- NRTS NRTS DUCT
- CCTV CAMERA
- MS4 VARIABLE MESSAGE SIGN
- MS1 SIGN
- CABINETS
- SIGNAL CONTROLLED JUNCTION.
- HIGHWAY BOUNDARY
- PROPOSED CARRIAGEWAY
- PROPOSED ROAD MARKINGS
- PROPOSED RETAINING WALL
- PROPOSED EARTHWORK
- MARKER POSTS

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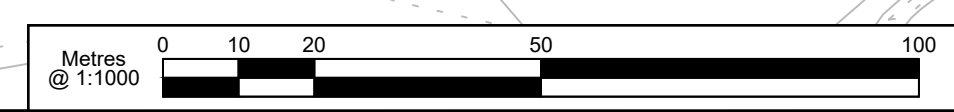
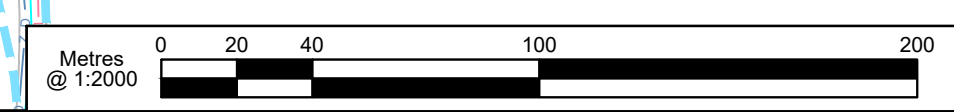
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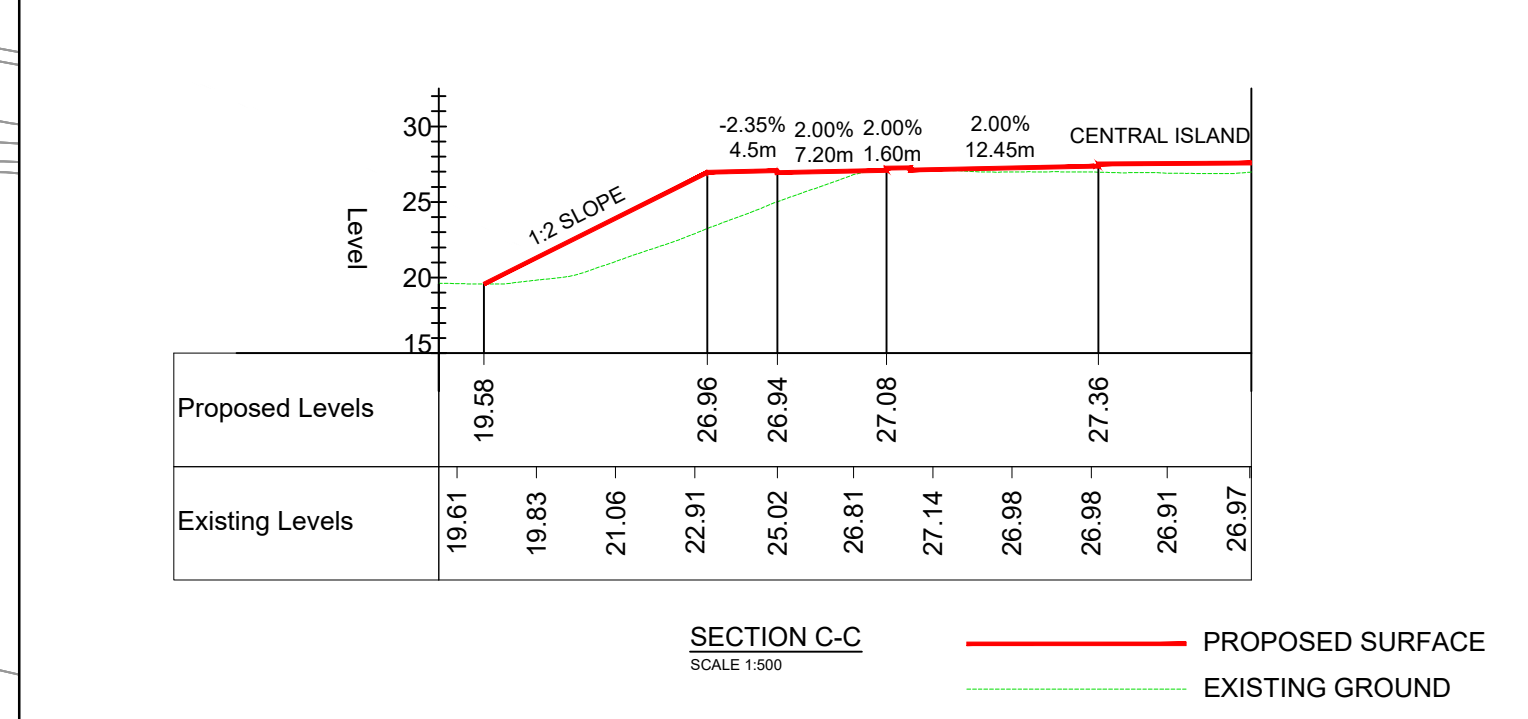
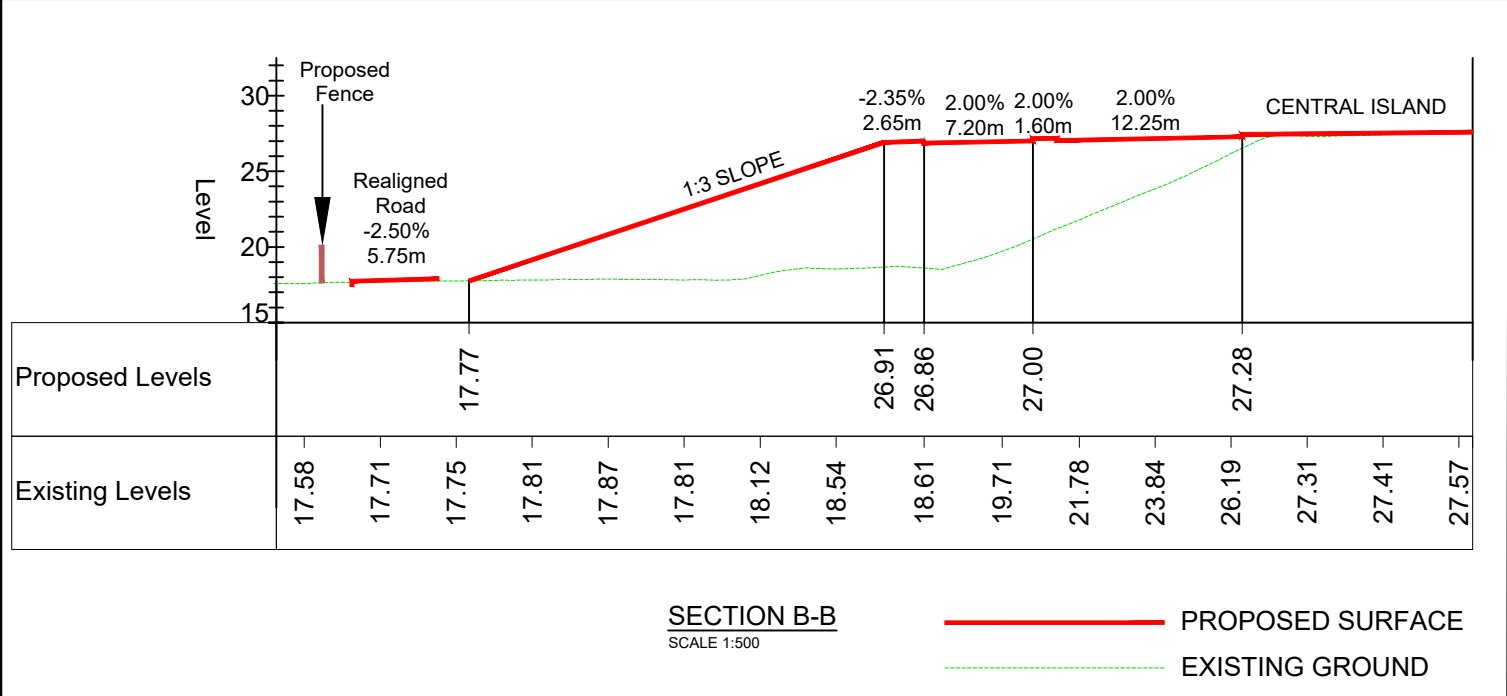
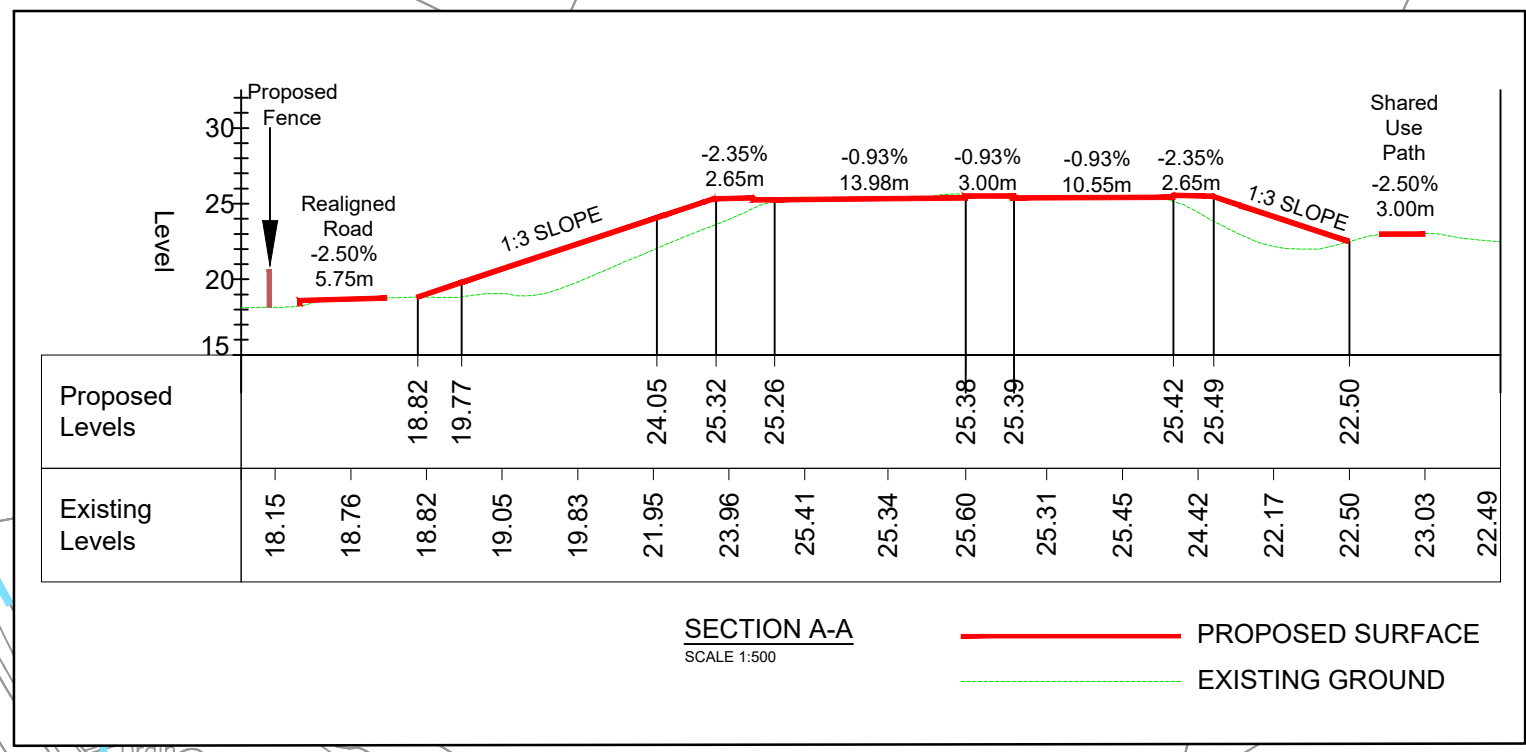
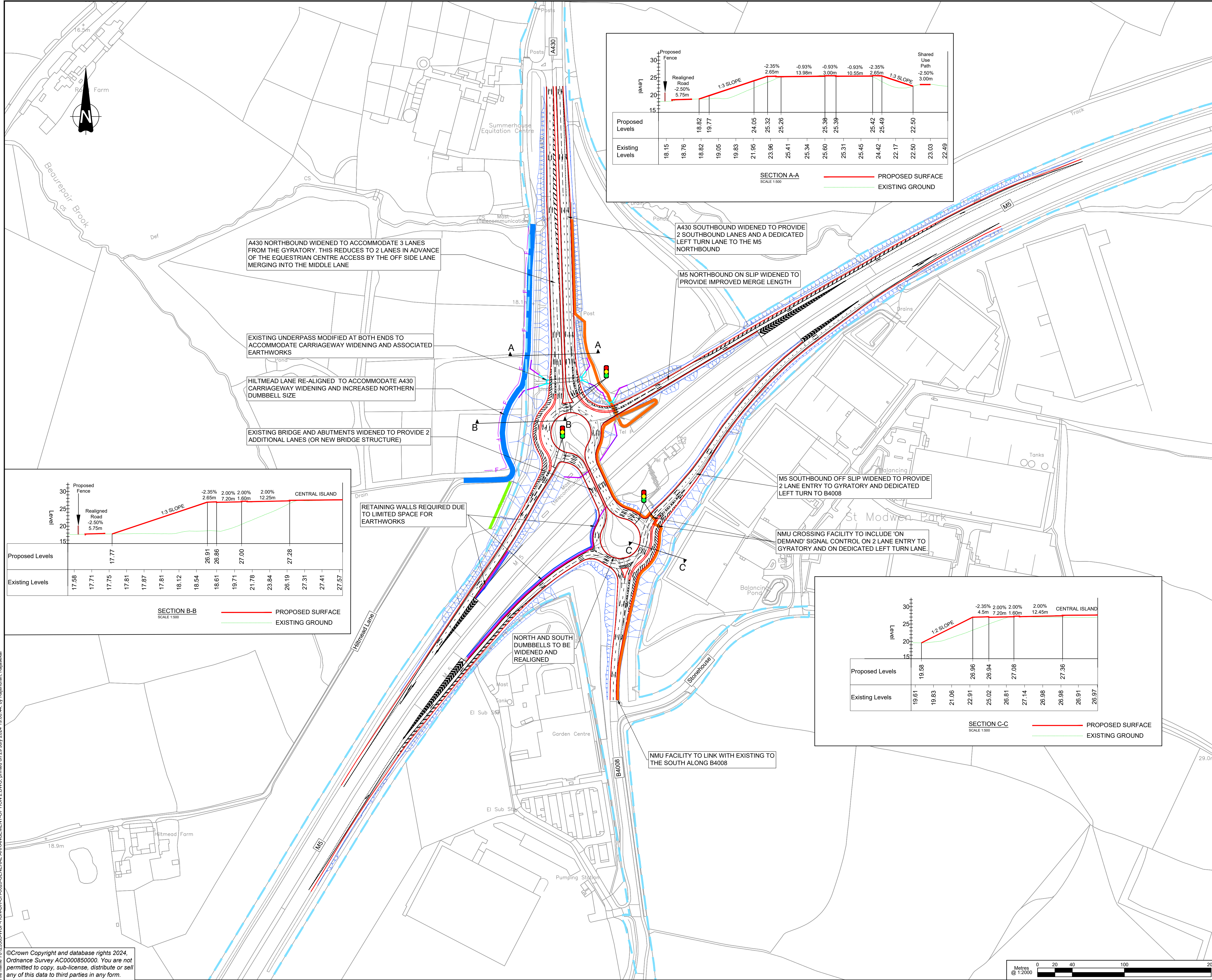
TITLE: **OPTION 1 CONSTRAINTS PLAN SHEET 01 OF 01**

SCALE @ A1: AS SHOWN	CHECKED: PG	APPROVED: GH
PROJECT NO: 70123385	DESIGNED: RR	DRAWN: GM
DATE: 29/07/2024		
DRAWING NO: 70123385-WSP-HGN-DR-CH-0110		REV: P01

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- KEY:**
- HIGHWAY BOUNDARY
 - PROPOSED CARRIAGEWAY
 - PROPOSED ROAD MARKINGS
 - PROPOSED RETAINING WALL
 - REALIGNED HILTSMEAD LANE
 - PROPOSED SHARED USE PATH
 - PROPOSED FENCE
 - REALIGNED FARM TRACK
 - WIDENED / NEW UNDERPASS
 - EXISTING UNDERPASS
 - PROPOSED EARTHWORK
 - SIGNAL CONTROLLED JUNCTION

A430 NORTHBOUND WIDENED TO ACCOMMODATE 3 LANES FROM THE GYRATORY. THIS REDUCES TO 2 LANES IN ADVANCE OF THE EQUESTRIAN CENTRE ACCESS BY THE OFF SIDE LANE MERGING INTO THE MIDDLE LANE

A430 SOUTHBOUND WIDENED TO PROVIDE 2 SOUTHBOUND LANES AND A DEDICATED LEFT TURN LANE TO THE M5 NORTHBOUND

M5 NORTHBOUND ON SLIP WIDENED TO PROVIDE IMPROVED MERGE LENGTH

EXISTING UNDERPASS MODIFIED AT BOTH ENDS TO ACCOMMODATE CARRIAGEWAY WIDENING AND ASSOCIATED EARTHWORKS

HILTSMEAD LANE RE-ALIGNED TO ACCOMMODATE A430 CARRIAGEWAY WIDENING AND INCREASED NORTHERN DUMBBELL SIZE

EXISTING BRIDGE AND ABUTMENTS WIDENED TO PROVIDE 2 ADDITIONAL LANES (OR NEW BRIDGE STRUCTURE)

M5 SOUTHBOUND OFF SLIP WIDENED TO PROVIDE 2 LANE ENTRY TO GYRATORY AND DEDICATED LEFT TURN TO B4008

NMU CROSSING FACILITY TO INCLUDE 'ON DEMAND' SIGNAL CONTROL ON 2 LANE ENTRY TO GYRATORY AND ON DEDICATED LEFT TURN LANE.

RETAINING WALLS REQUIRED DUE TO LIMITED SPACE FOR EARTHWORKS

NORTH AND SOUTH DUMBBELLS TO BE WIDENED AND REALIGNED

NMU FACILITY TO LINK WITH EXISTING TO THE SOUTH ALONG B4008

P01	29/07/2024	GM	FIRST ISSUE	PG	GH
REV	DATE	BY	DESCRIPTION	CHK	APP

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SITE PROJECT: **M5 JUNCTION 12 FEASIBILITY STUDY**

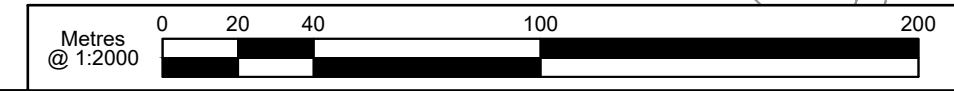
TITLE: **OPTION 2 GENERAL ARRANGEMENT SHEET 01 OF 01**

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PROJECT NO: 70123385	DESIGNED: RR	DRAWN: GM
		DATE: 29/07/2024

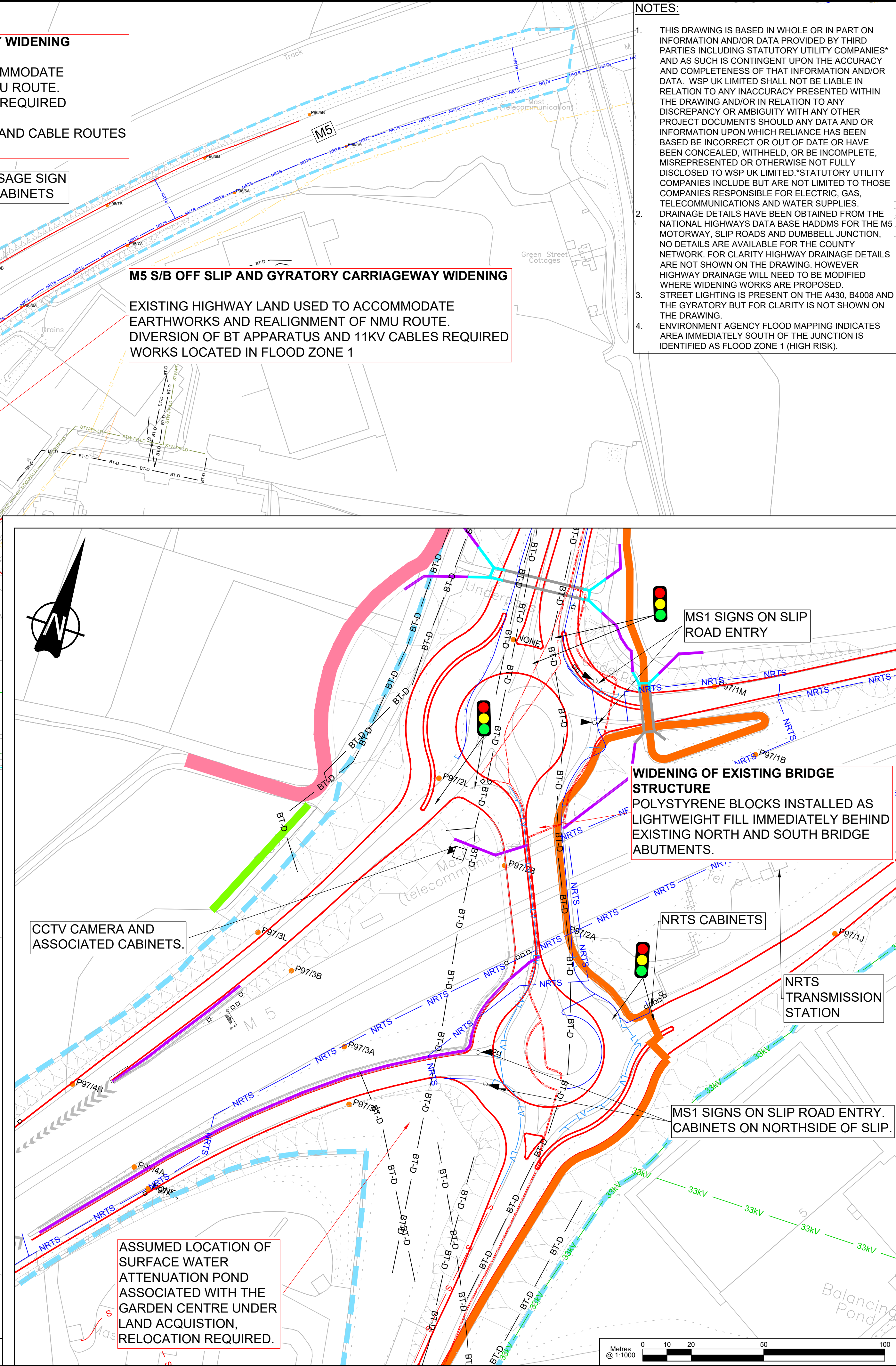
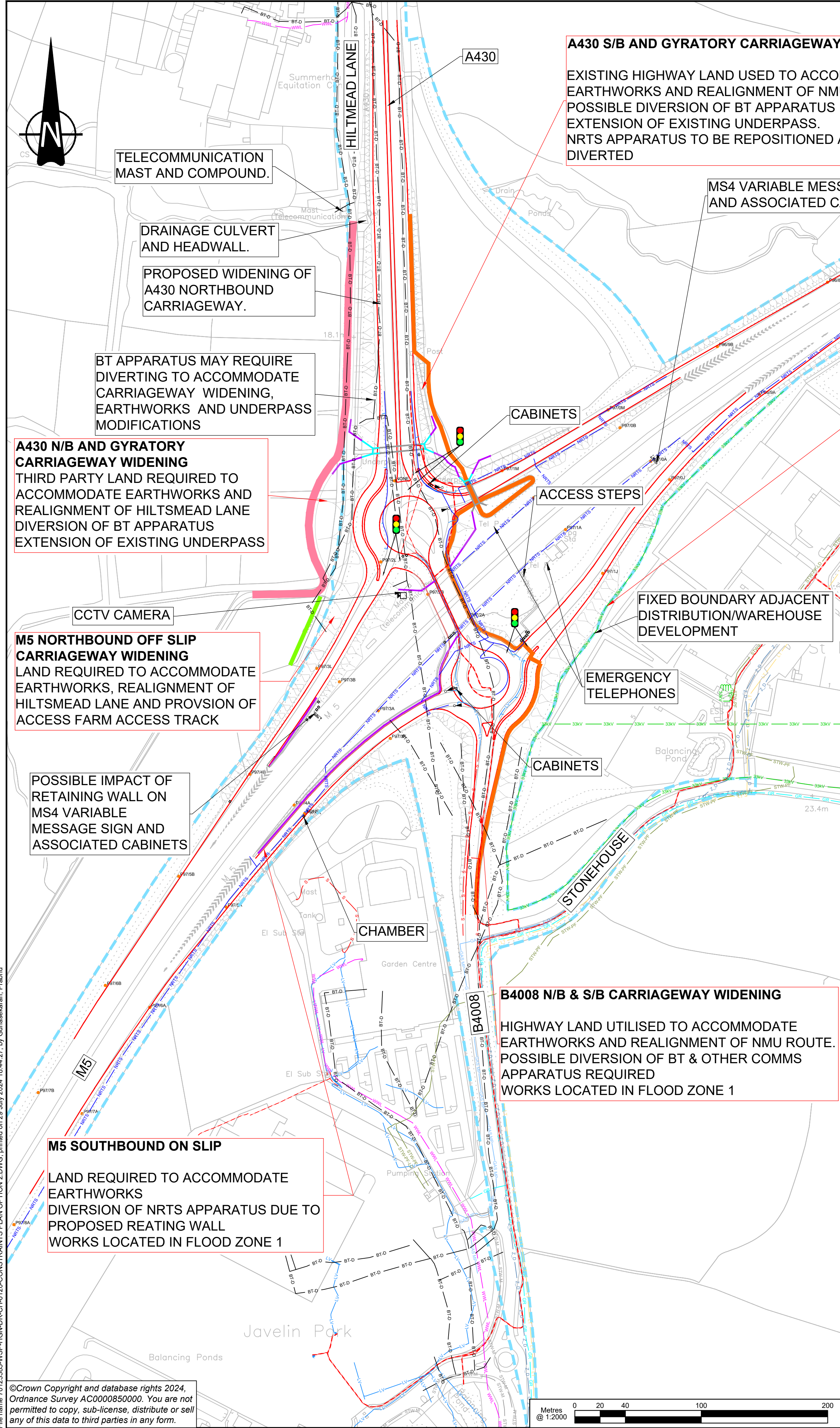
DRAWING NO: **70123385-WSP-HGN-DR-CH-0020** REV: **P01**

File name: 70123385-WSP-HGN-DR-CH-0020-GENERAL ARRANGEMENT-OPTION 2.DWG, printed on 29 July 2024 19:06:44, by Rajendran, Rajasekar

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- ENVIRONMENT AGENCY FLOOD MAPPING INDICATES AREA IMMEDIATELY SOUTH OF THE JUNCTION IS IDENTIFIED AS FLOOD ZONE 1 (HIGH RISK).

KEY:

- BT-D BT DUCT
- P-BT PROPOSED BT NETWORK
- VM-UG-U VIRGIN MEDIA
- VF-TP UNDERGROUND VODAFONE THIRD PARTY
- VF-O UNDERGROUND VODAFONE OWNED
- CF CITY FIBRE
- WWL WALES & WEST LOW
- 11KV 11KV UNDERGROUND
- 33KV 33KV UNDERGROUND
- LV LV
- GR GIGACLEAR ROUTE
- NNU NEOS NETWORK UNDERGROUND
- S SERVICE
- CI-N COIT INFRASTRUCTURE NETWORK
- STW-PF-LD SEVERN-TRENT-PRESSURE FOUL LATERAL DRAIN
- STW-PF SEVERN-TRENT-PRESSURE FOUL
- STW-LD SEVERN-TRENT-LATERAL DRAIN
- STW-M SEVERN-TRENT-WATER MAIN
- GAS MP GAS-MEDIUM PRESSURE
- Z-D ZAYO DUCT
- LT LUMEN TECHNOLOGIES
- NRTS NRTS DUCT
- CCTV CAMERA
- MS4 VARIABLE MESSAGE SIGN
- MS1 SIGN
- CABINETS
- SIGNAL CONTROLLED JUNCTION.
- HIGHWAY BOUNDARY
- PROPOSED CARRIAGEWAY
- PROPOSED ROAD MARKINGS
- PROPOSED RETAINING WALL
- REALIGNED HILTSMEAD LANE
- PROPOSED SHARED USE PATH
- FARM TRACK
- PROPOSED EARTHWORK MARKER POSTS
- XXX ITEMS IDENTIFIED AS SIGNIFICANT CONSTRAINTS

REV	DATE	BY	DESCRIPTION	CHK	APP
P01	29/07/2024	GM	FIRST ISSUE	PG	GH

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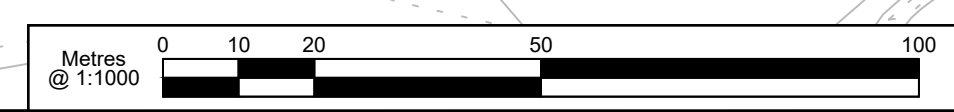
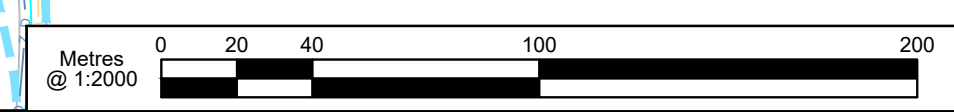
Gloucestershire
COUNTY COUNCIL

SITE/PROJECT: **M5 JUNCTION 12 FEASIBILITY STUDY**

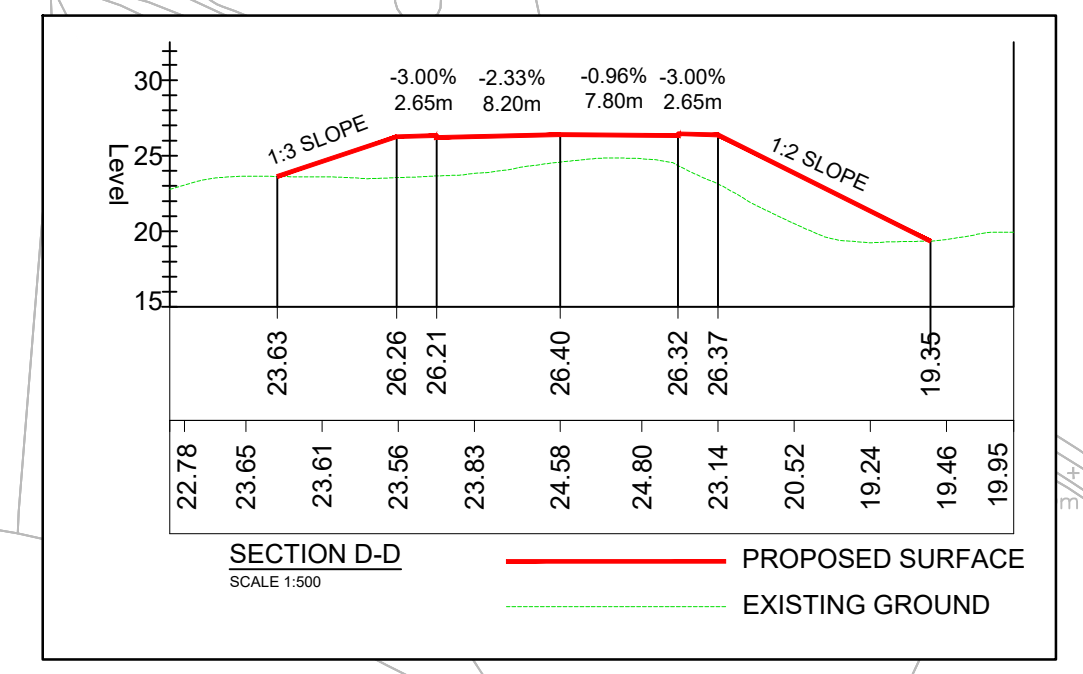
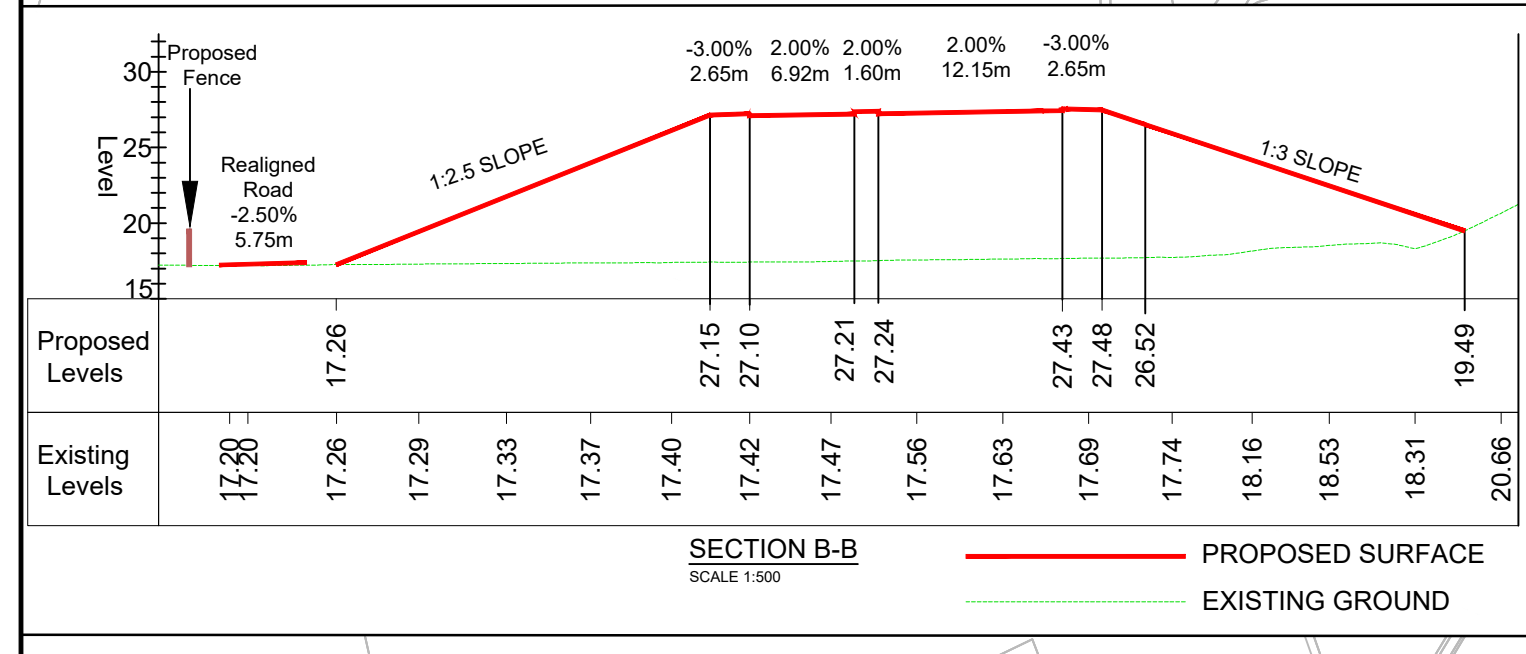
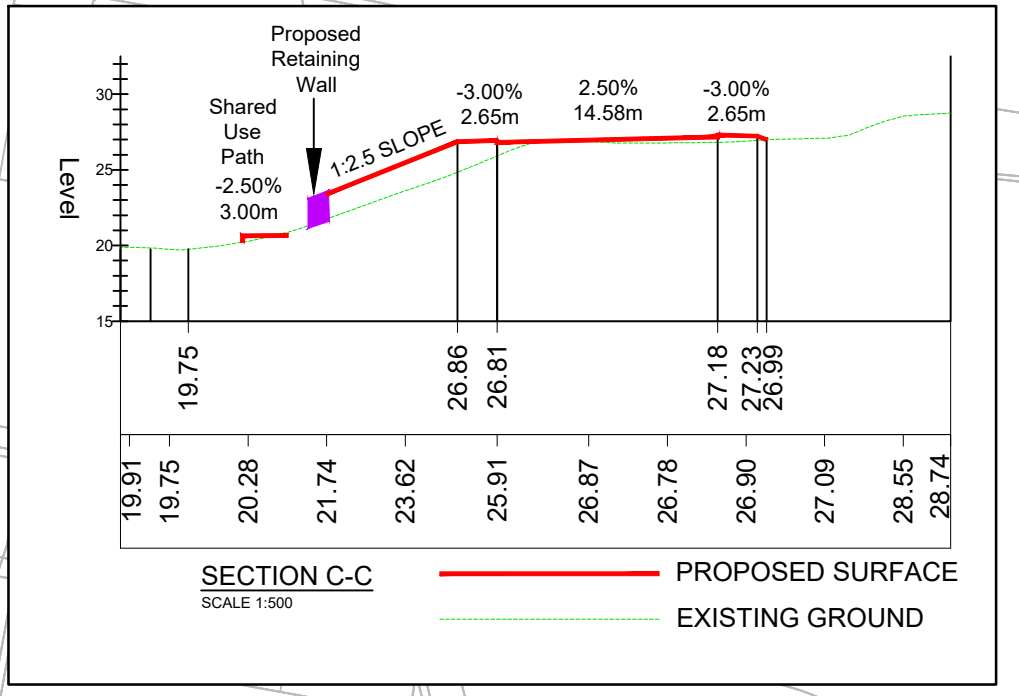
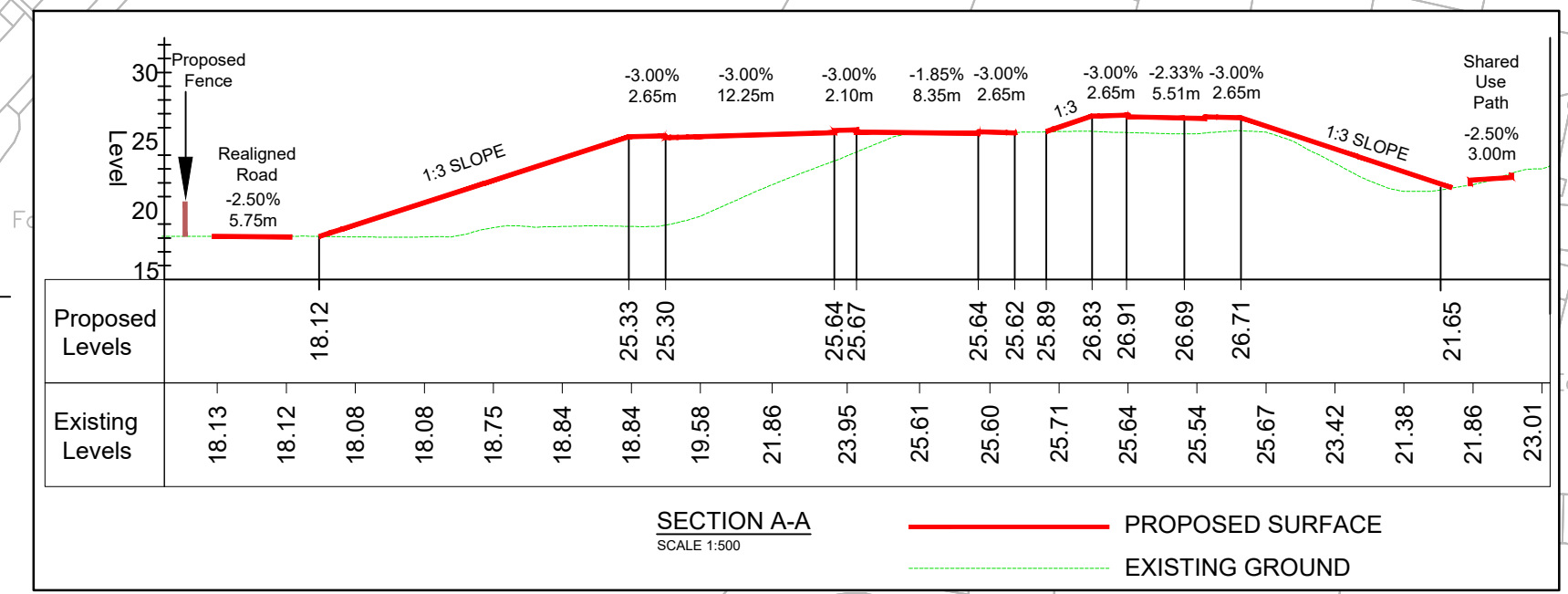
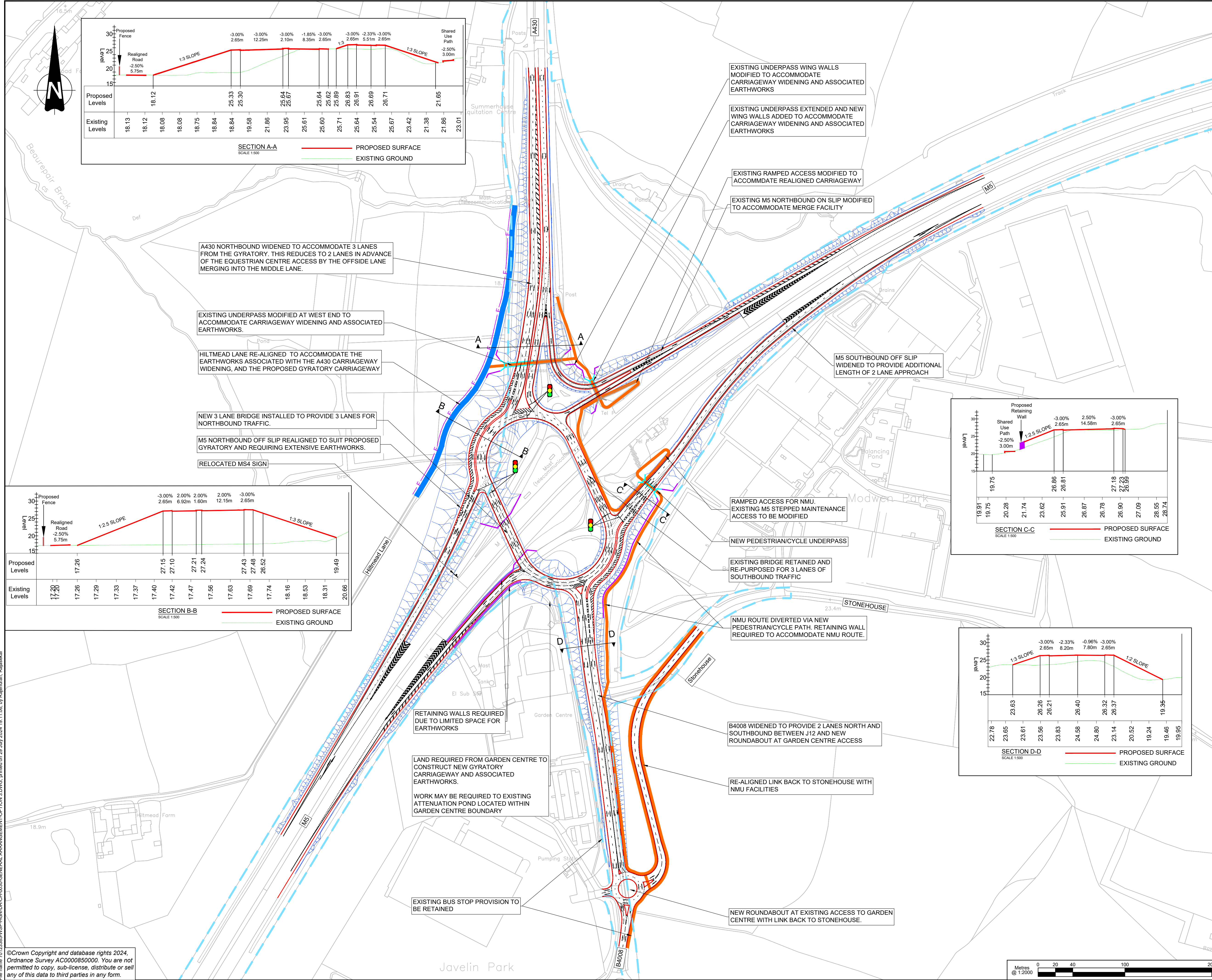
TITLE: **OPTION 2 CONSTRAINTS PLAN SHEET 01 OF 01**

SCALE @ A1:	CHECKED:	APPROVED:
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PROJECT NO:	DESIGNED:	DATE:
70123385	RR	29/07/2024
DRAWING NO:	REV:	
70123385-WSP-HGN-DR-CH-0120	P01	

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- KEY:**
- HIGHWAY BOUNDARY
 - PROPOSED CARRIAGEWAY
 - PROPOSED ROAD MARKINGS
 - PROPOSED RETAINING WALL
 - REALIGNED HILTSMEAD LANE
 - PROPOSED SHARED USE PATH
 - PROPOSED FENCE
 - WIDENED / NEW UNDERPASS
 - EXISTING UNDERPASS
 - PROPOSED EARTHWORK
 - SIGNAL CONTROLLED JUNCTION

A430 NORTHBOUND WIDENED TO ACCOMMODATE 3 LANES FROM THE GYRATORY. THIS REDUCES TO 2 LANES IN ADVANCE OF THE EQUESTRIAN CENTRE ACCESS BY THE OFFSIDE LANE MERGING INTO THE MIDDLE LANE.

EXISTING UNDERPASS MODIFIED AT WEST END TO ACCOMMODATE CARRIAGEWAY WIDENING AND ASSOCIATED EARTHWORKS.

HILTSMEAD LANE RE-ALIGNED TO ACCOMMODATE THE EARTHWORKS ASSOCIATED WITH THE A430 CARRIAGEWAY WIDENING, AND THE PROPOSED GYRATORY CARRIAGEWAY

NEW 3 LANE BRIDGE INSTALLED TO PROVIDE 3 LANES FOR NORTHBOUND TRAFFIC.

M5 NORTHBOUND OFF SLIP REALIGNED TO SUIT PROPOSED GYRATORY AND REQUIRING EXTENSIVE EARTHWORKS.

RELOCATED MS4 SIGN

EXISTING UNDERPASS WING WALLS MODIFIED TO ACCOMMODATE CARRIAGEWAY WIDENING AND ASSOCIATED EARTHWORKS

EXISTING UNDERPASS EXTENDED AND NEW WING WALLS ADDED TO ACCOMMODATE CARRIAGEWAY WIDENING AND ASSOCIATED EARTHWORKS

EXISTING RAMPED ACCESS MODIFIED TO ACCOMMODATE REALIGNED CARRIAGEWAY

EXISTING M5 NORTHBOUND ON SLIP MODIFIED TO ACCOMMODATE MERGE FACILITY

M5 SOUTHBOUND OFF SLIP WIDENED TO PROVIDE ADDITIONAL LENGTH OF 2 LANE APPROACH

RAMPED ACCESS FOR NMU. EXISTING M5 STEPPED MAINTENANCE ACCESS TO BE MODIFIED

NEW PEDESTRIAN/CYCLE UNDERPASS

EXISTING BRIDGE RETAINED AND RE-PURPOSED FOR 3 LANES OF SOUTHBOUND TRAFFIC

NMU ROUTE DIVERTED VIA NEW PEDESTRIAN/CYCLE PATH. RETAINING WALL REQUIRED TO ACCOMMODATE NMU ROUTE.

RETAINING WALLS REQUIRED DUE TO LIMITED SPACE FOR EARTHWORKS

LAND REQUIRED FROM GARDEN CENTRE TO CONSTRUCT NEW GYRATORY CARRIAGEWAY AND ASSOCIATED EARTHWORKS.

WORK MAY BE REQUIRED TO EXISTING ATTENUATION POND LOCATED WITHIN GARDEN CENTRE BOUNDARY

EXISTING BUS STOP PROVISION TO BE RETAINED

B4008 WIDENED TO PROVIDE 2 LANES NORTH AND SOUTHBOUND BETWEEN J12 AND NEW ROUNDABOUT AT GARDEN CENTRE ACCESS

RE-ALIGNED LINK BACK TO STONEHOUSE WITH NMU FACILITIES

NEW ROUNDABOUT AT EXISTING ACCESS TO GARDEN CENTRE WITH LINK BACK TO STONEHOUSE.

P01	29/07/2024	GM	FIRST ISSUE	PG	GH
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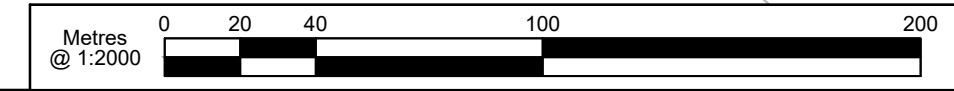
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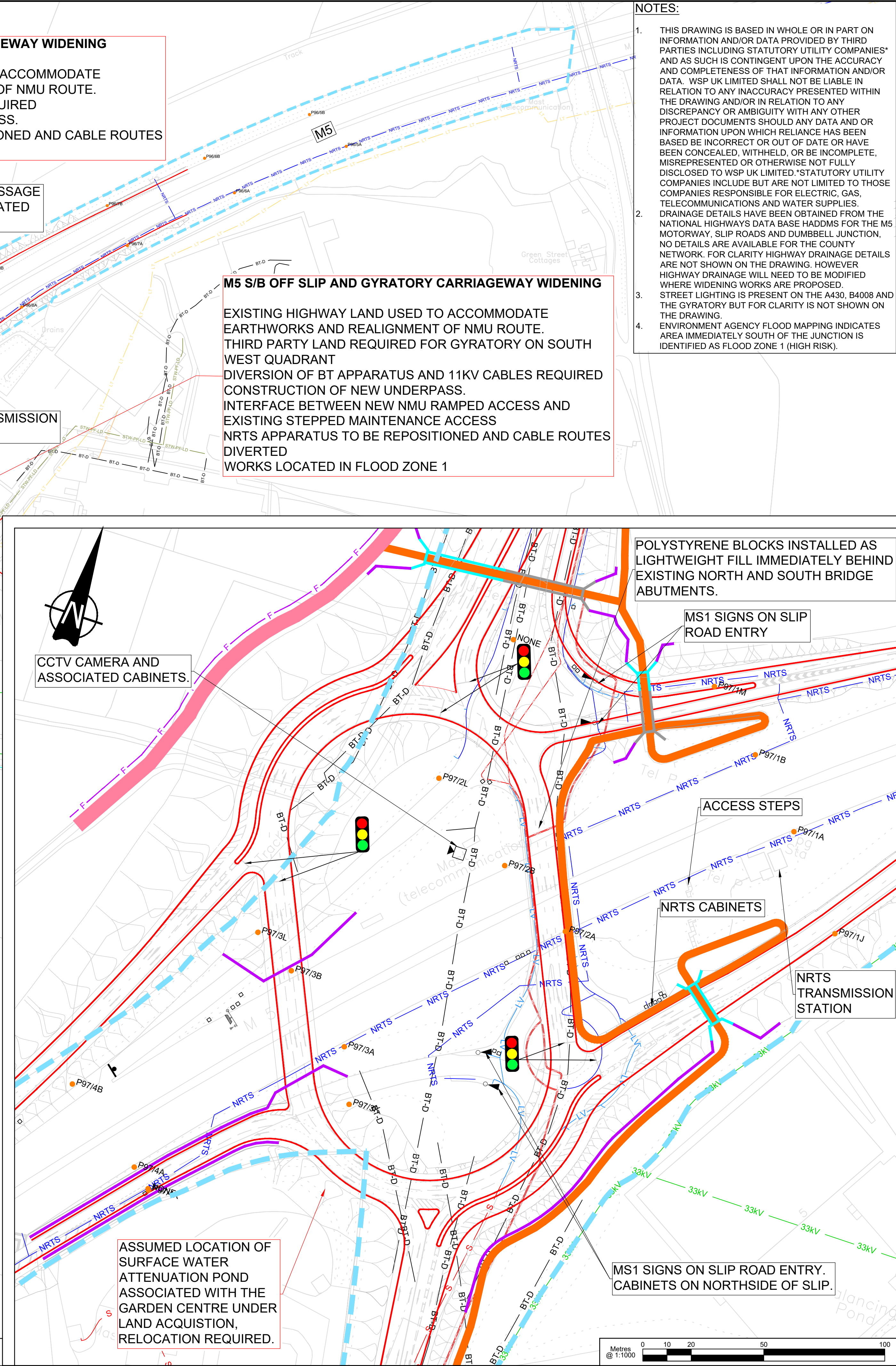
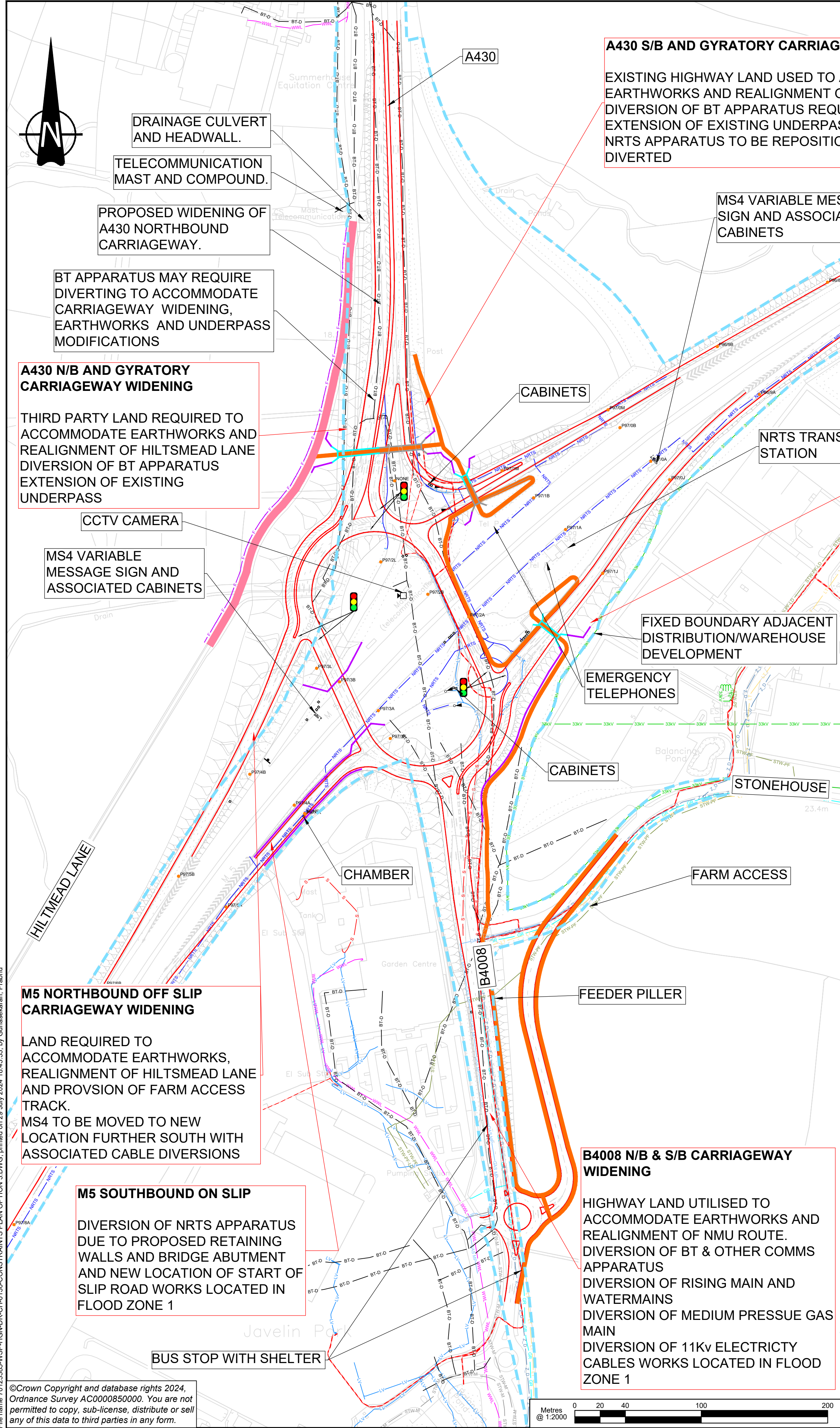
SCALE @ A1: 1:2000	CHECKED: PG	APPROVED: GH
PROJECT NO: 70123385	DESIGNED: RR	DRAWN: GM
		DATE: 29/07/2024

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- XXX ITEMS IDENTIFIED AS SIGNIFICANT CONSTRAINTS

REV	DATE	BY	DESCRIPTION	CHK	APP
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TITLE: OPTION 3 CONSTRAINTS PLAN SHEET 01 OF 01

SCALE @ A1:	CHECKED:	APPROVED:
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PROJECT NO: 70123385	DESIGNED: RR	DRAWN: GM
DATE: 29/07/2024		
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