



WALTHAMSTOW WETLANDS

Stage C Report
KLA Design Team

802 R001 Stage C Report 02



Introduction

- Walthamstow Reservoirs: Setting the scene
- Walthamstow Wetlands: Vision
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The Walthamstow Wetlands project is centred on opening the Walthamstow Reservoirs to wider public access allowing visitors to enjoy and learn about the site's distinctive built and natural heritage.

This distinctive nature stems from the site's importance as a historic operational landscape that supplies drinking water to London, and its rich biodiversity that is of international importance for attracting a large number of water birds.

The nature conservation value, industrial heritage, operational functionality and distinctive landscape character of Walthamstow Reservoirs is unique in London. The Walthamstow Wetlands project aims to profile and conserve this hidden heritage and enable more people to access and appreciate it.

Thames water in partnership with Waltham Forest Council have established the Walthamstow Wetlands Partnership to deliver the project, which includes the Environment Agency, Natural England, the neighbouring boroughs of Hackney & Haringey, Lea Valley Regional Park Authority & English Heritage as key stakeholders. Once established, the London Wildlife Trust will operate the Walthamstow Wetlands.

The Walthamstow Wetlands Partnership is currently applying for Stage 2 Heritage Lottery Funding after a successful Stage 1 submission.

This report outlines the Vision for Walthamstow Wetlands, setting out the aspiration for the site and providing a context for the HLF Stage 2 proposals. These proposals are detailed within the HLF Stage C section of the report.

A series of key projects have been identified in Walthamstow Wetlands: Key Future Projects. Though these project do not form part of the HLF proposals they are key works which will support the HLF proposals and the vision.

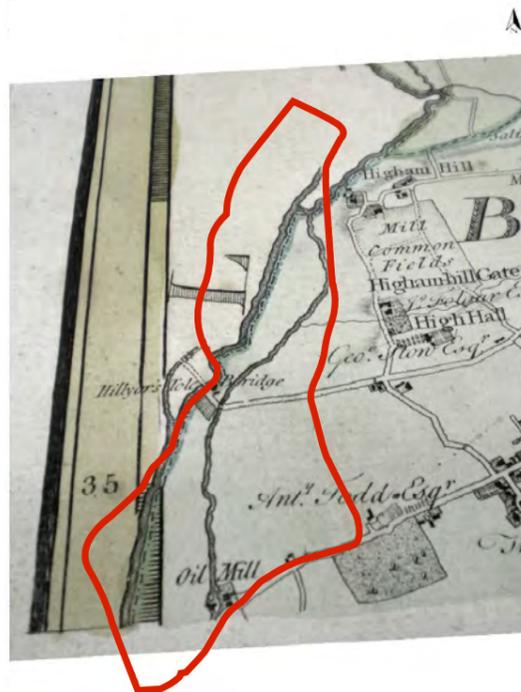
The report begins by outlining the heritage features of the site which have formed the basis of our design approach .

Walthamstow Reservoirs: Setting the scene

Historic evolution of the site as a drinking water resource



1746



1777



1805

The evolution of the Walthamstow Reservoirs from marsh-land grazed by animals and cropped for hay to reservoirs follows the development of the early 19th & 20th Century urban expansion of London and the efforts to improve water quality to reduce outbreaks of Cholera.

Kemps map of 1746, shows The Coppermill building marked as Kemps mill sitting in rural Marsh land next to the River Lea. At this time, the Ferry Boat Inn acted as the main ferry point across the river until 1760 when the bridge was built.

In 1854, initial work to build an aqueduct to carry water to the Essex and Middlesex filter beds commenced. In 1863, reservoirs 1,2&3 were built by excavating existing marsh-land at ground level. Reservoirs 4&5 were then constructed above ground level following drought and the reservoirs continued to be added to until finally Lockwood was constructed in 1904. The engineering history of the reservoirs follows an interesting period in the development of the use of concrete and reinforced concrete in large engineering projects of this kind.

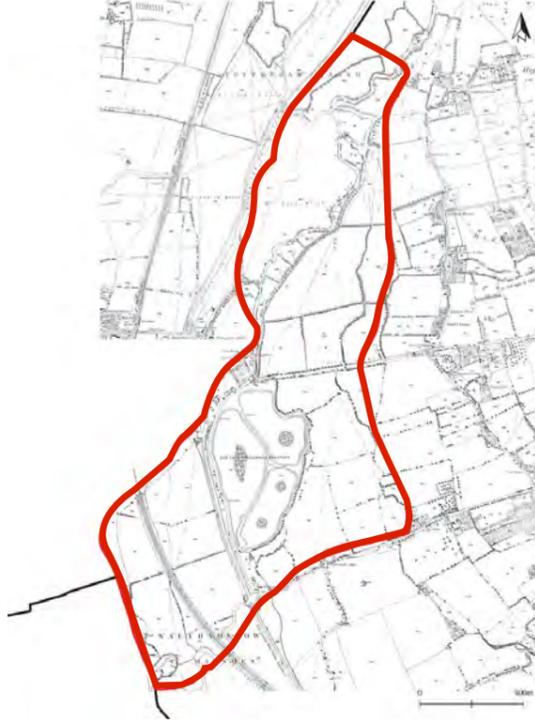
The fact that the marsh was drained, reduced the flood capacity of the river Lea and by 1954 construction of the River Lea flood relief channel was required to alleviate this situation.



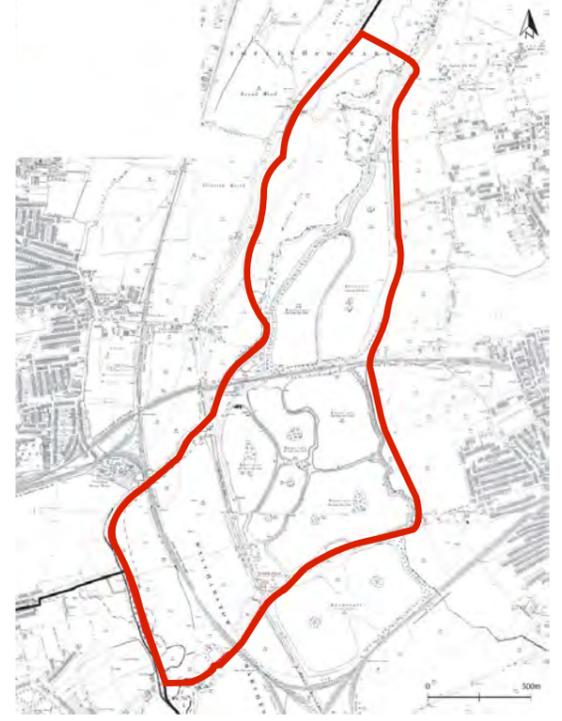
Historic evolution of the site as a drinking water resource



1822



1865



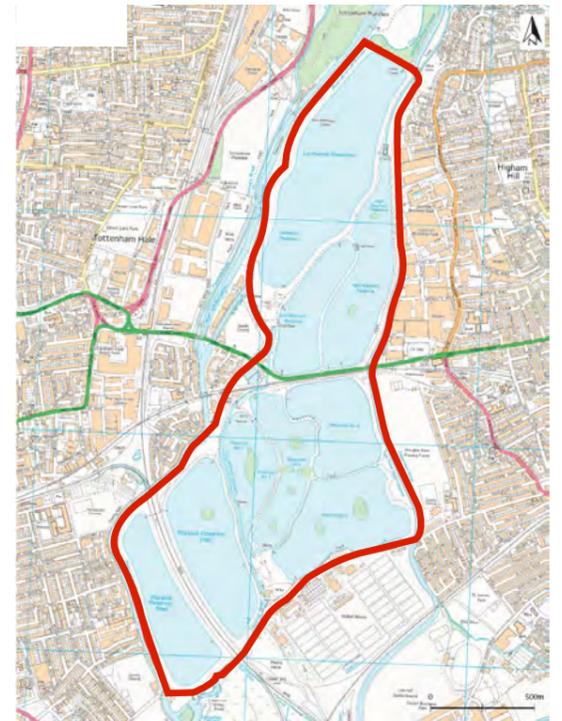
1893



1915



1935



2012

The development of the site as a drinking water resource has created a distinct site encompassing a range of heritage features. These features and the interface between them, have created the site we see today.

The key heritage features have been identified below, and have formed the basis for our design approach:

- Ecological heritage
- Fishing heritage
- Industrial Archeology
- Interface between the Engineered Landscape & the Natural landscape



East Warwick Reservoir Island

Though the marshland has gone the birds have remained, establishing a distinct and dynamic ecological heritage on site. The development of the raised and ground level reservoirs as well as the management of the site as a fishing resource has created a variety of habitats attracting a diverse number of bird species through out the seasons.

The site's designation as a SSSI, SPA & Ramsar reflects the site's ecological importance at an international and local level. However, though the reservoirs are visited regularly by a number of local bird watcher's the majority of local people do not know the site's ecological importance.

Our approach is to enhance and protect the existing habitats, allowing them to be used as a natural resource to educate visitors. Our long-term view is to expand and diversify the habitats on site, to emphasize the dynamic nature of the wetlands and bring this rich ecological heritage to the surface.



Historic Marine Engine House & Old Well House



Historic Coppermill Building

The Lea valley has for centuries been a place of industry and infrastructure, besides its other roles as wild space, pasture, fishery.

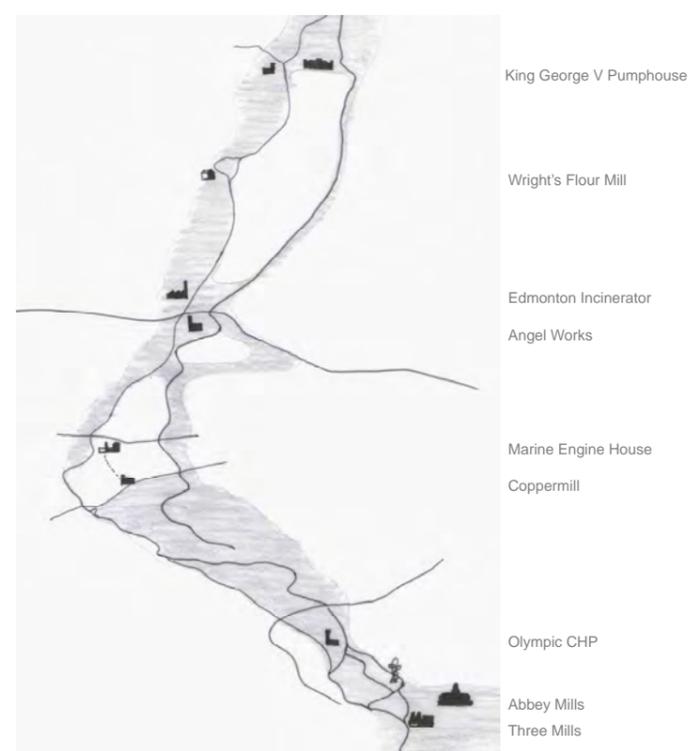
Its open spaces are dominated by a series of infrastructure buildings, which stand tall and isolated. These buildings power a network of pipes, channels and cables that criss-cross the valley floor. In the short distance between the tidal mill at Three Mills, Bromley-by-Bow and the Olympic Combined Heat and Power plant, they span centuries, telling the story of how London has been powered, watered and drained.

Now that the Lea valley is a space of leisure, their tall, blank masses and slender chimneys help to guide visitors through the tangle of watercourses and railway lines.

The Marine Engine House and Coppermill sit within this tradition and this wider civil engineering heritage. These buildings are key orientation features within the site as well as supporting an understanding of a space much larger than the Walthamstow Reservoirs site. They are linked by paths and traces of infrastructure – the aqueduct across Walthamstow Marshes and the Lea Bridge Road filter beds – to the Olympic site, forming a thread of infrastructure, ecology, landmarks and ruins.

The expansive valley floor is broken up by viaducts and banded reservoirs, so that its width and length are in places reduced to a narrow strip. It is only when one rises above the infrastructure that the scale, diversity and richness of the valley become apparent, as is the case at Springfield Park, for example.

Our aim is to bring this rich industrial past to the surface through the provision of the elevated viewpoints to create visual links to the historic urban landscape of the valley as well as the re use of historic industrial features.



Pumping and Powering in the Lea Valley





“Fly Fishing in the River Lee near the Ferry Boat Inn”, 1831 by James Pollard, in Tate Britain.

The heritage of fishing in the Lee Valley is an important part of local history. On this site particularly fishing has been a historic recreation, for example six fisheries in Walthamstow were listed in the Domesday book whilst in 1653 the River Lea next to the Ferry Boat Inn was described in the Compleat Angler. The reservoir site has a long history of use for fishing by the local population with the Walthamstow Fishery managing both coarse and fly-fishing on site today. The majority of the existing recreational visitors to the site are fishers making fishing the key component of the site's recreational heritage, which should be celebrated within the project.



Prominent raised banks of the statutory reservoirs



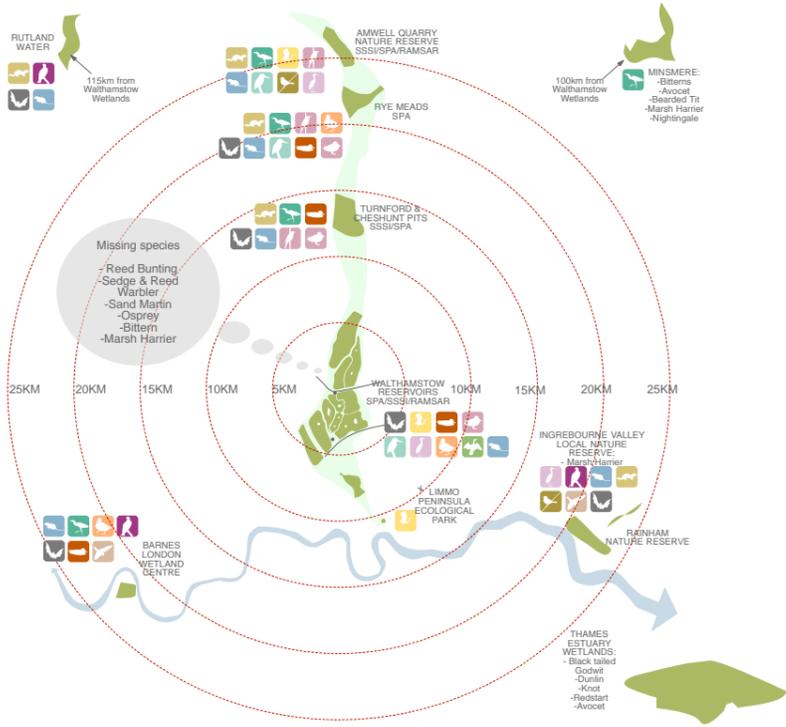
'Naturalised' verges of the non statutory reservoirs

The interface between the engineered landscape and the natural landscape is a relationship that is key in all the site heritage features.

It is this interface which has created the site's distinctive aesthetic embodied by the contrast between the prominent raised engineered banks of the statutory reservoirs and the naturalised, overgrown banks of the non statutory reservoirs at the heart of the site. The relationship between the industrial and the natural landscape is symbiotic on this site and is a key aspect of the site heritage that can be drawn upon and conveyed to visitors in a number of ways. Our approach is to enhance this distinction and replicate this interface in new aspects of the scheme e.g. the re use of historic industrial features as nesting structures or ponds.



Walthamstow Wetlands: Vision



Existing Regional Habitat



Heron Island in Reservoir no 2

A lot is already there

It's an 'island', more or less sealed off; with distinctive landscapes and birdlife, and with two decommissioned buildings

The Walthamstow Reservoirs are a place apart, a reserve secured by running water for two thirds of its perimeter, and by steel fences and brick viaducts for the remainder.

Inside this enclosure are vast expanses of water, a sudden and spectacular shift of scale from the streets around, and colonies of birds nesting in the tall tree canopies of the islands and reservoir edges. Its designation as a SSSI, SPA and Ramsar reflects its status, regionally, nationally and internationally for its populations of Gadwalls, Shovelers, Tufted ducks, Herons and Cormorants. All this is currently enjoyed by an average of thirty visitors a day.

There are two brick industrial buildings, both picturesque aggregations of sheds and towers. They are no longer operational but are currently used by Thames Water for storage. What could be easier than opening up this reserve, connecting the island back to the parkland of the valley floor?

But...it's a vacuum in an area of intense pressure.

The sense of enclosure is deceptive.

It's more porous than it seems, the perimeter fence deters but doesn't prevent intruders: poaching & breaking in.

There are intense social pressures in neighbouring areas, and these are expressed in the unusual patchwork of open spaces along the valley floor. The Lea Valley is a place of liberty and taking liberties, away from the city: racing motorbikes, barbecues in the ancient and ecologically sensitive marshes. Other reserves in the area tread a fine line. The Waterworks Centre is a walled reserve, with a single entrance across a footbridge – it is quite deliberately not accessible from the aqueduct path/ Friends Bridge to the west. The Middlesex Filter Beds have several, uncontrolled entrances, and are more intensively used – but also more abused. To the north, Folly Lane Community Woodland gives the lie to the concept of benign neglect in such a vacuum, suffering from fly tipping and vandalism.

The vacuum is also under pressure from invasive species, and from predators. Water serves as a conduit to draw in Japanese Knotweed, Zebra Mussels. The islands provide secure habitats away from land predators such as foxes and mink, which are a problem in other reserves.

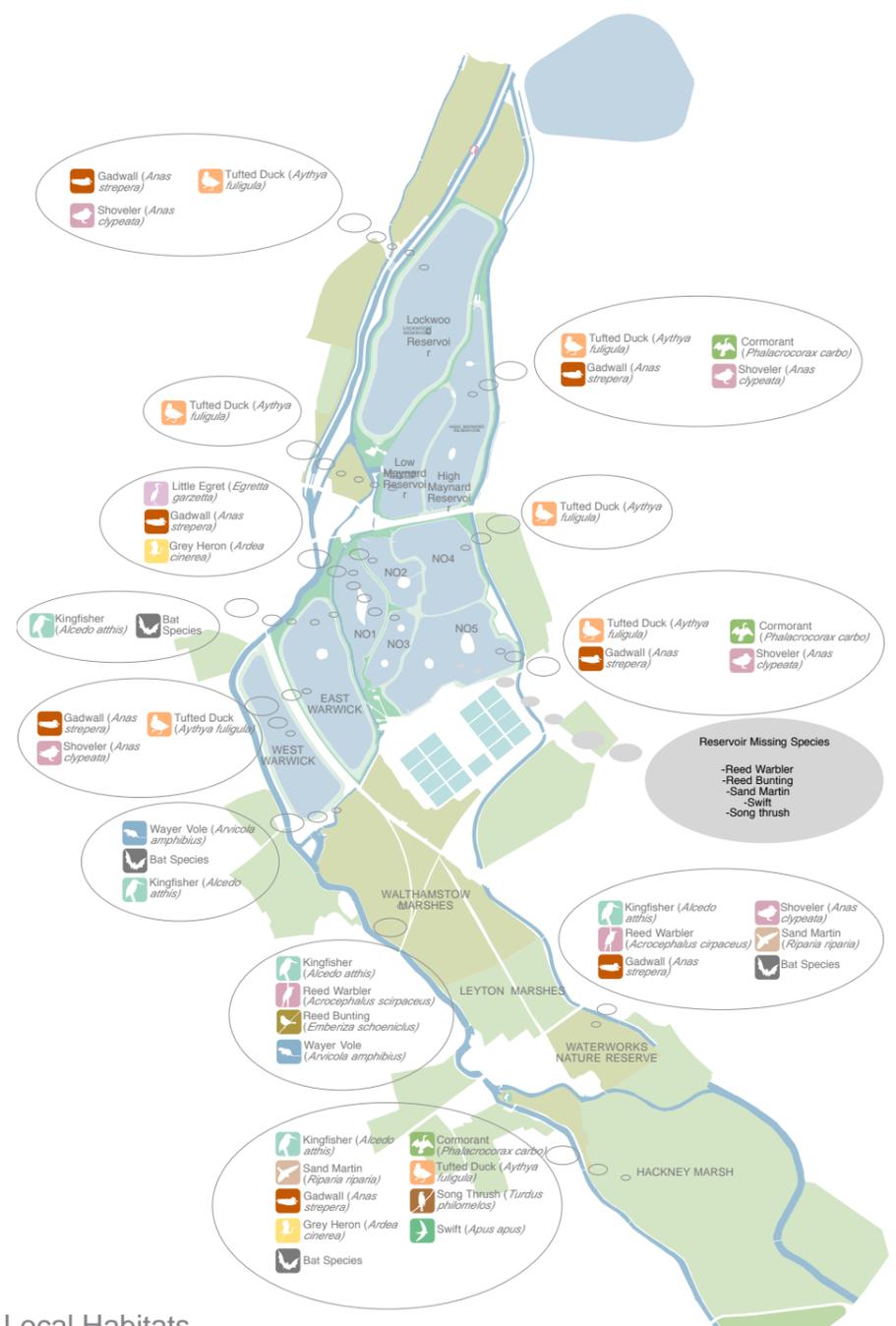
Although discreet, it is a highly managed operational site, and opening it to greater public access will entail more intense management. This can continue to be 'light touch', discreet but unapologetic.

It's not static, nor is it singular

It's not static. It's already clear that management of the site and its habitats can have unintended consequences. It was tree management on the High Maynard reservoir which displaced the cormorants, who in turn displaced the herons. And the attempt to create habitat for wetland birds on the East Warwick attracted...the black gulls. Having displaced the herons from the islands on reservoir no. 5, the

cormorants will shortly exhaust them.

Nor is it singular, despite appearances on satellite photos and maps. The reservoirs were built over seventy years, growing in scale and height in relation to advances in safe water supply and the needs and growth of the City Of London. Their differences are overlaid on topographic, climatic and socio-economic differences. The reservoirs lie across a bend in the valley, where it twists from a south-south-westerly axis to a south-south-easterly axis – from facing to the City, to facing to Canary Wharf. The prevailing south-westerly winds seem to result in nesting on the eastern side of the site, or the eastern side of the islands. The raised reservoirs shelter the lower ones; there are shallow areas of sheltered water, and deep areas of windswept water. To the west lies the Lee Navigation, a mix of meanders and cuts; through the middle runs the Lea Diversion and Coppermill Stream, both approximations of earlier watercourses, and with largely naturalised banks; to the east lies the deep concrete conduit of the Flood Relief Channel. To the north, surrounds are scrubby landfill (Tottenham Marshes) and the backs of industrial properties; to the south is ancient marshland and buildings of the Victorian city edge. A few binary differences accumulate to create a bewilderingly varied site.



Local Habitats





Ecological Enhancements : Visionary enhancements of the Coppermill Stream & Reservoir no 1

Habitats will be nurtured rather than intensively developed

The desire to extend and protect existing habitats and bird communities can be partially met by introduction of increased diversity of habitats, however this landscape of birds will develop over time, increasing plant diversity and introducing an enriched patina of plant life, mammals, birds, amphibians and invertebrates. Reed beds are key to making a strategic difference to this landscape and the increase in this habitat alone will bring enhanced bird populations.

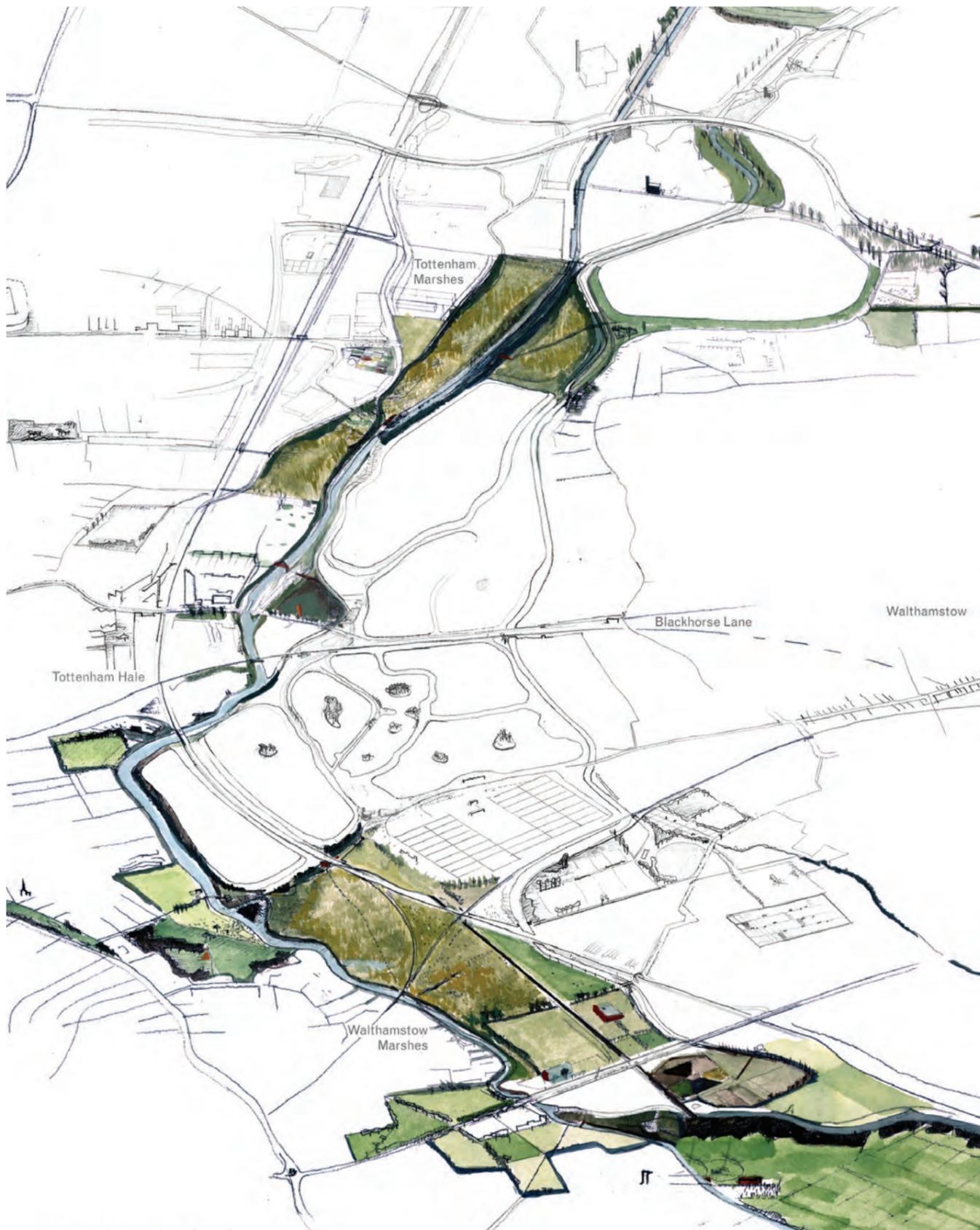
In studying the wider Lea Valley and its protected habitats and the natural areas surrounding wetlands, we have identified opportunities for improving key species at Wetlands. Though this information will continue to evolve as we develop the project and gain a clearer understanding of the site and its ecology a visionary set of proposals have been established.

The proposals primarily focus on improving the current SSSI, SPA & Ramsar site designations as well as proposals that will support Biodiversity Action Plan key species that have been agreed and developed with the wider client body.



Visionary Ecological Proposals





Disconnected Site :
Walthamstow reservoirs is currently disconnected from the network of open spaces surrounding the site

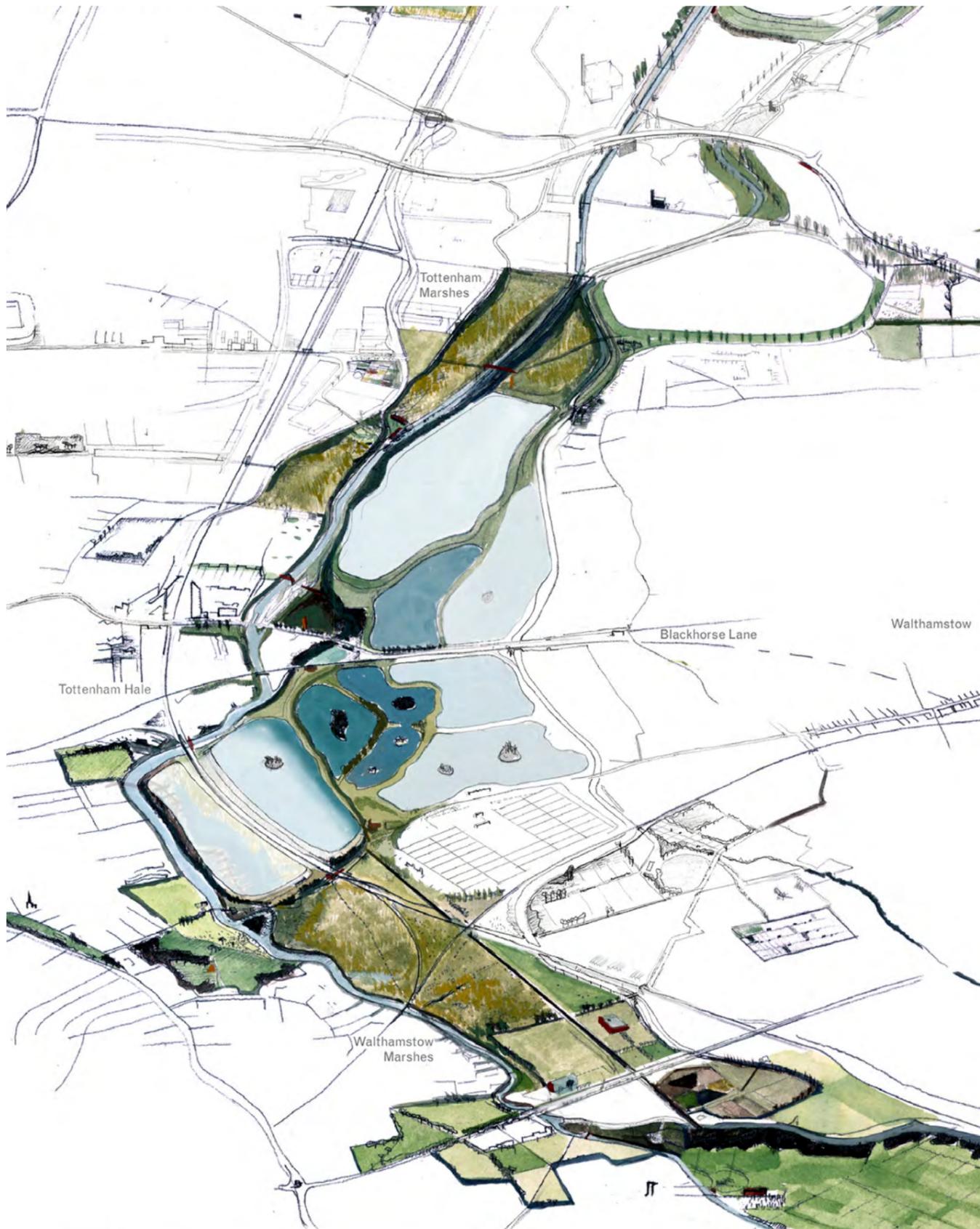
2 What isn't there is the organisation, or the public.

This can't be transformed overnight. The organisation and public need to grow into the buildings and the site.

Because so much is already there, change will be a process, not a one-off event. The first stage of works are a kick-start, building an overcapacity for the anticipated public in ten years' time, but one that can be delivered and run economically. A mature organisation and public will be able to seize longer term opportunities at West Warwick Reservoir or the Coppermill building better than is possible at the moment. The first phase must provide a foundation for a broad-based movement, drawing in volunteers and a critical mass of interested participants.

The buildings should be loose fit, and managed in a nimble way.

The buildings should be conceived to accommodate change. This is in many ways hard to anticipate; however it is natural with two robustly built existing buildings that significant overcapacity is inherent, both in terms of the total area, and the room sizes. In the spirit of open-endedness, the temptation should be avoided to subdivide large spaces excessively, as their scale is likely to be of great use in the longer term. We therefore advocate a 'loose fit' between the area brief and the building fabric.



Integrated Site :
Increased access and a focal 'green core' will integrate the site into the surrounding open space network

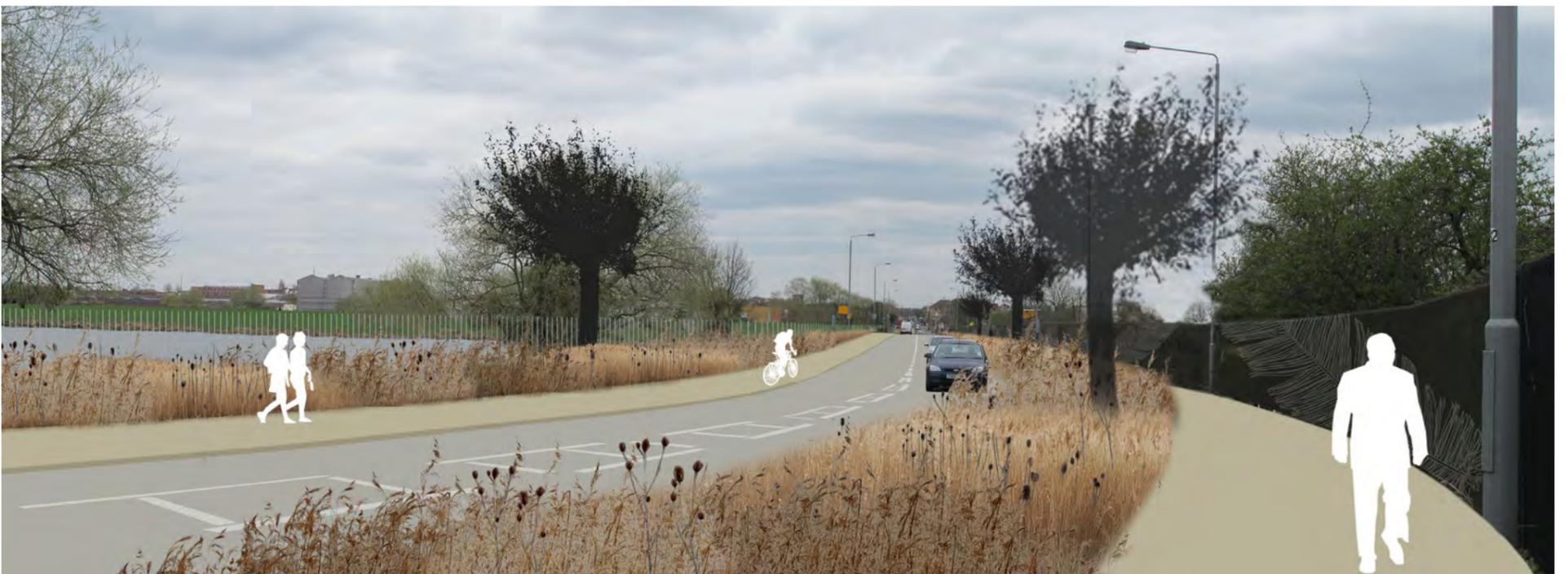
The use of the site will be seasonal, dynamic and cumulative.

The life of the site is seasonal, with both winter and summer birds (and abundant insect life in May). Its use for schools will be confined to term times and weekdays, while large scale public use is likely to focus on weekends in summer. These fluctuations allow the different rooms to be shared between different users over time – reinforcing the 'loose fit' approach. On top of these fluctuations, a temporary exhibition and a programme of associated public events can introduce new themes and stimuli, building up a wider public for the site.

Secure and managed access is the key – this needs to be radically transformed or facilities will not be sustained, and momentum and legitimacy will be lost. The connections need to be both local and along the valley.

If growth is to be 'organic', then access is the fertiliser. Neighbouring sites attract large numbers of visitors – Tottenham Marshes, the Waterworks nature reserve, Walthamstow Marshes consistently attract between 200,000 and 400,000 visits annually, despite their sometimes torturous access arrangements and lack of linkage.

Despite its wonderful natural assets our site sits within an area where local people have poor access to nature. Connecting the wetlands to these people is key. Connecting the site into the Lea valley network is also critical. The reservoirs' position as a gap in the 'unfinished' regional park makes this connection beneficial to both the 'Wetlands' and the wider valley experience.



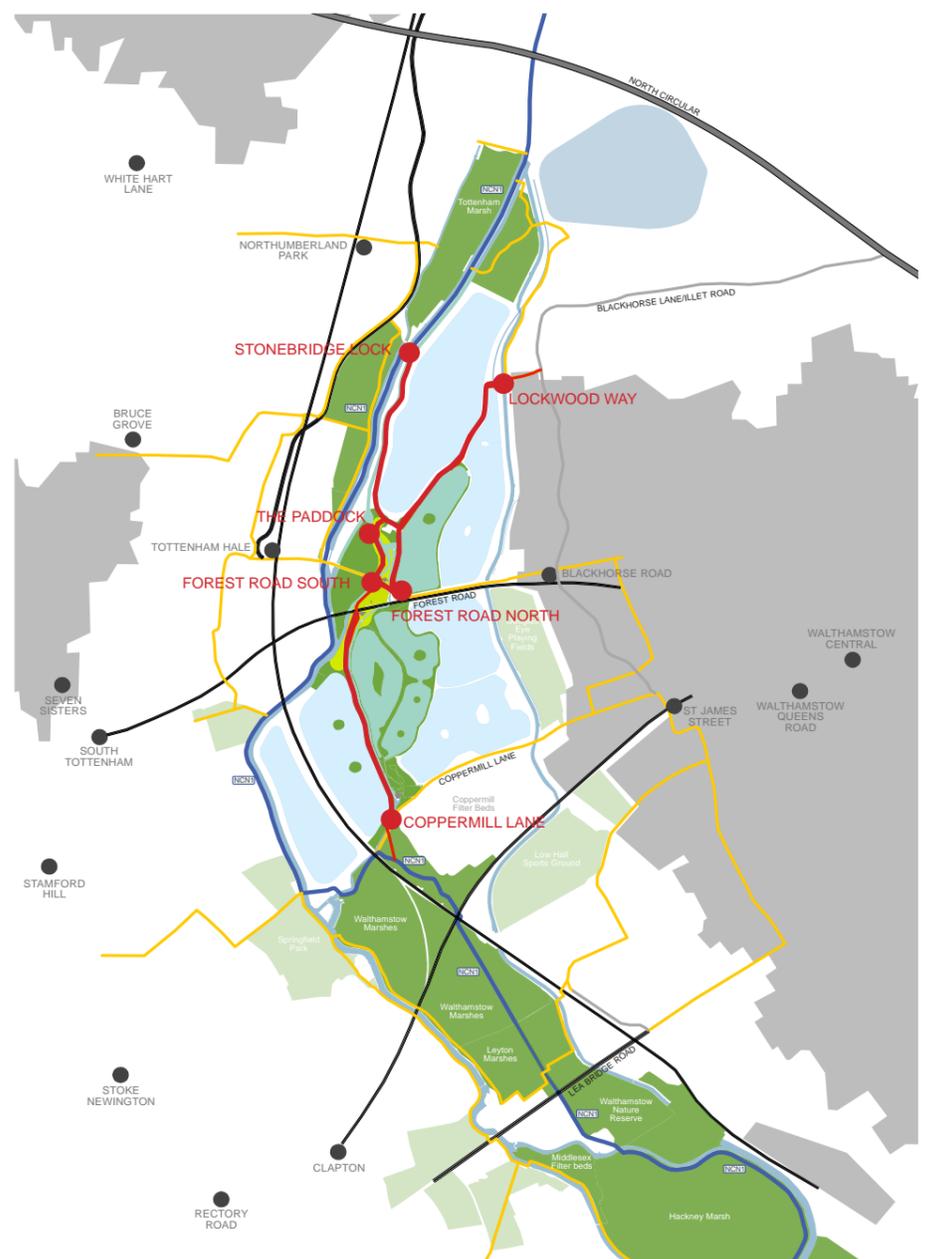
Forest Road Vision

Increased access to nature

The new accessibility of the site needs to be bold and clear – not just changed, but visibly so. This involves a transformation of the site exterior, changing it from a defensive condition to an inviting landscape experience. The southern edge, to Walthamstow Marshes and Coppermill Fields, and the frontage to Forest Road are particularly important in determining this aspect – both as a continuation of the landscape and as an invitation to enter, with the Coppermill and Marine Engine House catching the eye from afar. A small window to the popular Lee Navigation footpath also exists to the north of the East Warwick reservoir.

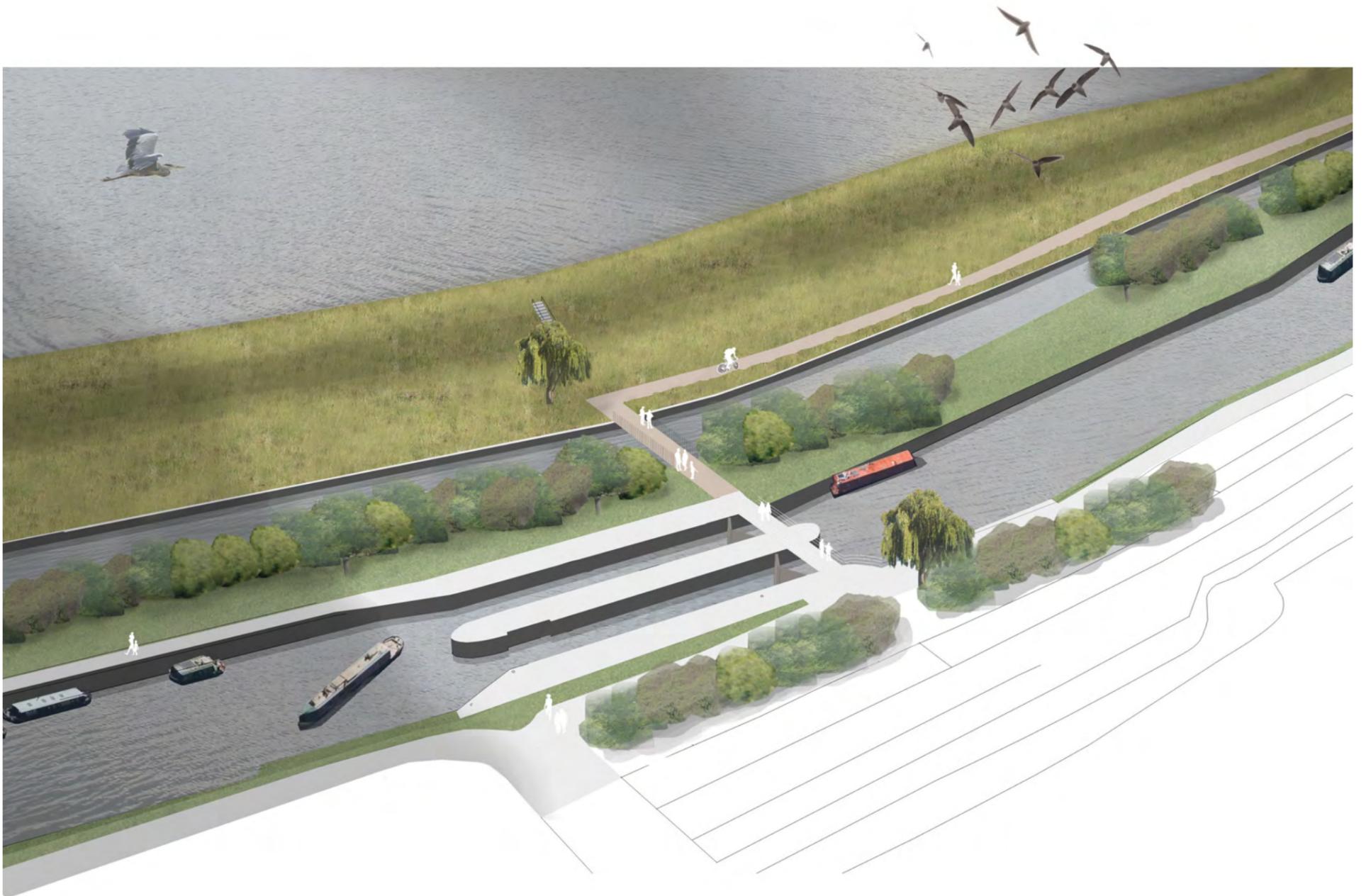
A series of entrances should permeate the site boundary to create important links to areas deficient in access to nature and with adjacent open spaces and their visitor's.

The entrances will be key in triggering a 'change in behaviour' for visitors. Though the access points will create links to the adjacent open space of the Lee Valley, this site is different. The entrances have an important role in creating this distinction before people access the site. The vision for the entrances focus on a 'wetland approach'. This allows the wetland to extend out into the local landscape reinforcing this distinction between adjacent open spaces and reinforcing that a change in behavior is required.



Access Vision





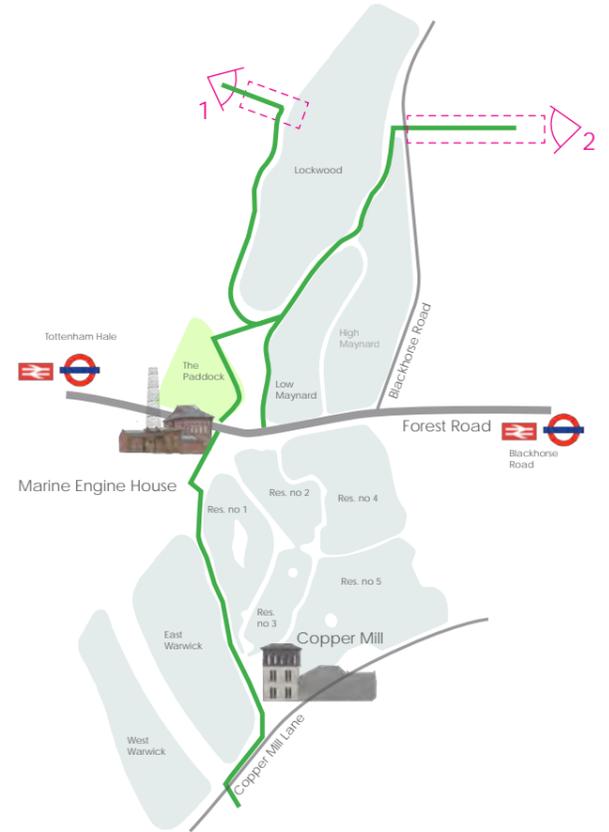
1.Coppermill Lane Entrance - View looking over the Coppermill Lane Entrance & Lane Approach

Lockwood Way

Located along the north eastern edge of the site, Lockwood Way entrance provides a key link for the residents of Walthamstow Forest a key area deficient in access to nature.

Stonebridge Lock

Stonebridge lock is a popular destination in the Lee Valley. A new entrance in this location would link directly to the existing lock, activating the entrance and providing a key link to nature for Tottenham residents.



2.Lockwood Way Entrance - View over the proposed Blackhorse Lane Entrance and approach to the Lockwood Way Entrance





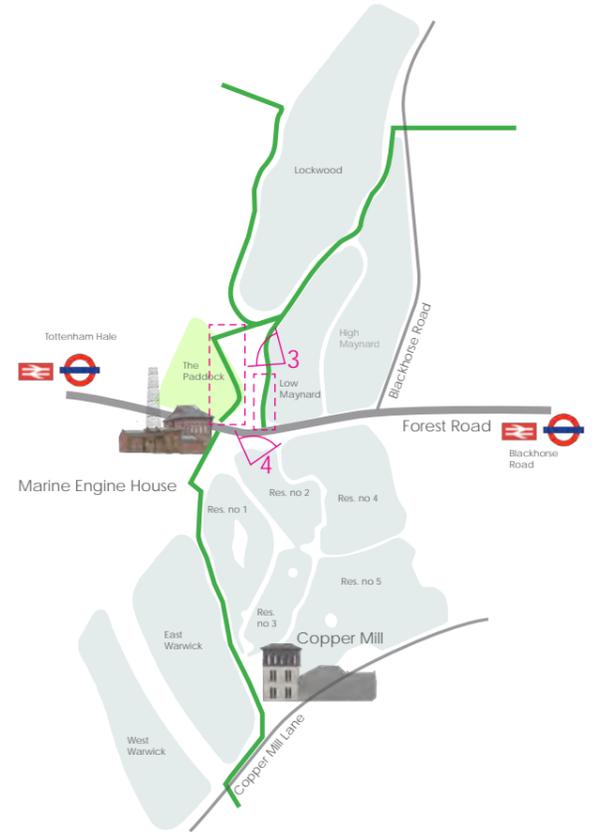
3.The Paddock Entrance - View looking over the proposed Paddock entrance linking the northern reservoirs to the Paddock site

The Paddock

This proposed entrance would activate 'The Paddock' site an existing nature conservation site adjacent the reservoirs. This link would be beneficial in extending the influence of the wetlands in the local context and creating important ecological links.

Forest Road North

A new pedestrian entrance is proposed to the northern reservoir, separate and distinct from the existing Thames Water Operational access. Ecological and habitat improvements along Low Maynard and along the southern edge of the northern reservoirs allows the wetland aesthetic to encroach on to Forest Road.



4. North Forest Road Entrance - View over the proposed North Forest Road Entrance



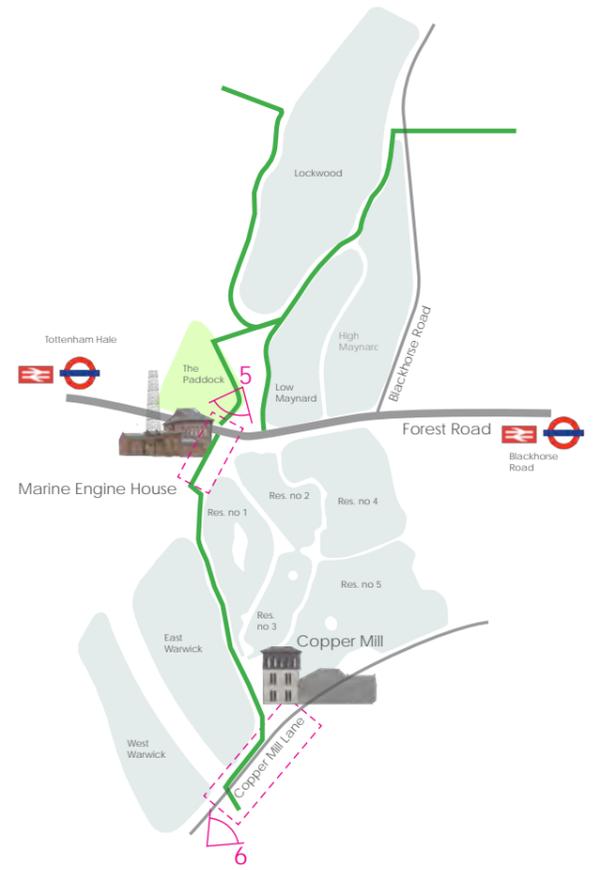
5. Forest Road Entrance - View over the proposed Forest Road Entrance

Forest Road South

The South Forest Road Entrance is the focal entrance to the Walthamstow Wetlands with long views to the Marine Engine House Visitor Centre that will act as a key orientation feature, drawing people through the entrance space. It is envisaged that the wetland habitat at the heart of the site extends and colonises this entrance space creating a strong wetland identity on Forest Road.

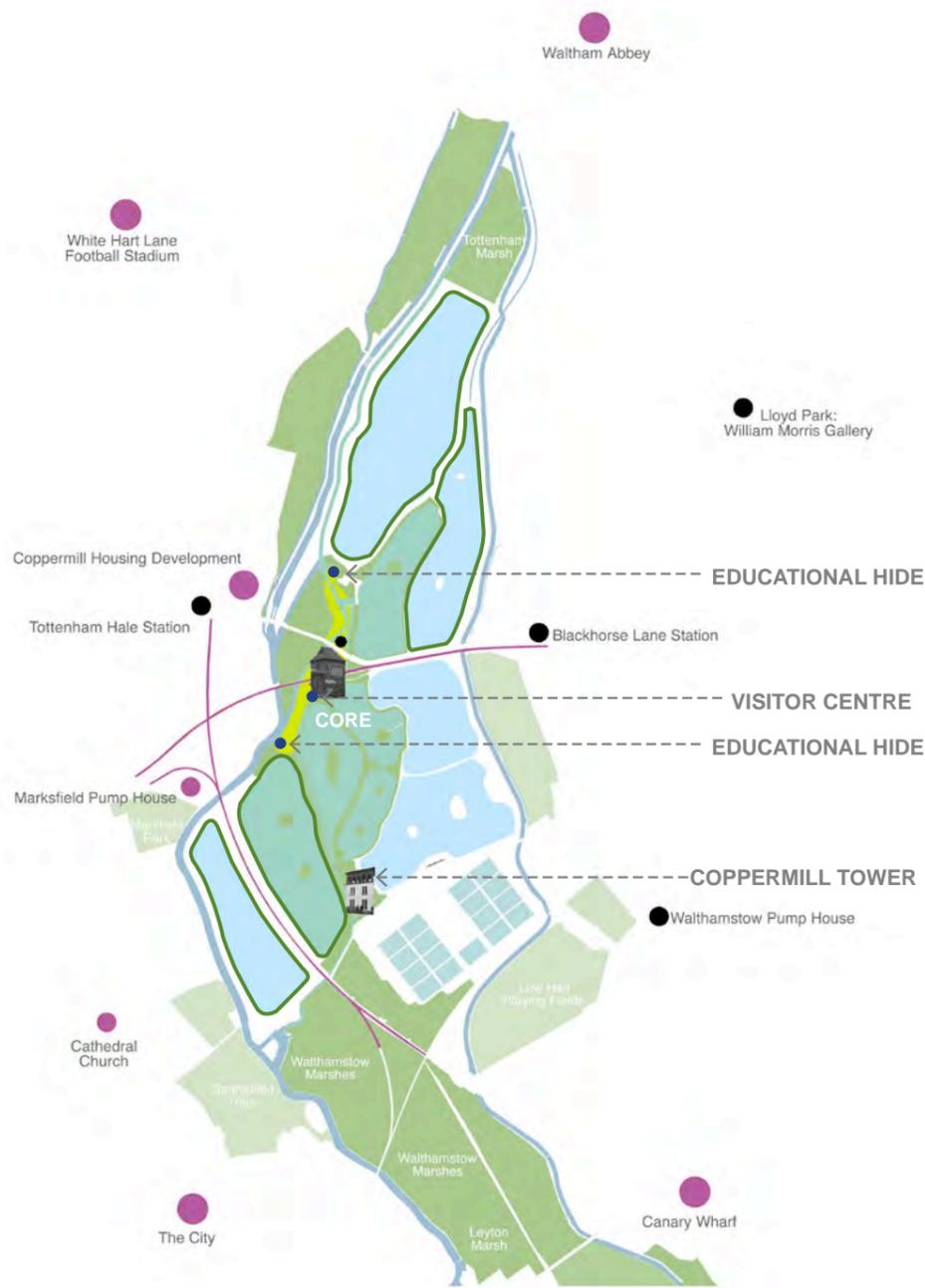
Coppermill Lane

The Coppermill Lane entrance establishes a direct link between the site and Walthamstow Marshes. Improvements to the existing lane will create a 'Wetland Approach' with the wetland aesthetic extending along Coppermill Lane.

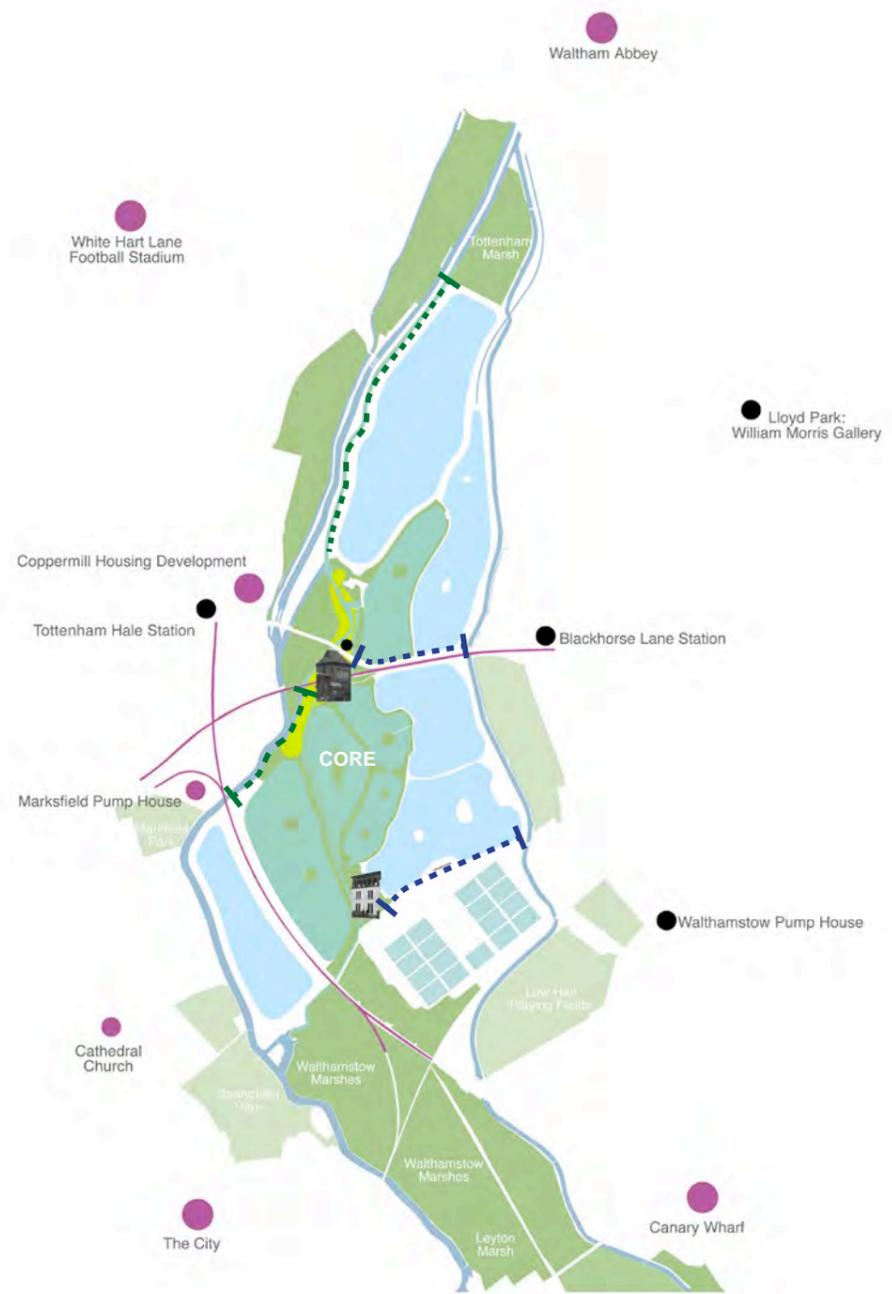


6. Coppermill Lane Entrance - View looking over the Coppermill Lane Entrance & Lane Approach





Green Core & Site Orientation



Key Windows into the Site

Identity – reclaiming the infrastructure landscape

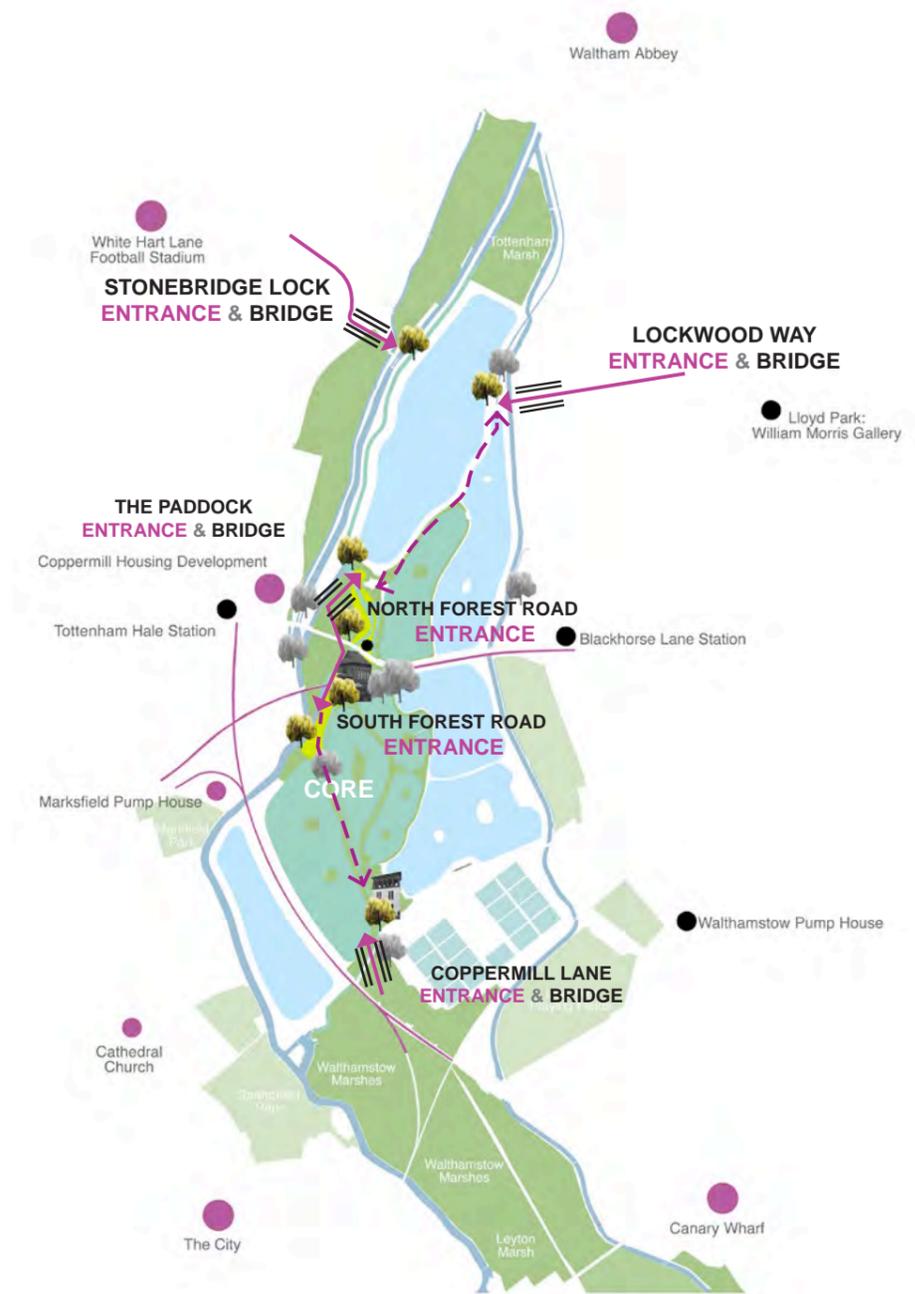
Engineering has largely separated the reservoirs from the rest of the valley floor, lifting the edge reservoirs high above the neighbouring open spaces, presenting grassy mounds to the outside. However, at the heart of the site are the lowest lying reservoirs, dug into the ground rather than mounded above it. When they were built, these reservoirs were contorted to the watercourses and field lines, implanted with islands, and lined with trees – they are works of landscape design as much as of infrastructure. It is this chain of below ground reservoirs, and the isthmus of land between the Coppermill Stream and the Lea Diversion, that form the ‘green core’ of the project: a low-lying landscape already rich in life, whose habitats we can further enhance because of the reduced infrastructure constraints (no danger of breach and flood) and the river edges.

While the new primary paths will connect strongly to the Lea valley network, these connections will not be seamless: we wish to keep a certain sense of separateness, of specialness. Visitors will cross the water to enter the site, using new footbridges over the Coppermill Stream and the Flood Relief Channel. (At a later stage, new bridges over the Lea Diversion may connect to the Paddock and Stonebridge Lock). At the main Forest Road entrance, the railway viaduct forms a strong threshold which you must pass before the site becomes visible. These thresholds will assist the physical security of the site, but should also help communicate that the reservoirs are a place apart, where different behaviour is required.

Once in, the watercourses lead you through the site: the Coppermill Stream lines the path from the southern edge up to the Marine Engine



Tree Network



Water Crossing & Entrance Approach

House, after which the Lea Diversion traces the path up to Stonebridge Lock. These watercourses are a mix of the ancient and the engineered, of the natural and the man-made. We will cut down the concrete edge of the Coppermill Stream, widening its riverbank, open up the thick undergrowth along the Lea Navigation to allow views through and down to the river, and (later) remove the weir at the northern end of the Paddock.

The existing earthworks and islands will be maintained as quieter areas and will be protected from disturbance, beyond the reach of the public landscape.

The heritage of ecology colonising and contrasting the engineered landscape will be further enhanced through the design proposals.

These will include-

- A swift / house martin tower within the Marine Engine house
- The excavation and installation of ponds in the old building foundations
- Water channels which trace historic industrial pipework
- Habitat creation within new structures e.g. nesting sites in bridges, decks etc.
- Extension of the wetland habitat into the surrounding landscape e.g. Forest road improvements, Coppermill lane approach etc.



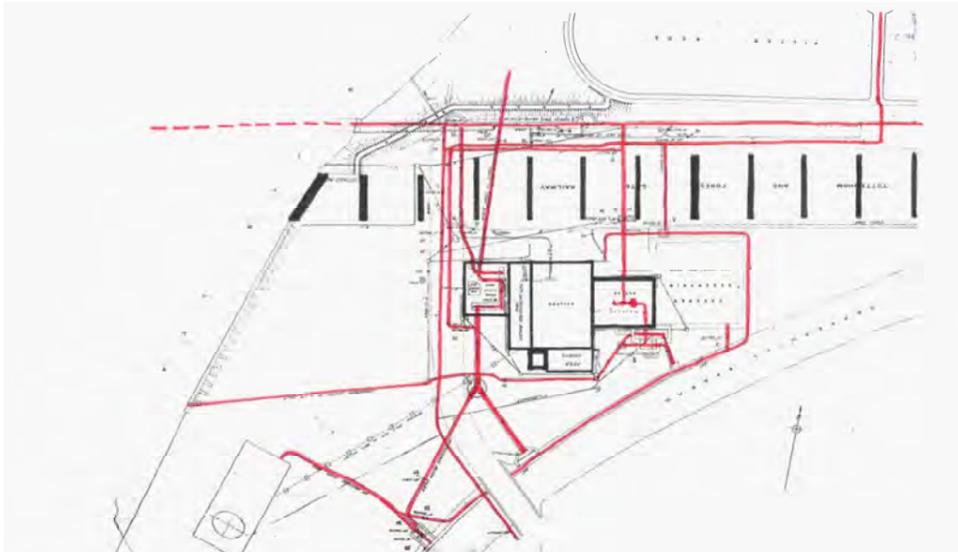


Outdoor Education Space & Meadow Vision

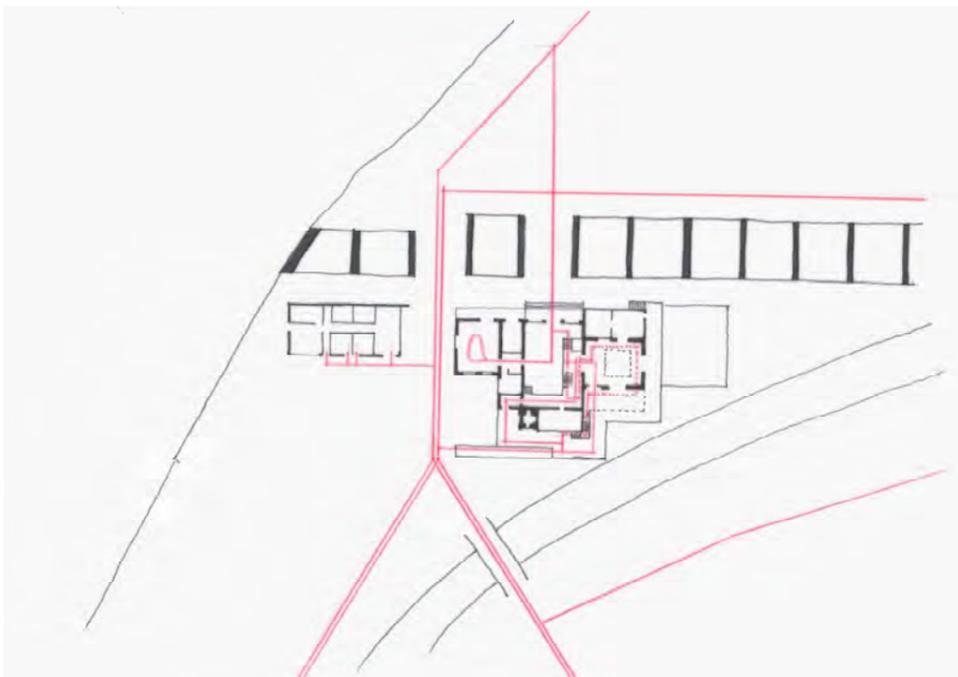
The buildings, both former pump-houses, are rooted in the network of open conduits and subterranean pipes, and tower above the reservoirs.

The Marine Engine House will serve as a gatehouse for those entering the southern site from Forest Road, and as a focus for visitor facilities. A new block will allow volunteers & rangers to keep an eye on the public passing through the site, while the passage through the building will lead from the industrial yard through the central hall and out to the café (in the triple engine room), the education room (in the turbine room) and viewing terrace. The flows of people will parallel the pipes, valves and pumps by which the water was regulated. New terraces at ground, first and second floor level will reveal a series of views over the site: down reservoir No 1 to its island; across the railway and the road to the Lockwood and Maynard Reservoirs; down the valley towards Canary Wharf, and over Spring Hill to the City.

The Marine Engine House is eclectic in detail (Dutch gables, pagoda) roof, but picturesque in its composition – it seems to have been designed by an engineer who had read Pugin’s ‘Contrasts’. The central point of the building’s composition used to be a tall chimney, which was demolished in the 1940s. We will reinstate it at a reduced (but still significant) height in open brickwork, forming a tower for swallows and bats – a sign of the site’s reclamation by nature, an emblem of the Wetlands visible from Forest Road.



Previously: regulating flows of water



Now: regulating flows of people





Ecological Heritage



Industrial Heritage

What this unusual site helps us to see and understand

The site's rich heritage and its urban location provide an opportunity to convey a diverse variety of educational topics to visitors.

These topics range in scale & themes covering site heritage as well as wider cultural and historic issues relating to London, the UK and worldwide issues.

The Activity Plan has identified a series of key themes to organise how this diverse range of narratives can be told, these are-

Precious For Nature
Precious For London
Precious For You

A permanent exhibition will be located within the Marine Engine House, this will form the main focus of education and interpretation on site supported by fixed interpretation within the landscape and temporary exhibitions.

The aim of the fixed interpretation is to make the implicit explicit, drawing out issues and connections that are visible but not obvious. This material will be located at key points around the site.

The vision for the temporary exhibitions is to create a curatorial arts project at the Wetlands that continuously researches and explores the site and its cultural and social context.

The key topics which will form the focus of our interpretation and exhibition are contained within the HLF Stage C section of the report. Key narratives which we have explored in our research for these topics are noted below -

How changing climatic conditions built and shaped the Lee valley
Gravel terraces line the Lea, the deposits of warm pleistocene seas. The valley itself was carved by meltwaters from an ice lake in the Anglian glaciation, which diverted the Thames from the centre to the southern edge of its basin. The power of climate forces becomes palpable through these extremes and the landscape they have formed.

Migratory patterns of species found at the reservoirs
The birds on site migrate from Eastern Europe, the Mediterranean and the Southern hemisphere (swifts). By understanding these patterns, we come to understand the dynamic and complex rhythms of the natural world, and the linkages that other species make between habitats (migration routes tend to follow wetland areas – there is a west African coastal route, and an East African one up the Rift Valley). The presence of significant migrant populations along the valley edge makes this theme particularly personal. These patterns are now changing, as witnessed by the Little Egret's entry into southern Britain, including on this site.

Human Settlement - these wetlands have long been settled
The valley edges and floor have yielded both prehistoric and historic archaeological finds (bronze cauldrons, bronze sword, Saxon armlet, log boat, crannog piles), a sign of the attractiveness of water edge sites for human life – now a global condition.

Multiple uses of the different branches of the River Lee for transport, power and drinking water

There has been a mill at Walthamstow since Domesday, milling oil, gunpowder, copper sheet. This was one of many in the valley; the water power from the multiple watercourses was the original motivation for industry to locate here.

The exponential growth of Victorian London and the challenge of urban sanitation

East London has long been supplied with drinking water from the Lea. Walthamstow Reservoirs were built as a direct result of the cholera outbreak of 1860, traced to the ELWC's reservoirs at Old Ford (now the Olympic site). The reservoirs were moved further up the valley to be upstream from urban sources of pollution, and were supplemented by steam powered pumps to deliver filtered, pressurised water, essential to clearing waste via the new sewer system.

Fluvial flooding, now mitigated by the Flood Relief Channel along the edge of the site

The Lea valley floor was inherently prone to both tidal and fluvial flooding. The building up of the floodplain for reservoirs blocked the main course of the Lea (it lies under Lockwood, William Girling and King George V reservoirs), exacerbating this problem. The flooding experienced in 1947 (repeated in 1968 and 1987) necessitated the construction of the Flood Relief Channel along the eastern edge of the valley.

Contemporary problems of toxicity

The Lea has been slowly cleaned of industrial pollution; but tributaries such as the Pymmes and Dagenham Brooks, the Moselle carry different challenges, passing through landfill sites or catching foul water from domestic misconnections.

Water Conservation

Extraction from the Lea is so substantial that its flow is minimal, illustrating the physical affects of the increased pressure on our water sources. One of the key themes that Thames Water promote is water conservation and how people's understanding of how they use water can dramatically affect the water system and water treatment.

The naturalistic appearance of the reservoirs and the self-evident nature of tap-water illustrate how our water resources are a complex and dynamic system requiring both management and respect.



HLF Stage C Design



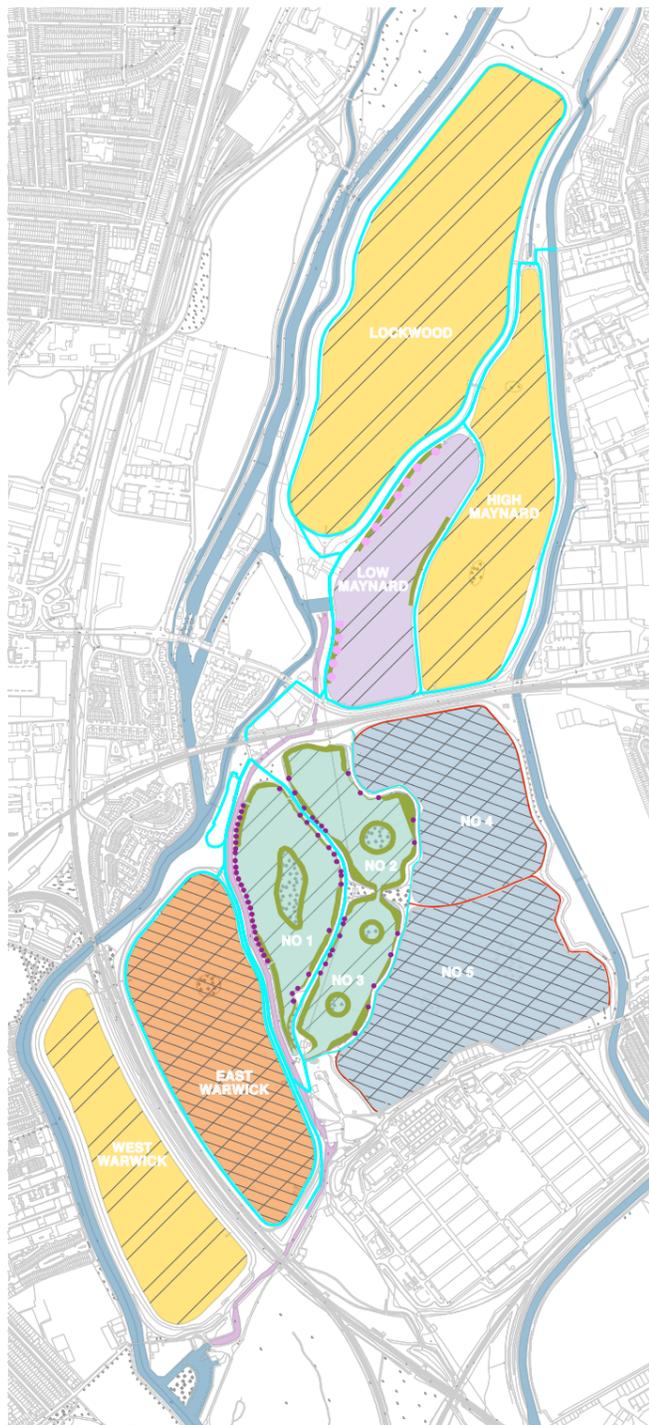
Thames Water Operations Proposals

- ▨ Statutory Reservoir : Raised
- ▨ Non Statutory Reservoir : Ground level
- ↗ Operational Access
- ↗ Occasional Operational Road: Road to be essential Thames Water Operations work
- ▬ Secondary Operational Track: 3m wide single
- ▬ Tertiary Operational Track: 3m wide single
- Operational Building/ Feature
- Sensitive Operational Building/ Feature: Lin Pedestrian Access Required
- Potential Planting Areas
- Silt : Existing locations of silt removed from the reservoirs
- Silt Location
- Proposed Thames Water Operation's centre mess room etc currently within the Marine E
- ▭ Future dredged silt location to create reed t

In considering the needs of Thames Water to operate their reservoirs, a number of opportunities have been identified:

- The area in green on the adjacent diagram shows left over space after operational restrictions. This area can be used for a much wider range of habitats than those currently allowed on raised statutory reservoir banks.
- Non statutory reservoirs also have less restrictions on the population of their banks by low vegetation.
- Silt dredged from reservoir no 3 as part of Thames waters maintenance of the overflow, can be reused as back fill to gabions provided as part of reed bed creation proposals.
- The operational connection between south and north of the site can be reduced to essential traffic only around the marine engine house, creating the opportunity for pedestrian priority space around this key visitor area
- A series of security proposal are being prepared by Thames Water to deal with increased security for sensitive operational areas.
- Operational uses in the marine engine house will be rehoused at coppermill in a new focus for Thames Water operations on site, separated from pedestrian entrances and with their own parking and vehicle entrances.





Fishery Proposals

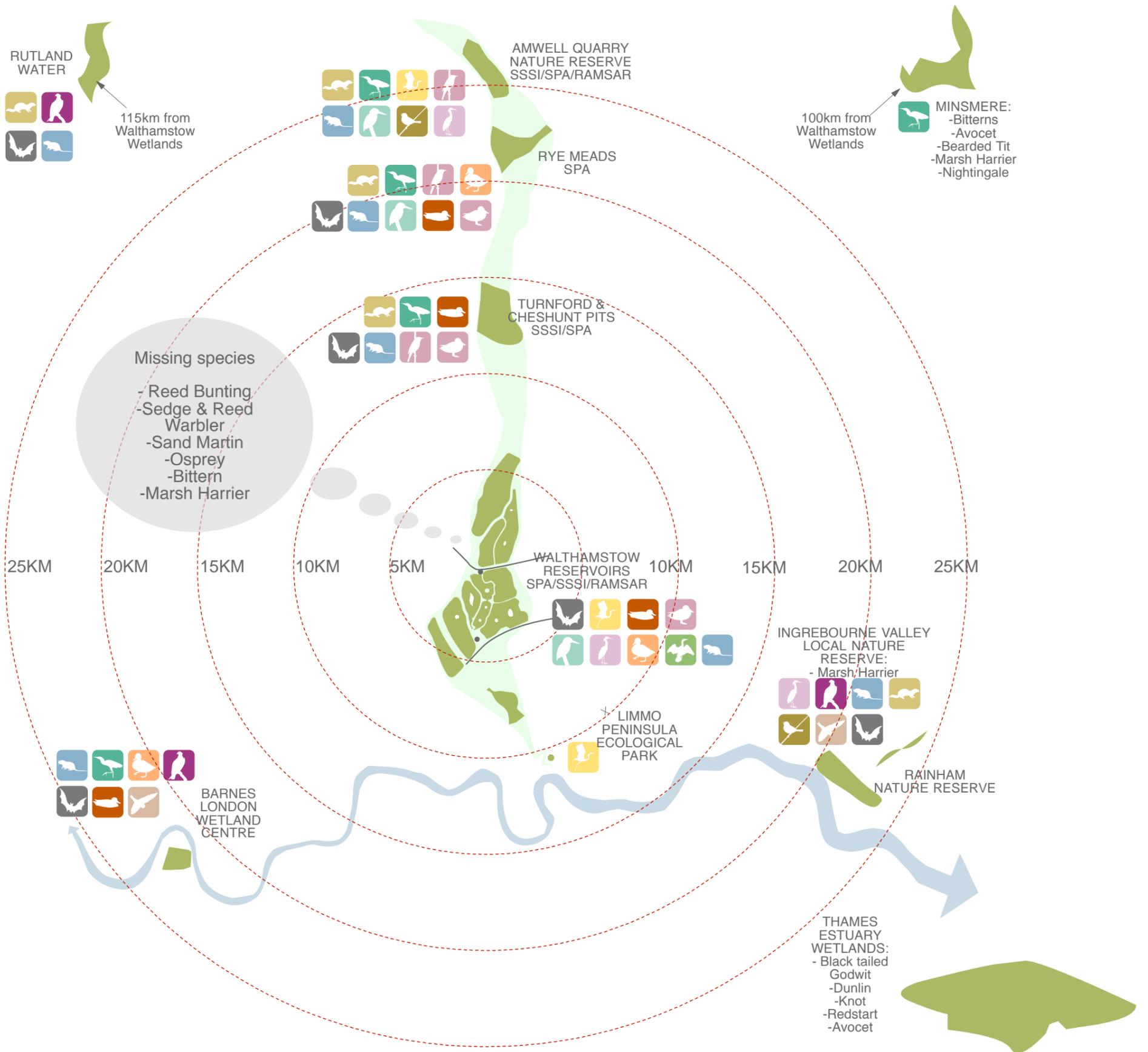
- Existing Reservoir Use**
- Carp Stocked
 - Trout Stocked : Rainbow trout predominantly with some brown and blue trout
 - Ability : Easy Course- Most fished reservoirs, Low Maynard to be enhanced to increase fishing potential
 - Ability : Difficult Course- Rarely fished reservoirs
 - Ability : Season Ticket Holder's Only
 - Ability : Fly Fishing - Regularly stocked
- Proposals :**
- 1. Reservoir Enhancement**
- Reed Planting : Reed planting to edge of the reservoirs and adjacent swims will enhance the fishery as well as improve the reservoir's biodiversity.
 - Low Maynard Fishing Potential Enhanced: Re stocking proposed by Fishery to reduce difficulty level and increase use
 - Existing Swims : Existing swims reduced (by 9no) to create distinct fishing areas
 - Re provided Swims : The swims removed in reservoirs no 1 /2 /3 will be re provided within Low Maynard
- 2. Fishing Access**
- Fishing Access ONLY : No public access will be allowed in these locations
 - Seasonal Public & Fishing Access Routes

As noted previously it is important to celebrate in the project, the heritage of fishing in the Lea Valley and on this site in particular. Fishing is a popular recreation on the site today with an active course & fly fishing community as well as an Angling Academy located at the existing Forest Road Entrance. The Academy works with a variety 'hard to reach' local community groups, introducing them to the sport. The management of the site as a fishery has helped shape the site's distinctive habitat and ecology.

Our vision for the site is to increase the naturalised nature of the 'green core', with the possibility of naturalising the fishing population in reservoirs no 1,2, & 3, by overtime, improving the fishing capability on Low Maynard. Our HLF proposals are the first step towards this change and focus on enhancing Low Maynard by installing new fishing swims along the western bank along with increased shrub planting & emergent vegetation to create a positive micro climate for course fishing. It has been agreed with the Walthamstow fisheries team that 9 no fishing swims within reservoirs 1,2, & 3 be removed to facilitate this.

The interface between existing fishers and increased numbers of public visitors has also been addressed. The existing topography levels within reservoirs no1, 2 & 3 (the focus of course fishing) provide a natural separation between the public and fishers with distinct pedestrian zones at the top of the bank and fisher zones at the bottom of the bank. A similar form of separation will be provided on the banks of Low Maynard with new fishing platforms installed along the water edge enclosed by new shrub vegetation to create a distinct fisher zone, which is separate from the primary pedestrian route. Care will need to be taken by both fly fishers and the public in particular along the eastern edge of reservoirs 4&5 as the existing raised banks of the statutory reservoirs prevent this separation





Key Regional Habitats

Walthamstow Wetlands Designations : Key Species

SSSI/SPA/Ramsar

-  Cormorants:SSSI
-  Gadwall:SSSI/SPA
-  Tufted duck:SSSI
-  Grey heron:SSSI
-  Shoveler:SSSI/SPA
-  Bittern:SPA

Biodiversity Action Plan : Key Species

-  Grey heron:LBAP/OBAP
-  Song thrush:WBAP/OBAP
-  Swift:WBAP/OBAP
-  Sand Martin:LBAP/OBAP
-  Kingfisher:OBAP
-  Reed bunting:OBAP
-  Otter: OBAP/LBAP
-  Water vole: OBAP/LBAP
-  Bats: OBAP/LBAP

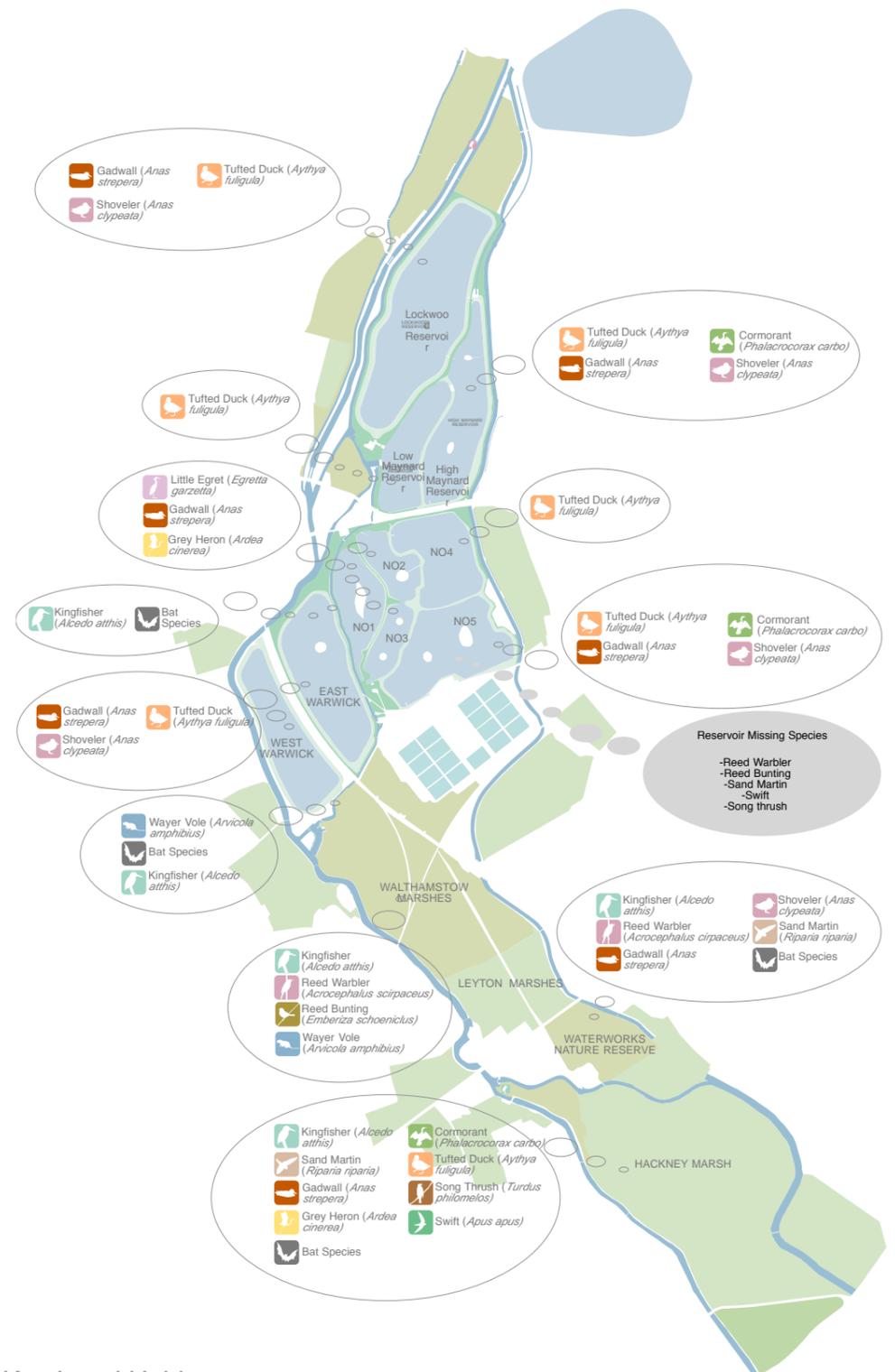
Existing Species

-  Little Egrets

Key Species in adjacent spaces

-  Sedge & Reed warbler
-  Osprey

In studying the wider Lea Valley and its protected habitats and the natural areas surrounding wetlands, we have identified opportunities for improving key species at Wetlands. This information will continue to evolve as we develop the project and gain a clearer understanding of the site and its ecology.



Key Local Habitats





Existing Vulnerable Habitats



Habitat Creation : HLF Basic Cost Proposal

- Key Vulnerabilities:**
Lee Valley SPA/Ramsar species
- Wintering waterfowl of 3 species:
 Bittern *Botaurus stellaris*
 Gadwall *Anas strepera*
 Shoveler *Anas clypeata*
- Secondary Vulnerabilities:**
Walthamstow Reservoirs SSSI Species
- Breeding Grey Heron *Ardea cinerea*
 - Breeding Pairs of Tufted Ducks *Aythya fuligula*
 - Moulted male tufted ducks *Aythya fuligula*
- Other vulnerable habitats:**
- Stocked reservoirs with Carp and Trout for fishing are causing high competition for invertebrate food supply between the fish and waterfowl. (SSSI/SPA)
 - Tern rafts in poor condition could be restored.
- Existing Island Habitats Opportunities:**
- Existing wooded islands require restoration for breeding birds.
 - Cormorant Islands: Restoration of these islands will be difficult currently due to cormorant presence, however there is an opportunity to improve these islands in the future.
 - Ex Cormorant Islands: Vegetation is minimal on these islands in High Maynard Reservoir due to previous cormorant colonies.

- Heronry Island to be enhanced by re-establishing areas of shingle substrate, to support / improve SSSI species
- Existing scrub managed & enhanced to improve biodiversity and create screens, to support / improve SSSI species
- Reed Bed Creation, to support / improve SSSI /SPA/Ramsar species
- Meadow: Species rich grassland / wildflower meadow, with framed views into the site from the west
- Unimproved Grassland : Existing grass cutting regime relaxed to allow grass to grow long
- Swift Tower : To be incorporated into the Marine Engine House improvements e.g chimney reinstated as a swift tower
- Existing bird hides to be refurbished
- New fishing platforms to replace 9 no platforms removed from Reservoir no 1/2/3



We have included the whole client group in our discussions about identifying existing vulnerable habitats and proposals to improve the site's capacity to support the Lee Valley SPA, SSSI and Ramsar status. Our full habitat creation proposals are included within Appendix A.

Our vision for habitat creation at the Walthamstow Wetlands is to address the shortfalls identified by our vulnerable habitat & wider habitat study by proposing potential change over time.

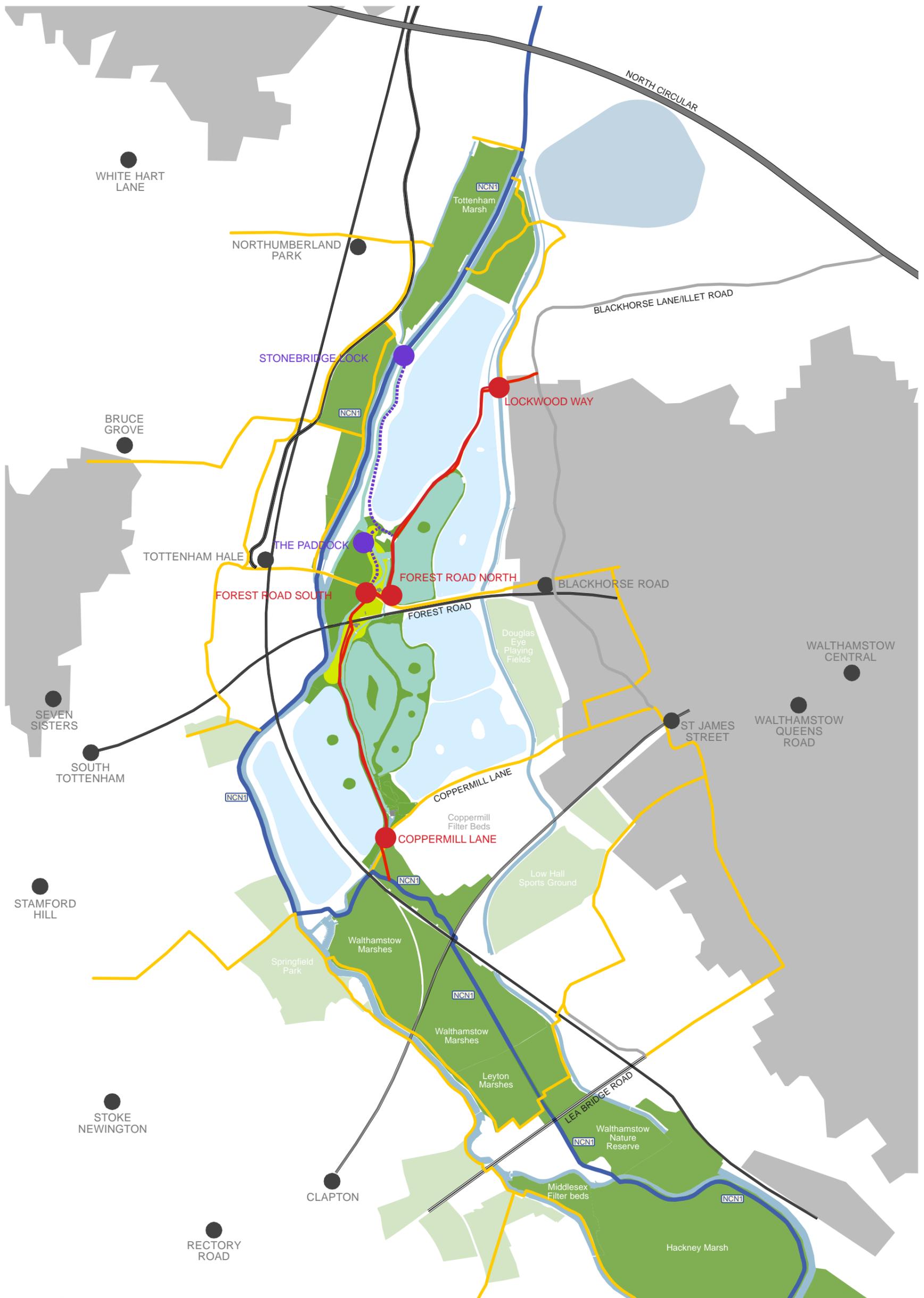
The habitat creation for HLF focus on enhancing the 'green core' creating a strong first phase of habitat creation which will enhance and protect the existing vulnerable habitats on site as well as introducing new habitats to increase site biodiversity.

New reed bed creation around the existing islands in reservoirs no 1,2 & 3 and along the bank of reservoirs 1 & 3 will enhance breeding and nesting in these locations as well as attract desirable bird species e.g. reed bunting, reed warbler etc. Additional planting to the existing plants to protect nesting / breeding birds will also enhance the biodiversity of the bank.

Simple management changes of the existing grassland will also add to the richness of the site. Species rich meadow will be the main extended educational area for the marine engine house and will also contain a new pond created from the foundations of the old pumping station, to reflect the historic relationship between these two buildings. Whilst unimproved grasslands to the south of the viaduct and Lockwood reservoir will create locations for loggeries and hibernacula's created through the activity plan.

A network of new willow trees at all entrances will support the changed culture required of visitors entering wetlands as well as increasing the presence of willows on site and the habitats they support.

The HLF proposals are very much seen as the first phase of habitat enhancement on site and has been derived from a wider vision proposal which is included within the Walthamstow Wetlands : Key Future Projects section of this report. London Wildlife Trust as the delivery partner will continue the enhancement of the site ecology through community volunteer activities.



Access Proposals



A number of access points to the site were considered and their suitability reviewed in relation to walking, cycling and access to nature. The full study can be viewed in appendix C3.

Four access points have been taken forward for HLF. These four entrances are:

Lockwood entrance This entrance is particularly important because it links into residents of LBWF who do not currently have access to nature. Creating a nature reserve on their doorstep is an important strategic move for the borough. This entrance also links into large populations within walking and cycling distance of the wetlands and will support the improved environment of Blackhorse Lane which is being supported with HLF funding.

Forest Road North. This entrance is located on the eastern edge of the Ferry Boat Inn and is separate from the Operational site entrance. Once in the site, a long view across Low maynard is opened up. This entrance also links into DDA compliant fishing swims which is close enough to DDA compliant parking in the northern end of the car park.

Forest Road South. This is located opposite the Ferry boat inn and at the western edge of the car park with long views to the Marine Engine House. This entrance is easily accessible along Forest Road from both Black Horse Road and Tottenham tubes. The operational and maintenance entrance is separate and on the eastern side. Cars will enter the car park and leave at one entrance point and coaches will operate on a one way system.

Coppermill Entrance. Located West of the Coppermill building to link into the strategic route from Walthamstow Marshes. This entrance has a fine framed view of the Coppermill tower which is the entrance gateway feature and landmark at this point.

- VISION ENTRANCES
- HLF ENTRANCES
- AREAS DEFICIENT IN ACCESS TO NATURE

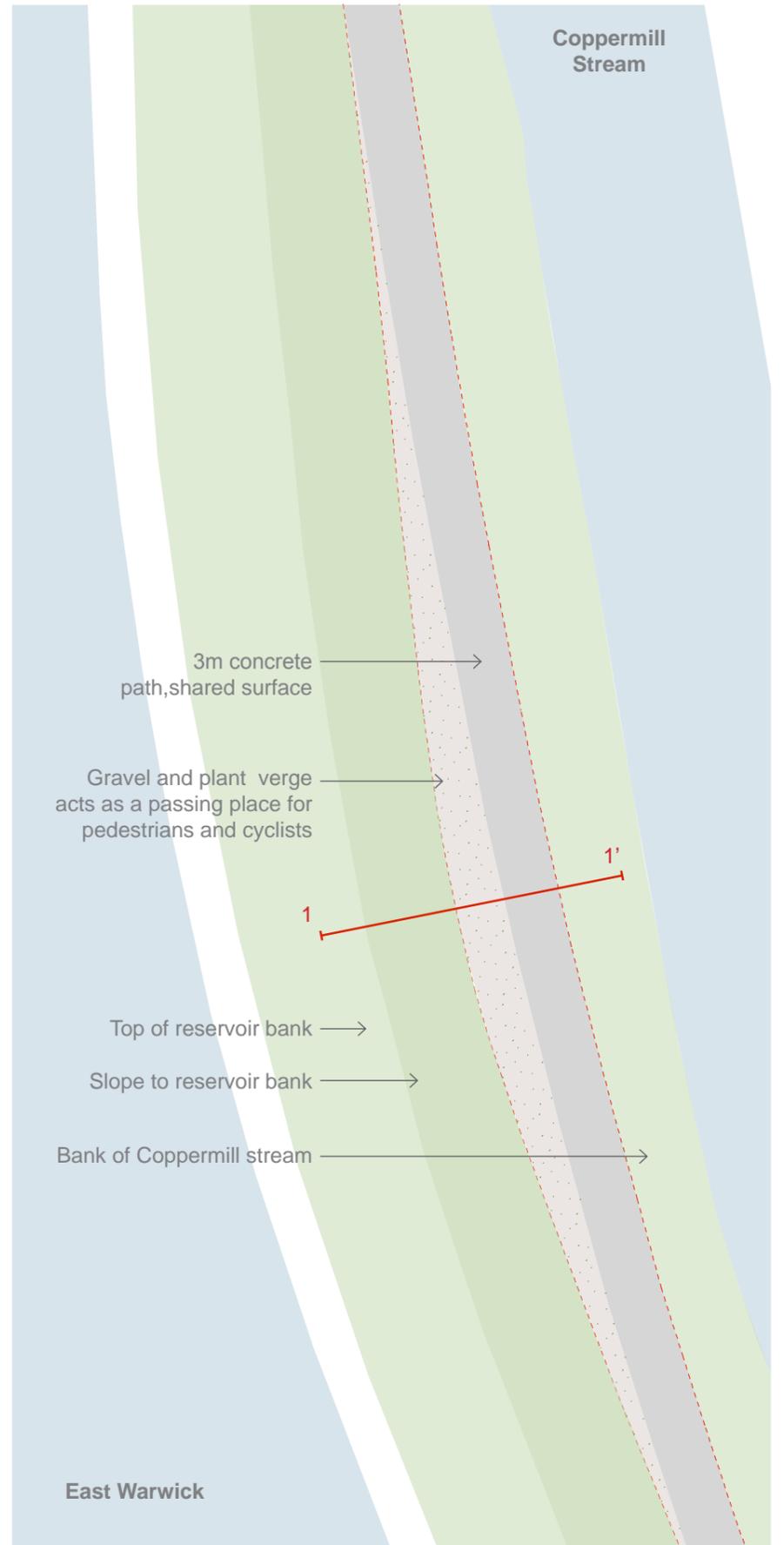


Circulation: Primary & Secondary Routes



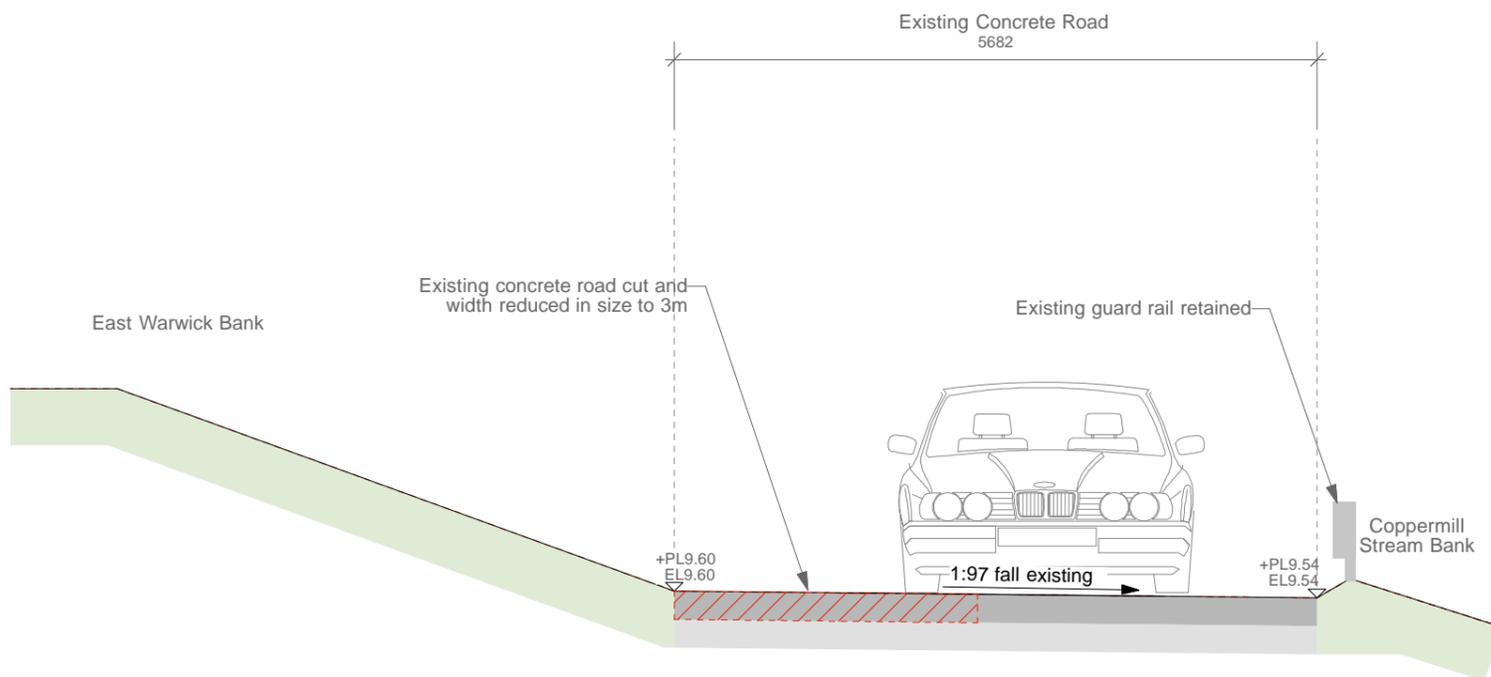
Primary & Secondary Routes

- Concrete Primary route :
Shared vehicle & pedestrian route, resurfaced to create a continuous surface
- Gravel Secondary route :
Shared vehicle & pedestrian route, existing surfaced retained & repaired
- - - Guided Route & Weekend Access only :
Shared vehicle & pedestrian route, existing surfaced retained & repaired

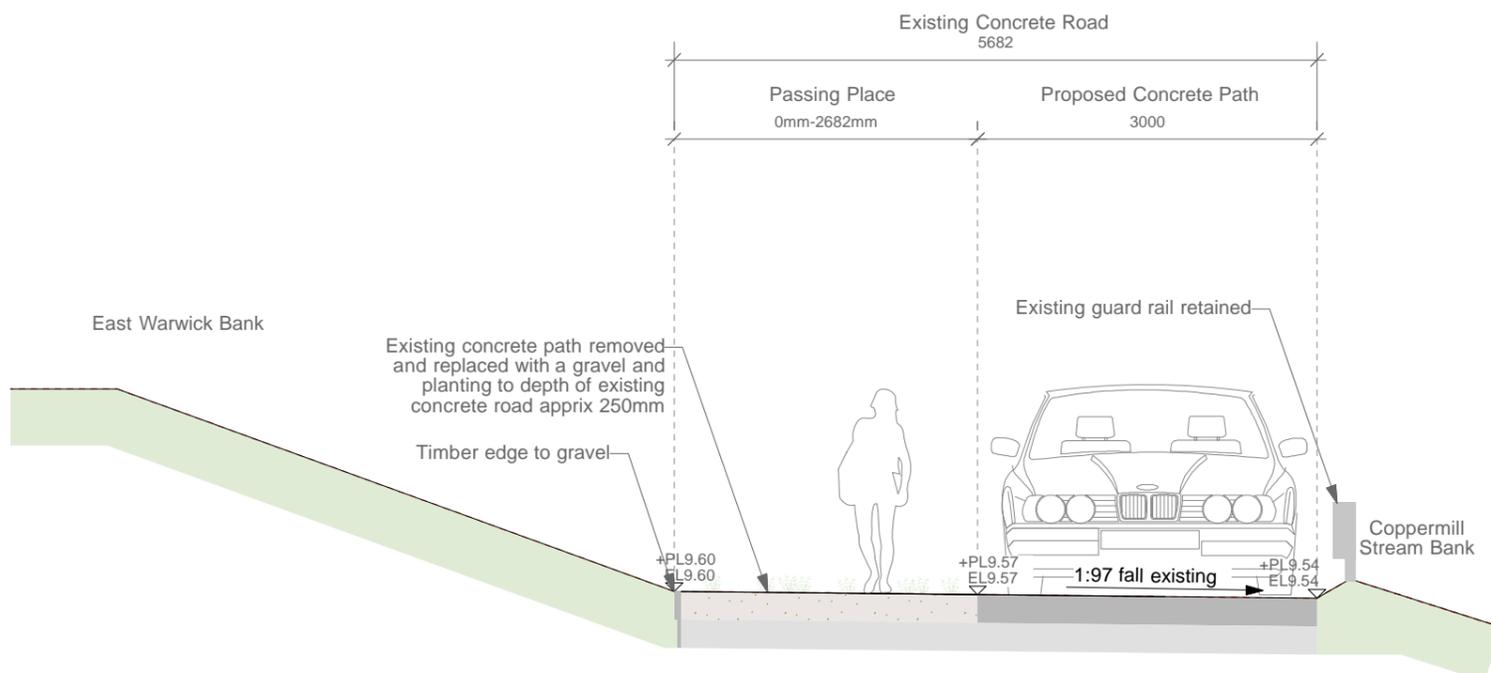


Detail Plan : Primary Route & Passing Places





1. Existing section : Existing path is more 'road' like then pathway



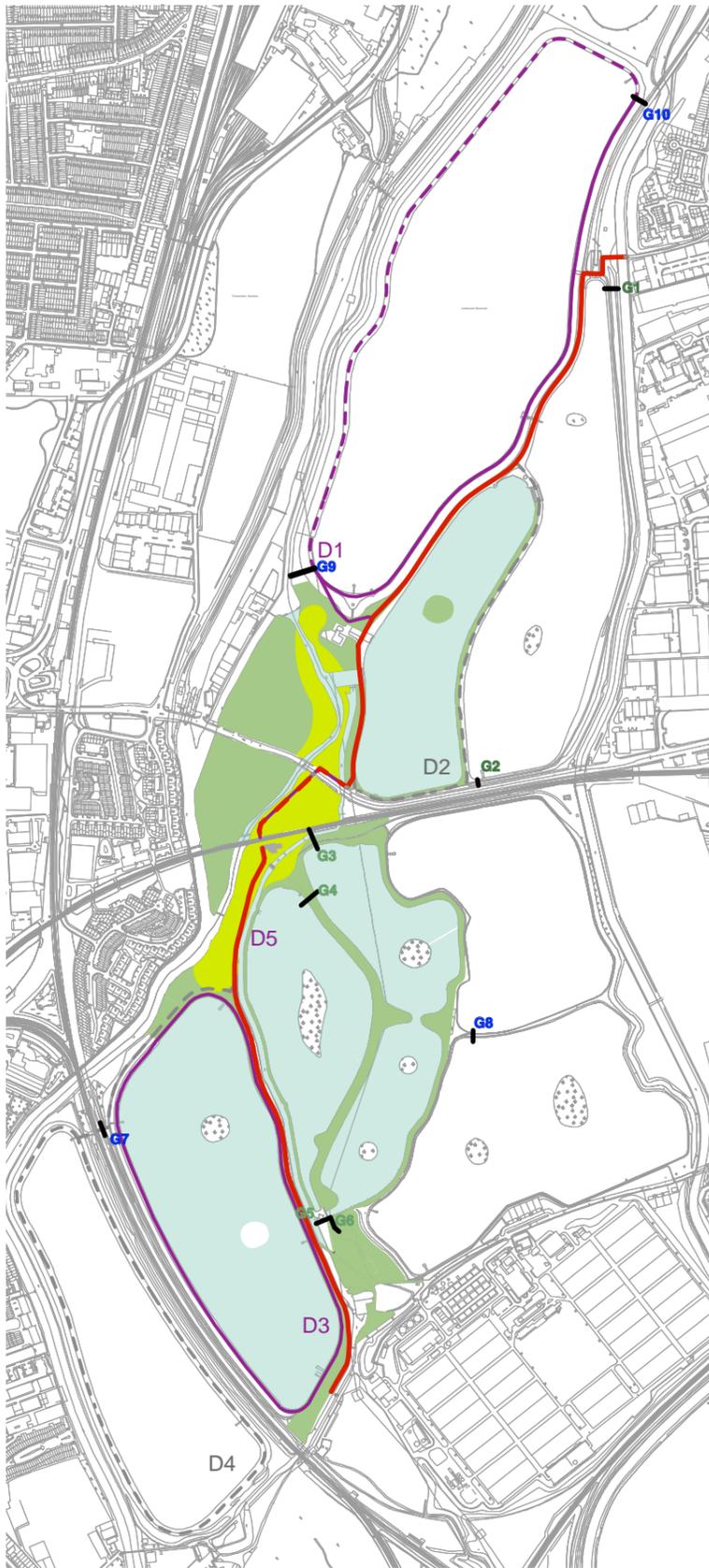
1. Proposed section : Existing road reduced to 3m and a gravel verge installed to create a passing place along the path



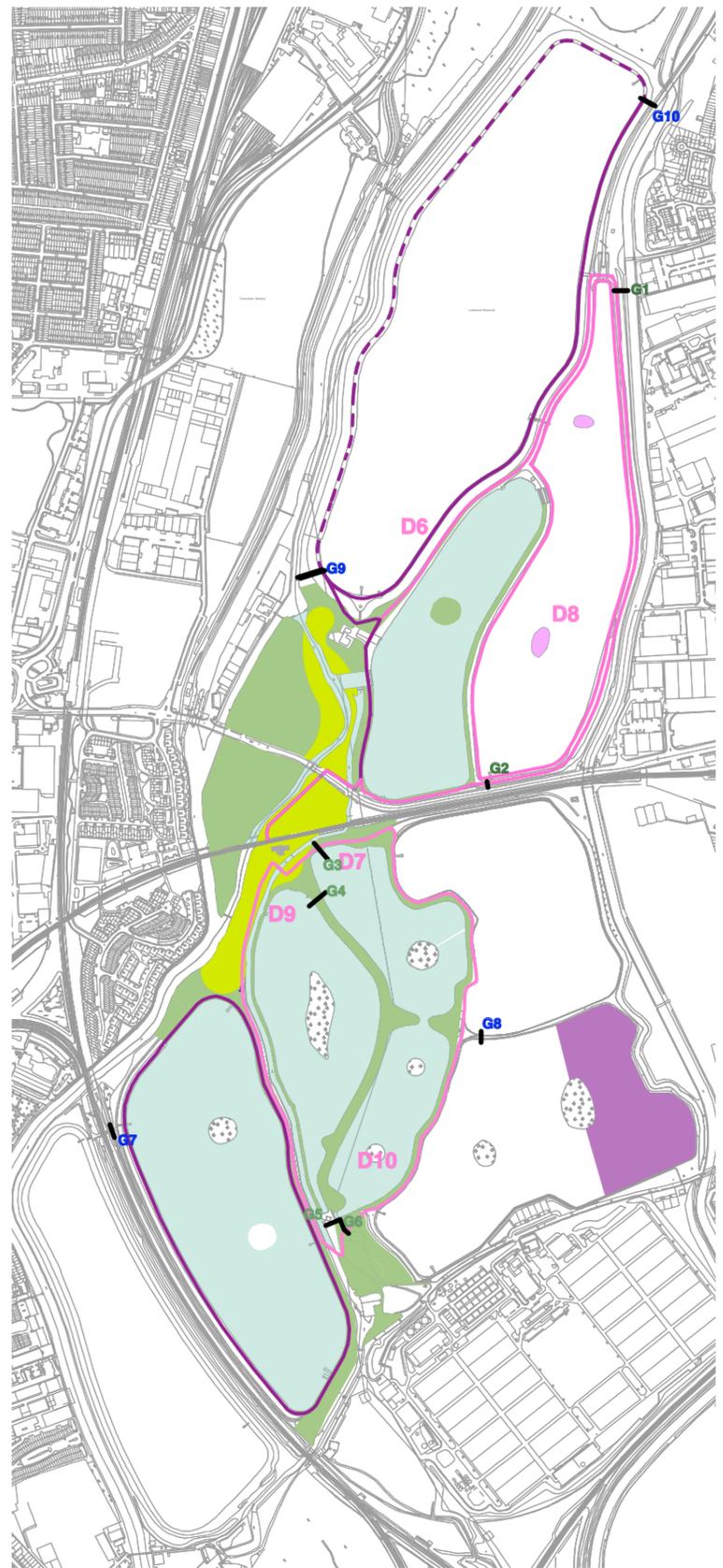
The four access points are linked by a single circulation route (the primary route), which runs north - south through the Wetlands, linking all entrances to the Visitor Centre at the heart of the site. This primary route will be the focal recreational route for pedestrians and cyclists and will be resurfaced in concrete (where required) to create a distinct and continuous route. The existing gravel surface of the secondary routes will be retained to create a clear hierarchy of routes around the site.

Both the primary and secondary routes will be shared with Thames Water Operation's vehicles. Due to the increased number of pedestrians and cyclists along the primary route, expected as part of these proposals, gravel-passing places will be constructed alongside the primary route to create safe refuges for pedestrians and cyclists.



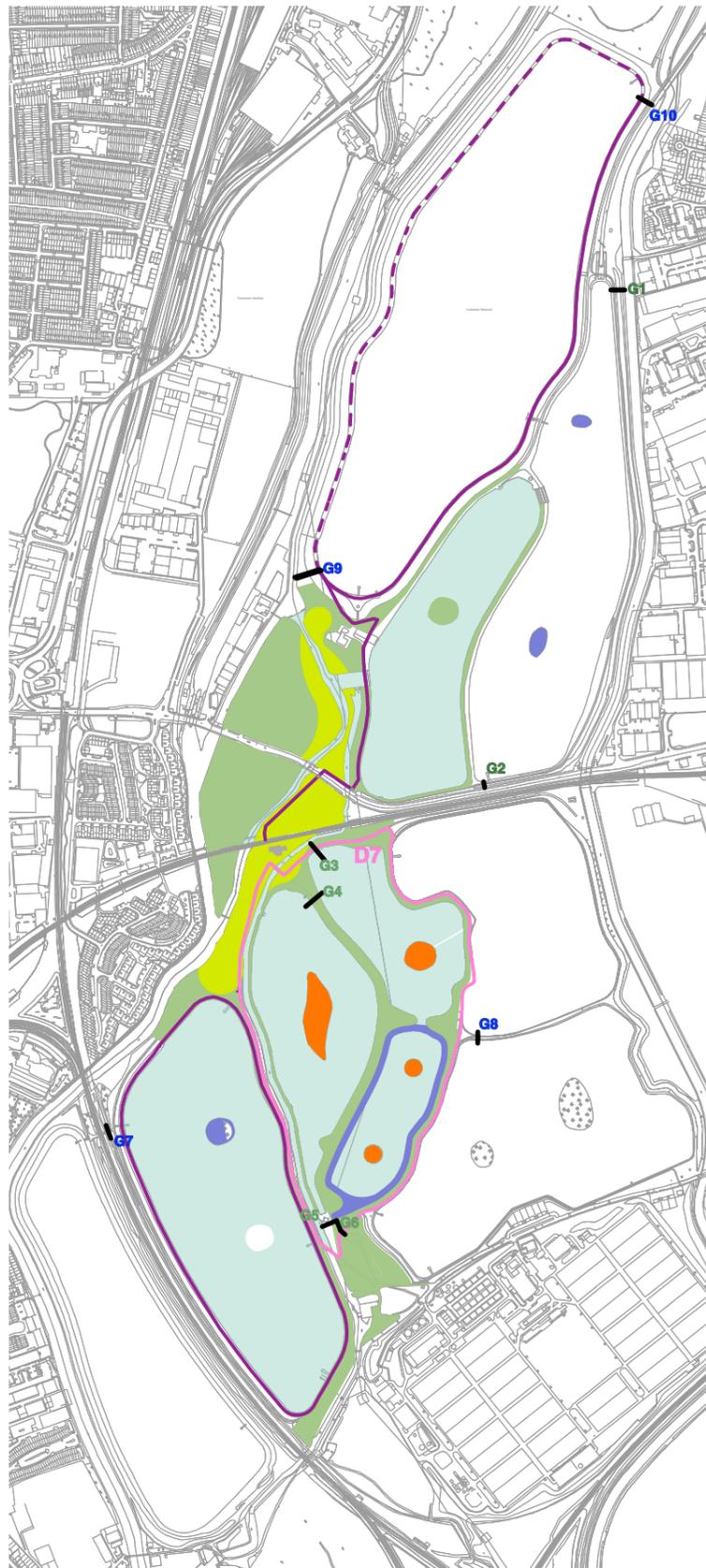


Non Seasonal Routes

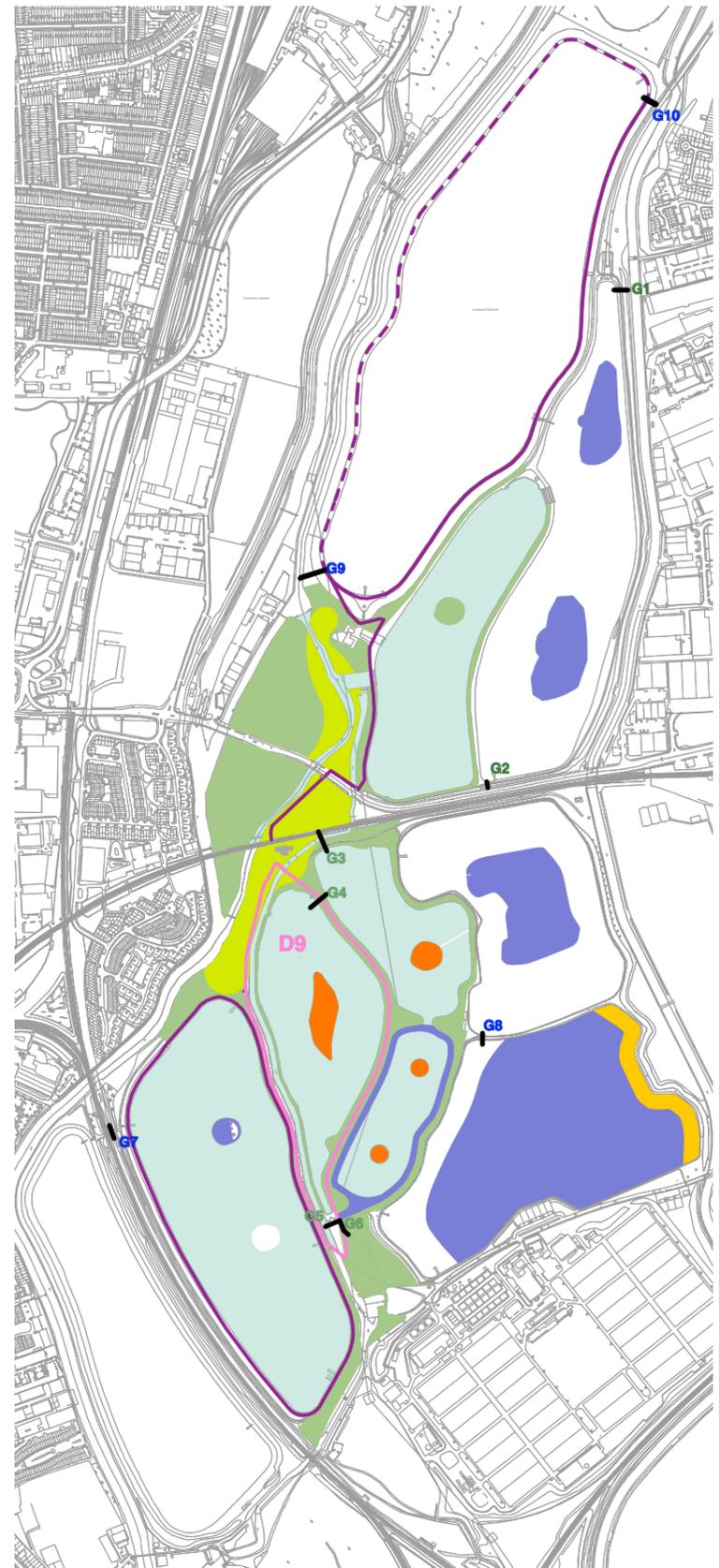


Seasonal Routes : Winter Access

- Gates
- Primary route : Non seasonal
- Secondary route : Non seasonal
- Secondary route : Seasonal
- Bird sensitivity : Wintering Gadwall & Shoveler
- Bird sensitivity : Breeding herons & little egrets
- Bird sensitivity : Breeding tufted duck (Spring) & moulted tufted duck (Summer/Autumn)
- Bird sensitivity : Wintering Shoveler
- Green core: Site concept



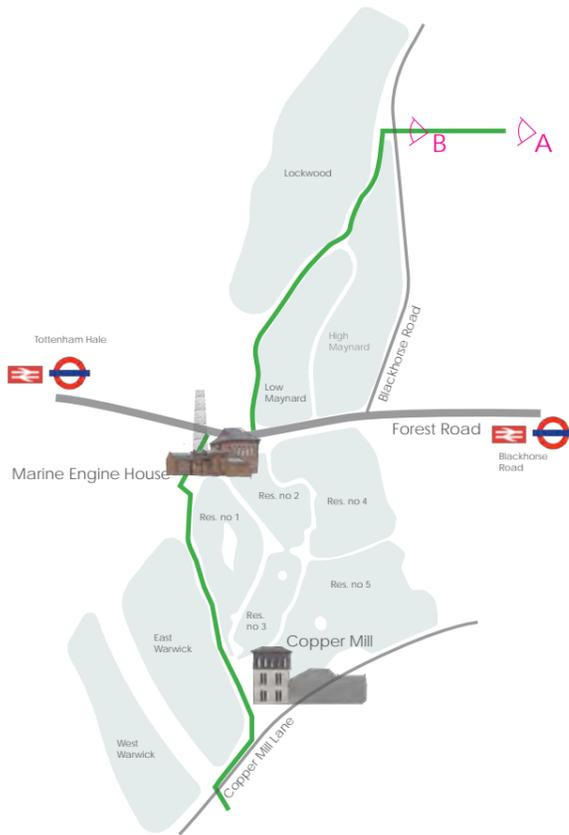
Seasonal Routes : Spring Access



Seasonal Routes : Summer & Autumn Access

Site circulation has been assessed against habitat sensitivities resulting in a series of seasonal and non-seasonal routes being proposed as well as planting mitigation. The only areas in Wetlands that will be inaccessible to the general public are the north, east and south sides of reservoirs 4&5 which are closed for fishing, to protect the moulting area for tufted ducks and to protect the privacy of 5 properties on Coppermill Lane. Because of concerns regarding the remoteness of the western edge of Lockwood reservoir, this area will be closed except when guided tours will take people around this route.

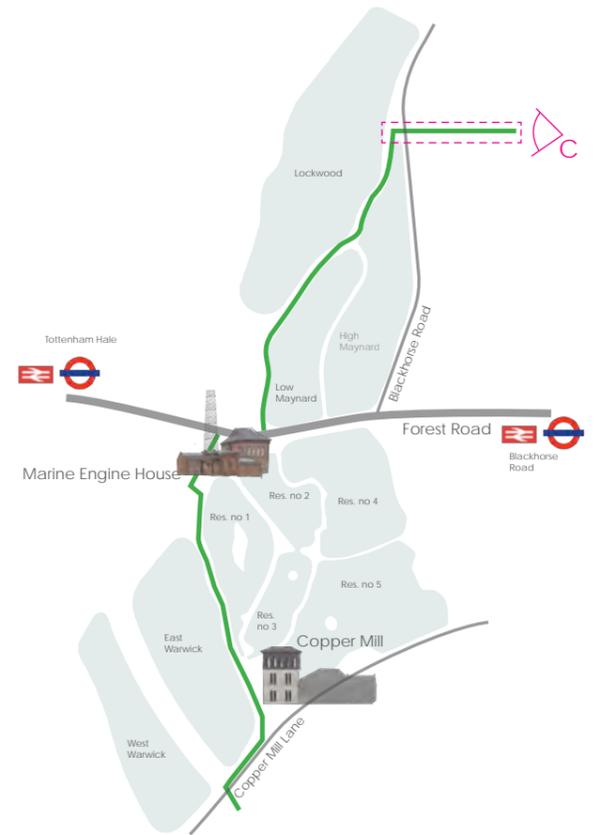
Maximum access on the site is achieved in winter when there is less sensitivity for birds. In spring and summer one route through reservoirs 1,2&3 is open whilst the other is closed to give protection to breeding birds. A series of gates are proposed across the site to enable these routes to be controlled. The gates will be important interpretation features explaining why the routes are closed and linking this to the sites ecology and habitats.



A: Existing gated access to Lockwood Way approach on Blackhorse Lane

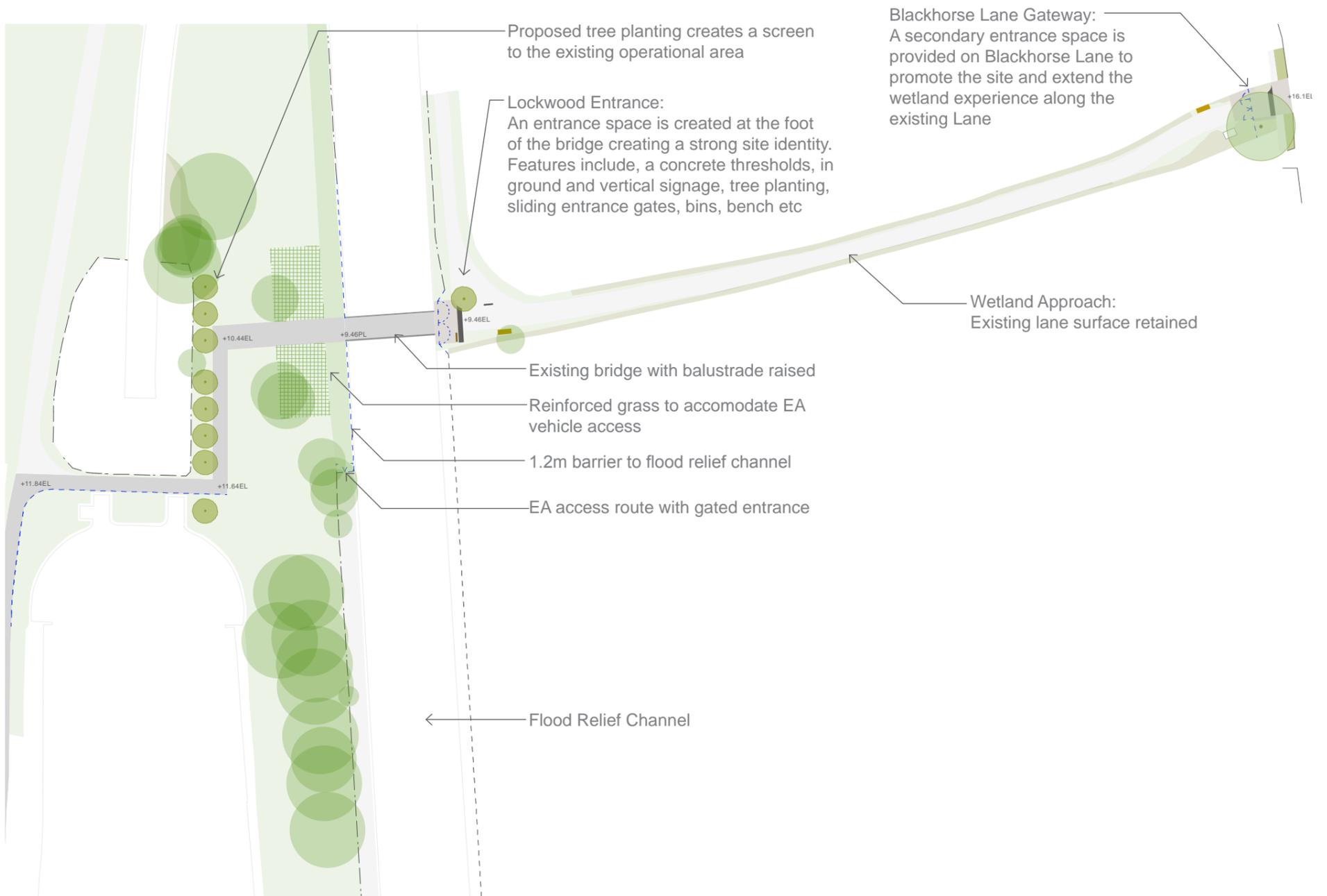


B: Existing Lockwood Way entrance & EA bridge



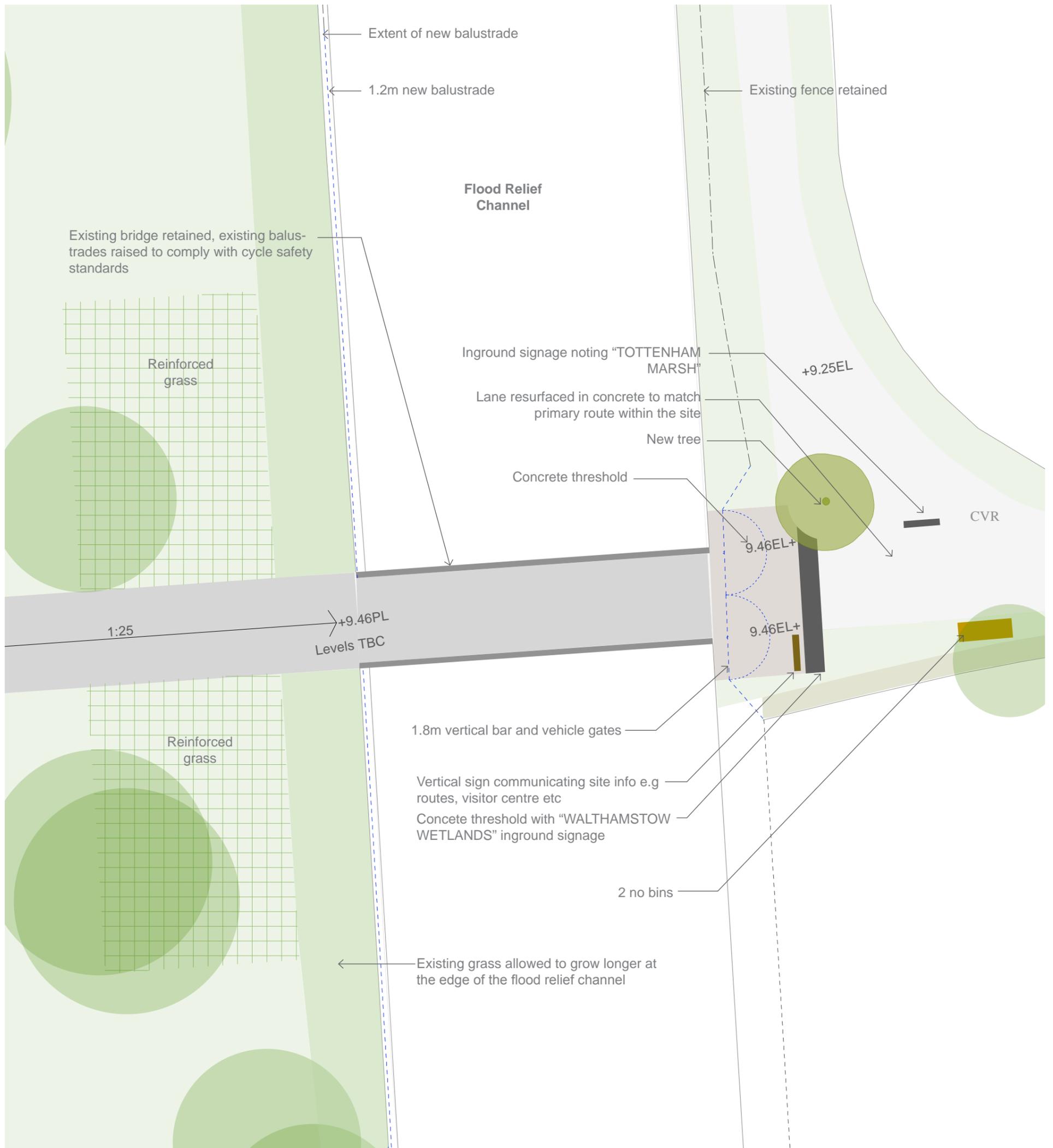
C: Lockwood Way Entrance - View over the proposed Blackhorse Lane Entrance and approach to the Lockwood Way Entrance

Lockwood Way Entrance



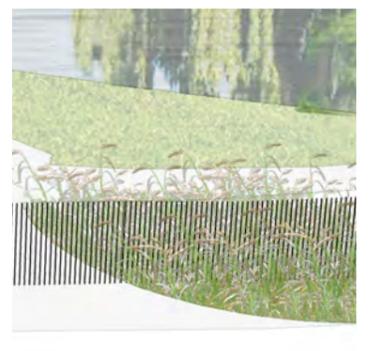
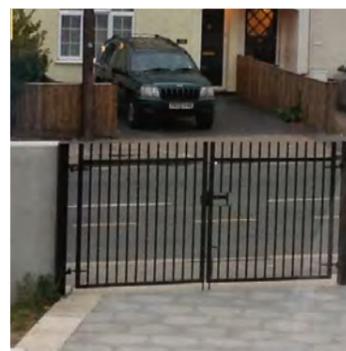
Two gateway features are proposed at the Lockwood Way Entrance, a threshold gateway feature at Blackhorse Lane and a new entrance gateway adjacent the existing site entrance. This double gateway feature allows the wetland experience to extend to Blackhorse Lane, creating a wetland 'approach' that will initiate a change of behaviour in visitors.

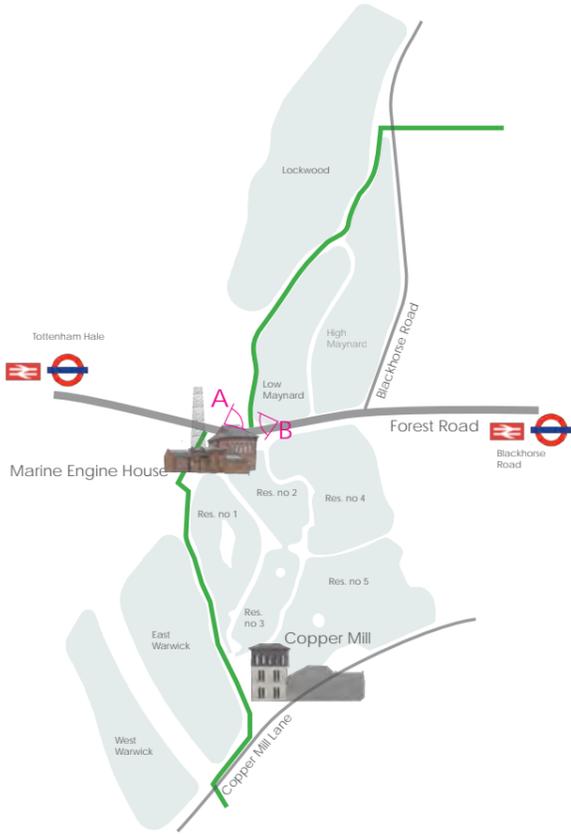




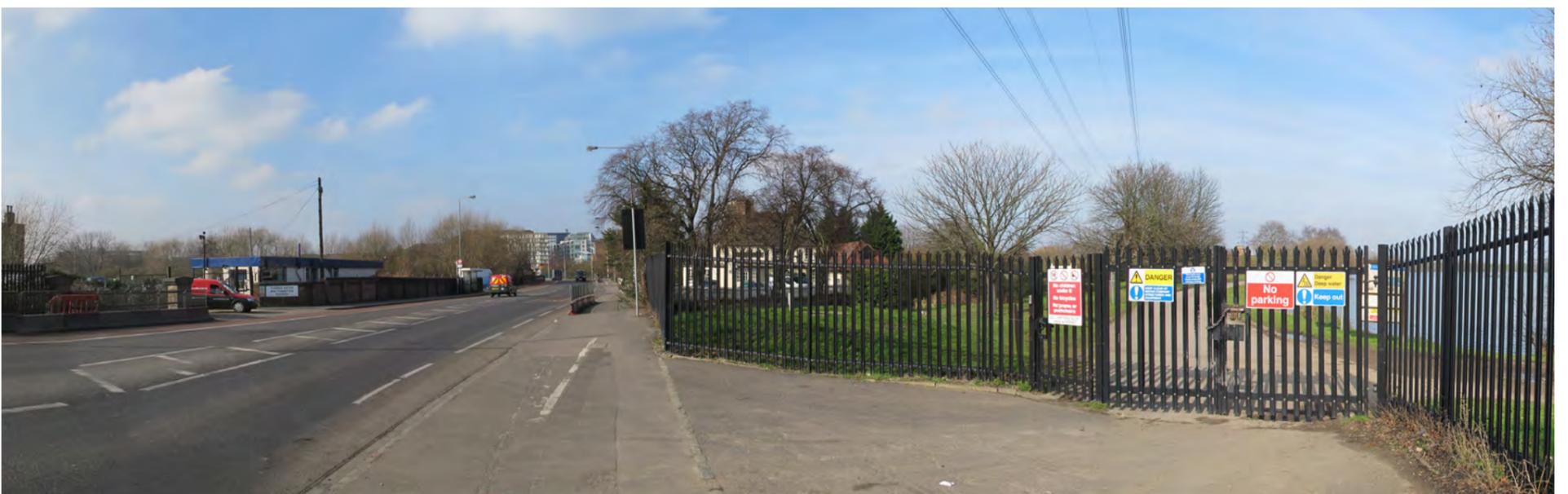
The main site entrance is located at the existing Environment Agency bridge illustrating a key relationship through out the site between site access and water. Crossing the bridge to access the site highlights that this is a special space.

An entrance space at the foot of the bridge is proposed which consists of a concrete threshold, site signage, bins, benches and tree planting. This suite of materials and site furniture create a strong identity that is repeated at all the site access points.

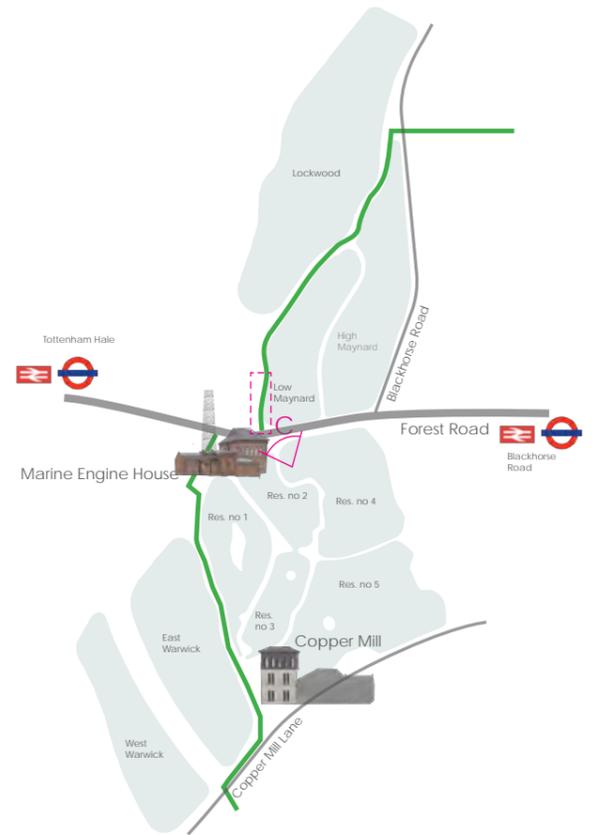




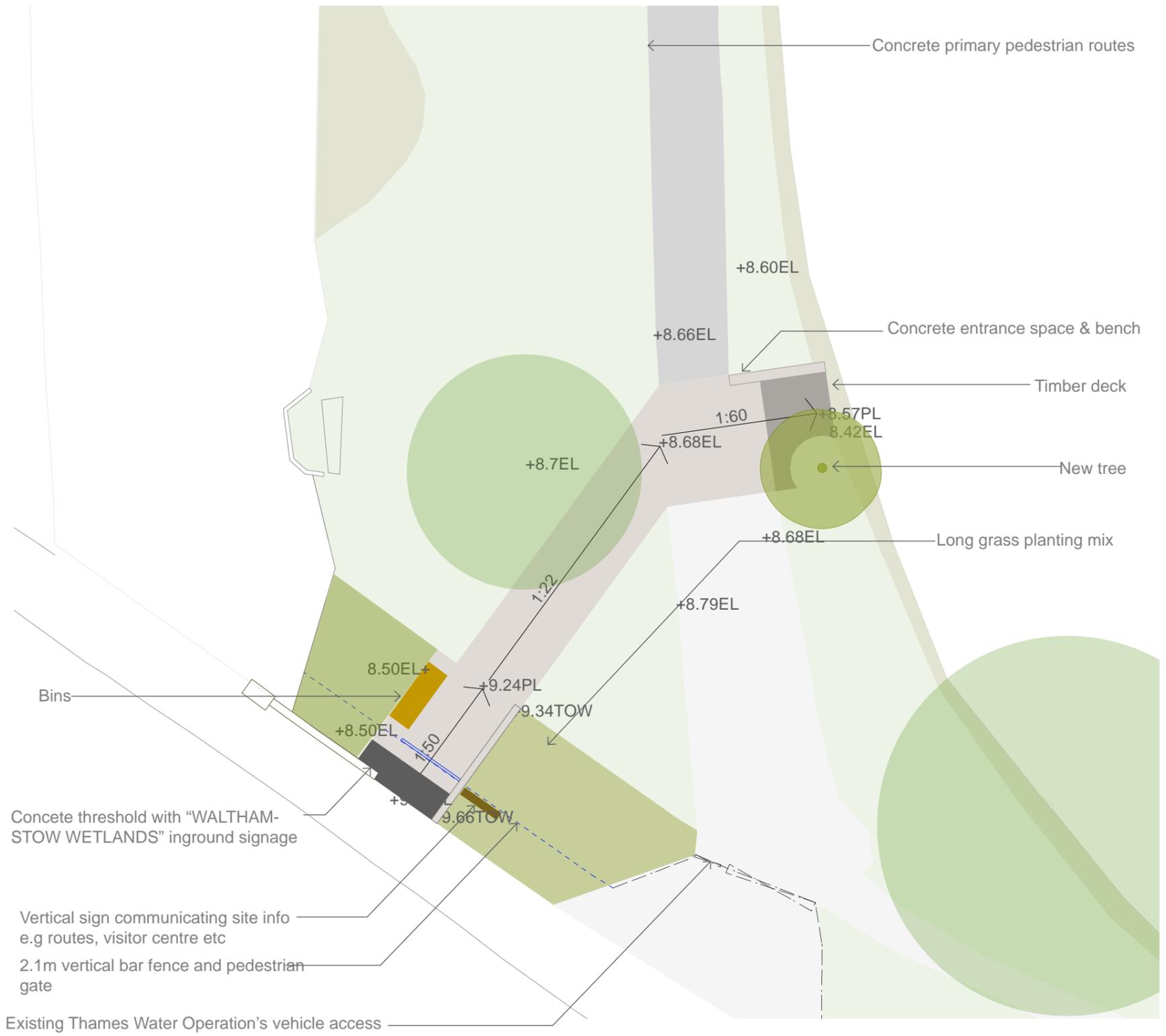
A: Proposed location for the North Forest Road Entrance adjacent the Coppermill Stream



B: Existing Thames Water Operation's access to the north of Forest Road

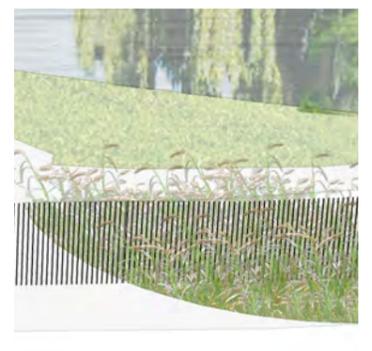
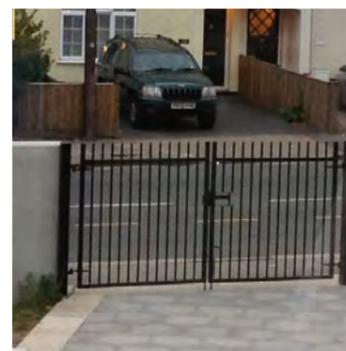


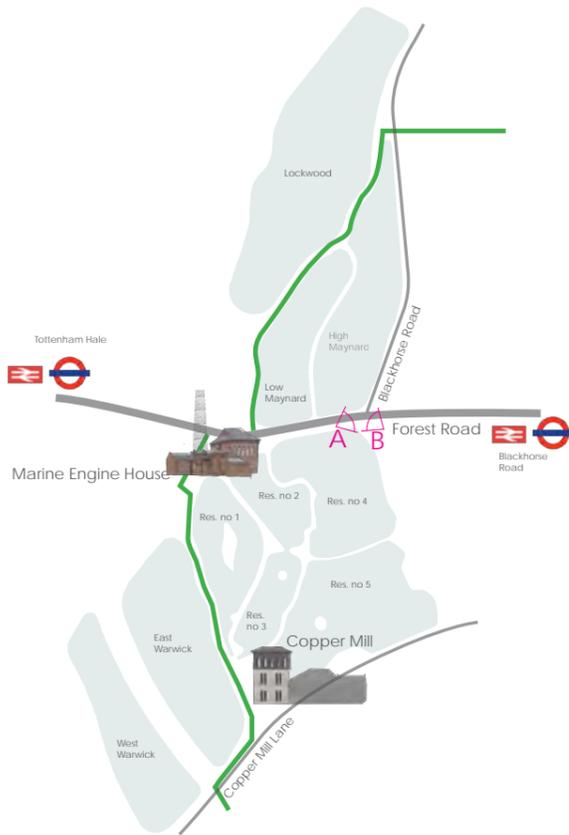
C:North Forest Road Entrance - View over the proposed North Forest Road Entrance



A new entrance to the northern reservoirs from Forest Road is proposed adjacent to the Coppermill Stream. This new pedestrian entrance space connects directly to the primary concrete pedestrian route creating a direct link between Lockwood Way and Forest Road and separates pedestrians from the Thames Water Operation's vehicle access.

The entrance space consists of a concrete threshold, site signage, bins, benches and tree planting.





A viewing platform is proposed at the north eastern corner of Forest Road to provide views over High Maynard reservoir and create the first new window into wetlands.

Currently there is little interface between the public and the reservoirs at this point as the high banks of the reservoir prevents views over the water.

The viewing platform will be a key opportunity to make an early move to open up the site and give the residents of Waltham Forest a taste of what is to come when the site opens up fully. This place can be used as an education area for schools and an information point about the project.

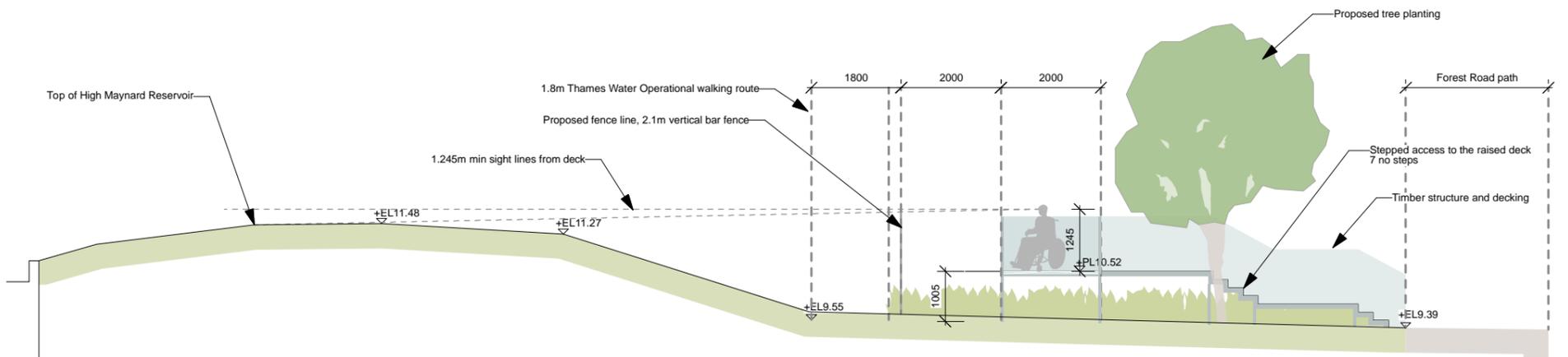
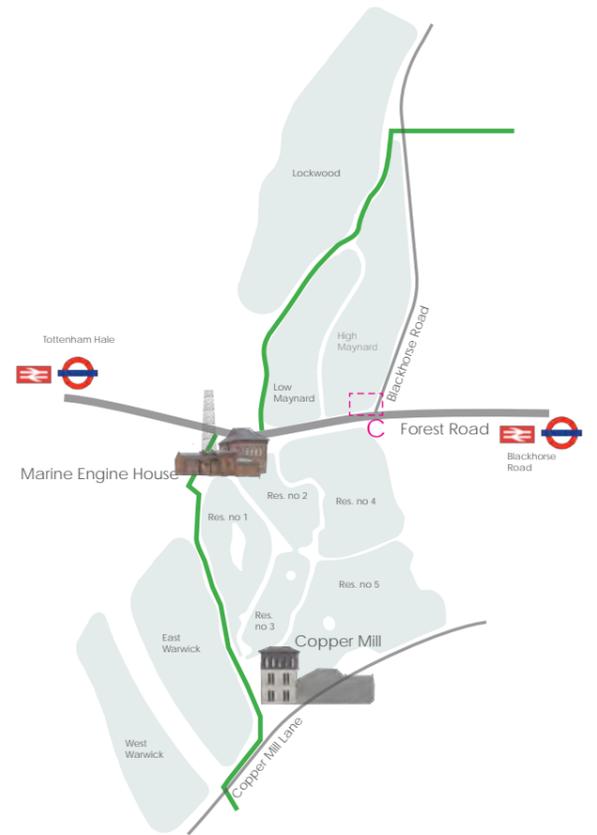


A: View from proposed platform position towards Blackhorse Lane tube station

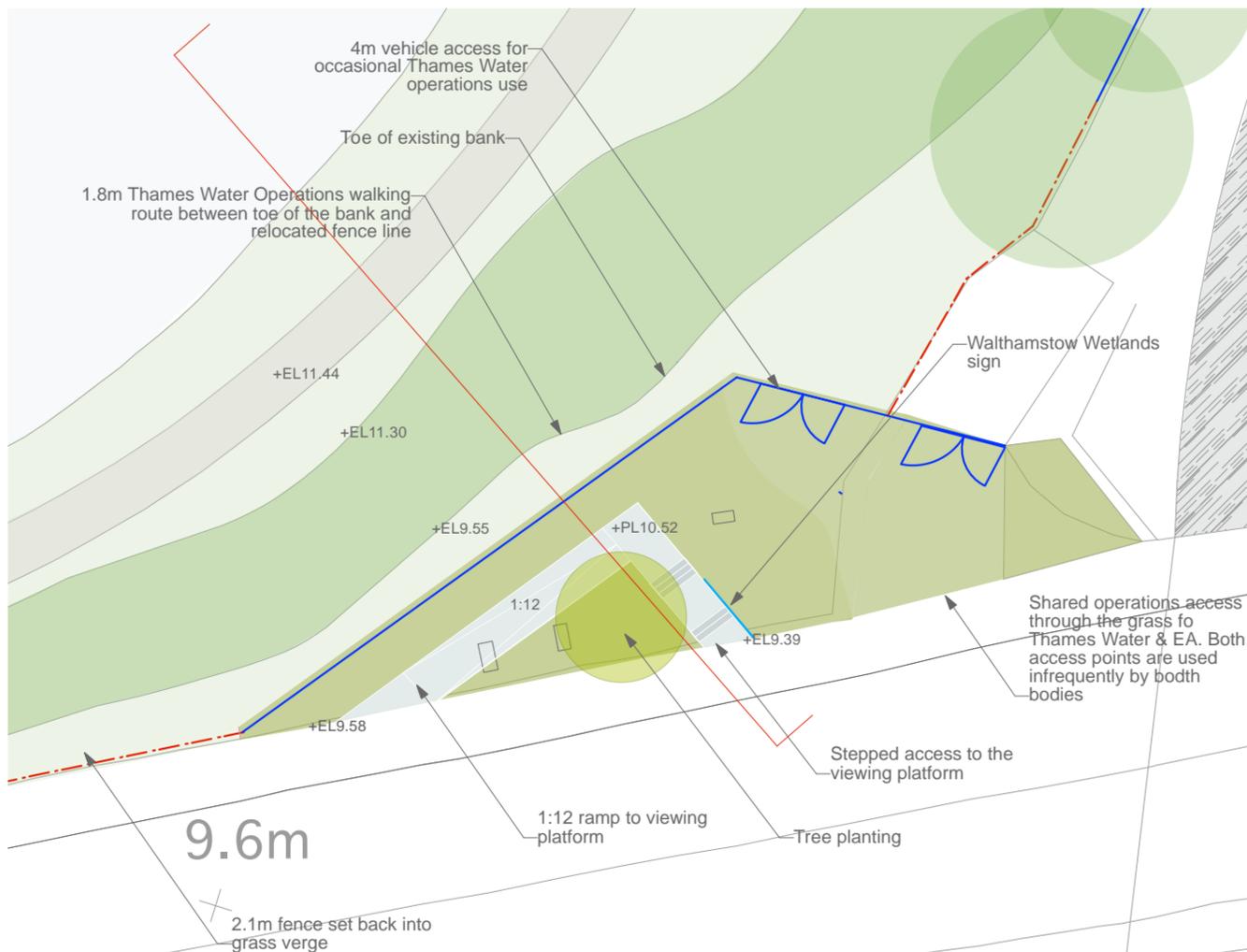


B: Existing south east corner of Forest Road

Forest Road Improvements

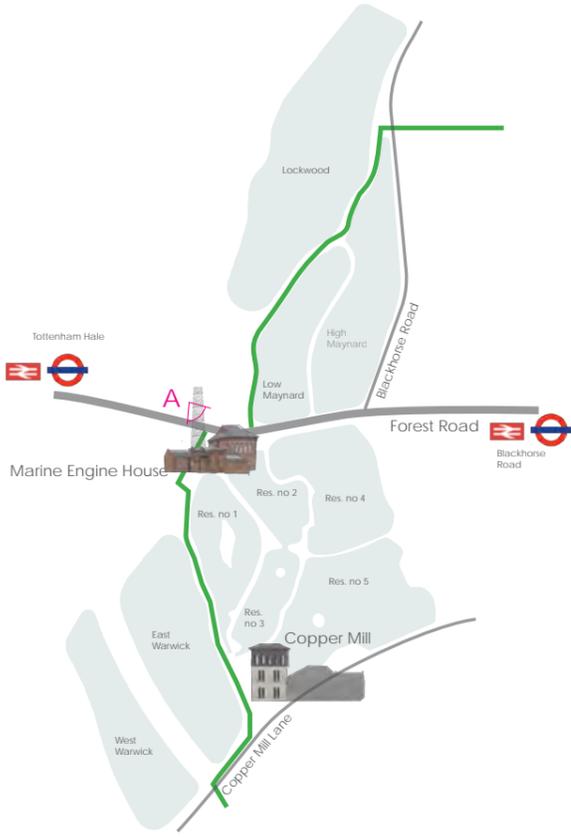


C: Section: Viewing platform at the eastern corner of Forest Road

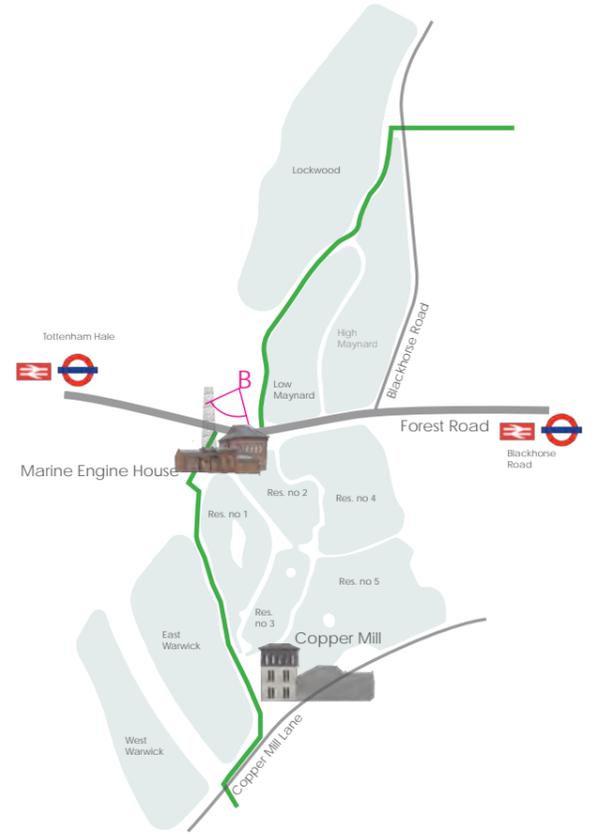


C: Plan: Viewing platform at the eastern corner of Forest Road



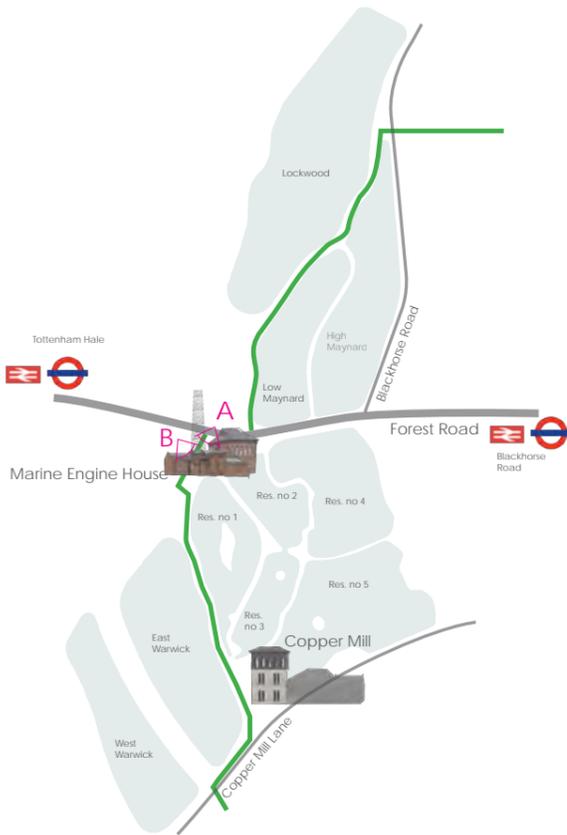


A: Existing Forest Road site entrance



B:Forest Road Entrance - View over the proposed Forest Road Entrance

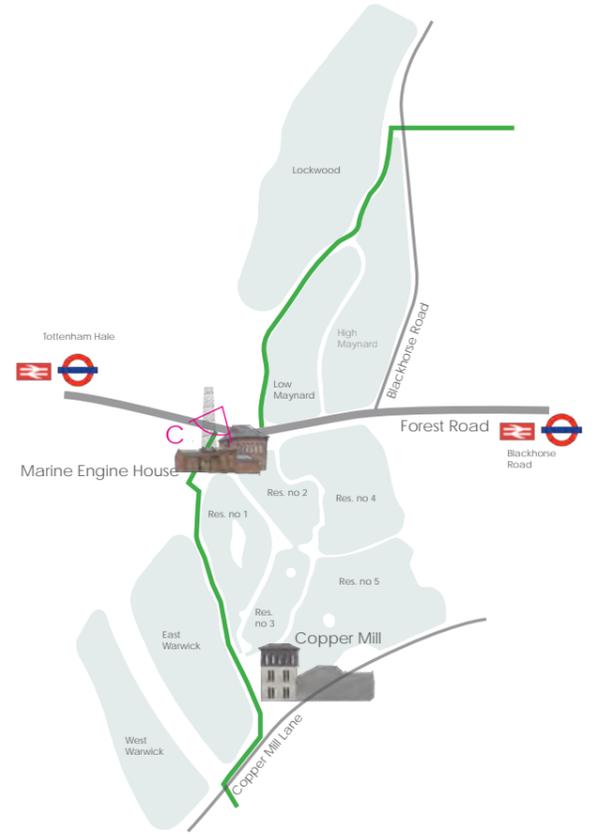




A: Existing car park and angling classroom at Forest Road



B: Existing viaduct and Marine Engine House



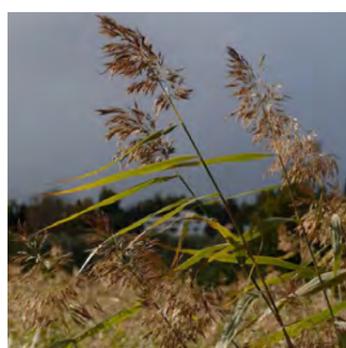
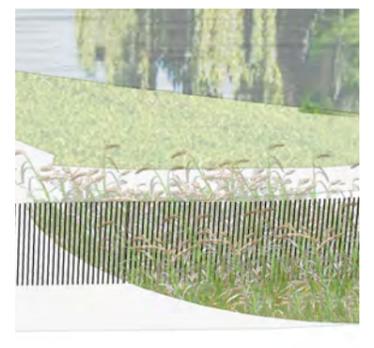
Forest Road Entrance - View along the proposed boardwalk



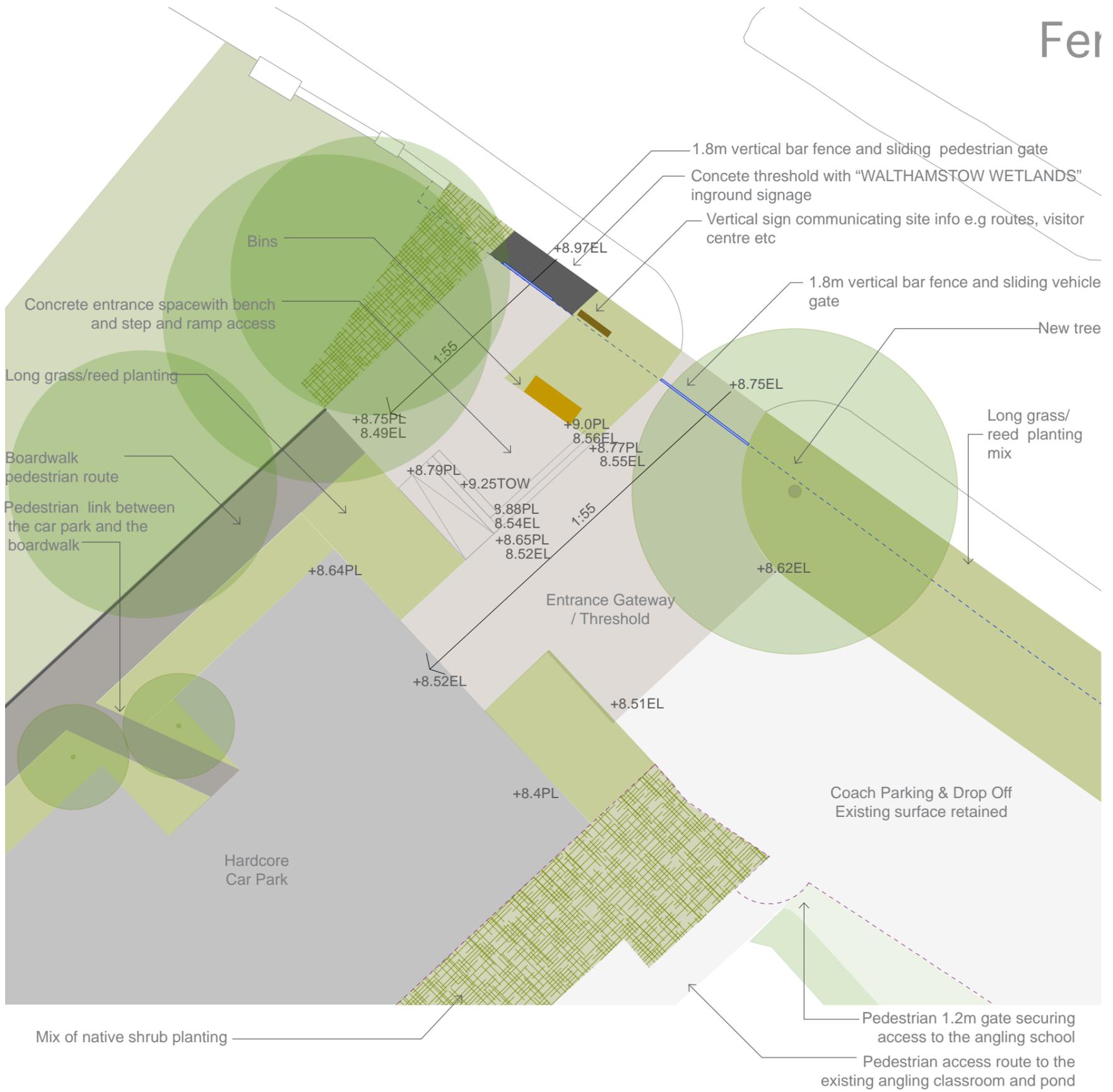
Long grass and reed planting dominate punctuated with pollarded willow trees dominate the Forest Road South entrance, creating a strong 'wetland' aesthetic which extends from the Marine Engine House to Forest Road.

Separate access points have been provided for pedestrians, vehicles and Thames Water Operation and service vehicles along the site frontage. The existing car park will be extended to accommodate approx 70 parking spaces (including 4 no disabled spaces within a resurfaced area at the southern edge of the car park) and a coach drop off and parking area located at the site entrance. A separated pedestrian and cycle route is provided along the edge of the River Lee in the form of a timber boardwalk, which creates a direct link between the Marine Engine House and Forest Road for pedestrians and cyclists.

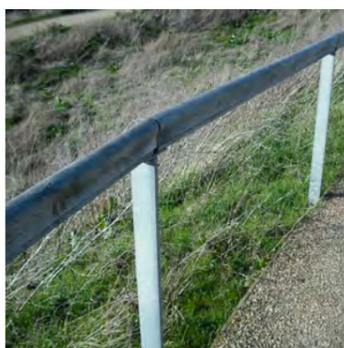
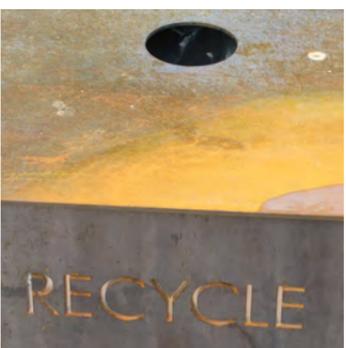
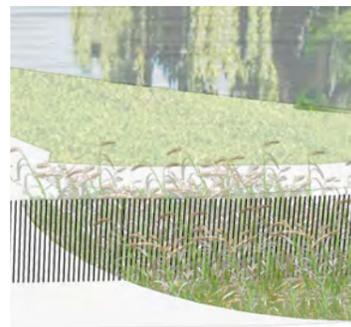
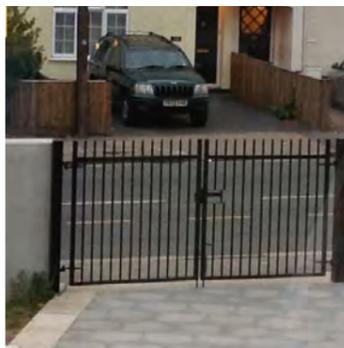
The angling classroom and angling pond are retained and accessed from the car park and coach drop off area.

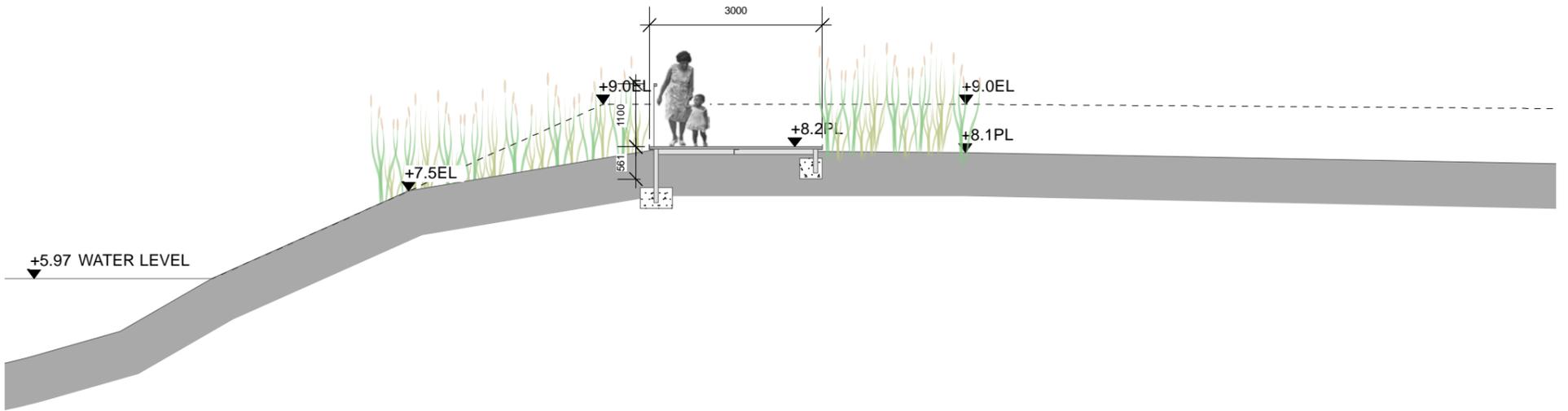


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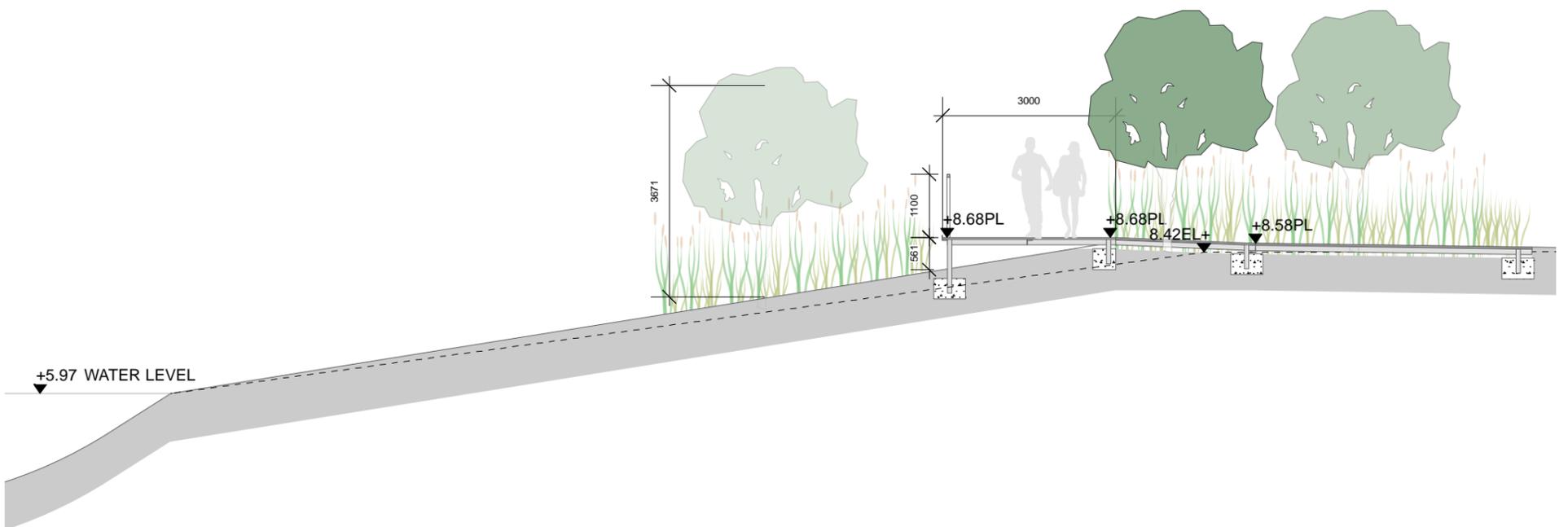


A concrete threshold is proposed at the pedestrian entrance and the vehicle entrance at South Forest Road Entrance. The pedestrian threshold has been raised to create a raised platform to separate vehicle and pedestrian movement and promote the pedestrian route.

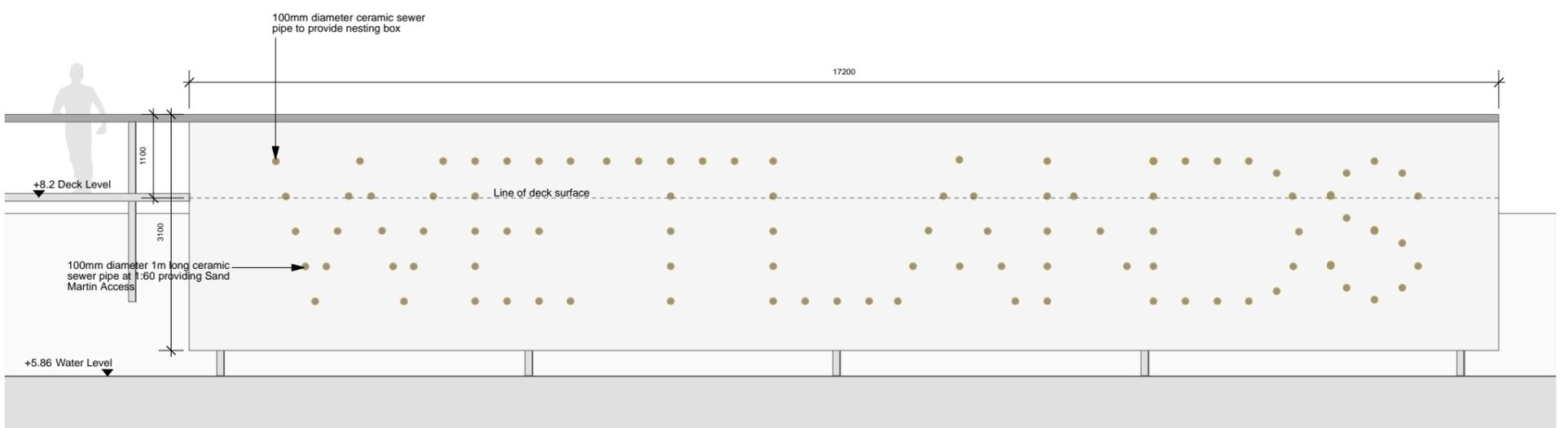




1. Typical Section through the pedestrian boardwalk at South Forest Road Entrance



2. Typical Section through the pedestrian boardwalk and deck links with the car park



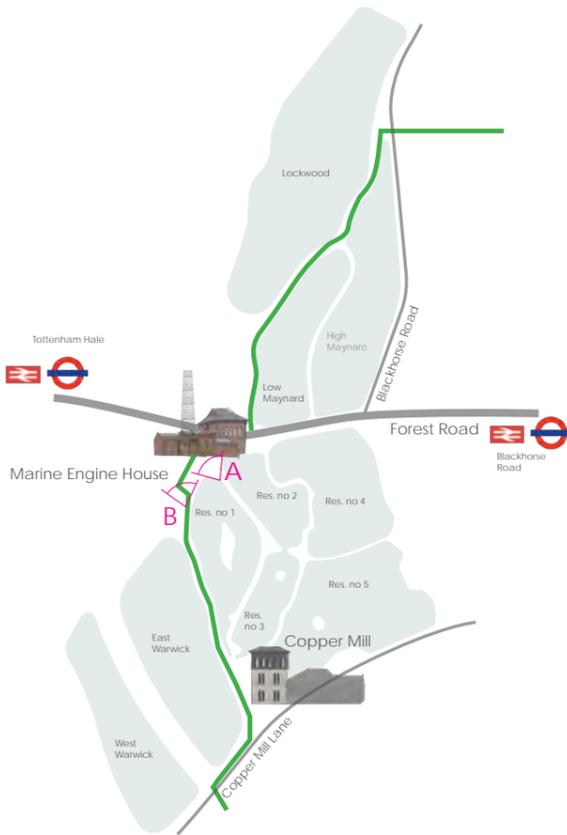
3. Elevation of boardwalk & nesting wall



A timber boardwalk along the bank of the River Lee forms the main pedestrian route, which links Forest Road to the Marine Engine House. The boardwalk overlooks the existing river corridor and can be accessed directly from the car park. Low-level lighting will light this access route to create a safe and distinct access route.

Habitat features such as nesting areas will be incorporated into the boardwalk structure to emphasise the existing synergy on site between ecology and the functional landscape.

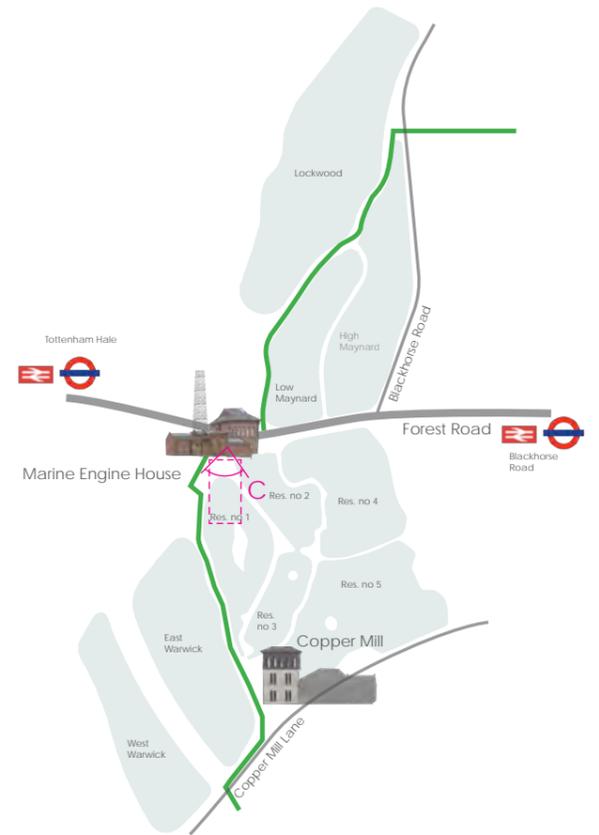




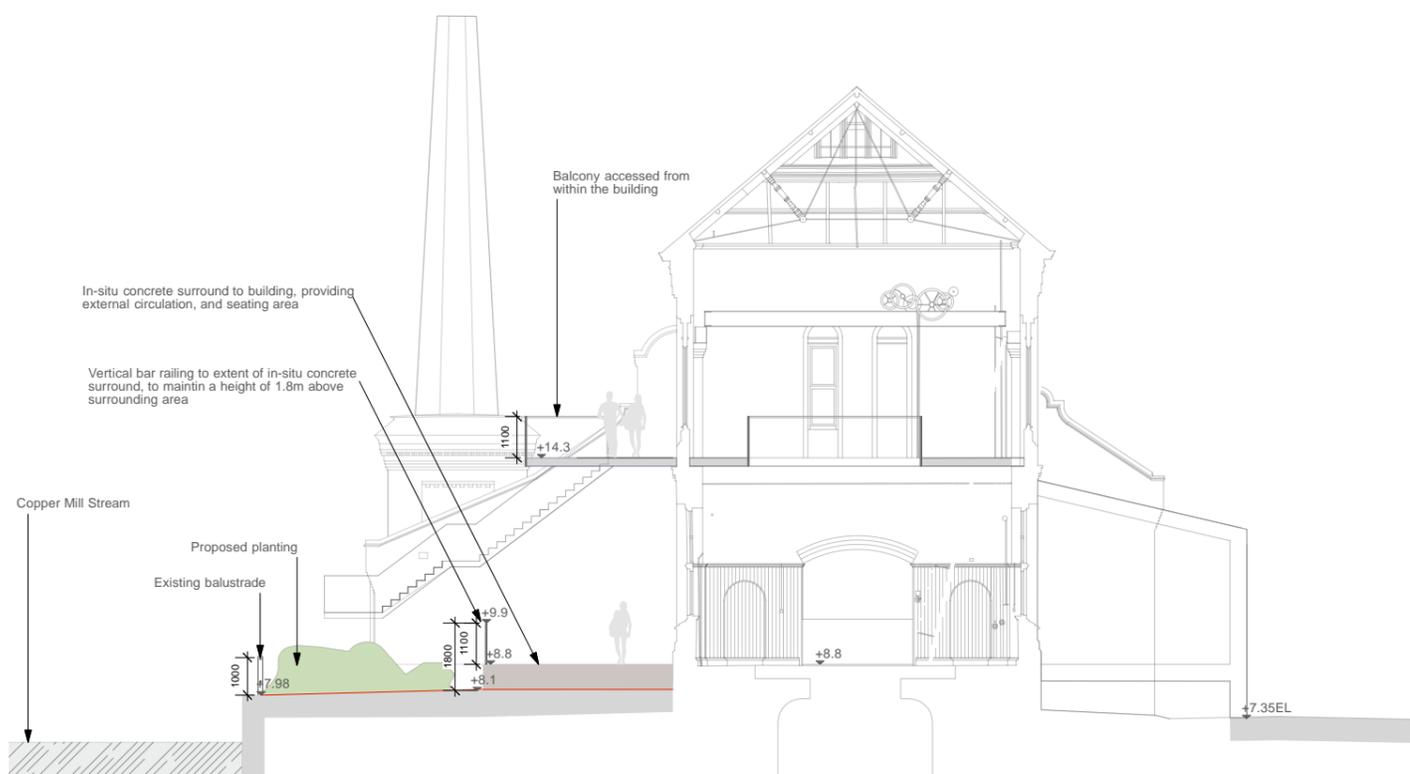
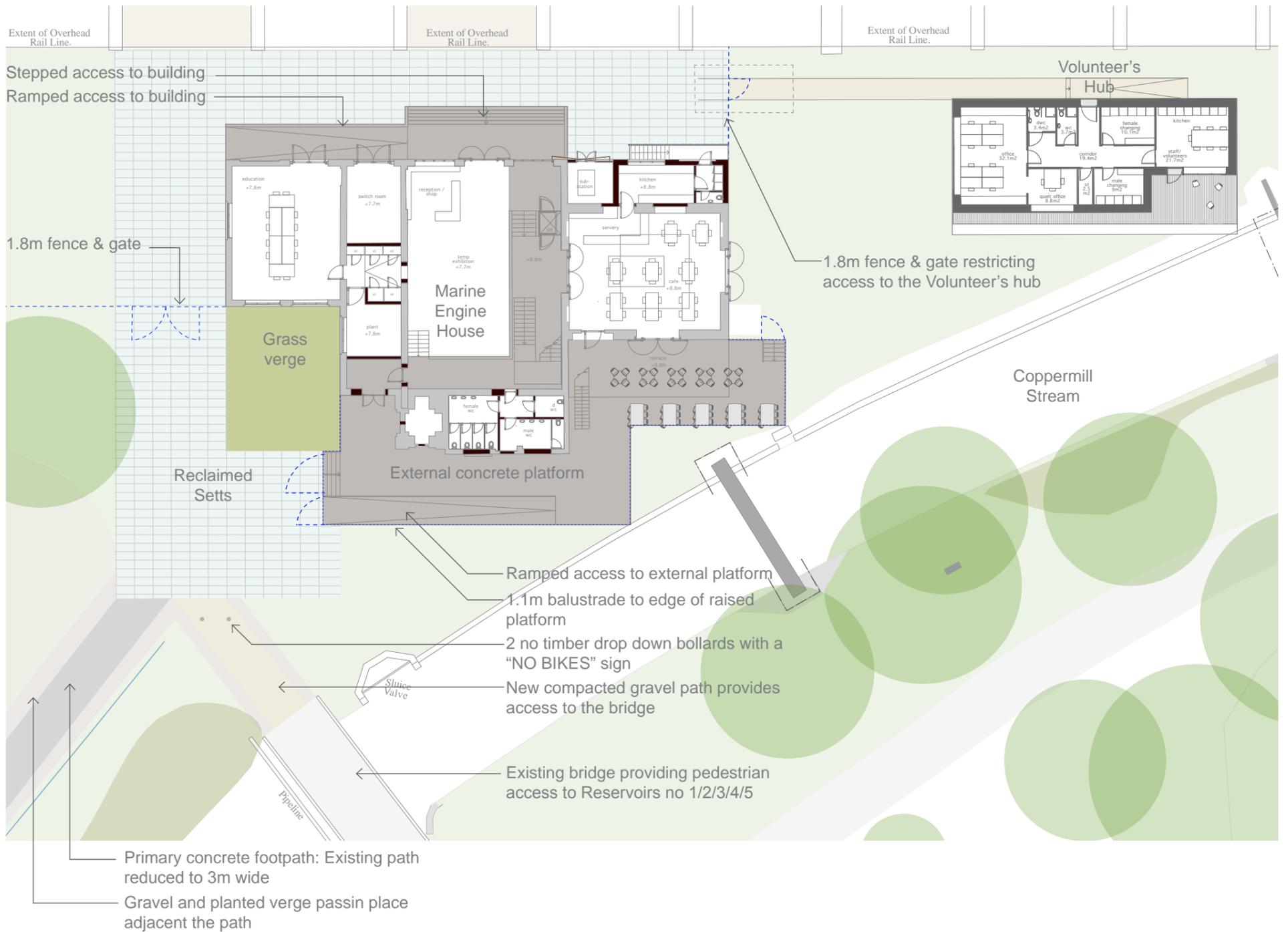
A: Existing view from Reservoir 1 towards the Marine Engine House



B: Proposed pond location adjacent the Marine Engine House



C:Marine Engine House - View over Reservoir 1 from the proposed upper deck at the Marine Engine House



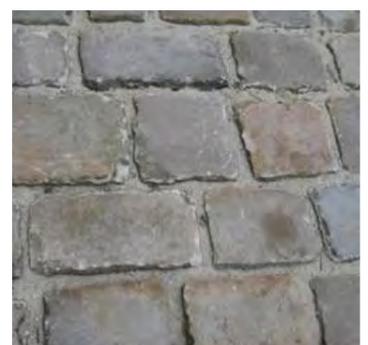
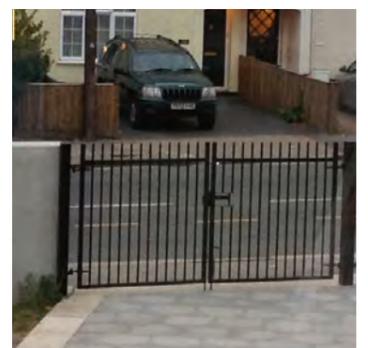
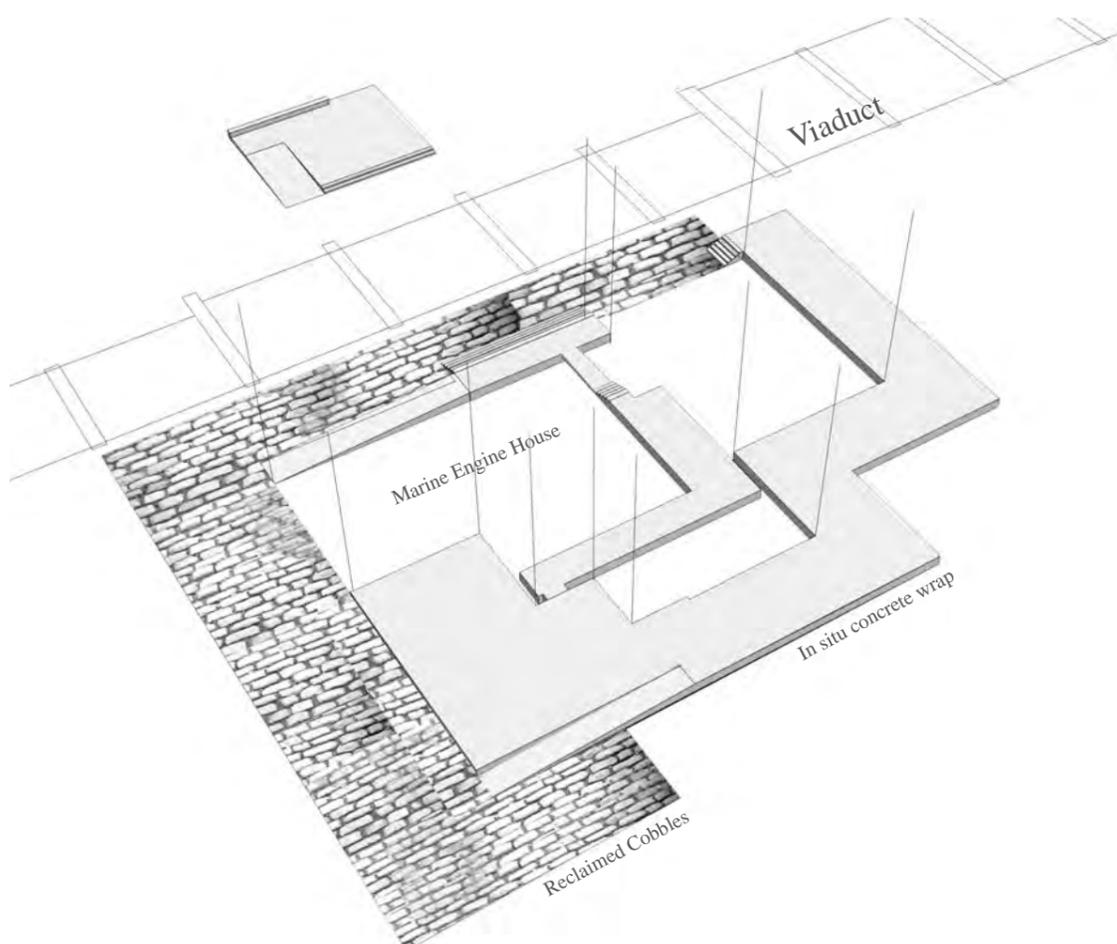
Section : Raised external platform

As visitor's pass under the existing railway viaduct they enter the Marine Engine House Visitor Centre entrance space. A reclaimed cobbled/sett surface creates a threshold space for visitors before they enter the building or continue on into the landscape.

An external concrete platform wraps around the existing building providing access into the building at the main entrance along the northern facade and a raised platform to the south of the building that overlooks reservoir no 1. It is envisaged that this platform could be used as an outdoor space during events in the building. A 1.1m balustrade encloses the external platform allowing this space to be secured and prevent people from accessing the southern reservoirs.

The volunteers hut is located to the east of the Marine Engine House and is gated to prevent the public accessing this operational space.

The primary concrete route continues south from the threshold space whilst a gravel pathway provides access to reservoirs no 1,2 & 3 via the existing bridge. Two timber bollards are proposed before the bridge to inform visitors that there is no cycle access within this area of the site. The bollards will be collapsable to allow occasional vehicle access.





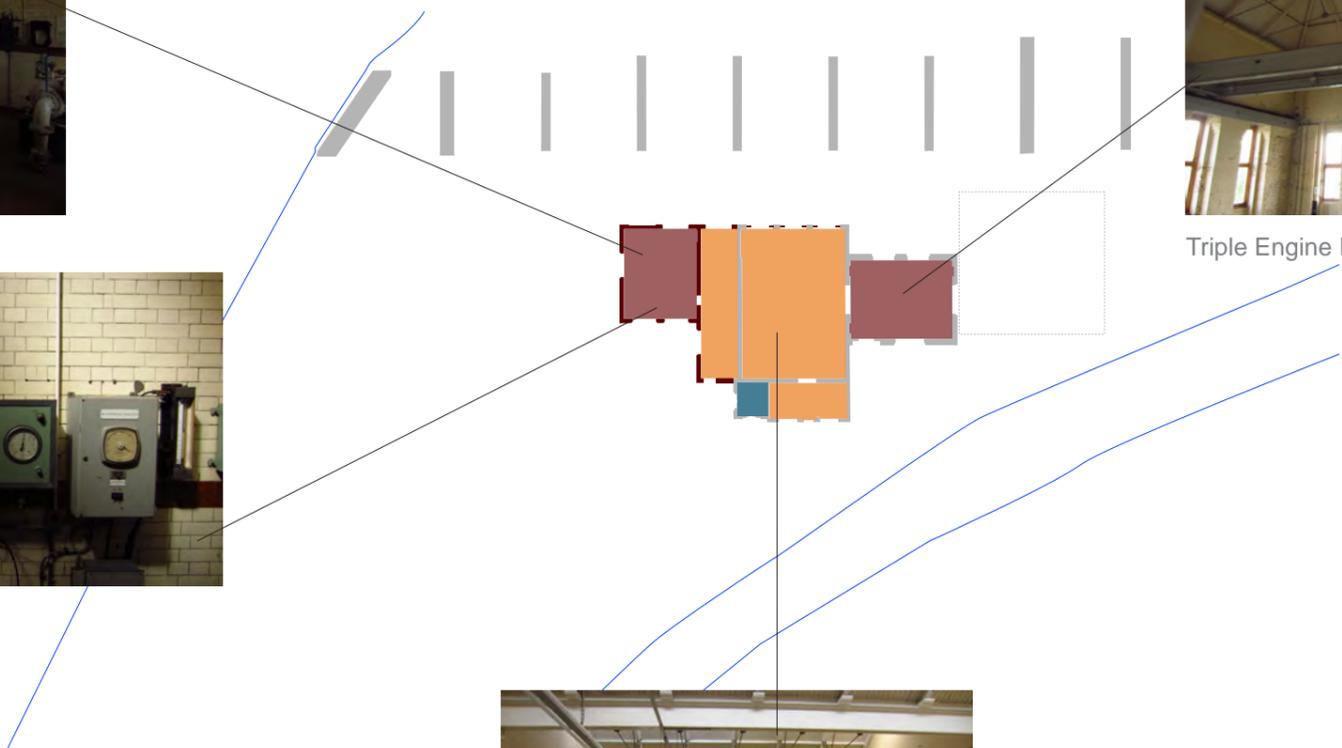
Triple Engine Room



Boiler Room



Boiler Room



The Marine Engine House has been substantially altered across the years, with elements and rooms variably affected by change. The original turbine room and triple engine room are significantly intact in terms of structure, décor and fittings. Interventions here have been limited and carefully judged.

The central hall, the original boiler room retains none of its décor or fittings, and has been significantly altered, it is therefore the focus of interventions to aid internal access and circulation. The chimney has been demolished and upstand roof lights removed. While reinstatement for its own sake has not been considered, knowledge of these missing elements has substantially informed our approach to the addition of the new volume required to access a first floor.

There are currently four different ground floor levels, disposed around the central room, which is at the level of the ground to the north. This is not tenable in a building for public use, either with or without lifts, and we have therefore sought to rationalise the levels, while paying careful attention to the character of the rooms affected.

- Structure not intact
- Structure intact
- Structure and decor and some fittings intact



Finishes

- External ramp and steps: acid etched in situ concrete
- External terrace: acid etched in situ concrete
- New raised floor in central hall – foamed concrete, in-situ structural topping. Insulation and under floor heating, polished or ground concrete screed finish
- Other rooms: insulation, power-floated screed
- New floor build-up over reservoir in triple engine room: steel frame, mineral wool insulation 150 mm, chequer plate finish
- New galleries, terrace, raised walkway, stairs and lift shaft in steel structure, intumescent paint/ lacquer; steel chequer plate floors
- Removal of some machines in turbine room; retention of wall machines, and pipeway through – new grille over
- Chemical strip of wall and ceiling paint in all rooms, repaint/ seal
- Open blocked up arched windows to N of central hall – double glaze
- Cut down 2 no. large window openings in triple engine room to ground.
- Windows blocked, new doorways as plans
- Glazing: reglaze windows with double glazing; glass to north elevation to be security and acoustic rated. Allow for patch repair and redecorate existing wood frames. Reglaze windows in triple engine

room roof, fit electrical actuators.

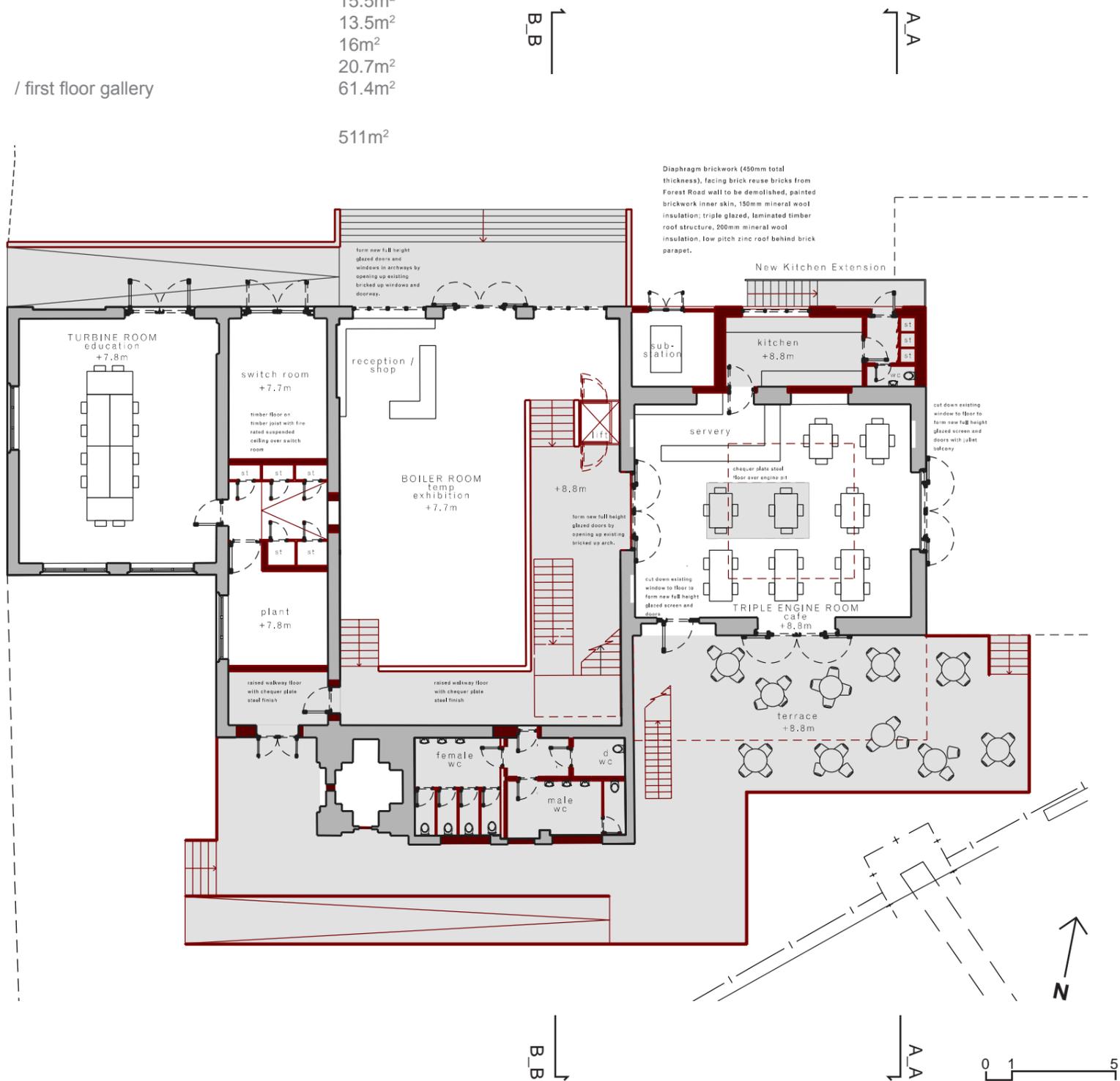
- All glass low iron, high level glass self-cleaning
- Local replacement of damaged bricks to external walls
- Off site restoration (sandblasting, repair, seal) cast iron rainwater goods
- Re-roof with clay tiles (reuse existing + new to match), assume new ply sheathing and breather membrane
- New upstand roof lights – laminated timber sub frame, insulated zinc roof, hardwood casements with electric actuation
- New masonry 'swift tower' in 325 - 215mm cement mortar brickwork, octagonal form (allow for chamfered and corner specials), hit-and-miss perforations
- fire compartmentation: allow for new custom hardwood FD30 doors.
- public WCs
- kitchen fit-out
- fitted lab benches to education room



Marine Engine House Proposal: Ground Floor Plan

Areas

Temporary exhibition / reception / shop	170.5m ²
Education	72m ²
Café	88m ²
Kitchen, store and WC	22.8m ²
WCs M + F + D	30.6m ²
Plant	15.5m ²
Cloakroom	13.5m ²
Circulation	16m ²
Switch room	20.7m ²
Interpretation / first floor gallery	61.4m ²
Total	511m²



Due to the specific nature of the opportunities and constraints, we have established a few 'fixes', developing options around and in relation to these. Fixes: the tall 'Triple Engine Room' is elevated above the level of the reservoirs, and therefore offers views out over them. As the only room in the building with an outlook, we propose to locate the café here, with a level raised terrace to the south. We believe that the old turbine room, lined in white glazed brick would work well as an education room for a full class. The electrical substation will be left in situ, with new fireproof construction around it.

The Marine Engine House sits at the threshold to the site, before the paths fork to the west, south and east. It would be accessed from both the north, entered under the viaduct, and the south, approached along the main 'spine' route.

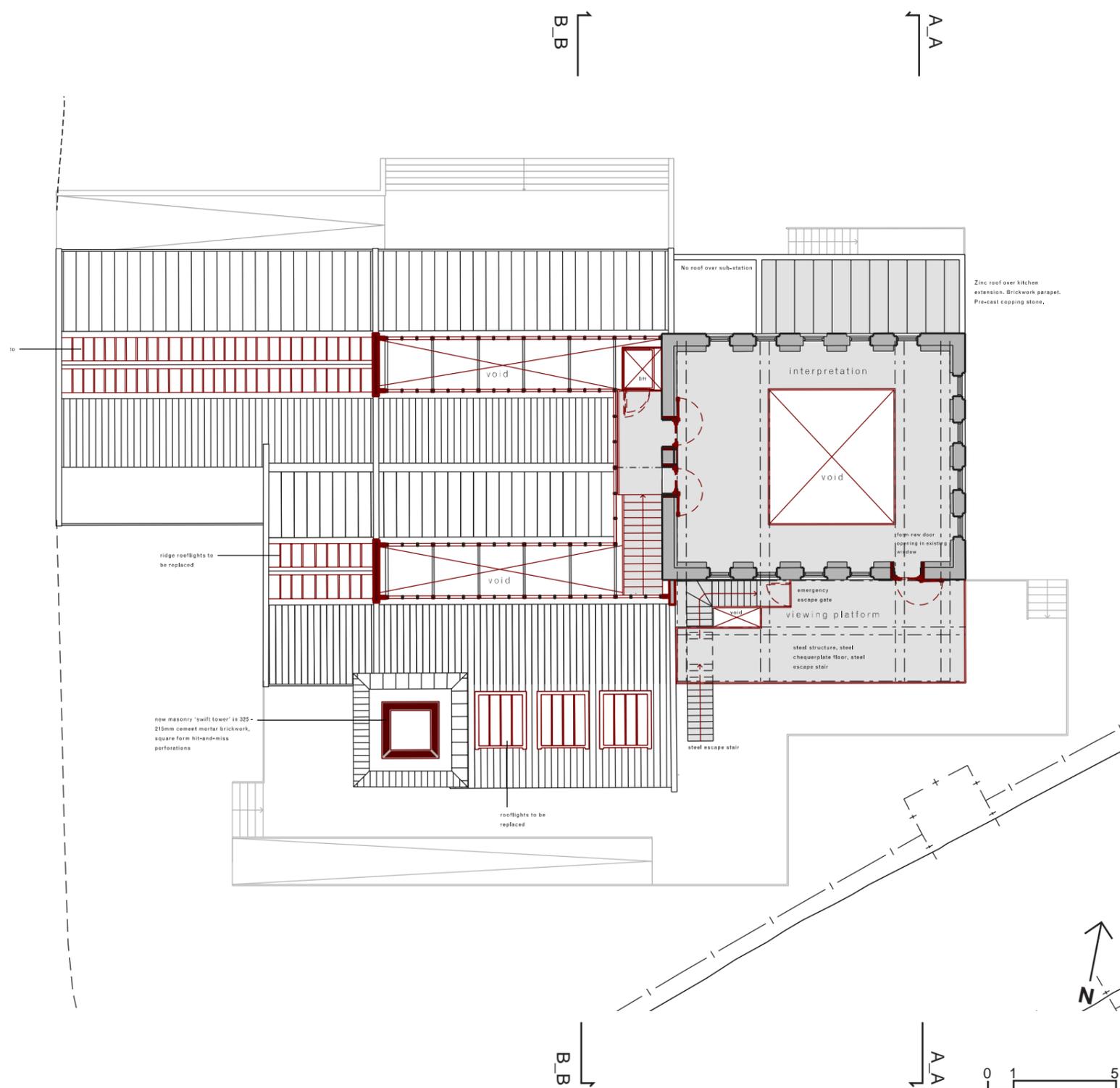
Like the landscape, the building offers several ways through:

The entrances from both north and south are into the large central hall (boiler room), connecting into the café (triple engine room) and education room (turbine room).

- Existing differences in levels between rooms are reconciled by raising the level of the boiler room floor to that of the turbine room floor and adding a raised walkway around the boiler room that would be on the same level as the triple engine room café.



Marine Engine House Proposal: Upper Level Plan



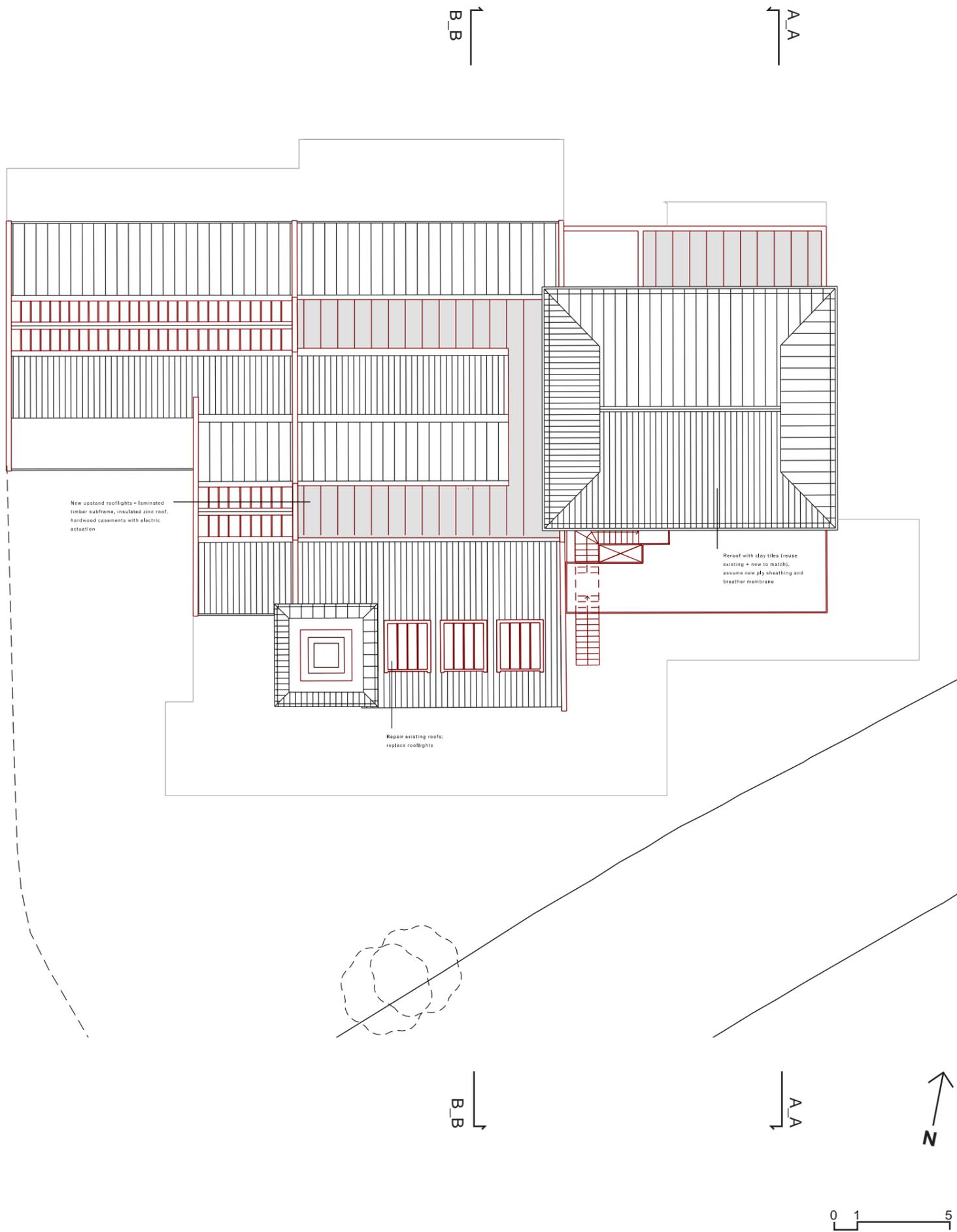
- A lift and stair on the east side of the boiler room give access to the lower level café and upper level gallery of the triple engine room.
- The lift and stair require a section of the roof to be cut out and reconstructed.

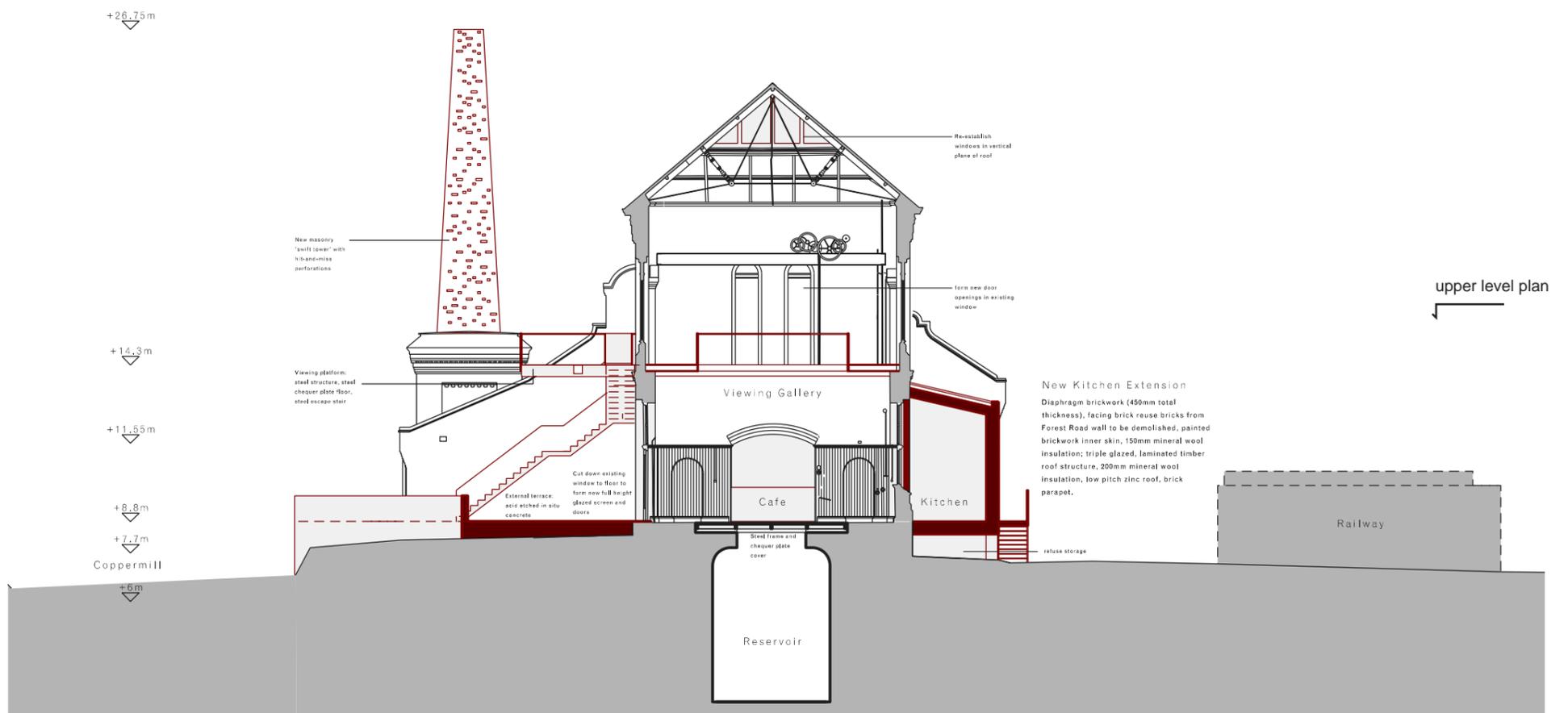
The Marine Engine House sits at a low point, where the main route dips below the viaduct. Movement through the building is proposed as a vertical journey, from the enclosed, industrial character of the viaduct, yard and central boiler room, to the elevated viewpoint of a new gallery and viewing terrace around the old triple engine hall. The café enjoys elevated views above the reservoirs, looking south over reservoir no. 1. The new first floor interpretation gallery and viewing terrace will offer spectacular views out over the wider valley landscape.

The historic character of the old triple engine hall and turbine room will be sustained by retention of the décor and fittings that make them distinctive. A new swift tower in open brickwork will re-establish the presence of the building in the wider landscape, which is currently severely truncated. This is intended to be tall enough to serve as a marker in the landscape – including from Forest Road – but low enough (about half the original height) to minimise maintenance.

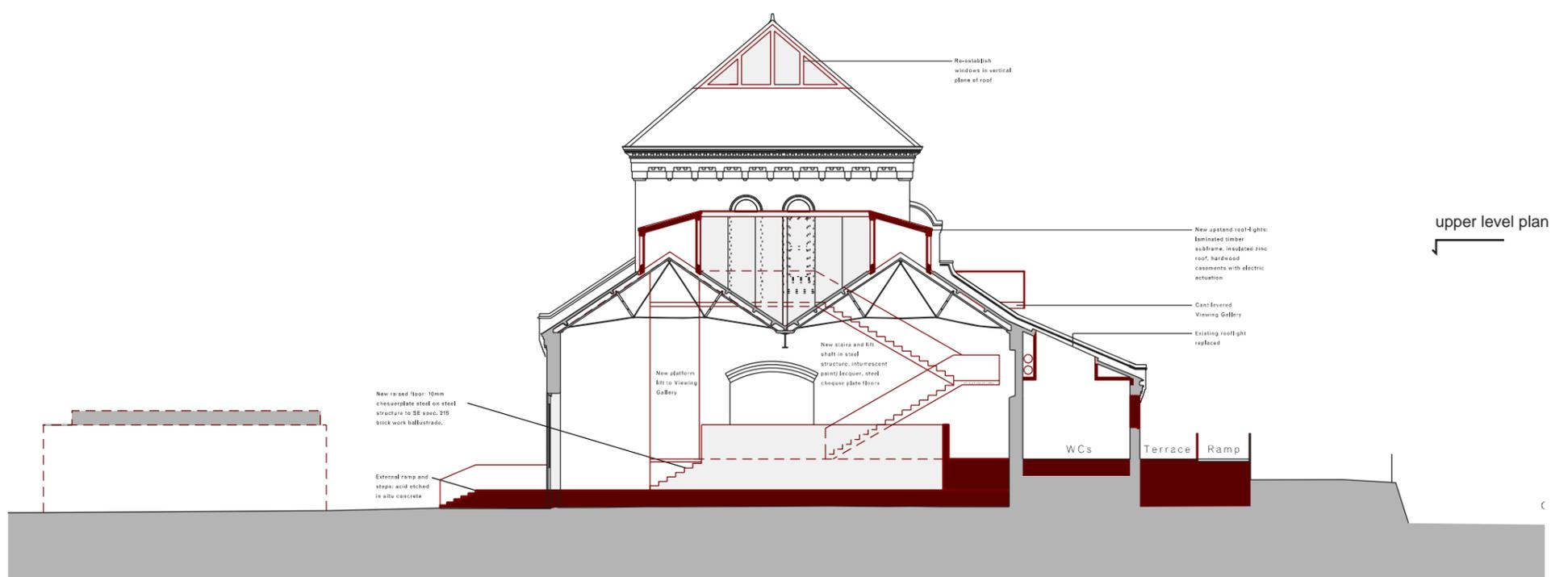
The accommodation of the brief into the building is 'loose fit'. Each room serves several purposes at different times, while retaining its distinctive character.







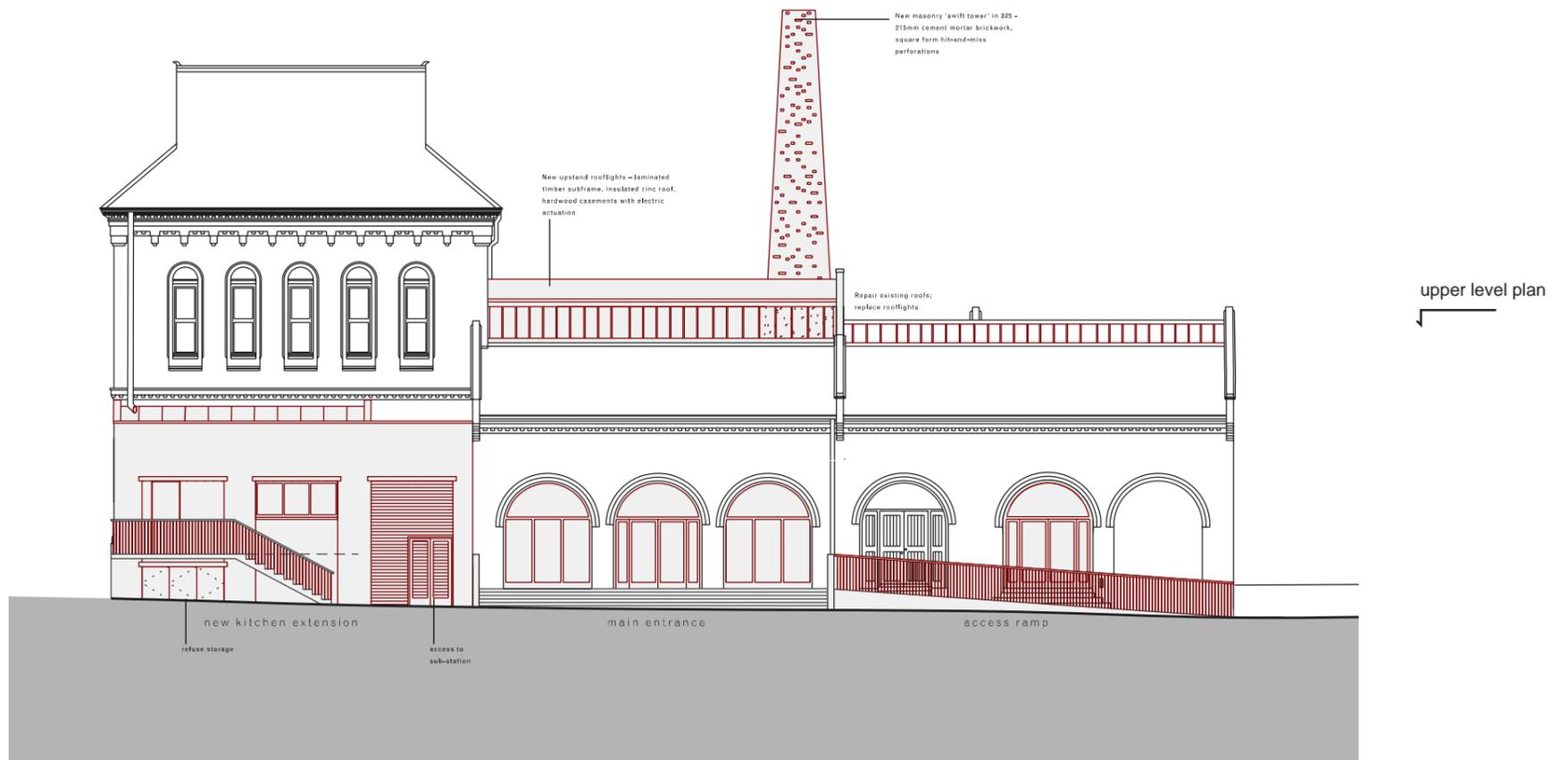
Section A_A



Section B_B



Marine Engine House Proposal: North and South Elevations

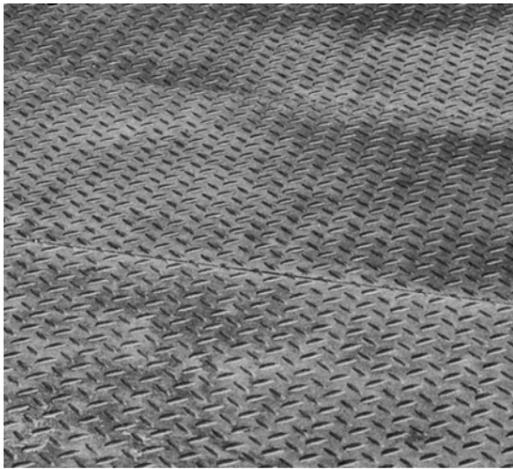


North Elevation

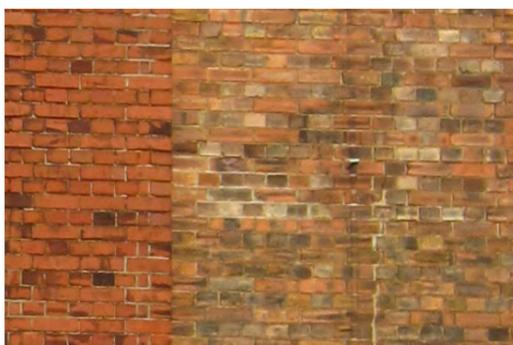


South Elevation

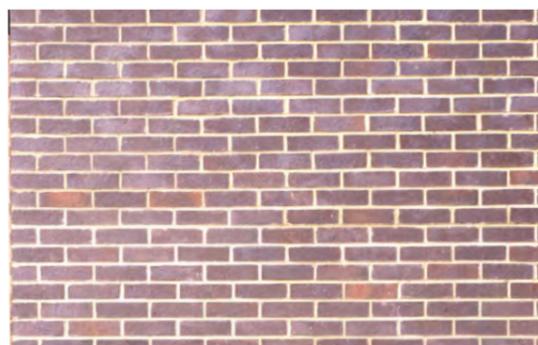




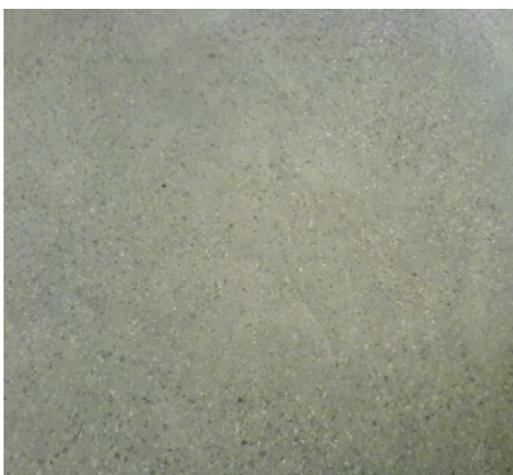
Steel chequer plate floor for stairs, high level gallery and viewing terrace



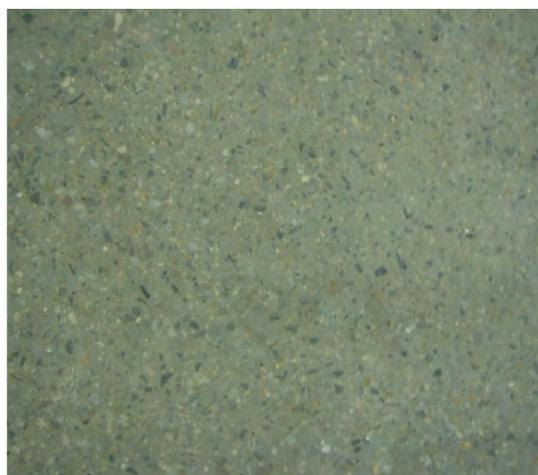
Reclaimed bricks to match Marine Engine House existing stock



Engineering bricks to construct the Swift Tower

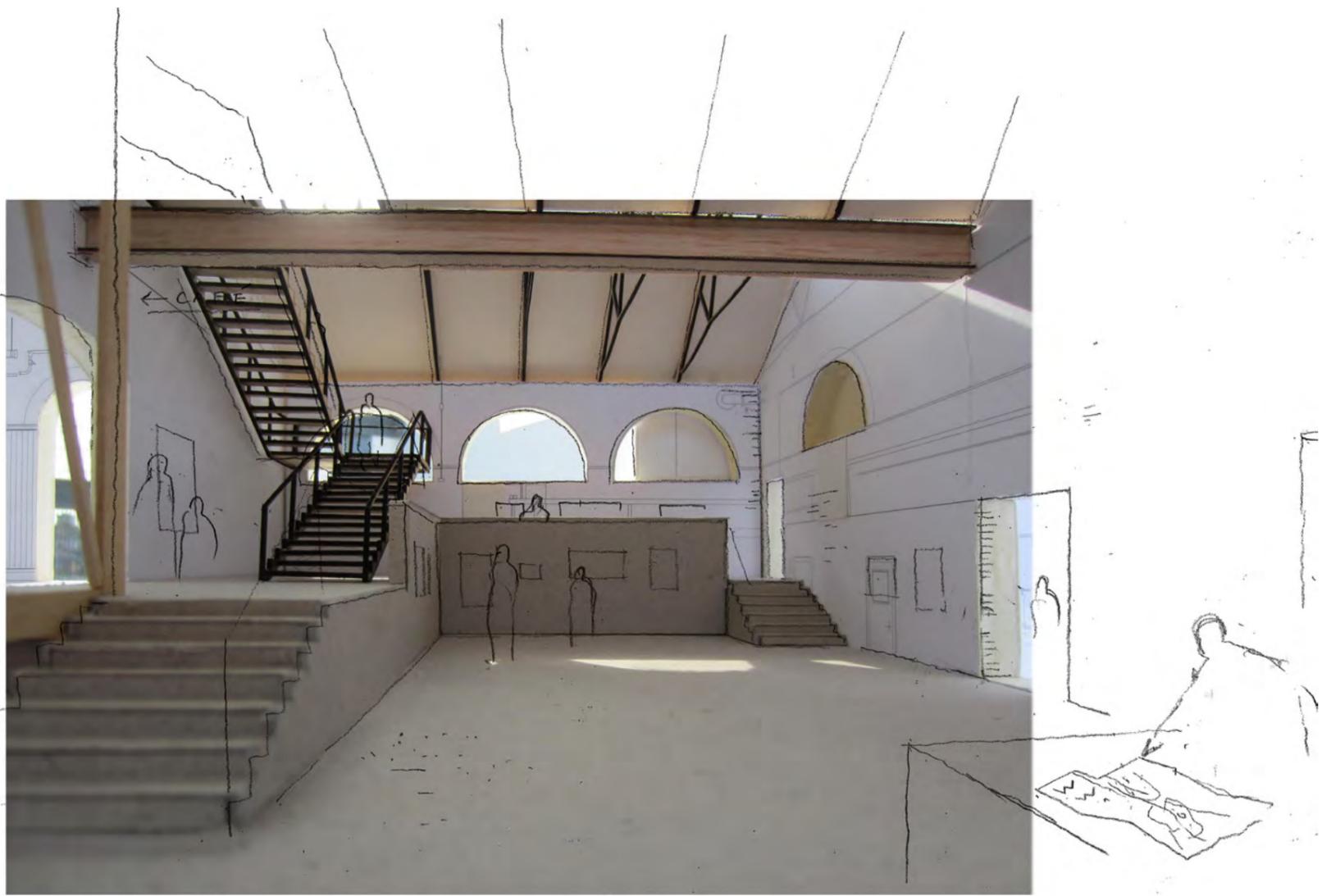


Ground concrete screed floor finish

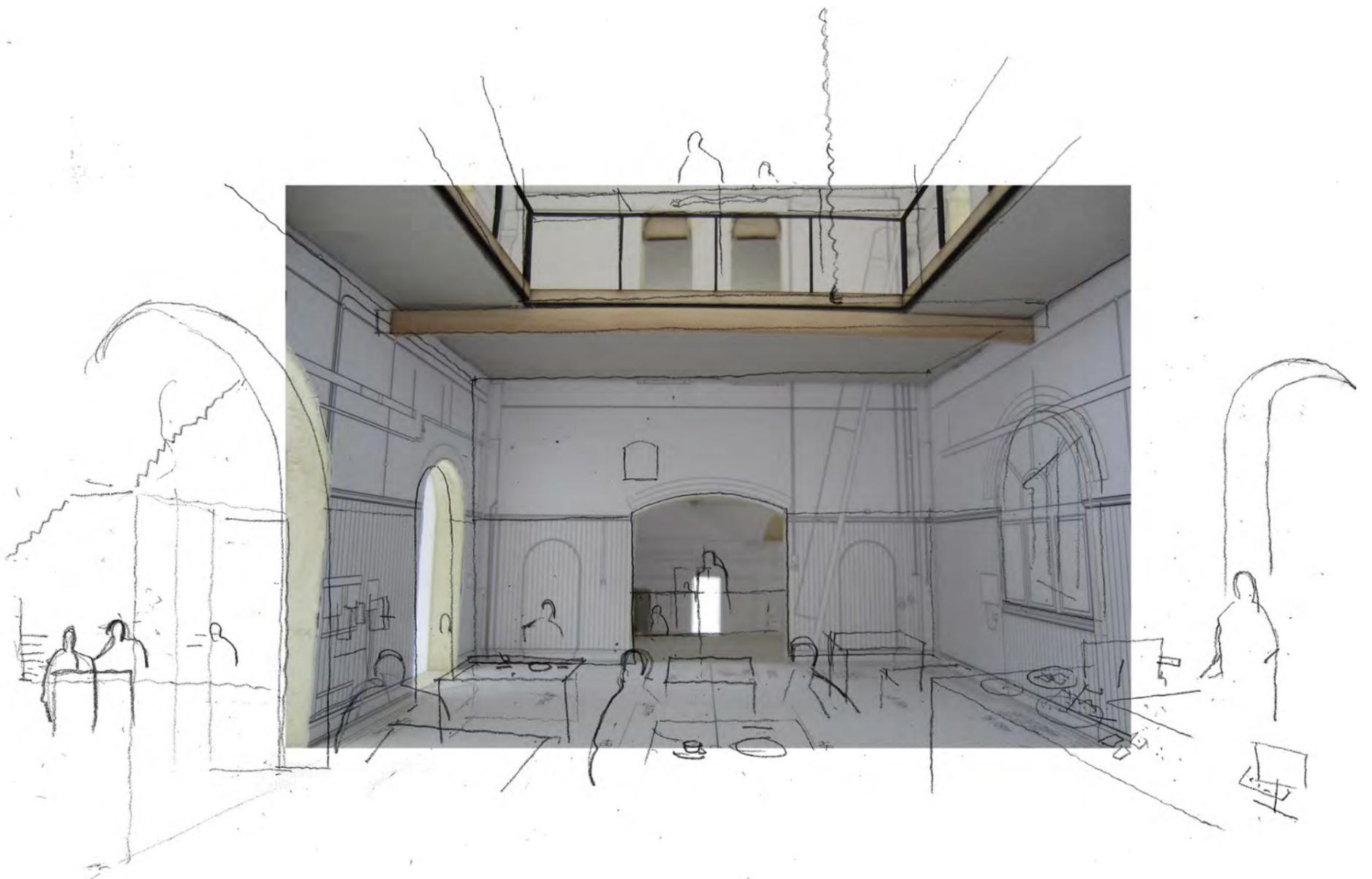




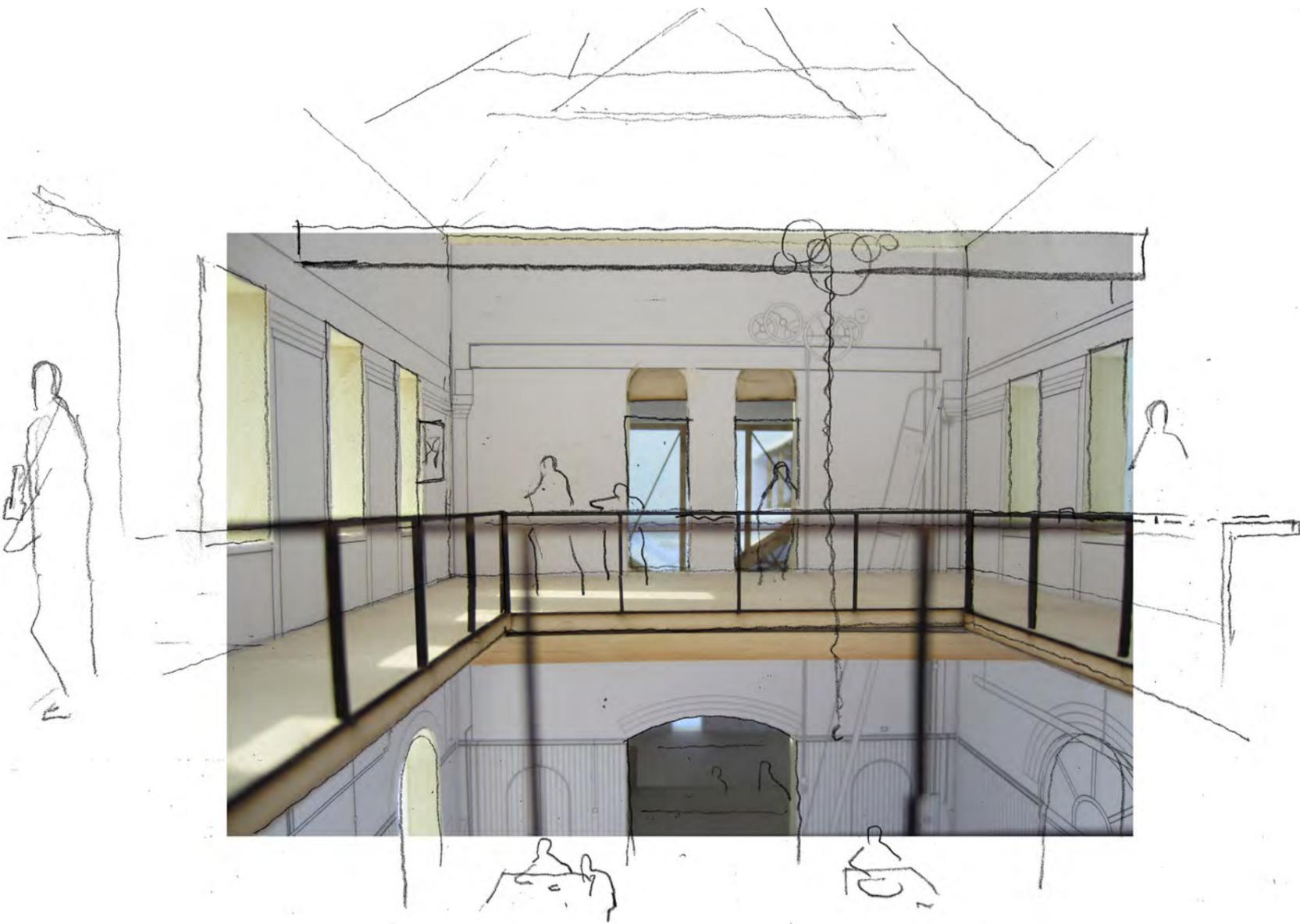
Entrance to the Marine Engine House



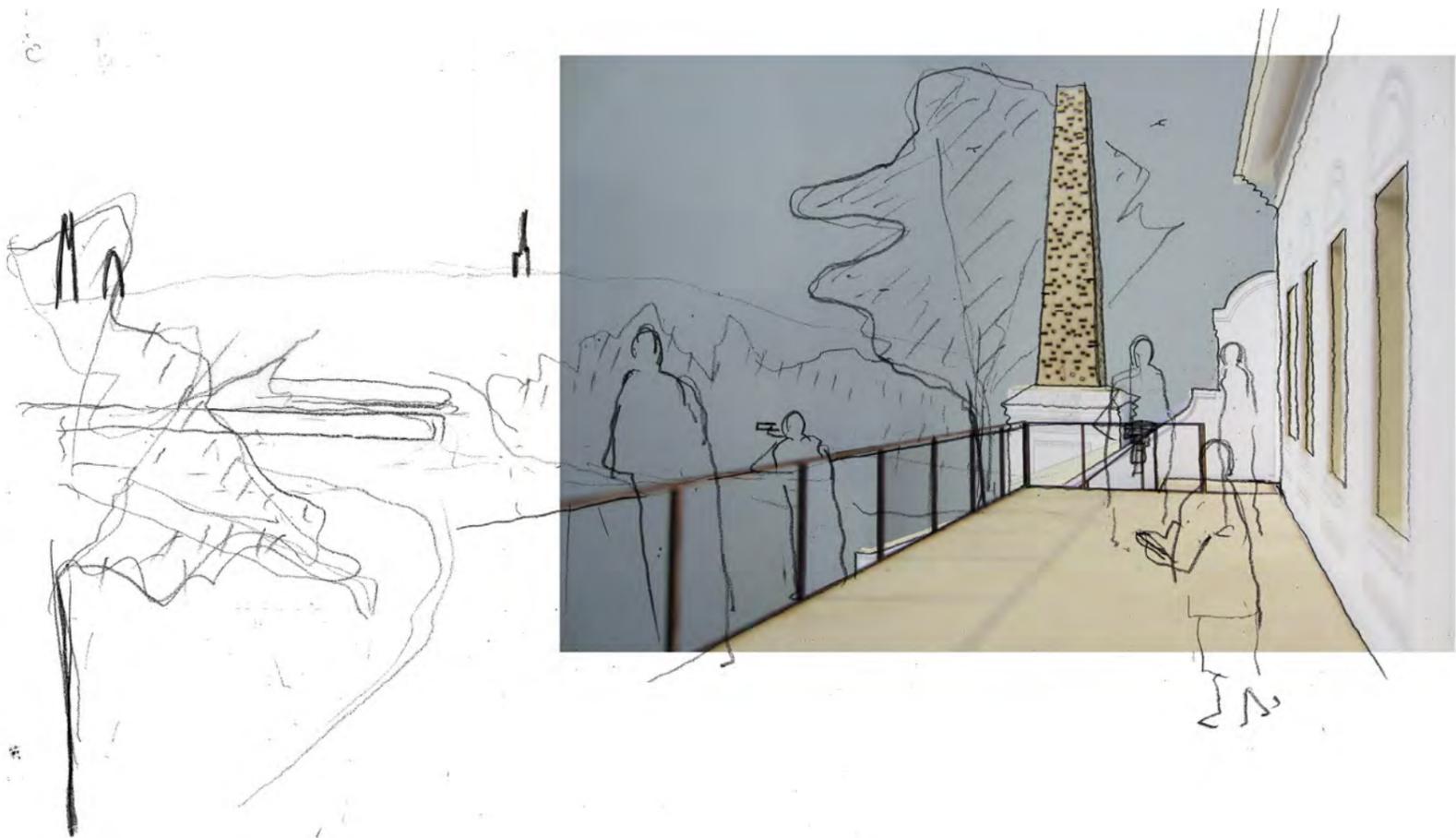
Reception - Temporary Exhibition



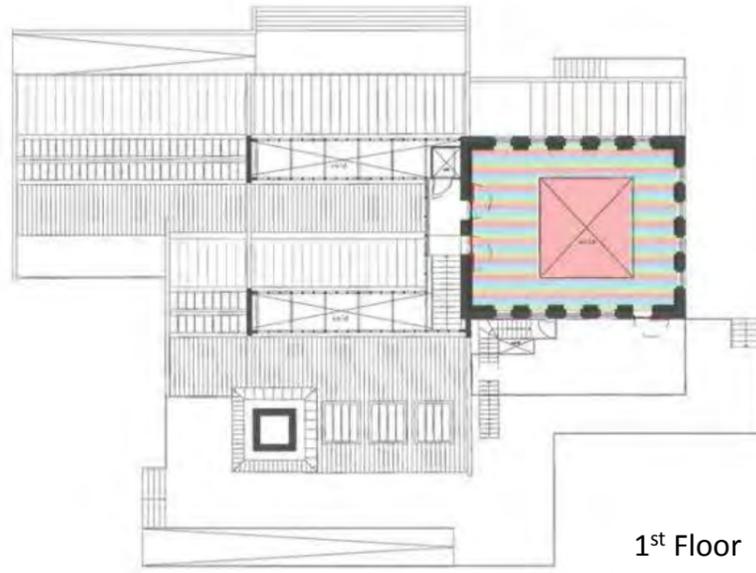
Cafe



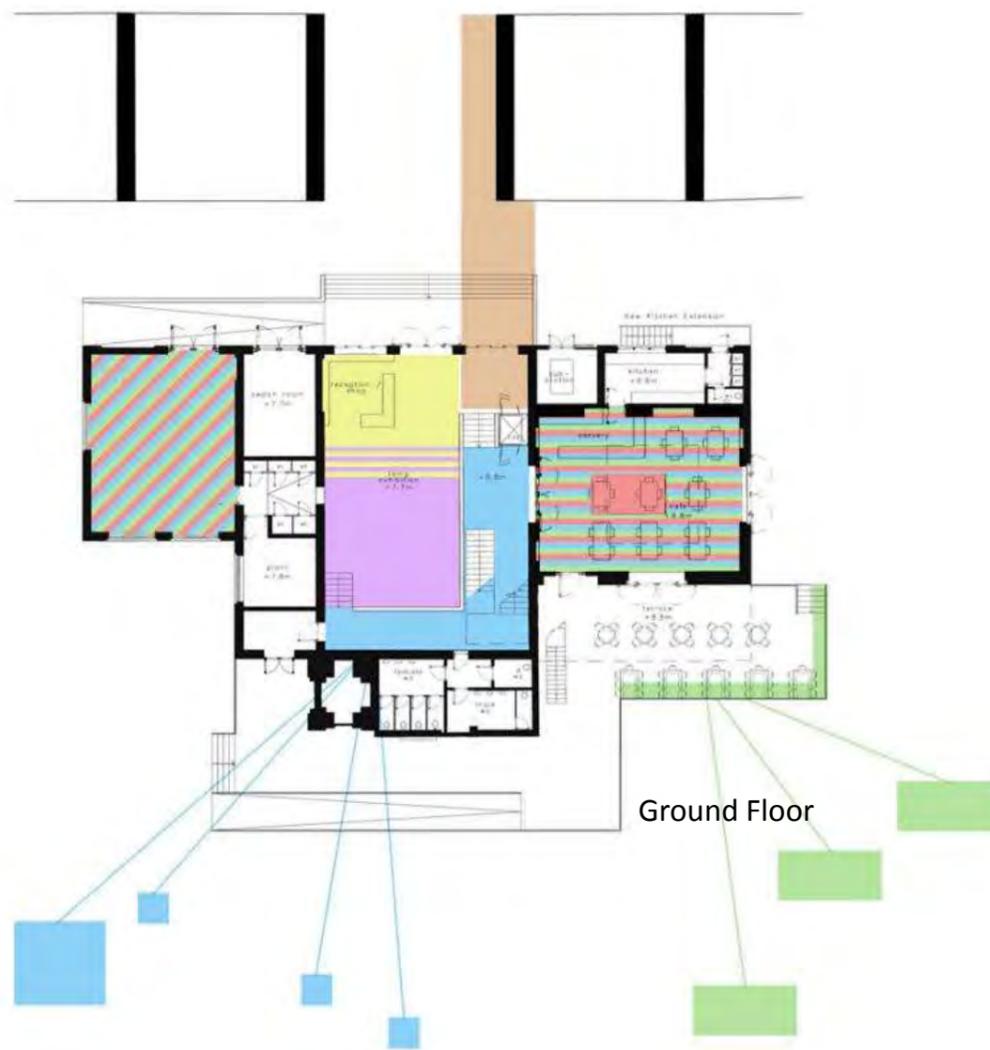
Gallery



Viewing Terrace



1st Floor



Ground Floor

Other sites relating to 'Precious for London'

Other sites relating to 'Precious for Nature'

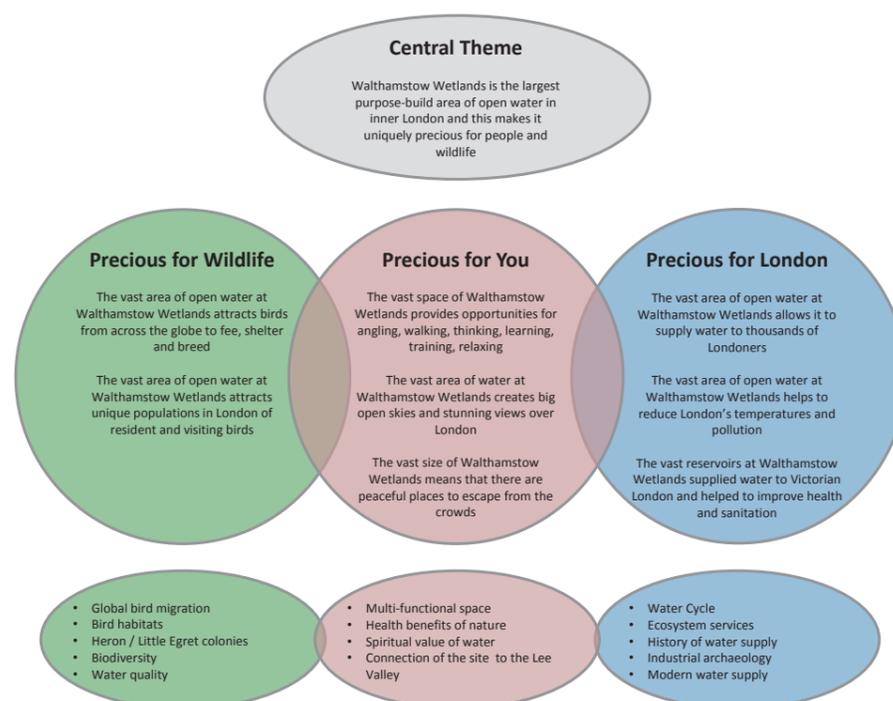
- | | | | |
|--|-----------------------|---|-----------------------|
|  | 'Precious for London' |  | Orientation |
|  | 'Precious for Nature' |  | Reception / Shop |
|  | 'Precious for You' |  | Temporary Exhibitions |

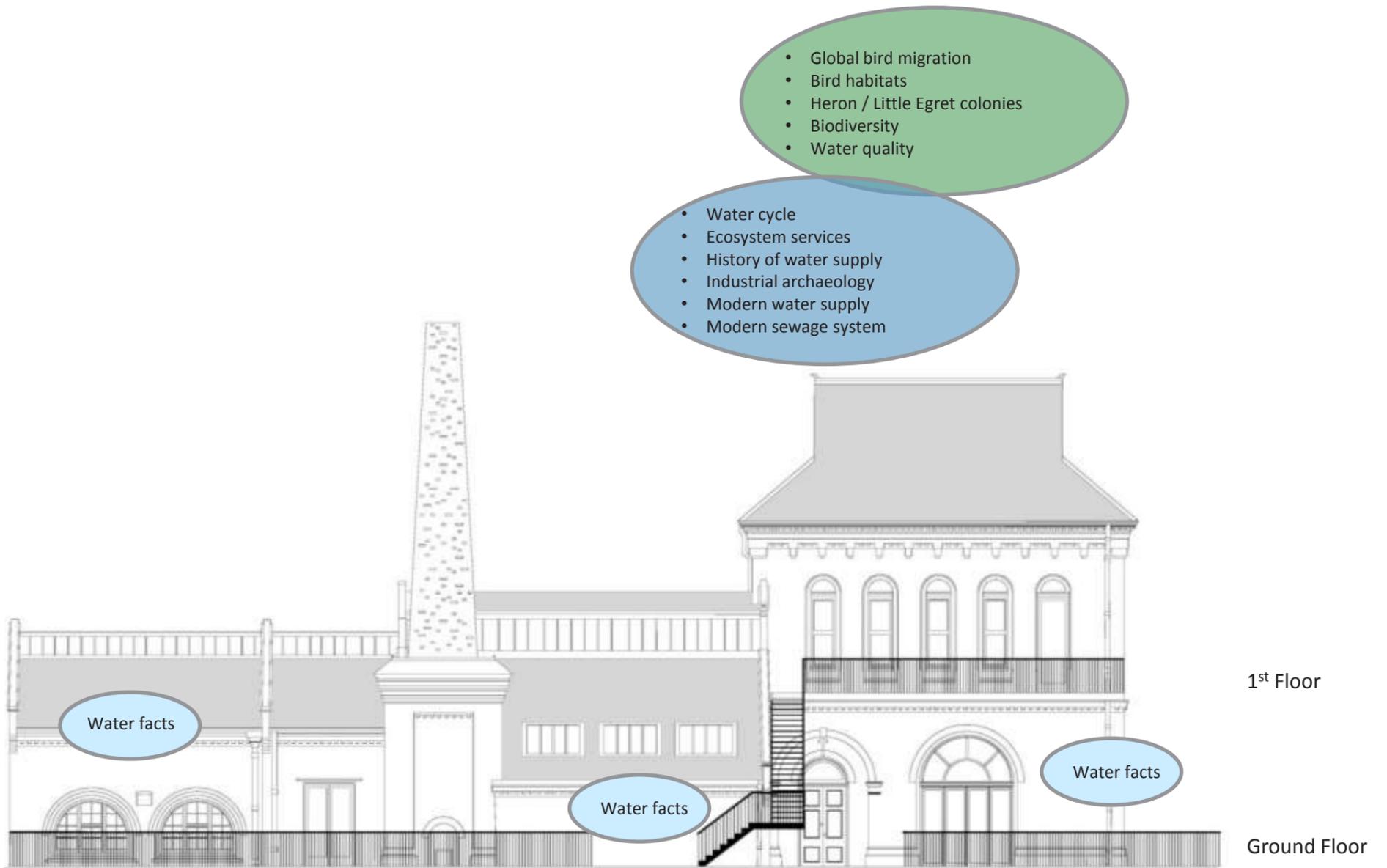


The many and varied individual stories connected with Walthamstow Wetlands, from the historical background, the industrial heritage, its present day role in supplying London drinking water, to the wildlife, its habitat and ecological issues, will be interpreted around the site. These fall into the three main themes identified in the Activity Plan:

- 'Precious for London'
- 'Precious for Nature'
- 'Precious for You'

These will be introduced and explored in the permanent exhibition located within the Triple Engine House and linked to sites and walks around the Southern and Northern Reservoirs.





The Turbine Hall

Education space covering all themes interpreted through facilitated and self learning toolkits.

Permanent Exhibition theme:
The Function of the Building

The Boiler Room

Reception / Shop / Orientation / Temporary Exhibitions

Permanent Exhibition theme:
The Industrialisation of Water

The Triple Engine Room

Permanent Exhibition interpreting all themes in detail



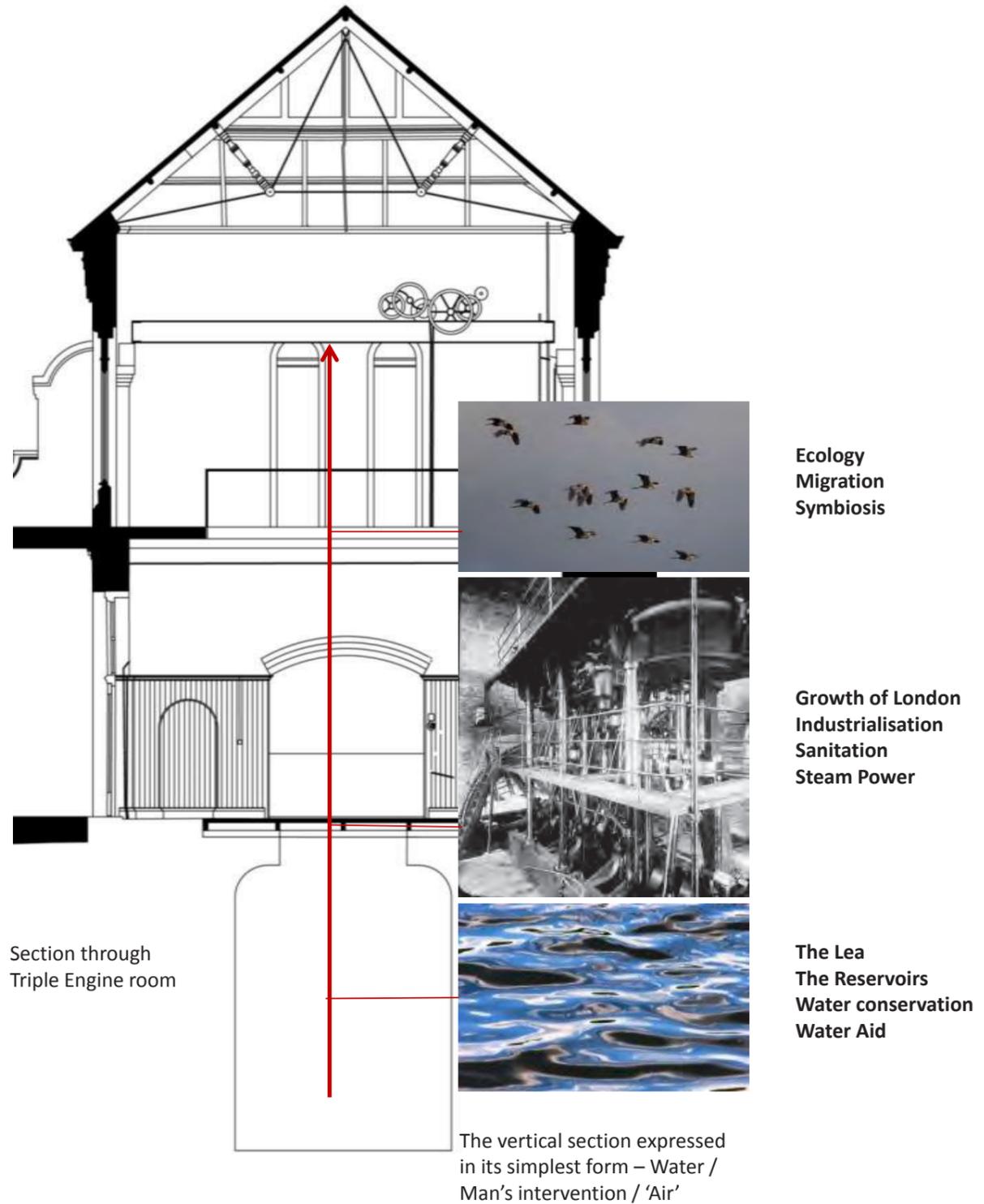
Location of Permanent Exhibition Elements

The principal location for the permanent exhibition will be over the two levels of the Triple Engine Room, covering all themes.

Additional displays will be sited in the Turbine Hall and the Boiler Room.

Aside of the content themes identified in the Activity Plan, there will be further interpreted themes (related to Water Aid / Water Conservation / Water Facts / water supply / waste water) displayed within the Turbine Hall, the WCs and within the Café.





Permanent Exhibition – Triple Engine Room

We are interested in exploring the verticality of the space and how we might relate this to the themes to be interpreted in the permanent exhibition.

The connection between water, man's intervention and ecology should ideally be explored together – showing how one affects the other – rather than as separate stand-alone themes.

The space within the cafe is restricted and, when busy, may make viewing of interpretation difficult. Some aspects of the content can be covered with a simple statement, for example 'Water Aid' could be connected with the cafe servery – perhaps where drinking water is dispensed. We believe therefore that some of the background content will need to be covered outside the cafe (on the circulation platform) . This could relate to the initial need for the reservoirs and their early history as well as their present day role in supplying London's drinking water.

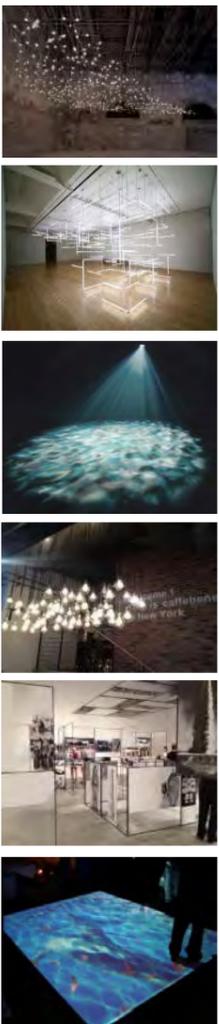
The engine tank below the floor offers the potential for a representation of water within the space. While we may not be able to leave a section of the floor open, it would be possible with the use of lighting, sound and AV, to create an installation that speaks of water.

Our ambition would be to create a physical connection from this 'water' to some form of sculptural intervention that can carry interpretation to create a dramatic centrepiece to the space and limit the need for information to be displayed on the panelled walls.





Section through Triple Engine room

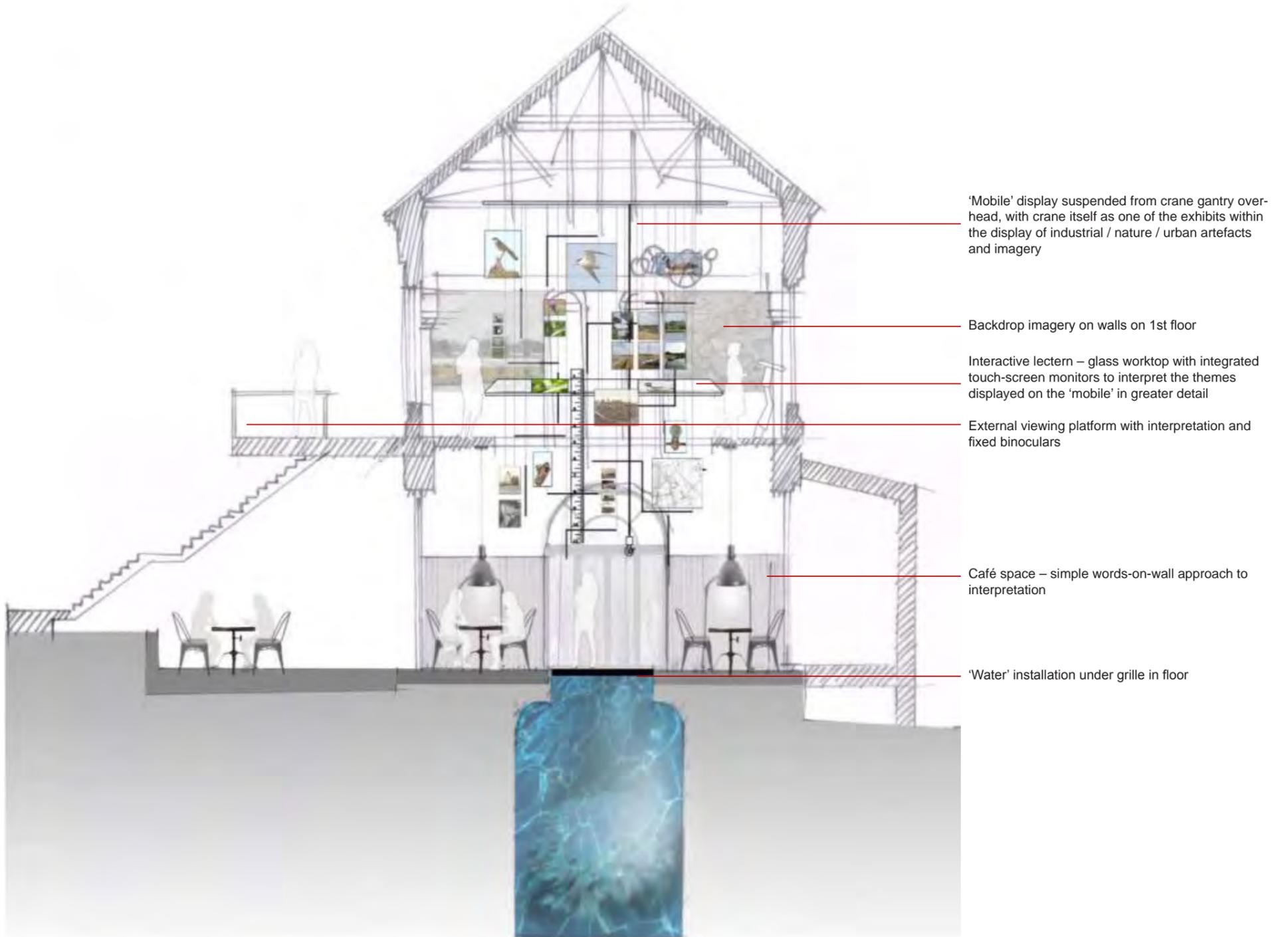


Permanent Exhibition – Triple Engine Room

Sculptural display centred on theme of ‘Precious for You’

- Could the engine tank be partially covered with a grille that allows for transmission of light and sound?
- Could a central structure carry images and 3D objects (both real and replica) that carry information that can be interpreted through other means (mobile devices / table-top graphics / touchscreen monitors at 1st floor level)
- Could it be connected with the crane?
- What might the structure carry – engine parts / maps / water engineering sections / silhouettes of fish or birds?

Marine Engine House Exhibition





Visualisation of Permanent Exhibition in the Triple Engine Room

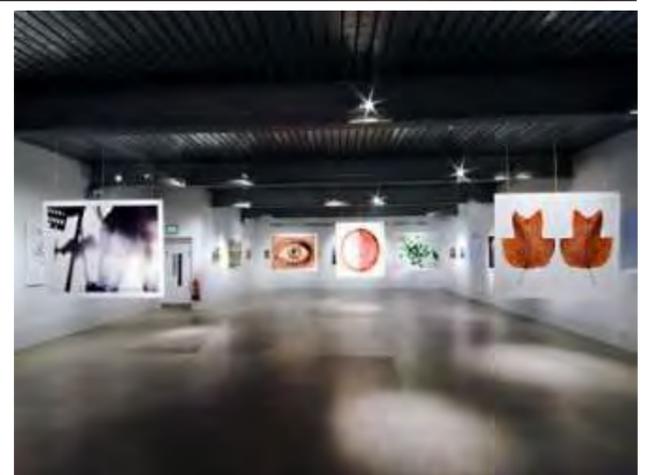
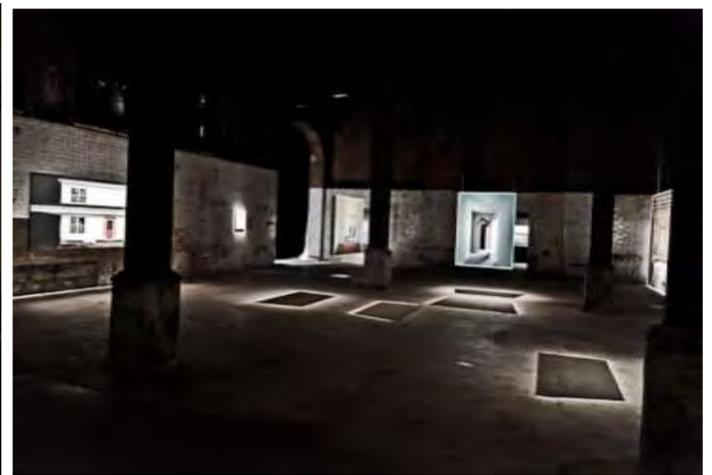
This central hanging installation will become a place to display artefacts and objects associated with the themes of the exhibition.



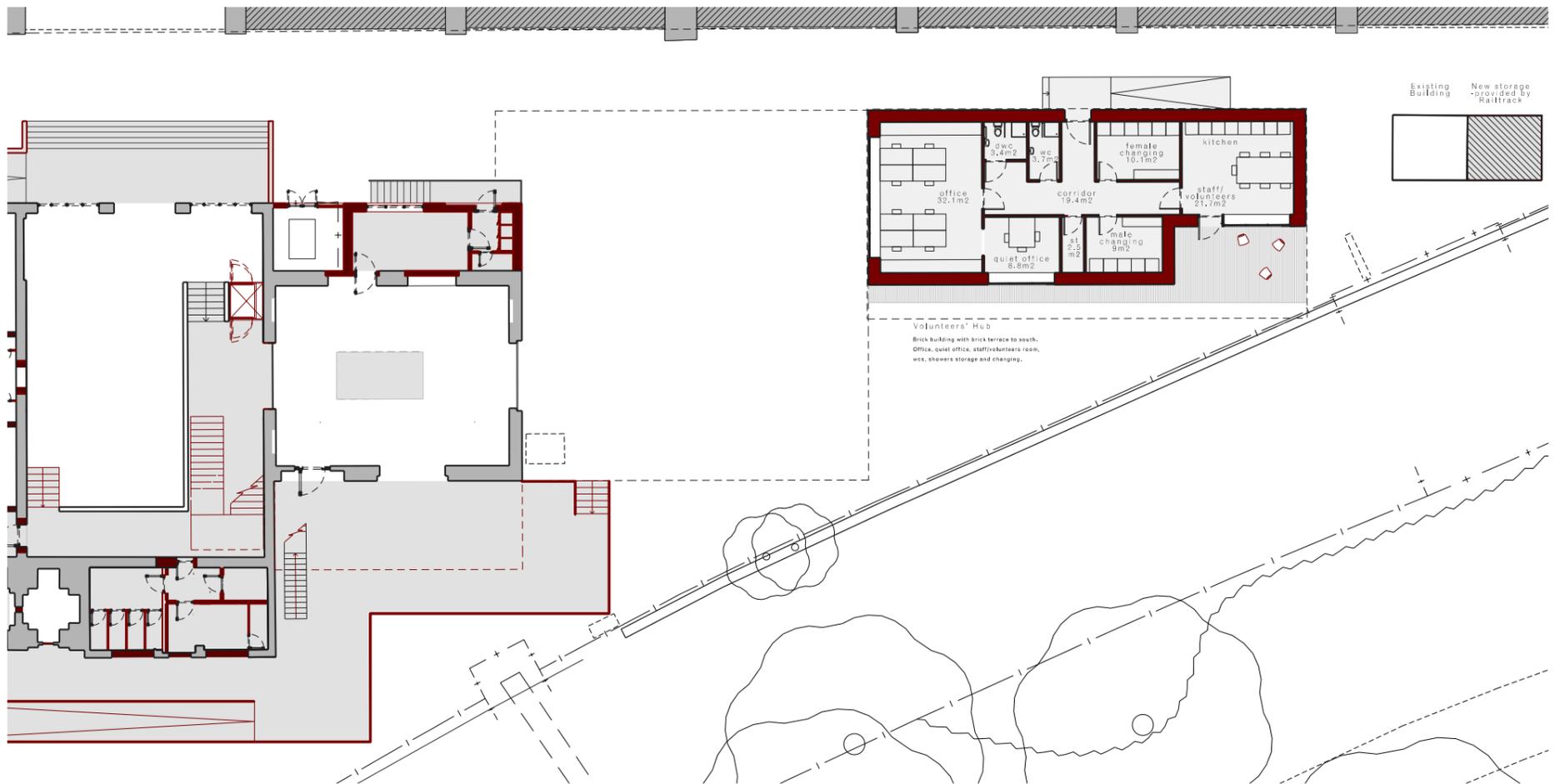
The Boiler Room

A programme of Temporary Exhibitions could draw an additional audience group and promote repeat visits. These could be art-based displays inspired by the landscape / wildlife / industrial heritage.

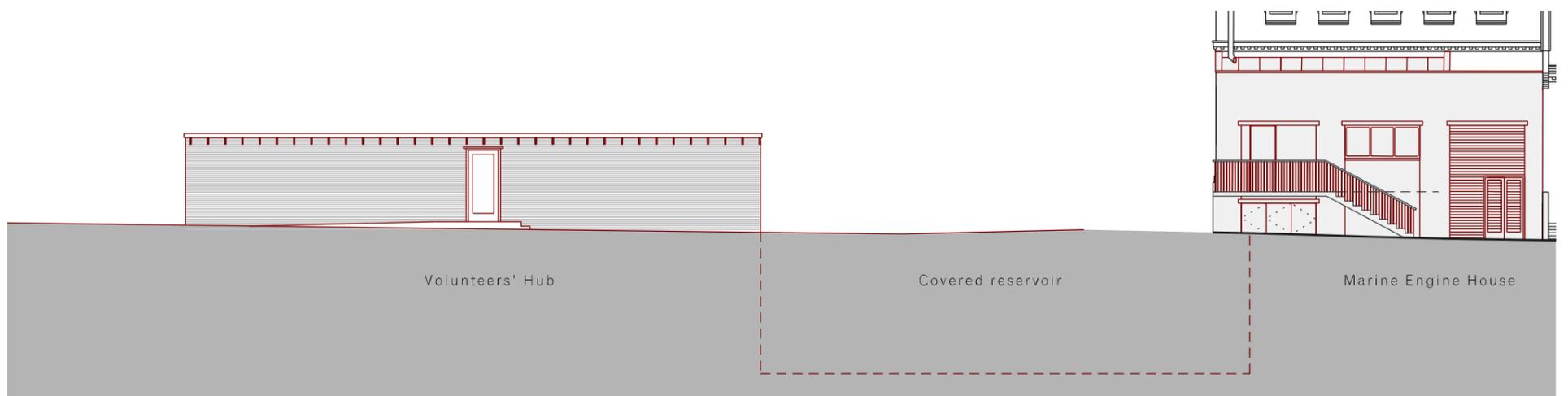
Some interpretation on upper level relating to 'industrialisation of water', waste water and drinking water treatment process.



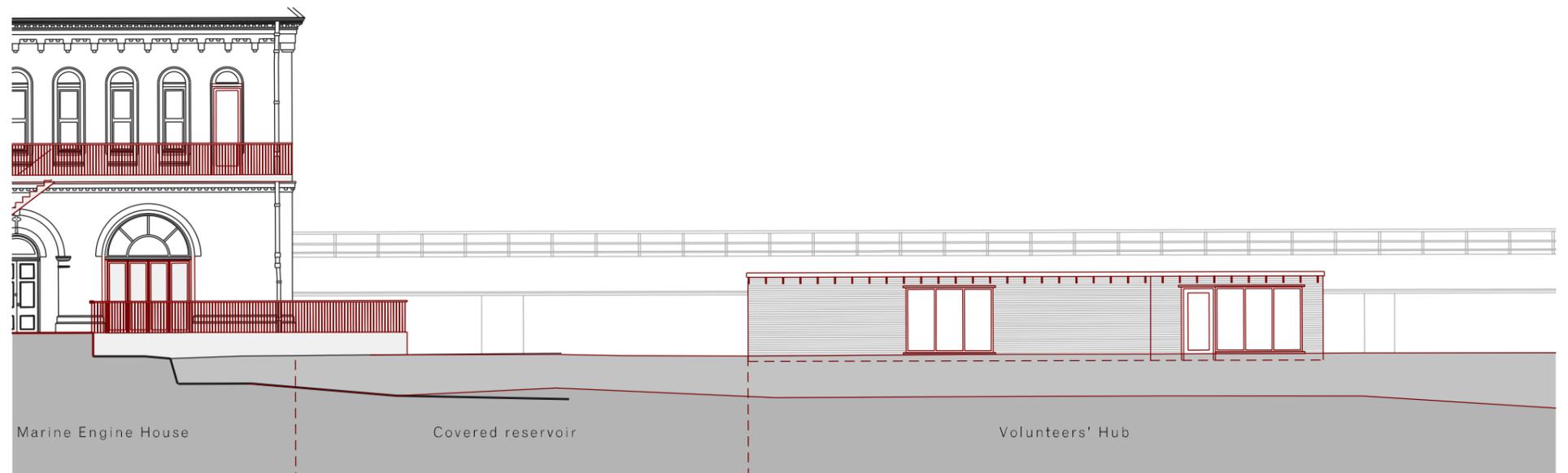




Plan: Volunteer Hub



Section1 : Section looking south towards the Marine Engine House & Volunteer Hub



Section2 : Section looking north towards the Marine Engine House & Volunteer Hub



The volunteers' hub houses site management offices together with changing rooms and staff room for volunteers.

Its siting to the east of the marine engine house is the outcome of a thorough investigation. Four sites were reviewed in terms of: their contribution to access control and surveillance of the site; their relation to the main public route; their visibility and contribution to the public perception of the site; their relation to the locally listed Marine Engine House; the availability of more screened private areas.

In the proposed location, the volunteers' hub sits on a triangular site between the Marine Engine house, the Coppermill Stream, and the railway viaduct. It is a 'back of house' location, away from the public route, reflecting the proposed change of role of the rangers' office: fishing permits will now be collected either from an automatic distributor or from the shop during opening hours.

The location and building design offer accessible but discreet, simple but comfortable accommodation for the rangers and volunteers upon whom the site's operation will rely.

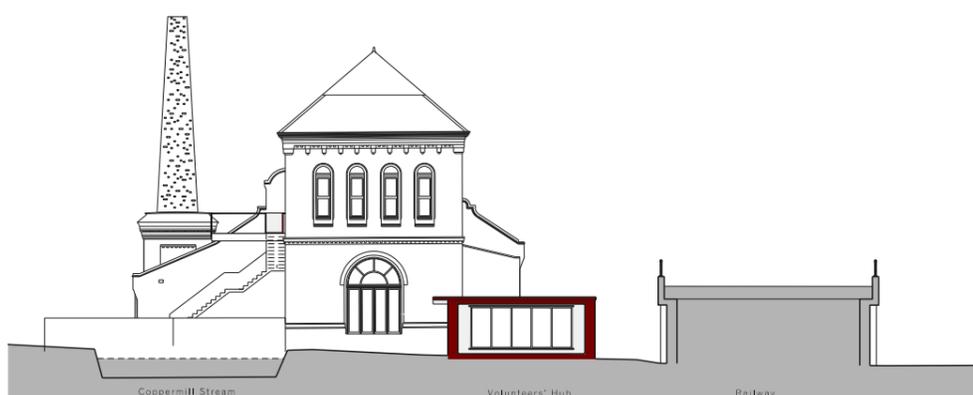
Proximity to the Marine Engine House and visibility from the public footpath across the Coppermill Stream require a building of some quality and craft, but the location offers some leeway between desirable high standards and simple but effective solutions.

A number of procurement options involving 'in kind' contributions have been investigated in order to increase both the 'social capital' and quality of this important construction:

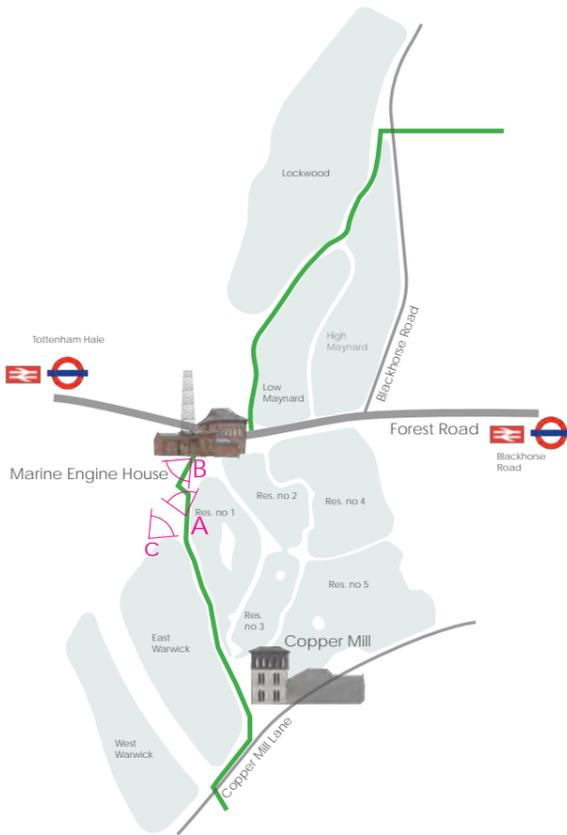
- construction of a watertight shell (in reclaimed brick and timber) and purchase of materials by the main contractor, followed by fit-out by apprentices from a local construction college or by a corporate sponsor.
- construction of shell and fit-out by an eco-building charity (using, for example, timber frame, straw bale and lime render), with skilled leaders directing committed volunteers.
- full construction including fit-out by main contractor using basic quality specification (block work structure with brick facing).

Key to the realisation of the first two options will be the identification of and agreement with a suitable delivery partner, it is therefore proposed that a representative of the client group investigate this as a matter of priority, so that the preferred procurement route is reflected in the planning application.

Given the uncertainties of the first two procurement routes, the third offers a secure benchmark for both quality and value, and is therefore the one used for budget purposes.



Meadow & Outdoor Education Space



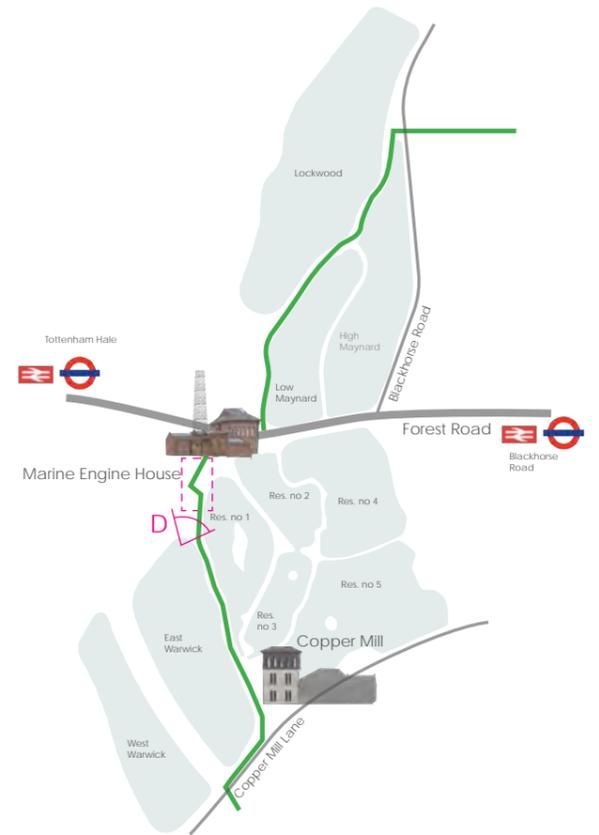
A + B: Existing photos of the proposed meadow space adjacent the primary access route



C: Existing view towards the Marine Engine House from the top of East Warwick reservoir



Meadow & Outdoor Education Space



D: View looking north over the outdoor education space towards the Marine Engine House

Meadow & Outdoor Education Space



Plan : Meadow & Outdoor Education Space



Meadow & Outdoor Education Space

The meadow and outdoor education space extends southwards from the Marine Engine House to the northern bank of East Warwick. The existing species rich grassland within this area will be managed as a meadow to create a rich habitat and space for informal recreation and educational & volunteer activities. Areas of native shrub planting create informal divisions within this space to deter geese whilst a series of timber decks create seating opportunities and destination features. As part of the HLF proposals the foundations of the Old Well House will be excavated and a clay pond liner installed, to enable a pond to be constructed in this location by volunteers as part of the activity plan.

A series of mown grass paths pass through this space linking the timber decks and a series of mown spaces.

As part of the access improvements the existing ramp to East Warwick will be extended and re graded to create a 1:21 DDA compliant access route to the top of the reservoir to ensure all visitors can appreciate the elevated views.

A 0.5km circular route is proposed within this space linking the Marine Engine House and top of East Warwick.

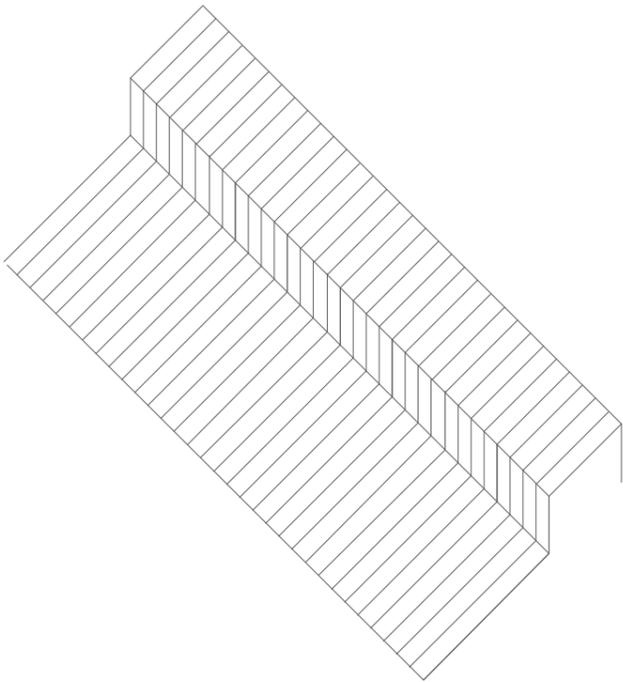


Meadow & Outdoor Education Space: Timber Platforms

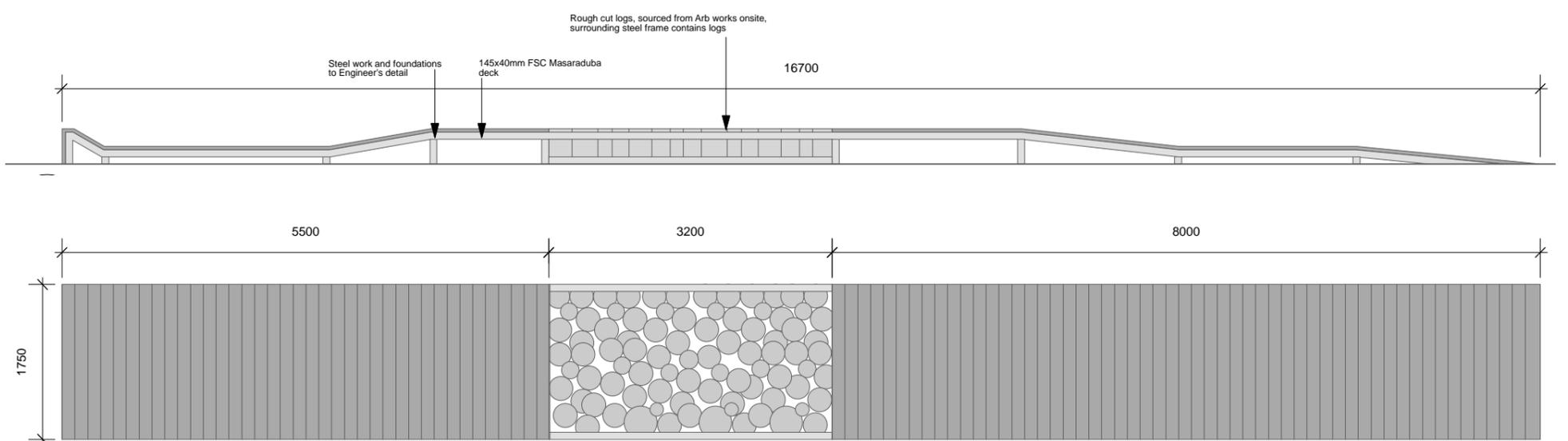


Existing timber decks at Rainham

The timber decks have an undulating form to create a playful profile which can accommodate a number of uses from providing simple seating opportunities, picnicking areas or spaces for classes of children to work and play. Habitat features are built into the deck to allow visitors to interact with ecology on a more intimate scale.



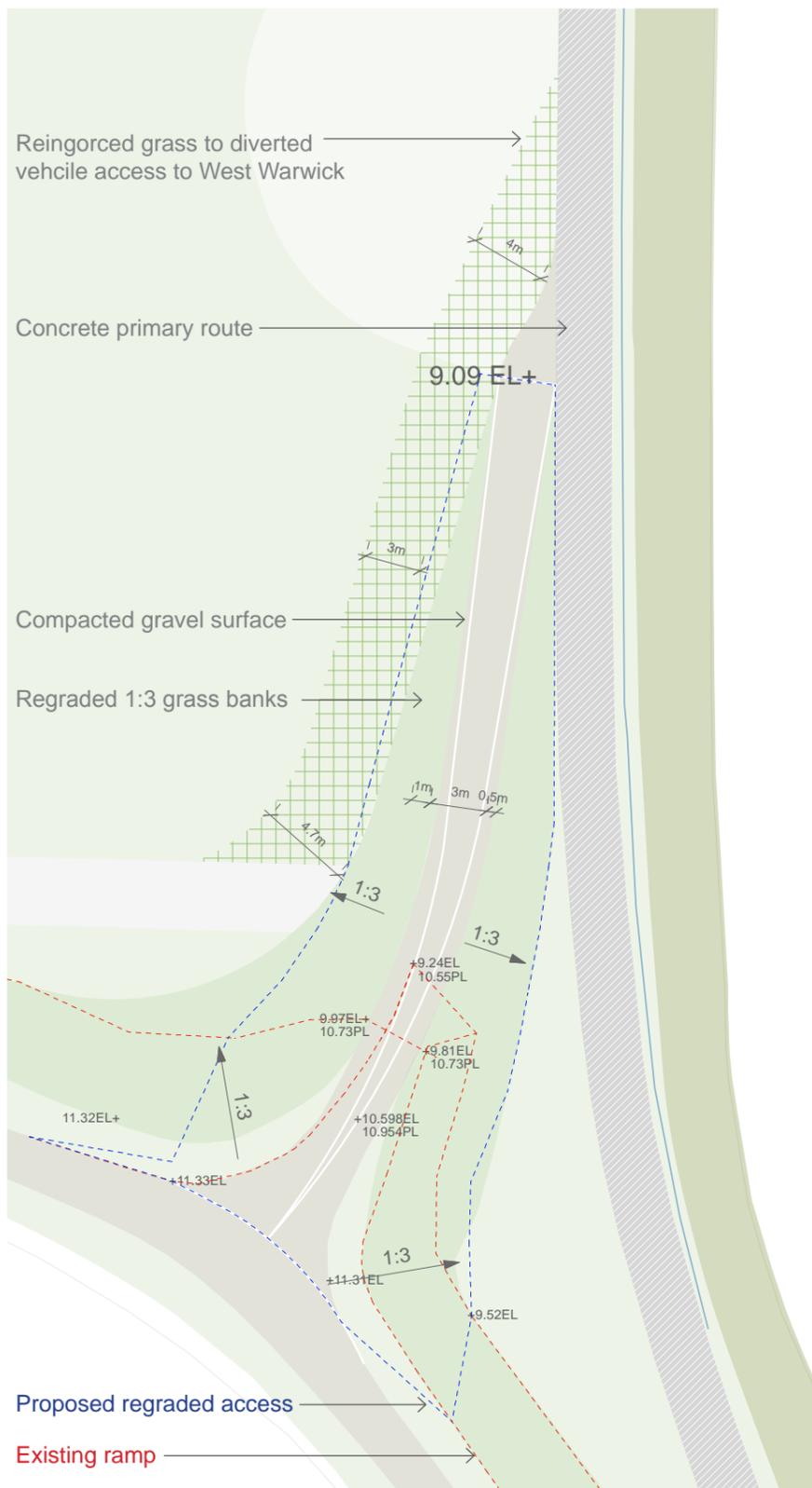
Timber surface 'folds' to create seating features



Undulating Timber Platforms : Seating, play & habitat

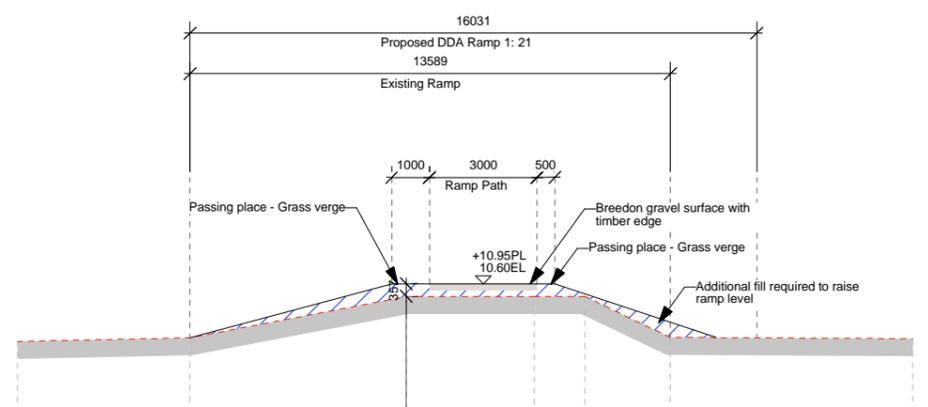


Meadow & Outdoor Education Space: Timber Platforms

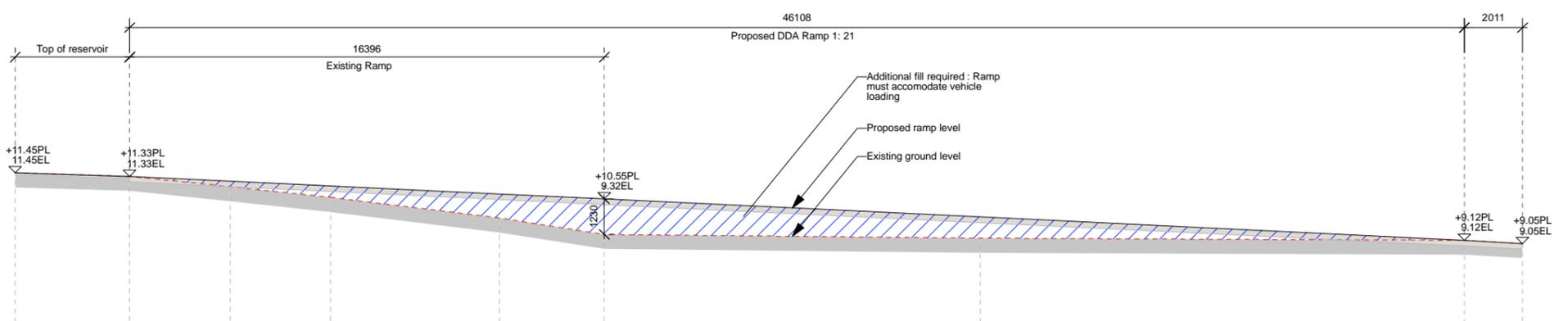


Plan : Ramp extension & regrading

The existing ramp to the top of East Warwick does not currently comply with DDA access requirements. By extending and re grading the current access a 1:21 slope we have the opportunity to create one DDA compliant route to the top of one of the raised reservoirs to give all visitors the opportunity to experience the impressive elevated views, a key feature of the site. The re graded access will be built on top of the existing ramp to ensure the structure of the reservoir is not undermined.

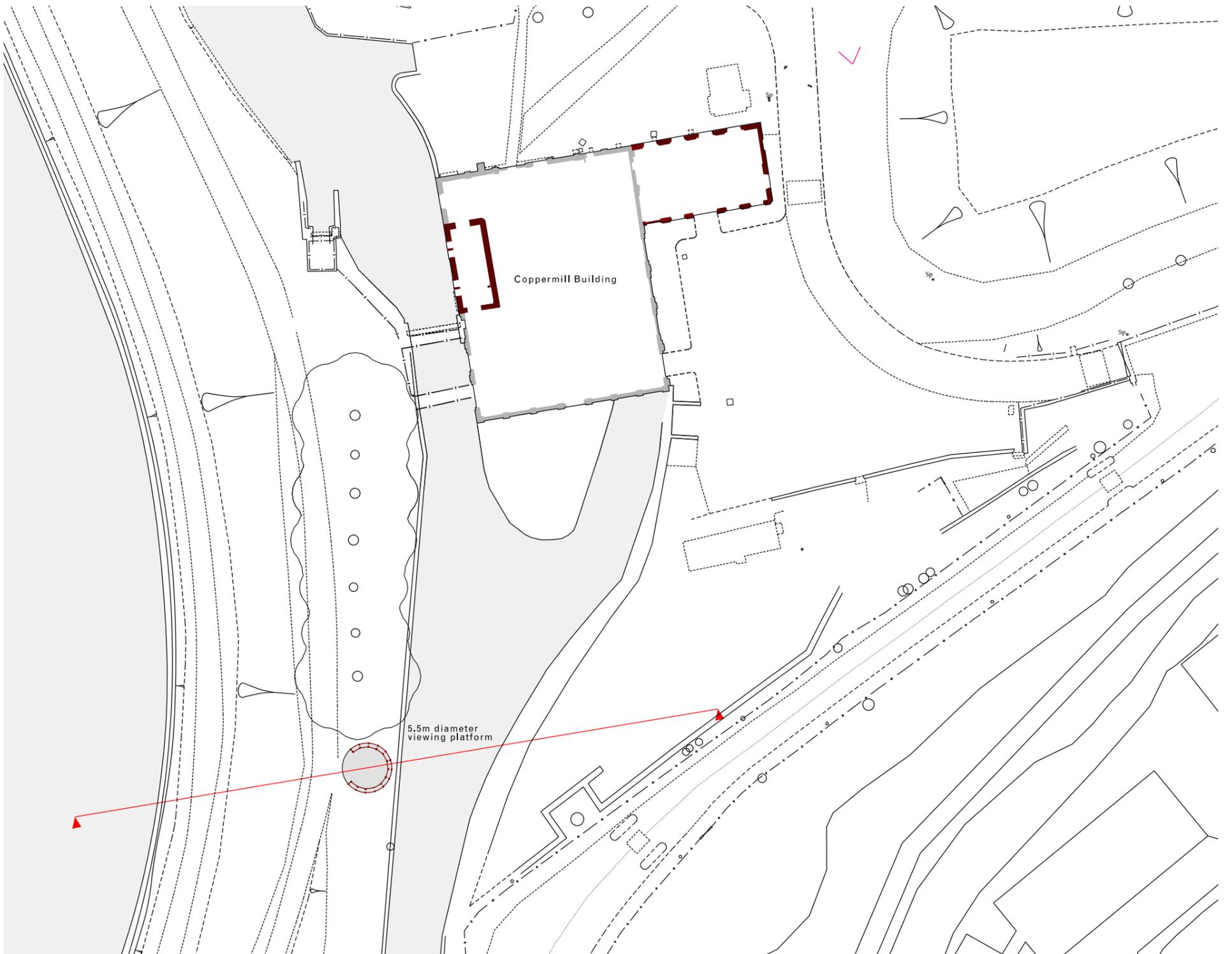


1. Cross Section : Ramp improvements

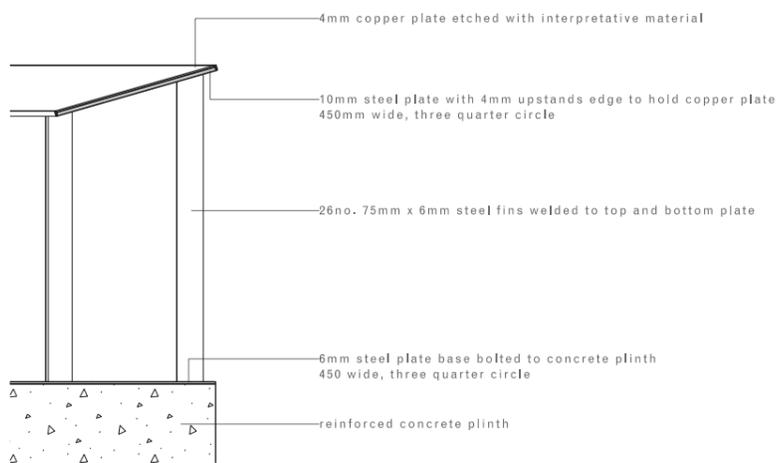


2. Longitudinal Section : Ramp improvements





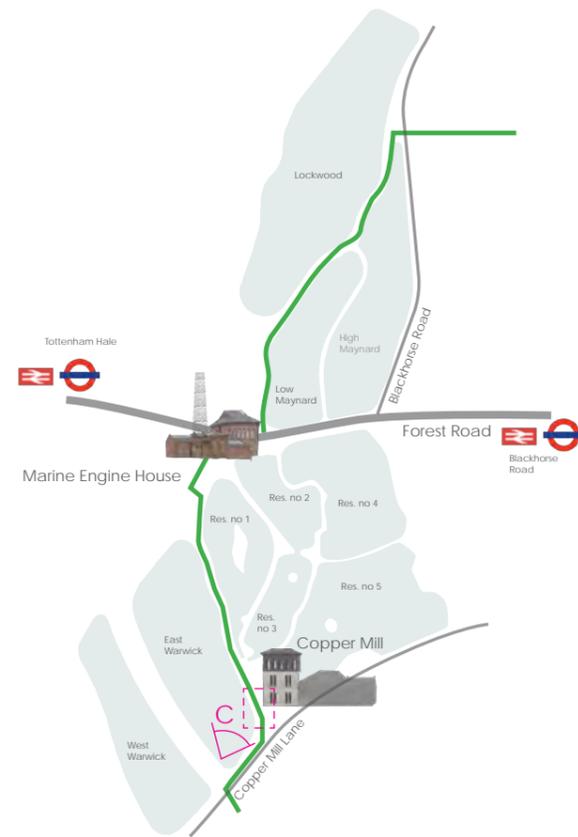
Site Plan with section line



Detail Section



Coppermill Building: 'Intellectual Access'

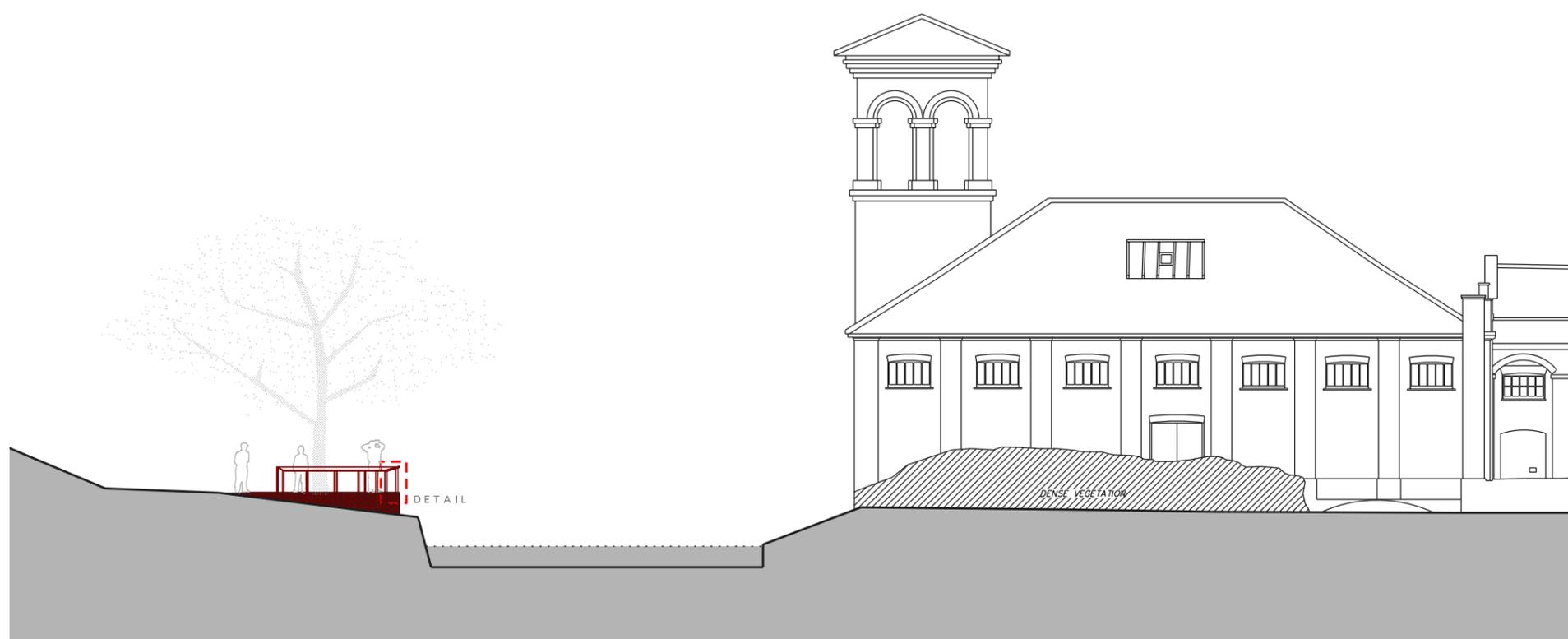


The constraints on access to the Coppermill Tower, and the costs of these have led us to review a range of options from full access to a high level viewing platform, to access at ground level only, to 'intellectual access'.

The modest benefits of physical access to the Coppermill are significantly outweighed by the costs (including access bridge across the Coppermill stream, fireproof separation, and stair and lift access.)

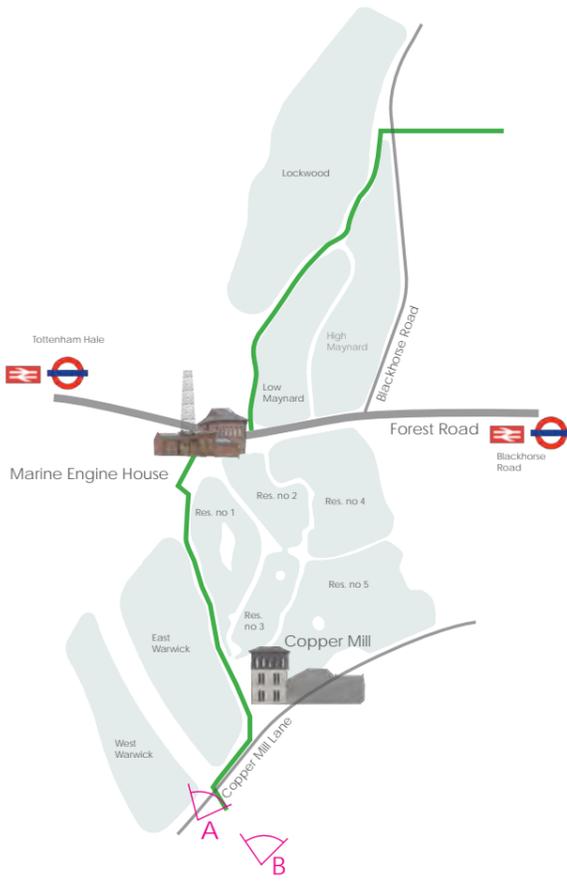
Our proposal responds to our research on the history of the building and site, taking the abstracted form of a waterwheel. A circular area would be formed at a bend in the stream and path, approaching the Coppermill. The low but deep balustrade marking out this area would hold interpretation material tracing the long history of the mill. The construction is proposed as three-quarters of a circle, with a diameter of 5.5 metres reflecting the last recorded waterwheel at the mill in 1865.

The canopies of the trees would be raised and benches placed in their shade for visitors to enjoy the historic setting of the mill and millpond.



Section
0 1 5





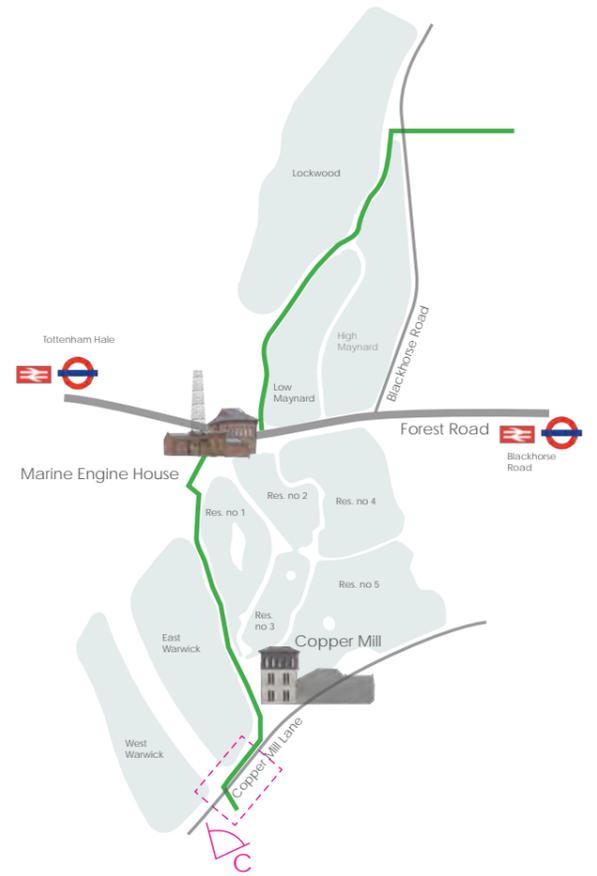
A: Existing Coppermill Lane and proposed entrance proposal



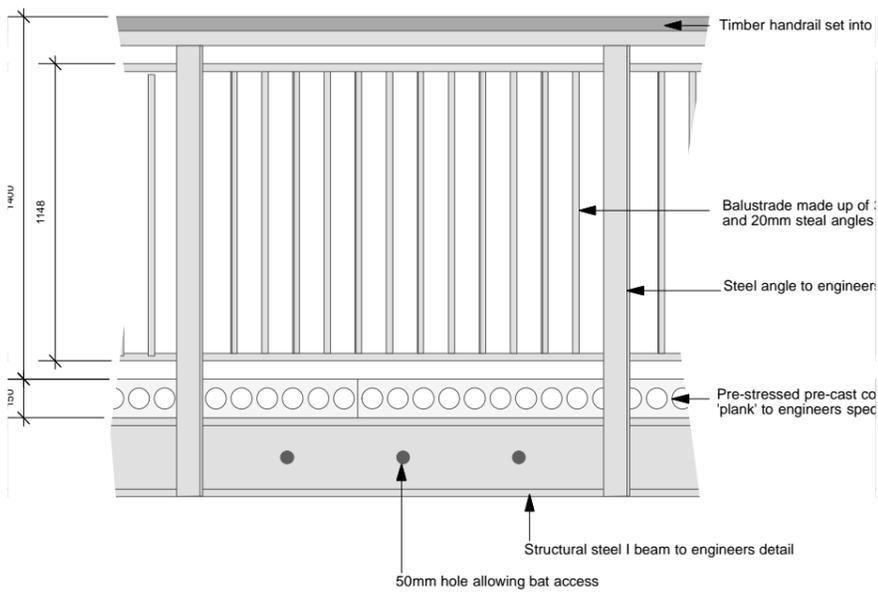
B: View from Walthamstow Marsh towards the southern edge of the site



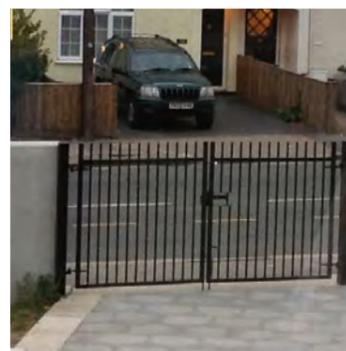
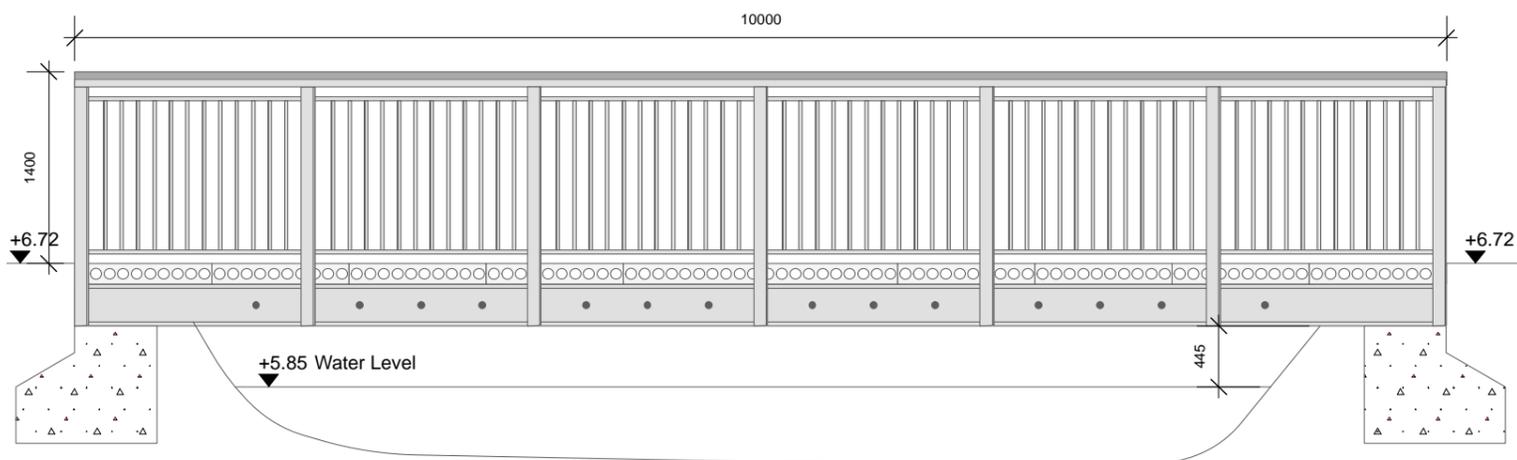
Coppermill Lane Entrance



C: Coppermill Lane Entrance - View looking over the Coppermill Lane Gateway Entrance



The HLF proposals provide a new 'gateway entrance' at Coppermill Lane which includes a new pedestrian cycle bridge over the Coppermill Stream which connects to the primary pedestrian route. Similar to the other site entrances a concrete threshold is proposed to define the entrance and create a distinctive threshold feature alerting visitors that they are entering a distinctive space. The gateway entrance contains the same suite of entrance furniture e.g. signage, in ground & vertical to create a distinct identity and provide continuity across this large site.





A number of key locations around the site have been identified as best placed to carry interpretation.

These fall into a number of categories:

- The entrance to the site
- The Marine Engine House
- The Coppermill Building
- Key points around the Southern and Northern Reservoirs
- Hides

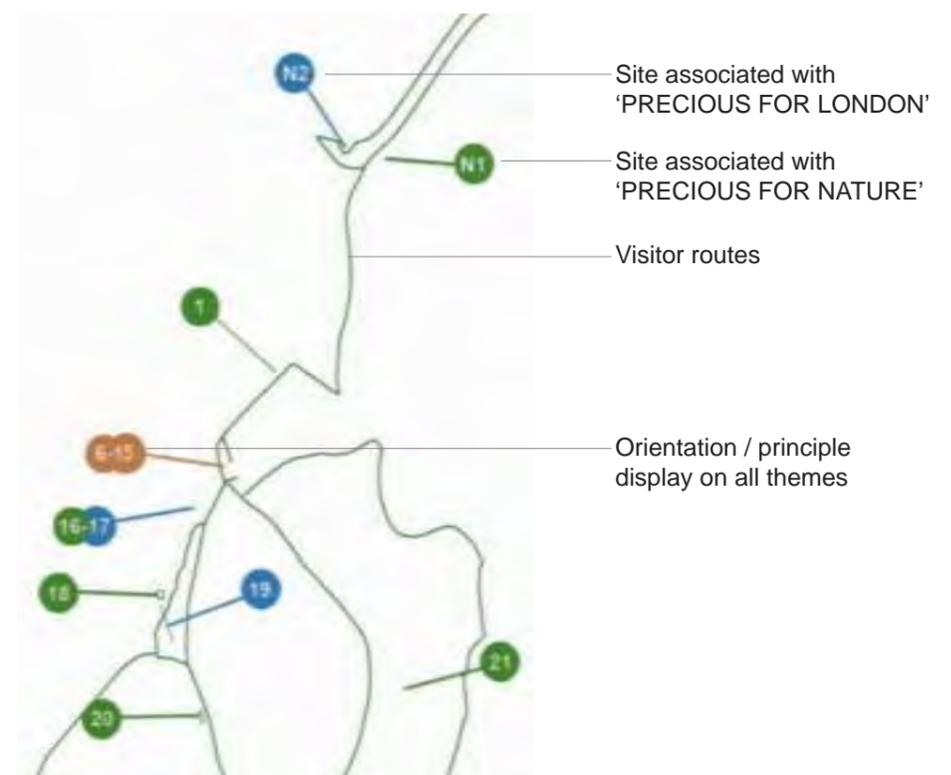
Early content themes have been identified and each is interpreted at a location that best relates to that theme. These fall into three categories:

- Precious for London
- Precious for Nature
- Precious for You

The interpretation within the landscape should be subtle and not feel out of place in its setting. The use of art installation pieces and interpretation can work well to allow for less didactic presentations that still reinforce the themes covered in the permanent exhibition.

Three types of interpretation within the landscape has been identified, the brief for which will be developed at Stage D -

- Site Orientation
- Directional Signage
- Heritage Interpretation



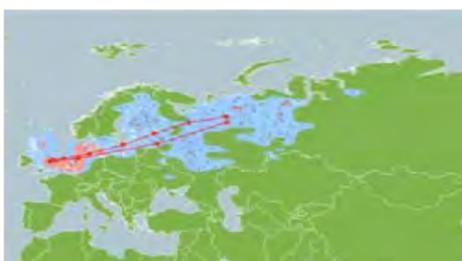
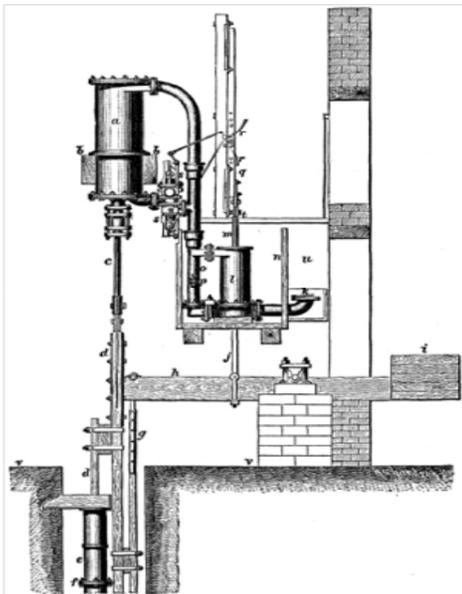


Points of interpretation from Forest Road to the Marine Engine House

- 1 Ferry Lane/ Forest Road Bridge**
The Lea has always been an edge, a boundary. Now it's the boundary between Waltham Forest and Haringey; previously it's been the boundary between London and Essex; and between the Saxons and Vikings.
- 2 Ferry Boat Inn**
In the 19th century it was known as the Walthamstow Ferry fishery or Day's Water, its headquarters being at the Ferry Boat inn. A 15-lb salmon killed there in 1833 may have been the last to be recorded in the river Lea.
- 3 Forest Road/ Car Park Reed Beds**
Our cities have become too hard-surfaced. Storm rainwater rushes into the drains, causing flash flooding.
- 4 River Lea Diversion Boardwalk**
The River Lea has always had several branches. This used to be the main branch until the Lockwood reservoir blocked it.
- 5 Stock Pond**
There were six fisheries in Walthamstow manor in 1066.







General Orientation to the site

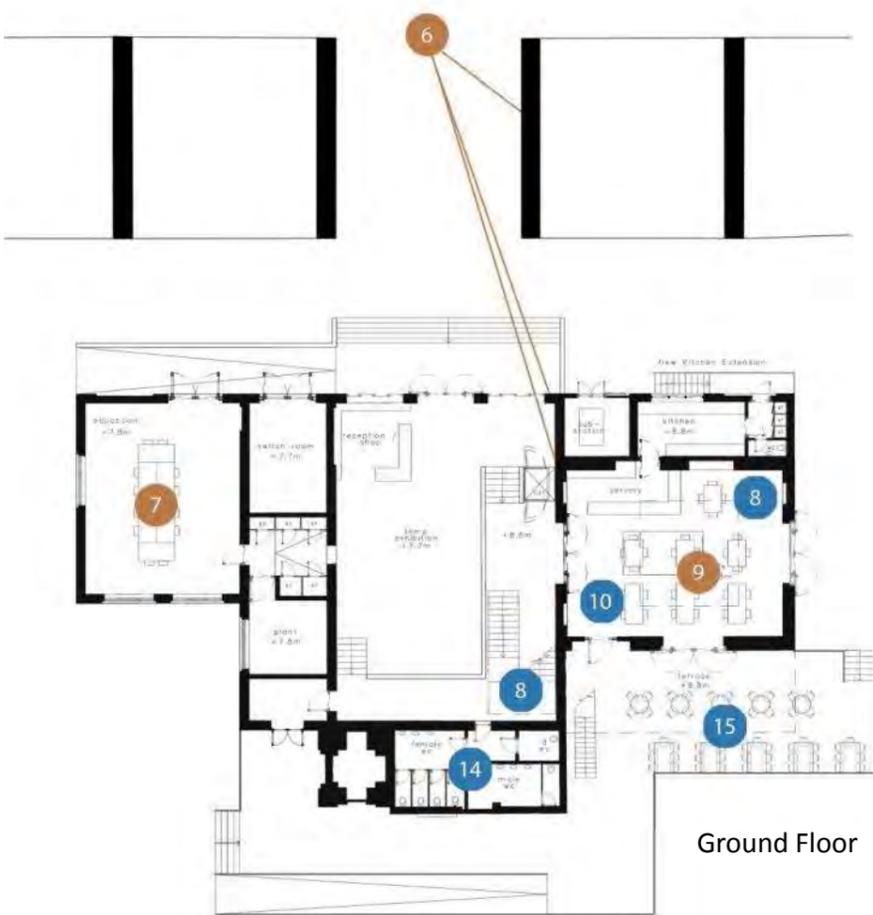
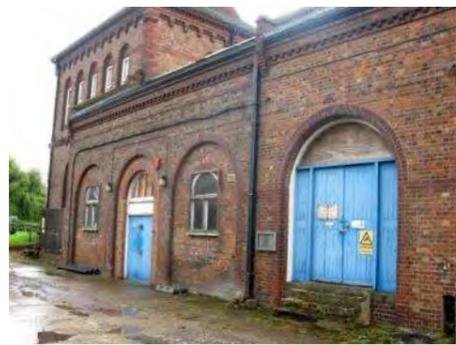
Permanent Exhibition on themes of;

- Walthamstow Reservoir background history
- The industrial revolution of water supply
- Steam Power
- Water Aid
- The WC
- Bird Migration
- The Landscape of the region
- The Growth of London
- Sustainability
- The Water Cycle
- Water Efficiency
- Water Treatment Process
- Waste Water Treatment Process

Education Programmes on

- Water science
- Archaeology
- Engineering
- Migration
- Sustainability
- The Water Cycle
- Water Efficiency
- Water Treatment Process
- Waste Water Treatment Process

Programme of Temporary Exhibitions



6 Railway Bridge / Exterior of Marine Engine House / Reception / Changing Displays

Arrival point information - site map / location of wildlife species / general safety & conservation information / opening & closing times etc.

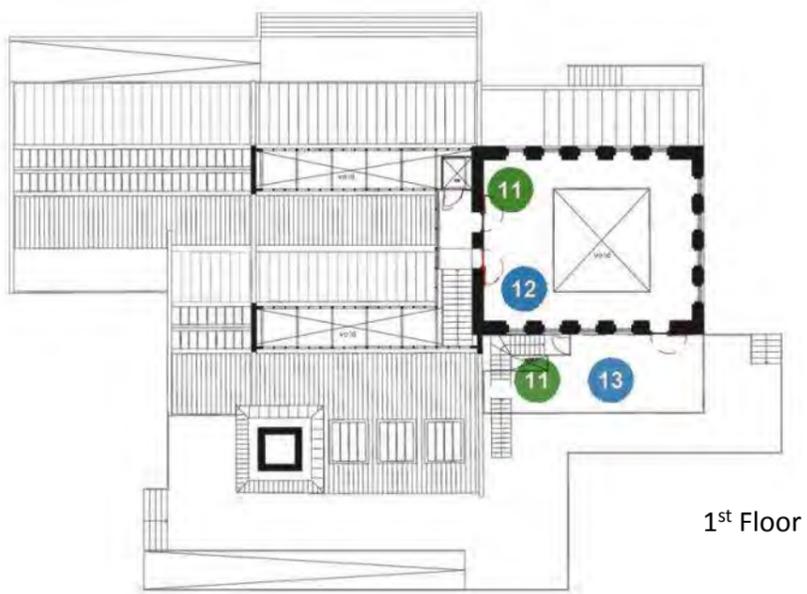
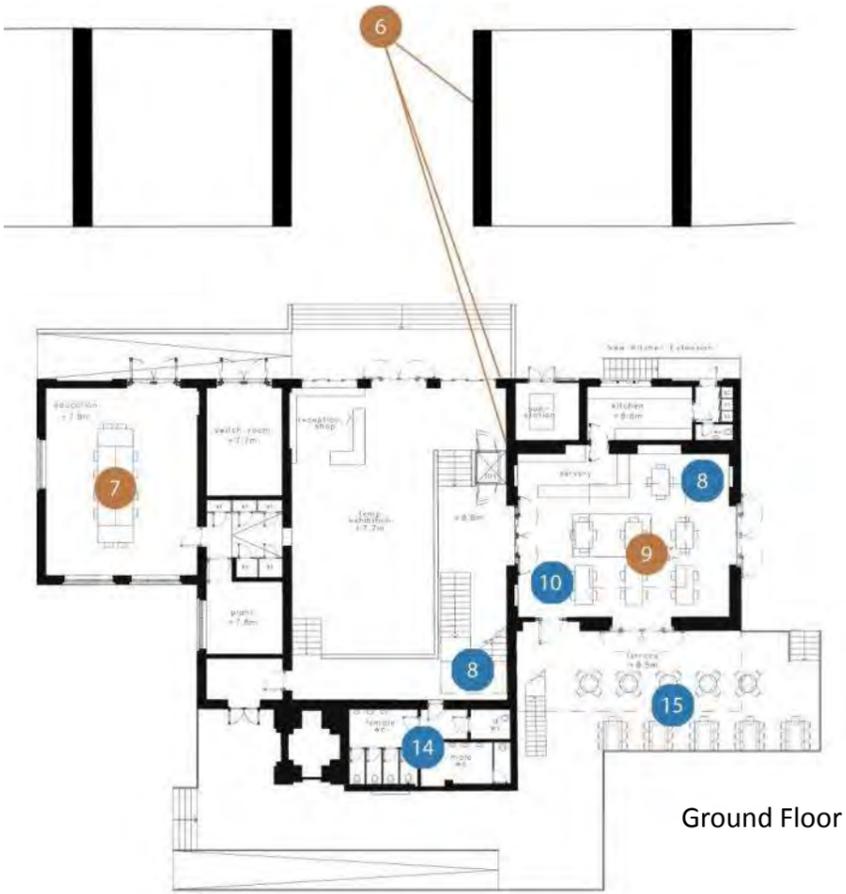
7 Education Programmes – Turbine Hall

Education programmes centred around :

- Plumbed-in laboratory benches
- Boxes of archaeological, natural historical and engineering objects for hands-on exploration (nonvaluable, or facsimiles of originals)
- Visual taster (film projection?) of material / stories on engineering and ecology
- Water conservation messages
- Water use in daily life



The displays should be a mix of interactive, static, text based and creative artistic installations (ideally created as part of the education programme)

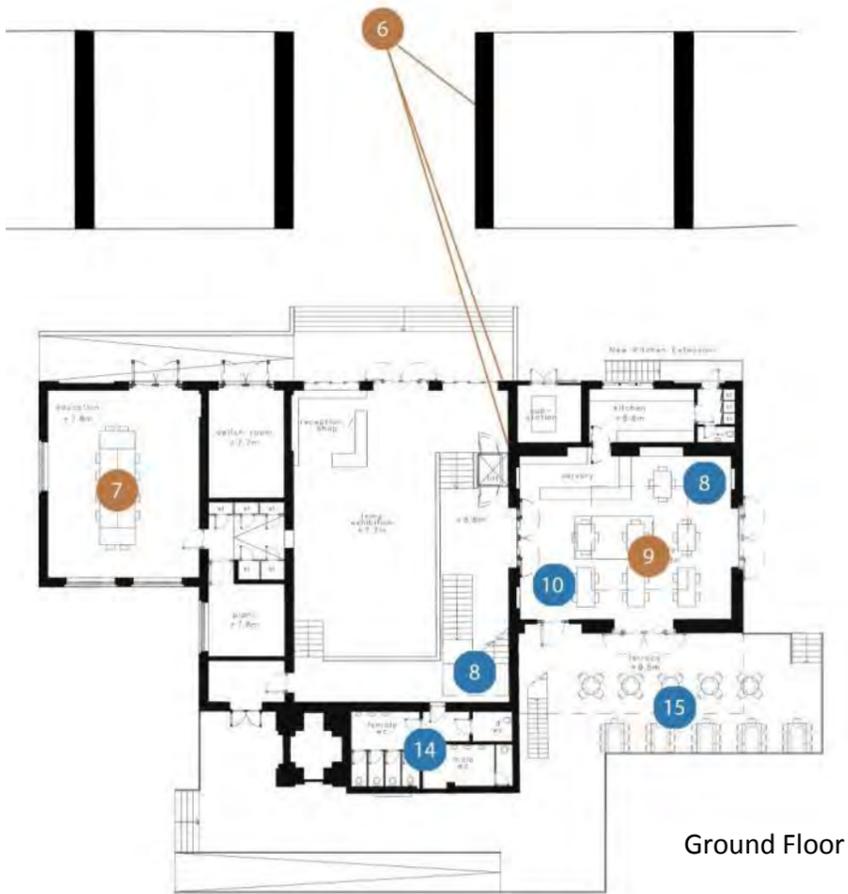
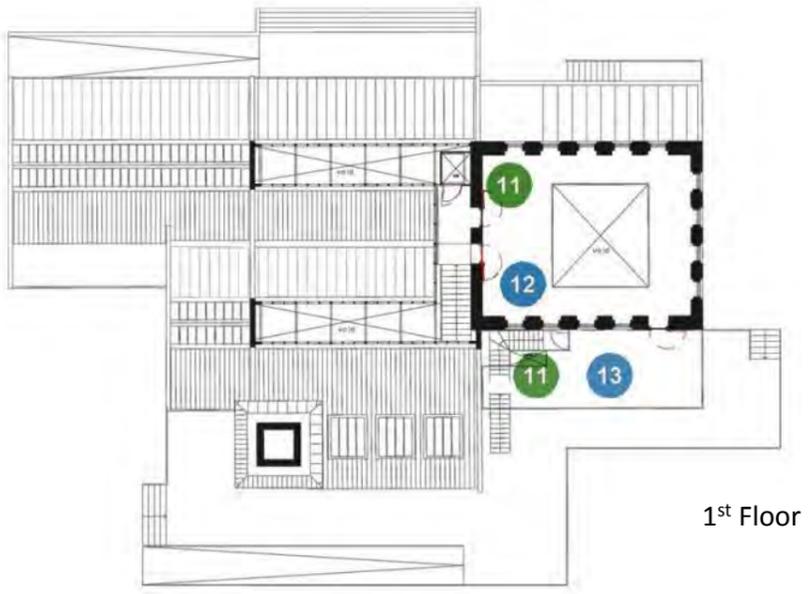


Permanent Exhibition - Triple Engine Room

- 8 Cholera is still rife in Africa and Asia. It's a disease of poverty, not of the tropics. Water Aid supports investment separating supply and wastewater (?) – the same decisive step taken by London in the 1850s.
- 9 Sculptural display on theme of 'Precious for You' with overhead display linked to engine tank.
- 10 Steam power revolutionised water supply and wastewater management in the 1850s. The safe way to drink was to drink beer or tea. With a water intake far upstream from the city (the Coppermill), pressurised water supply (the steam pump), filtration (at Lea Bridge Road), the recently invented water closet and Bazalgette's interceptor sewers, London's water was made safe, freeing the city to grow from 1m to 6m in 50 years.
- 11 Little Egrets winter in the Mediterranean and summer in Walthamstow. They are a recent arrival in South England (a sign of global climate change).

The reservoirs also host birds from Southern Africa to the Arctic Circle (and also invasive species multiplying with global trade).

Swifts navigate 3000km migrations from the Southern hemisphere, travelling between temperate summers. They predominantly nest in urban areas and have developed a symbiosis with humans. [Bats are less tolerant, but still connected to our habitats: they live in the places that we have abandoned. With the creation of a masonry structure, in the place where the chimney stood until the 1950s, it can be demonstrated that buildings and cities can support our symbiosis.



Permanent Exhibition - Triple Engine Room

- 12** Before humans settled the area, the landscape was restless, always changing. The Lea emerged at the last Ice Age, when an ice lake blocked the Thames and drove it 30km south to its current course at the edge of its basin, eroding the valley through layers of accumulated gravel.

Under human occupation change has accelerated, first fitting into natural constraints, then progressively ignoring and abusing them. Despite this, the valley's first inhabitants, its wetland wildlife, have proved remarkably resilient, adapting themselves to co-exist with us.

- 13** Tottenham High Road follows the line of the old Roman Road north out of London (London to York). You can see its line marked out by tall buildings, from the Shard at London Bridge, past the Gherkin just off Bishopsgate, to XXX at Tottenham Green.



Permanent Exhibition - WC's and Cafe Terrace

- 14** Permanent Exhibition – WCs and Cafe Terrace
Until the 19th century, human waste was collected 'dry' by the 'night-soil men', and sold to farmers as fertiliser, but with London's growth much seeped into rivers. The 1850's transformation waste used to be flushed out into the Thames. This made beaches dirty and caused algal blooms (eutrophication). Thames Water's sewage treatment now extracts the nitrates and phosphates, sells them as fertilisers or uses them as fuel. The Thames Tideway project also addresses river/ estuary / marine sewage discharge.

Kingston upon Thames has narrowly avoided being flooded by sewage after a bus sized 'Fatberg' has been cleared from its sewers. This 15 tonne ball of grease and sanity wipes is a perfect example of the pressures placed on London's sewage system by modern life in a growing city and reinforces Thames Water's message of 'bin it – don't block it'

- 15** This building used to house a coal-powered steam pump to move water about the city; now it is heated by a heat exchanger in the Coppermill Stream. Ground and air source heat pumps are part of a series of sustainable technologies reducing (but not eliminating) our dependence on fossil fuels.

The interpretation within the WCs could be text based – simple messages about water use above the taps or more detailed information on the back of the cubical doors or above the urinals. The use of simple iconography could be used for impact and perhaps to link to some of the themes covered in the permanent exhibition.



Example of graphics to cubicle doors at London's National Maritime Museum

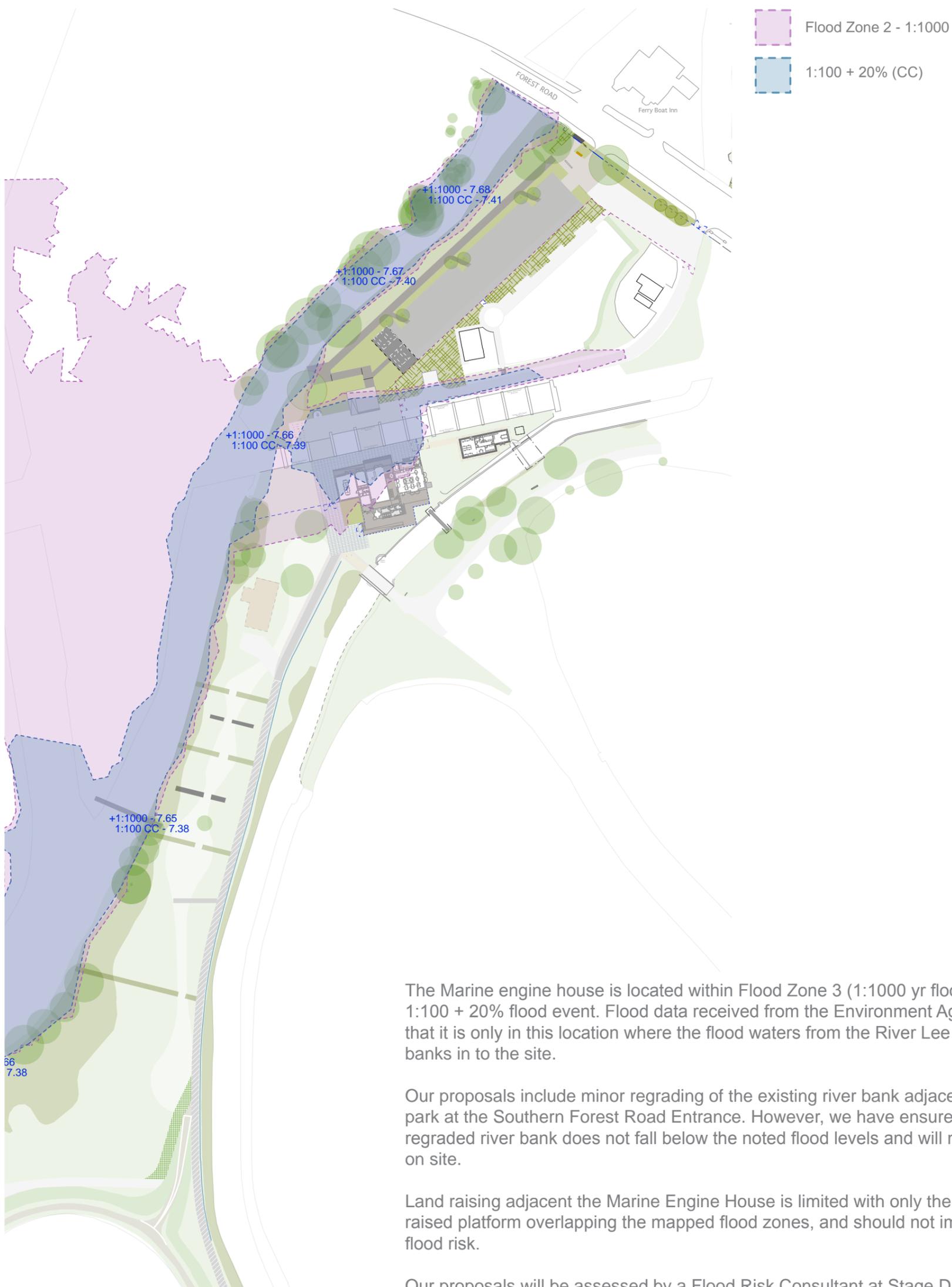


The interpretation within the landscape should be subtle and not feel out of place in its setting. The use of art installation pieces and interpretation can work well to allow for less didactic presentations that still reinforce the themes covered in the permanent exhibition.

Three types of interpretation within the landscape has been identified, the brief for which will be developed at Stage D -

- Site Orientation
- Directional Signage
- Heritage Interpretation





The Marine engine house is located within Flood Zone 3 (1:1000 yr flood event) and a 1:100 + 20% flood event. Flood data received from the Environment Agency illustrates that it is only in this location where the flood waters from the River Lee break over the river banks in to the site.

Our proposals include minor regrading of the existing river bank adjacent the existing car park at the Southern Forest Road Entrance. However, we have ensured that the top of the regraded river bank does not fall below the noted flood levels and will not increase flood risk on site.

Land raising adjacent the Marine Engine House is limited with only the northern edge of the raised platform overlapping the mapped flood zones, and should not impact the existing flood risk.

Our proposals will be assessed by a Flood Risk Consultant at Stage D.





 Contamination Risk: Moderate to High

Capita Symond's have completed a Phase 1 Contaminated Land Desk Study which has highlighted areas within the site which have a moderate to high risk of contamination. The keys areas at risk are -

- Area around the Marine Engine House
- Old filter beds at the existing Forest Road entrance
- Coppermill Building
- Dredged silt mounds to the north of East Warwick and adjacent the Coppermill building.

Based on our proposals Capita Symond's have advised that a further Phase 2 contamination site investigation may be required to ascertain if there is contamination and how this should be remediated. Due to our proposals this site investigation will be focused on the Marine Engine House, old filter beds and areas of dredged silt.

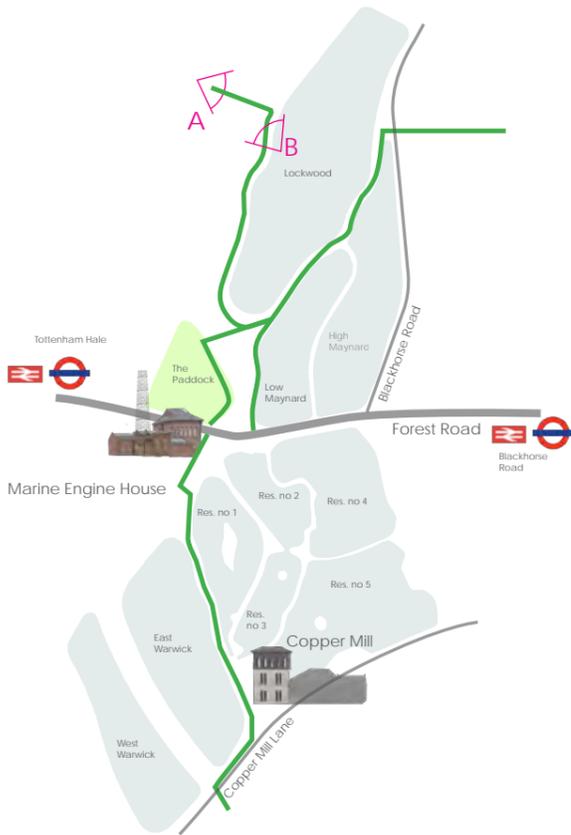
The full Phase 1 Contaminated Land Desk Study is provided in Appendix C.



Walthamstow Wetlands: Key Future Projects

A series of future projects have been identified which will support the HLF proposals as well as being key in achieving the vision for the site. The Key projects are noted below-

- Site Entrances : The Paddock & Stonebridge Lock
- Forest Road Improvements
- Tree House Hide
- Coppermill Viewing Tower
- Habitat Enhancements - Vision



A:View from Stonebridge Lock towards Lockwood Reservoir

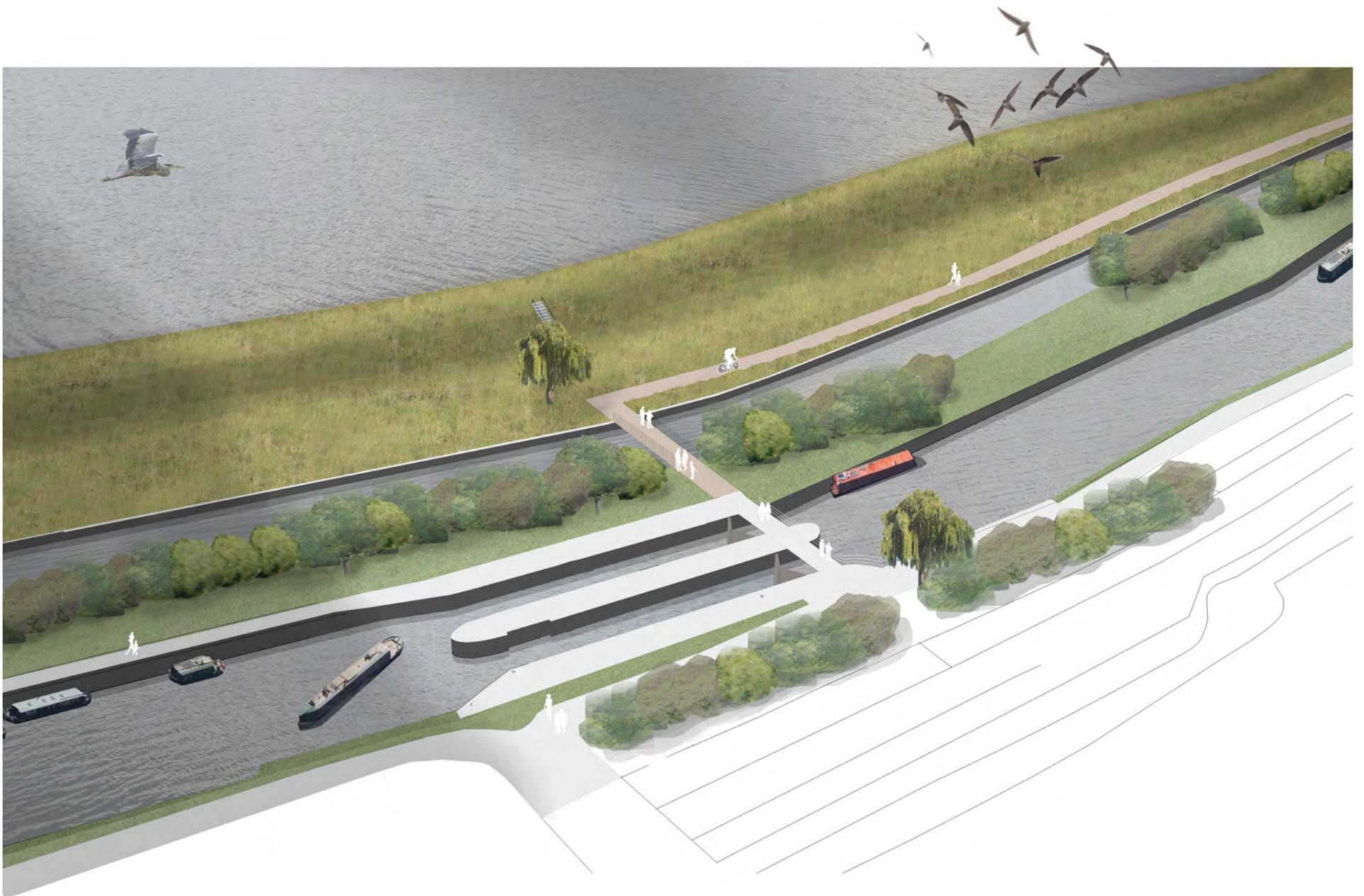
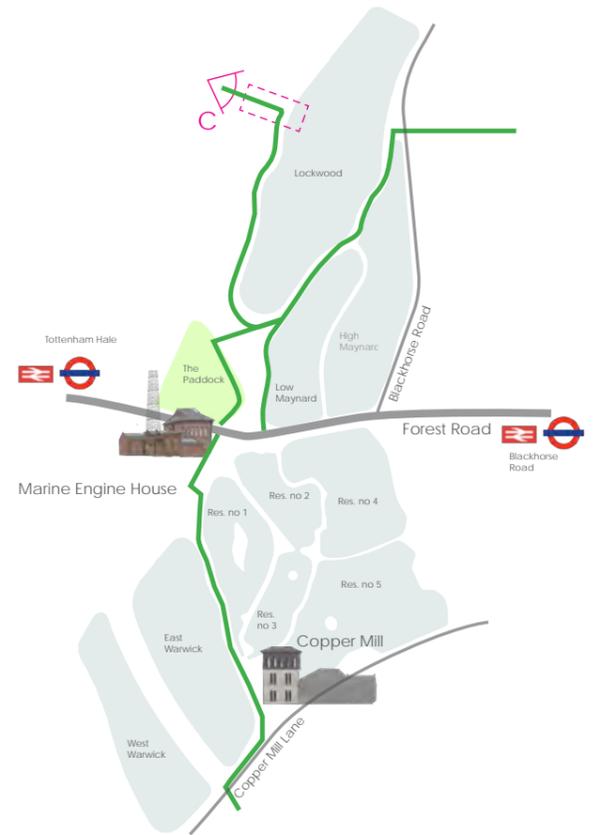


B:View over Stonebridge Lock from the top of Lockwood Reservoir

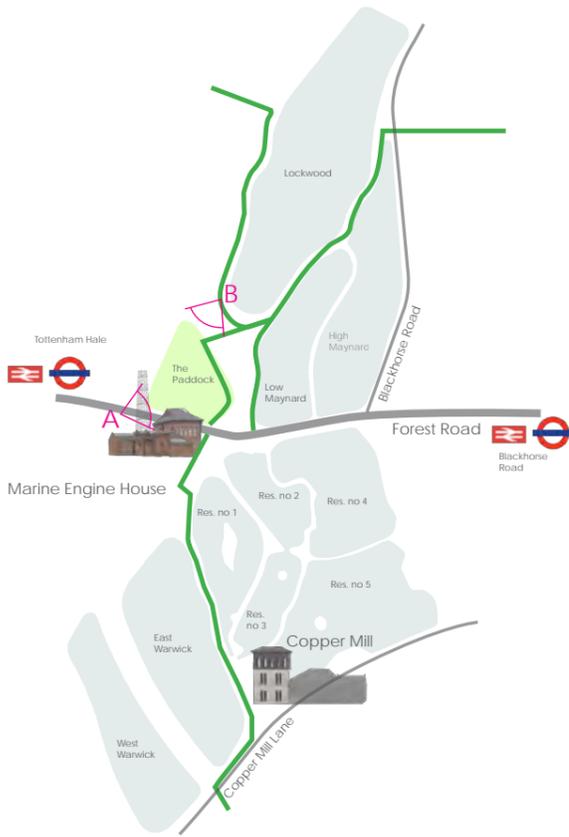
Key Future Projects: Stonebridge Lock Entrance

A new pedestrian bridge would be required to link the northern reservoirs to Stonebridge lock. A new set of concrete steps up the bank of Lockwood Reservoir would provide a prominent access to the top of the reservoir as well as preventing erosion of the bank. A new gravel footpath would continue south of the new bridge access along the bank of the River Lee and connect into the primary footpath.

A gateway entrance would be required on the Stonebridge Lock side of the bridge to prevent access to the bridge out of hours.



C.Coppermill Lane Entrance - View looking over the Coppermill Lane Entrance & Lane Approach



A:View of the Paddock entrance on Forest Road

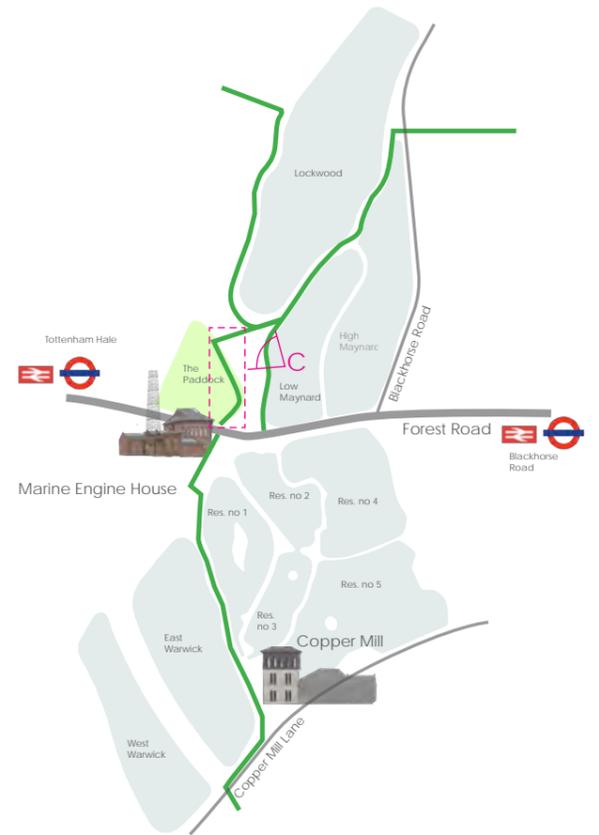


B:View over the Paddock from the top of Lockwood Reservoir

Key Future Projects: The Paddock Entrance

The Paddock entrance would create a pedestrian link between Forest Road and the northern reservoirs which is separate from the Thames Water Operational area and primary operational route.

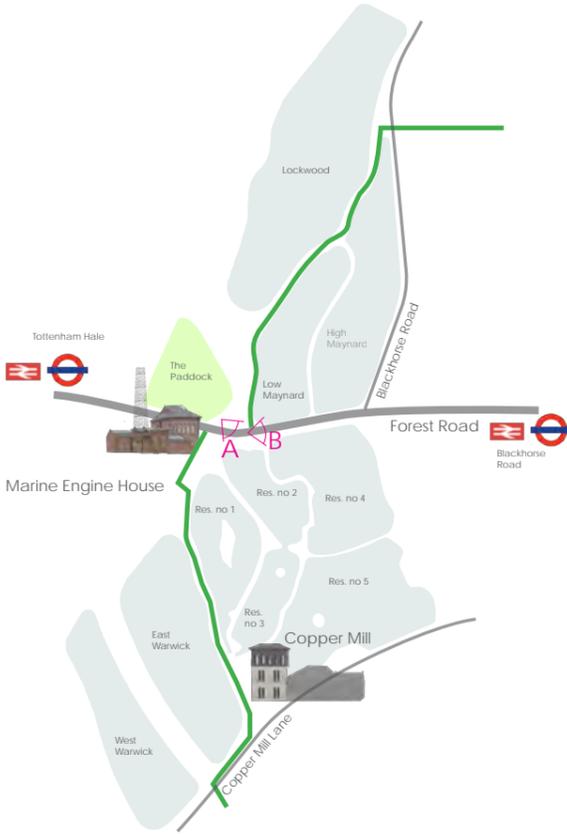
A new pedestrian bridge located at the northern extent of the Paddock would link the site into a large space to the south of Lockwood Reservoir. An additional hide/classroom would further activate this space creating an additional educational area on the northern site. A new pathway would link the bridge to the primary route allowing pedestrians to bypass the existing Thames Water Operational area.



C. The Paddock Entrance - View looking over the proposed Paddock entrance linking the northern reservoirs to the Paddock site



Key Future Projects: Forest Road Improvements



Forest Road is an important strategic link within the local area and regionally. The road is a key east-west link linking Waltham Forest and Harringay, as well as having two tube stops (Tottenham Hale & Blackhorse Road tube stop) located at the western and eastern extent respectively.

Currently Forest Road is not a comfortable environment for pedestrians with footpaths directly adjacent to the busy roadway and views over the reservoirs blocked by the Rail line or the reservoir embankments. As Forest Road is a key approach to Walthamstow Wetlands a series of improvements have been developed to improve the current road environment for pedestrians and promote the Walthamstow Wetlands by extending the wetlands along this roadway.



A: Existing railway wall along the southern edge of Forest Road

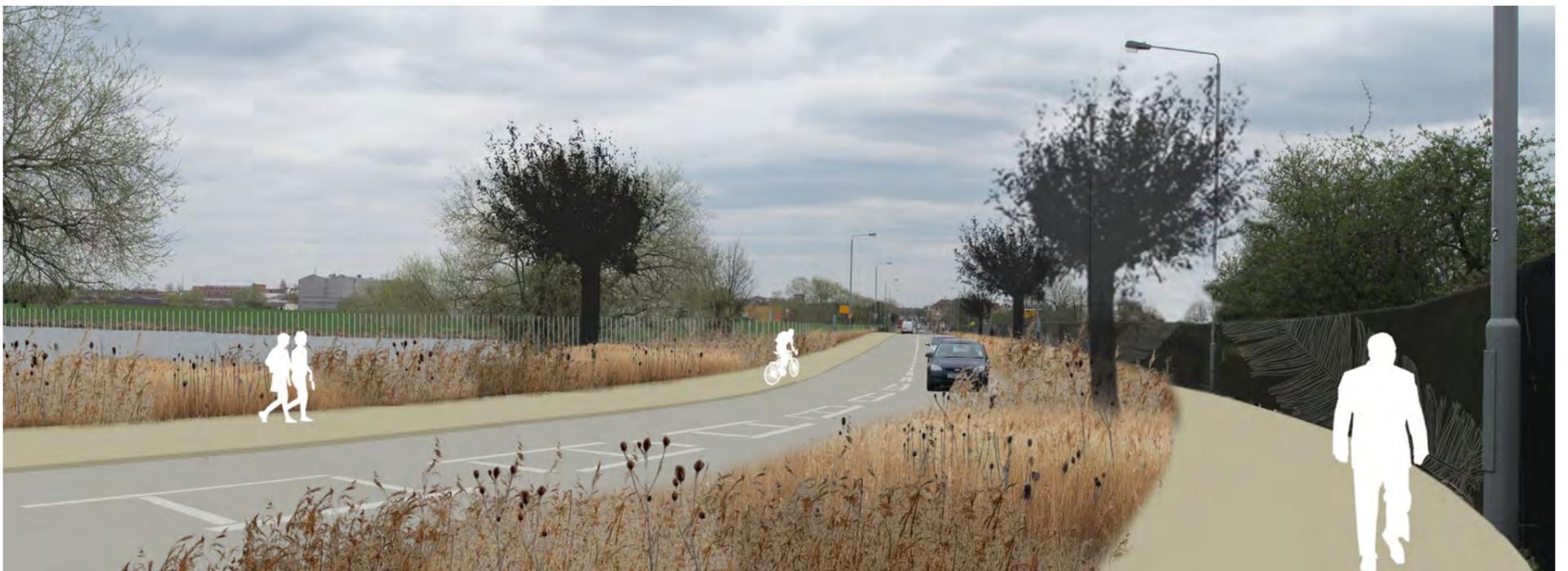
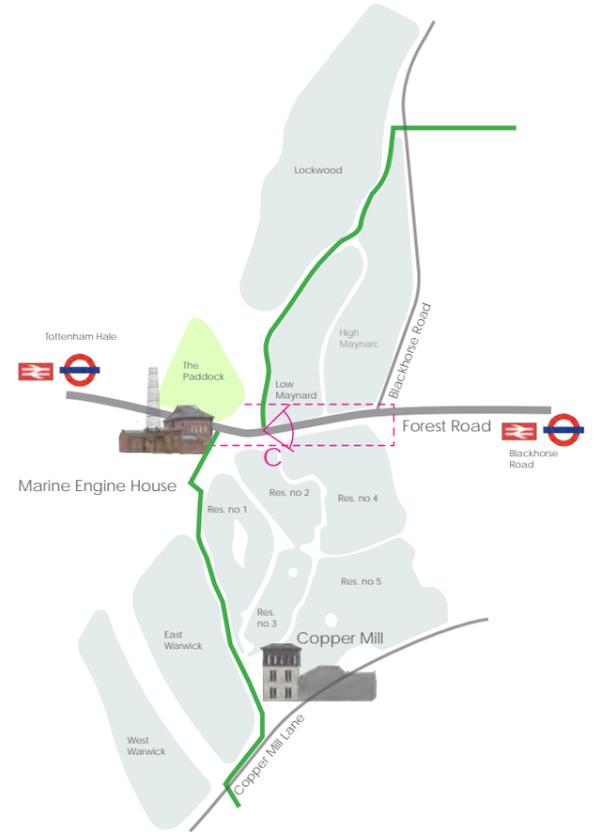


B: Existing view looking east along Forest Road

Key Future Projects: Forest Road Improvement

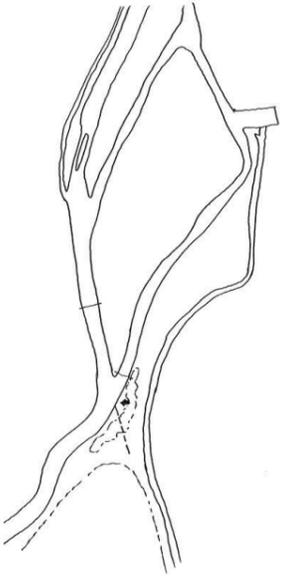
Key improvements include :

- Fence relocation & Wetland Edge: The relocation of the existing Walthamstow Wetlands fence line within a vegetated verge to extend the wetland aesthetic to Forest Road.
- SUDs verge: The establishment of a SUDs verge in the current bus lane location will promote sustainable water treatment , create a more attractive environment and create a buffer between the busy carriageway and the footpaths.
- Pedestrian Crossing Points: A new pedestrian crossing point is proposed adjacent to Forest Road South Entrance to create a pedestrian link with the North Forest Road entrance. Further detail on this is provided within Appendix A.
- Removal of advertising hoardings.

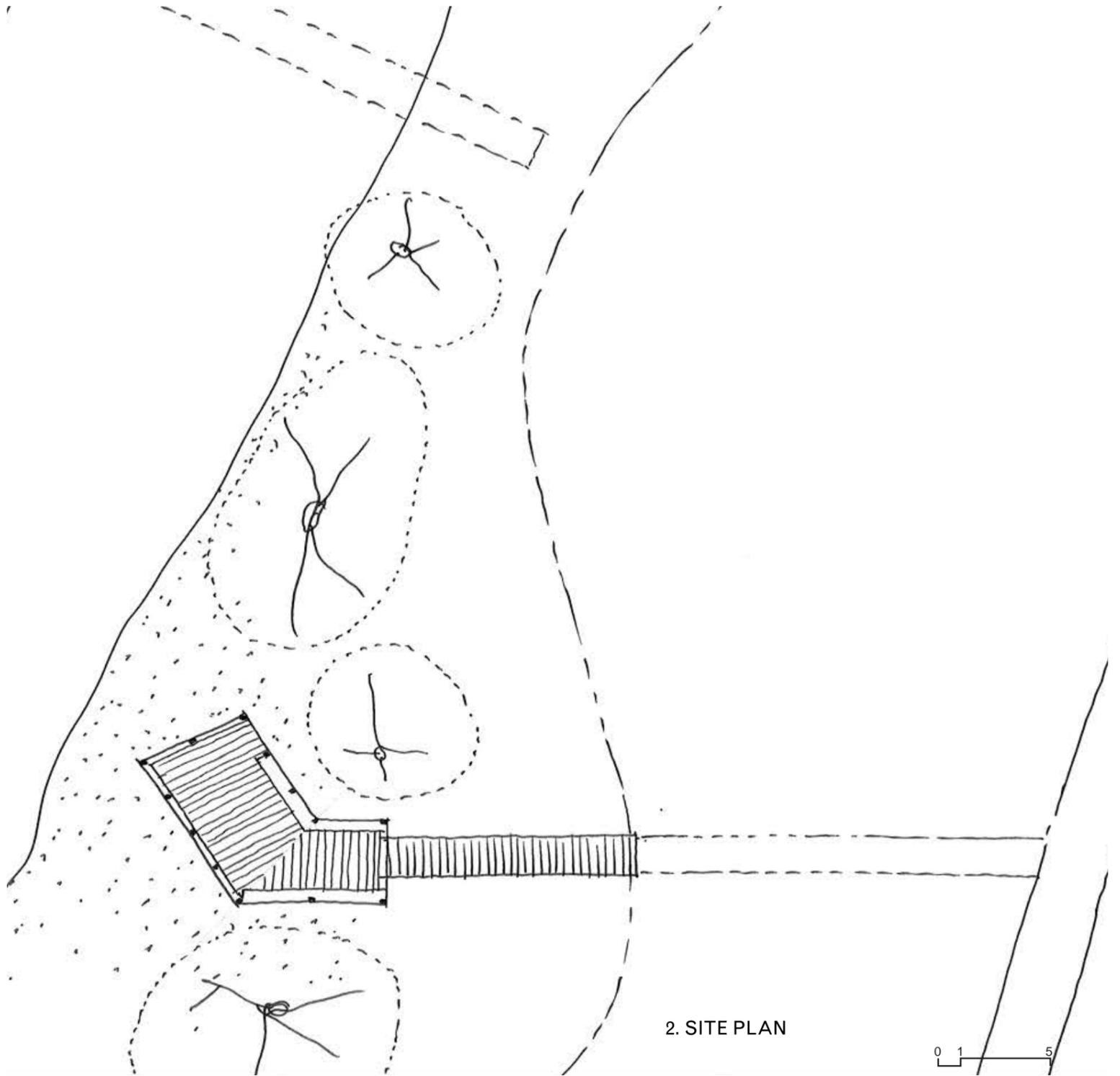


C:Forest Road Improvements

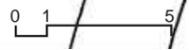




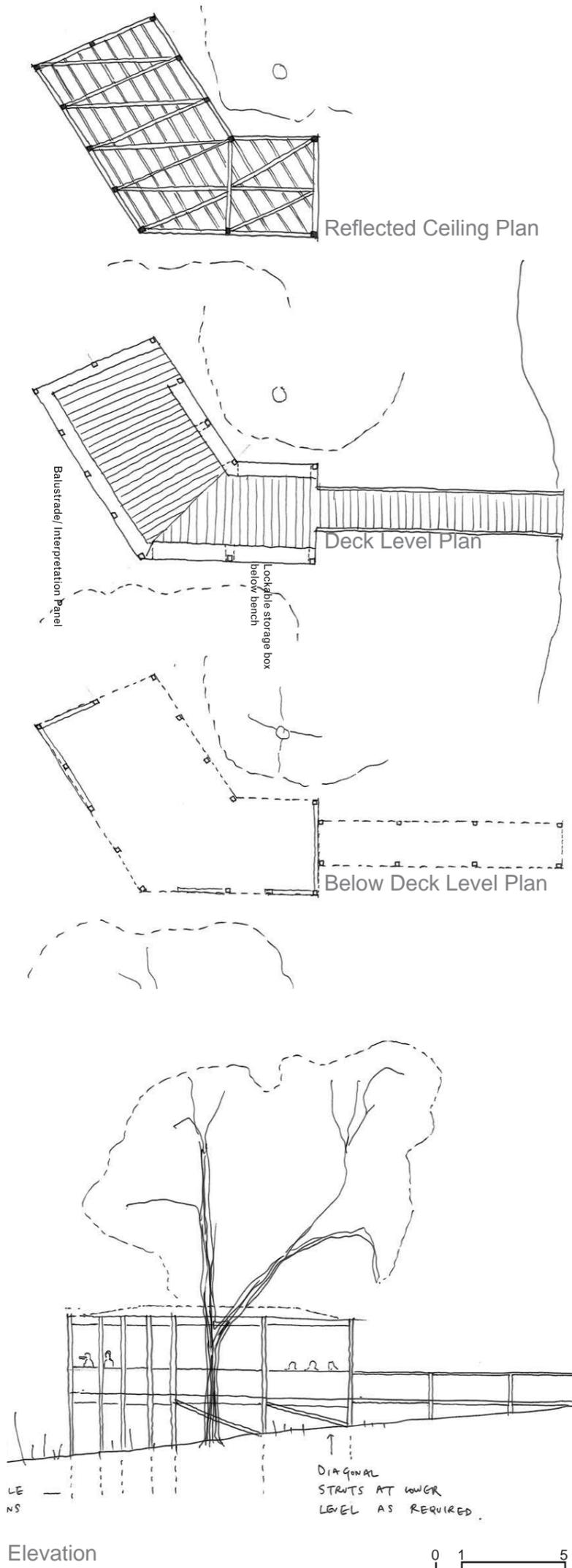
1. SITUATION PLAN



2. SITE PLAN



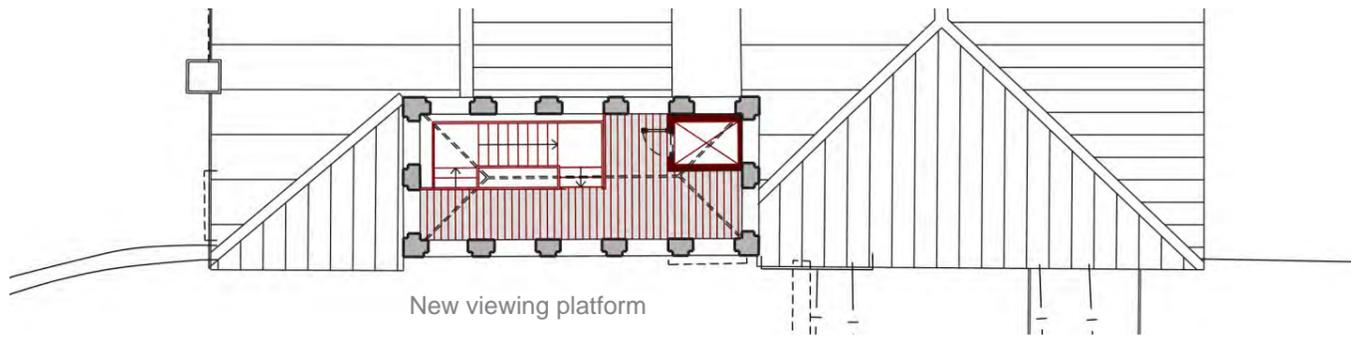
Key Future Projects: Tree House Classroom & Hides



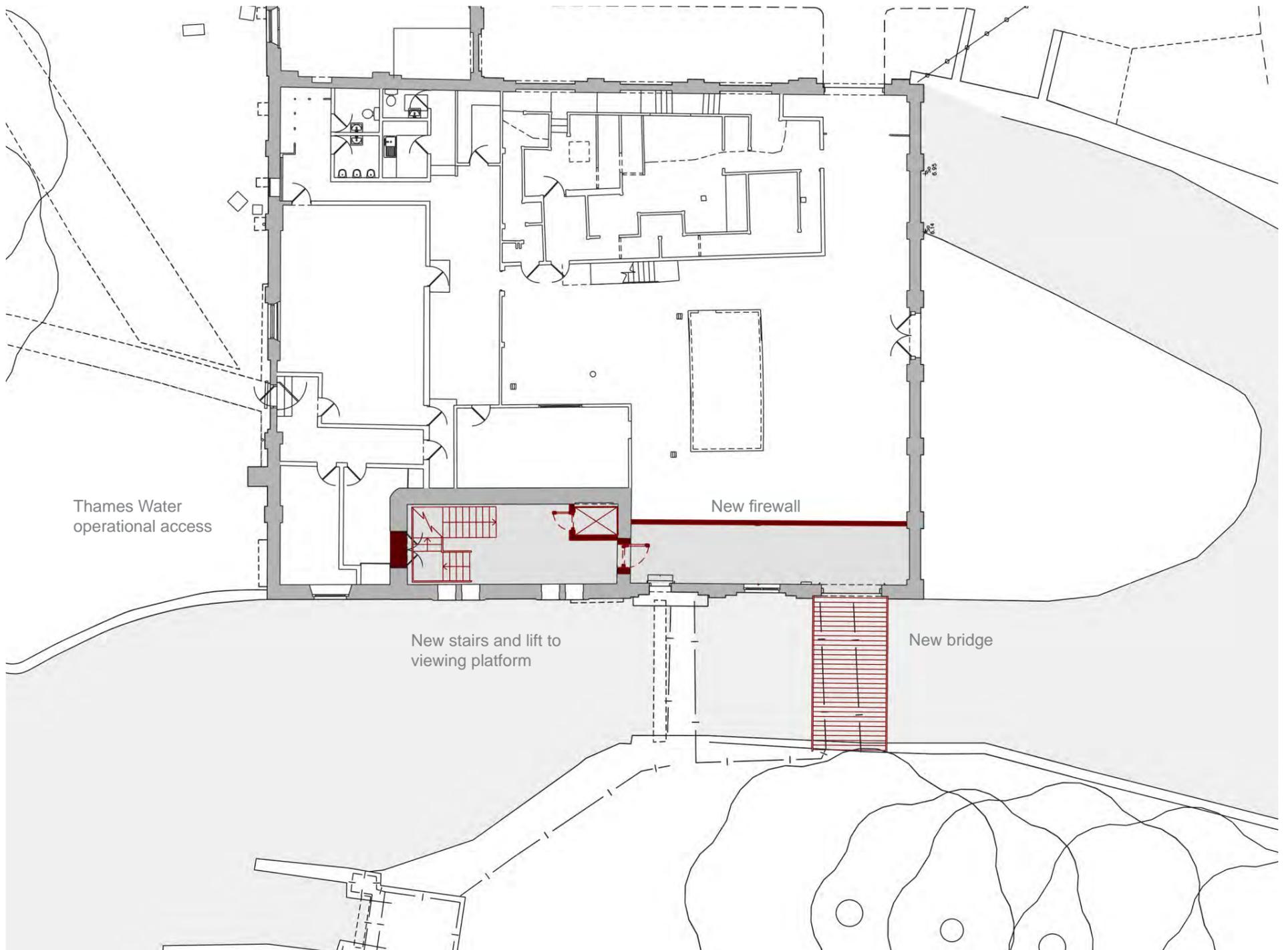
The classroom hide would be an outpost of the marine engine house in its reservoir landscape. The classroom wraps around a tree, reinforcing the integration of landscape and building, an inside/ outside space protected only with a simple roof and closely integrated into the canopy of the tree.

A railway carriage could be simply customised as a hide and would have a strong connection to the infrastructural nature of this site – both the London Overground and the Victoria line traverse this site.





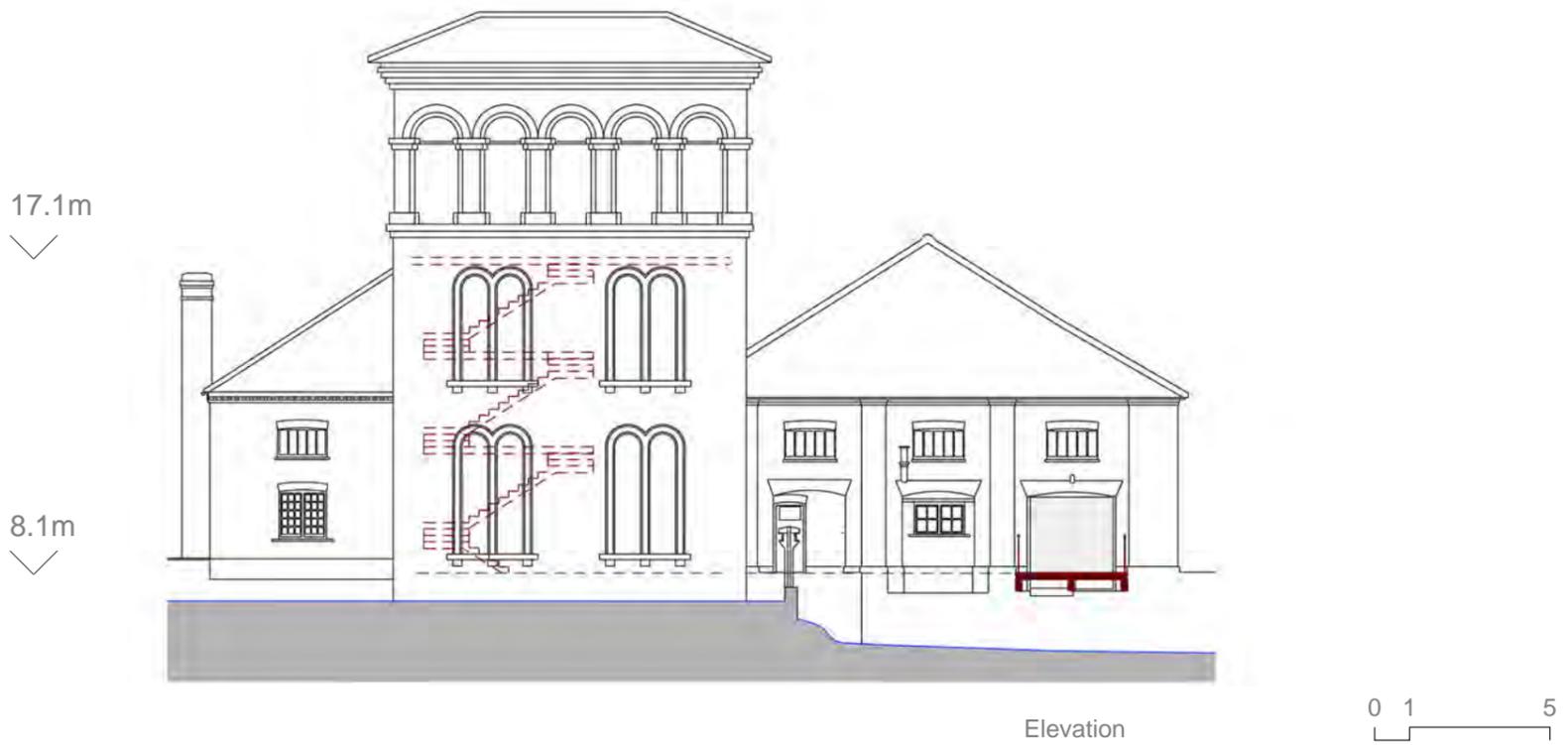
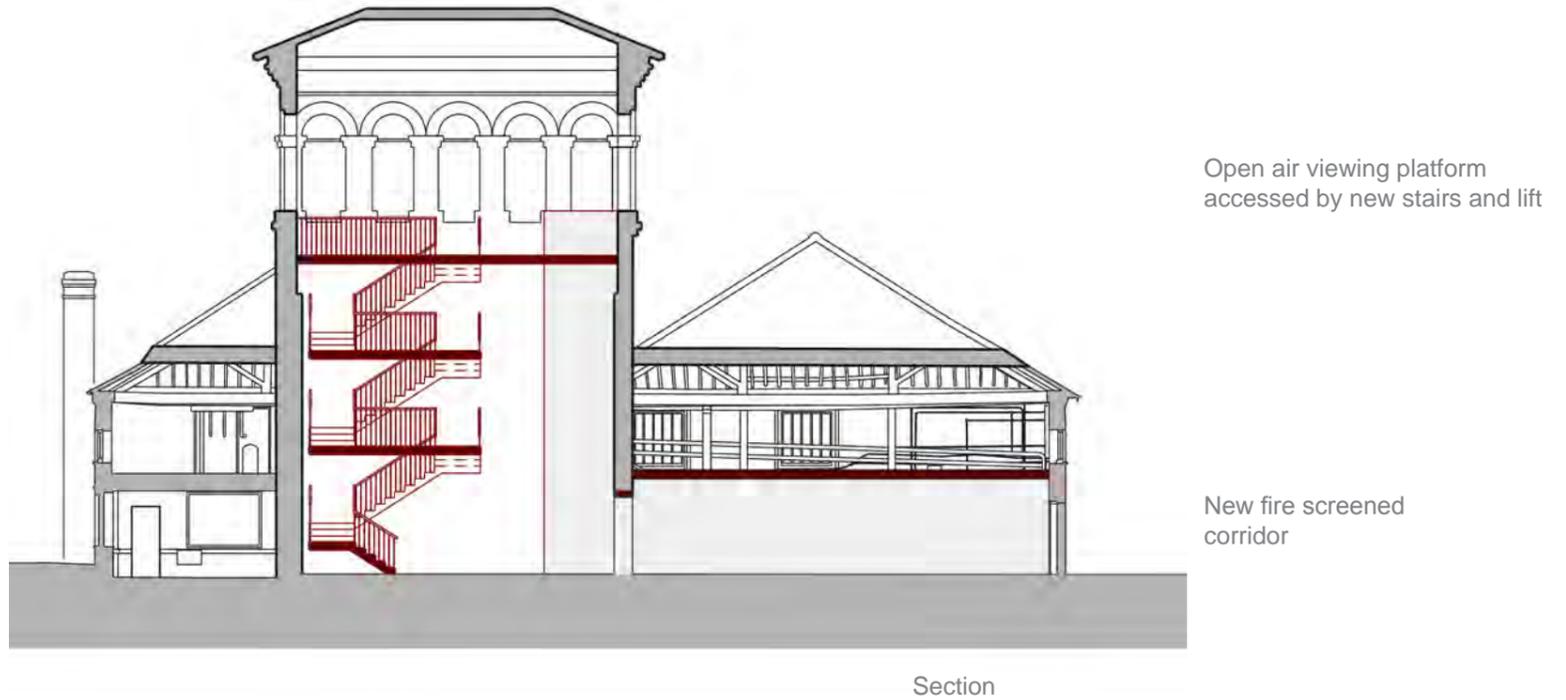
High Level Plan



Ground Level Plan



Key Future Projects: Coppermill Viewing Tower



The Coppermill tower's Italianate façade is a focus of the Coppermill lane entrance. The tower will house a viewing terrace at the southern end of the site, drawing attention to the mill's varied past and serve as an insight into its origins as a place of water power and its industrial heritage.

Responding to the original brief, public access to the Coppermill tower is organised from the west to maximise its connection to the new entry, and avoid interference with the operational area. The stair and lift are configured to form a continuous 9 metre long viewing platform looking west over the Warwick reservoirs. We are advised that step free access to the viewing platform is likely to be a requirement of the

heritage lottery Fund, and simply represents good practice. Finding a viable long-term use for the whole of the Coppermill building is challenging due to its remote location. The most compelling vision to emerge from discussions with project partners is that it would become the centre for a curatorial arts project (should it become surplus to Thames Water's requirements) focussing on the wetlands, the characterful open space of the Coppermill building could provide fantastic artists' studios and exhibition space.



Key Future Projects: Visionary Habitat Enhancements



Key Opportunities which support Walthamstow Reservoirs SSSI Species

-  Additional Island Creation built up from reservoir base.
-  Heronry Island on new proposed solid islands built up from reservoir base to support breeding grey herons in response to decline in numbers on site.
-  Reed Bed Creation: Reed beds around islands create protective zone for heron to feed on small fish. Margin will act as 'refuge' which is less accessible to larger birds. Additional habitat for Reed Warbler, Sedge Warbler, Reed Bunting, Shoveler, Gadwall & Bittern
-  Enhanced marginal vegetation to improve low nesting cover for duck including the planting of additional marginal and aquatic species and the management of existing scrub.

Key Opportunities which support Lee Valley SPA/RAMSAR species

-  There is a possibility that reservoirs No 2 & 3 be converted to low density locally native fish community to reduce competition between stocked fish and waterfowl for feeding on invertebrates.
-  Additional Island Creation for Gadwall & Shoveler built up from reservoir base
-  Low Maynard Course Fishing Enhancements: Carp from no2 and 3 reservoir relocated to maintain course fishing potential
-  Reed bed creation for overwintering/passage Shoveler, Gadwall and Bittern. New reed beds will improve habitat for Reed Warbler, Sedge Warbler & Reed Bunting

Key Opportunities which support Biodiversity Action Plan Key Species

-  Potential wetland scrape location
-  Kingfisher, Dragonfly & Butterfly Enhancements: Banks to Coppermill Stream to become Naturalised/improved. Pond/marshy habitat creation linked with new meadow
-  Water Vole & Amphibian Habitat Enhancements : Improved marginal habitat along water courses through new emergent and aquatic planting and existing cutting regime of the bank relaxed to allow natural growth
-  Bank Enhancements : Terracing / regrading of banks to improve and enhance bank vegetation
-  Sand Martin habitat: Sand bank/artificial nests

Activity Plan Enhancements

-  Bat Nesting Boxes : Bat boxes installed along existing stream corridor in existing trees
-  Amphibian & Reptile Habitat : To include log/rubble piles, 'wild corners', compost heaps, hibernacula etc
-  Bird Feeding Station within the Meadow

Potential West Warwick Reservoir Decommissioning

-  Roosting platforms in reed bed for Marsh Harrier habitat
-  Reed bed habitat creation for Reed Warbler, Sedge Warbler, Reed Bunting, Shoveler, Gadwall & Bittern,

Cormorant Islands : Management to existing islands once existing cormorant population have relocated

-  Existing islands managed to re-establish areas of shingle substrate and scrub vegetation for ground nesting species

Additional Habitat Enhancements

-  Floating Island to Lockwood Reservoir: Reed bed habitat creation for Reed Warbler, Sedge Warbler, Reed Bunting, Shoveler, Gadwall & Bittern,

Vision : Habitat enhancement



Key Future Projects: Visionary Habitat Enhancements

Vulnerable habitats include carp and trout in fishing reservoirs which compete with waterfowl for the invertebrate food supply. Islands are also a key area of vulnerability, requiring restoration for breeding birds. New islands would also protect the site's ability to support breeding herons. Breeding birds such as Gadwell, Shoveller's and Tufted Ducks use of certain reservoirs at breeding or moulting times of the year is also an issue when introducing large numbers of new visitors to site. As well as Gadwell, Shoveller and Tufted ducks, other significant populations of breeding birds on site such as great crested grebe, coot, sedge and reed warbler would benefit hugely from increased areas of reed beds to protect and improve their populations. We are also keen to improve amphibian and invertebrate populations where they directly interface with existing species rich areas such as Walthamstow Marshes and Tottenham Marsh. Other biodiversity action plan species that are also to be encouraged are song thrush, swift, sand martin, king fisher and reed bunting.

Our concept for habitat creation is to address the above shortfalls by proposing potential change over time for example shifting some of the fisheries gradually to focus on Low Maynard, with the potential to make reservoirs no 2&3 more naturalised fish environments.

Other habitat creation main moves focus on reed bed creation particularly around reservoirs 1,2&3 in the short term and then gradually spreading out over more reservoirs. The reduction in capacity particularly in the large above ground reservoirs is of concern to Thames Water and these reservoirs are also deeper so in these reservoirs reed beds would be floating whilst inground reservoirs can support islands and reed beds built from ground level of the reservoirs. East Warwick Island will be enhanced to re establish areas of shingle and support wading birds.

Enhancement and naturalisation of the coppermill stream in a key location next to the marine engine house will support the visitors direct experience of a naturalised stream and the benefits of enhancing the water holding capacity of the stream as well as increased biodiversity. Further increasing the capacity of this stream to support water voles and a more diverse range of amphibians is visualised as well as enhancing its ability to support bats, kingfishers, dragonfly and butterflies.

Species rich meadow with a new wetland scrape will be the main extended educational area for the marine engine house and will also contain a new pond created from the foundations of the old pumping station, linked to the marine engine house by a water channel to reflect the historic relationship between these two buildings.

The potential decommissioning of West Warwick reservoir presents an exciting opportunity in the future to create a very richly colonised reservoir with considerable areas of reed beds.

