

# Lower Thames Crossing

## 2.16 Drainage Plans

### Volume C (sheets 21 to 49)

APFP Regulation 5(2)(o)

Infrastructure Planning (Applications:  
Prescribed Forms and Procedure)  
Regulations 2009

Volume 2

**DATE:** October 2022

Planning Inspectorate Scheme Ref: TR010032  
Application Document Ref: TR010032/APP/2.16

**VERSION:** 1.0

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# Lower Thames Crossing

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# 1 Introduction

- 1.1.1 This document is submitted to the Planning Inspectorate on behalf of the Secretary of State in relation to an application made by National Highways (the Applicant) under section 37 of the Planning Act 2008.
- 1.1.2 The application is for the grant of development consent for the A122 Lower Thames Crossing. Should development consent be granted, the draft A122 (Lower Thames Crossing) Development Consent Order (Application Document 3.1) (the draft Order) will be made by the Secretary of State (subject to any modifications considered appropriate).
- 1.1.3 This document comprises part of the suite of application documentation and is included in the application to comply with Regulations 5(2)(o) and Regulation 5(4) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, which require:
- 5(2)(o) ‘any other plans, drawings and sections necessary to describe the proposals for which development consent is sought, showing details of design, external appearance, and the preferred layout of buildings or structures, drainage, surface water management, means of vehicular and pedestrian access, any car parking to be provided, and means of landscaping.*
- 5(4) Where a plan comprises three or more separate sheets a key plan must be provided showing the relationship between the different sheets.’*
- 1.1.4 The purpose of the Drainage Plans is to show the key features of the drainage design of the Project for which development consent is sought. Each sheet shows the relevant drainage design within the area shown. The highways design is shown in the background on the Drainage Plans for illustrative purposes and specifically to provide context and aid understanding of the works.
- 1.1.5 This plan set numbers all the proposed wetland and infiltration basins shown in the design. The works numbers provided are shown in the Works Plans (Application Document 2.6) and defined in Schedule 1 of the draft Order (Application Document 3.1).
- 1.1.6 Each sheet shows the relevant drainage design and works numbers applicable within the area shown. Reference should be made to the next relevant sheet for details of works numbers beyond the cut lines. Other information on the Drainage Plans is shown beyond the cut lines for completeness and context.
- 1.1.7 To ensure sufficient detail and clarity of information, the Drainage Plans (sheets 1 to 49) have been prepared at a scale of 1:2500. The key plan uses a smaller scale than that prescribed in Regulation 5(3) of the 2009 Regulations so that the Project can be represented on a single sheet plan.
- 1.1.8 The Applicant has adopted the same consistent approach for Drainage Plans as has been used for the following:
- Land Plans (Application Document 2.2)
  - Crown Land Plans (Application Document 2.3)

- c. Special Category Land Plans (Application Document 2.4)
  - d. General Arrangement Plans (Application Document 2.5)
  - e. Works Plans (Application Document 2.6)
  - f. Rights of Way and Access Plans (Application Document 2.7)
  - g. Streets Subject to Temporary Restrictions of Use Plans (Application Document 2.8)
  - h. Traffic Regulation Measures Plans (Application Document 2.10)
  - i. Temporary Works Plans (Application Document 2.17)
  - j. Hedgerow and Tree Preservations Order Plans (Application Document 2.18)
- 1.1.9 The information contained on each sheet of the Drainage Plans corresponds with the geographical information shown on each sheet of the aforementioned sets. This is intended to help interested parties understand the inter-relationship between the different sets of plans and to help illustrate the design of the Project more clearly.
- 1.1.10 This approach means that there are some sheets that cover an area of the Project where there is no drainage design. On these sheets, the Applicant has introduced a label stating: 'No design information on this sheet'.
- 1.1.11 The Drainage Plans show the Order Limits and the relevant local authority boundaries. In this plan set, 'the Order Limits' mean the limits of lands to be acquired or used, permanently or temporarily, within which the authorised development may be carried out, as set out in Article 2 of the draft Order (Application Document 3.1).
- 1.1.12 This plan set uses a different legend on all sheets: it shows a consistent base key (presented across the plan set) followed by a sheet-specific key for catchment areas and outfalls. This means that there may be some items shown in the key that are not on a given sheet.
- 1.1.13 As this document has been informed by and is part of the application documentation it should be read alongside the other application documents. In particular, the plans should be read alongside Schedule 1 of the draft Order (Application Document 3.1).
- 1.1.14 To ensure that the file size of this document does not exceed the 50MB limit prescribed by the Planning Inspectorate, the set has been split into three volumes: volume A contains the key plan, volume B the initial sheets 1 to 20 and volume C contains the following sheets, 21 to 49.

## 2 Schedule of Plans included in this application document

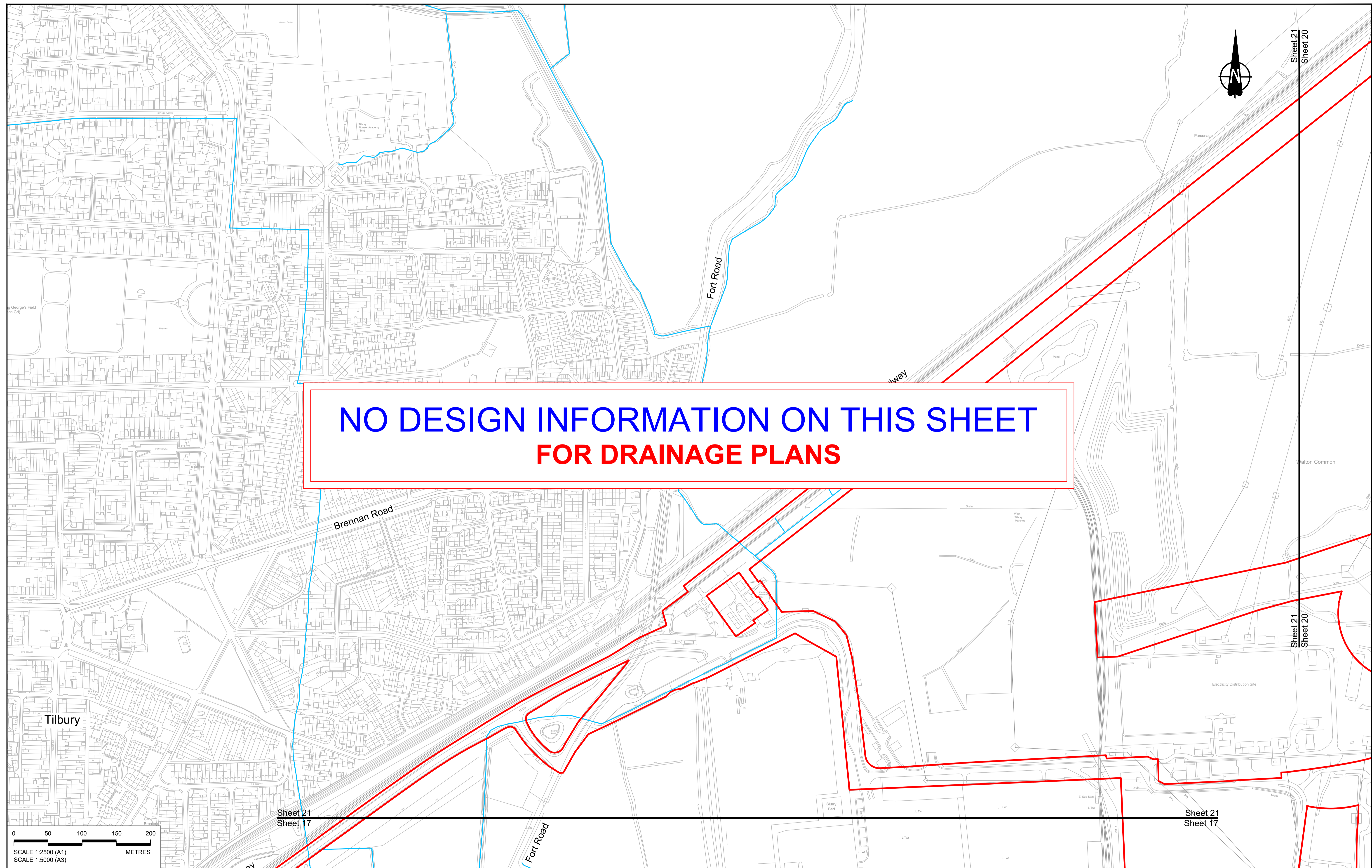
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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 2	TR010032/APP/2.16	P01
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 3	TR010032/APP/2.16	P01
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 4	TR010032/APP/2.16	P01
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 5	TR010032/APP/2.16	P01
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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 7	TR010032/APP/2.16	P01
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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 9	TR010032/APP/2.16	P01
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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 11	TR010032/APP/2.16	P01

Document Title	Document Number	Revision
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 12	TR010032/APP/2.16	P01
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 13	TR010032/APP/2.16	P01
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 14	TR010032/APP/2.16	P01
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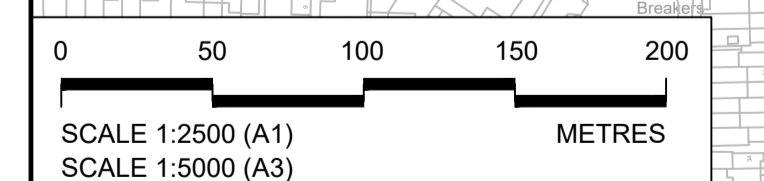
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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 27	TR010032/APP/2.16	P01
DRAINAGE PLANS REGULATION 5(2)(o) SHEET 28	TR010032/APP/2.16	P01
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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 37	TR010032/APP/2.16	P01



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DRAINAGE PLANS REGULATION 5(2)(o) SHEET 38	TR010032/APP/2.16	P01
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FOR DRAINAGE PLANS**

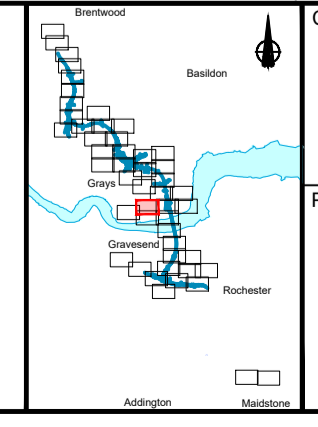


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P01	SB	19/10/2022	DCO Application	LY	BB ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd/ Apprv'd

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- These plans should be read in conjunction with Schedule 1 (Authorise Development) of the Development Consent Order (application document reference TR010032/APP/3.1)
- Where proposed catchment areas boundaries overlap with each other or the Order Limits they are shown adjacent to each other or the Order Limit to provide greater visual clarity but these could extend to the boundary of other catchment areas or the Order Limits as well.

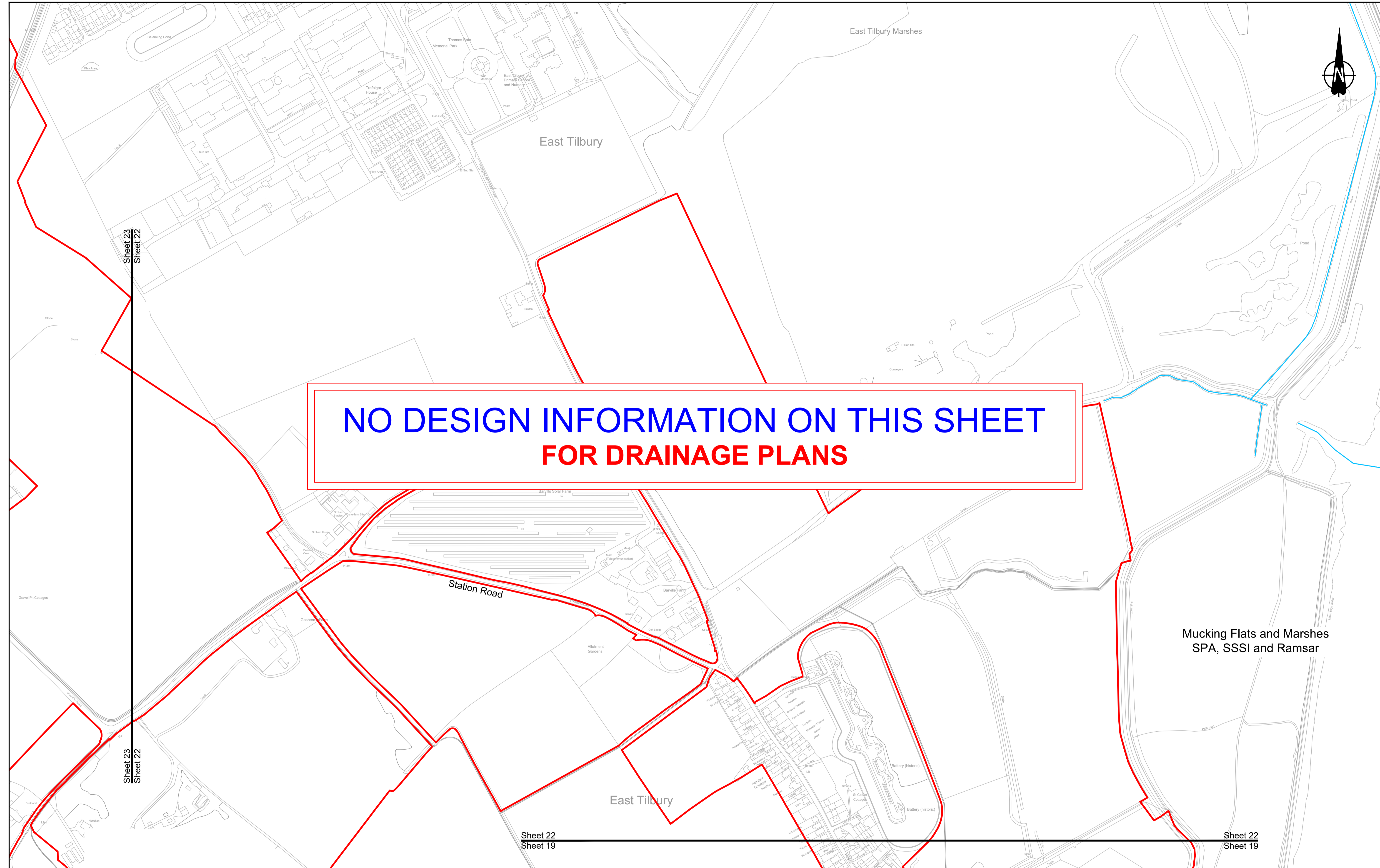
<b>BOUNDARIES</b>		<b>PROPOSED DRAINAGE</b>	
Order Limits	Watercourse diversion	Ditch	Culvert or pipe
Local Authority boundary	Infiltration basin, attenuation pond, infiltration pond	P.S. Pumping station	Containment for contaminated water from tunnel low point sump
Existing watercourse	Swale		



**national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
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Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10018		
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Rev	Status	Rev. Date	Purpose of revision	Drawn	Chkd	Apprv'd
P01	S8	19/10/2022	DCO Application	LY	BB	ASB

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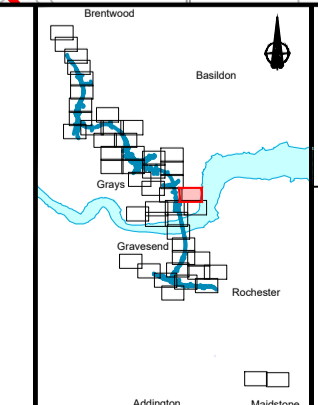
**BOUNDARIES**

- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale

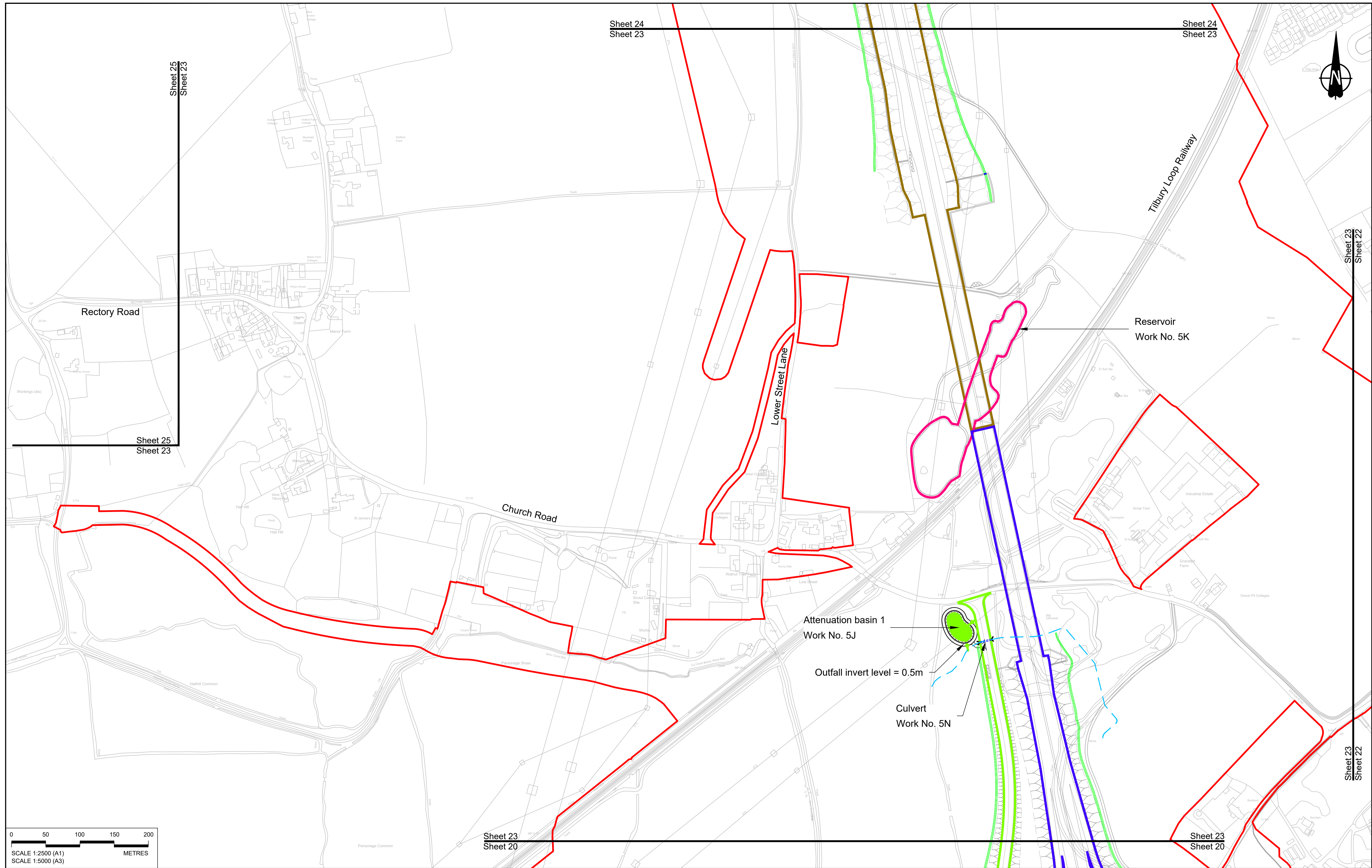
- Ditch
- Culvert or pipe
- P.S. Pumping station
- Containment for contaminated water from tunnel low point sump



Client: **national highways**

Project: **LOWER THAMES CROSSING**

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Application Document Number	TR010032/APP/2.16	Scale	1:2500		
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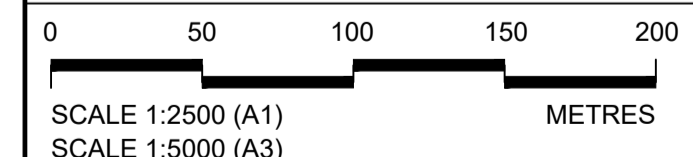
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Rev	Status	Rev. Date	Purpose of revision	Drawn	Chk'd	Appr'd

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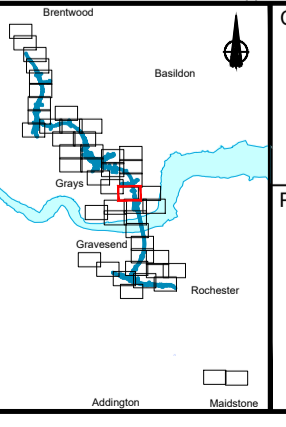
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**LEGEND:**

BOUNDARIES	
	Order Limits
	Local Authority boundary
	Existing watercourse

PROPOSED DRAINAGE	
	Watercourse diversion
	Infiltration basin, attenuation pond, infiltration pond
	Swale
	Ditch
	Culvert or pipe
	Pumping station
	Containment for contaminated water from tunnel low point sump

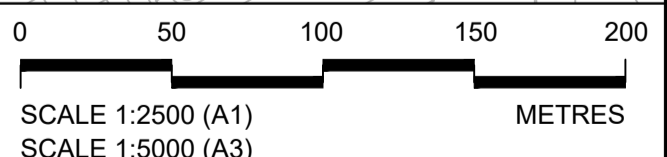
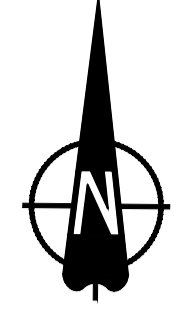
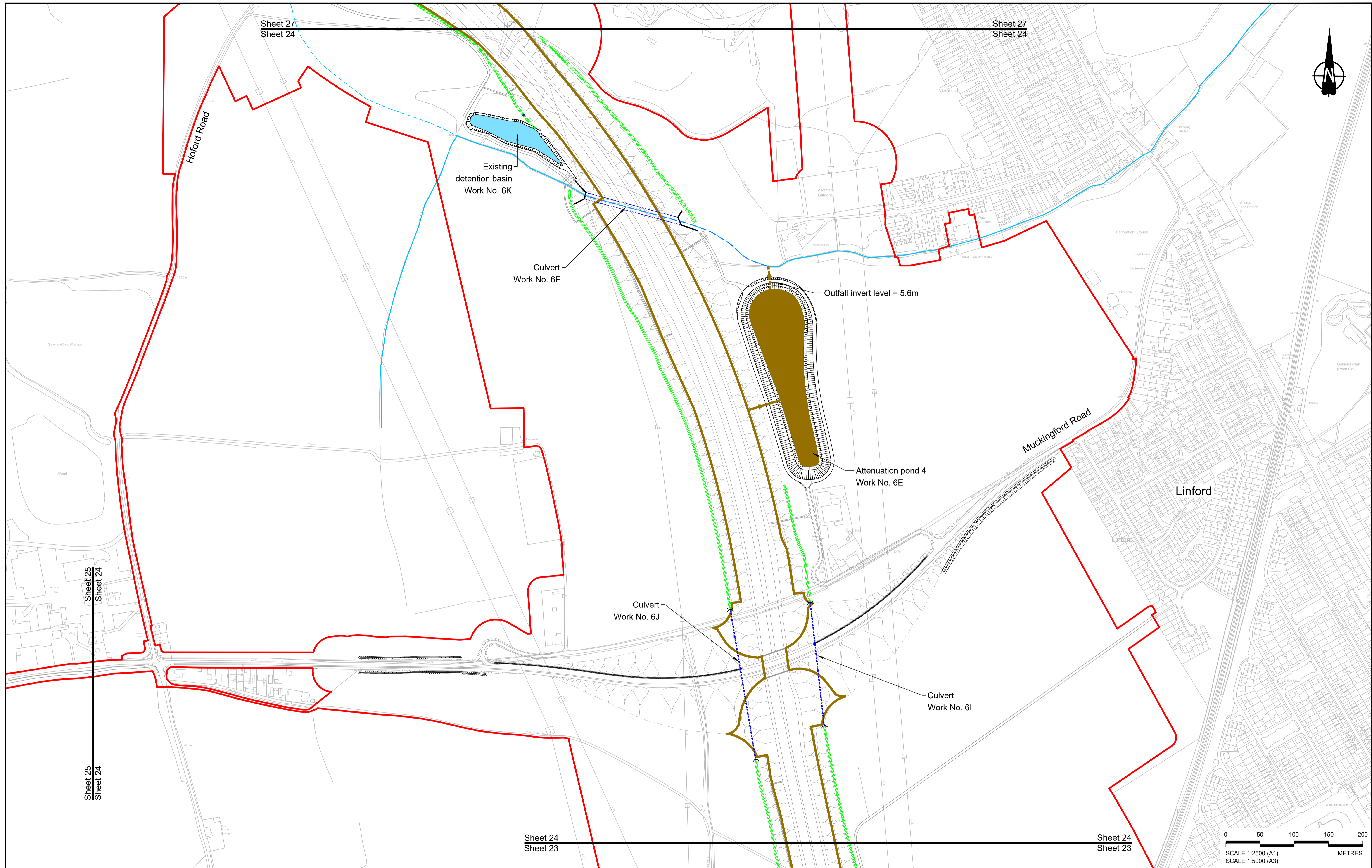
CATCHMENT AREAS AND OUTFALLS	
	Catchment for Work No. 5H and 5I
	Catchment for Work No. 5J
	Outfall to Work No. 5J
	Discharge to existing drainage network or watercourse for Work No. 5J
	Catchment for Work No. 6E
	Reservoir Work No. 5K



Client:

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 23</b>				
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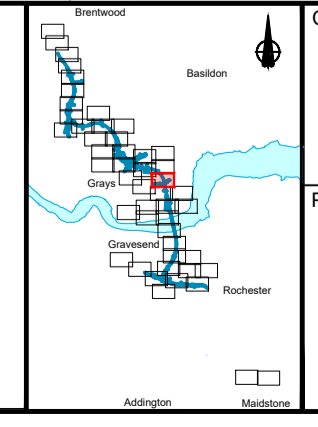
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Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

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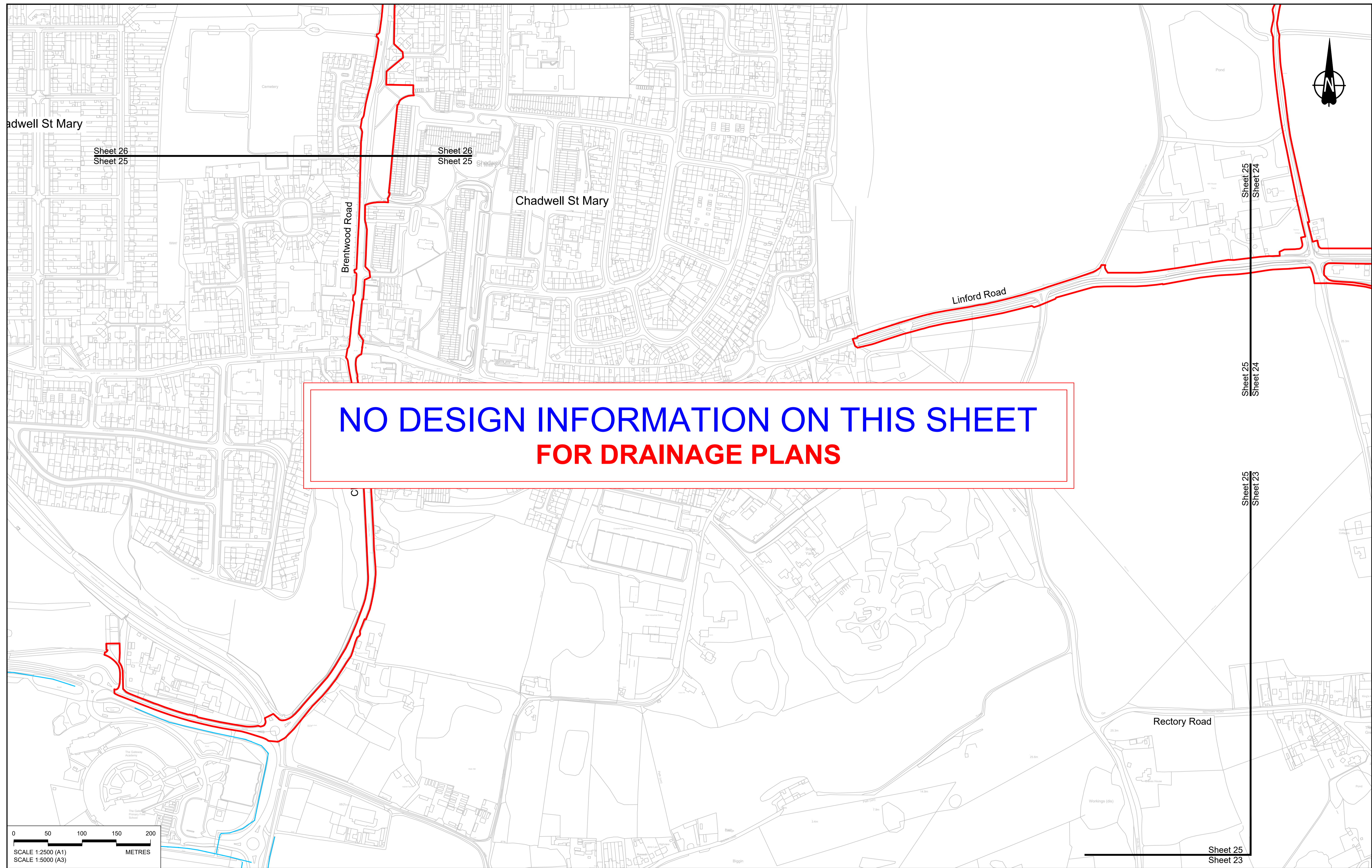
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	Local Authority boundary		Infiltration basin, attenuation pond, infiltration pond		Outfall to Work No. 6E
	Existing watercourse		Swale		Discharge to existing drainage network or watercourse for Work No. 6E
					Pumping station
					Containment for contaminated water from tunnel low point sump
					Culvert or pipe



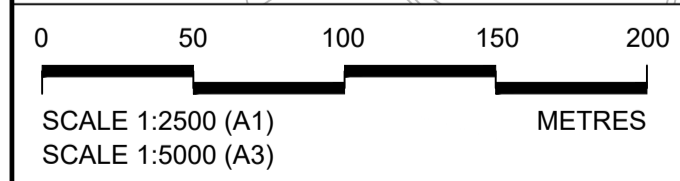
Client: **national highways**

Project: **LOWER THAMES CROSSING**

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Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10021		
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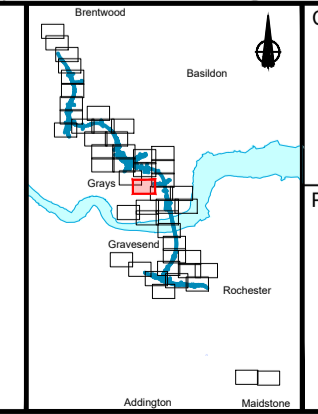
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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd

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**LEGEND:**

<b>BOUNDARIES</b>	<b>PROPOSED DRAINAGE</b>	
Order Limits	Watercourse diversion	Ditch
Local Authority boundary	Infiltration basin, attenuation pond, infiltration pond	Culvert or pipe
Existing watercourse	Swale	P.S. Pumping station
		Containment for contaminated water from tunnel low point sump



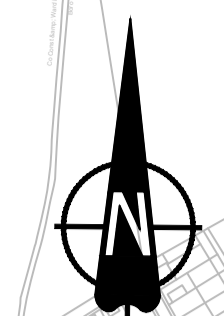
**national highways**

Project: **LOWER THAMES CROSSING**

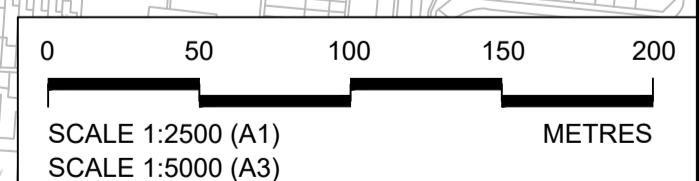
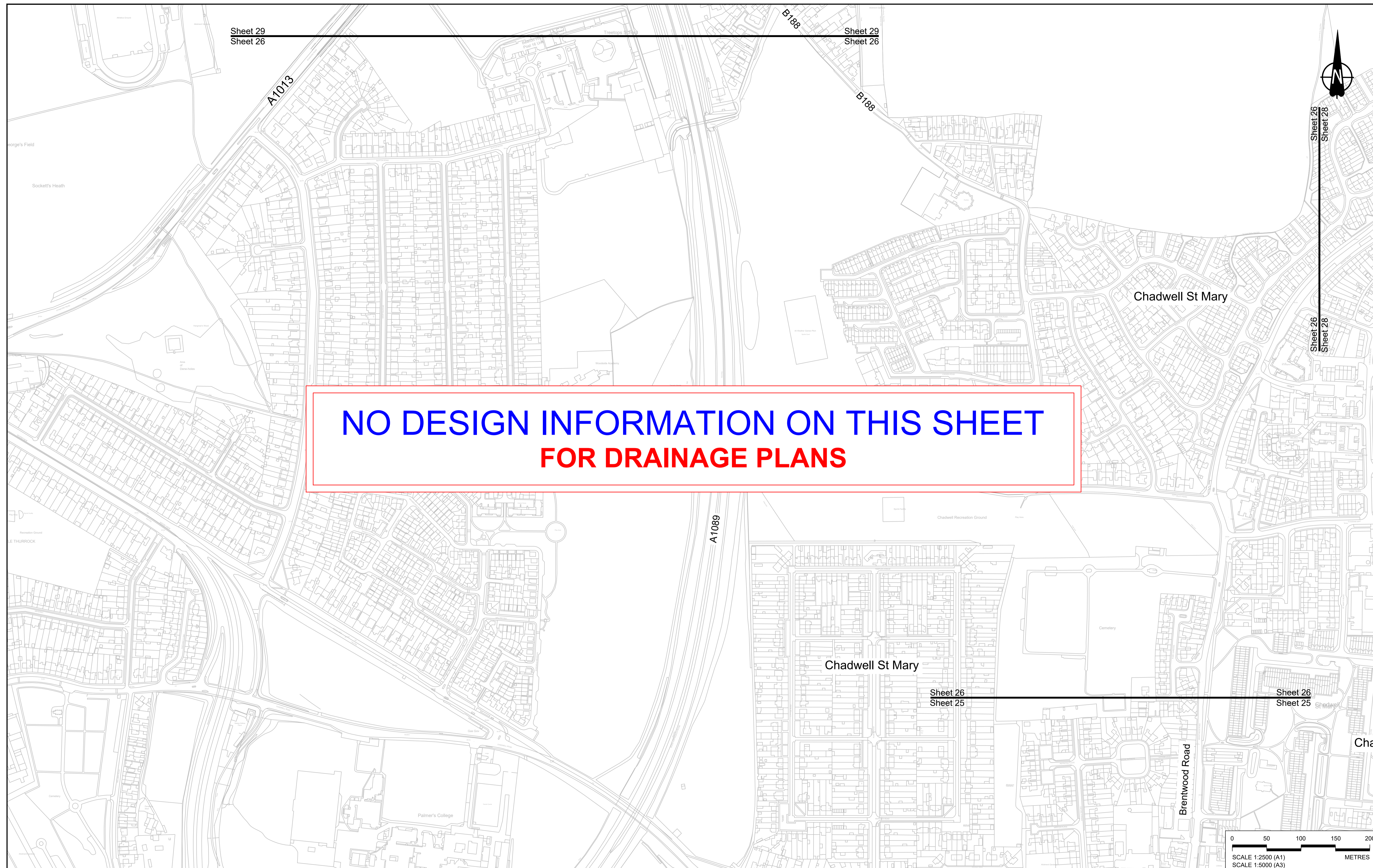
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Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10022		
		Scale	1:2500

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**NO DESIGN INFORMATION ON THIS SHEET  
FOR DRAINAGE PLANS**




P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

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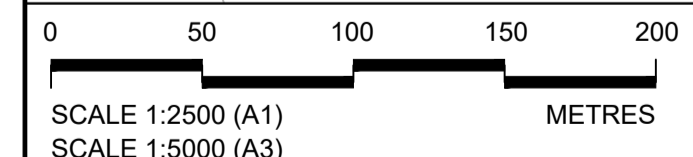
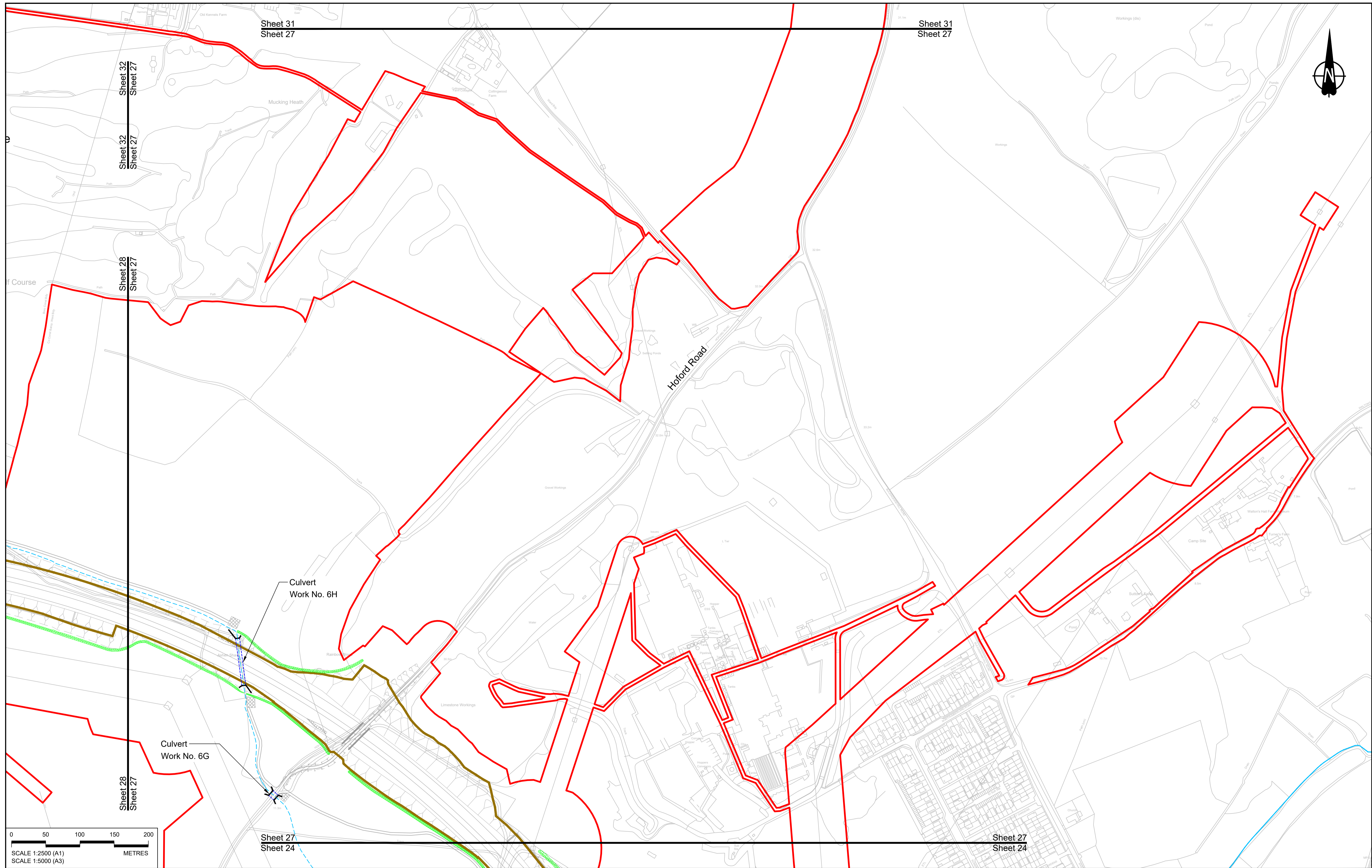
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<b>BOUNDARIES</b>	<b>PROPOSED DRAINAGE</b>	
Order Limits	Watercourse diversion	Ditch
Local Authority boundary	Infiltration basin, attenuation pond, infiltration pond	Culvert or pipe
Existing watercourse	P.S.	Pumping station
	Swale	Containment for contaminated water from tunnel low point sump



**LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 26		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10023		
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**LEGEND:**

**BOUNDARIES**

- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

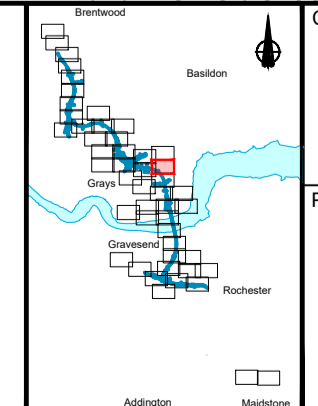
- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale

**CATCHMENT AREAS AND OUTFALLS**

- Ditch
- Culvert or pipe
- P.s.
- Pumping station
- Containment for contaminated water from tunnel low point sump

**CATCHMENT AREAS AND OUTFALLS**

- Catchment for Work No. 6E

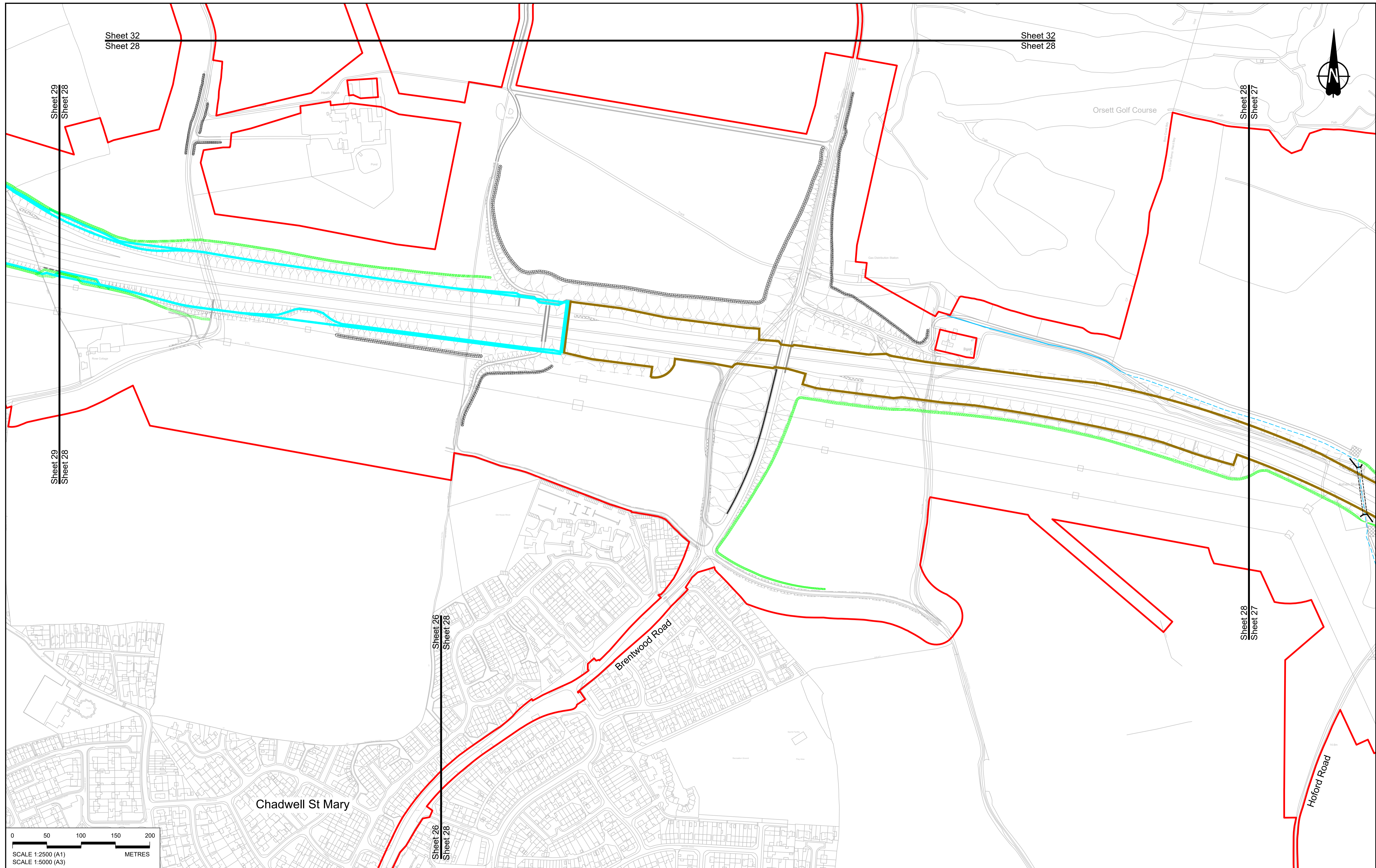


Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 27</b>		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10024		
		Scale	1:2500





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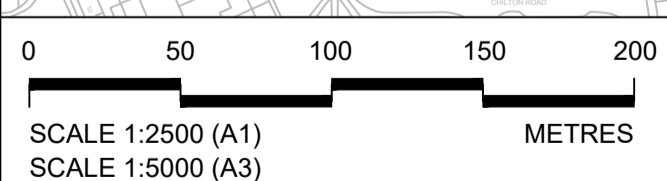
Sheet 29  
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Sheet 27

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Sheet 28

Sheet 28  
Sheet 27

Sheet 26  
Sheet 28



**NOTES:**  
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 3. Where proposed catchment areas boundaries overlap with each other or the Order Limits they are shown adjacent to each other or the Order Limit to provide greater visual clarity but these could extend to the boundary of other catchment areas or the Order Limits as well.

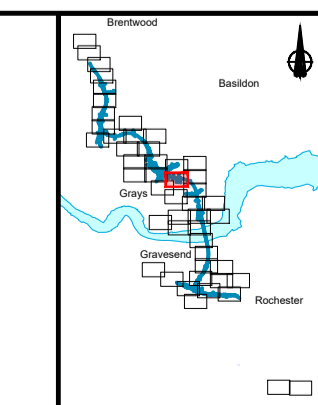
**LEGEND:**  
**BOUNDARIES**  
 - - - Order Limits  
 - - - Local Authority boundary  
 - - - Existing watercourse

**PROPOSED DRAINAGE**  
 - - - Watercourse diversion  
 [Symbol] Infiltration basin, attenuation pond, infiltration pond  
 [Symbol] Swale

[Symbol] Ditch  
 [Symbol] Culvert or pipe  
 [Symbol] P.S. Pumping station  
 [Symbol] Containment for contaminated water from tunnel low point sump

**CATCHMENT AREAS AND OUTFALLS**  
 [Symbol] Catchment for Work No. 6E  
 [Symbol] Catchment for Work No. 8F

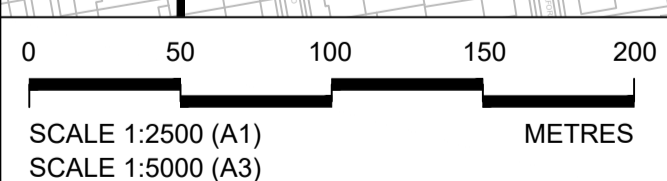
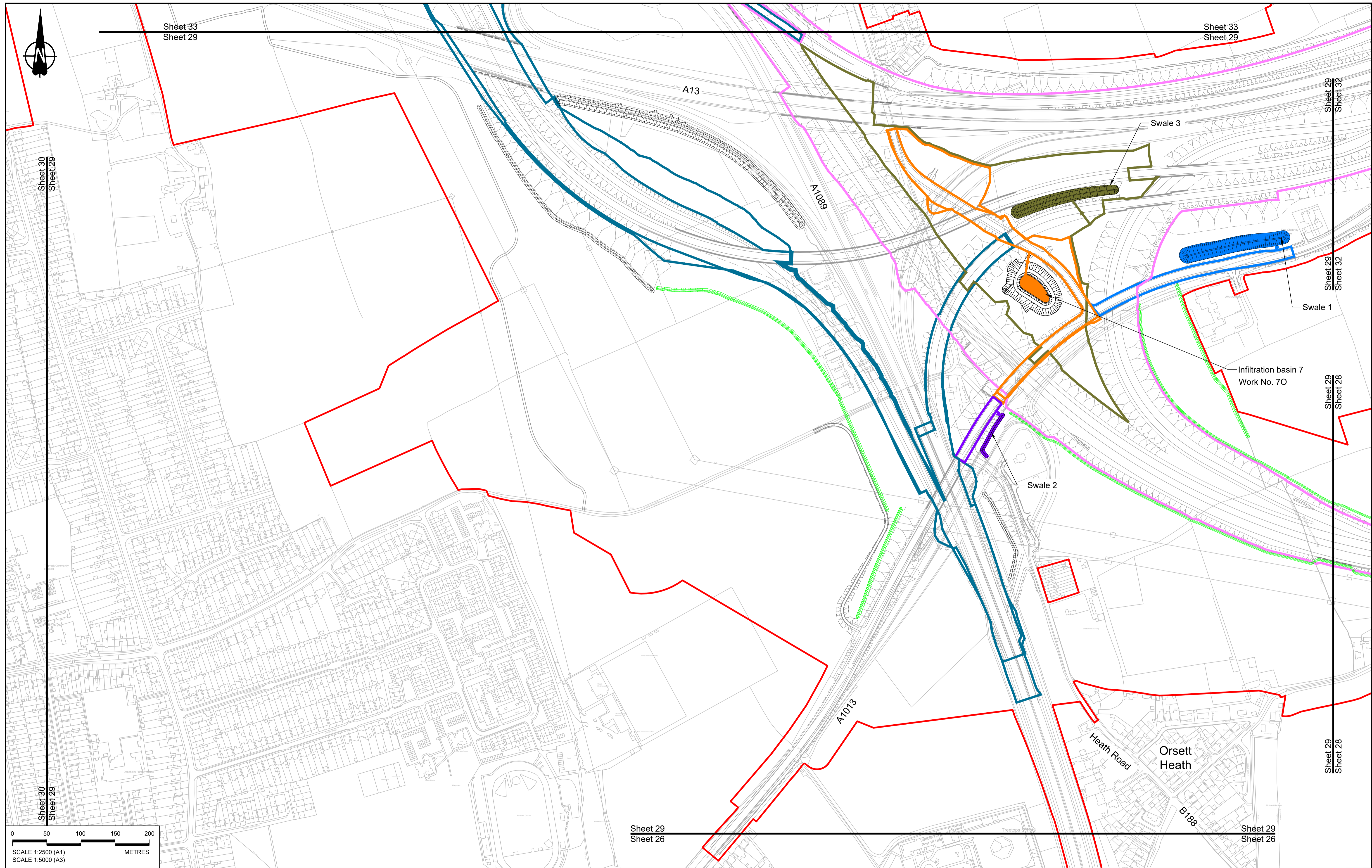
P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd



Client: **national highways**

Project: **LOWER THAMES CROSSING**

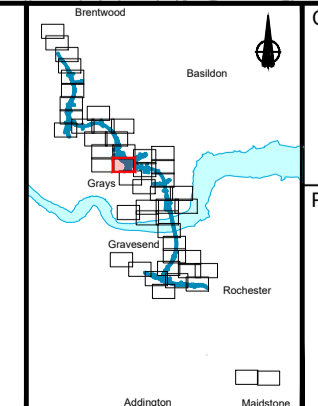
Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 28</b>				
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10025				



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<b>NOTES:</b> 1. The proposed works shown are illustrative only and will be subject to change as part of detailed design development. Any changes will be limited to being within the constraints included in the Development Consent Order (application document reference TR010032/APP/3.1). 2. These plans should be read in conjunction with Schedule 1 (Authorise Development) of the Development Consent Order (application document reference TR010032/APP/3.1). 3. Where proposed catchment areas boundaries overlap with each other or the Order Limits they are shown adjacent to each other or the Order Limit to provide greater visual clarity but these could extend to the boundary of other catchment areas or the Order Limits as well.

<b>BOUNDARIES</b> Order Limits Local Authority boundary Existing watercourse	<b>PROPOSED DRAINAGE</b> Watercourse diversion Infiltration basin, attenuation pond, infiltration pond Swale	Ditch Culvert or pipe P.S. Pumping station Containment for contaminated water from tunnel low point sump	<b>CATCHMENT AREAS AND OUTFALLS</b> Catchment for Work No. 8F Catchment for Work No. 8E Catchment for Work No. 70 Outfall to Work No. 70 Outfall to Swale 1 Catchment for Swale 1 Outfall to Swale 2 Catchment for Swale 2 Outfall to Swale 3 Catchment for Swale 3
---	---	---	---

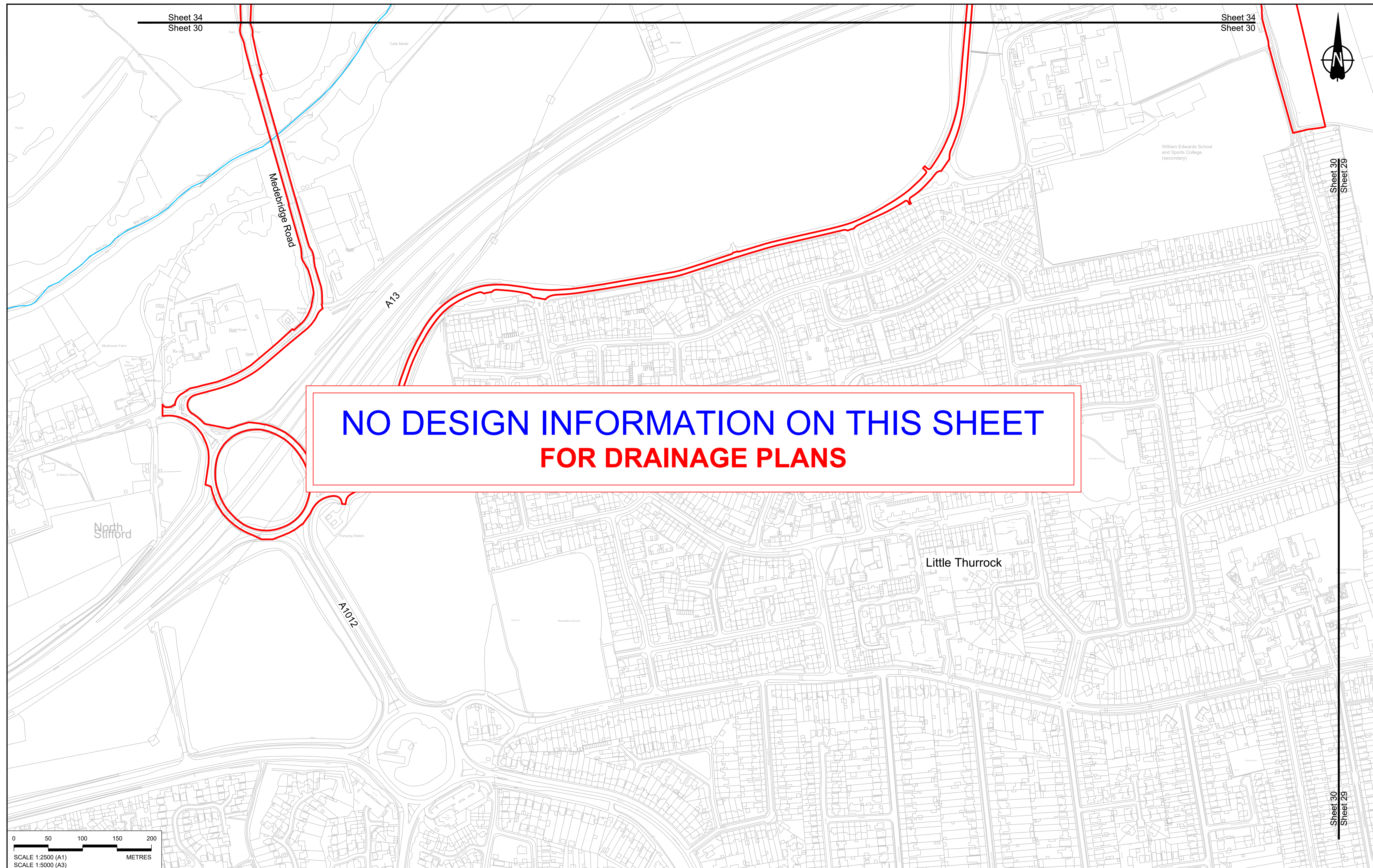
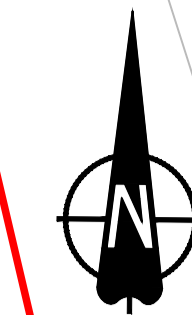
<b>LEGEND:</b> Order Limits Local Authority boundary Existing watercourse	<b>PROPOSED DRAINAGE</b> Watercourse diversion Infiltration basin, attenuation pond, infiltration pond Swale	Ditch Culvert or pipe P.S. Pumping station Containment for contaminated water from tunnel low point sump	<b>CATCHMENT AREAS AND OUTFALLS</b> Catchment for Work No. 8F Catchment for Work No. 8E Catchment for Work No. 70 Outfall to Work No. 70 Outfall to Swale 1 Catchment for Swale 1 Outfall to Swale 2 Catchment for Swale 2 Outfall to Swale 3 Catchment for Swale 3
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Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 29		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10026		
Scale	1:2500		



**NO DESIGN INFORMATION ON THIS SHEET  
FOR DRAINAGE PLANS**



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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

**NOTES:**

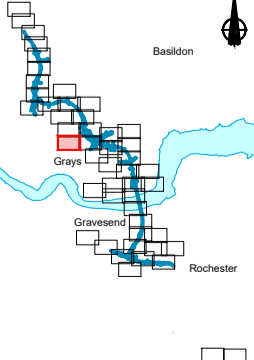
- The proposed works shown are illustrative only and will be subject to change as part of detailed design development. Any changes will be limited to being within the constraints included in the Development Consent Order (application document reference TR010032/APP/3.1).
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**LEGEND:**

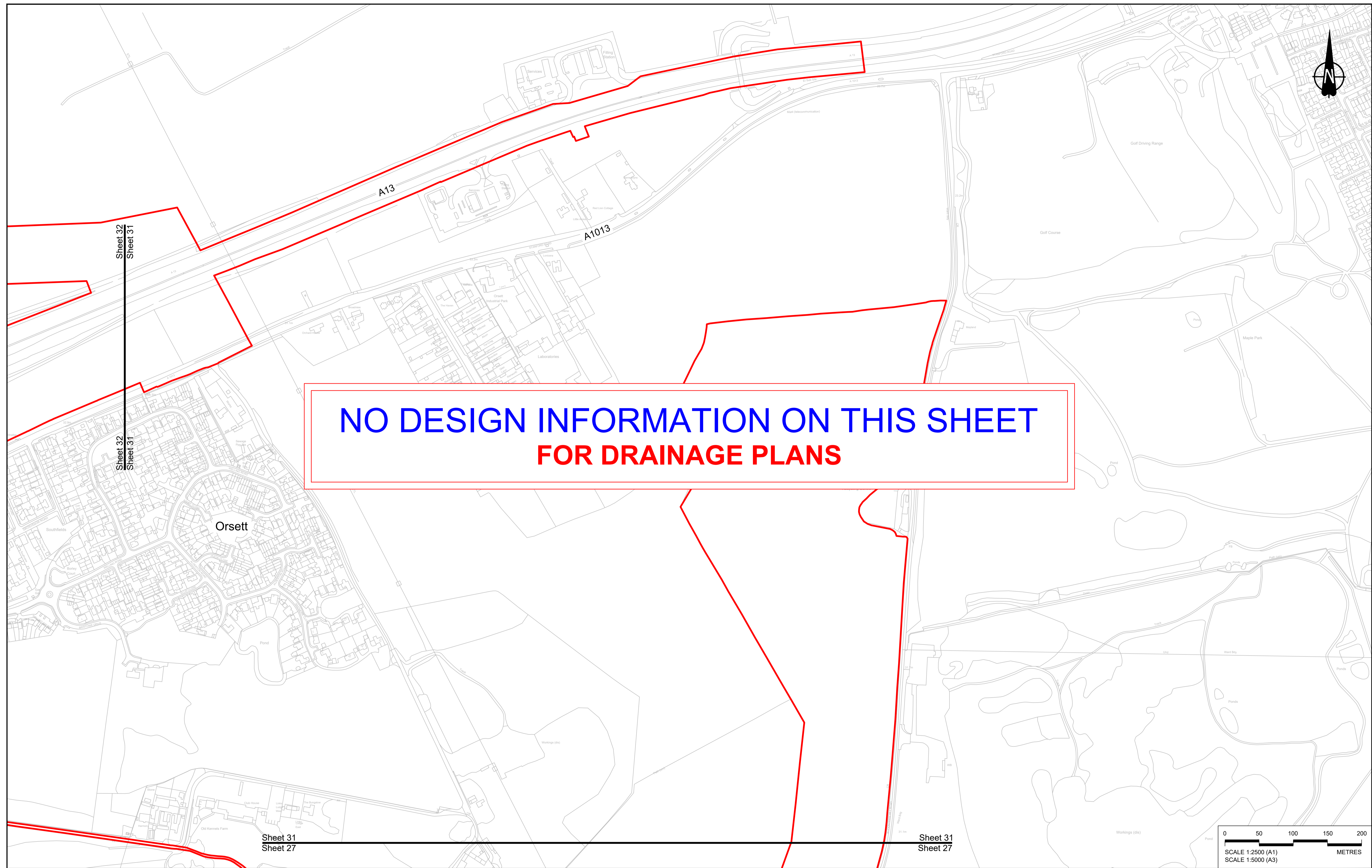
<b>BOUNDARIES</b>	<b>PROPOSED DRAINAGE</b>	
Order Limits	Watercourse diversion	Ditch
Local Authority boundary	Infiltration basin, attenuation pond, infiltration pond	Culvert or pipe
Existing watercourse	Swale	P.S. Pumping station
		Containment for contaminated water from tunnel low point sump



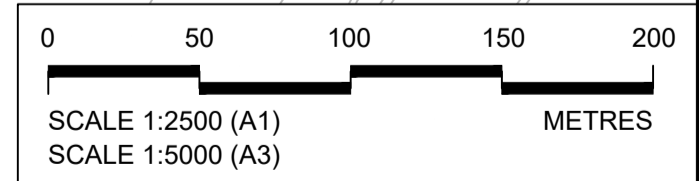
**LOWER THAMES CROSSING**



Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 30		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10027		
		Scale	1:2500



**NO DESIGN INFORMATION ON THIS SHEET  
FOR DRAINAGE PLANS**

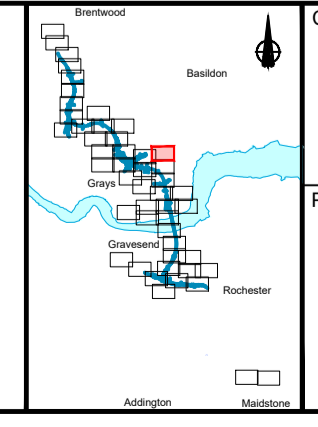


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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

**NOTES:**

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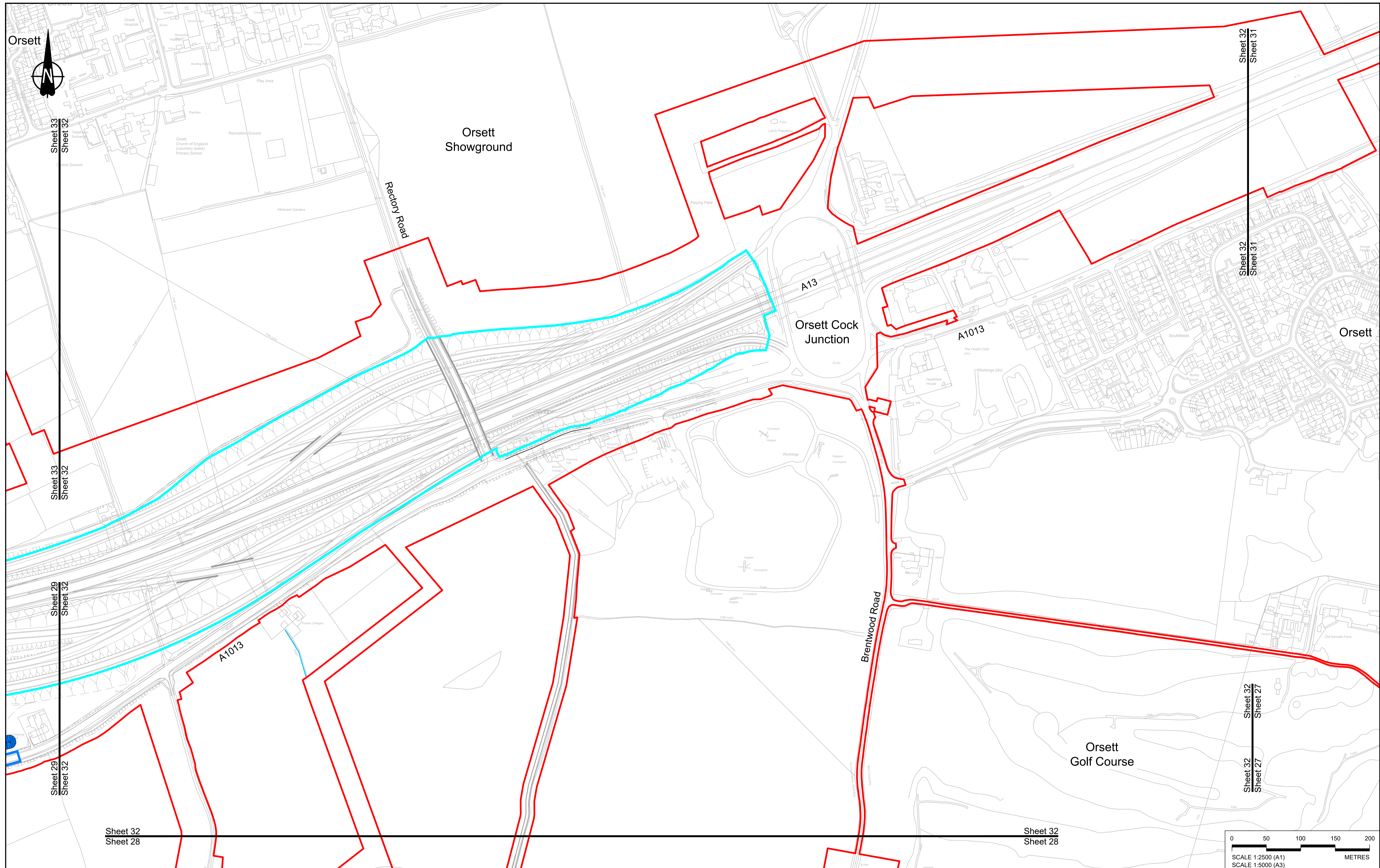
<b>LEGEND:</b>		<b>BOUNDARIES</b>		<b>PROPOSED DRAINAGE</b>	
	Order Limits		Local Authority boundary		Watercourse diversion
	Existing watercourse				Ditch
					Culvert or pipe
					P.s. Pumping station
					Containment for contaminated water from tunnel low point sump
			Infiltration basin, attenuation pond, infiltration pond		Swale



**national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 31		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10028		
		Scale	1:2500



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P01	SB	19/10/2022	DCO Application	LY	BB ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd / Apprv'd

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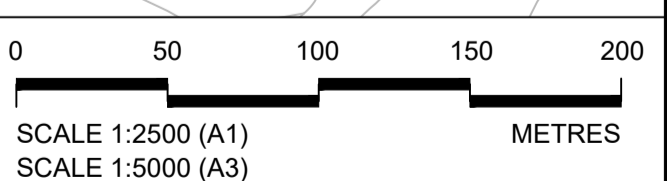
**LEGEND:**

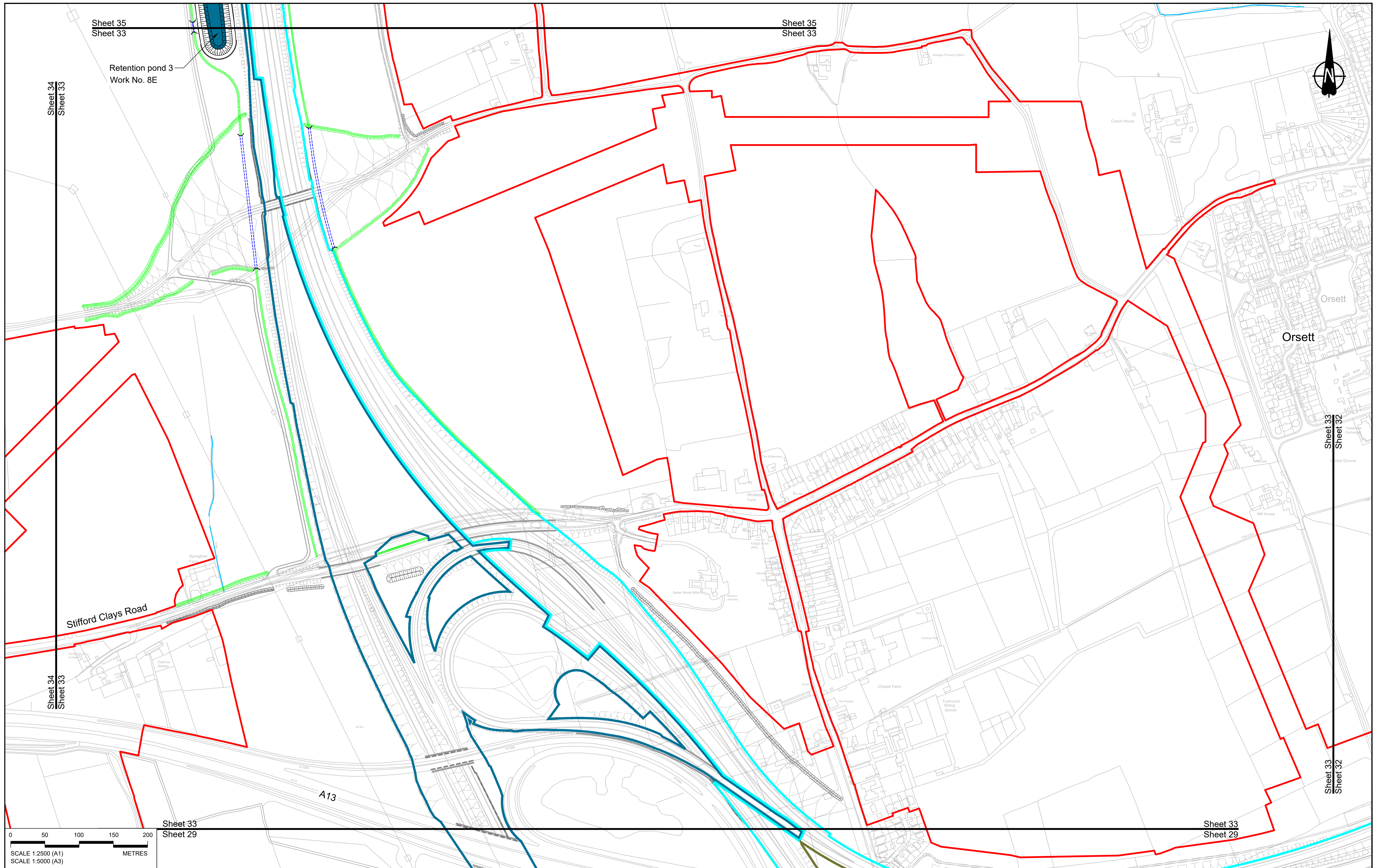
<b>BOUNDARIES</b>	<b>PROPOSED DRAINAGE</b>	<b>CATCHMENT AREAS AND OUTFALLS</b>
— Order Limits	--- Watercourse diversion	--- Catchment for Work No. 8F
- - - Local Authority boundary	--- Infiltration basin, attenuation pond, infiltration pond	--- Ditch
--- Existing watercourse	--- Swale	--- Culvert or pipe
		--- P.S. Pumping station
		--- Containment for contaminated water from tunnel low point sump

Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 32</b>		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10029		
		Scale	1:2500





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Retention pond 3  
Work No. 8E

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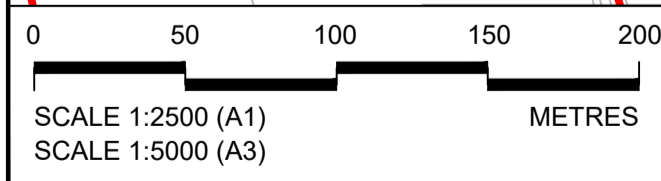
Sheet 33  
Sheet 32

Stifford Clays Road

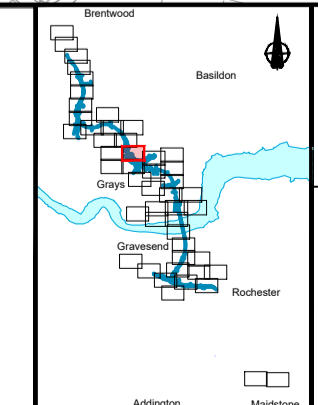
A13

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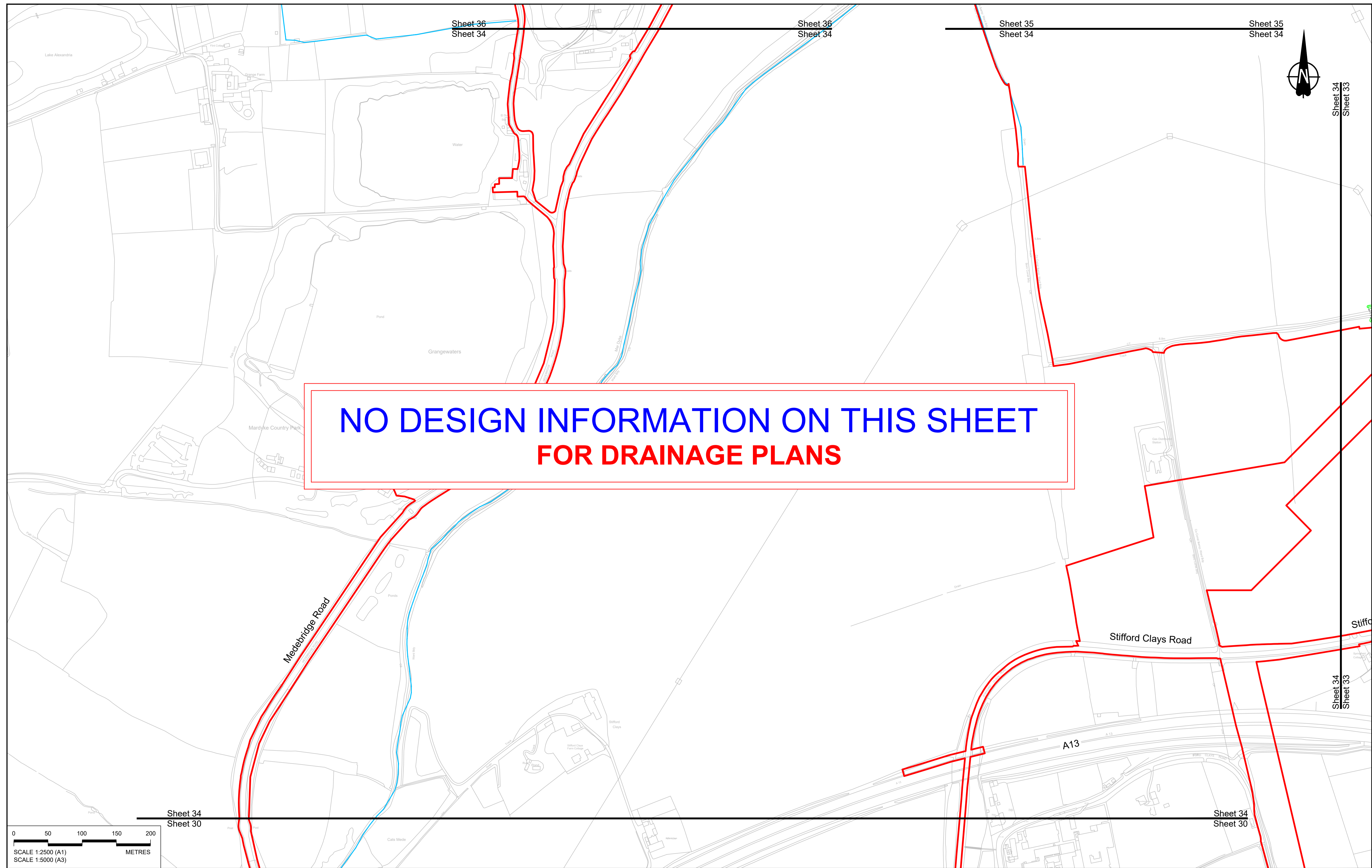
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<b>NOTES:</b>					
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<b>LEGEND:</b>					
<b>BOUNDARIES</b>		<b>PROPOSED DRAINAGE</b>		<b>CATCHMENT AREAS AND OUTFALLS</b>	
	Order Limits		Watercourse diversion		Catchment for Work No. 8F
	Local Authority boundary		Infiltration basin, attenuation pond, infiltration pond		Catchment for Work No. 8E
	Existing watercourse		Ditch		Culvert or pipe
			P.S. Pumping station		Containment for contaminated water from tunnel low point sump
			Swale		



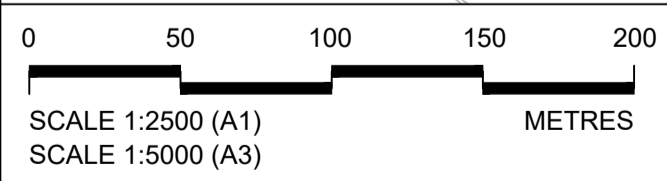
Client  
**national highways**

Project  
**LOWER THAMES CROSSING**

Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 33</b>				
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10030				



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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

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**LEGEND:**

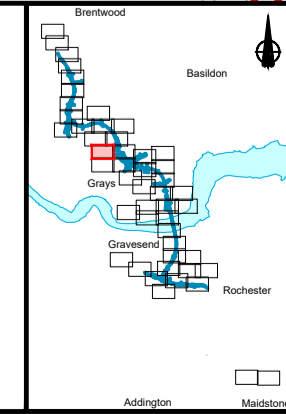
**BOUNDARIES**

- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale

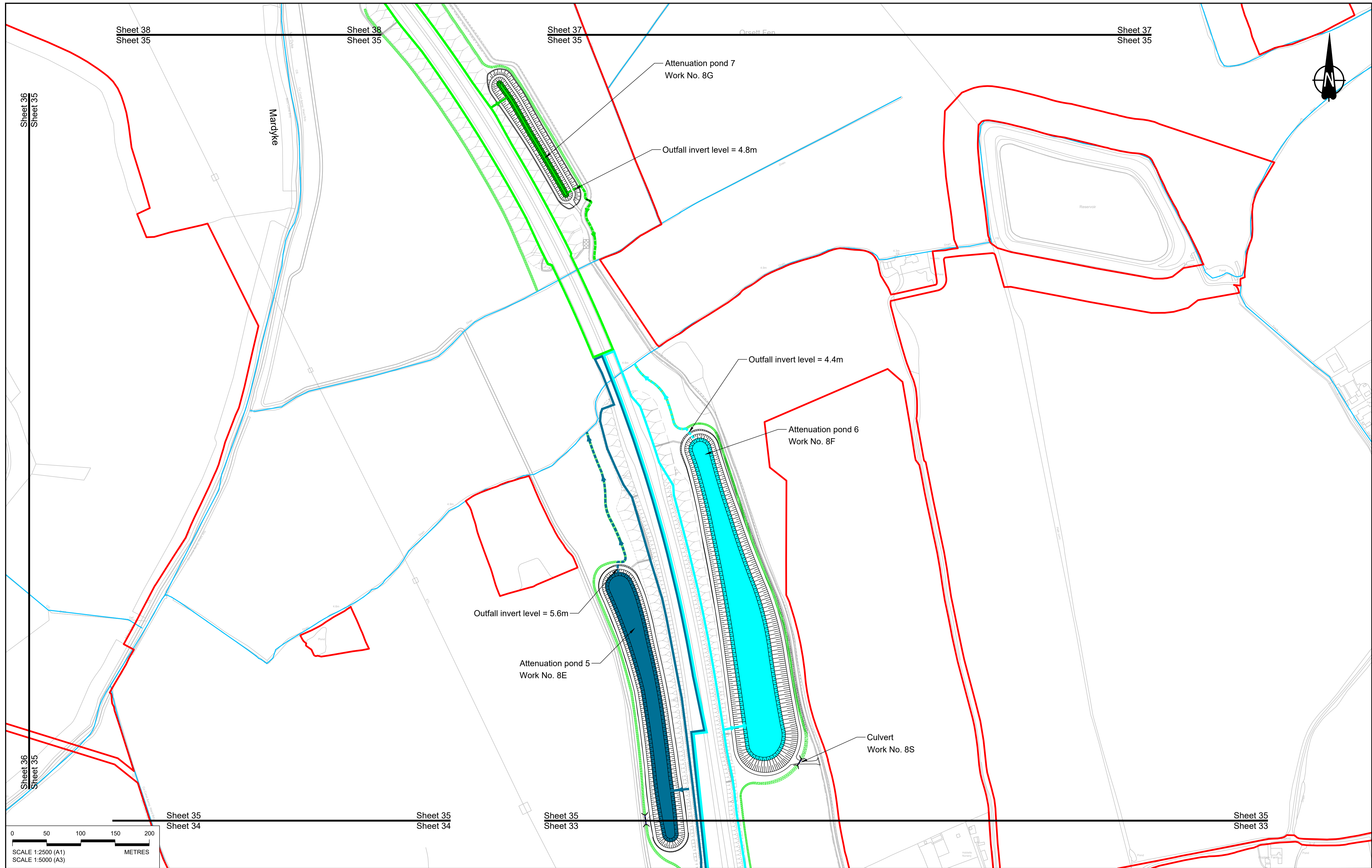
- Ditch
- Culvert or pipe
- P. S. Pumping station
- Containment for contaminated water from tunnel low point sump



Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 34		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10031		
Scale	1:2500		



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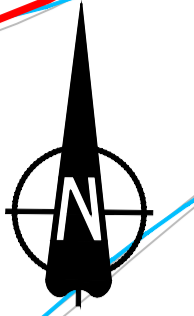
Sheet 36  
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Mardyke

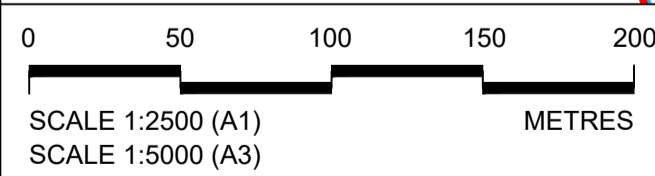


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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

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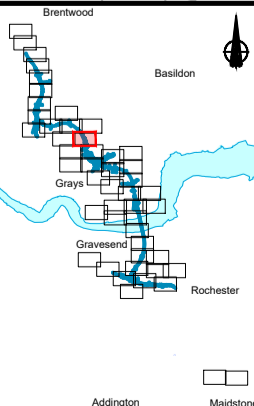
**LEGEND:**  
**BOUNDARIES**  
 - - - Order Limits  
 - - - Local Authority boundary  
 - - - Existing watercourse

**PROPOSED DRAINAGE**  
 - - - Watercourse diversion  
 [Symbol] Infiltration basin, attenuation pond, infiltration pond  
 [Symbol] Swale

[Symbol] Ditch  
 [Symbol] Culvert or pipe  
 [Symbol] P.S. Pumping station  
 [Symbol] Containment for contaminated water from tunnel low point sump

**CATCHMENT AREAS AND OUTFALLS**  
 [Symbol] Catchment for Work No. 8F  
 [Symbol] Outfall to Work No. 8F  
 [Symbol] Discharge to existing drainage network or watercourse for Work No. 8F  
 [Symbol] Catchment for Work No. 8E  
 [Symbol] Outfall to Work No. 8E

[Symbol] Discharge to existing drainage network or watercourse for Work No. 8E  
 [Symbol] Catchment for Work No. 8G  
 [Symbol] Outfall to Work No. 8G  
 [Symbol] Discharge to existing drainage network or watercourse for Work No. 8G



Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 35		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10032		
		Scale	1:2500



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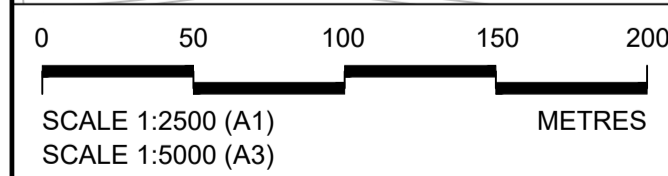
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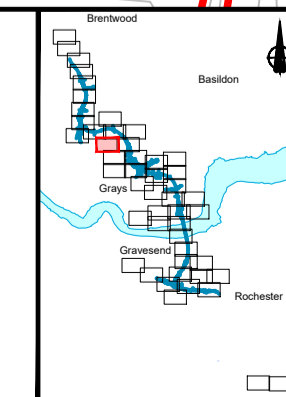
**BOUNDARIES**

- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale
- Ditch
- Culvert or pipe
- P.s. Pumping station
- Containment for contaminated water from tunnel low point sump

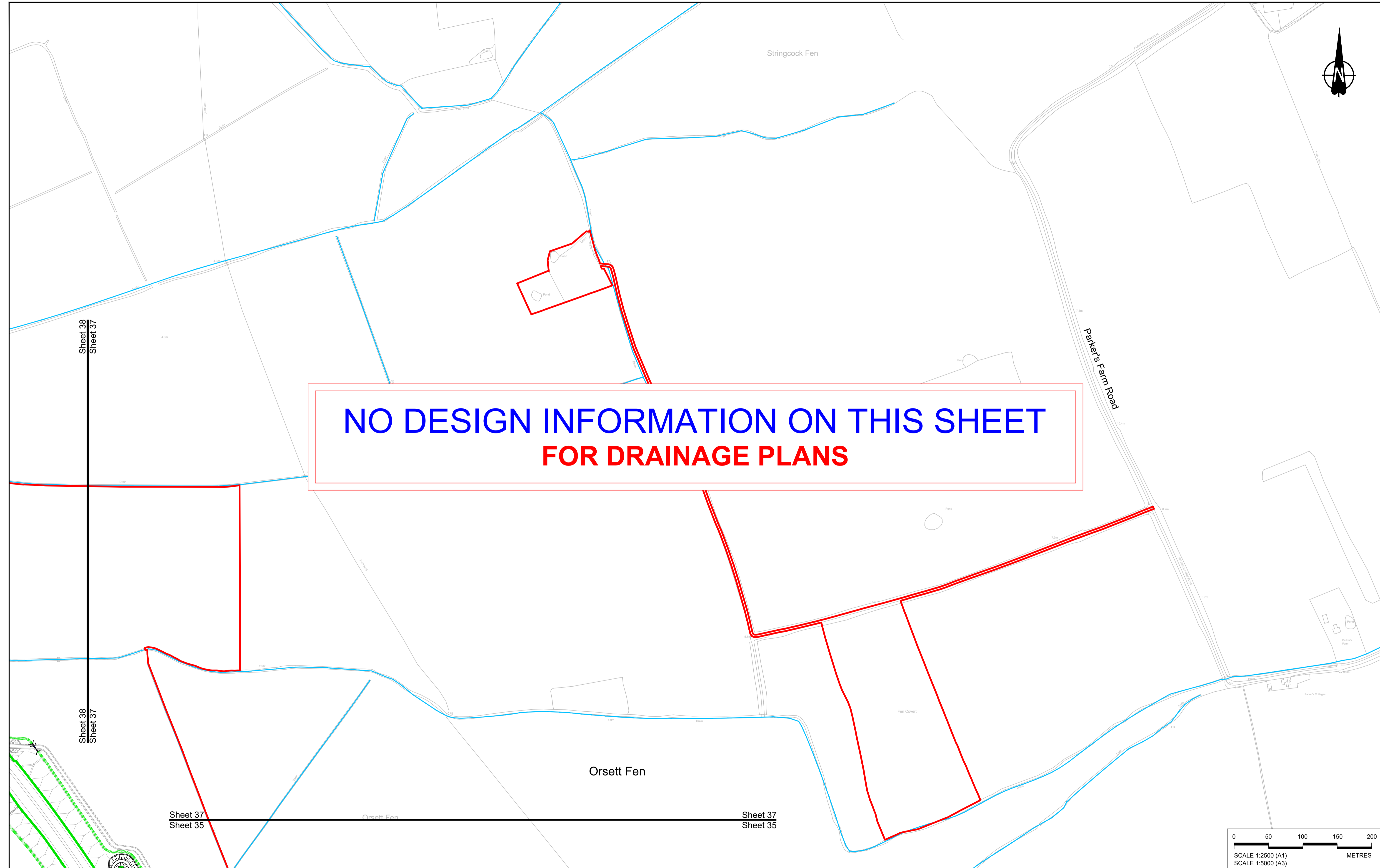
P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd



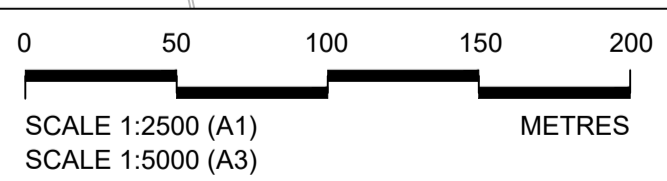
Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 36		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10033		
		Scale	1:2500



**NO DESIGN INFORMATION ON THIS SHEET  
FOR DRAINAGE PLANS**



Rev	Status	Rev. Date	Purpose of revision	Drawn	Chk'd	Apprv'd
P01	S8	19/10/2022	DCO Application	LY	BB	ASB

**NOTES:**

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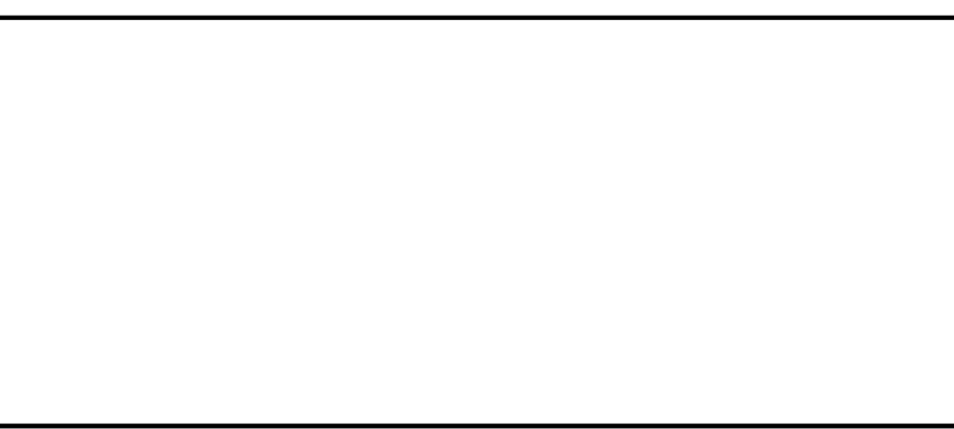
**LEGEND:**

**BOUNDARIES**

- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

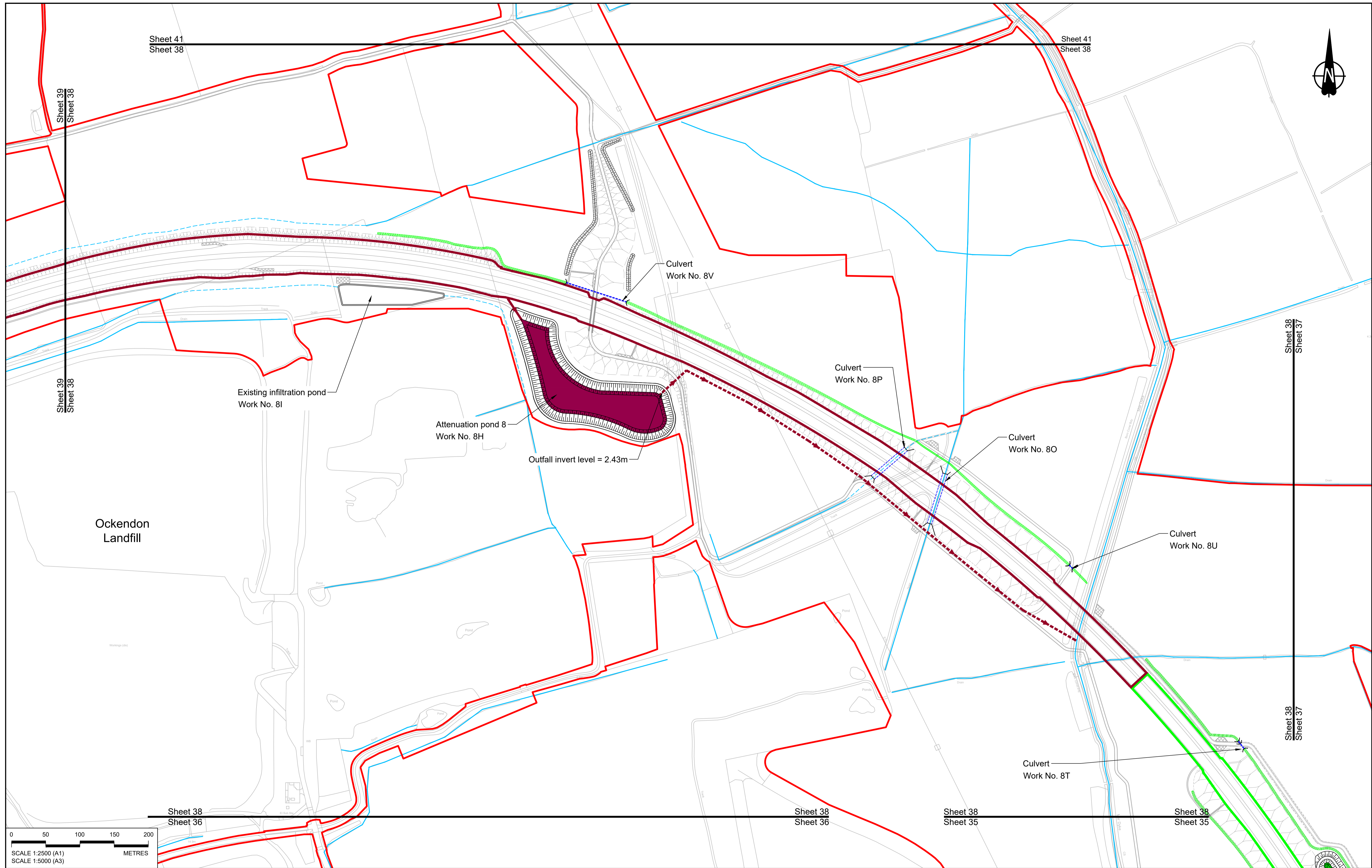
- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale
- Ditch
- Culvert or pipe
- P.S. Pumping station
- Containment for contaminated water from tunnel low point sump



**national highways**

**LOWER THAMES CROSSING**

Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 37</b>				
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10034				



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Existing infiltration pond  
Work No. 8I

Attenuation pond 8  
Work No. 8H

Outfall invert level = 2.43m

Culvert  
Work No. 8V

Culvert  
Work No. 8P

Culvert  
Work No. 8O

Culvert  
Work No. 8U

Culvert  
Work No. 8T

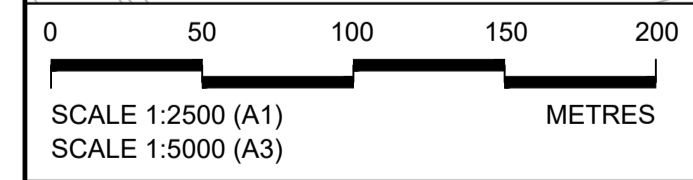
Ockendon  
Landfill

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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

**NOTES:**  
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 3. Where proposed catchment areas boundaries overlap with each other or the Order Limits they are shown adjacent to each other or the Order Limit to provide greater visual clarity but these could extend to the boundary of other catchment areas or the Order Limits as well.

**LEGEND:**

**BOUNDARIES**

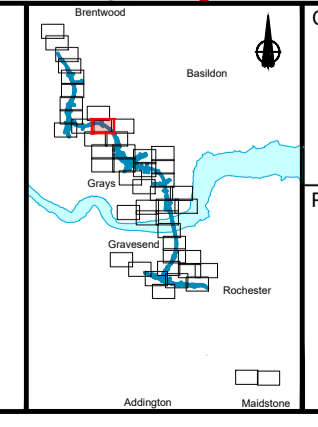
- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale
- Ditch
- Culvert or pipe
- P.S. Pumping station
- Containment for contaminated water from tunnel low point sump

**CATCHMENT AREAS AND OUTFALLS**

- Catchment for Work No. 8G
- Catchment for Work No. 8H
- Outfall to Work No. 8H
- Discharge to existing drainage network or watercourse for Work No. 8H



Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status: **DCO Application**

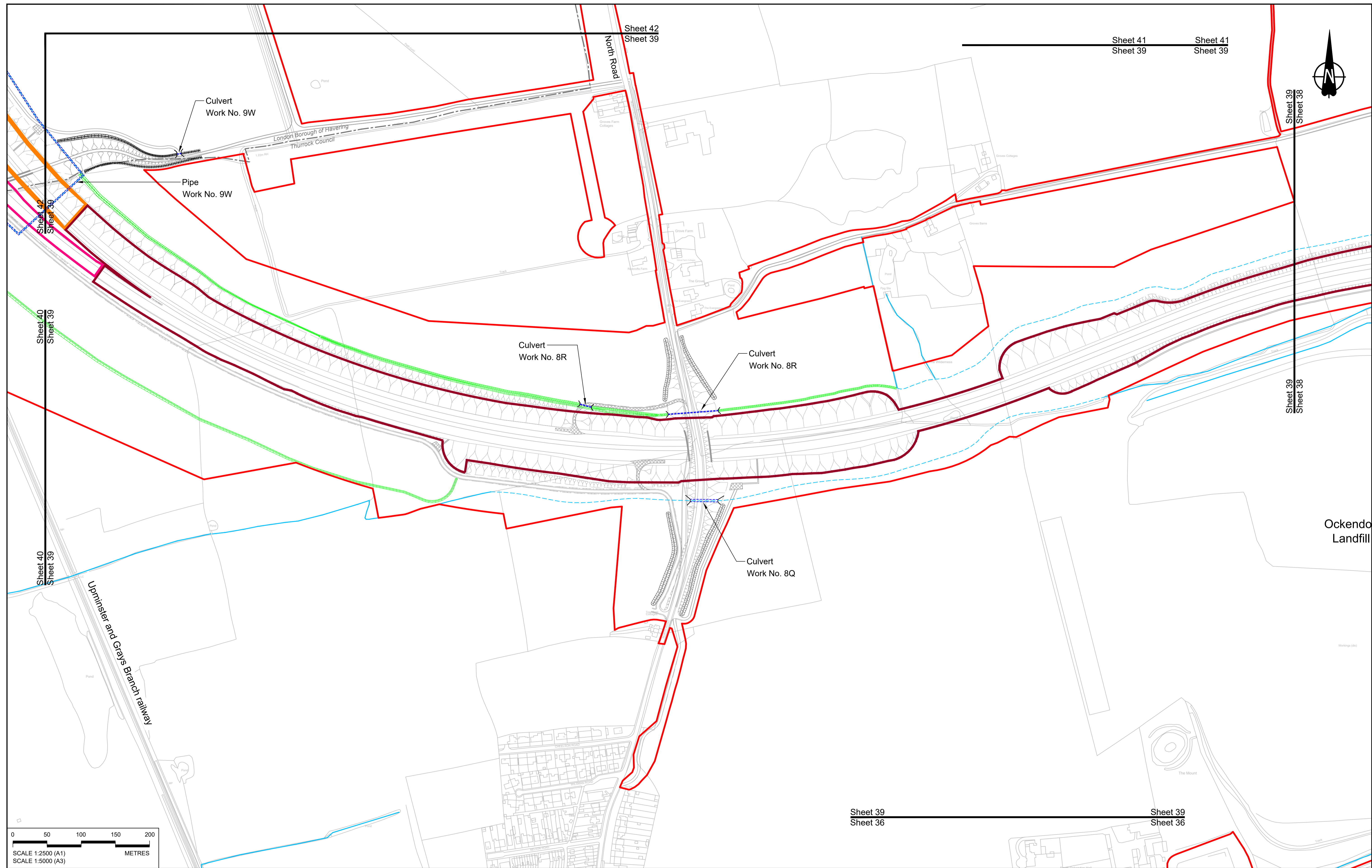
Application Document Number: **TR010032/APP/2.16**

Drawing title: **DRAINAGE PLANS REGULATION 5(2)(o) SHEET 38**

Drawing Number: **HE540039-CJV-BOP-SZZ\_DN100000 -DR-CD-10035**

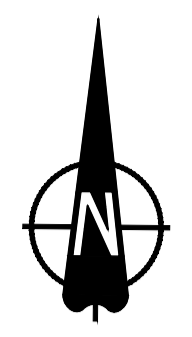
Original Size: **A1** | Revision: **P01**

Scale: **1:2500**



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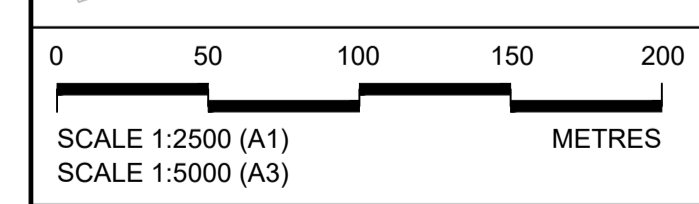
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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

**NOTES:**

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**LEGEND:**

**BOUNDARIES**

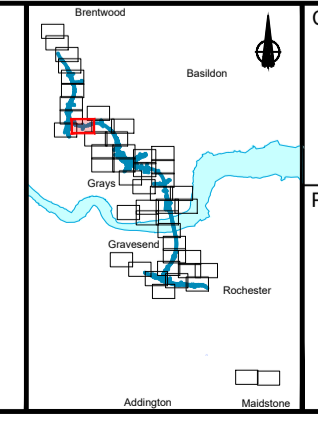
- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale
- Ditch
- Culvert or pipe
- P.s.
- Pumping station
- Containment for contaminated water from tunnel low point sump

**CATCHMENT AREAS AND OUTFALLS**

- Catchment for Work No. 8H
- Catchment for Work No. 9Q
- Catchment for Work No. 9R



Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 39		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10036		
		Scale	1:2500

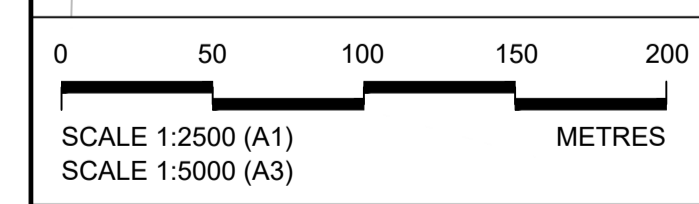
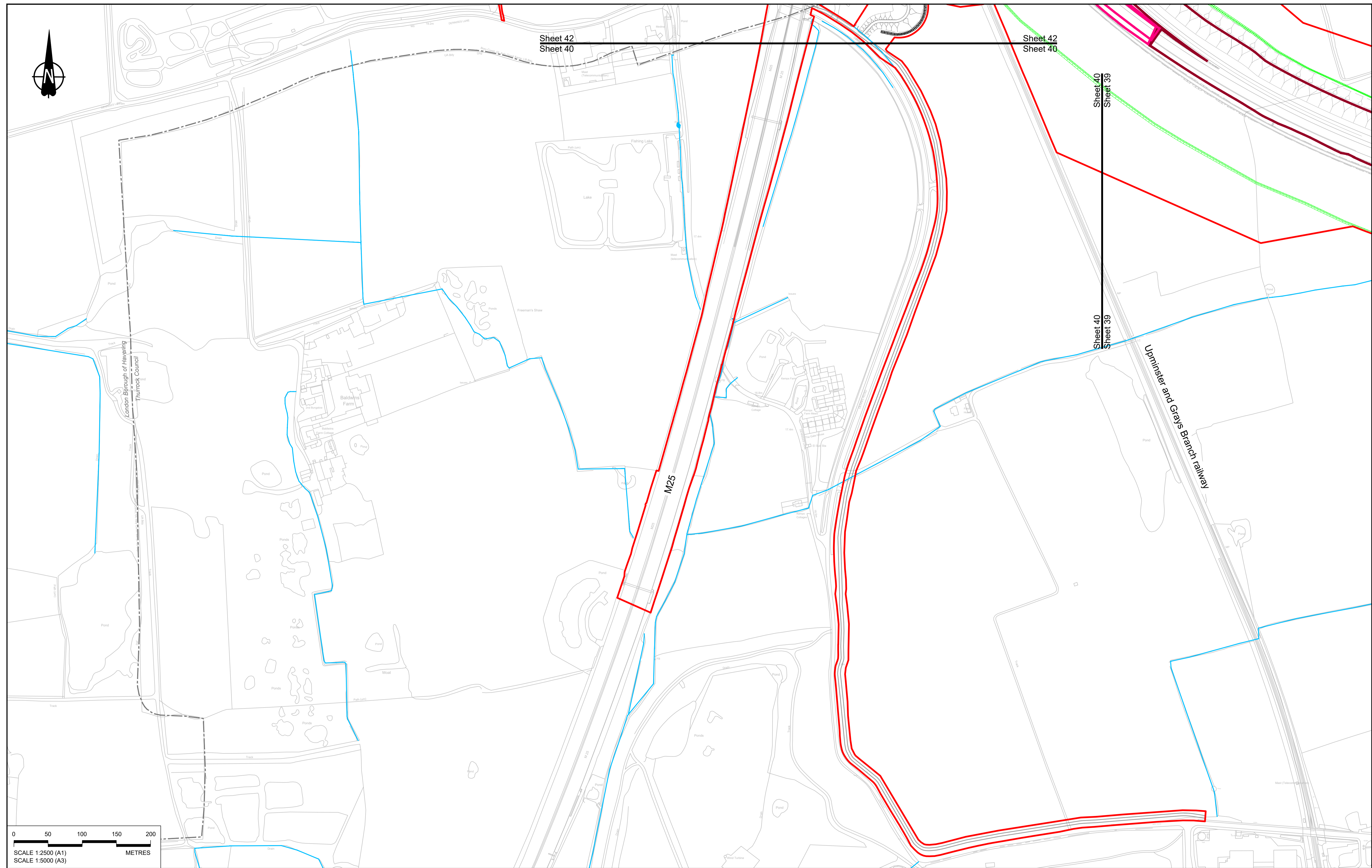


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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd

**NOTES:**

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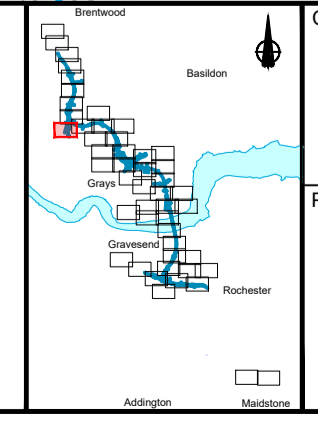
**LEGEND:**

**BOUNDARIES**

- Order Limits
- Local Authority boundary
- Existing watercourse

**PROPOSED DRAINAGE**

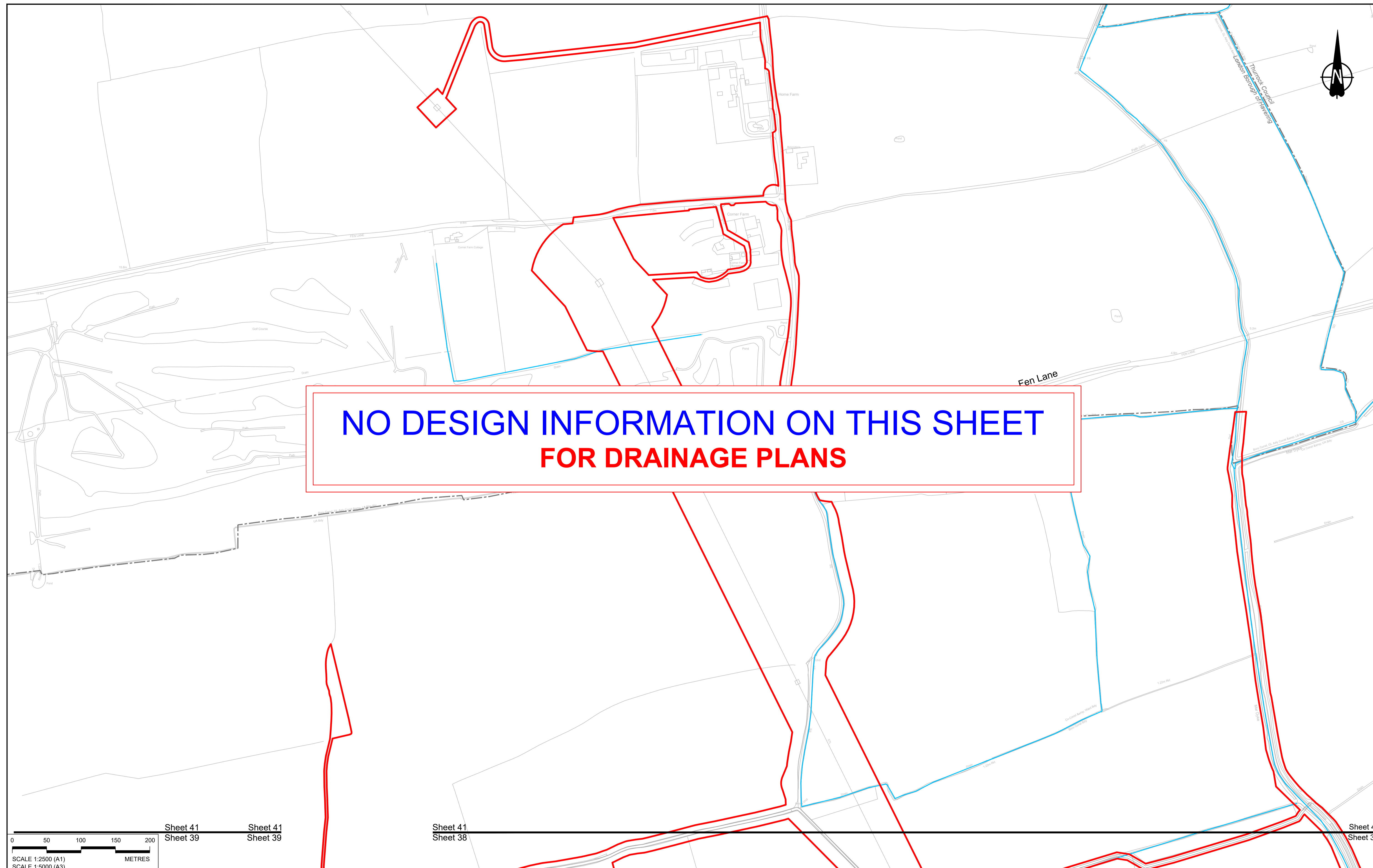
- Watercourse diversion
- Infiltration basin, attenuation pond, infiltration pond
- Swale
- Ditch
- Culvert or pipe
- P.S. Pumping station
- Containment for contaminated water from tunnel low point sump



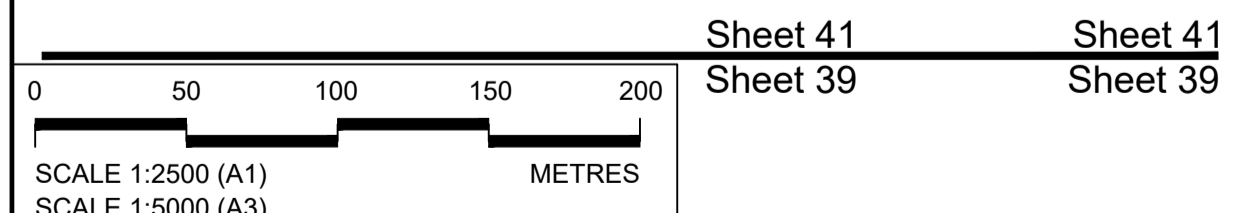
Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 40		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10037		
		Scale	1:2500



**NO DESIGN INFORMATION ON THIS SHEET  
FOR DRAINAGE PLANS**

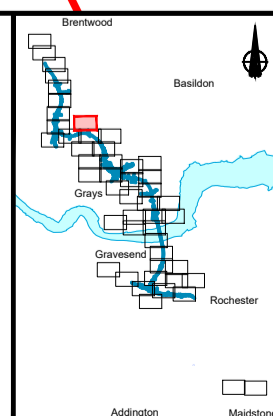


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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

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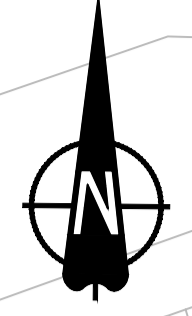
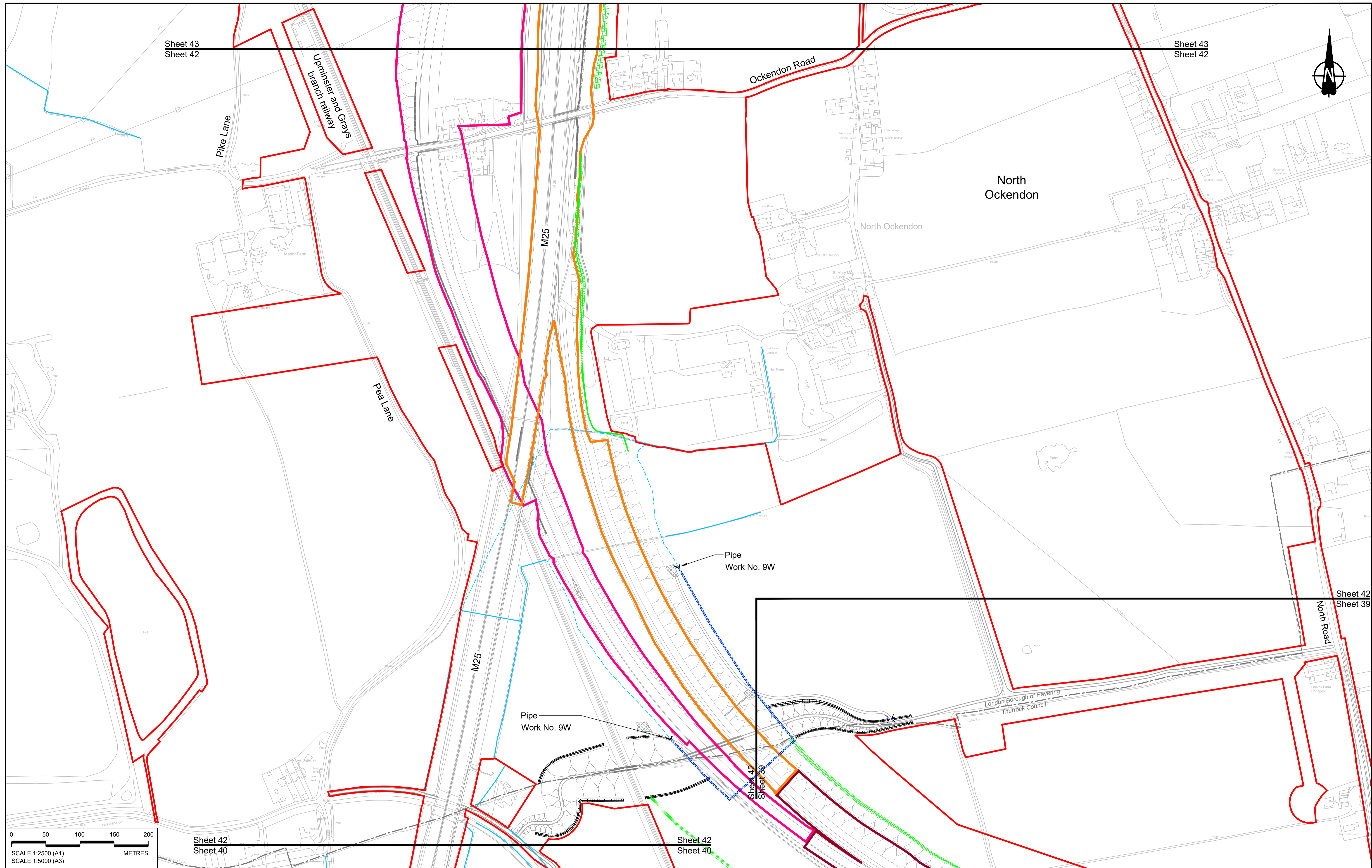
<b>LEGEND:</b>		
<b>BOUNDARIES</b>		
	Order Limits	
	Local Authority boundary	
	Existing watercourse	
<b>PROPOSED DRAINAGE</b>		
	Watercourse diversion	
	Infiltration basin, attenuation pond, infiltration pond	
	Swale	
	Ditch	
	Culvert or pipe	
	P.s.	Pumping station
	Containment for contaminated water from tunnel low point sump	



Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 41		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10039		
		Scale	1:2500



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Uppinister and Grays  
branch railway

Ockendon Road

North  
Ockendon

Pike Lane

M25

Pea Lane

Pipe  
Work No. 9W

Pipe  
Work No. 9W

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North Road

London Borough of Havering  
Thurrock Council



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**NOTES:**

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**LEGEND:**

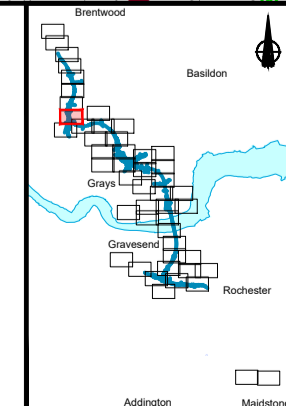
- BOUNDARIES**
- Order Limits
  - Local Authority boundary
  - Existing watercourse

- PROPOSED DRAINAGE**
- Watercourse diversion
  - Infiltration basin, attenuation pond, infiltration pond
  - Swale

- Ditch
- Culvert or pipe
- P.S. Pumping station
- Containment for contaminated water from tunnel low point sump

- CATCHMENT AREAS AND OUTFALLS**
- Catchment for Work No. 9Q
  - Catchment for Work No. 9R

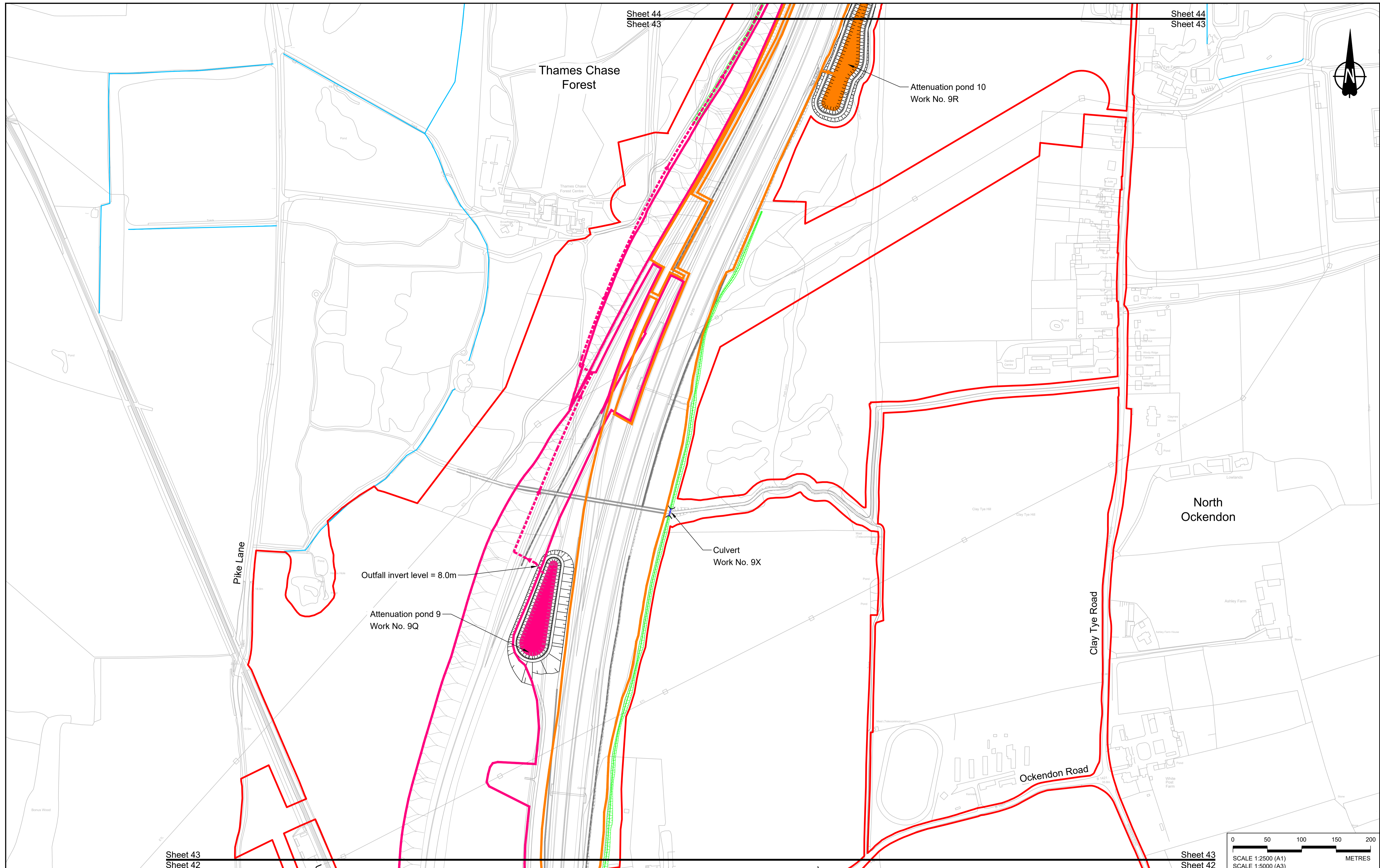
P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd



Client: **national highways**

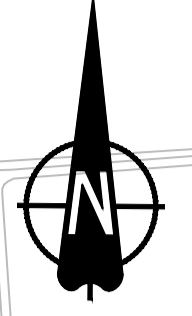
Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 42</b>				
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10040				



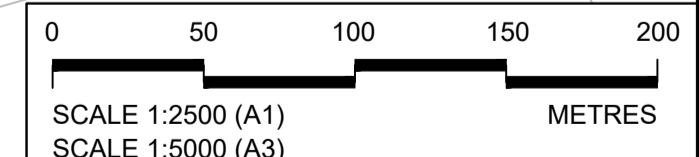
Sheet 44  
Sheet 43

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Sheet 43



Sheet 43  
Sheet 42

Sheet 43  
Sheet 42



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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd

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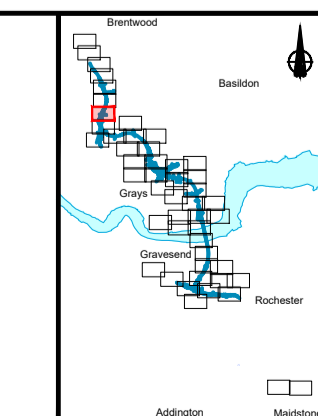
**LEGEND:**

- BOUNDARIES**
- Order Limits
  - Local Authority boundary
  - Existing watercourse

- PROPOSED DRAINAGE**
- Watercourse diversion
  - Infiltration basin, attenuation pond, infiltration pond
  - Swale

- Ditch
- Culvert or pipe
- P.S. Pumping station
- Containment for contaminated water from tunnel low point sump

- CATCHMENT AREAS AND OUTFALLS**
- Catchment for Work No. 9Q
  - Outfall to Work No. 9Q
  - Discharge to existing drainage network or watercourse for Work No. 9Q
  - Outfall to Work No. 9R
  - Catchment for Work No. 9R

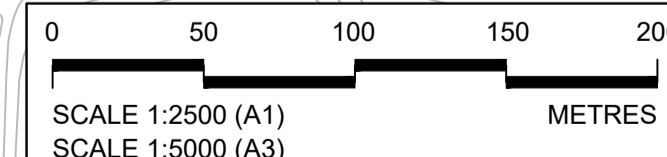
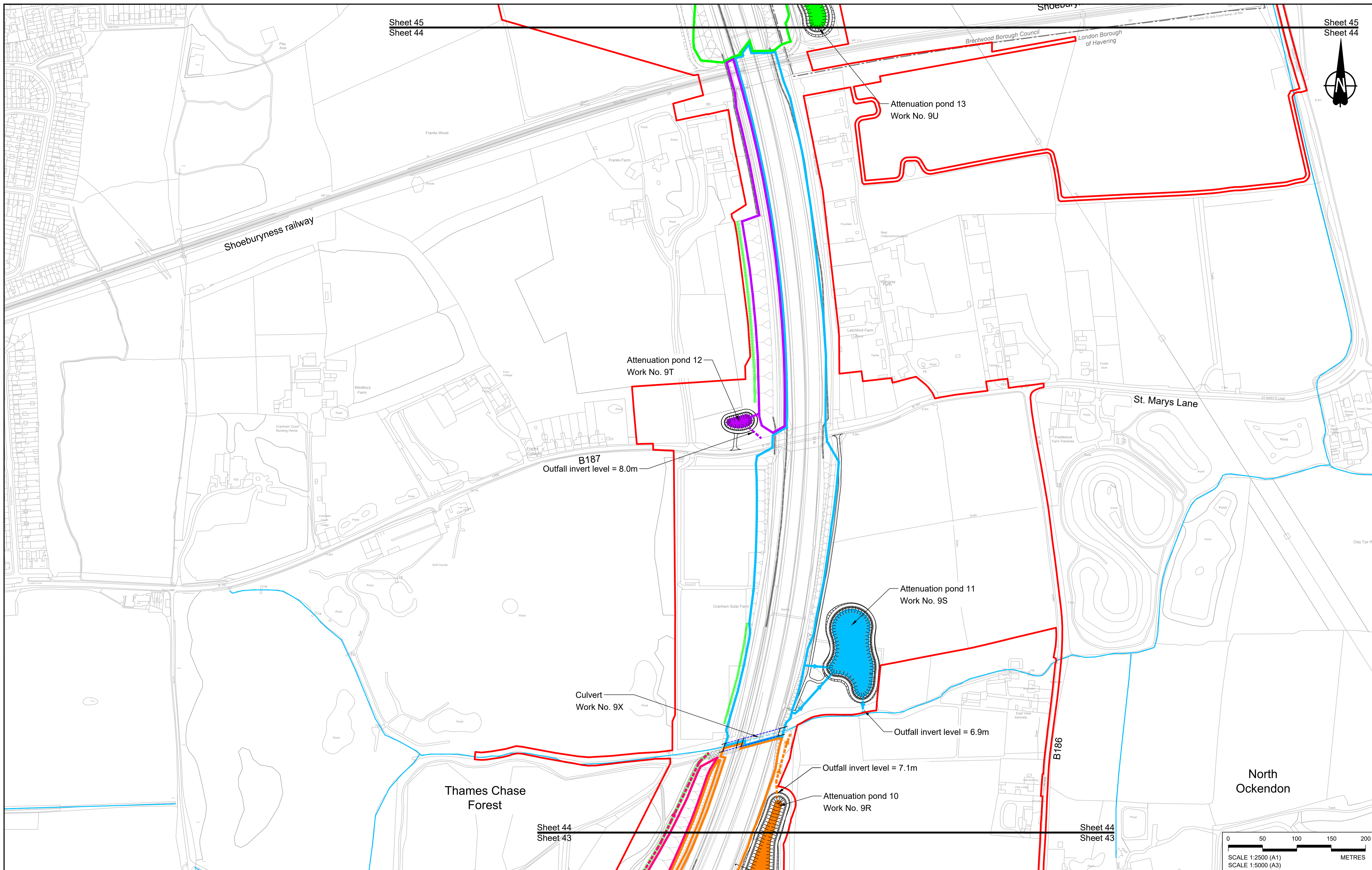
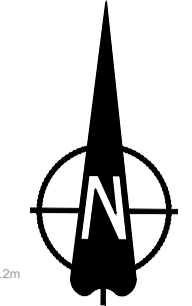


Client: **national highways**

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 43		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10041		
		Scale	1:2500





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P01	SB	19/10/2022	DCO Application	CH	BB ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd/ Apprv'd

**NOTES:**  
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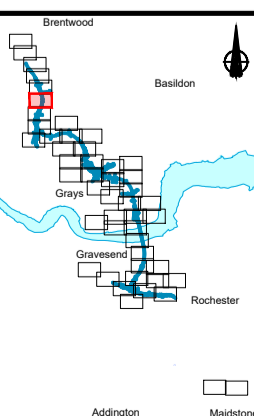
**BOUNDARIES**  
 Order Limits  
 Local Authority boundary  
 Existing watercourse

**PROPOSED DRAINAGE**  
 Watercourse diversion  
 Infiltration basin, attenuation pond, infiltration pond  
 Swale

Ditch  
 Culvert or pipe  
 P.S.  
 Pumping station  
 Containment for contaminated water from tunnel low point sump

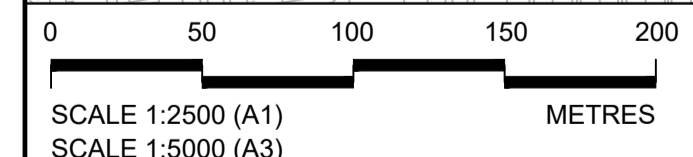
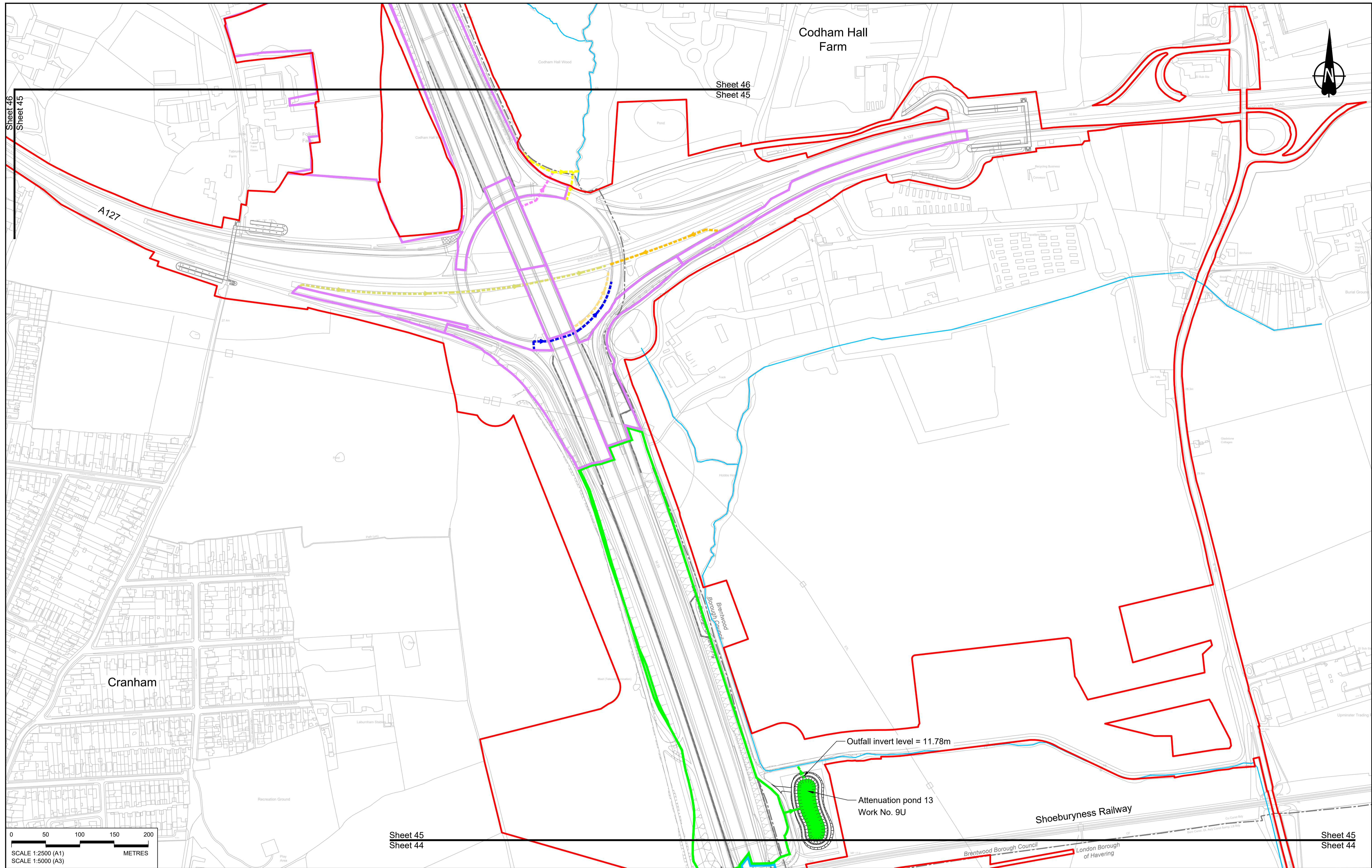
**CATCHMENT AREAS AND OUTFALLS**  
 Catchment for Work No. 9Q  
 Outfall to Work No. 9Q  
 Discharge to existing drainage network or watercourse for Work No. 9Q  
 Catchment for Work No. 9R  
 Outfall to Work No. 9R  
 Discharge to existing drainage network or watercourse for Work No. 9R

Catchment for Work No. 9S  
 Outfall to Work No. 9S  
 Discharge to existing drainage network or watercourse for Work No. 9S  
 Catchment for Work No. 9T  
 Outfall to Work No. 9T  
 Discharge to existing drainage network or watercourse for Work No. 9T  
 Catchment for Work No. 9U



**national highways**  
 LOWER THAMES CROSSING

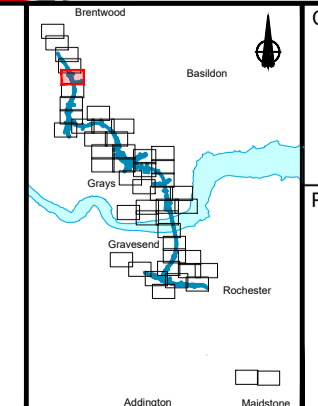
Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 44		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10042		
Scale		1:2500	



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<b>LEGEND:</b> <b>BOUNDARIES</b> - - - Order Limits - - - Local Authority boundary - - - Existing watercourse	<b>PROPOSED DRAINAGE</b> - - - Watercourse diversion Infiltration basin, attenuation pond, infiltration pond Swale	Ditch Culvert or pipe P.S. Pumping station Containment for contaminated water from tunnel low point sump
---	---	---

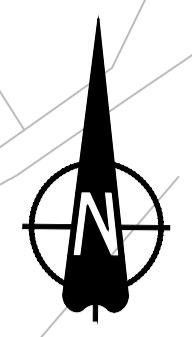
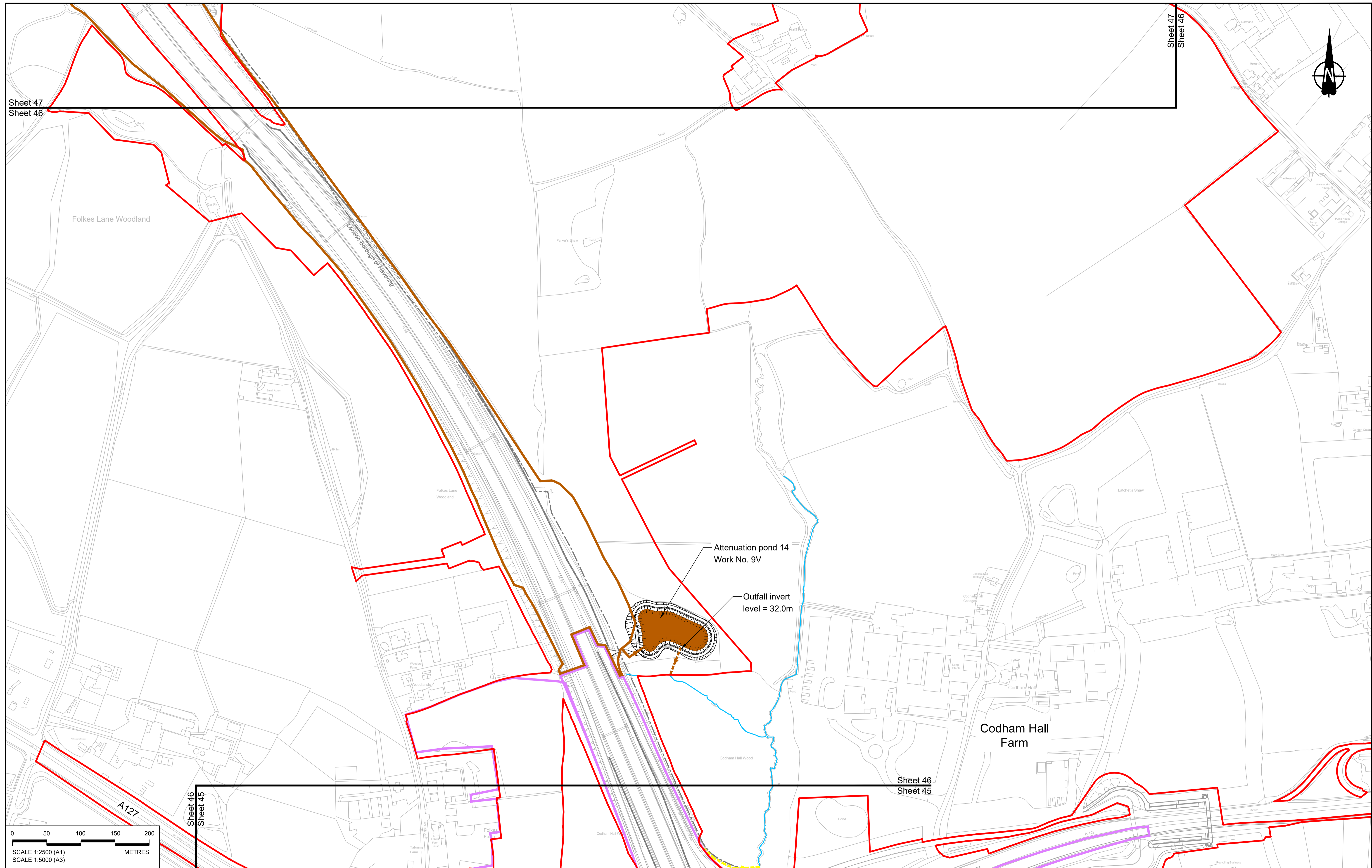
<b>CATCHMENT AREAS AND OUTFALLS</b> - - - Existing Catchments Discharge 1 to existing drainage network Discharge 2 to existing drainage network Discharge 3 to existing drainage network Discharge 4 to existing drainage network Discharge 5 to existing drainage network Discharge 6 to existing drainage network Discharge 7 to existing drainage network Outfall to Work No. 9U
--



Client: **national highways**

Project: **LOWER THAMES CROSSING**

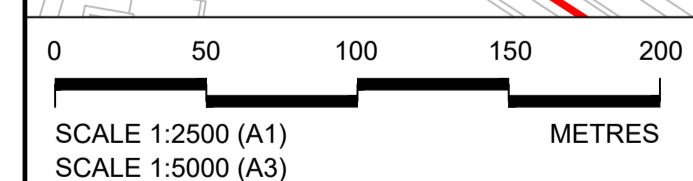
Status: DCO Application	Original Size: A1	Revision: P01
Application Document Number: TR010032/APP/2.16	Scale: 1:2500	
Drawing title: DRAINAGE PLANS REGULATION 5(2)(o) SHEET 45		
Drawing Number: HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10043		



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Sheet 45



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NOTES:						
1.	The proposed works shown are illustrative only and will be subject to change as part of detailed design development. Any changes will be limited to being within the constraints included in the Development Consent Order (application document reference TR010032/APP/3.1).					
2.	These plans should be read in conjunction with Schedule 1 (Authorise Development) of the Development Consent Order (application document reference TR010032/APP/3.1)					
3.	Where proposed catchment areas boundaries overlap with each other or the Order Limits they are shown adjacent to each other or the Order Limit to provide greater visual clarity but these could extend to the boundary of other catchment areas or the Order Limits as well.					
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd
P01	SB	19/10/2022	DCO Application	LY	BB	ASB

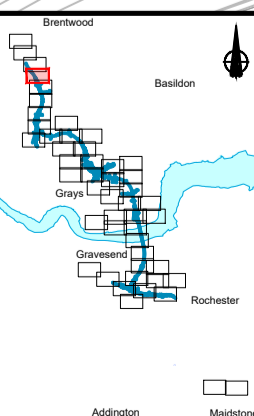
NOTES:  
 1. The proposed works shown are illustrative only and will be subject to change as part of detailed design development. Any changes will be limited to being within the constraints included in the Development Consent Order (application document reference TR010032/APP/3.1).  
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LEGEND:  
**BOUNDARIES**  
 - - - Order Limits  
 - - - Local Authority boundary  
 - - - Existing watercourse

**PROPOSED DRAINAGE**  
 - - - Watercourse diversion  
 [Symbol] Infiltration basin, attenuation pond, infiltration pond  
 [Symbol] Swale

[Symbol] Ditch  
 [Symbol] Culvert or pipe  
 [Symbol] P.S. Pumping station  
 [Symbol] Containment for contaminated water from tunnel low point sump

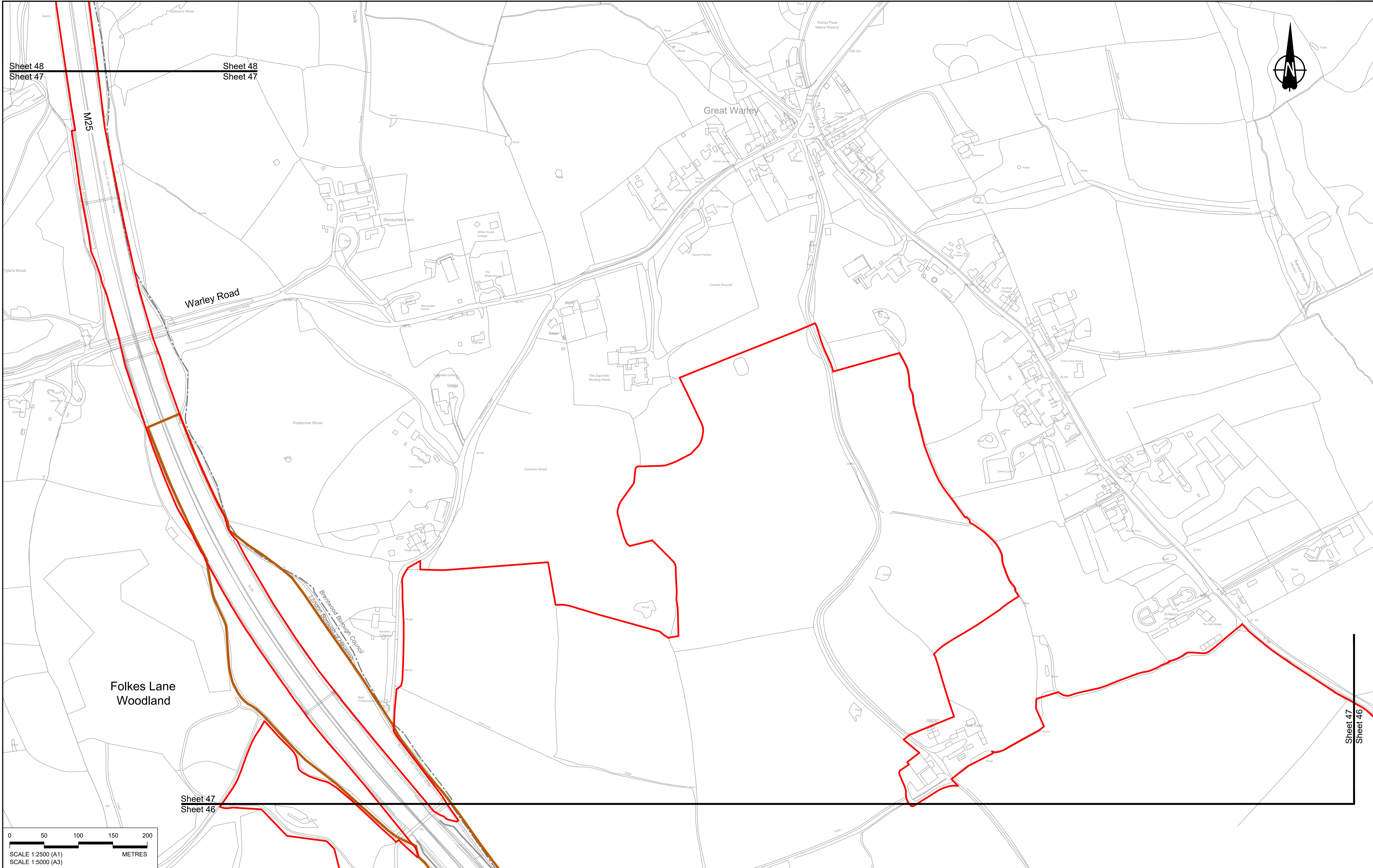
**CATCHMENT AREAS AND OUTFALLS**  
 - - - Existing catchment for Work No. 9V  
 - - - Outfall to Work No. 9V  
 - - - Discharge to existing drainage network or watercourse for Work No. 9V  
 - - - Existing catchment for Discharge 7



Client: **national highways**

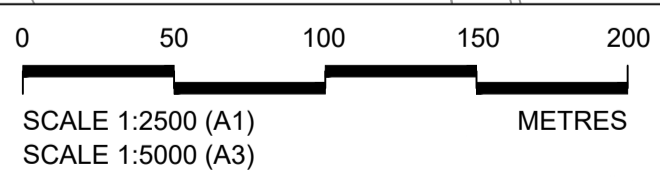
Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 46		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10044		
		Scale	1:2500



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Sheet 47



Folkes Lane Woodland

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Sheet 47  
Sheet 46

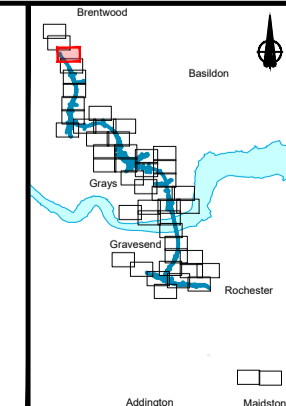
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P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd

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 2. These plans should be read in conjunction with Schedule 1 (Authorise Development) of the Development Consent Order (application document reference TR010032/APP/3.1).  
 3. Proposed works are shown adjacent to the Order Limits to provide greater visual clarity of the extent of the work but could extend to the Order Limits as well.

BOUNDARIES	
	Order Limits
	Local Authority boundary
	Existing watercourse

PROPOSED DRAINAGE	
	Watercourse diversion
	Infiltration basin, attenuation pond, infiltration pond
	Swale
	Ditch
	Culvert or pipe
	P.S. Pumping station
	Containment for contaminated water from tunnel low point sump

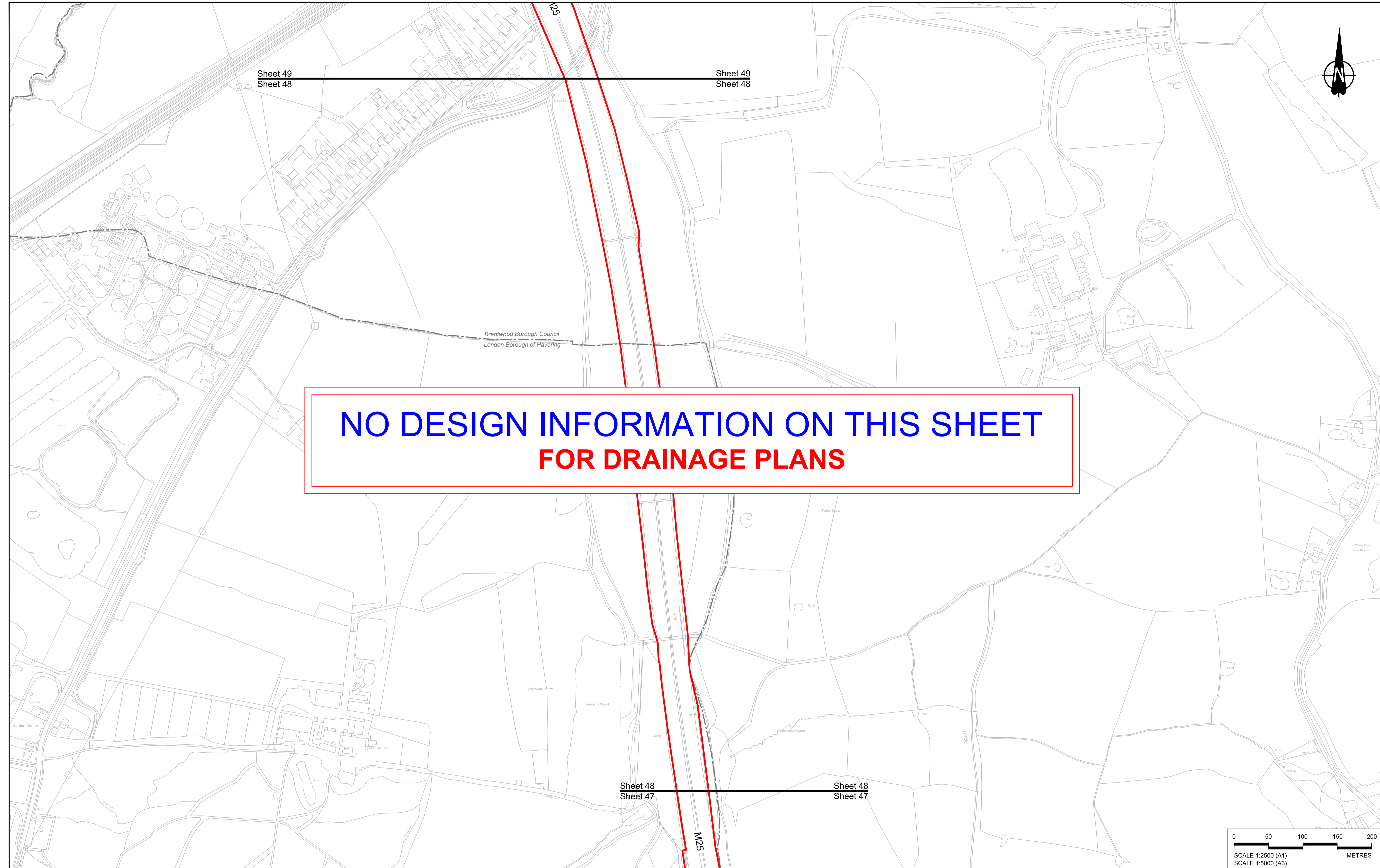
CATCHMENT AREAS AND OUTFALLS	
	Existing catchment for Work No. 9V



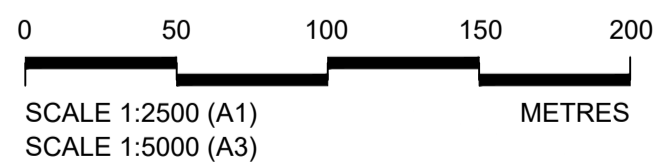
Client: national highways

Project: LOWER THAMES CROSSING

Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	DRAINAGE PLANS REGULATION 5(2)(o) SHEET 47				
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10045				



**NO DESIGN INFORMATION ON THIS SHEET  
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Rev	Status	Rev. Date	Purpose of revision	Drawn	Chkd	Apprvd
P01	S8	19/10/2022	DCO Application	LY	BB	ASB

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- Where proposed catchment areas boundaries overlap with each other or the Order Limits they are shown adjacent to each other or the Order Limit to provide greater visual clarity but these could extend to the boundary of other catchment areas or the Order Limits as well.

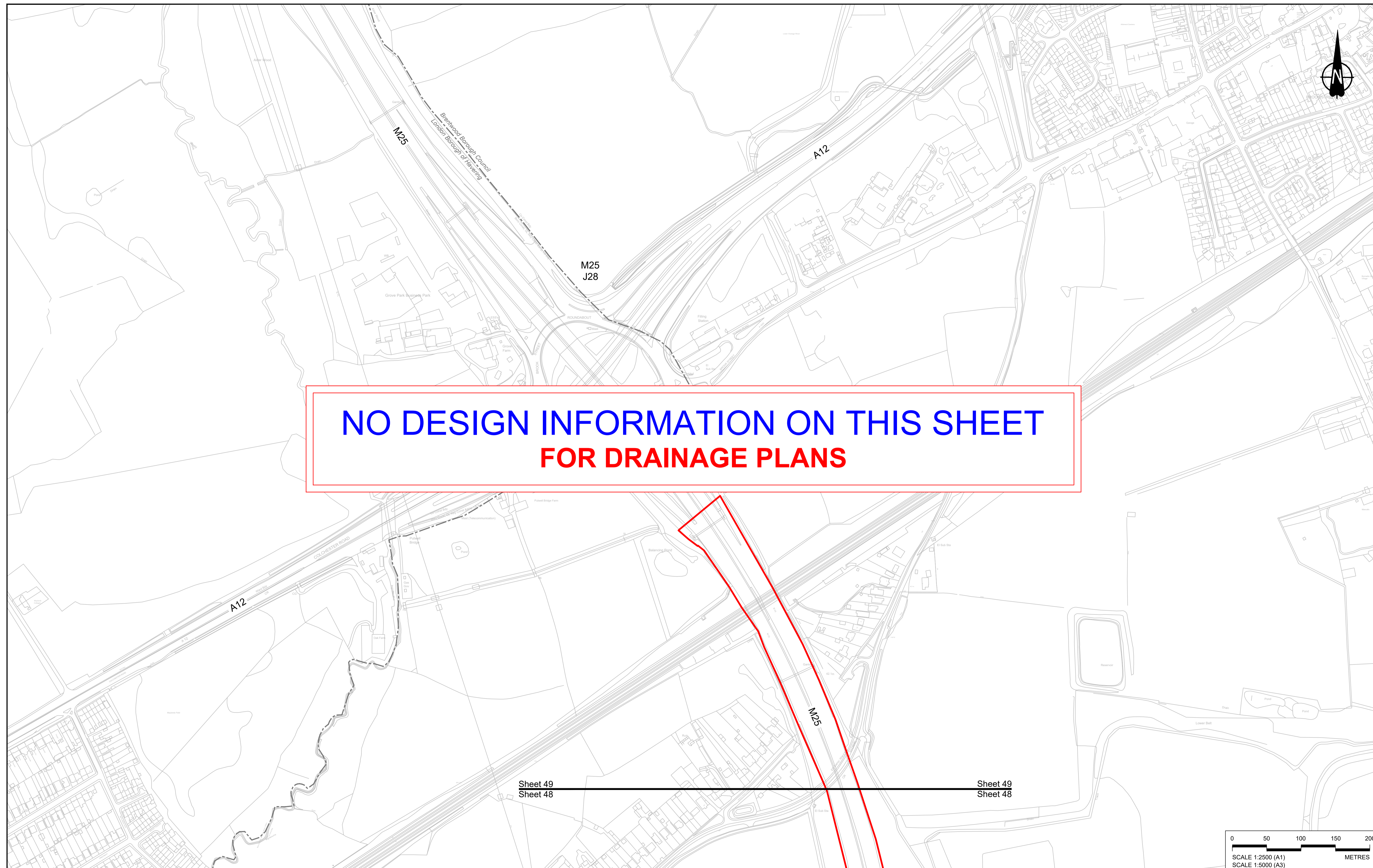
**LEGEND:**

<b>BOUNDARIES</b>	<b>PROPOSED DRAINAGE</b>	
Order Limits	Watercourse diversion	Ditch
Local Authority boundary	Infiltration basin, attenuation pond, infiltration pond	Culvert or pipe
Existing watercourse	Swale	P.S. Pumping station
		Containment for contaminated water from tunnel low point sump

Client: **national highways**

Project: **LOWER THAMES CROSSING**

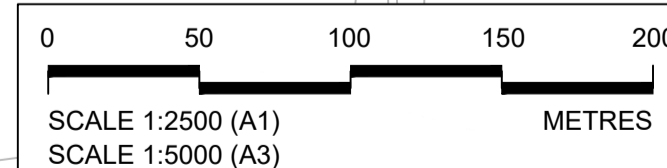
Status	DCO Application	Original Size	A1	Revision	P01
Application Document Number	TR010032/APP/2.16	Scale	1:2500		
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 48</b>				
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000_-DR-CD-10046				



**NO DESIGN INFORMATION ON THIS SHEET  
FOR DRAINAGE PLANS**

Sheet 49  
Sheet 48

Sheet 49  
Sheet 48



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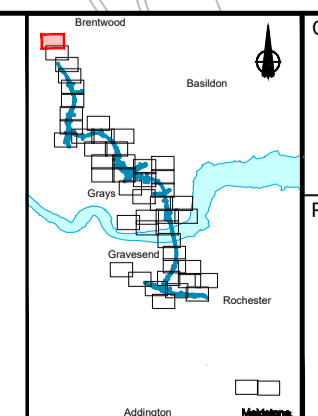
P01	SB	19/10/2022	DCO Application	LY	BB	ASB
Rev	Status	Rev. Date	Purpose of revision	Drawn	Check'd	Apprv'd

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**LEGEND:**

<b>BOUNDARIES</b>	<b>PROPOSED DRAINAGE</b>	
Order Limits	Watercourse diversion	Ditch
Local Authority boundary	Infiltration basin, attenuation pond, infiltration pond	Culvert or pipe
Existing watercourse	Swale	P.S. Pumping station
		Containment for contaminated water from tunnel low point sump



Client:

Project: **LOWER THAMES CROSSING**

Status	DCO Application	Original Size	Revision
Application Document Number	TR010032/APP/2.16	A1	P01
Drawing title	<b>DRAINAGE PLANS REGULATION 5(2)(o) SHEET 49</b>		
Drawing Number	HE540039-CJV-BOP-SZZ_DN100000 -DR-CD-10047		
		Scale	1:2500

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