



# RIVER CRANE TWICKENHAM ROUGH AND MOORMEAD

Optioneering Report



Job title	River Crane – Twickenham Rough and Moorhead	Job number	5709
Document title	Feasibility report	File reference	4.7.1

Revision	Date	Filename	River Crane Twickenham Rough and Moorhead Optioneering Report		
Draft 1	31/10/25	Description	Feasibility Report		
			Prepared by	Checked by	Approved by
		Name	Alex Clark	Sally German	Sally German
		Signature			
Issue	17/12/25	Filename			
		Description	Feasibility Report		
			Prepared by	Checked by	Approved by
		Name	Alex Clark	Sally German	Sally German
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

## Table of Contents

1	Introduction .....	3
2	Twickenham Rough .....	5
2.1	Existing site conditions .....	5
2.1.1	Ecology .....	5
2.1.2	Utilities.....	7
2.1.3	Flood risk .....	8
2.2	Concept Design.....	9
3	Moormead .....	12
3.1	Existing site conditions .....	12
3.1.1	Ecology .....	12
3.1.2	Utilities.....	13
3.2	Flood Risk.....	14
3.3	Design options .....	15
3.3.1	Option A – Shallow scrape and in-channel enhancements.....	15
3.3.2	Option B – New remeandered section of channel.....	17
3.3.3	Option C – regrade right bank and in-channel enhancements .....	18
3.3.4	Option D – regrade right bank downstream of Hill View Road .....	20
4	Conclusion.....	21
4.1	Next steps.....	21
4.1.1	Twickenham Rough .....	21
4.1.2	Moormead.....	21
	Appendix 1 – Twickenham Rough Utilities – Emapsite .....	22
	Appendix 2 – Moormead Utilities - Emapsite .....	24

Figure 1	(Top left) pre-restoration, (top right) immediately following excavation work, (bottom left) post-completion summer 2022, (bottom right) summer 2025. Credit ©WildFuture.....	4
Figure 2	Phase 1 Habitat Survey, Twickenham Rough.....	5
Figure 3	Existing flood risk - Twickenham Rough .....	8
Figure 4	Twickenham Rough: concept design .....	9
Figure 5	Twickenham Rough: typical cross section .....	10
Figure 6	Twickenham Rough: Indicative drawing of raised embankment .....	11
Figure 7	Phase 1 Habitat Survey, Moormead.....	12

---

Figure 8	Existing flood risk - Moormead .....	15
Figure 9	Moormead: Option A concept design .....	16
Figure 10	Moormead: Option A cross section.....	16
Figure 11	Moormead: Option B concept design .....	17
Figure 12	Moormead: Option B cross section.....	18
Figure 13	Moormead: Option C concept design .....	19
Figure 14	Moormead: Option C cross section.....	19
Figure 15	Moormead: Option D location .....	20
Figure 16	Moormead: Option D cross section .....	20
Figure 17	Electricity utility map, Twickenham Rough .....	22
Figure 18	Gas utility map, Twickenham Rough .....	22
Figure 19	Water utility map, Twickenham Rough .....	23
Figure 20	Telecom utility map, Twickenham Rough.....	23
Figure 21	Electricity utility map, Moormead .....	24
Figure 22	Gas utility map, Moormead .....	24
Figure 23	Water utility map, Moormead .....	25
Figure 24	Telecom utility map, Moormead .....	25

## 1 Introduction

Salix River and Wetland Services Ltd (Salix) have been commissioned by The Zoological Society of London to develop a feasibility report for the Lower River Crane by Twickenham Rough and by Moormead and Bandy Recreational Ground.

From Mereway Weir, the River Crane is confined by two kilometres of concrete channel, significantly degrading the ecological and geomorphological function of the watercourse. The Lower Crane Partnership are working to deliver the collaboratively developed Lower Crane Re-Naturalisation and Enhancement plan which can be found at [www.cranevalley.org.uk/lower-river-crane-restoration-strategy](http://www.cranevalley.org.uk/lower-river-crane-restoration-strategy). The aims of the plan are to:

- Create and modify habitat in the Lower Crane so that it supports more wildlife.
- Modify in-channel structures that block the migration of fish to restore the ecological connection between the Crane and the wider Tidal Thames.
- Make space for water and modify the channel to reduce the threat of flooding and make the river more resilient to low flows.
- Make the Lower Crane river reach an asset for local people to enjoy.

The restoration of the River Crane at Twickenham Rough and Moormead is associated with the Wider River Crane Vision. A pilot study was conducted at Marsh Farm, where a two-stage channel, embayment and oversized gravels were introduced to trial a range of measures, which can be seen in Figure 1. In August 2025, an Riverfly Monitoring Initiative was conducted, which found the restored section had one of the highest scores (12) found within the whole River Crane catchment. This highlights the significant importance of the restoration works occurring within the Lower Crane to improve these degraded habitats.



**Figure 1** (Top left) pre-restoration, (top right) immediately following excavation work, (bottom left) post-completion summer 2022, (bottom right) summer 2025. Credit ©WildFuture.



greater potential interest that may require further survey. Any such areas identified can then be examined in more detail through targeted Phase 2 surveys. Please see AQASS report<sup>1</sup> attached for the full results.

Twickenham Rough is a small area of mainly scrub habitat nestled between the River Crane and the footpath and cycleway on the south bank of the river. The open habitats here are part of a Site of Importance for Nature Conservation for the rough grassland, tall herbs, scrub and young woodland. Amenity grassland and mature trees are present on the northern bank. The following habitats were identified within the site:

- Scrub – dense/continuous A2.1;
- Parkland/Scattered trees (mixed) A3.3;
- Running water – eutrophic G2.1;
- Amenity grassland J1.2.

**Scrub:** elder, dog rose, white dead nettle, hawthorn, goat willow and young lime trees made up the thin bank of scrub between the river and parkland on the north bank of the River Crane. Amongst the scrub were nettles, cleavers, green alkanet pentaglottis, cow parsley and Spanish bluebells. On the south bank the scrub was thicker and had occasional mature trees including pedunculate oak, wild cherry and rowan. Bramble and hawthorn predominated with ivy, holly (*Ilex aquifolium*), Meadow cranesbill (*Geranium pratense*), broom (*Cytisus scoparius*), dogwood (*Cornus sanguinea*) and buddleia.

**Parkland:** between the River Crane and the sports fields on the north bank were planted trees with a mix of native and non-native species present at various ages of maturity. Ash, Holly oak, Lombardy poplar 'Italica' (*Populus nigra*), Silver birch (*Betula pendula*), False-acacia (*Robinia pseudacacia*) and pedunculate oak were all noted. The poplar tree was old and mature with pedunculate oak in its understory. The trunk was covered in dense ivy and was identified as a potential bat roost (T15).

**Running water:** the River Crane divided the north and south banks of the Twickenham Rifle Club/Cranford Way recreation grounds. The river is highly modified with concrete banks and bed and a small number of low weirs that have been notched. Despite the highly modified habitat, moderate numbers of the fish species chub (*Squalius cephalus*) were observed as were waterfowl including little egret (*Egretta garzetta*), Egyptian geese (*Alopochen aegyptiaca*), mallard (*Anas platyrhynchos*), moorhen (*Gallinula chloropus*) and grey heron (*Ardea cinerea*). Small areas of gravel were present on the river bed below the weirs. The Beautiful demoiselle (*Calopteryx virgo*) damsel fly were noticed amongst the riverside vegetation.

---

<sup>1</sup> AQASS, (June 2025). *Lower River Crane Enhancements Extended Phase 1 Habitat Survey*.

**Table 1 Target notes for Twickenham Rough**

TARGET NOTE NUMBER	GRID REFERENCE	TYPE	NOTES
T15	TQ 15541 73531	Potential Bat Roost	Mature poplar with heavy ivy growth.
T16	TQ 15599 73546	Non-native species	False acacia, green alkanet
T17	TQ 15647 73546	Observation	Large wood pile – hedgehog and stag beetle habitat
T18	TQ 15590 73514	Spoil Pile	Woody debris, brick, glass, soil and litter pile.
T19	TQ 15610 73507	Potential Bat Roost	Mature pedunculate oak with thick ivy

### 2.1.2 Utilities

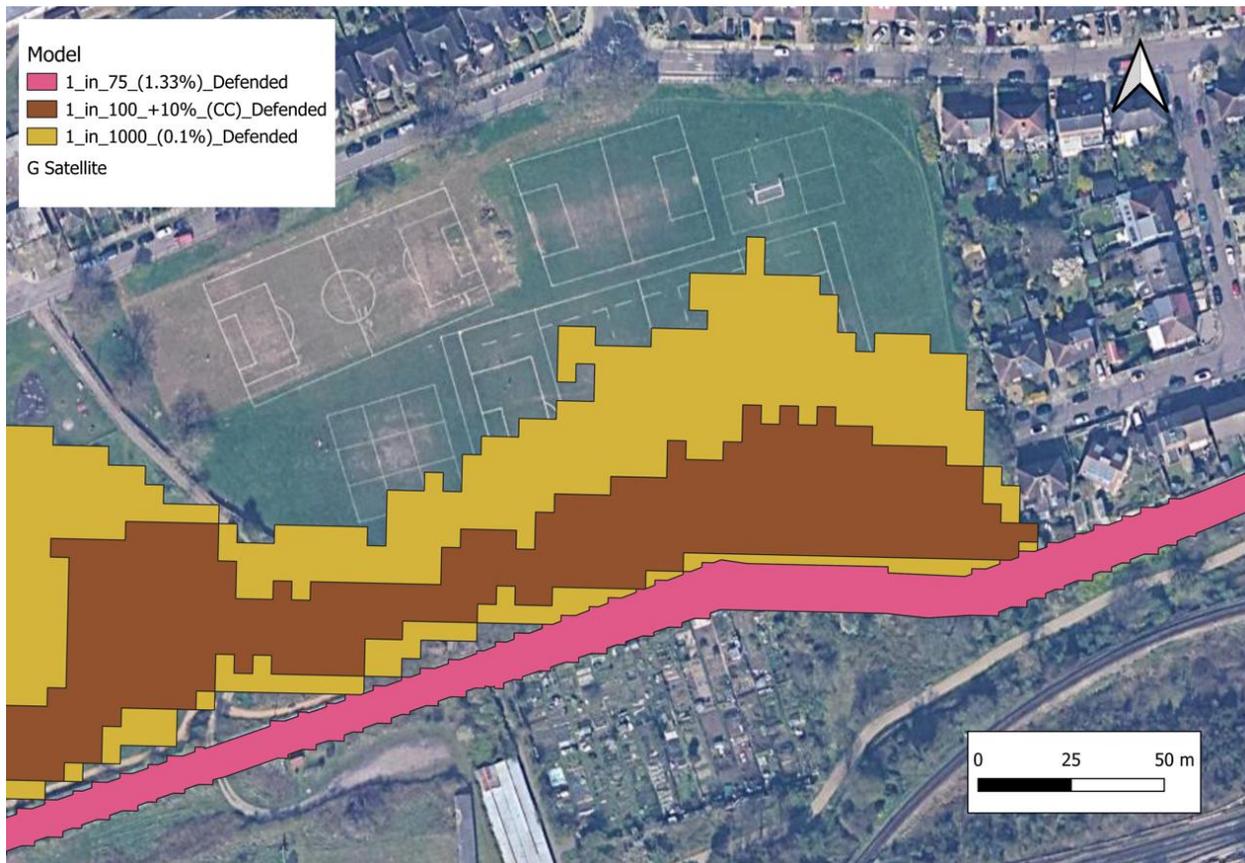
A utility survey was completed by Emapsite, summarised below in Table 2. The maps can be found in Appendix 1 – Twickenham Rough Utilities – Emapsite.

**Table 2 Utility summary - Twickenham Rough**

UTILITY	PRESENCE WITHIN THE UTILITY SURVEY	NOTES
Electricity	Yes	No electricity cables were identified within close proximity to the project area. Underground cables were identified along the probable access route within the footpath, off Craneford Way.
Gas	Yes – access only	No gas utilities were identified within close proximity to the proposed project location. Gas services were only identified along the main road at Craneford way.
Water	Yes	A foul water pipe runs within close proximity to the project site, through the playing fields directly north of the proposed embayment. The foul water pipe also runs along the probable access route, adjacent to the River Crane.
Telecoms	Yes – access only	No telecoms are within close proximity to the project site. Telecoms are identified along the probably access route near the footpath, off Craneford Way.

### 2.1.3 Flood risk

A flood risk mapping study commissioned by the Environment Agency<sup>2</sup> (AECOM, 2024) has updated the previous 2006 River Crane flood model. The results at Twickenham Rough can be found in Figure 3 below. The results show that Twickenham Rough on the right bank is not at risk of flooding within a 1 in 1000 Annual Exceedance Probability. The left bank in the amenity space of Richmond College is at risk of flooding within a 1 in 100 AEP.



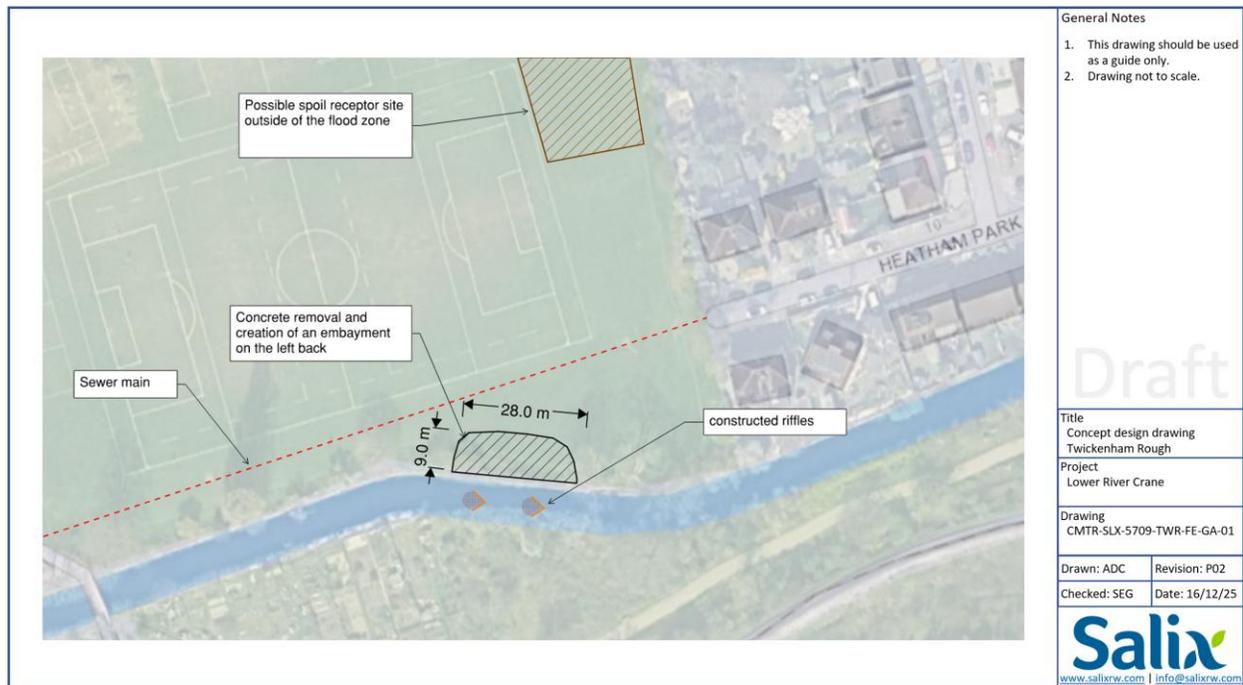
**Figure 3 Existing flood risk - Twickenham Rough**

<sup>2</sup> AECOM, (2024) *River Crane Model Update. HNL and Thames Modelling Package.*

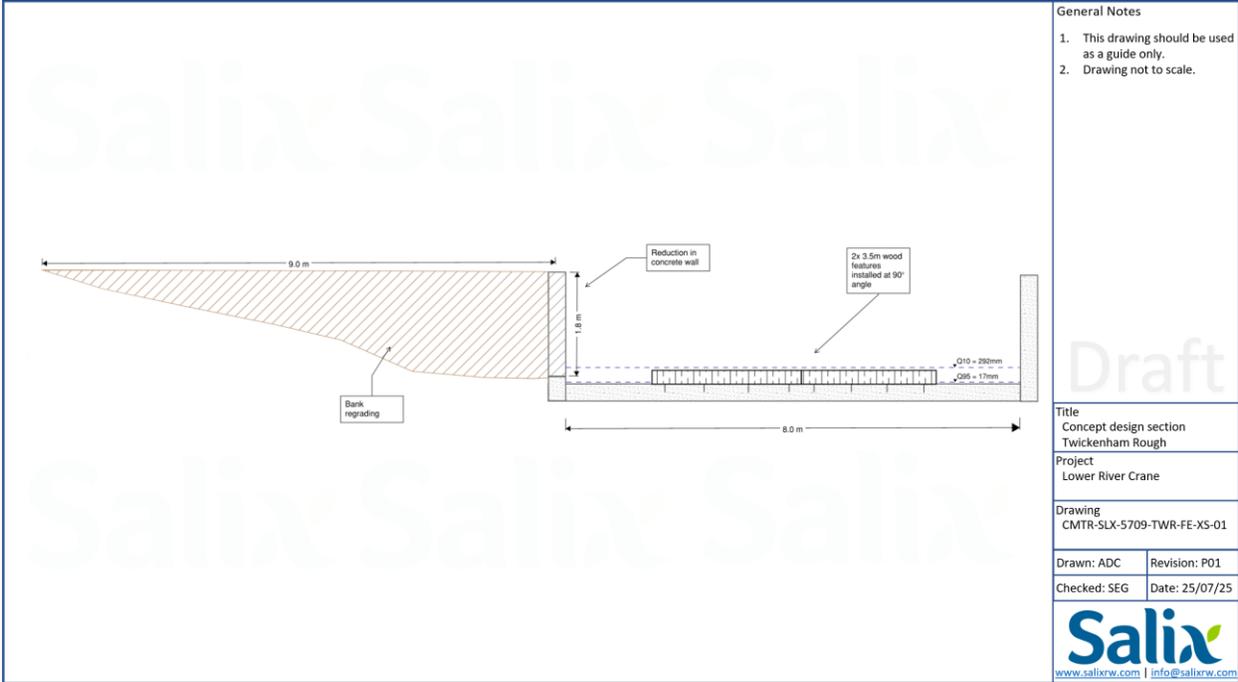
## 2.2 Concept Design

The River Crane is constrained in a concrete channel, severely limiting its natural function and habitat value. Removing the concrete and promoting in-channel flow variation and habitat are key to improve the ecological value of the watercourse.

An assessment of the existing constraints within the site with reference to ecology, utilities and access was undertaken. An indicative layout plan can be seen in Figure 4 and cross section in Figure 5, where a section of concrete could be removed and bank regraded to construct an embayment.



**Figure 4 Twickenham Rough: concept design**



**Figure 5 Twickenham Rough: typical cross section**

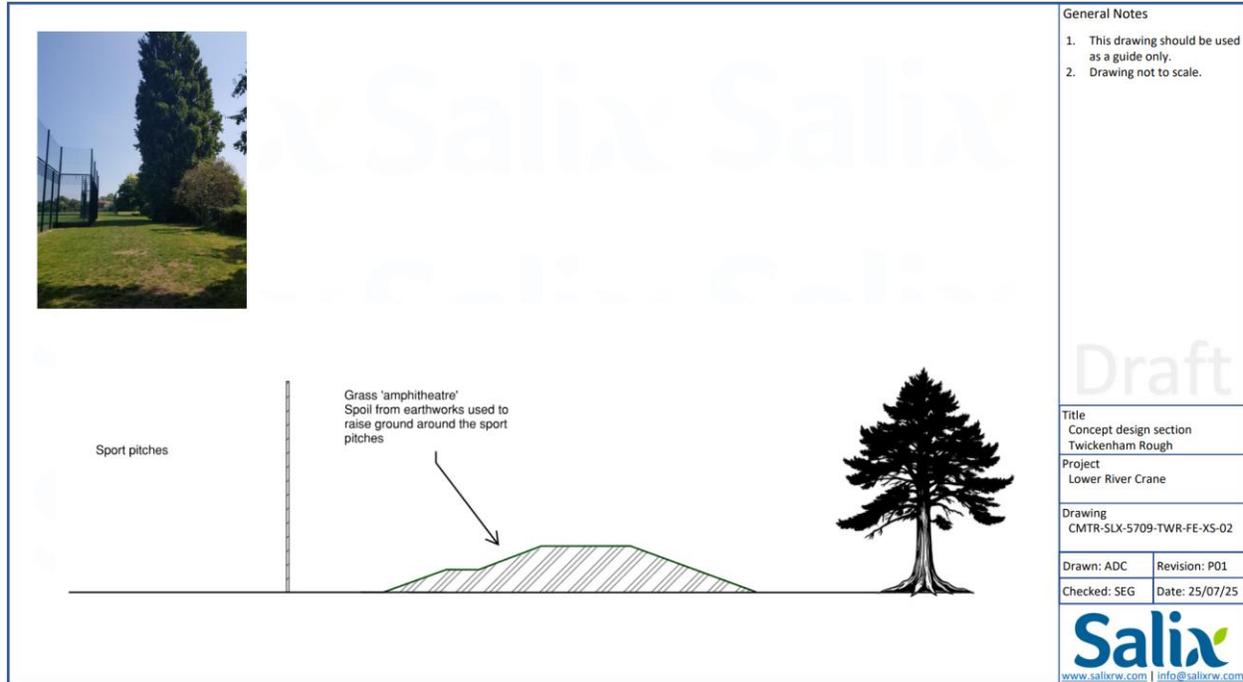
Embayments within the concrete channel provide an opportunity for some of the only marginal and emergent plant species to establish within the Lower Crane, and provide connectivity between freshwater and terrestrial habitats. Whilst the concept drawing proposes a 28 metre section to be restored, this length should be considered as indicative and to be developed during outline design. The 28 metre section was determined to fit between mature trees, although it is known that one of these trees is non-native. The design development should seek whether any vegetation can be removed to increase the length of restoration.

Regrading the bank will also provide a net increase flood storage capacity, to mitigate the potential flood risk impact from in-channel works.

The proposed in-channel features consist of creating two constructed riffle features to improve in channel habitat and flow diversity. These features will comprise of large wood and imported gravels. The lower River Crane is a heavily modified, currently constructed entirely from concrete and Mereway Weir is also present upstream. This extensive engineering results in restrictions in the natural supply of sediment (from upstream and through other natural processes) and prohibits the creation of the dynamic and natural geomorphological features and processes that you would expect to see in a river with more natural bed and bank materials. As a result, gravel retention features are essential to create and maintain in-channel habitat diversity. Without such interventions, the modified nature of the channel severely restricts the ecological and geomorphological variability necessary for improving the watercourse.

Subject to conversations with Richmond College, it might be possible to repurpose the soil from the bank reprofiling within the local area (outside of the floodplain), to provide a significant construction cost saving (the alternative is to take the material off site for disposal). This excess soil could be repurposed to

form raised embankments around the existing sports pitches, enhancing the site's amenity value. These embankments would provide informal seating areas for spectators during sporting events, contributing both functional and recreational benefits to the overall design. The informal seating embankments must be positioned outside of the flood zone as shown earlier in Figure 3 and Figure 4.



**Figure 6 Twickenham Rough: Indicative drawing of the proposed raised bank**

During construction, the access route for machinery and deliveries would likely occur from Craneford Way, near Craneford Playground. It is noted that a sewer main runs directly north of the restoration feature, where appropriate mitigation will be required.

### 3 Moormead

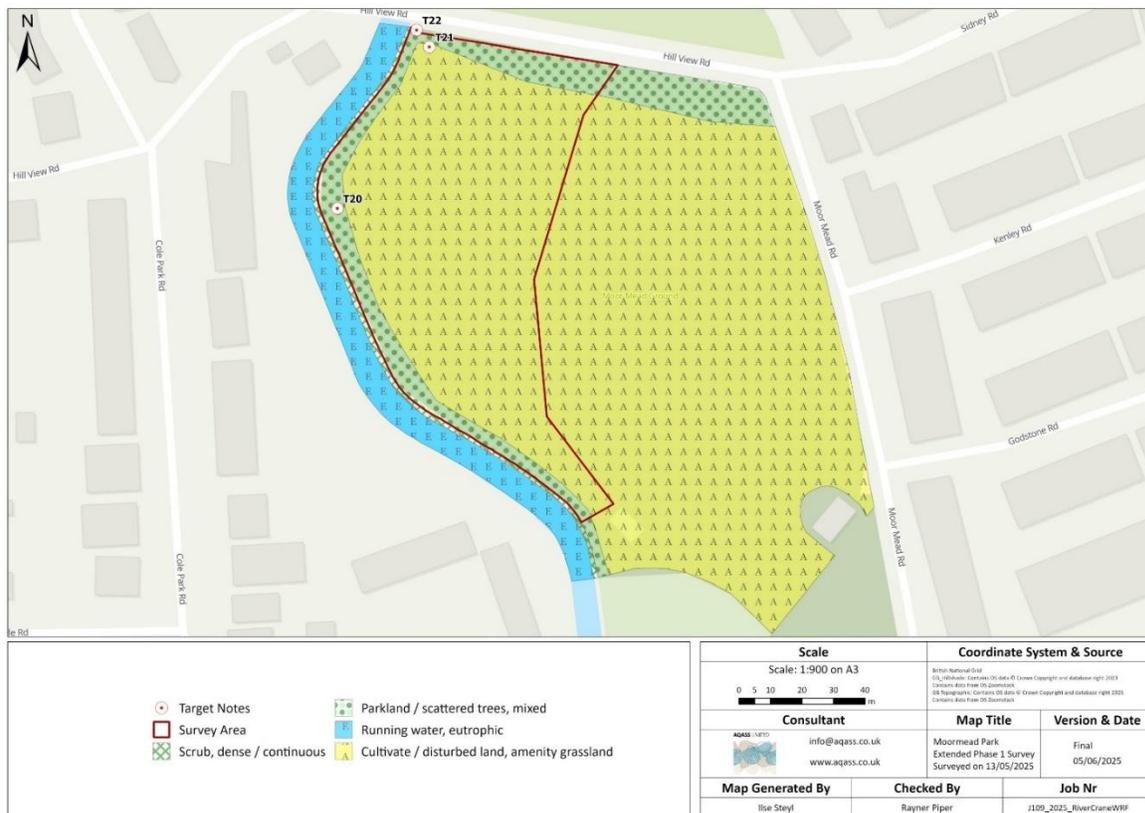
#### 3.1 Existing site conditions

Moormead is located near to: TQ 16292 74163, within the Moormead and Bandy Recreational Ground. The area is heavily utilised for recreational use, with Moormead Cricket Club and Moormead Football Club in close proximity actively utilising the grounds.

The River Crane at the Moormead site is in concrete channel measuring approximately 8m wide and 1.8m high. The extent of our assessment for this site is defined in Figure 7. Through both Moormead and Bandy Recreation Ground, the river is largely hidden from public view, obscured by dense vegetation, trees, and a wire fence. As a result, the watercourse is visually and physically disconnected from the surrounding public open space.

##### 3.1.1 Ecology

A site walkover and extended Phase 1 Habitat survey was conducted by AQASS. The site walkover was conducted on the 13<sup>th</sup> of May 2025, where terrestrial and aquatic habitats were surveyed in the vicinity of the watercourse.



**Figure 7 Phase 1 Habitat Survey, Moormead**

The survey involved a systematic walkover of the site to classify the habitat types present, following the standard Phase 1 Habitat Survey methodology (JNCC, 2016). Habitat types were identified and mapped, with an assessment of the species composition of each habitat. This technique provides an inventory of

the basic habitat types present and identifies areas of greater potential interest that may require further survey. Any such areas identified can then be examined in more detail through targeted Phase 2 surveys. The full report can be found attached<sup>3</sup>. A summary can be found below.

The River Crane meanders north within a concrete channel before reaching Moormead Park, which is on the river's east bank. Moormead Park— a large park managed for recreation and sport for the public and has a cricket pitch and other sporting facilities. The following habitats were identified within the site:

- Scrub – dense/continuous A2.1;
- Parkland/Scattered trees (mixed) A3.3;
- Running water – eutrophic G2.1;
- Amenity grassland J1.2.

**Scrub:** The River Crane is fenced off to prevent access to the river. Thick scrub grows either side of the fence and within it grows occasional mature trees including sycamore and wild cherry. Elder, green alkanet, laburnum, hawthorn and dogwood are present with green alkanet, nettles, cleavers and mallow and dogrose. Both the scrub and mature trees provide some cover and shading over the river channel.

**Parkland:** mature trees line the river bank and include ash, horse chestnut, holly oak and alder (*Alnus glutinosa*). The river is fenced to prevent access to the river from the park. Behind the fence grow pedunculate oak, sycamore (*Acer pseudoplatanus*), holly, yew and wild cherry.

**Running water:** It was not possible to see what habitats or species were present within the channel as the margins were screened with a wire fence and dense vegetation.

**Table 3 Target notes for Moormead**

TARGET NOTE NUMBER	GRID REFERENCE	TYPE	NOTES
T20	TQ 16292 74163	Mammal observation	Fox hole?
T21	TQ 16321 74214	Bird nesting	Newly fledged carrion crows
T22	TQ 16317 74220	Non-native species	Laburnum & green alkanet

### 3.1.2 Utilities

A utility survey was completed by Emapsite, summarised below in Table 4. The maps can be found in Appendix 2 – Moormead Utilities - Emapsite.

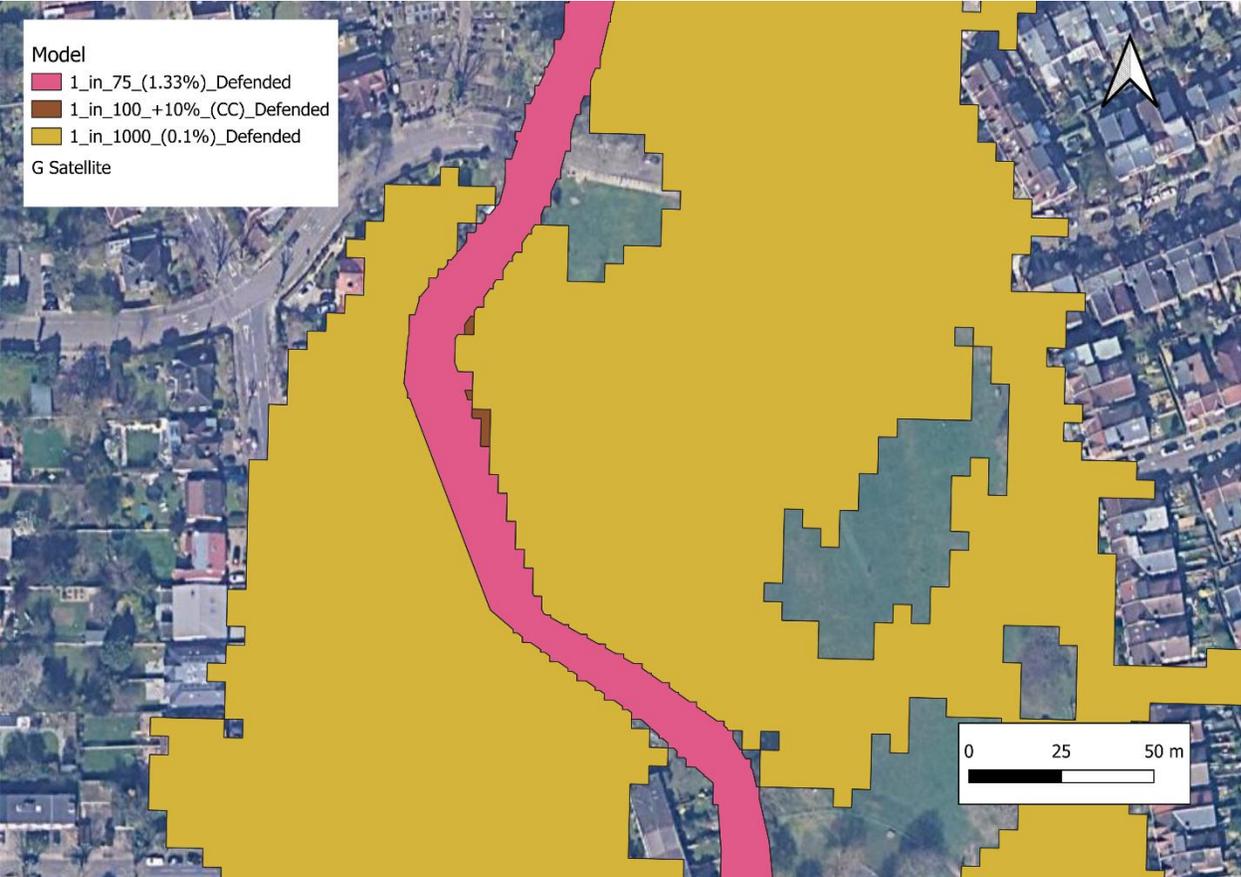
<sup>3</sup> AQASS, (June 2025). *Lower River Crane Enhancements Extended Phase 1 Habitat Survey*.

**Table 4 Utility summary - Moormead**

UTILITY	PRESENCE WITHIN THE UTILITY SURVEY	NOTES
<b>Electricity</b>	Yes - access only	No electricity cables were identified within close proximity to the project area. Low voltage cables were identified near the main roads surrounding Moormead.
<b>Gas</b>	Yes – access only	No gas utilities were identified within close proximity to the proposed project location. Gas services were only identified along Moor Mead Road.
<b>Water</b>	Yes	A rising main water pipe runs directly east of the project site, in close proximity to the proposed works.
<b>Telecoms</b>	Yes – access only	No telecoms are within close proximity to the project site. Telecoms are identified along the nearby main roads.

### 3.2 Flood Risk

A flood risk mapping study commissioned by the Environment Agency (AECOM, 2024) has updated the previous 2006 River Crane flood model. The results at Moormead found in Figure 8 below. The results show that flows are typically in-channel in events up to 1 in 100 AEP. Much of the surrounding area and Moormead recreational ground, is at risk of flooding in a 1 in 1000 AEP.



**Figure 8 Existing flood risk - Moormead**

### 3.3 Design options

The River Crane near Moormead recreational field is constrained in concrete, severely limiting its natural function and habitat value. The bank tops are also heavily overgrown, hiding the watercourse from public view. An assessment of the existing constraints within the site with reference to ecology, utilities and access was undertaken, and two options have been identified which work towards delivering the aspirational visions for this river, which in this case are to improve in channel habitats and flow diversity and improve connectivity between the river and its floodplain.

#### 3.3.1 Option A – Shallow scrape and in-channel enhancements

The first option looks to partially remove the concrete banks to allow a proportion of higher flow events to be routed through a shallow channel with a wetland scrape constructed on the right bank/floodplain. In combination with this, a series of large wood features would be installed to create flow diversity and retain gravels and other sediment within the channel. Suitability of gravel augmentation should be explored further due to the existing dense vegetation which made it difficult to determine existing channel conditions. This option would help to increase the flow diversity within the River Crane through a 65m section, whilst limiting its impact on flood risk by creating additional capacity at higher flows. The new high flow channel could be planted with a diverse mix of native wildflowers and depending on ground water levels and ground conditions, it could act as a semi-permanent wetland in winter months.

The dimensions of the high flow channel and wetland area will be subject to design. It is important to note that as the majority of Moormead recreational ground is within the FZ3 extent so it is anticipated that any spoil will need to be taken off-site



Figure 9 Moormead: Option A concept design

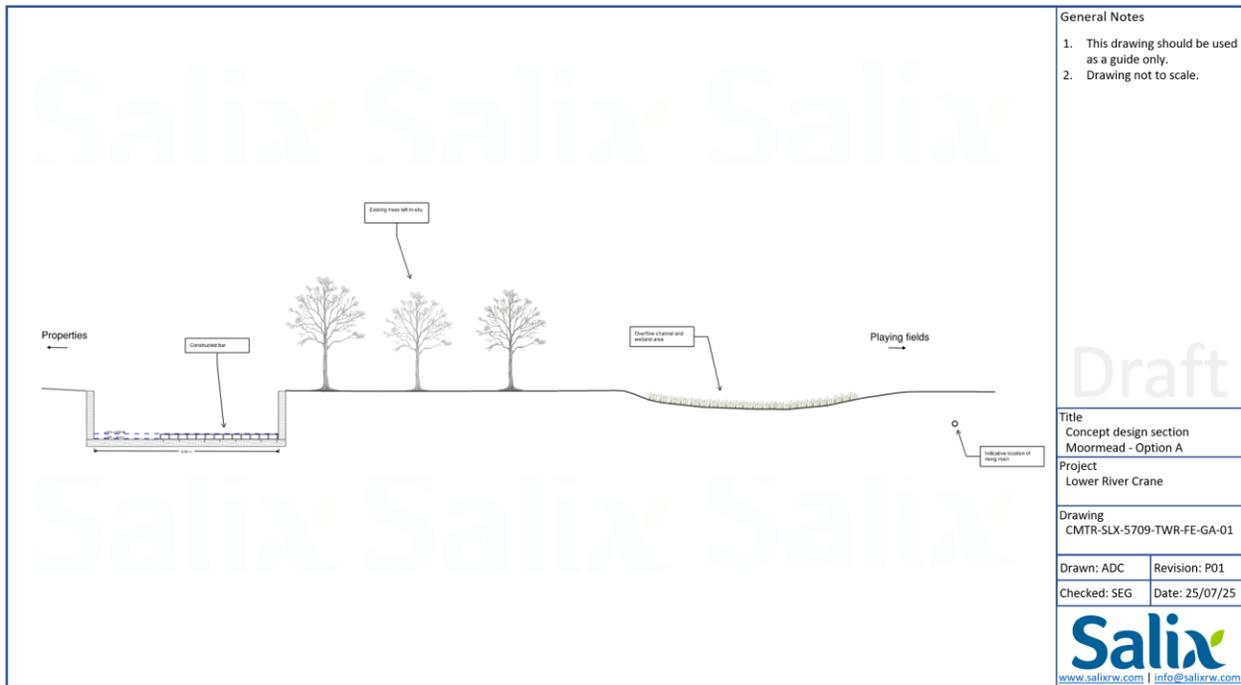


Figure 10 Moormead: Option A cross section

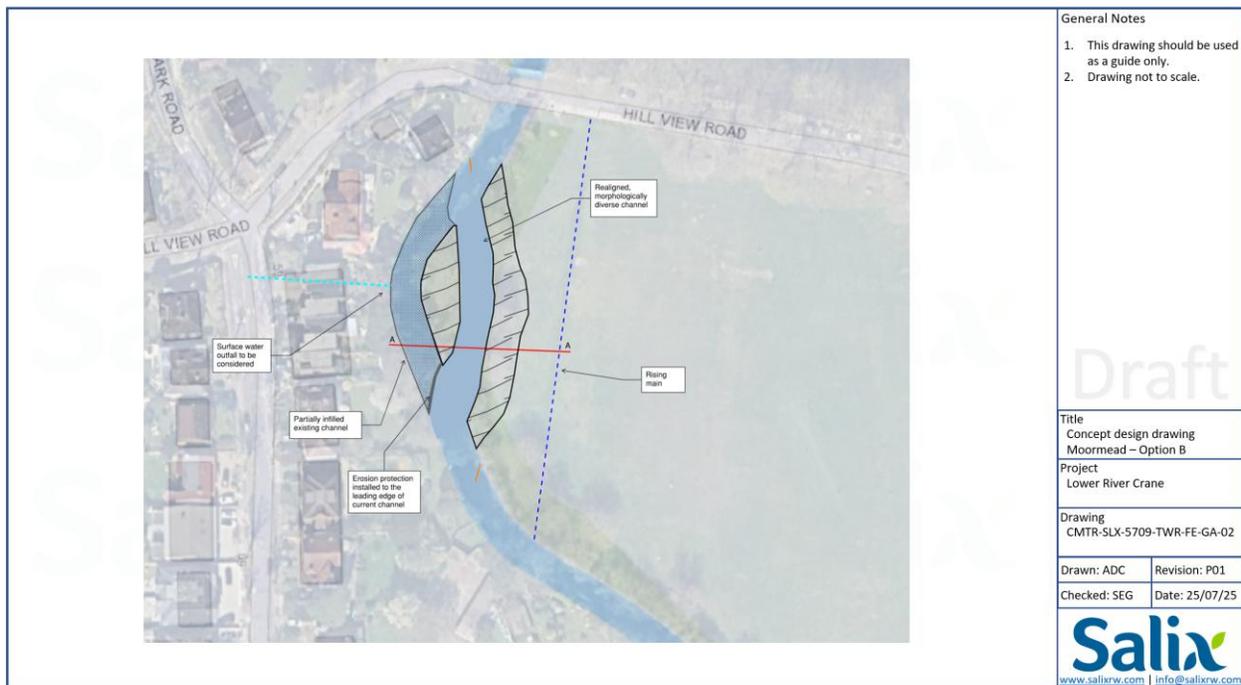
### 3.3.2 Option B – New remeandered section of channel

The second option would look to create a new remeandered channel on the right hand bank/floodplain and to partially infill the existing channel and create a backwater. This option has the potential to significantly increase the ecological value of this section of the lower River Crane, which is otherwise entirely made up of concrete. Marginal vegetation and natural bed substrate can be introduced within the new channel, providing valuable in channel and riparian habitat in what is otherwise a concrete channel.

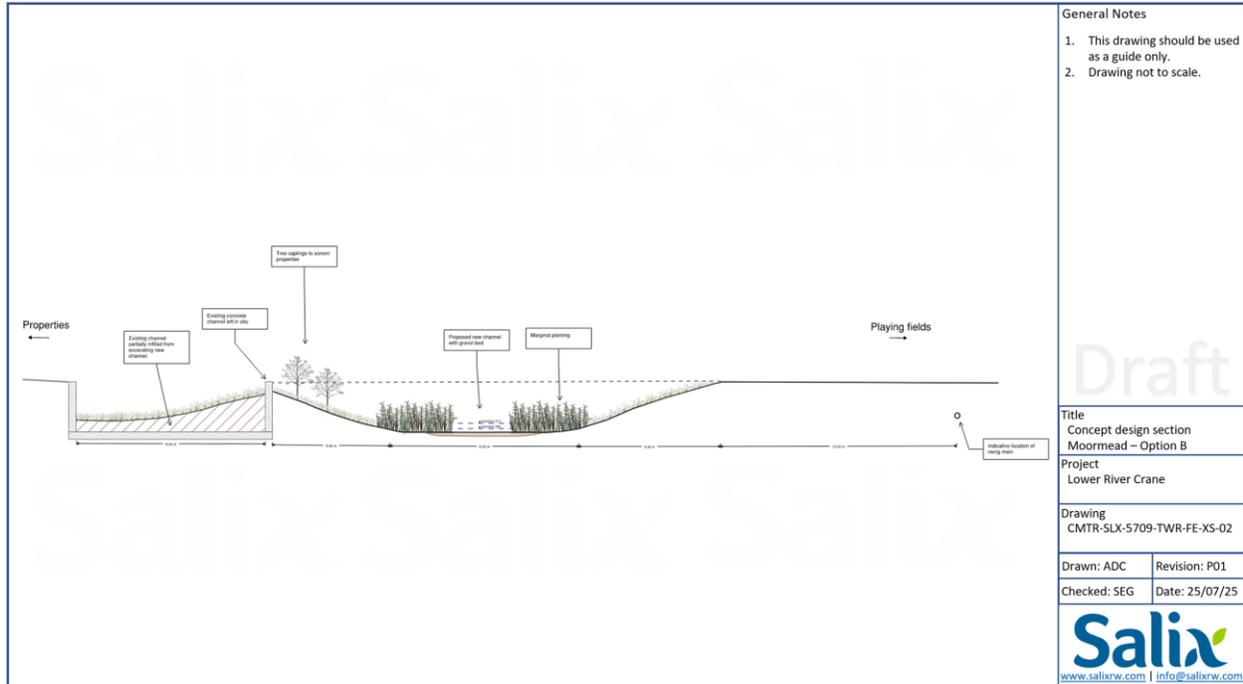
The bypass concrete channel will have an element of backfilling to reuse some spoil, but tapered to allow the creation of a back water and also providing increased flood storage capacity. The existing surface water drain may require rerouting. The backwater will provide a different type of habitat to the main channel with more ponded water and will also provide a refugia for fish during high flow events.

If Option B was pursued, it would require modelling. Typha and Himalayan Balsam have a prominent seed bank in the lower Crane and both species could cause continual maintenance issues if not properly addressed. Low flows within the Lower River Crane are also a known issue. A design should assess what its impact might be during low flows conditions.

Whilst exact quantities will be determined during design development, the material required to go off site could be in excess of 1,000m<sup>3</sup>.



**Figure 11 Moormead: Option B concept design**



**Figure 12 Moormead: Option B cross section**

**3.3.3 Option C – regrade right bank and in-channel enhancements**

Option C would consider reducing the existing concrete wall and install in channel features. Reducing the height of the concrete will enable dense marginal vegetation to establish within the newly regraded section. This option would increase habitat diversity

If Option C were pursued, early engagement with the properties on the opposite bank would be advised. The channel is currently heavily shaded which helps to screen the properties from the park. Whilst both sides of the channel are densely vegetated, this option has the potential to reduce the screening to the properties.



**General Notes**

1. This drawing should be used as a guide only.
2. Drawing not to scale.

**Title**  
Concept design drawing  
Moormead – Option C

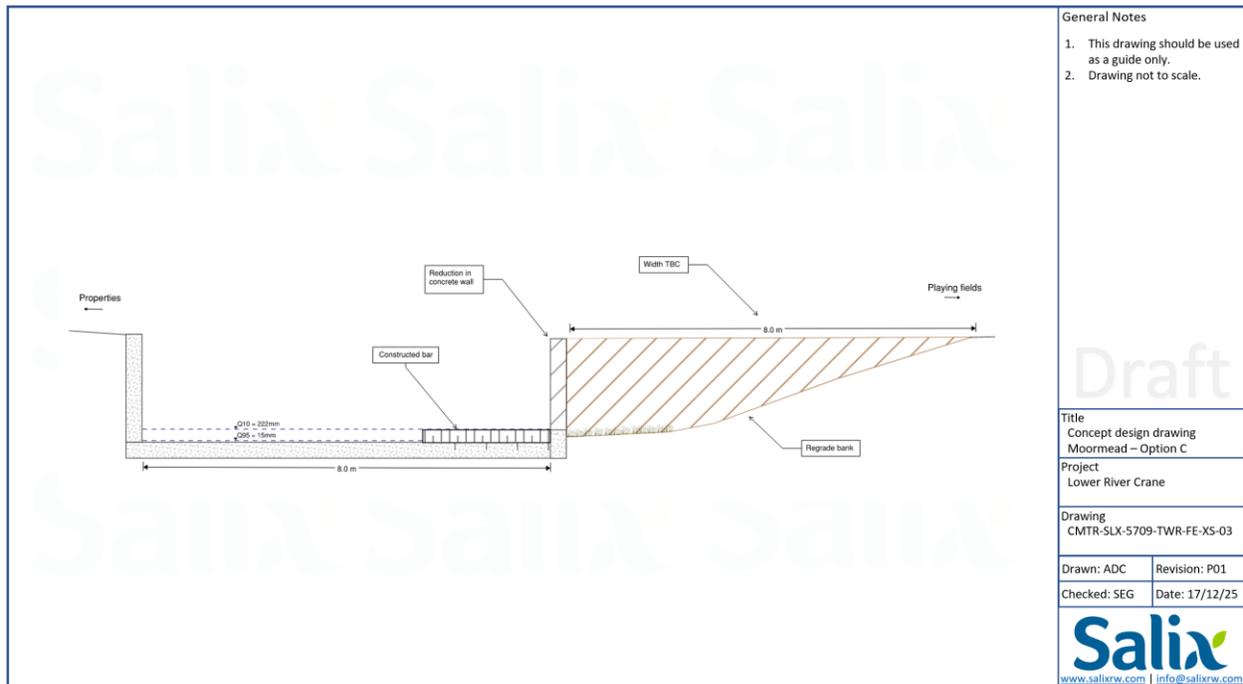
**Project**  
Lower River Crane

**Drawing**  
CMTR-SLX-5709-TWR-FE-GA-03

Drawn: ADC	Revision: P01
Checked: SEG	Date: 17/12/25

www.salixrw.com | info@salixrw.com

**Figure 13 Moormead: Option C concept design**



**General Notes**

1. This drawing should be used as a guide only.
2. Drawing not to scale.

**Title**  
Concept design drawing  
Moormead – Option C

**Project**  
Lower River Crane

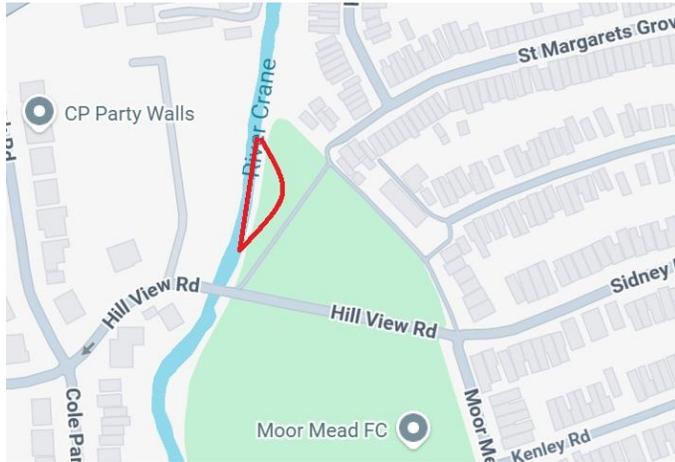
**Drawing**  
CMTR-SLX-5709-TWR-FE-XS-03

Drawn: ADC	Revision: P01
Checked: SEG	Date: 17/12/25

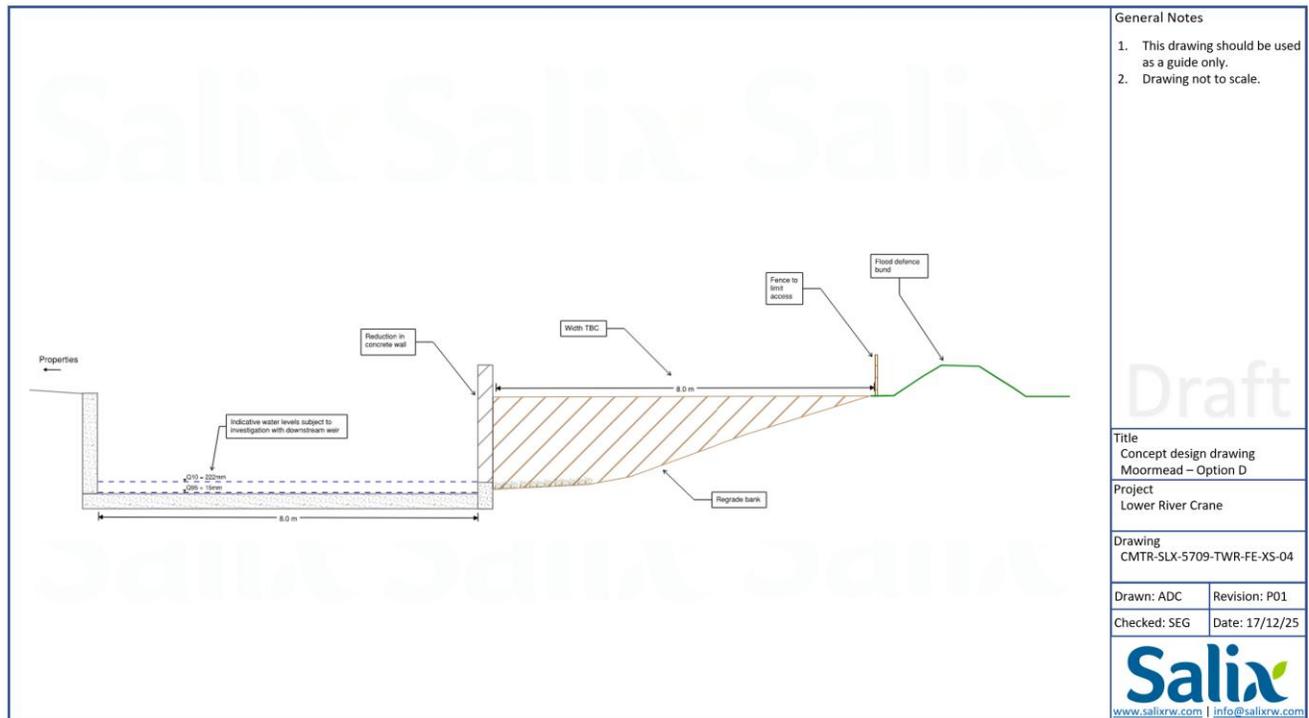
www.salixrw.com | info@salixrw.com

**Figure 14 Moormead: Option C cross section**

### 3.3.4 Option D – regrade right bank downstream of Hill View Road



**Figure 15 Moormead: Option D location**



**Figure 16 Moormead: Option D cross section**

Option D would require further design development.

- The concrete channel is a formal flood defence for nearby properties. Altering the structure will require approval from the Environment Agency. If this option was sought further, a solution would likely consider construction of a new earth bund to provide the same level of protection as the existing flood defence wall.
- The habitat value of in-channel features would be impeded due to the weir directly downstream at this location.

- The weir directly downstream is a relatively large. There is a health risk of inadvertently improving access which would need to be mitigated. This would likely involve fencing the embayment.

## 4 Conclusion

The River Crane at Twickenham Rough and Moormead currently provides very limited habitat value, as the channel is completely artificial and constructed from concrete. Any restoration projects should consider removing the concrete where possible, increasing geomorphological and ecological processes and diversity.

### 4.1 Next steps

#### 4.1.1 Twickenham Rough

- As the landowner, Richmond College should be contacted to understand whether the restoration project is something that could be explored further, as well as utilising the soil to create raised areas around the sports facilities.
- If the landowner is in approval with the concept, the next steps would involve moving to outline design and development. This would involve sizing the backwater with the project steering group and whether there are any constraints with vegetation (tree) removal to increase the length of the restoration works.
- Production of the outline design should include a bill of quantities and high-level construction costings.
- An assessment of flood risk.

#### 4.1.2 Moormead

- Complete a stakeholder engagement meeting to determine the preferred option to be taken forward to outline design.
- Review landownership boundaries to confirm whether the whole of the River Crane is within the ownership of Richmond Council, or whether the private properties have ownership of up to half of the existing channel.
- Complete a topographic survey.
- Complete an outline design report inclusive of cut & fill.
- If Option B is pursued, hydraulic modelling should be undertaken to determine channel suitability.
- Production of high-level construction costings to determine feasibility. Options to reuse the spoil locally should be examined by Richmond and FORCE.

## Appendix 1 – Twickenham Rough Utilities – Emapsite

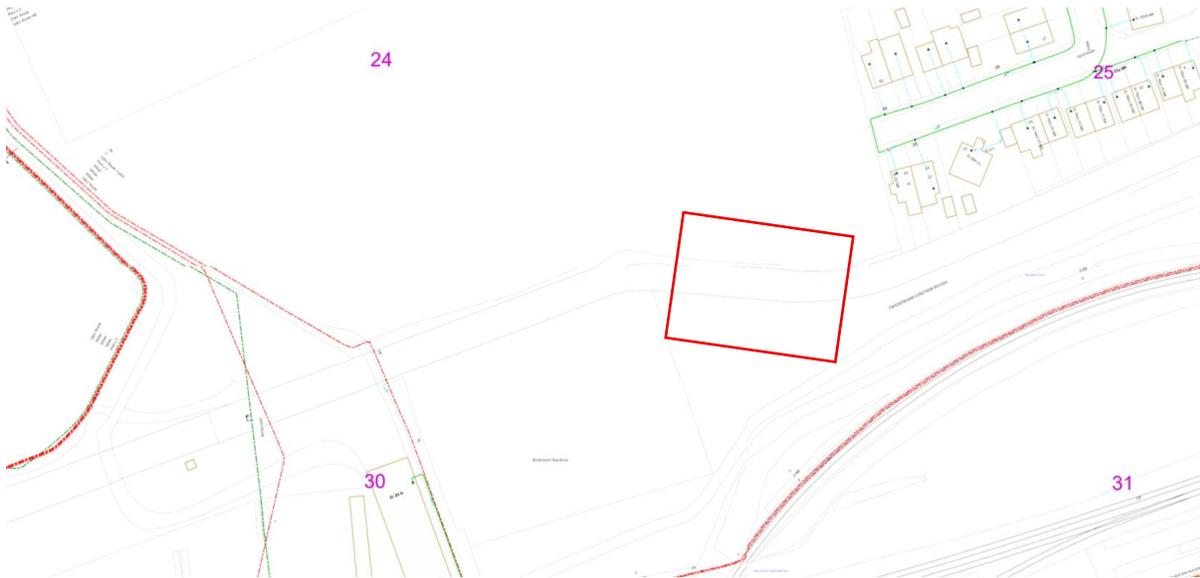


Figure 17 Electricity utility map, Twickenham Rough

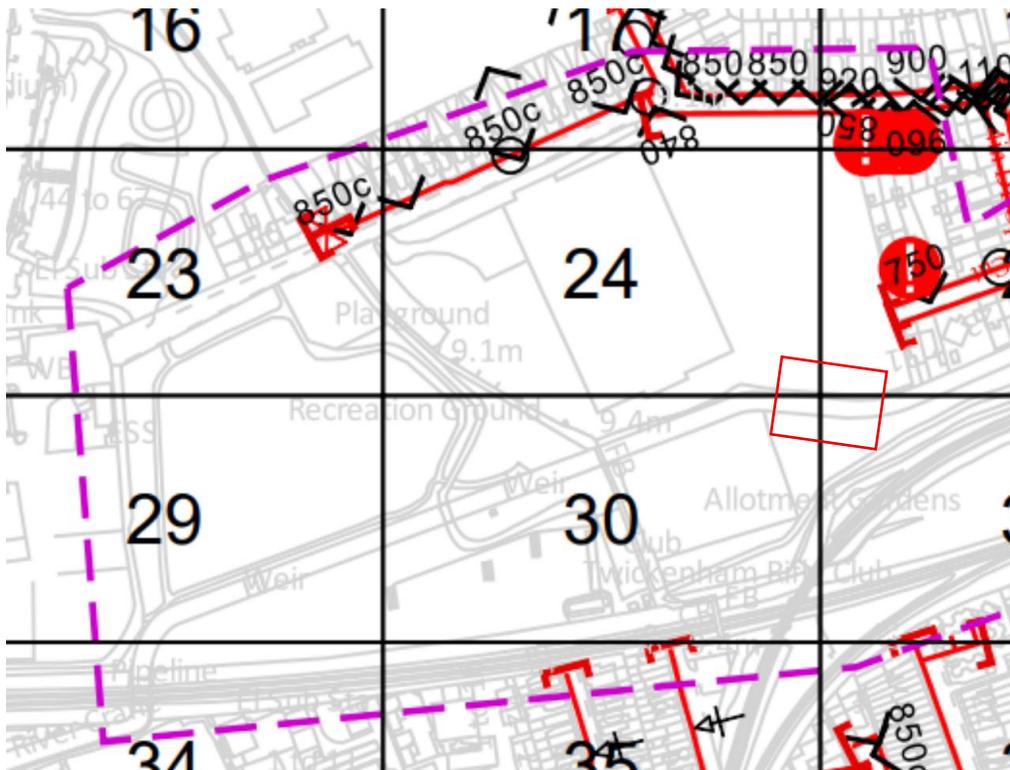


Figure 18 Gas utility map, Twickenham Rough

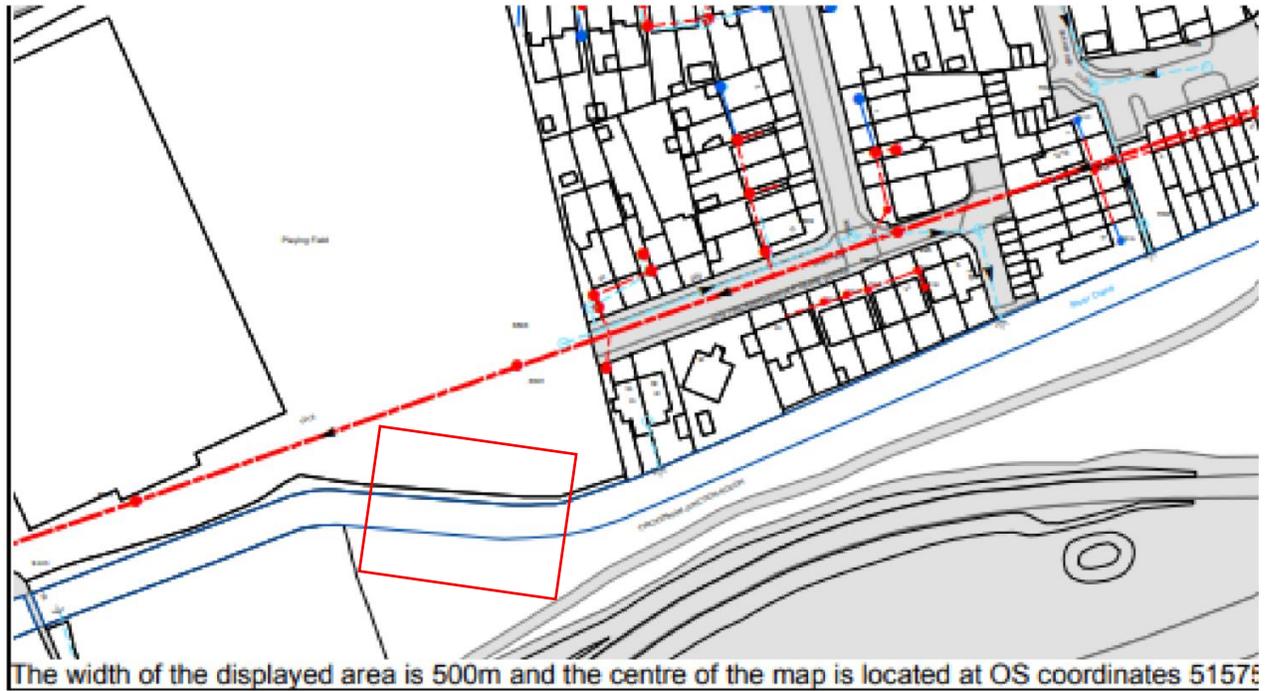


Figure 19 Water utility map, Twickenham Rough



Figure 20 Telecom utility map, Twickenham Rough

## Appendix 2 – Moormead Utilities - Emapsite



Figure 21 Electricity utility map, Moormead

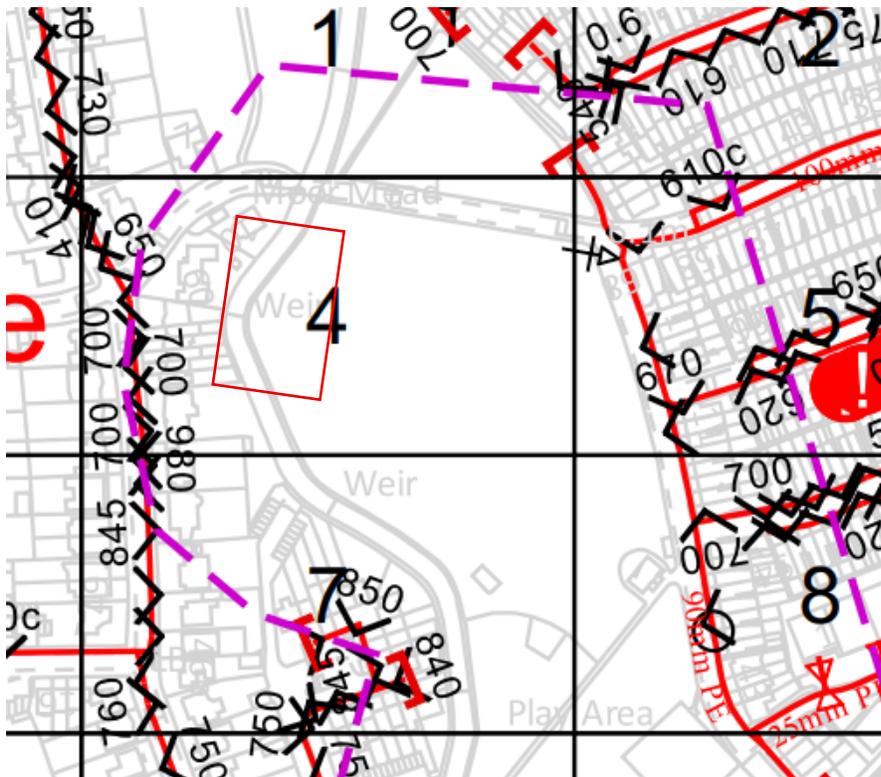


Figure 22 Gas utility map, Moormead

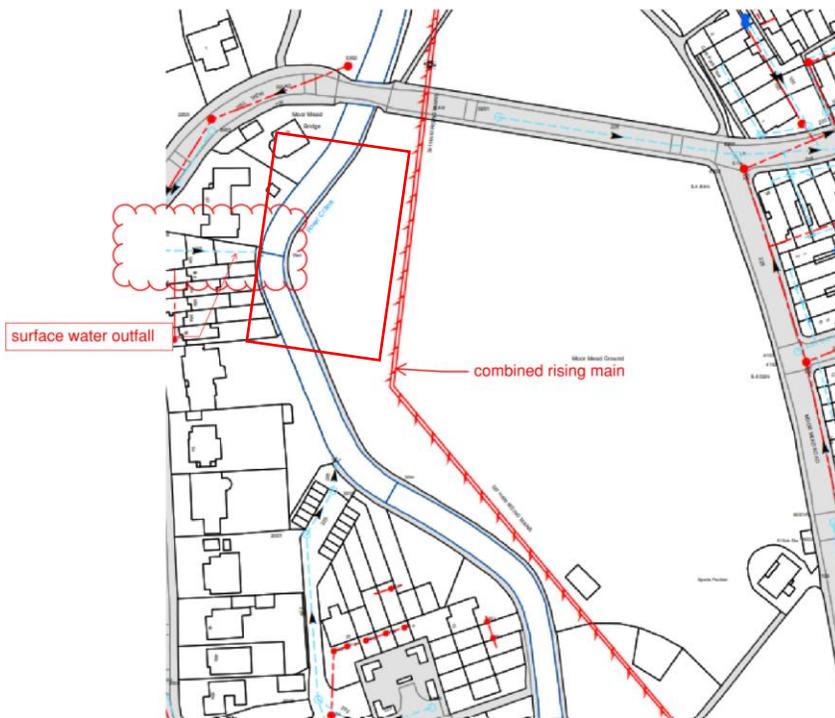


Figure 23 Water utility map, Moormead



Figure 24 Telecom utility map, Moormead