Preliminary Environmental Information Report Volume 2

Appendix 8.4 Baseline Report - River Condition Assessment Survey

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Contents

1 Introduction

1.1 Project description

1.1.1 LionLink is a proposed electricity interconnector between Great Britain and the Netherlands that would supply up to 2 gigawatts (GW) of electricity and would connect to Dutch offshore wind via an offshore converter platform in Dutch waters (hereafter the Project).

1.1.2 The Proposed Scheme (defined as the part of the Project within the British jurisdiction) would involve the construction of the proposed Converter Station and the installation of offshore and onshore proposed Underground High Voltage Direct Current Cables (HVDC) to the proposed Converter Station and the proposed Underground High Voltage Alternating Current Cables (HVAC) between the proposed Converter Station and the Kiln Lane Substation.

1.2 Overview of survey approach

1.2.1 An Ecology Survey Strategy (ESS) was produced in March 2023, which explained the approach for ecological surveys to inform the baseline for the Proposed Onshore Scheme. The ESS set out the rationale and methods for how and when relevant ecological features would be identified to inform the design process. The aim of the ESS was to ensure that sufficient baseline data would be available to embed the mitigation hierarchy within the design, i.e. to avoid adverse impacts to valuable ecological features wherever possible, and to minimise any unavoidable adverse impacts.

1.2.2 A River Condition Assessment (RCA) was undertaken for all lengths of watercourse falling within the Proposed Onshore Scheme Scoping Boundary ((shown in **Figure 1-2 of the EIA Scoping Report** (Ref 1)) to guide avoidance of impacts to the highest value sections of watercourse. As the RCA captures a wide range of both physical and biological factors, this condition score also acts as a proxy for a wide range of associated aquatic receptors to inform decisions at the early design stages.

1.3 Purpose and scope of this document

1.3.1 The purpose of this report is to present the results of RCA undertaken for the Proposed Onshore Scheme. The objectives of this report are to:

a. Present the results of Modular River Physical (MoRPh) surveys undertaken on each watercourse as part of the RCA;
b. Present the results of the desk study element of the RCA, including over-deepening assessment;
c. Present the final Biodiversity Net Gain (BNG) condition scores for each watercourse as determined by the RCA; and

d. Provide sufficient information to inform an assessment of potential impacts to watercourses as a result of the Proposed Onshore Scheme and to inform design of appropriate mitigation measures (where required).

2 Methods

2.1 Background to River Condition Assessment survey

2.1.1 The character of naturally functioning rivers and streams is highly variable, depending primarily on a set of physical factors and processes (for example valley gradient, flow regime, bed material). Their character also depends on the nature of any interactions between riparian and aquatic vegetation and the physical factors and processes arising from the presence of vegetation.

2.1.2 As a result, naturally functioning rivers and streams can take on a wide variety of forms and dynamics, such that the physical habitats they display, and their rate of turnover are also highly variable. Superimposed upon this natural variability, numerous pressures and direct interventions by humans affect the nature and dynamics of the river's habitat mosaic and inevitably have an impact on the biota that these habitats can support. An RCA is therefore undertaken to take account of these factors by using data from a desk-study and field surveys:

a. At the reach scale (defined as section of river along which boundary conditions are sufficiently uniform that the river maintains a near consistent internal set of process–form interactions) the apparent (indicative) type of river or stream (the 'River Type') that is being considered is classified, based mainly upon a desk-study but supported with bed material information extracted from Modular River Physical 5 (MoRPh5) sub-reach field surveys and reach observations.
b. At the sub-reach scale (short sections of channel 50, 100, 150 or 200m in length) condition is assessed in relation to what is achievable for the River Type if it were functioning naturally. This assessment takes account of the local range and extent of the physical habitats and human influences observed in field surveys of five contiguous (i.e. side by side or 'joined up') MoRPh modules (a MoRPh5 sub-reach survey) and also the likelihood of the river channel being over-deep as a result of human actions and thus to some degree being disconnected from bank top/floodplain habitats.

2.1.3 These two components contribute to the calculation of a river condition class for each watercourse on a site.

2.2 Desk study

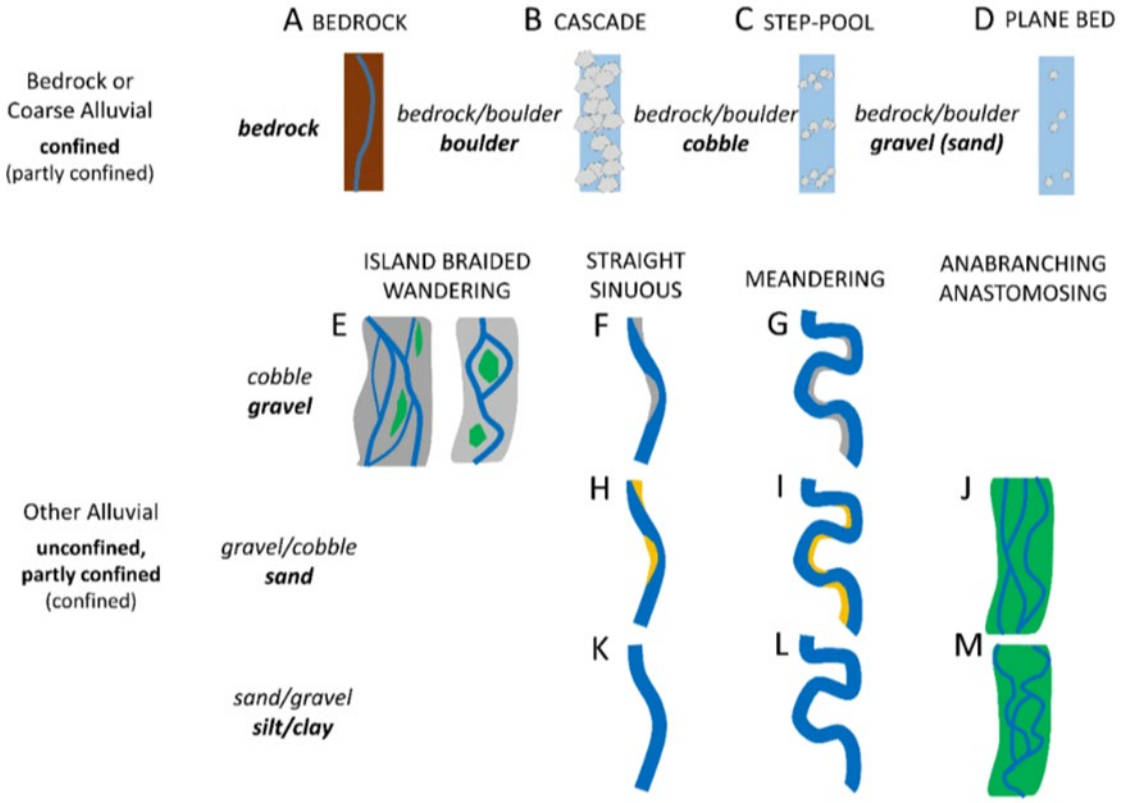
2.2.1 The River Type assessment was determined using:

a. Measurements of planform, natural confinement and valley gradient of the extended river reach enclosing the Proposed Onshore Scheme area; and
b. Information on the bed material of the river.

2.2.2 This data was then entered into the RCA information system, which automatically generated an indicative (naturally-functioning) hydromorphological River Type for the extended river reach. The River Type assessment was undertaken in accordance with best practice (Ref 2).

2.2.3 There is a total of 15 River Types, of which only 13 indicative River Types (A to M) are relevant to this survey.

Inset 2.1: Thirteen near-natural River Types that might be encountered in England (Ref 2)



2.2.4 Eight River Type indicators were combined to determine the indicative River Type for each watercourse (see **Table 2.1**). Five indicators (A1-A5) were assessed by a desk-study at the river reach scale for each watercourse relevant to the study. A further three (A6-A8) were automatically generated from the MoRPh5 sub-reach field survey data once it has been uploaded into the RCA information system.

Table 2.1: Indicators derived from desk-study and MoRPh5 field survey that contribute to assessing the River Type and function

Source	Code	Name
Desk-study	A1	Braiding Index (BI)
Desk-study	A2	Sinuosity Index (SI)
Desk-study	A3	Anabranching Index (AI)
Desk-study	A4	Level of confinement (U, PC, C)
Desk-study	A5	Valley gradient
Field survey	A6	Bedrock reaches

Source	Code	Name
Desk-study	A7	Coarsest bed material size
Field survey	A8	Average alluvial bed material size class

2.2.5 To determine indicators A1 to A5 (during the desk-study), a qualified RCA surveyor assessed the watercourse using maps and aerial imagery, along with topographic information.

2.2.6 Indicators A6 to A8 describe the riverbed material and were derived from the MoRPh5 field surveys. Where more than one MoRPh5 survey was assessed, the MoRPh5 survey with the coarsest bed material was used to estimate the indicative River Type (MoRPh5 surveys from the same reach/watercourse have the same River Type).

2.2.7 The findings of this desk-study were used to inform the indicative River Type for the specified watercourses (in conjunction with indicators A6-A8) and were used to supplement the provisional condition score (generated from the RCA information system following input of field survey data) and provide a final condition score/class.

2.3 Field survey

2.3.1 A total of 15 watercourses fall within the Proposed Onshore Scheme Scoping Boundary (**Annex A: Site Overview**). Location details are outlined in **Table 2.2**.

2.3.2 The MoRPh survey (Ref 3) is used in the RCA to collect field information for the sub-reach(es) of a river with the aim of surveying at least 20% of the total river length within or immediately adjacent to the Proposed Onshore Scheme Scoping Boundary. The aims of the surveys were to provide a representative baseline of conditions at the time of survey to inform the early stages of design for the Proposed Onshore Scheme. Given the length of each watercourse falling within the Proposed Onshore Scheme Scoping Boundary is likely to be many times greater than that falling within the bounds of the eventual Draft Order Limits, 20% of total river length was utilised as a target to ensure the final condition of watercourse sections was reasonably reliable over the extended assessment length.

Table 2.2: Summary of locations scoped in for MoRPh5 survey

Watercourse	Morph 5 ID	Upstream extent National Grid Reference (NGR)	Downstream extent NGR	20 % reach length surveyed?
Dunwich River Upstream	1 a – 1e	TM 43007 71475	TM 45013 71178	Yes

Watercourse	Morph 5 ID	Upstream extent National Grid Reference (NGR)	Downstream extent NGR	20 % reach length surveyed?
Hundred River	2a – 2j	TM 42348 64440	TM 42423 62138	Yes
Hundred River (Peakhill Farm)	3a – 3f	TM 41496 64809	TM 42274 63719	Yes
Hundred River (Westhouse Tributary)	4a – 4i	TM 40570 64198	TM 42133 63137	Yes
Minsmere River (Darsham Marshes)	5a – 5c	TM 42032 68523	TM 43012 68051	Yes
Minsmere Southern Tributrary	6a – 6h	TM 41752 67383	TM 42917 67925	Yes
River Blyth	7a – 7c	TM 42486 76453	TM 45010 75390	No
River Blyth Tributary 1	8a – 8g	TM 42960 74508	TM 44054 75484	No
River Blyth Tributary 2	9a – 9e	TM 42488 76387	TM 44124 75315	No
River Fromus tributary	10a – 10h	TM 40521 62439	TM 39493 61547	Yes
River Wang Main River	11a – 11h	TM 43490 79902	TM 46371 79113	Yes
River Wang Tributary	12a – 12f	TM 44425 80744	TM 44706 79750	Yes
River Wang New Valley Tributary	13a – 13d	TM 43575 78015	TM 44498 77904	Yes
Dunwich River Downstream	N/A	TM 49163 73939	TM 49885 74501	No
Buss Creek	N/A	TM 50443 76912	TM 50992 76999	No

2.3.3 For assessing river condition, MoRPh5 sub-reach surveys were comprised of five contiguous (side by side or 'joined up') MoRPh module surveys, to capture information for sub-reaches of 50, 100, 150, 200m in length according to the MoRPh width (the width of the water and any bare sediments and areas of emergent aquatic plants at the water's edge). MoRPh5 surveys for these different widths were undertaken within delineated sections of river channel of consistent

condition to provide a minimum survey of 20% of the total river length within the Proposed Onshore Scheme Scoping Boundary. Each MoRPh5 sub-reach survey represented the range of local river conditions within each delineated river section.

2.3.4 Each sub-reach was representative of the range of local river conditions. In particular, sub-reaches were selected to capture the most physically degraded part of the river within the study area and the most natural/unmodified part of the river. All of the watercourses surveyed were <5m in width, except for the River Blyth where the river was 5-10m in width. MoRPh surveys capture information on short lengths of river channel comprised of five contiguous modules of river (MoRPh5). Each module is approximately twice the MoRPh width (i.e. MoRPh width < 5m, module length = 10m; MoRPh width ≥ 5m and < 10m, module length = 20m).

2.3.5 The MoRPh surveys extended perpendicular to each watercourse (specifically up to 10m from the bank top edge on both banks) and recorded information relating to the bank tops, bank faces, channel-water margin and the riverbed as well as channel dimensions. The survey captured the extent and character of (a) bank and bed sediments, (b) morphological and hydraulic features/habitats, (c) riparian and aquatic vegetation extent and structure, (d) presence and extent of non-native invasive plant species (NNIPS), (e) bank top land use pressures, (f) human interventions within the river channel and (g) the cross-sectional dimensions of the river channel.

2.3.6 MoRPh surveys are ordinarily conducted during periods of low flow, during spring or early summer; this enables the recording of information on both vegetation and physical properties of the river and its margins. The MoRPh surveys undertaken as part of this assessment were undertaken across August, September and October 2023, under normal flow conditions, with clear water, allowing full visual assessment of the riverbed and bank faces.

2.4 Assessing river condition

2.4.1 River conditions were assessed using 32 condition indicators (Ref 4) that were automatically extracted from the MoRPh5 field data. Each river condition indicator was assigned a score of 0 to + 4 (positive indicators) or 0 to – 4 (negative indicators). Positive indicators represent the diversity (richness) and abundance (extent) of physical habitats offered by vegetation, sediment, vegetation-sediment related physical features, and hydraulic habitats that can be observed at low flows. Negative indicators represent the extent and severity of local human interventions or pressures.

2.4.2 A preliminary condition score for each MoRPh5 survey was calculated as the sum of the average of the positive condition indicator scores and the average of the negative condition indicator scores for the sub-reach. The preliminary condition score was translated into a final condition score (5-good, 4-fairly good, 3-

moderate, 2-fairly poor, 1-poor) based upon the determined River Type (Ref 4). The process in which the preliminary condition score is translated into a final condition score is dependent on the River Type under consideration. This is because all River Types have been set likely best and worst preliminary condition scores for each River Type and lower threshold values for allocating a final condition score in the form of boundaries. These boundaries were defined for each River Type by subdividing the numerical gap between the estimated worst/best case preliminary condition scores for each River Type into the five scores mentioned above.

2.4.3 The preliminary condition score for each sub-reach was extrapolated based on shared physical characteristics to highlight the extent to which each condition score could be applied.

2.5 Over-deep assessment

2.5.1 Over-deep channels are river channels whose depth relative to its width suggests that the bed has been incised/dredged and/or the bank tops have been raised, with the result that high flows are less likely to connect with the bank tops and floodplain than if the channel cross section profile was unmodified.

2.5.2 The over-deepening assessment is only applied to certain River Types but if the channels of those River Types are judged to be over-deep, the Final Condition Score is reduced by one class (e.g. Good is reduced to Fairly Good). The assessment of over-deepening is only relevant to single thread River Types F, G, H, I, J, K, L, shown within **Inset 2.1.**

2.5.3 The MoRPh5 indicators generated include two river channel shape indicators; average width and river shape, which are recorded in the MoRPh5 surveys. River shape is used to assess the likelihood of a surveyed channel being sufficiently over-deep to adversely affect its hydrological/ecological lateral connectivity. If a river shape has a value of ≤2 the river is considered highly likely to be over-deep and if the river shape has a value of ≤4, the river is likely to be over-deep.

2.5.4 Following completion of the RCA, an over-deep assessment was undertaken for each of the sub-reaches surveyed (where applicable) with river condition adjusted accordingly.

2.6 Constraints and limitations

2.6.1 Areas beyond the initial Proposed Onshore Scheme Scoping Boundary have subsequently been incorporated into the Draft Order limits, encapsulating several new watercourses; the River Fromus south of Saxmundham and the Hundred River at Coldfair Green. Sufficient information relating to these watercourses would be obtained to appropriately inform impact assessment prior to the Environmental Statement stage.

2.6.2 Field MoRPh surveys are ordinarily conducted during periods of low flow, during spring or early summer; this enables the recording of information on both vegetation and physical properties of the river and its margins. Although the 2023 surveys were undertaken between mid-summer and autumn, care was given to accurately identify and quantify physical features that may have been obscured by vegetation and therefore the timing of the surveys was not considered to be a significant limitation to the survey findings.

2.6.3 Dense vegetation coverage was encountered at many of the survey sites. The bank faces were heavily overgrown, primarily with scrub and shrubs, making the prescribed number of MoRPH5 surveys unachievable at these locations. Five out of 15 sites where the targeted number of MoRPH5 surveys could not be conducted included the River Blyth, River Blyth tributaries 1 and 2, Dunwich River downstream (DS) and Buss Creek. The aims of the surveys were to provide a representative baseline of conditions at the time of survey to inform the early stages of design for the Proposed Onshore Scheme. As such, where 20% of total river length has not been achieved, there is not likely to be significant limitation in the survey deliverables. However, once a final boundary is defined, the integrity of this data would be reviewed to ascertain how the survey design (both on a temporal and spatial scale) aligns with best guidance.

2.6.4 The lower reaches of the River Blyth and its tributaries could not be accessed due to dense reeds and barbed wire fences preventing access to the bank side and channel. Additionally, as the lower reaches transitioned from farmland to saltmarsh, with the river becoming more estuarine, MoRPh is not suitable to classify these areas. It was therefore not possible to survey at least 20% of the River Blyth and its two tributaries as identified within the Proposed Onshore Scheme Scoping Boundary.

2.6.5 Two of the proposed reaches (Buss Creek and Dunwich River DS) were identified to be intertidal areas. The current MoRPh methodology is not suitable to classify these areas; therefore, they were removed from the survey schedule.

3 Results

3.1 Desk study

3.1.1 The results from the desk study can be found in **Section 3.3**, where they are assessed in conjunction with the field survey results, preliminary and final condition scores.

3.1.2 Across the entire survey array, indexes for anabranching were classed as '0', indicating that there was only one main channel to the watercourses observed during the survey.

3.1.3 The sinuosity index (SI) ranged from 1.042 to 1.415, which is categorised as straight sinuous (<1.5), with meandering classed as a sub-reach returning an index of > 1.5.

3.1.4 All sites were recorded as unconfined, which is categorised as reaches with less than 10% of their total river length in contact with valley side slopes, or ancient terraces.

3.1.5 Bedrock was not recorded at any of the MoRPh5 sub-reaches surveyed. The coarsest bed material recorded within different sub-reaches ranged from silt to gravel/pebble, with the average size of alluvial bed material across the different MoRPh5 sub-reaches ranging from sand to silt.

3.1.6 Following the classification of River Types, three reaches were classed as H, eight reaches were classed as K and two reaches were classed as L (see **Table 3.3**). As illustrated in **Inset 2.1**:

a. River Type H is described as unconfined, other alluvial, straight sinuous, gravel/cobble (sand) watercourse;
b. River Type K is described as an unconfined other alluvial straight sinuous sand/gravel (silt) watercourse; and
c. River Type L classified as an unconfined, other alluvial, meandering sand/gravel (silt/clay) watercourse.

3.2 MoRPh5 surveys

3.2.1 The suite of the surveys that were completed, along with positions of MoRPh5 surveys, are summarised in **Table 3.1** and shown in **Annex B: MoRPH Sub-reach Extents**. As a result of the various constraints detailed in **Section 2.5**, it was only possible to achieve 20% survey coverage at ten of the 15 watercourses.

Table 3.1: Summary of MoRPh5 survey locations

Watercourse	MoRP5 ID	Upstream extent NGR	Downstream extent NGR
Dunwich River Upstream	1a	TM 43194 71263	TM 43231 71250
	1b	TM 43560 71159	TM 43598 71145
	1c	TM 44020 71084	TM 44073 71088
	1d	TM 44336 71070	TM 44379 71064
	1e	TM 44614 71023	TM 44668 71020
Hundred River	2a	TM 42432 64009	TM 42412 63973
	2b	TM 42368 63916	TM 42350 63883
	2c	TM 42275 63776	TM 42278 63737
	2d	TM 42321 63616	TM 42324 63573
	2e	TM 42154 63212	TM 42150 63173
	2f	TM 42147 63097	TM 42169 63066
	2g	TM 42269 62900	TM 42289 62871
	2h	TM 42357 62710	TM 42364 62671
	2i	TM 42381 62466	TM 42380 62420
	2j	TM 42401 62203	TM 42417 62167
Hundred River (Peakhill Farm)	3a	TM 41500 64763	TM 41513 64713
	3b	TM 41752 64207	TM 41743 64167
	3c	TM 41772 64076	TM 41796 64043

Watercourse	MoRP5 ID	Upstream extent NGR	Downstream extent NGR
	3d	TM 41817 63990	TM 41852 63970
	3e	TM 41888 63945	TM 41921 63924
	3f	TM 41949 63902	TM 41983 63882
Hundred River (Westhouse Tributary)	4a	TM 40774 64220	TM 40818 64204
	4b	TM 40997 64092	TM 41055 64054
	4c	TM 41166 63964	TM 41205 63936
	4d	TM 41374 63745	TM 41402 63718
	4e	TM 41434 63662	TM 41466 63630
	4f	TM 41628 63451	TM 41656 63421
	4g	TM 41758 63249	TM 41794 63218
	4h	TM 41897 63185	TM 41933 63174
	4i	TM 42067 63151	TM 42122 63136
Minsmere River (Darsham Marshes)	5a	TM 42134 68595	TM 42176 68624
	5b	TM 42291 68539	TM 42346 68497
	5c	TM 42594 68325	TM 42628 68309
Minsmere Southern Tributary	6a	TM 41766 67381	TM 41818 67383
	6b	TM 42008 67364	TM 42050 67376
	6c	TM 42169 67536	TM 42216 67547
	6d	TM 42250 67555	TM 42293 67588

Watercourse	MoRP5 ID	Upstream extent NGR	Downstream extent NGR
	6e	TM 42380 67645	TM 42416 67655
	6f	TM 42477 67664	TM 42521 67683
	6g	TM 42600 67712	TM 42625 67742
	6h	TM 42749 67755	TM 42760 67792
River Blyth	7a	TM 42485 76443	TM 42566 76431
	7b	TM 42810 76375	TM 42886 76350
	7c	TM 43254 76241	TM 43327 76198
River Blyth Tributary 1	8a	TM 42969 74501	TM 43003 74480
	8b	TM 43152 74512	TM 43173 74539
	8c	TM 43237 74648	TM 43270 74696
	8d	TM 43421 74851	TM 43473 74870
	8e	TM 43827 75087	TM 43871 75096
	8f	TM 43915 75124	TM 43952 75136
	8g	TM 43972 75172	TM 44003 75192
River Blyth Tributary 2	9a	TM 42551 76391	TM 42586 76387
	9b	TM 42639 76341	TM 42668 76313
	9c	TM 42755 76176	TM 42792 76154
	9d	TM 43002 76088	TM 43025 76071
	9e	TM 43208 76126	TM 43228 76097

Watercourse	MoRP5 ID	Upstream extent NGR	Downstream extent NGR
River Fromus Tributary	10a	TM 40520 62428	TM 40503 62390
	10b	TM 40436 62221	TM 40451 62188
	10c	TM 40391 61956	TM 40342 61926
	10d	TM 40230 61808	TM 40201 61778
	10e	TM 40095 61688	TM 40067 61658
	10f	TM 39947 61553	TM 39909 61532
	10g	TM 39754 61537	TM 39719 61537
	10h	TM 39564 61536	TM 39525 61547
River Wang Main River	11a	TM 43831 79914	TM 43879 79930
	11b	TM 44149 79915	TM 44180 79893
	11c	TM 44293 79703	TM 44321 79678
	11d	TM 44421 79710	TM 44458 79725
	11e	TM 44940 79696	TM 44979 79686
	11f	TM 45783 79328	TM 45820 79318
	11g	TM 46298 79286	TM 46315 79253
	11h	TM 45335 79544	TM 45373 79536
River Wang Tributary	12a	TM 44409 80706	TM 44408 80674
	12b	TM 44483 80554	TM 44516 80532
	12c	TM 44577 80459	TM 44607 80436

Watercourse	MoRP5 ID	Upstream extent NGR	Downstream extent NGR
	12d	TM 44639 80354	TM 44682 80314
	12e	TM 44672 80237	TM 44666 80194
	12f	TM 44660 79894	TM 44694 79861
River Wang New Valley Tributary	13a	TM 43620 78042	TM 43654 78066
	13b	TM 43833 78117	TM 43873 78114
	13c	TM 44190 78095	TM 44228 78082
	13d	TM 44439 77965	TM 44456 77930

3.3 River types and condition scores

3.3.1 Following the desk-based study and MoRPh5 surveys, the preliminary condition score, River Type, and ultimately the final condition score for each MoRPh5 sub-reach survey was calculated as shown in **Table 3.2**.

3.3.2 To illustrate the findings of this report the final condition score boundaries for the relevant indicative River Type (A to M) were overlain on the preliminary condition scores for the MoRPH5 sub-reaches (see **Inset 3.1**). A table reporting the raw indicator values for all MoRPh5 sub-reaches is provided in **Annex D: Raw data of MoRPh5 surveys**.

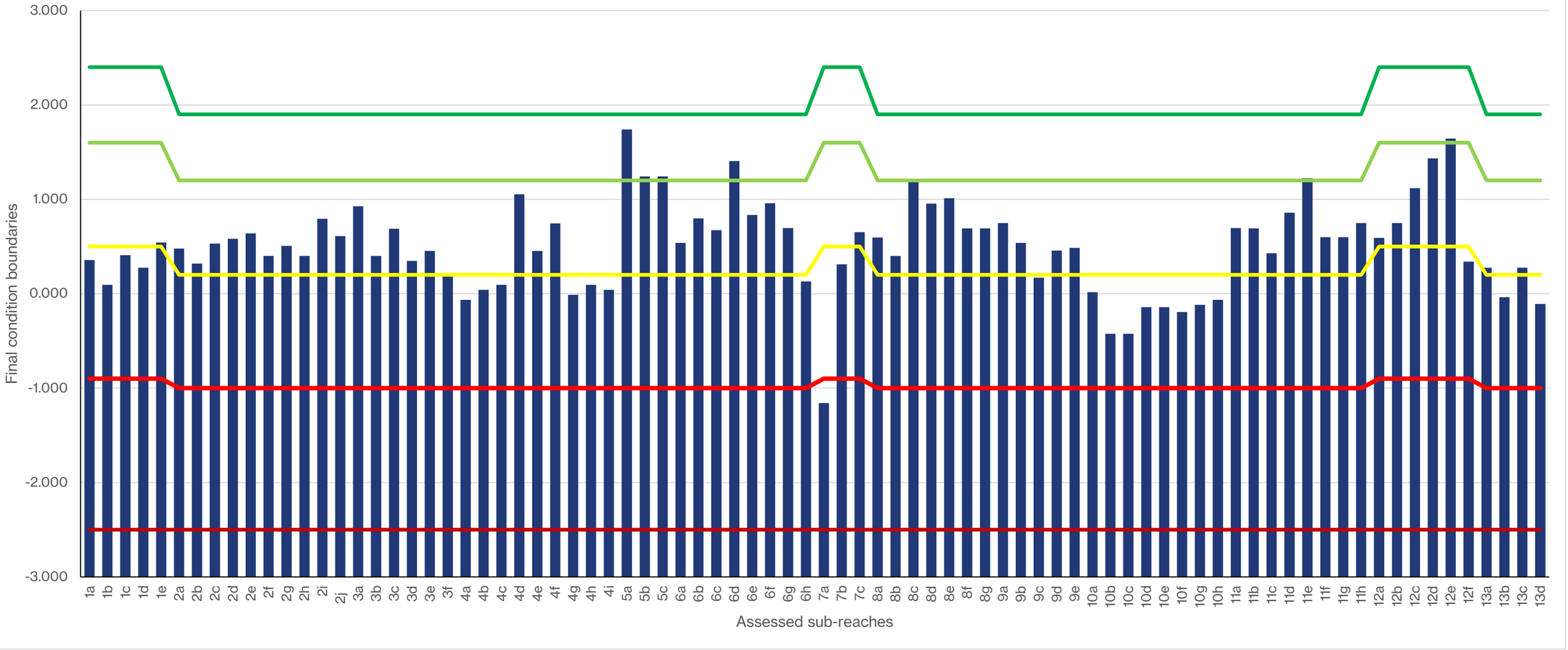
Table 3.2: Characteristics of the MoRPh5 survey sub-reaches

Watercourse name	A1 Braiding index	A2 Sinuosity index	A3: Anabranching index	A4: Level of Confinement	A5: Reach valley gradient	A6 Bedrock sub-reach	A7 Coarsest bed material	A8 Average alluvial bed material size class	River Type	Survey ID	Preliminary condition score	Final condition class/final condition score	Shape	Adjusted Final condition class due to over-deepening
Dunwich River	0	1.1	0	Unconfined	0.0045	No	Gravel/pebble	Sand	H	1a	0.356	Fairly poor	1.38	Poor
										1b	0.093	Fairly poor	1.42	Poor
										1c	0.409	Fairly poor	1.01	Poor
										1d	0.275	Fairly poor	0.77	Poor
										1e	0.543	Moderate	1.36	Fairly poor
Hundred River	0	1.136	0	Unconfined	0.0041	No	Gravel/pebble	Silt	K	2a	0.478	Moderate	0.06	Fairly poor
										2b	0.32	Moderate	0.78	Fairly poor
										2c	0.53	Moderate	1.19	Fairly poor
										2d	0.583	Moderate	1.40	Fairly poor
										2e	0.64	Moderate	0.93	Fairly poor
										2f	0.401	Moderate	0.85	Fairly poor
										2g	0.506	Moderate	1.02	Fairly poor
										2h	0.401	Moderate	0.99	Fairly poor
										2i	0.794	Moderate	1.89	Fairly poor
										2j	0.611	Moderate	0.88	Fairly poor
Hundred River (Peakhill Farm)	0	1.154	0	Unconfined	0.0046	No	Silt	Silt	K	3a	0.927	Moderate	0.75	Fairly poor
										3b	0.401	Moderate	0.62	Fairly poor
										3c	0.688	Moderate	0.98	Fairly poor
										3d	0.348	Moderate	1.26	Fairly poor
										3e	0.453	Moderate	0.78	Fairly poor
										3f	0.19	Fairly poor	1.00	Poor
Hundred River (Westhouse Tributary)	0	1.100	0	Unconfined	0.0070	No	Silt	Silt	K	4a	-0.065	Fairly poor	0.95	Poor
										4b	0.04	Fairly poor	0.95	Poor
										4c	0.093	Fairly poor	1.00	Poor
										4d	1.053	Moderate	0.70	Fairly poor
										4e	0.453	Moderate	0.92	Fairly poor
										4f	0.745	Moderate	0.64	Fairly poor
										4g	-0.012	Fairly poor	1.33	Poor

Watercourse name	A1 Braiding index	A2 Sinuosity index	A3: Anabranching index	A4: Level of Confinement	A5: Reach valley gradient	A6 Bedrock sub-reach	A7 Coarsest bed material	A8 Average alluvial bed material size class	River Type	Survey ID	Preliminary condition score	Final condition class/final condition score	Shape	Adjusted Final condition class due to over-deepening
										4h	0.093	Fairly poor	0.75	Poor
										4i	0.04	Fairly poor	1.00	Poor
Minsmere River (Darsham Marshes)	0	1.273	0	Unconfined	0.0009	No	Silt	Silt	K	5a	1.741	Fairly good	2.25	Moderate
										5b	1.243	Fairly good	2.08	Moderate
										5c	1.243	Fairly good	2.10	Moderate
Minsmere Southern Tributary	0	1.286	0	Unconfined	0.0036	No	Gravel/pebble	Silt	K	6a	0.538	Moderate	1.25	Fairly poor
										6b	0.798	Moderate	1.16	Fairly poor
										6c	0.672	Moderate	2.15	Fairly poor
										6d	1.405	Fairly good	1.75	Moderate
										6e	0.834	Moderate	2.23	Fairly poor
										6f	0.96	Moderate	1.60	Fairly poor
										6g	0.696	Moderate	1.40	Fairly poor
										6h	0.13	Fairly poor	1.26	Poor
River Blyth	0	1.042	0	Unconfined	0.0008	No	Gravel/pebble	Sand	H	7a	-1.158	Poor	2.53	Poor
										7b	0.312	Fairly poor	2.33	Poor
										7c	0.652	Moderate	2.76	Fairly poor
River Blyth Tributary 1	0	1.357	0	Unconfined	0.0014	No	Gravel/pebble	Silt	L	8a	0.595	Moderate	2.54	Fairly poor
										8b	0.401	Moderate	2.51	Fairly poor
										8c	1.194	Moderate	2.87	Fairly poor
										8d	0.955	Moderate	3.93	Fairly poor
										8e	1.012	Moderate	2.83	Fairly poor
										8f	0.692	Moderate	3.89	Fairly poor
										8g	0.692	Moderate	4.56	Moderate
River Blyth Tributary 2	0	1.415	0	Unconfined	0.0009	No	Silt	Silt	L	9a	0.749	Moderate	2.70	Fairly poor
										9b	0.538	Moderate	2.28	Fairly poor
										9c	0.17	Fairly poor	2.13	Poor
										9d	0.457	Moderate	2.50	Fairly poor
										9e	0.486	Moderate	3.94	Fairly poor
	0	1.200	0	Unconfined	0.0048	No	Silt	Silt	K	10a	0.016	Fairly poor	1.51	Poor
										10b	-0.425	Fairly poor	1.51	Poor

Watercourse name	A1 Braiding index	A2 Sinuosity index	A3: Anabranching index	A4: Level of Confinement	A5: Reach valley gradient	A6 Bedrock sub-reach	A7 Coarsest bed material	A8 Average alluvial bed material size class	River Type	Survey ID	Preliminary condition score	Final condition class/final condition score	Shape	Adjusted Final condition class due to over-deepening
River Fromus Tributary										10c	-0.425	Fairly poor	1.31	Poor
										10d	-0.142	Fairly poor	1.56	Poor
										10e	-0.142	Fairly poor	1.56	Poor
										10f	-0.194	Fairly poor	1.56	Poor
										10g	-0.117	Fairly poor	1.67	Poor
										10h	-0.065	Fairly poor	1.33	Poor
River Wang Main River	0	1.200	0	Unconfined	0.0017	No	Gravel/pebble	Silt	K	11a	0.696	Moderate	2.29	Fairly poor
										11b	0.692	Moderate	1.31	Fairly poor
										11c	0.429	Moderate	1.40	Fairly poor
										11d	0.858	Moderate	1.61	Fairly poor
										11e	1.223	Fairly good	2.28	Moderate
										11f	0.599	Moderate	3.14	Fairly poor
										11g	0.599	Moderate	2.73	Fairly poor
										11h	0.749	Moderate	1.66	Fairly poor
River Wang Tributary	0	1.273	0	Unconfined	0.0018	No	Gravel/pebble	Sand	H	12a	0.591	Moderate	2.47	Fairly poor
										12b	0.749	Moderate	2.68	Fairly poor
										12c	1.117	Moderate	2.20	Fairly poor
										12d	1.433	Moderate	2.18	Fairly poor
										12e	1.644	Fairly good	2.33	Moderate
										12f	0.34	Fairly poor	1.56	Poor
River Wang New Valley Tributary	0	1.111	0	Unconfined	0.0067	No	Silt	Silt	K	13a	0.275	Moderate	1.27	Fairly poor
										13b	-0.036	Fairly poor	0.91	Poor
										13c	0.275	Moderate	1.07	Fairly poor
										13d	-0.109	Fairly poor	0.81	Poor

Inset 3.1: Final condition boundaries for the relevant indicative River Types (A to M) overlain on the preliminary condition scores for the project sub-reaches. Dark green (Good), light green (Fairly good), yellow (Moderate), red (Fairly poor) and dark red (Poor)



3.3.3 A summary overview of each watercourse has been provided below. A full list of the raw indicator values for all MoRPh5 sub-reaches is provided in **Annex D: Raw data of MoRPh5 surveys**.

Dunwich River Upstream

3.3.4 At the time of survey, the upstream reach of the Dunwich River was narrow (wetted channel widths of roughly 1 m), shallow (water depths generally < 0.1 m) and slow-flowing. The watercourse was fairly homogenous in terms of RCA characteristics observed across the sites surveyed, with the river condition assessed to be poor or fairly poor. The bank tops on either side were predominantly agricultural (arable), with steeply vegetated bank faces and heavily silted sediments (with the exception for sub-reaches 1a and 1d) across the channel bed.

3.3.5 The river shape across the MoRPh5 surveys conducted at Dunwich River Upstream varied from 0.77-1.42, suggesting that the river is highly likely to be over-deep.

3.3.6 Negative indicator scores that were recorded for the watercourse include B5 bank top management (sub-reaches 1a – c; scoring -3), and all sites scoring -4 for E7 channel bed siltation.

3.3.7 Positive indicator scores included C3 bank face natural bank profile extent for all locations (scoring 3), sub-reaches 1e scoring 4 for C6 bank face bare sediment extent and sub-reaches 1a and 1d scoring strongly (4) for E6 channel bed material richness.

Inset 3.2: Example photograph of on the Dunwich River Upstream at sub-reach 1c, module 3 (downstream view).

Hundred River

3.3.8 The RCA characteristics of the Hundred River were generally similar at each of the ten sub-reaches with river condition assessed to be fairly poor at each. Adjacent land use was entirely agricultural with a mixture of grazed pasture and arable fields bordering the channel. At the time of surveying the channel was dry at each of the sub-reaches surveyed, with terrestrial plant growth recorded in channel at several of the modules.

3.3.9 The banks of the watercourse were steep and heavily incised throughout with river shapes of 0.06-1.89 indicating that the channel was highly likely to be over-deep.

3.3.10 Negative indicator scores that were recorded for the watercourse include B5 bank top management (sub-reaches 2a – j; scoring -2 or less).

3.3.11 Positive indicator scores included C3 bank face natural bank profile extent with seven of the ten sub-reaches scoring 3. For E6 channel bed material richness, sub-reaches 2d-j scored 2 or above.

Inset 3.3: Example photograph of the Hundred River at sub-reach 2h, module 1 (upstream view)

Hundred River (Peakhill Farm)

3.3.12 River condition of the Hundred River tributary through Peakhill Farm was mostly assessed to be fairly poor. Sub-reach 3f was, however, classified as poor condition due to low scoring positive indicators such as C4 bank face natural profile richness and C1 bank face riparian vegetation structure.

3.3.13 Adjacent land use was almost entirely agricultural with a mixture of grazed pasture and arable fields bordering the channel. A small section of broad-leaved woodland was present on the right-hand bank of sub-reach 3c.

3.3.14 The banks of the watercourse were steep and heavily incised at each of the sub-reaches (river shapes of 0.62-1.26) indicating that the channel was highly likely to be over-deep. At the time of survey sub-reaches 3d-f were recorded as dry. Sub-reaches 3a-c were wetted but the watercourse in these locations was not freely flowing.

3.3.15 Negative indicator scores that were recorded for the watercourse include B5 bank top management (sub-reaches 3a – f; scoring -2 or less).

3.3.16 Positive indicator scores included C6 bank face bare sediment extent with sub-reaches 3a-f ranging from 1-4.

Inset 3.4: Example photograph of the Hundred River (Peakhill Farm) at sub-reach 3b, module 1 (downstream view)

Hundred River (Westhouse Tributary)

3.3.17 At the time of the survey the watercourse was dry. The watercourse was variable in river condition with six of the nine sub-reaches judged to be in poor condition (sub-reaches 4a-c and 4g-i) and three sub-reaches classified as fairly poor condition (sub-reaches 4d-f). The differences in river condition were attributed to E7 channel bed siltation which was present at sub-reaches 4a-c and 4g-i but not at sub-reaches 4d-f.

3.3.18 Adjacent land use was almost entirely agricultural comprising arable fields; however, a farm pond was present on the left-hand bank of sub-reach 4f.

3.3.19 Similar to the other Hundred River watercourses, the banks of the Hundred River (Westhouse Tributary) were steep and heavily incised throughout with river shapes of 0.7-1.33 indicating that the channel was highly likely to be over-deep.

3.3.20 Negative indicator scores that were recorded for the watercourse include B5 bank top management (sub-reaches 4a-c and 4e – i; scoring -3 or less) and E7 channel bed siltation (sub-reaches 4a-c and 4g-i scoring -4).

Inset 3.5: Example photograph of the Hundred River (Westhouse tributary) at sub-

3.3.21 Positive indicator scores included C3 bank face natural bank profile extent with eight of the nine sub-reaches scoring 3.

Minsmere River (Darsham Marshes)

3.3.22 At the time of survey, channel dimensions were variable between sub-reaches with water depths ranging from approximately 0.2 – 0.7m and wetted channel widths ranging from approximately 2.5-4.5m. River condition was, however, assessed to be moderate at each of the three sub-reaches surveyed. Adjacent land use was entirely agricultural grazed pasture.

3.3.23 The banks of the watercourse were steep and heavily incised throughout with river shapes of 2.08-2.25 indicating that the channel was likely to be over-deep.

3.3.24 Negative indicator scores that were recorded for the watercourse include B5 bank top management ground cover (all sub-reaches scoring -2 or less).

3.3.25 Positive indicator scores included B3 bank top water related features (all sub-reaches scoring 2 or above), C3 bank face natural bank profile extent with all sub-reaches scoring 3, and C4 bank face natural bank profile richness (sub-reaches 5a and 5b; scoring 4).

3.3.26 E4 channel bed natural feature extent scored 3 at sub-reach 5a, and E6 channel bed material richness scored 3 at sub-reaches 5a and 5b.

Inset 3.6: Example photograph of the Minsmere River (Darsham Marshes) at sub-reach 5b, module 1 (upstream view)

Minsmere Southern Tributary

3.3.27 At the time of survey, the Minsmere Southern Tributary was narrow (wetted channel widths of roughly 1.5m), shallow (water depths generally < 0.2m) and slow flowing. River condition was assessed to be fairly poor at six of the eight sub-reaches surveyed (Plate 6). Adjacent land use was predominantly agricultural with a mixture of grazed pasture and arable fields bordering the channel, with occasional broad-leaved woodland.

3.3.28 The Minsmere Southern Tributary sub-reach 6h was classified as fairly poor due to scoring strongly on negative indicators B4 bank top NNIPS cover, C10 bank

face NNIPS cover and E7 channel bed siltation, whilst sub-reach 6d scored moderate due to scoring higher across the board for positive indicators and strongly on positive indicator (D1 channel margin aquatic vegetation extent). All other sub-reaches were classified as fairly poor.

3.3.29 The banks of the watercourse were steep and heavily incised throughout with river shapes of 1.16-2.23 indicating that the channel was highly likely to be over deep.

3.3.30 Negative indicator scores that were recorded for the watercourse included:

a. B4 bank top NNIPS (sub-reaches 6h; scoring-3) due to the presence of Himalayan balsam (Impatiens glandulifera);
b. Three sub-reaches with B5 bank top managed ground cover (scoring -3);
c. C10 bank face NNIPS cover (sub-reaches 6h; scoring -4); and
d. Four sub-reaches scoring -4 for E7 channel bed siltation.

3.3.31 Positive indicator scores included:

a. Three sub-reaches for B3 bank top water related features (scoring 4);
b. Six sub-reaches for C3 bank face natural bank profile extent (scoring 3);
c. Four sub-reaches for C4 bank face natural bank profile richness (scoring 3);
d. Three sub-reaches scoring 3 or more for C6 bank face bare sediment extent;
e. Sub-reach 6d with D1 channel margin aquatic vegetation extent scoring 3;
f. Sub-reach 6b with D3 channel margin physical feature extent scoring 3;
g. Sub-reach 6f scoring 3 for E2 channel bed tree features richness; and
h. Five sub-reaches scoring 3 for E6 channel bed material richness.

Inset 3.7: Example photograph of the Minsmere Southern Tributary at sub-reach 6e, module 1 (upstream view)

River Blyth

3.3.32 At the time of survey, channel dimensions were relatively consistent between the sub-reaches with water widths approximately 7m and bank full widths approximately 12m. Water depths (0.3 - >1m) were, however, variable but flows were consistently slow throughout. Adjacent land use was entirely agricultural grazed pasture bordering the channel.

3.3.33 River condition assessed to be fairly poor – poor at each of the three sub-reaches surveyed. Sub-reach 7a was initially classed as poor (prior to the over-deep assessment) due to scoring strongly on negative indicators C8 bank face reinforcement extent, C9 bank face reinforcement material severity, C10 bank face NNIPS cover, E8 channel bed reinforcement extent, E9 channel bed reinforcement severity and E10 channel bed artificial features severity. Sub-reach 7b was classified as poor following the deepening assessment, whilst sub-reach 7c scored fairly poor due to scoring strongly on positive indicators B3 bank top water-related features, D1 channel margin aquatic vegetation extent and D3 channel margin physical feature extent.

3.3.34 The banks of the watercourse were relatively steep and moderately incised throughout with river shapes of 2.33-2.79 indicating that the channel was likely to be over deep.

3.3.35 Negative indicator scores that were recorded for the watercourse include:

a. Sub-reach 7a scoring -3 for B5 bank top managed ground cover;
b. All sub-reaches scoring -4 for C7 bank face artificial bank profile extent;
c. Sub-reach 7a scoring -4 for C10 bank face NNIPS cover due to the presence of Himalayan balsam;
d. Sub-reach 7a scoring -3 for E10 channel bed artificial features severity; and
e. All sub-reaches scoring -4 for E12 channel bed filamentous algae extent.

3.3.36 Positive indicator scores included:

a. B3 bank top water-related features at sub-reach 7c (scoring 4);
b. D1 channel margin aquatic vegetation extent at two sub-reaches (scoring 3);
c. D3 channel margin physical feature extent scoring 3 at sub-reach 7c; and
d. All sub-reaches scoring 3 for E6 channel bed material richness.

Inset 3.8: Example photograph of the River Blyth at sub-reach 7b, module 1 (downstream view)

River Blyth Tributary 1

3.3.37 At the time of survey, channel dimensions were relatively consistent between the sub-reaches with water widths approximately 3 - 4m and water depths generally 0.4 – 0.6m. Flows were sluggish at each of the sub-reaches and certain sections of the channel were choked with emergent vegetation (sub-reaches 8d and 8f). Adjacent land use was entirely agricultural with a mixture of grazed pasture and arable fields bordering the channel.

3.3.38 River condition was assessed to be fairly poor at six of the sub-reaches surveyed, and moderate at sub-reach 8g. The classifications of sub-reaches 8a – 8f were lowered to fairly poor from moderate following the over-deepening assessment, whilst sub-reach 8g remained moderate.

3.3.39 The banks of the watercourse were moderately steep and incised throughout for sub-reaches 8a – 8f with river shapes of 2.51-3.92 indicating that the channel was likely to be over deep. Whereas the river shape for sub-reach 8g was 4.56, indicating that the channel was not likely to be over-deep in that section.

3.3.40 Negative indicator scores that were recorded for the watercourse include:

a. Sub-reach 8b scoring -3 for B4 bank top NNIPS cover (Himalayan balsam present);
b. 8b scoring -4 for D5 channel margin artificial features;
c. Six sub-reaches scoring -4 for E7 channel bed siltation; and
d. Two sub-reaches scoring -3 or lower for E10 channel bed artificial feature severity.

3.3.41 Positive indicator scores that were recorded for the watercourse include:

a. Bank top water-related features at four sub-reaches scoring 4;
b. All sub-reaches scoring 3 for C3 bank face natural bank profile extent;
c. Sub-reach 8d scoring 4 for C4 bank face natural bank profile richness;
d. Sub-reach 8e scoring 3 for C6 bank face bare sediment extent;
e. Sub-reach 8d scoring 3 for D1 channel margin aquatic vegetation extent;
f. Three sub-reaches scoring 3 for D2 channel aquatic morphotype richness;
g. Two-sub-reaches scoring 3 for E2 channel bed tree features richness;
h. Sub-reach 8c scoring 3 for E4 channel bed natural features extent; and
i. Two sub-reaches scoring 3 for E6 channel bed material richness.

Inset 3.9: Example photograph of the River Blyth Tributary 1 at sub-reach 8d, module 1 (downstream view view).

River Blyth Tributary 2

3.3.42 At the time of survey, channel dimensions were variable between sub-reaches with water widths ranging from approximately 1.5 – 4.5m and water depths ranging from approximately 0.1 – 1.0m. The watercourse was slow flowing at each of the sub-reaches and three furthest downstream sub-reaches (sub-reaches 9c-e) were choked with emergent vegetation. Adjacent land use was entirely agricultural with grazed pasture fields bordering the channel on both banks.

3.3.43 River condition assessed to be fairly poor at four of the five sub-reaches (9a, b, d and e) and poor at sub-reach 9c. The difference in condition was attributed to low scoring of positive indicators C1 bank face riparian vegetation structure, C2 bank face tree feature richness and E2 channel bed tree features richness at sub-reach 9c.

3.3.44 The banks of the watercourse were relatively steep and incised throughout with river shapes of 2.13-3.94 indicating that the channel was likely to be over deep.

3.3.45 Negative indicator scores that were recorded for the watercourse include B5 bank top managed ground cover (all sub-reaches scoring -2) and C7 bank face artificial bank profile extent (all sub-reaches scoring -3 or less).

3.3.46 Positive indicator scores included D1 channel margin aquatic vegetation extent with all sub-reaches scoring 3.

Inset 3.10: Example photograph of the River Blyth Tributary 2 at sub-reach 9c, module 1 (upstream view)

River Fromus Tributary

3.3.47 At the time of survey, channel dimensions were variable between sub-reaches with water widths ranging from approximately 0 – 1.5m and water depths ranging from approximately 0.0 – 0.09m. Sub-reaches 10a and b were wetted at the time of survey with no perceptible flow, the remaining sub-reaches were dry. The watercourse was largely homogenous throughout with river condition assessed to be poor at each of the eight sub-reaches surveyed. Adjacent land use was entirely agricultural with a mixture of grazed pasture and arable fields bordering the channel.

3.3.48 The banks of the watercourse were steep and heavily incised throughout with river shapes of 1.31-1.67 indicating that the channel was highly likely to be over deep.

3.3.49 Negative indicator scores that were recorded for the watercourse include all sub-reaches scoring poorly for B5 bank top managed ground cover (-3 or lower), all sub-reaches scored poorly (-4) for E7 channel bed siltation, and two sub-reaches scored poorly (-4) for E10 channel bed artificial features severity.

3.3.50 Positive indicator scores included B3 bank top water-related features (scoring 4 at sub-reach 10a), and all sub-reaches scored 3 for C3 bank face natural bank profile extent.

Inset 3.11: Example photograph of the River Fromus tributary at sub-reach 10d, module 1 (downstream view)

River Wang Main River

3.3.51 At the time of survey, channel dimensions were variable between sub-reaches with water widths ranging from approximately 1.8 – 3.5m and water depths ranging from approximately 0.9 – 0.53m. River condition was assessed to be fairly poor at seven of the sub-reaches surveyed, whilst sub-reach 11e was classified as moderate. The difference in condition was attributed to scoring highly for positive indicator B3 bank top water-related features at sub-reach 11e. Adjacent land use was almost entirely agricultural with a mixture of grazed pasture and arable fields bordering the channel.

3.3.52 The banks of the watercourse were broadly steep and heavily incised throughout with river shapes of 1.13-3.14 indicating that the channel was likely (highly likely for sub-reaches b, c, d and h) to be over-deep.

3.3.53 Negative indicator scores that were recorded for the watercourse include all sub-reaches scoring poorly (-4) for E7 channel bed siltation, and sub-reach 11f scoring poorly for E10 channel bed artificial features severity.

3.3.54 Positive indicator scores which were recorded for the watercourse include:

a. Two sub-reaches with B3 bank top water-related features scoring 3 or greater;
b. Seven sub-reaches scoring 3 for C3 bank face natural bank profile extent;
c. Three sub-reaches scoring 3 or greater for C4 bank face natural bank profile richness;
d. Three sub-reaches for C6 bank face bare sediment extent scoring 3;
e. Sub-reach 11g scoring 3 for D1 channel margin aquatic vegetation extent;
f. Two sub-reaches scoring 3 for E2 channel bed tree features richness;
g. Sub-reach 11e scoring 3 for E4 channel bed natural features extent; and
h. And three sub-reaches scoring 3 for E6 channel bed material richness.

Inset 3.12: Example photograph of the River Wang Main River at sub-reach 11e, module 1 (downstream view)

River Wang Tributary

3.3.55 The River Wang Tributary was narrow (water widths roughly 1.0 – 3.0m), shallow (water depths approximately 0.1 – 0.2m) and slow flowing. Adjacent land use included a mixture of arable farmland, broad-leaved woodland and housing.

3.3.56 River condition was variable between sub-reaches, being assessed as fairly poor at sub-reaches 12a-d, moderate at 12e, and poor at 12f. The difference in condition was attributed to differences in scoring of indicators B3 bank top water-related features, C6 bank face bare sediment extent and B4 bank top NNIPS cover (Himalayan balsam present at 12f).

3.3.57 The banks of the watercourse were generally quite steep and incised throughout with river shapes of 1.56-2.68 indicating that the channel was likely to be over-deep.

3.3.58 Negative indicator scores that were recorded for the watercourse include B5 bank top managed ground cover (sub-reaches 12a – f; scoring -2), E7 channel bed siltation (sub-reaches 12a – f; scoring -3 or less) and C10 bank face NNIPS cover (Himalayan balsam present at 12f).

3.3.59 Positive indicator scores included C3 bank face natural bank profile extent and C4 bank face natural bank profile richness with each of the six sub-reaches scoring 2 or above for each indicator. Additionally, for E2 channel bed tree features richness all six sub-reaches scored 2 or above.

Inset 3.13: Example photograph of the River Wang Tributary at sub-reach 12d, module 1 (upstream view)

River Wang New Valley Tributary

3.3.60 At the time of surveying channel dimensions were consistent between sub-reaches with water widths of roughly 1m and water depths of approximately 0.1m. The watercourse was slow flowing at each of the sub-reaches and adjacent land use on both banks was entirely arable farmland.

3.3.61 River condition was assessed to be fairly poor at two of the four sub-reaches (sub-reaches 13a and c) and poor at the other two sub-reaches (sub-reaches 13b and d). The difference in condition was attributed to difference in scoring of indicators C1 bank face riparian vegetation structure and E10 channel bed artificial features severity.

3.3.62 The banks of the watercourse were relatively steep and incised throughout with river shapes of 0.81-1.27 indicating that the channel was highly likely to be over-deep.

3.3.63 Negative indicator scores that were recorded for the watercourse include B5 bank top managed ground cover (sub-reaches 13a – d; scoring -2 or less), E7 channel bed siltation (sub-reaches 13a – d; scoring -4) and E10 channel bed artificial features severity (sub-reaches 13b and d scoring -2 or less).

3.3.64 Positive indicator scores included C3 bank face natural bank profile extent (sub-reaches 13a – d scoring 3) and E6 channel bed material richness (sub-reaches 13a – d scoring 2).

Inset 3.14: Example photograph of River Wang New Valley Tributary at sub-reach 13c, module 1 (upstream view)

4 Conclusions

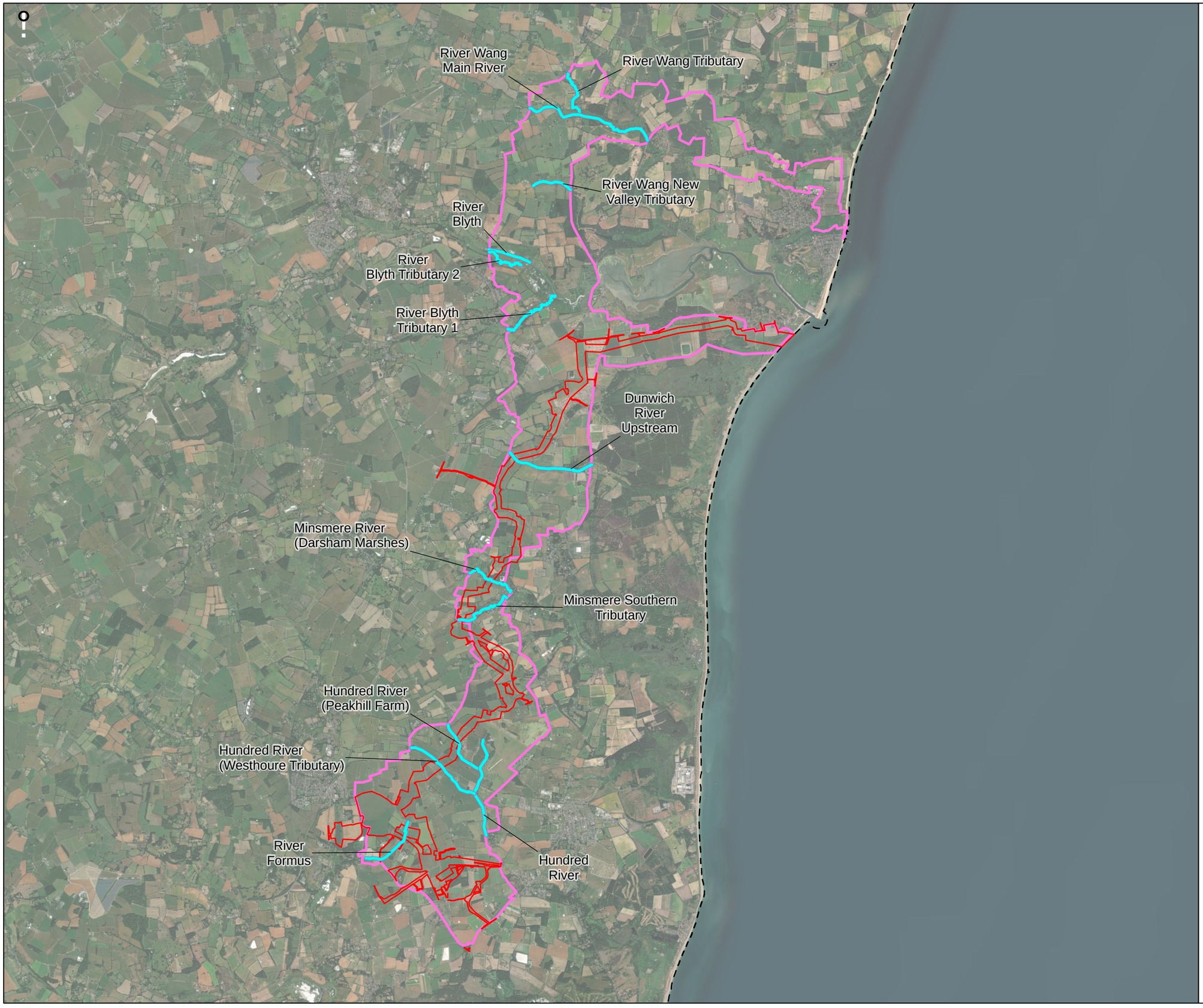
4.1.1 In summary, Dunwich River Upstream, River Blyth and the River Wang Tributary were classified as type H watercourses, unconfined, other alluvial, straight sinuous, gravel/cobble (sand), with condition ranging from fairly poor to moderate.

4.1.2 The Hundred River, its two tributaries (Peakhill Farm and Westhouse Farm), Minsmere Southern Tributary, Minsmere River (Darsham Marshes), River Fromus Tributary, River Wang Main River and River Wang New Valley Tributary were classified as type K watercourses (unconfined other alluvial straight sinuous sand/gravel (silt), with condition ranging from fairly poor to moderate). River Blyth Tributaries 1 and 2 were classified as type L watercourses (unconfined, other alluvial, meandering sand/gravel (silt/clay), with condition ranging from poor to fairly poor).

4.1.3 Using a combination of the sub-reach data, observations made on site and expert best judgement, river condition has been extrapolated to provide 100% coverage for each watercourse within the Proposed Onshore Scheme Scoping Boundary (see **Inset 3.1**).

4.1.4 Generally, watercourse sub-reaches were fairly uniform in condition but there were occasions where river condition varied between sub-reaches. For example, at River Blyth Tributary 2 river condition ranged from poor to fairly poor. Examination of the 32 condition indicators reveal that differences in condition may at least be partially explained by low scoring C1 bank face riparian structure and C2 bank face tree feature richness. Changes in bank face vegetation structure (obtained using aerial imagery and site photographs) were, therefore, used as the main factor in extrapolating river condition to obtain 100% coverage.

Annex A: Site Overview



Surveyed Watercourse

Proposed Onshore Scheme Draft Order Limits

Mean Low Water Springs

Proposed Onshore Scheme Scoping Boundary

Coordinate System: British National Grid

Kilometres

0 1 2 4

Rev	Date	By	Chkd	Appd	Authd
02	26/09/2025	AW	JM	LC	LC

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Client

National Grid LionLink Limited (NGLLL)

Project Name

LIONLINK

Drawing Title

Figure 1: Site Overview

Scale at A3

1:90,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

287334-00

Rev

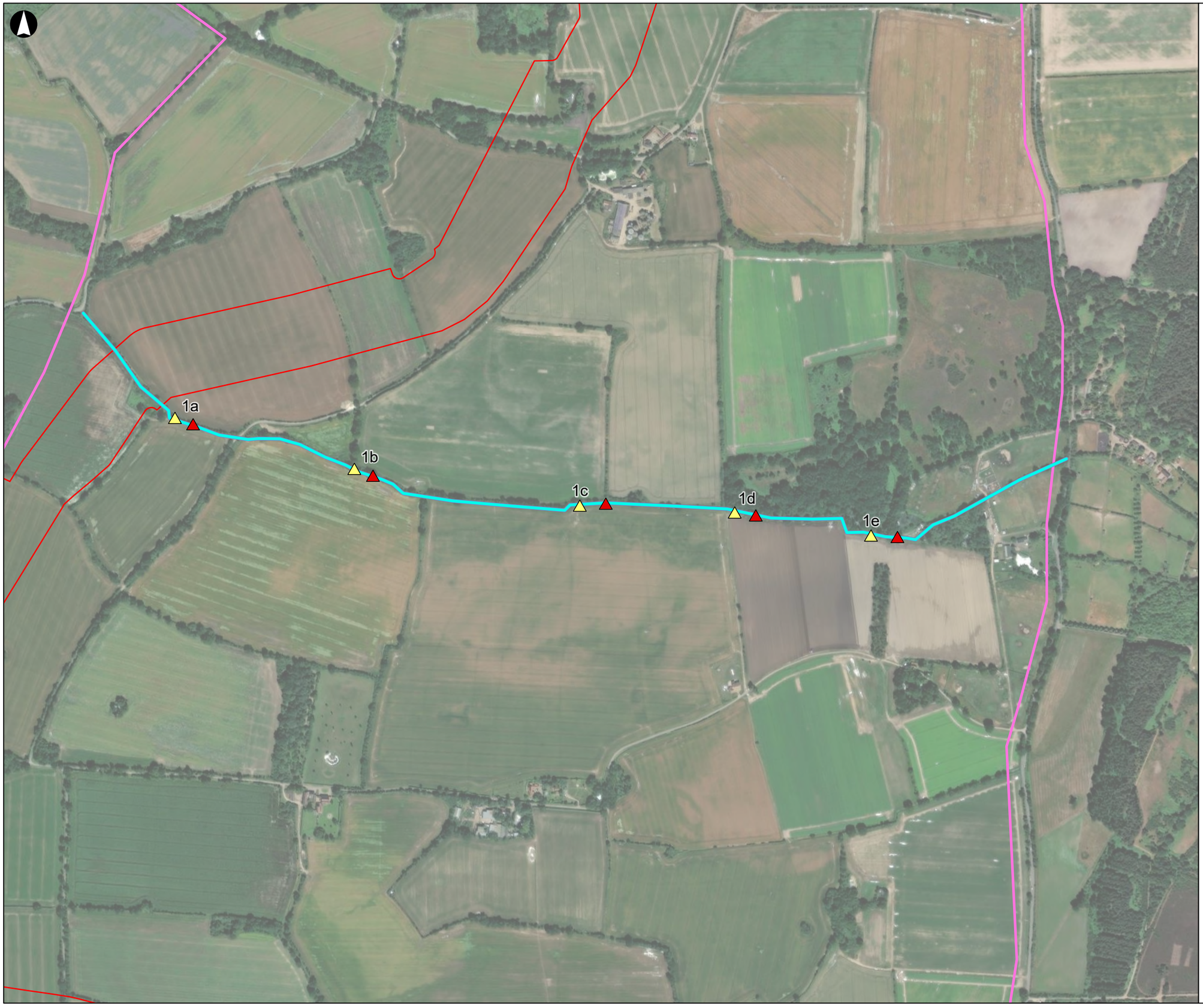
02

Drawing Number

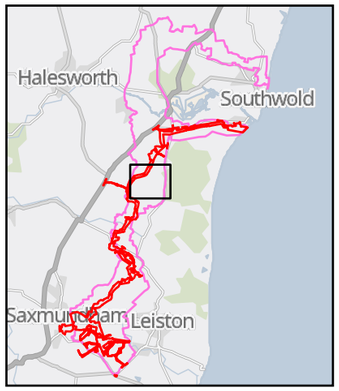
LL-ARP-FIG-ENV-0158-P01

A3

Annex B: MoRPH Sub-reach Extents



Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

Rev	Date	By	Chkd	Appd	Authd
02	26/09/2025	AW	JM	LC	LC

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www.arup.com

Client

National Grid LionLink Limited (NGLLL)

Project Name

LIONLINK

Drawing Title

Figure 2: MoRPH Sub-reach Extents

Sheet 1 of 13

Scale at A3

1:7,500

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

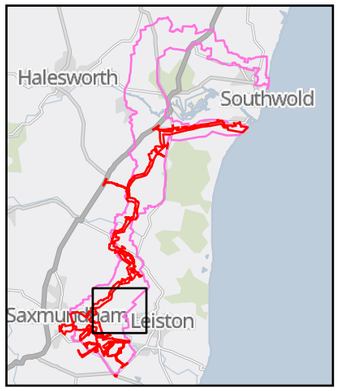
Project Number	Rev
287334-00	02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

Rev	Date	By	Chkd	Appd	Authd
02	26/09/2025	AW	JM	LC	LC

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Project Name

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Drawing Title

Figure 2: MoRPH Sub-reach Extents

Sheet 2 of 13

Scale at A3

1:10,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

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Rev

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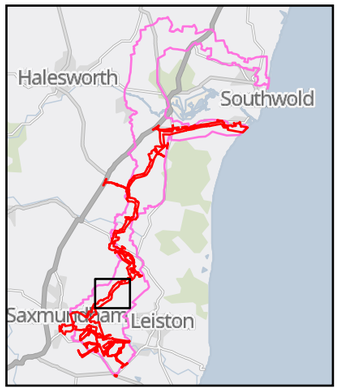
Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

Rev	Date	By	Chkd	Appd	Authd
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Figure 2: MoRPH Sub-reach Extents

Sheet 3 of 13

Scale at A3

1:6,500

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

287334-00

Rev

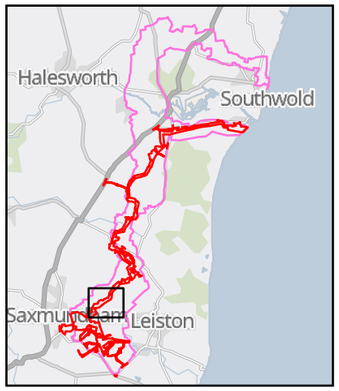
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

Rev	Date	By	Chkd	Appd	Authd
02	26/09/2025	AW	JM	LC	LC

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Figure 2: MoRPH Sub-reach Extents

Sheet 4 of 13

Scale at A3

1:6,500

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

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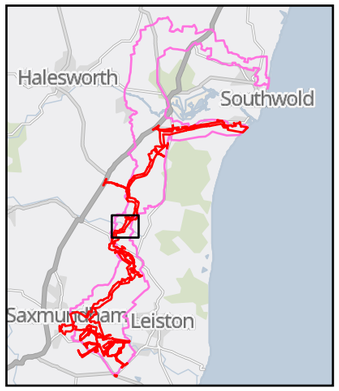
Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 5 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

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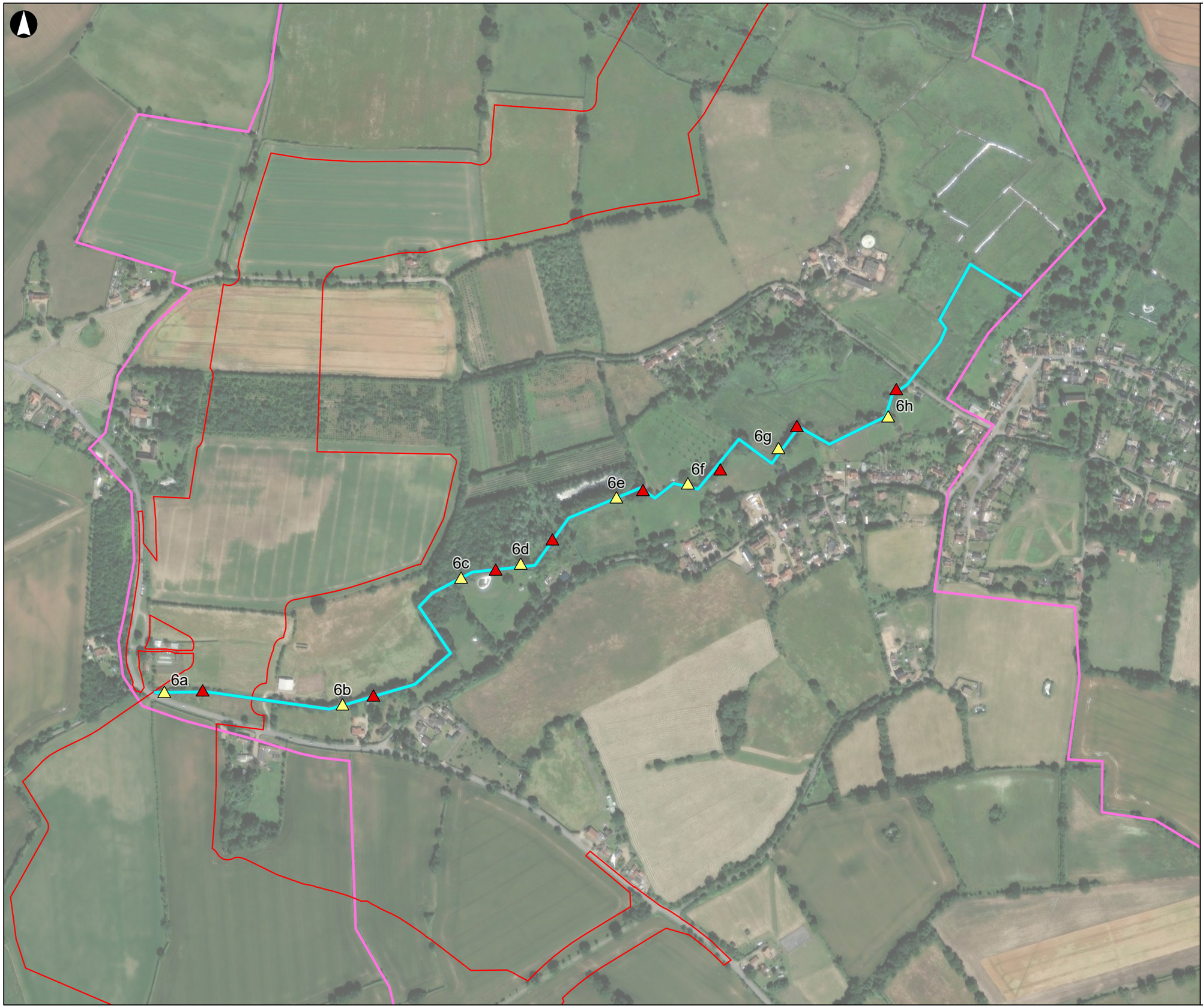
Rev

02

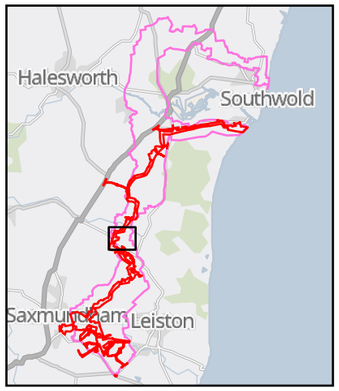
Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3



Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 6 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

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Rev

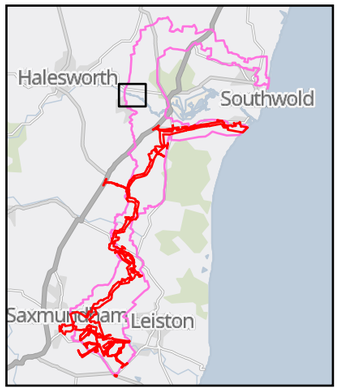
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 7 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

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Rev

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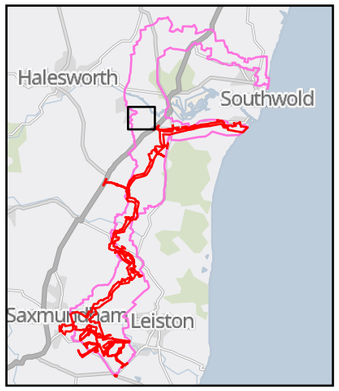
Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Drawing Title

Figure 2: MoRPH Sub-reach Extents

Sheet 8 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

287334-00

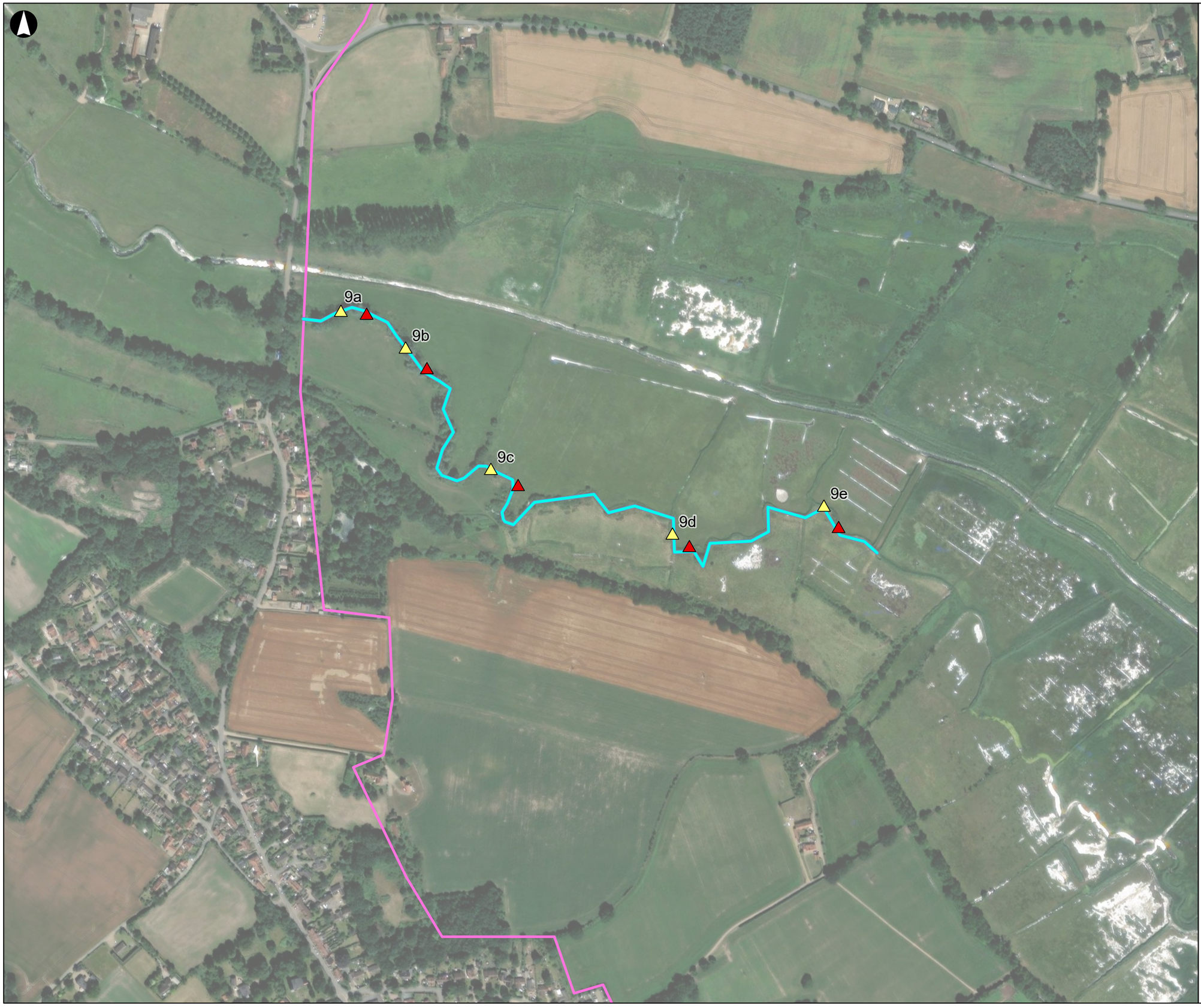
Rev

02

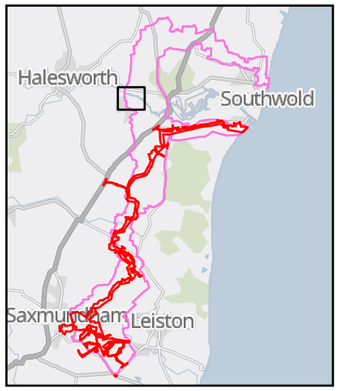
Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3



Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Drawing Title

Figure 2: MoRPH Sub-reach Extents

Sheet 9 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

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For Information

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Rev

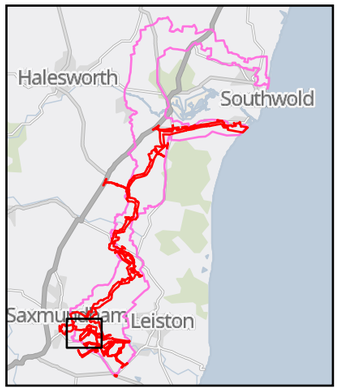
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Draft Order Limits
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 10 of 13

Scale at A3

1:6,500

Role

Modular River (MoRPh) and River Corridor Report

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Rev

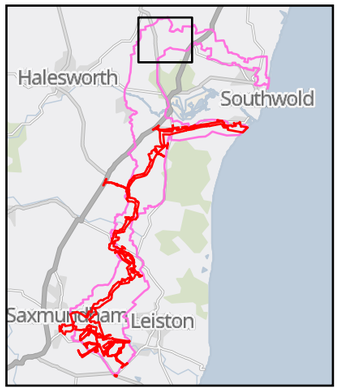
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 11 of 13

Scale at A3

1:10,000

Role

Modular River (MoRPh) and River Corridor Report

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Rev

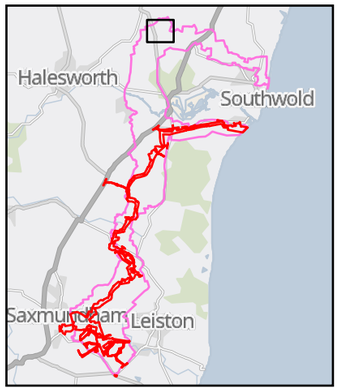
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 12 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

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Rev

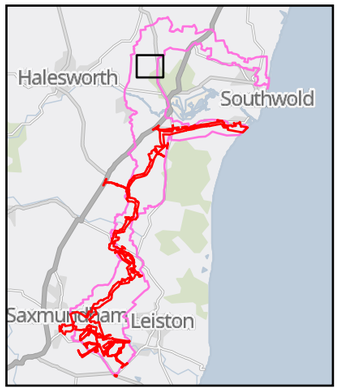
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

A3

Surveyed Watercourse
Upstream point
Downstream point
Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Figure 2: MoRPH Sub-reach Extents

Sheet 13 of 13

Scale at A3

1:5,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

287334-00

Rev

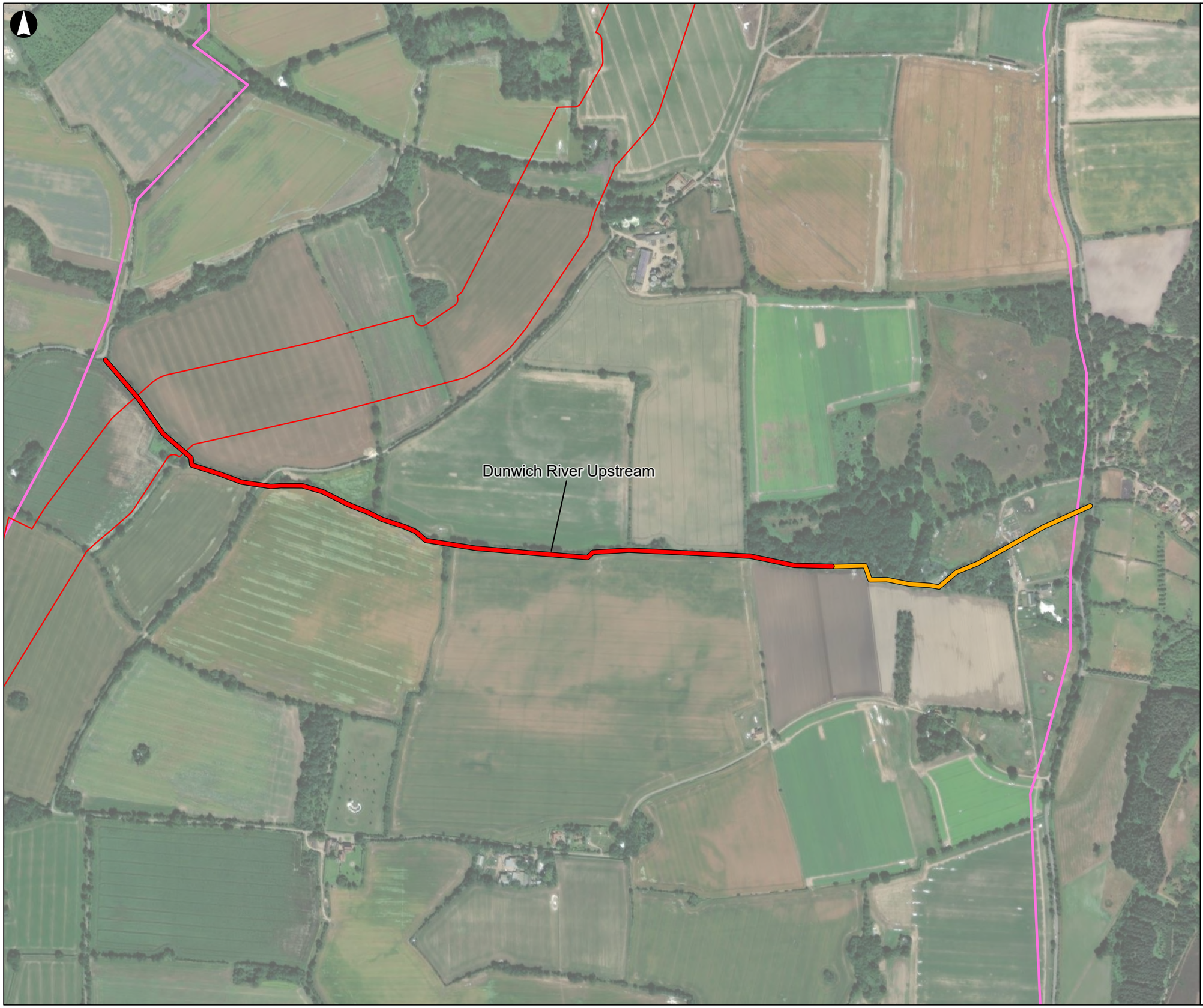
02

Drawing Number

LL-ARP-FIG-ENV-0159-P01

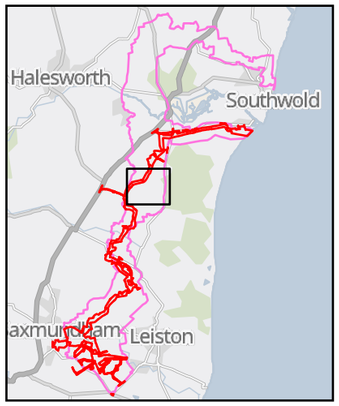
A3

Annex C: Extrapolated River Condition



Surveyed River Condition

- Fairly poor
- Poor
- Proposed Onshore Scheme Draft Order Limits
- Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 100 200 400

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Project Name

LionLink

Drawing Title

Figure 3: Extrapolated River Condition

Sheet 1 of 5

Scale at A3

1:7,500

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

287334-00

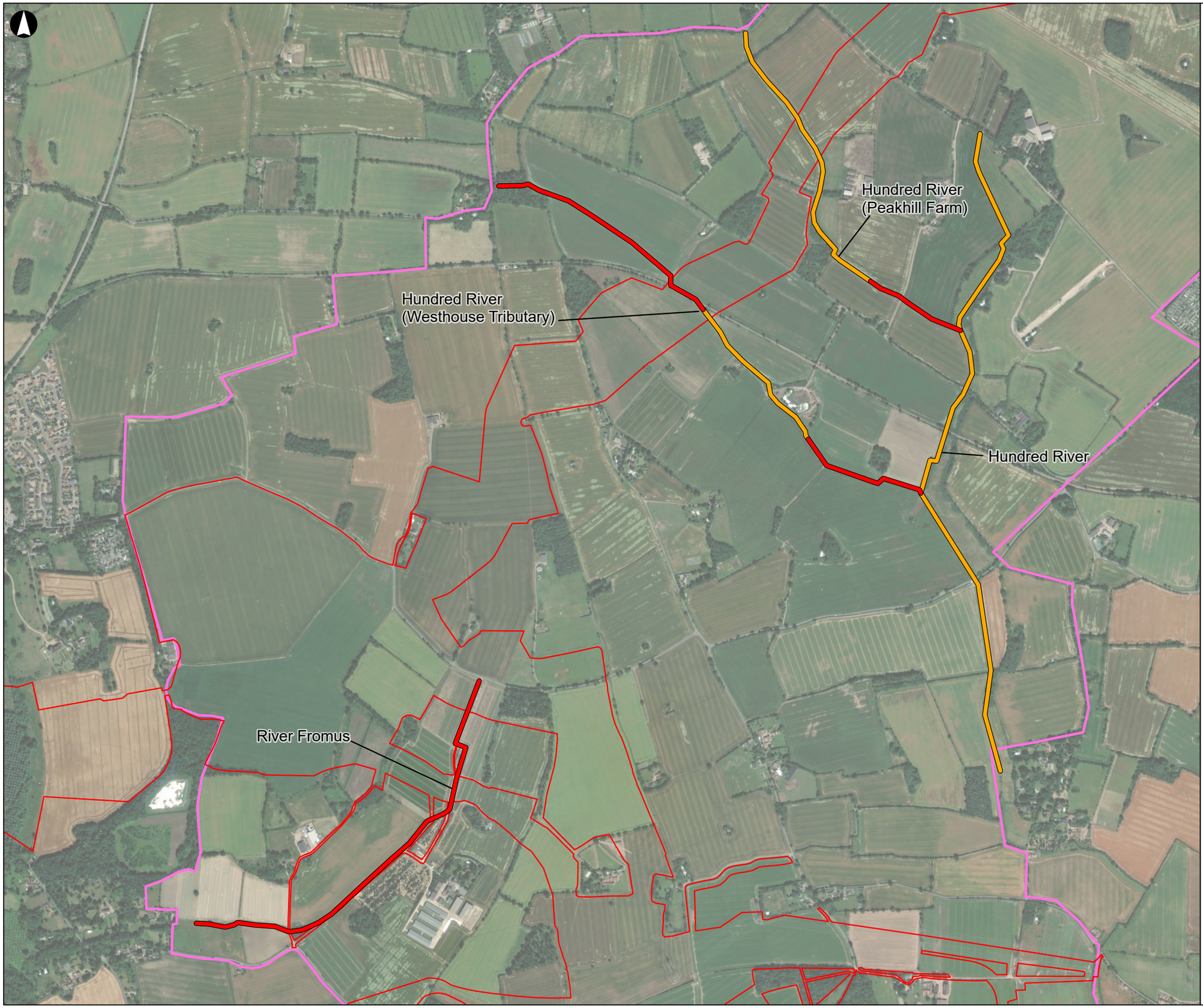
Rev

02

Drawing Number

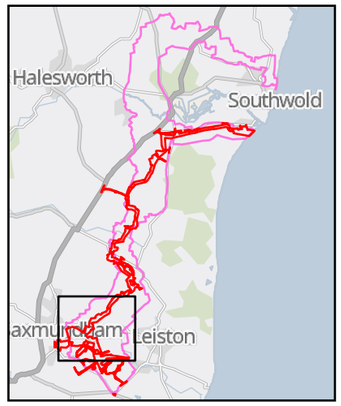
LL-ARP-FIG-ENV-0160-P01

A3



Surveyed River Condition

- Fairly poor
- Poor
- Proposed Onshore Scheme Draft Order Limits
- Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 125 250 500

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Drawing Title

Figure 3: Extrapolated River Condition

Sheet 2 of 5

Scale at A3

1:13,500

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

287334-00

Rev

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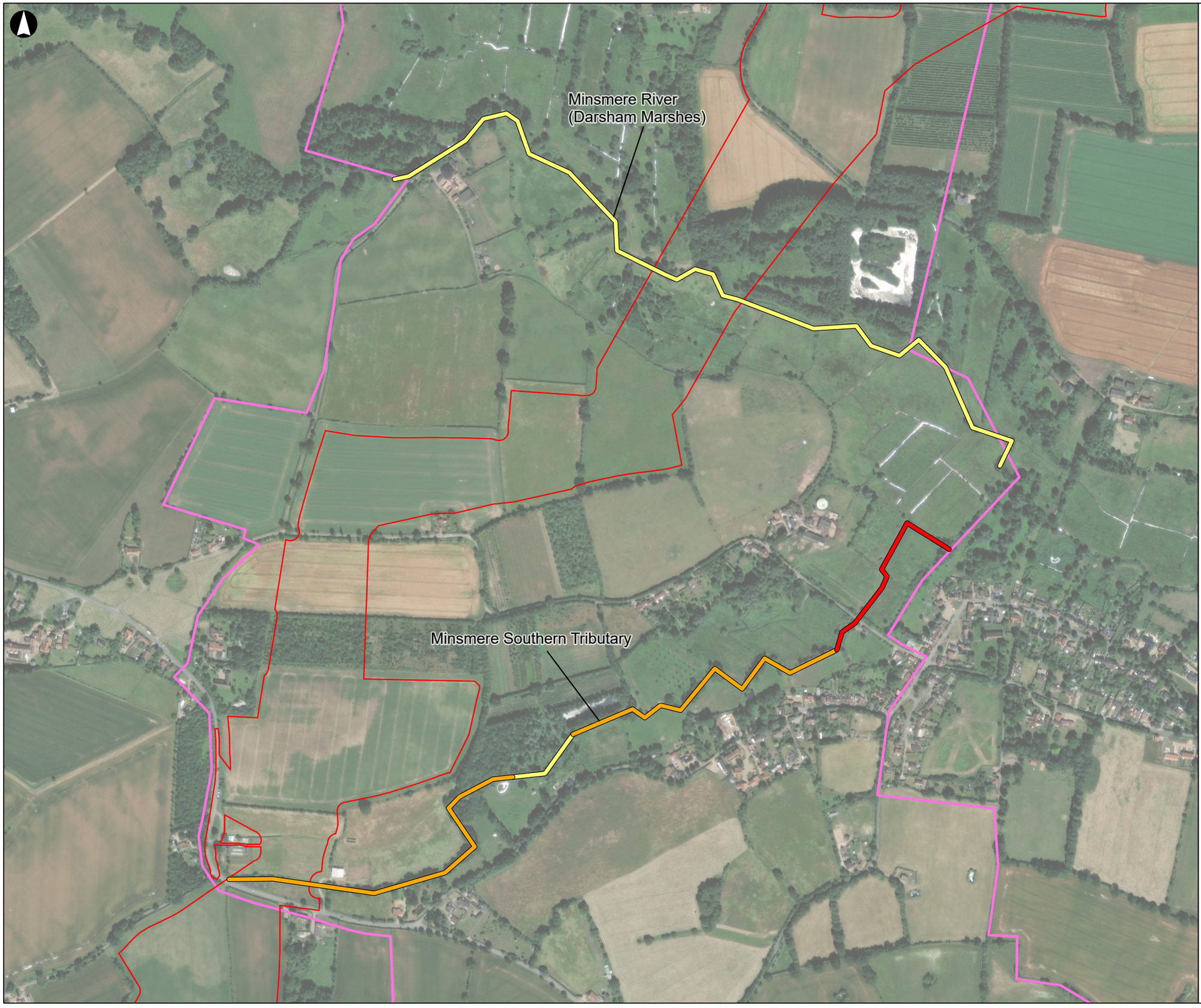
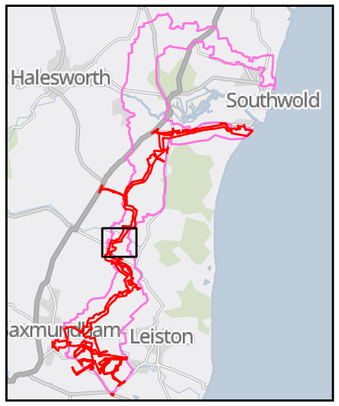
LL-ARP-FIG-ENV-0160-P01

A3



Surveyed River Condition

- Moderate
- Fairly poor
- Poor
- Proposed Onshore Scheme Draft Order Limits
- Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 75 150 300

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Project Name

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Drawing Title

Figure 3: Extrapolated River Condition

Sheet 3 of 5

Scale at A3

1:6,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

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Drawing Number

LL-ARP-FIG-ENV-0160-P01

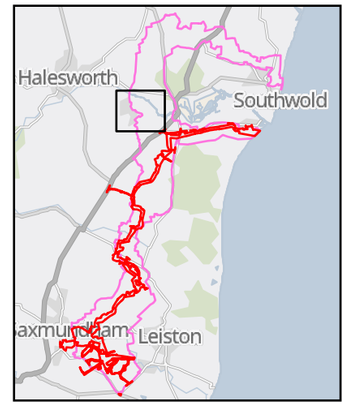
A3

River Blyth

River Blyth Tributary 2

River Blyth Tributary 1

Surveyed River Condition
- Fairly poor
- Poor
- Proposed Onshore Scheme Draft Order Limits
- Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

0 125 250 500

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Figure 3: Extrapolated River Condition

Sheet 4 of 5

Scale at A3

1:8,500

Role

Modular River (MoRPh) and River Corridor Report

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For Information

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Drawing Number

LL-ARP-FIG-ENV-0160-P01

A3

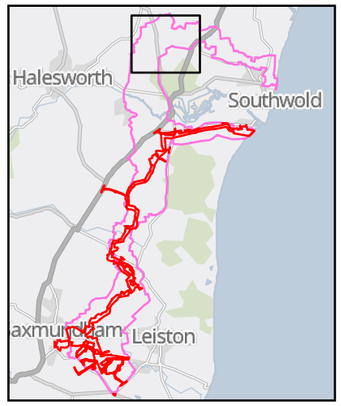
River Wang Tributary

River Wang Main River

River Wang New Valley Tributary

Surveyed River Condition

- Moderate
- Fairly poor
- Poor
- Proposed Onshore Scheme Draft Order Limits
- Proposed Onshore Scheme Scoping Boundary



Coordinate System: British National Grid

Metres

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Figure 3: Extrapolated River Condition

Sheet 5 of 5

Scale at A3

1:12,000

Role

Modular River (MoRPh) and River Corridor Report

Suitability

For Information

Project Number

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02

Drawing Number

LL-ARP-FIG-ENV-0160-P01

A3

Annex D: Raw data of MoRPh5 surveys

Survey ID	Preliminary C	River Shape	Average Width	tive Index Ave	itive Index Ave	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2	D3	D4	D5	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
1a	0.356	1.38	2.1	0.895	-0.538	1	0	0	0	-3	2	1	3	1	1	1	0	0	0	0	1	0	0	0	0	1	2	0	0	0	3	-4	0	0	0	0	0
1b	0.093	1.42	2.1	0.632	-0.538	1	0	0	0	-3	1	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	-4	0	0	0	0	0
1c	0.409	1.01	2.1	0.947	-0.538	1	0	0	0	-3	2	1	3	1	1	2	0	0	0	0	2	1	0	0	0	1	1	0	0	0	2	-4	0	0	0	0	0
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1e	0.543	1.36	3	1.158	-0.615	1	0	2	0	-2	2	1	3	1	1	4	0	0	0	0	2	2	0	0	0	0	1	0	0	0	2	-4	0	0	0	0	-2
2a	0.478	0.06	2.02	0.632	-0.154	2	0	0	0	-2	1	0	3	2	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
2b	0.32	0.78	0.49	0.474	-0.154	2	0	0	0	-2	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0
2c	0.53	1.19	0.65	0.684	-0.154	3	0	0	0	-2	3	0	0	0	1	3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0
2d	0.583	1.4	0.96	0.737	-0.154	2	0	0	0	-2	2	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0
2e	0.64	0.93	0.93	0.947	-0.308	2	0	0	0	-3	2	1	3	2	1	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	3	0	0	0	0	0	-1
2f	0.401	0.85	1	0.632	-0.231	1	0	0	0	-3	2	0	0	0	1	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	2	0	0	0	0	0	0
2g	0.506	1.02	1.1	0.737	-0.231	1	0	0	0	-3	2	0	3	2	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0
2h	0.401	0.99	1.48	0.632	-0.231	1	0	0	0	-3	2	0	3	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0
2i	0.794	1.89	2.04	0.947	-0.154	2	0	0	0	-2	1	0	3	3	1	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0
2j	0.611	0.88	0.99	0.842	-0.231	1	0	0	0	-3	2	0	3	1	1	4	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0
3a	0.927	0.75	1.4	1.158	-0.231	1	0	0	0	-3	2	1	2	3	1	4	0	0	0	0	0	0	1	1	0	0	1	2	1	1	1	0	0	0	0	0	0
3a	0.401	0.62	0.93	0.632	-0.231	1	0	0	0	-3	2	0	3	1	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
3b	0.688	0.98	1.11	0.842	-0.154	2	1	0	0	-2	2	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0
3c	0.348	1.26	1.168	0.579	-0.231	1	0	0	0	-3	1	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
3d	0.453	0.78	0.7	0.684	-0.231	1	0	0	0	-3	1	0	3	1	1	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0
3e	0.19	1	0.918	0.421	-0.231	1	0	0	0	-3	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0
4a	-0.065	0.95	1	0.474	-0.538	2	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	0	0	0
4b	0.04	0.95	1	0.579	-0.538	2	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	-4	0	0	0	0	0
4c	0.093	1	1	0.632	-0.538	2	0	0	0	-3	1	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	-4	0	0	0	0	0
4d	1.053	0.7	1.14	1.053	0	2	0	0	0	0	2	0	3	2	1	1	0	0	0	0	2	1	1	1	0	1	0	0	0	0	3	0	0	0	0	0	0
4e	0.453	0.92	1.44	0.684	-0.231	1	0	0	0	-3	2	0	0	0	1	2	0	0	0	0	1	0	1	1	0	1	0	0	0	0	3	0	0	0	0	0	0
4f	0.745	0.64	1.1	1.053	-0.308	2	0	2	0	-4	1	0	3	2	1	0	0	0	0	0	3	1	1	1	0	1	1	0	0	0	1	0	0	0	0	0	0
4g	-0.012	1.33	2	0.526	-0.538	1	0	0	0	-3	1	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-4	0	0	0	0	0
4h	0.093	0.75	1.5	0.632	-0.538	2	0	0	0	-3	2	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	-4	0	0	0	0	0
4i	0.04	1	2	0.579	-0.538	1	0	0	0	-3	1	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	-4	0	0	0	0	0
5a	1.741	2.25	3.6	1.895	-0.154	2	0	2	0	-2	2	2	3	4	1	2	0	0	0	0	2	1	1	2	0	2	2	1	3	1	3	0	0	0	0	0	0
5b	1.243	2.08	3.72	1.474	-0.231	1	0	3	0	-3	2	1	3	2	1	1	0	0	0	0	2	2	3	1	0	2	1	0	0	0	3	0	0	0	0	0	0
5c	1.243	2.1	3.636	1.474	-0.231	1	0	2	0	-3	2	2	3	4	1	1	0	0	0	0	1	1	3	1	0	2	2	0	0	0	2	0	0	0	0	0	0
6a	0.538	1.25	2.76	1	-0.462	1	0	0	0	-3	2	1	2	1	1	3	0	-1	-2	0	0	0	2	1	0	0	2	0	0	0	3	0	0	0	0	0	0
6b	0.798	1.16	2.32	1.105	-0.308	2	0	0	0	-3	2	1	3	1	1	2	0	0	0	0	0	0	3	1	-1	0	2	0	0	0	3	0	0	0	0	0	0
6c	0.672	2.15	2.42	1.211	-0.538	2	0	0	0	-2	2	1	2	3	1	1	0	-1	-2	0	1	2	1	1	0	3	1	0	0	0	2	0	-1	-1	0	0	0
6d	1.405	1.75	1.84	1.789	-0.385	2	1	4	0	-1	2	1	3	3	1	2	0	0	0	0	3	1	1	1	0	0	2	2	1	1	3	-4	0	0	0	0	0
6e	0.834	2.23	2.55	1.526	-0.692	1	0	2	0	-2	1	1	3	1	1	4	0	0	0	0	2	1	1	1	-1	2	2	0	2	1	3	-4	0	0	-2	0	0
6f	0.96	1.6	2.24	1.421	-0.462	2	1	0	0	-3	1	1	3	3	1	4	0	-1	-2	0	0	0	1	1	0	0	3	1	1	1	3	0	0	0	0	0	0
6g	0.696	1.4	2	1.158	-0.462	1	1	4	0	-2	1	0	3	1	1	0	0	0	0	0	2	1	0	0	0	3	1	1	0	0	2	-4	0	0	0	0	0
6h	0.13	1.26	1.56	1.053	-0.923	1	0	4	-3	-1	1	0	3	3	1	0	0	0	0	-4	1	0	0	0	0	2	2	0	0	0	2	-4	0	0	0	0	0
7a	-1.158	2.53	7	0.842	-2	1	0	0	0	-3	1	0	0	0	1	2	-4	-2	-2	-4	1	0	0	0	0	3	0	2	1	1	3	0	-2	-2	-3	0	-4
7b	0.312	2.33	5.7	1.158	-0.846	1	0	2	0	-2	1	0	1	1	1	1	-4	0	0	-1	3	1	2	1	0	3	0	1	0	0	3	0	0	0	0	0	-4
7c	0.652	2.76	6.8	1.421	-0.769	2	0	4	0	-2	1	1	2	1	1	0	-4	0	0	0	3	1	3	1	0	2	1	1	0	0	3	0	0	0	0	0	-4
8a	0.595	2.54	4.12	1.211	-0.615	2	0	0	-1	-2	2	1	3	2	1	2	0	0	0	-1	1	0	1	1	0	1	2	0	1	1	2	-4	0	0	0	0	0
8b	0.401	2.51	3.54	1.632	-1.231	1	0	4	-3	0	1	1	3	2	1	2	0	0	0	-2	1	1	1	1	-4	3	1	2	2	1	3	-4	0	0	-3	0	0
8c	1.194	2.87	3.9	1.579	-0.385	1	0	1	0	-1	2	2	3	1	1	1	0	0	0	0	1	0	1	1	0	3	3	2	3	1	3	-4	0	0	0	0	0
8d	0.955	3.93	4.02	1.263	-0.308	1	0	1	0	0	1	0	3	4	1	0	0	0	0	0	3	2	1	1	0	3	1	1	0	0	1	-4	0	0	0	0	0
8e	1.012	2.83	4.3	1.474	-0.462	2	0	4	0	-2	1	1	3	2	1	3	0	0	0	0	0	0	0	0	0	2	3	1	2	1	2	0	0	0	-4	0	0
8f	0.692	3.89	3.5	1	-0.308	1	0	4	0	0	1	0	3	1	1	0	0	0	0	0	2	1	2	1	0	1	0	0	0	0	1	-4	0	0	0	0	0
8g	0.692	4.56	4.1	1	-0.308	1	0	4	0	0	1	0	3	1	1	0	0	0	0	0	2	1	1	1	0	2	0	0	0	0	1	-4	0	0	0	0	0
9a	0.749	2.7	3.09	1.211	-0.462	1	2	0	0	-2	2	3	0	0	1	4	-4	0	0	0	3	1	0	0	0	1	3	0	0	0	2	0	0	0	0	0	0
9b	0.538	2.28	3.2	1	-0.462	1	1	0	0	-2	2	4	0	0	1	1	-4	0	0	0	3	1	0	0	0	1	2	0	0	0	2	0	0	0	0	0	0
9c	0.17	2.13	3.4	0.632	-0.462	1	0	0	0	-2	1	0	0	0	1	1	-4	0	0	0	3	1	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0
9d	0.457	2.5	5	0.842	-0.385	1	0	0	0	-2	1	0	2	2	1	1	-3	0	0	0	3	1	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0
9e	0.486	3.94	4	0.947	-0.462	2	0	0	0	-2	3	1	1	1	1	1	-4	0	0	0	3	1	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0
10a	0.016	1.51	2.1	0.632	-0.615	1	0	4	0	-4	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	0	0	0
10b	-0.425	1.51	2.1	0.421	-0.846	1	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	-4	0	0
10c	-0.425	1.31	2.1	0.421	-0.846	1	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	-4	0	0
10d	-0.142	1.56	2.5	0.474	-0.615	1	0	0	0	-4	1	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	0	0	0
10e	-0.142	1.56	2.5	0.474	-0.615	1	0	0	0	-4	1	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	0	0	0
10f	-0.194	1.56	2.5	0.421	-0.615	1	0	0	0	-4	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	0	0	0
10g	-0.117	1.67	2.5	0.421	-0.538	1	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-4	0	0	0	0	0
10h	-0.065	1.33	2	0.474	-0.538	1	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	-4	0	0	0	0	0
11a	0.696	2.29	2.36	1.158	-0.462	1	0	0	0	-2	2	1	3	2	1	2	0	0	0	0	0	0	1	1	0	0	1	2	2	1	2	-4	0	0	0	0	0
11b	0.692	1.31	2.1	1	-0.308	1	0	0	0	0	1	2	3	2	1	1	0	0	0	0	1	0	0	0	0	0	2	0	2	1	2	-4	0	0	0	0	0
11c	0.429	1.4	2.1	0.737	-0.308	1	0	0	0	0	1	1	3	1	1	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	3	-4	0	0	0	0	0
11d	0.858	1.61	2.57	1.474	-0.615	1	0	0	0	-2	2	2	3	4	1	3	-2	0	0	0	1	0	1	1	0	0	2	1	2	1	3	-4	0	0	0	0	0
11e	1.223	2.28	3.38	1.684	-0.462	2	1	4	0	-2	1	2	3	3	1	3	0	0	0	0	1	0	0	0	0	2	3	0	3	1	2	-4	0	0	0	0	0
11f	0.599	3.14	3.61	1.368	-0.769	1	0	1	0	-2	2	1	3	2	1	3	0	0	0	0	1	0	2	1	0	0	3	0	1	1	3	-4	0	0	-4	0	0
11g	0.599	2.73	3.88	1.368	-0.769	2	1	0	0	-2	2	2	2	1	1	1	-2	0	0	0	3	2	0	0	0	3	2	0	1	1	2	-4	0	0	-2	0	0
11h	0.749	1.66	2.7	1.211	-0.462	2	0	3	0	-2	1	1	3	3	1	1	0	0	0	0	1	0	0	0	0	3	2	0	0	0	2	-4	0	0	0	0	0
12a	0.591	2.47	3.42	1.053	-0.462	2	0	0	0	-2	1	1	3	3	1	1	0	0	0	0	1	0	0	0	0	1	2	1	0	0	3	-4	0	0	0	0	0
12b	0.749	2.68	2.96	1.211	-0.462	2	0	0	0	-2	2	2	3	3	1	1	0	0	0	0	1	0	0	0	0	1	3	1	0	0	3	-4	0	0	0	0	0
12c	1.117	2.2	3.08	1.579	-0.462	2	0	0	0	-2	2	3	3	3	1	2	0	0	0	0	3	1	0	0	0	1	3	1	2	1	2	-4	0	0	0	0	0
12d	1.433	2.18	2.68	1.895	-0.462	1	0	2	0	-2	2	1	3	3	1	4	0	0	0	0	2	1	3	1	0	0	4	2	2	1	3	-4	0	0	0	0	0
12e	1.644	2.33	2.05	2.105	-0.462	2	2	3	0	-2	2	2	3	4	1	3	0	0	0	0	2	2	1	1	0	1	3	2	2	1	3	-4	0	0	0	0	0
12f	0.34	1.56	1.4	1.263	-0.923	2	2	0	-3	-2	2	1	3	2	1	0	0	0	0	-4	1	0	0	0	0	0	2	1	3	1	3	-3	0	0	0	0	0
13a	0.275	1.27	2	0.737	-0.462	1	0	0	0	-2	2	1	3	2	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	-4	0	0	0	0	0
13b	-0.036	0.91	1.3	0.579	-0.615	1	0	1	0	-2	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	-4	0	0	-2	0	0
13c	0.275	1.07	1.54	0.737	-0.462	1	0	0	0	-2	2	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	-4	0	0	0	0	0
13d	-0.109	0.81	1.06	0.737	-0.846	1	0	0	0	-3	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	2	-4	0	0	-4	0	0

Glossary and Abbreviations

Term	Definition
AI	Anabranching Index
BI	Braiding Index
DS	Downstream
ESS	Ecology Survey Strategy
gigawatts	GW
HVAC	High Voltage Alternating Current Cables
HVDC	High Voltage Direct Current Cables
MoRPh	Modular River Physical
NGR	National Grid Reference
NIPS	Native invasive plant species
RCA	River Condition Assessment
SI	Sinuosity Index
The Proposed Scheme	The term Proposed Scheme will be used when referring to the GB scheme components as a whole and will not include the Dutch components.
The Proposed Onshore Scheme	The term used when referring to the onshore components of the Proposed Scheme.

References

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