

Broadland Flood Alleviation Project
Flood Risk Management Proposals for Compartment 22
(Nogdam End to Loddon, River Chet)
Report by Senior Waterways and Recreation Officer

Summary: This report provides members with a summary of officers' comments on Broadland Environmental Services (BESL's) proposals for flood risk management works in Compartment 22 on the true right bank of the River Chet between Loddon and Nogdam End. Members' views on the contents of the report are welcomed.

1 Background

- 1.1 BESL has completed the majority of the flood risk management works on the River Chet with schemes carried out in Compartment 21 on the true left bank of the river and the downstream section of Compartment 22 between Chet mouth and Nogdam End on the true right bank. The only section of the river where flood risk management works have yet to be carried out is the section of Compartment 22 between Nogdam End and Pye's Mill on the true right bank of the river.
- 1.2 BESL's original solution for this section of the compartment was to setback over 2.5km of the flood bank and remove the piling that provided its erosion protection. This scheme would have provided defences to 1995 levels as in all other compartments in the BESL Project area. However, site investigations carried out by BESL since 2001 revealed that ground conditions in the compartment were exceptionally poor, to the extent that it would be difficult to construct a setback floodbank of the required height and durability. Additionally BESL identified that there would be difficulties with sourcing the required amount of material for the construction of the floodbank locally.
- 1.3 The Environment Agency (EA) therefore concluded that there were no solutions available that would meet its criteria for justifying the provision of flood risk management structures: namely that they should be technically feasible, sustainable and affordable.
- 1.4 In order to allow further site investigations to be carried out the EA undertook a £100,000 maintenance scheme in the Compartment in 2004 to improve the stability of the existing banks. This scheme was intended to extend the life of the banks by approximately five years and largely consisted of reprofiling the existing bank without sourcing new material.
- 1.5 Since 2004 the piling which provides the erosion protection for the floodbanks in the Compartment has been deteriorating and a number of piling failures

have taken place. Officers have therefore had regular discussions with BESL regarding the need for a comprehensive scheme for the compartment which would deal with the failing piling and provide structurally sound banks for the river. The EA has also been under pressure from the local community to come forward with a firm proposal for the compartment.

2 The EA's Current Proposal

- 2.1 BESL has now provided officers with a draft proposal for Compartment 22 for pre planning application consultation purposes and these are shown in detail on the maps at appendix 1 to this report.
- 2.2 In summary the proposal is to carry out a limited rollback of the floodbanks in the compartment by constructing a new bank from material sourced from newly dug soke dykes and then, when the new bank has stabilised, to remove the piling which provides the erosion protection in the compartment.
- 2.3 BESL had indicated in early discussions that, due to ground conditions, the new bank would provide a lower standard of defence than in other compartments and, in all likelihood, require more frequent crest raising due to predicted high settlement rates. In addition officers understand that the original proposal was to pass on maintenance liability for the new bank to the landowners after construction.
- 2.4 However, at a meeting held with BESL on 22 January to discuss the proposals BESL confirmed that further ground investigations had shown that it would be possible to build a more robust bank to a slightly higher standard than originally envisaged. The current proposal is therefore to build a rollback bank which will provide a slightly higher level of defence for the land but not to the 1995 standard achieved in all other broadland Project Compartments. The EA has also confirmed that the new bank will be maintained by BESL until the end of the Broadland Flood Alleviation Project in 2021.
- 2.5 After construction the new bank will need to stabilise before any piling removal can take place and this is likely to take approximately 18 months. This approach is in accordance with BESL's usual methodology for piling removal after floodbank construction.

3 Broads Authority Officer Comments on the Proposals

- 3.1 The solution proposed by BESL has already been trialled in an area where a piling failure occurred near Nogdam End last year. The same methodology, as is proposed in the current solution was used for the construction of a rollback bank in this area. The bank constructed after the piling failure has established well and has given BESL confidence in the solution provided to officers for discussion.
- 3.2 Members will be aware that there are two main issues that have been a cause for concern from a navigation perspective regarding this compartment. First, the deteriorating condition of the piling has resulted in a number of minor

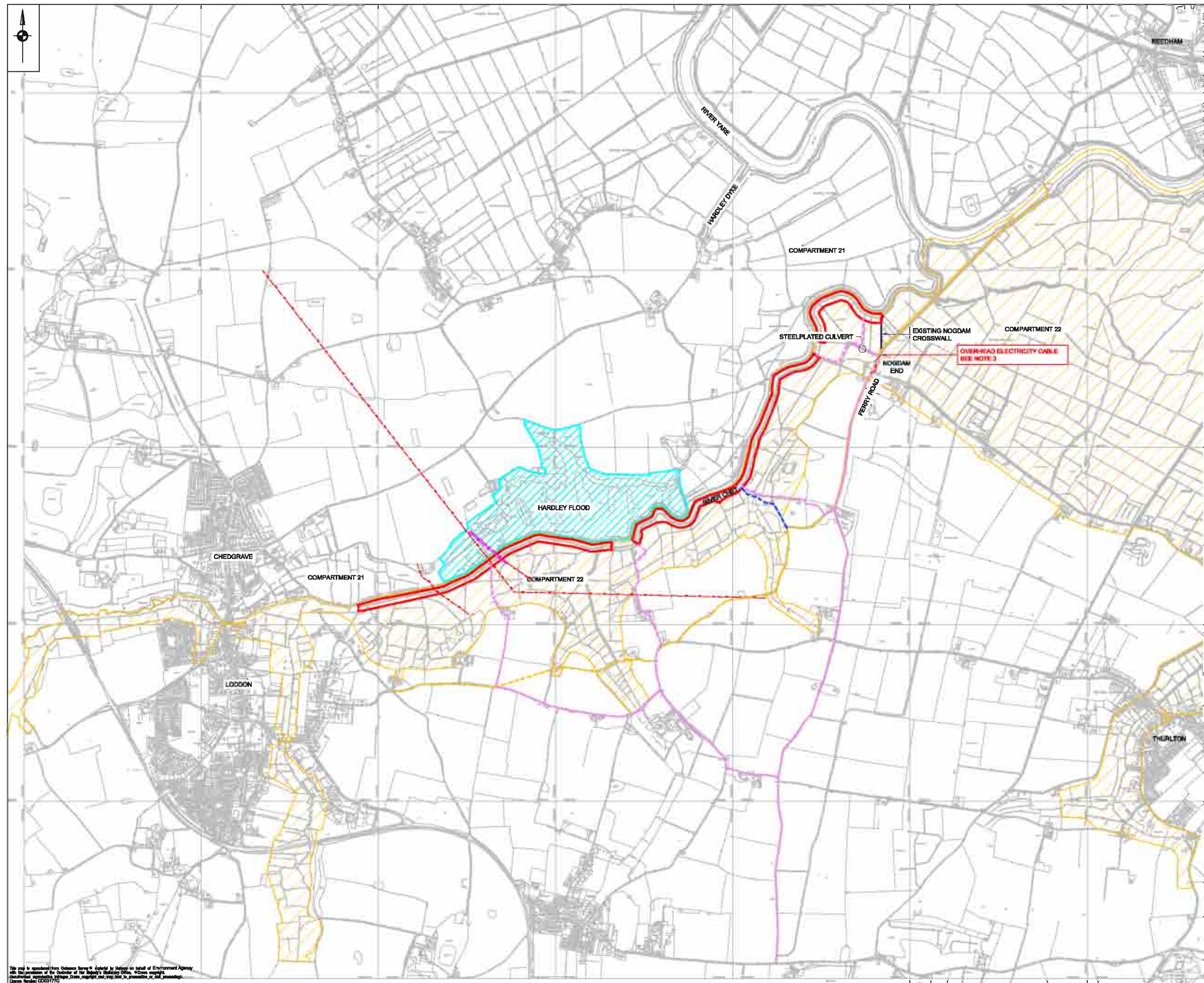
piling failures since the maintenance scheme was carried out in 2004 which have caused potential hazards to navigation. In all likelihood the frequency of piling failures will increase over time as the piling continues to deteriorate resulting in the piecemeal removal of the piling as it fails. Officers consider that this is not a desirable situation and would advocate a more structured approach which provides a comprehensive solution to bank reconstruction and piling removal and welcome the fact that BESL has put forward these proposals.










- 3.3 Additionally the fact that the piling is in such poor condition has meant that the Broads Authority has been unable to undertake full channel width dredging in this section of the River Chet due to the risk of causing major piling failures and bank collapse. The proposals are therefore also to be welcomed as the Authority will be able to programme major dredging operations after the completion of piling removal. Channel depths upstream of Nogdam End have been a cause of concern for the Authority and the boatyards at Chedgrave and Loddon for some time and dredging is likely to improve this situation.
- 3.4 It is also likely that there will be scope for stockpiling dredged material in the compartment for use in rond creation and future crest raising works and officers will be having discussions with BESL on this point.
- 3.5 Officers have also asked BESL if there is scope for increasing the width of the river by setting back the proposed cadge bank face slightly from the existing pile line when piling removal takes place. As the river Chet is narrow any width gain resulting from the proposed works would benefit navigation.

4 Conclusions

- 4.1 In principle officers consider that these proposals should be supported. A number of issues need clarification and further discussion, particularly with regard to the potential for dredging reuse and stockpiling and the precise specification for bank reprofiling, and officers will pursue these issues with BESL prior to the submission of a planning application for the works.
- 4.3 Further clarification is also required on BESL's proposals for the maintenance of the banks after construction and the likely effect of the proposals on the land affected by the works. It is anticipated that hydraulic modelling data will be included in the planning application which will give some indication of frequency of overtopping that will occur after the scheme is completed.
- 4.2 Provided that appropriate conditions regarding the timing of the works, methodology of piling removal, post piling removal bed survey, channel marking and erosion monitoring are attached to any planning permission granted for the scheme officers propose to support these proposals.
- 4.3 A further report will be brought to committee if there is any significant change to the proposals when the planning application is submitted.

Background papers:	Nil
Author:	Adrian Clarke
Date of report:	12 February 2013
Broads Plan Objectives:	CC3.1
Appendices:	Appendix 1 Detailed drawings of proposals



	COMPARTMENT 22 BOUNDARY
	EXTENT OF HARDLEY FLOOD
	PLANNING APPLICATION BOUNDARY
	EXISTING NOGDAM CROSSWALL
	MAIN ACCESS ROUTES
	PEDESTRIAN ONLY ACCESS AND LIMITED VEHICLE PARKING
	PUBLIC FOOTPATH ROUTE
	OVERHEAD ELECTRICITY CABLES
	UNDERGROUND ELECTRICITY CABLES

Notes:

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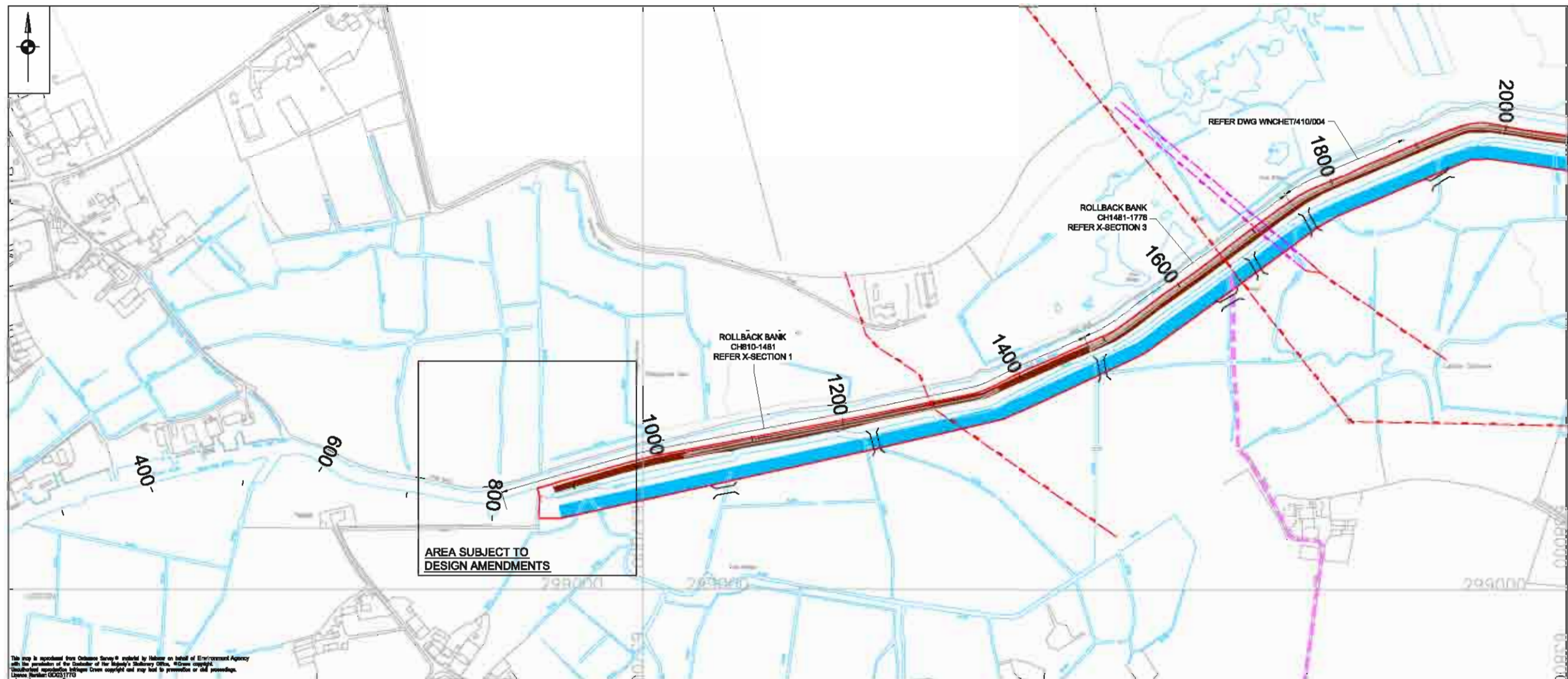
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**COMPARTMENT 22
RIVER CHET
OVERVIEW PLAN**

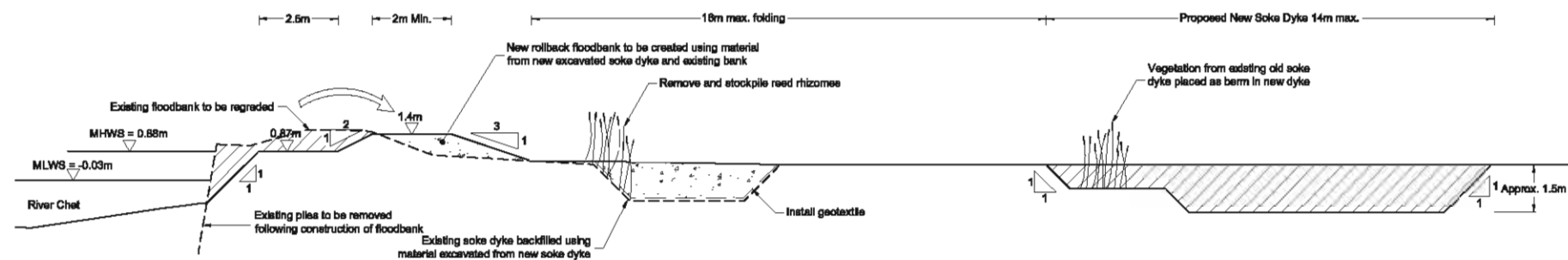
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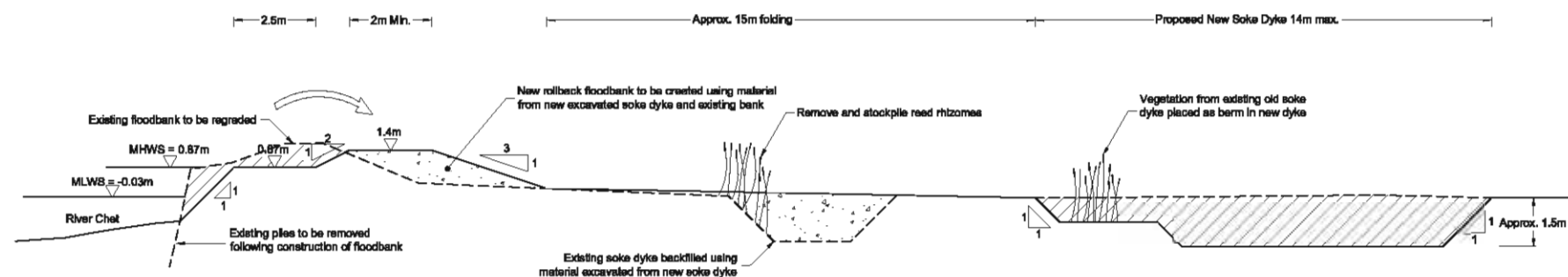
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PLAN OF WORKS
SCALE 1:2500



TYPICAL X-SECTION 1
ROLLBACK BANK Ch810-1481m
SCALE 1:100



TYPICAL X-SECTION 2
ROLLBACK BANK Ch1481-1776m
SCALE 1:100

Key:

- ROLLBACK BANK
- NEW SOKE DYKE
- CULVERTED CROSSINGS
- PLANNING APPLICATION BOUNDARY
- MAIN ACCESS ROUTES
- OVERHEAD ELECTRICITY CABLES
- UNDERGROUND ELECTRICITY CABLES

Notes:

1. NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
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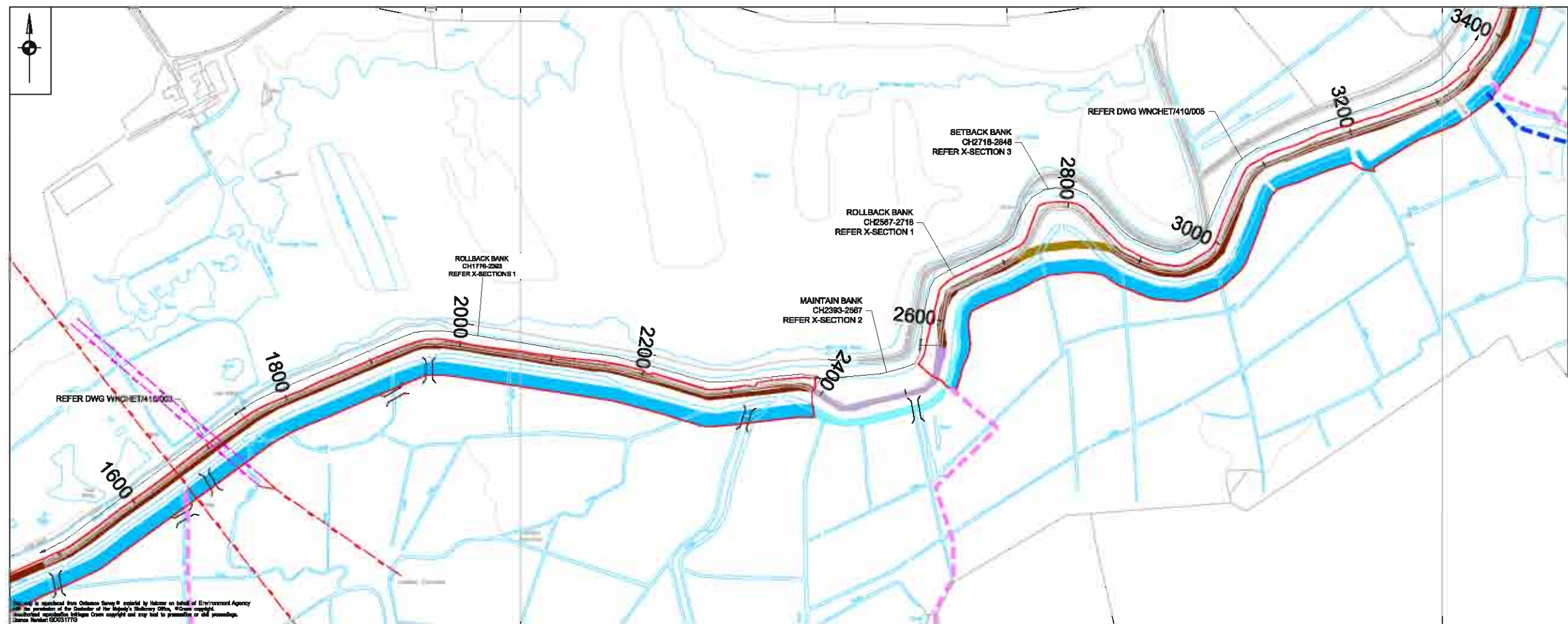
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RIVER CHET
DETAILED PLAN
SHEET 1 OF 5**

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Approved by: **WNCHET/410/003**
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Drawing No. WNCHET/410/003, Client: Broadland Environmental Services Limited, Project: Broadland Flood Alleviation Project, Sheet 1 of 5, Date: 22/11/2022, Scale: AS SHOWN AT A1



PLAN OF WORKS
SCALE 1:2500

Key:

- ROLLBACK BANK
- SETBACK BANK
- NEW SOKE DYKE
- EXISTING SOKE DYKE
- MAINTAIN BANK
- CULVERTED CROSSINGS
- PLANNING APPLICATION BOUNDARY
- OVERHEAD ELECTRICITY CABLES
- UNDERGROUND ELECTRICITY CABLES
- MAIN ACCESS ROUTES
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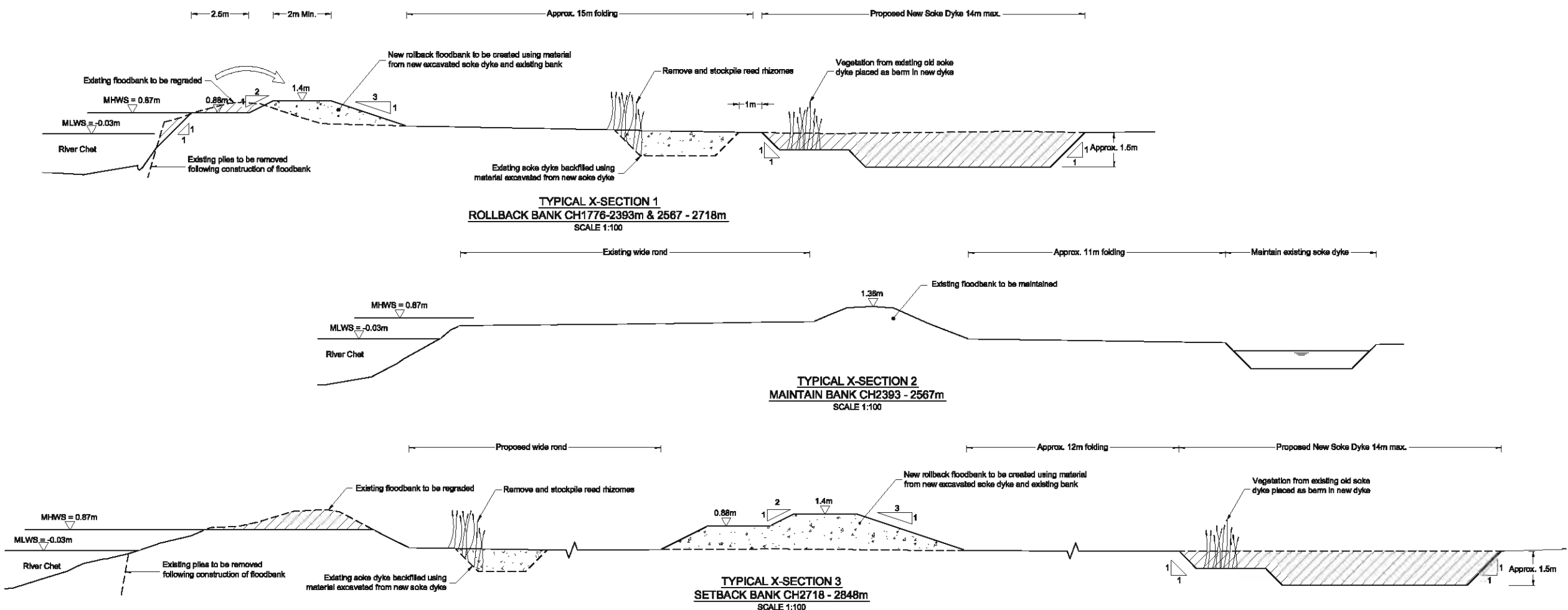
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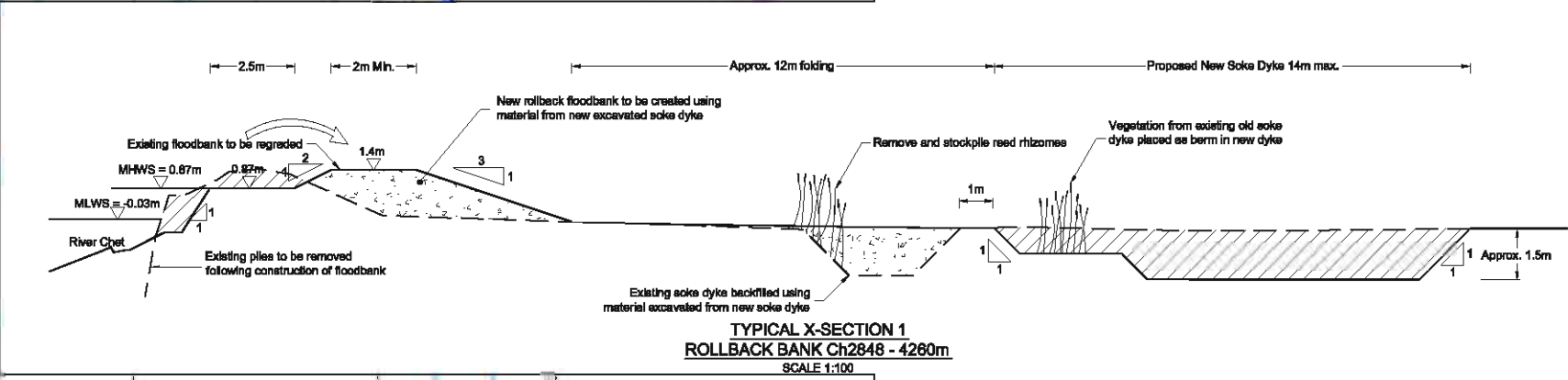
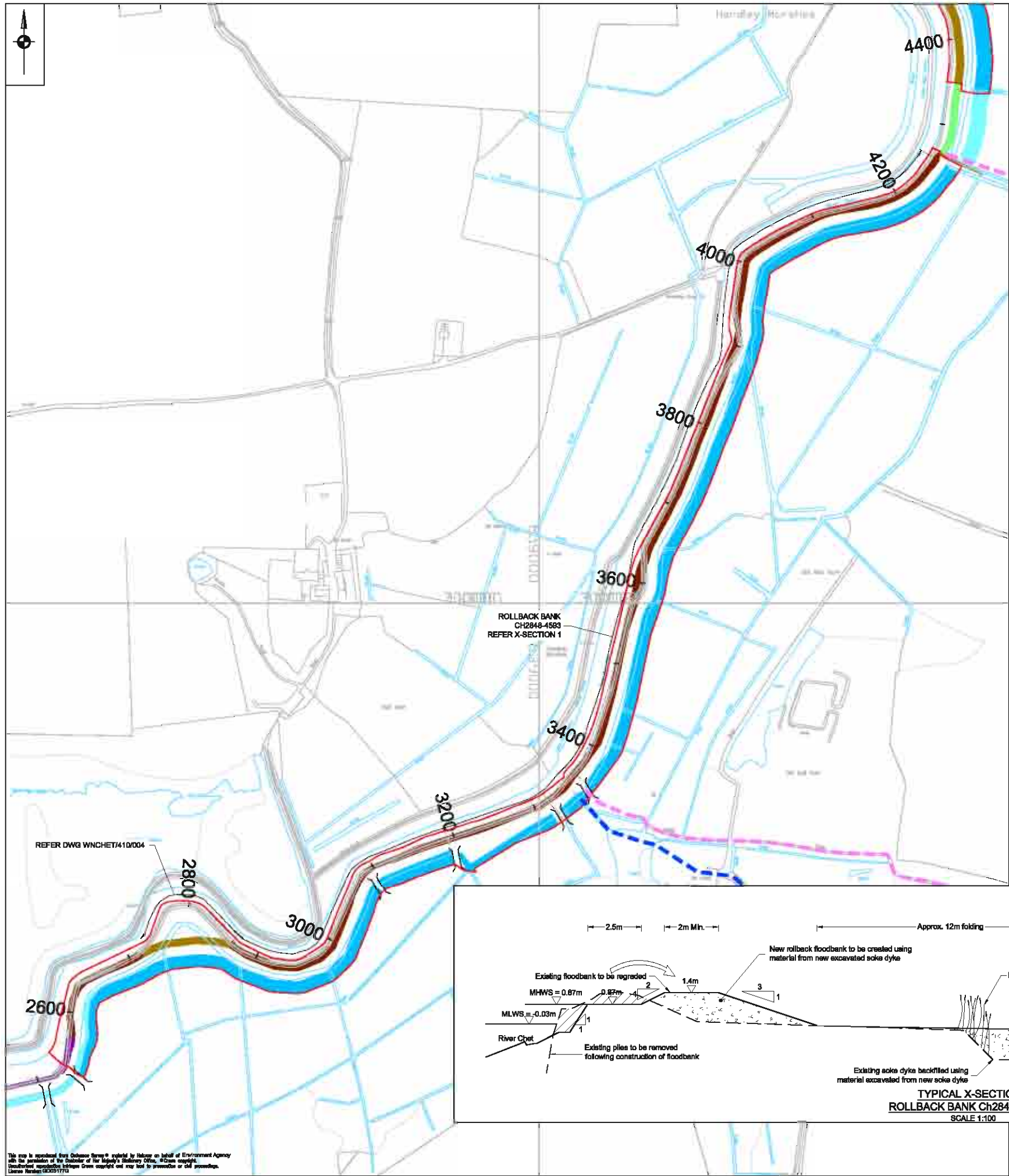
**RIVER CHET
DETAILED PLAN
SHEET 2 OF 5**

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PLAN OF WORKS
SCALE 1:2500

- Key:
- ROLLBACK BANK
 - SETBACK BANK
 - NEW SOKE DYKE
 - MAINTAIN BANK
 - CULVERTED CROSSINGS
 - LANDOWNER PARCELS
 - PLANNING APPLICATION BOUNDARY
 - MAIN ACCESS ROUTES
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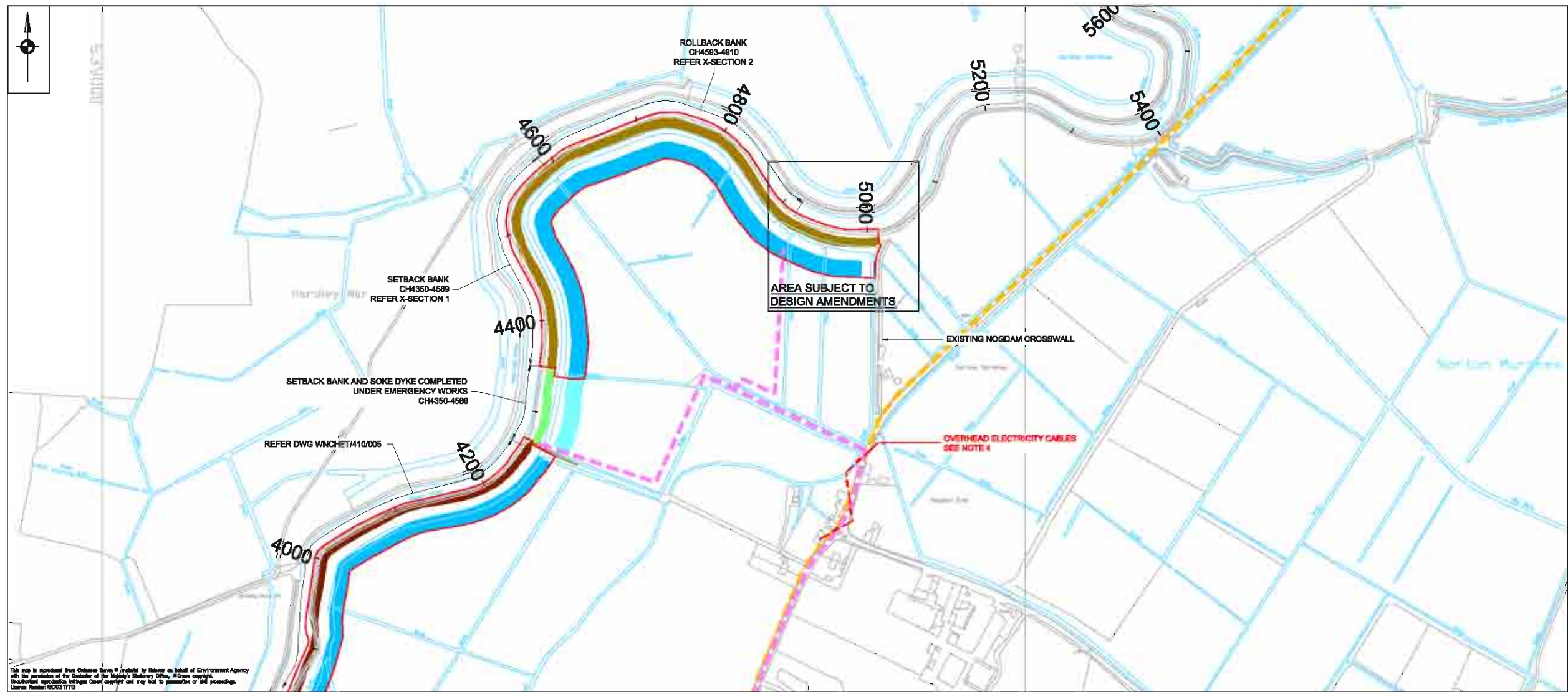
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RIVER CHET
DETAILED PLAN
SHEET 3 OF 5**

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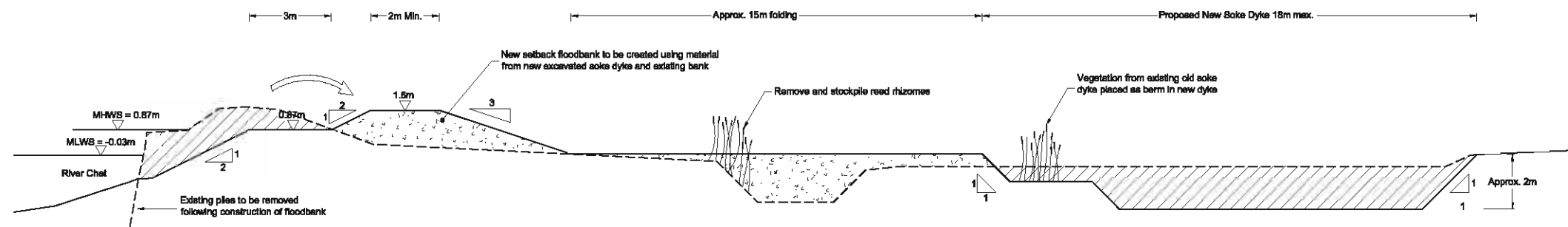
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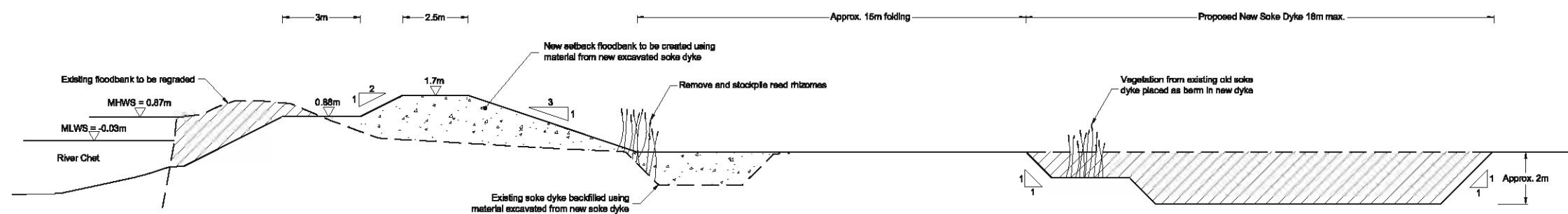
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PLAN OF WORKS
SCALE 1:2500



TYPICAL X-SECTION 1
SETBACK BANK CH4350 - 4589m
SCALE 1:100



TYPICAL X-SECTION 1
SETBACK BANK CH4593 - 4910m
SCALE 1:100

Key:

- ROLLBACK BANK
- SETBACK BANK
- NEW SOKE DYKE
- NEWLY EXCAVATED SOKE DYKE
- RECENTLY SETBACK BANK
- CULVERTED CROSSINGS
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- PUBLIC FOOTPATH ROUTE
- OVERHEAD ELECTRICITY CABLES

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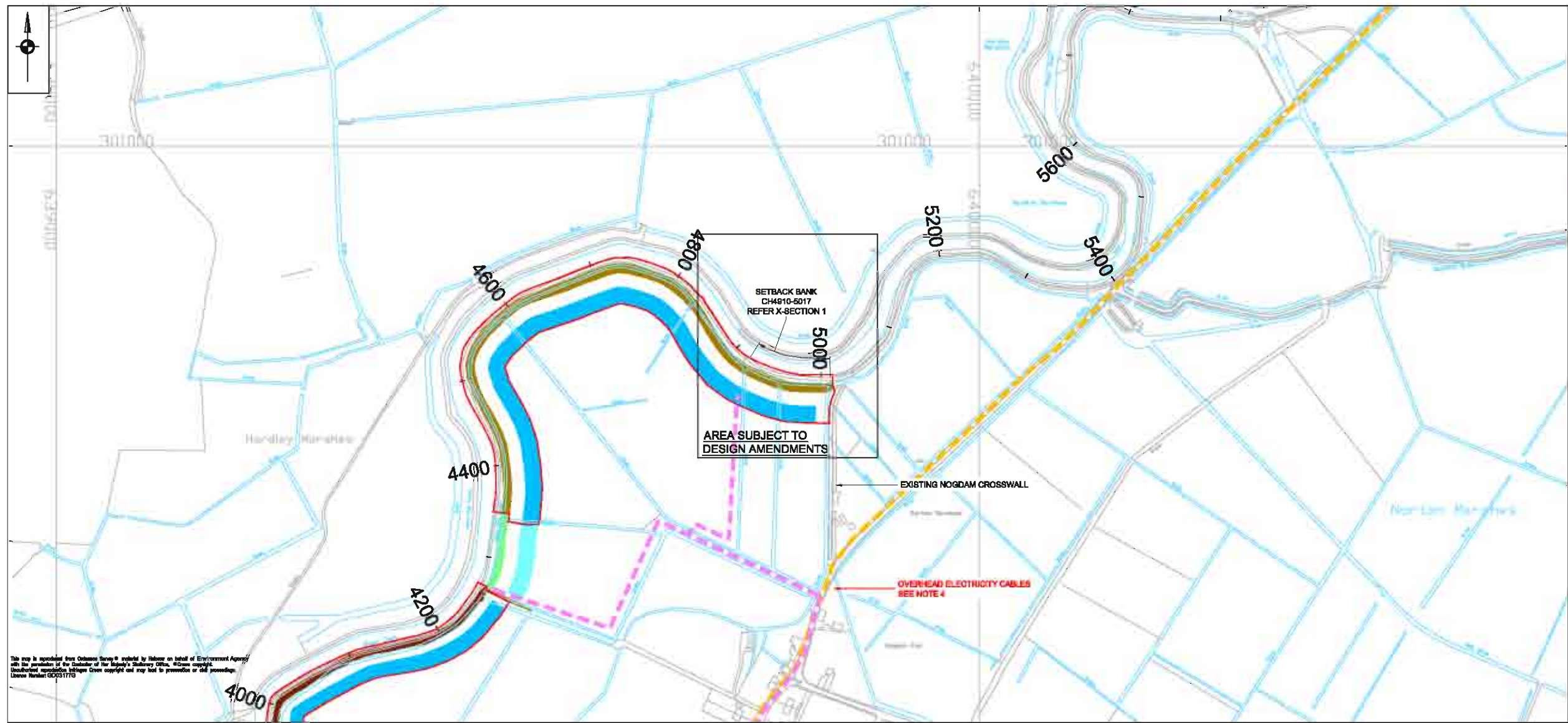
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RIVER CHET
DETAILED PLAN
SHEET 4 OF 5

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User and Print Date



PLAN OF WORKS
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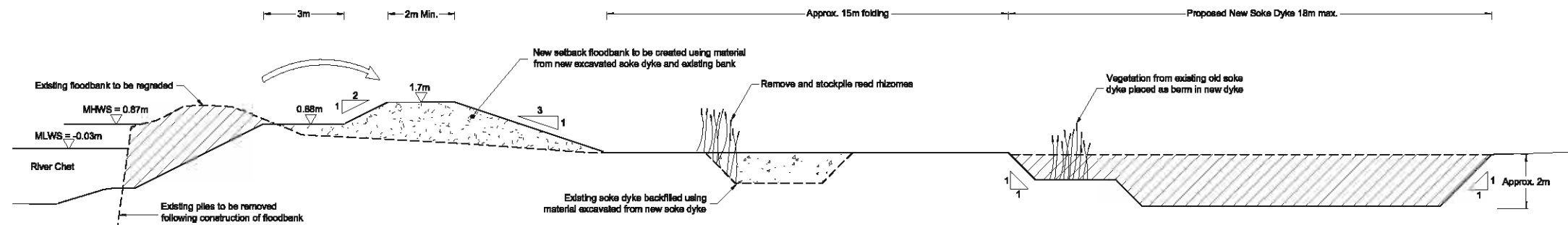
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TYPICAL X-SECTION 1
SETBACK BANK CH4910 - 5017m
SCALE 1:100

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