Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Landscape Vision

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European Union
European Regional Development Fund

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North West Regional Flood & Coastal Committee

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Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Introduction, Purpose and Objectives

Introduction

The Preston and South Ribble Flood Risk Management Scheme (FRMS) Areas 1 and 2 seeks to reduce the high level flood risk posed by the River Ribble to households and businesses in and around Preston and South Ribble. Local context 1 (page 5), provides a location plan and summary description of Areas 1 and 2.

The Landscape Design Guide – Rev A produced by Mott McDonald in August 2020 provides an outline landscape vision for the overall scheme (Areas 1 to 5) and has been used to guide the design development, raise the profile of the scheme and help bring in partners. The design guide provides information about site context, existing landscape materials, precedents of similar schemes and case studies. It also sets out opportunities and strategies for, flood wall and landscape design for each scheme area. This guide together with the Indicative Landscape Plans (ILPS) produced by Mott McDonald has been used to inform the Landscape Vision.

The Landscape Vision provides more detail for Areas 1 and 2 of the FRM scheme and includes analysis of the local site context; the proposed design strategy and, design development of components of the scheme.

Purpose

The purpose of the landscape vision is to promote a high quality and coherent approach to the design of hard and soft landscape and environmental elements for each phase of the Preston and South Ribble FRMS, and to ensure environmental constraints and opportunities are identified and addressed during the engineering process. In addition to informing the design process, the document can be used to inform decision making by the client and engagement with stakeholders; and inform contractor analysis of costs associated with the project.

Objectives

The objectives of the landscape vision for Areas 1 and 2 are:

- To focus on the best achievable environmental outcomes in terms of landscape and visual impact, cultural heritage and community;
- To inform selection and specification of hard and soft landscape elements within the scheme; and
- To ensure the design theme throughout the scheme is consistent and not piecemeal.

View of the existing flood wall from Broadgate, views of the River Ribble are filtered by self-sown vegetation on the wetside of the existing flood wall during the summer months

View of the River Ribble from Riverside, groups of self-sown trees on the wet-side of the existing flood wall filter views of the river and railway viaduct crossing in the summer months.

View from Riverside Road.Residential properties have open views of the river above the existing grey and monotonous flood wall that extends along the north side of Riverside Road.

Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Section 1: Site Description and Context

Local context

The local context of Areas 1 and 2 has been analysed firstly through a review of The Landscape Design Guide and Indicative Landscape Plans produced by Mott McDonald. This has been supplemented and expanded through desk study and a site survey undertaken in August 2020. This analysis is presented on Local context 1: Area 1 and 2, site location plan, scheme description and linking strategies; Local context 2: Landscape character, views and cultural heritage, Local context 3: Existing landscape features.

The detailed site context information that influences the landscape design strategy is summarised below and can be found in more detail in the site overview and context information chapter of the Landscape Design Guide.

Flooding zones

The current flood risk in Preston renders it a high priority flood risk in the northwest. Up until now, existing linear flood defences have mitigated this to some extent. However renewing these like for like will not provide sufficient protection for the foreseeable future as the majority of properties will remain within the significant flood risk band. In addition to this, the increase in flood risk due to climate change will mean these existing flood defences will provide a lower standard of protection.

Land-uses

Preston benefits from having a high number of green and open spaces, from formal parks such as Avenham and Miller Parks, to linear green spaces along the river, recreation grounds and small roadside urban greenspaces.

Designations

There are a variety of areas designated for their heritage and ecological value, shown on context sheet 1, which will influence landscape design proposals at different scales. Avenham and Miller Parks are designated a Grade II* listed Registered Park and Garden and lies within the Avenham and Miller Conservation Area. The south-west corner of Miller Park lies within Area 1. The park is a site of historic importance and lends a formal character to the area.
Avenham Park hosts a Pavilion Cafe and is the official start-point for the Preston Guild Wheel cycle route.
Old Penwortham Bridge is a scheduled monument and Grade II* listed. The Railway Viaduct is Grade II* listed. There are a number of listed buildings along the west end of Broadgate.
Local Nature Reserves in the form of linear belts of woodland extend from the river outwards towards the south and north. Such features have been fundamental when considering the landscape design for the scheme.
The Preston Guild Wheel cycle route extends along the north bank of the River Ribble as does the Ribble Way. The area is bisected by a number of Sustrans cycle routes and Public Rights of Ways linking urban areas to the river side and areas of open space.

Other linking strategies

The main influences on the scheme are:

Transforming Cities Fund (TCF): aims to improve productivity and spread prosperity through investment in public and sustainable transport in some of the largest English city regions. The Liverpool Road / Fishergate Hill junction located to the north of the scheme (see Local Context Sheet 1) is included in the Transforming Preston City Region bid.
The package of cycling and walking route interventions included within the TCF submission represents a step change in the standard of active travel infrastructure in Preston. The TCF schemes will create a transformed level of access to the city and key employment sites by active means, providing high quality radial spur routes linking the Guild Wheel and other existing provision into the City Centre. Public transport users will be able to walk from the public transport hubs to all major destinations in the City Centre through a continuous high-quality public realm with TCF complementing other schemes in the City, and filling in the gaps, to give a connected, integrated network of active travel across the city for the first time in its history.

South Ribble Green Links: The south bank of the River Ribble forms part of the South Ribble Green Links project, a network of multi-use green spaces connecting people and places. The Green Link programme aims to help improve air quality in South Ribble by providing green transport routes. The red route along the south bank of the River Ribble are central parks themed walks paid for by the Lancashire Environmental Fund,in partnership with
Lancashire Wildlife Trust and the River Ribble Trust, and were completed in 2018/2019.

Key features

River crossings:

The River Ribble has three bridge crossings within the scheme extents:

- Liverpool Road (Penwortham New Bridge) (1915), is a main vehicle route into Preston;
- Old Penwortham Bridge (1759), the sandstone bridge is a pedestrian and cycle route across the River Ribble. The bridge is Grade II* listed and a scheduled monument. Next to the bridge there is a pipe bridge carrying a high pressure gas main; and
- Railway Viaduct (1880) carrying the West Coast Main Line over the River Ribble, is Grade II* listed.

Liverpool Road Bridge

Old Penwortham Bridge

Railway Viaduct

Building materials:

- The principal building material is brick with a variety of types. The most common, red brick can be found in residential areas such as Broadgate, Riverside and Riverside Road. Other brick types can be found within more modern residential developments within Penwortham and in small infill housing development along Riverside.

Copings:

There are no dominant styles of coping.The following can be found:

- A mix of ornamental coping to brick walls along Broadgate,
- Riverside and Riverside Road;
- Concrete coping to existing flood wall; and
- Stone coping to bridge structures.

Railings:

There are no dominant styles of railings. The following can be found:

- Ornamental railings within Miller Park;
- Low steel railings to wall under railway viaduct; and
- Blue steel railings to Miller Gardens apartments, variety of railing styles to garden boundaries along Broadgate, Riverside and Riverside Road.

Vegetation and habitats:

The River Ribble corridor and adjacent areas support a mixture of vegetation. Tall ruderal and scattered trees make up much of the riverbanks, with some concrete engineered sections, and mudflat habitat found in the wider areas. Amenity grassland and scattered trees enclose the banks. Typical features include:

- Avenue trees within grass verges along Broadgate;
- Managed amenity grassland and specimen trees at Miller Park;
- Self-sown riverside trees along the wet side of the existing flood wall along both sides of the river, there are mainly along Broadgate with some groups of trees/scrub at Riverside; and
- River bank vegetation and mature trees adjacent to an existing flood bank at Ribble Sidings.

Protected species:

- Otters (a protected species) are known to be present along the river banks;
- Further ecological survey for species such as Bats will be undertaken; and
- The proposed works area is located within the Ribble Estuary Marine Conservation Zone.

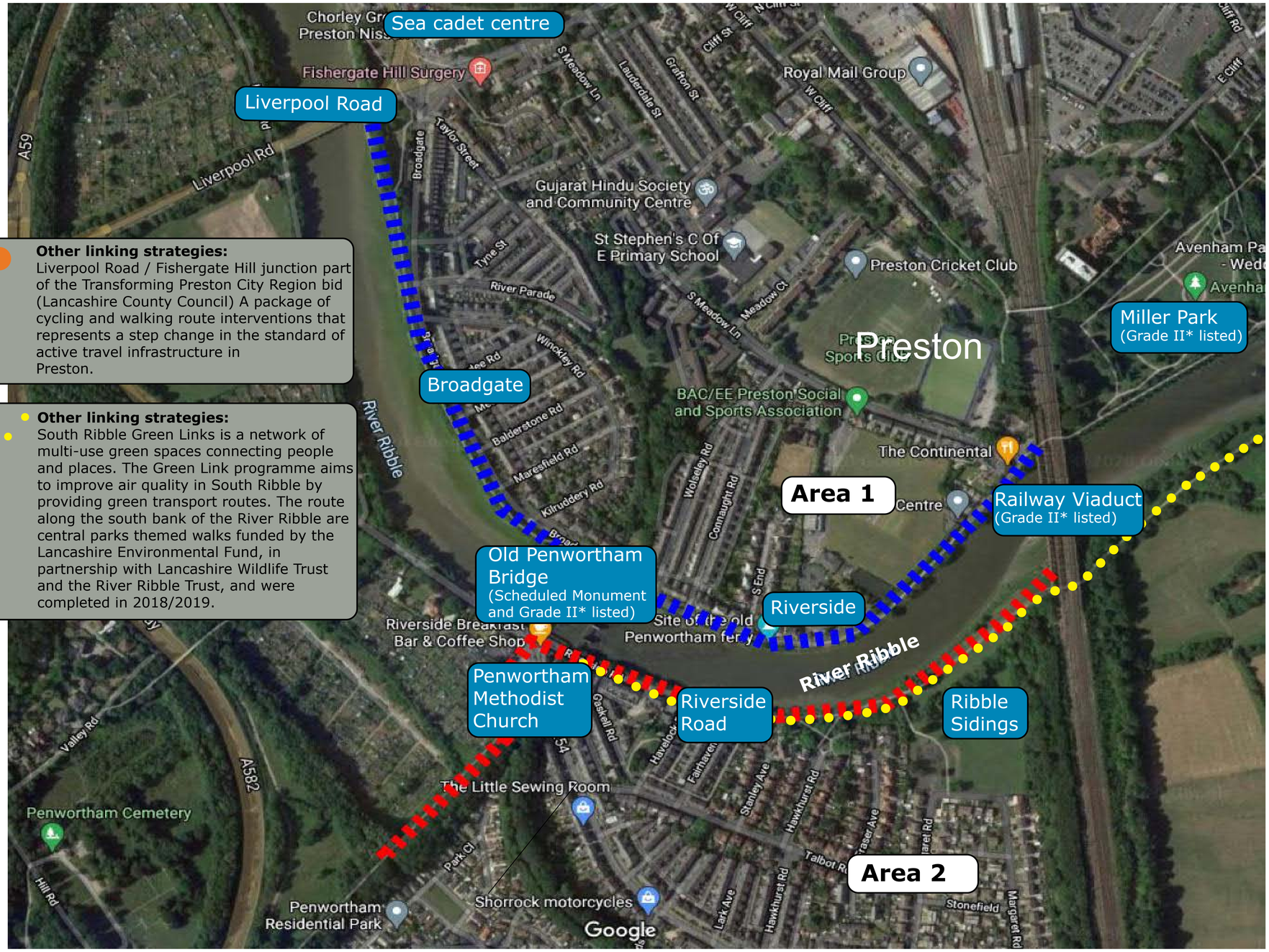
A mix of coping styles along Riverside Road

A mix of architectural styles along Riverside

Self-sown riverside trees along wet side of existing flood wall at Broadgate

Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Local context 1: Areas 1 and 2 site location plan, scheme description and linking strategies



Other linking strategies:
Liverpool Road / Fishergate Hill junction part of the Transforming Preston City Region bid (Lancashire County Council) A package of cycling and walking route interventions that represents a step change in the standard of active travel infrastructure in Preston.

Other linking strategies:
South Ribble Green Links is a network of multi-use green spaces connecting people and places. The Green Link programme aims to improve air quality in South Ribble by providing green transport routes. The route along the south bank of the River Ribble are central parks themed walks funded by the Lancashire Environmental Fund, in partnership with Lancashire Wildlife Trust and the River Ribble Trust, and were completed in 2018/2019.

Site location plan and scheme description

AREA 1

Area 1: Riversway and Broadgate, is located on the right (north) bank of the River Ribble. Extending from the West Coast Main Line (WCML), downstream to Liverpool Road Bridge.

To the north, the busy Liverpool Road and Strand Roads junction and main roads intersect the area. Further south, there are residential terraced houses along, Broadgate which provide an attractive facade. The Old Penwortham Bridge, a listed pedestrian bridge connects Broadgate to Riverside Road on the south bank. As the road ends, a separate pedestrian and cycle path takes users towards the Ribble Viaduct and Miller Park.

AREA 2

Area 2: Lower Penwortham, is located on the left (south) bank of the River Ribble and extends from the West Coast Main Line, downstream to Penwortham Old Bridge, and turning inland to tie into the abandoned railway embankment.
Towards the eastern end of Area 2, the land-use is increasingly residential with houses on Riverside Road overlooking the river and separated from it by an existing concrete flood wall.

Ribble Sidings is an area of open space next to the railway viaduct which provides informal recreation opportunities for the local community. This area is bounded by a strip of woodland planting along the eastern boundary by the railway viaduct and also provides opportunities for walking and play facilities for the nearby residents.

Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Local context 2: Landscape character, views and cultural heritage

Landscape character key characteristics

HISTORIC PARKLAND:
Designated Conservation Area and a Grade II* listed Historic Park and Garden; traditional Victorian parkland along the River Ribble; tree-lined riverside walk forms part of the Preston Guild Wheel; river crossed by Grade II* listed Ribble Viaduct; Victorian architectural detailing using local stone and ornamental railings; expansive views over the river towards agricultural and recreational land enhances the Park's riverside setting.

INDUSTRIAL AGES:
Outside historic core and Conservation Area; few listed buildings; primarily residential property with open space and sports pitches; waterside vegetation and avenue trees soften views; Preston Guild Wheel cycle/footpath along riverside; Old Penwortham Bridge Scheduled Monument & Grade II* listed; mix of architectural styles and details; red brick terraced Georgian town houses, Victorian terraces and small areas1930s semi-detached housing infill; wider views constrained by vegetation and built form.

SUBURBAN:
Outside historic core and Conservation Area; few listed buildings; primarily residential property with open space; mature trees along the WCML and along the footprint of a number of dismantled railway lines bisect the area; waterside vegetation softens views; pedestrian/ cycle access along riverside, routes of former railways and via old Penwortham Bridge; Scheduled Monument (and Grade II* listed); lower quality architectural detail; wider views constrained by vegetation and built form.

RIVER RIBBLE & COASTAL PLAIN:
River Ribble river corridor and adjacent low-lying agricultural landscape; arable fields bisected by wooded embankments of the West Coast Main Line and dismantled railway lines; mature trees and scrub denote field boundaries and minor watercourses; large sewage works well screened by vegetation; no settlement and few public roads; waterside vegetation softens views; pedestrian/cycle access along riverside and routes of former railways; urban edge of Preston and Penwortham softened by vegetation.

COASTAL PLAIN:
Low lying, extensive areas of allotments and formal recreation areas and Penwortham Cemetery; bisected by major transport routes including the A59 and A582 Golden Way; extensive mature trees and woodland along transport corridors, and routes of former dismantled railway lines, allotments and recreation areas; waterside vegetation softens views; pedestrian/cycle access along riverside and routes of former railways; wider views constrained by vegetation.

L1
INDUSTRIAL AGES:
Views towards the flood wall for visitors to Broadgate Gardens. Self-sown mature trees along wet side of existing flood wall filter and obscure views of the River Ribble.
Broadgate Gardens open space with existing mature trees and seating and clipped hedgerow boundary along Broadgate. Mature trees enhance the street scene along Broadgate.

L2
INDUSTRIAL AGES:
Views towards the River Ribble and existing flood walls from residential properties along Broadgate and users of the Preston Guild Wheel (National Cycle Route 62).
Self-sown mature trees along wet side of flood wall filter views of the river. Existing concrete flood wall along north bank of the River Ribble. Avenue trees along Broadgate on the north bank enhance the streetscene. Preston Guild Wheel cycle/footpath extends along the north side of the existing flood wall.

L3
RIVER RIBBLE & COASTAL PLAIN:
Old Penwortham Bridge Scheduled Monument & Grade II* listed. Historic stone bridge with Victoriana style street furniture provides pedestrian and cycle access across the River Ribble.

L8
SUBURBAN:
Views towards River Ribble and existing flood walls from residential properties along Riverside Road and users of PRoW 55 and National Cycle Route 55. Residential properties along Riverside visible above the existing flood wall on the north bank of the river.
Small open space at the end of Hawkhurst Road. Existing concrete flood wall along south bank of river. Tarmac road, low brick wall and hedgerows to front garden boundaries.

L9
COASTAL PLAIN:
Visitors to Penwortham Methodist Church have views across the B5254 Leyland Road.
Extensive areas of allotments and formal recreational areas edged with mature tree planting. Mature trees along National Cycle Route 62 and public footpath along route of former railway and embankments.

L4
INDUSTRIAL AGES:
Views towards the River Ribble and existing flood walls from residential properties along Riverside and users of the Preston Guild Wheel. Residential properties along Riverside Road are visible above the existing flood wall on the south bank of the river.

L5
INDUSTRIAL AGES:
Views towards River Ribble from Miller Park apartments and residential properties along Riverside, visitors to the Continental public house, users of the Preston Guild Wheel ad Sustrans route National Cycle Route 62. Open views across the river from existing embankment with separate pedestrian and cyclist paths.

L6
HISTORIC PARK:
Miller Park is a Grade II* listed Historic Park and Garden and within Avenham Conservation Area. Ribble Viaduct is Grade II* listed. Views towards the River Ribble from Miller Park.
Avenue trees along 'river side walk' adjacent to the river forms part of the Preston Guild Wheel cycle/footpath. Victorian park with mature trees and distinctive Victoriana style street furniture.

L7
SUBURBAN:
Ribble Sidings open space, mature trees along south bank of river filter views of the river from residential properties to the south. PRoW 55 and National Cycle Route 55 extend along south bank of river.

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Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Local context 3: Existing landscape features

Landscape elements (refer to the Landscape Design Guide (August 2019) for more images)

L2 Existing flood wall at Broadgate

L4 Existing flood wall at Riverside

L8 Existing flood wall at Riverside Road

L3 Cobbled road on Old Penwortham Bridge

L6 Wall and railings under the Railway Viaduct

L6 Signage next to Ribble Viaduct

L1 Bench facing onto Broadgate

L6 Railings and signage at Miller Park

L1 Railings near Riverside Road

L7 Ribble Sidings open space

River crossings

L3 Old Penwortham Bridge

L6 Railway Viaduct carrying the West Coast Main Line over the River Ribble

L3 Pipe bridge carrying high pressure gas main

Existing soft landscape features

L1 Broadgate Gardens urban green space adjoining Broadgate

L2 Avenue trees along Broadgate on the north bank of the River Ribble

Existing soft landscape features

L5 Pedestrian and cycle path separated by grass verge at Riverside

L6 Riverside walk adjacent to Miller Park on the north bank of the River Ribble

Existing street scene

L1 Broadgate

L4 Riverside

L8 Riverside Road

Section 2: Design Strategy

Design Strategy

The design strategy responds to the landscape context described in section 2 and the objectives referred to in section 3 by showing where the proposed finishes will be used within the Preston and South Ribble FRMS Areas 1 and 2 proposals and what has influenced the choice of materials.

The existing assets of each site (e.g. walls, embankments and control structures) have been assessed against the local context to identify the key objectives required in terms of enhancing the environment, integrating elements into the surrounding landscape and minimising environmental effects.

The overall design strategy for the proposed scheme is as follows:

- The landscape design will provide a means to restore urban areas and create new ecological habitats and features, provide recreational spaces and opportunities for public art and settings for historic landscape (Miller Park);
- Integrate 'safe by design' principles through spacing, sightlines and entry/ egress points;
- provide local amenity value by incorporating and enhancing public rights of way, open spaces and key views;
- Contribute to amenity use through distribution of key species with varying canopy heights, showcasing attractive species whilst creating open pathways where vegetation height steps down towards footpaths;
- Mitigate the loss of trees, vegetation and semi-natural riparian habitats;
- Native and low maintenance planting to provide visual screening where required and to enhance visual amenity;
- A simple material palette to provide consistency through the proposed scheme; and
- Opportunities and enhancements will be considered for each area where possible.

Design strategy sheet 1 identifies the key objectives for each design component to be considered during development of the design within each of the identified character areas.

Design strategy sheet 2 illustrates the recommendations for what is considered in terms of type and style, materials and character of the design elements. These are explained as follows.

The following are the scheme flood defence components and their design and finishes are described in more detail in section 3.

Flood defence components - landscape and ecology mitigation

Soft landscape proposals

Location: all character areas. Tree and shrub planting where possible along the route of the proposed scheme to mitigate loss of trees. Woodland belt planting, small area possible within Ribble Sidings open space within the suburban character area.

Purpose: to mitigate loss of trees arising from the development. Woodland planting proposed where more space is available and necessary permissions are granted.

Habitat creation

Location: River Ribble and coastal plain character area (banks of the river) and Suburban character area (Ribble Sidings).

Purpose: habitat creation proposals to mitigate habitat lost to accommodate the development. Proposed where more space is available and necessary permissions are granted.

Flood defence components

Pre-cast concrete flood walls

Location: all character areas outside the Conservation Area. Within Suburban and Industrial Ages character areas away from public realm.

Purpose: smooth finish concrete walls would be consistent with the existing flood defences found within the area. A pre-cast concrete wall would provide a consistent design theme to the flood defence to complement the diverse mix of architectural styles and materials within the urban area.

Glass panelled walls

Location: within Industrial Ages and Suburban character areas. Along Riverside between Penwortham Old Bridge and Miller Gardens Apartments; in front of the Continental Public House restaurant; and along Riverside Road from the Cadent Gas Pipe Bridge to Stanley Road.

Purpose: to maintain critical views of the river and key landmark buildings from residential properties and identified vantage points.

Floodgates

Location: outside Ribble Cottage and Miller Gardens Apartments and adjacent to The Continental pub and restaurant.

Purpose: to allow pedestrian/cycle access to be maintained at grade through flood defence walls for key routes.

Railings and handrails

Location: beneath the railway viaduct and at Penwortham Methodist Church.

Purpose: to ensure that health and safety is maintained where there is a potential fall hazard from top of wall and where new flood wall could have otherwise presented a trip hazard.

Embankments

Location: suburban character area. Within Ribble Sidings.

Purpose: where more space is available. To replace an existing flood embankment within Ribble Sidings where there is more space available to accommodate the footprint of the embankment and to blend in with the historic parkland where a flood wall would be out of character.

Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Design strategy 1: Landscape character, views and cultural heritage

L1

INDUSTRIAL AGES:
- New flood wall to integrate with surrounding area. Colour to complement adjacent housing.
- Potential for existing viewing platform to be retained and incorporated into the proposed scheme.
- Tree removal to be minimised, replacement tree and shrub planting to be provided within open space where underground services allow to enhance visual amenity and strengthen character within the existing green space.
- Street furniture to complement existing.

L2

IINDUSTRIAL AGES:
- Proposed flood wall to integrate with surrounding area.
- Tree removal to be minimised, avenue tree planting along Broadgate to be retained. Crown reduced as necessary to allow for construction access.
- Potential for wetland planting and habitat creation
- Redi-rock on wet-side of proposed flood wall.
- Preston Guild Wheel route to be maintained and enhanced.
- Street furniture to complement existing.

L3

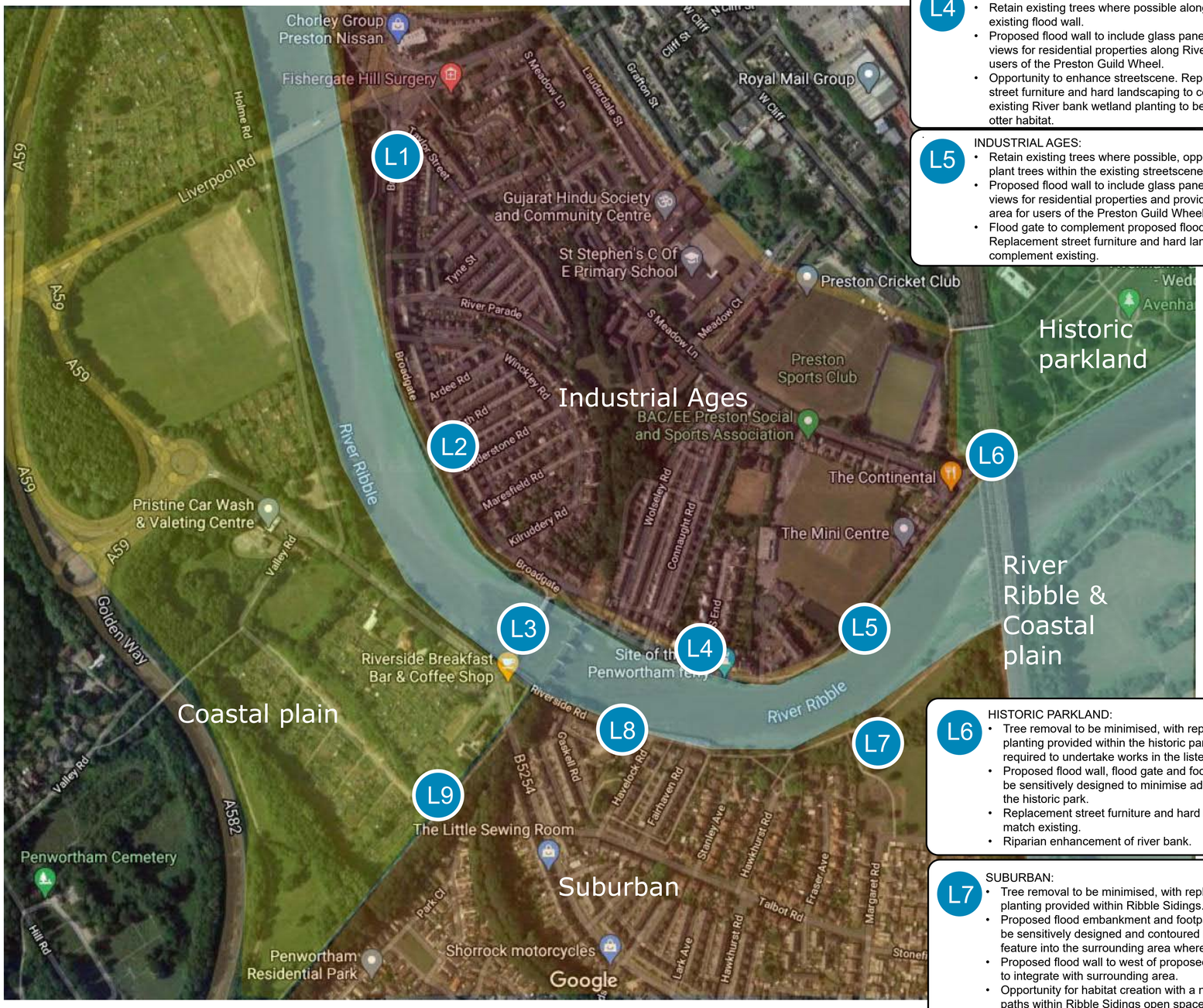
- RIVER RIBBLE & COASTAL PLAIN: Proposed flood wall tie-in with Old Penwortham Bridge to be carefully considered.
- Pipe bridge arch infill to complement existing stonework and proposed flood wall.
- Allow for rationalisation of riverside path route, and for an interpretation board relating to historic Penwortham Ferry Crossing.

L8

SUBURBAN:
- Tree removal to be minimised. Open space at the end of Hawkhurst Road to be reinstated to include new footpath layout with ornamental planting to enhance visual amenity for nearby residents and pedestrians.
- Existing flood embankment to be removed and replaced with flood wall. Proposed flood wall to integrate with surrounding area and to include glass panels to retain views from adjacent residential properties where possible.
- Replacement street furniture and hard landscaping to complement existing.

L9

COASTAL PLAIN:
- Tree removal and disturbance to adjacent allotments to be minimised, with replacement planting provided within the church grounds and adjacent areas where possible.
- Proposed flood wall to integrate with surrounding area and to complement existing brick walls and building facades.



L4

INDUSTRIAL AGES:
- Retain existing trees where possible along wet side of existing flood wall.
- Proposed flood wall to include glass panels to retain views for residential properties along Riverside and users of the Preston Guild Wheel.
- Opportunity to enhance streetscene. Replacement street furniture and hard landscaping to complement existing River bank wetland planting to be suitable for otter habitat.

L5

INDUSTRIAL AGES:
- Retain existing trees where possible, opportunity to plant trees within the existing streetscene .
- Proposed flood wall to include glass panels to retain views for residential properties and provide viewing area for users of the Preston Guild Wheel.
- Flood gate to complement proposed flood wall. Replacement street furniture and hard landscaping to complement existing.

L6

HISTORIC PARKLAND:
- Tree removal to be minimised, with replacement planting provided within the historic park. Consent required to undertake works in the listed park.
- Proposed flood wall, flood gate and footpath layout to be sensitively designed to minimise adverse effects on the historic park.
- Replacement street furniture and hard landscaping to match existing.
- Riparian enhancement of river bank.

L7

SUBURBAN:
- Tree removal to be minimised, with replacement planting provided within Ribble Sidings.
- Proposed flood embankment and footpath layout to be sensitively designed and contoured to integrate the feature into the surrounding area where possible.
- Proposed flood wall to west of proposed embankment to integrate with surrounding area.
- Opportunity for habitat creation with a network of paths within Ribble Sidings open space to enhance biodiversity and amenity value, working with South Ribble Borough Council. Existing play facilities to be retained.


L1 Broadgate


L4 Riverside


L6 Miller Park


L8 Riverside Road


L9 & L3 View from Old Penwortham Bridge towards Penwortham Methodist Church


L7 Ribble Sidings

Preston and South Ribble Flood Risk Management Scheme Areas 1 and 2

Design strategy 2: Design of components

L1

BROADGATE GARDENS:
- Replacement of existing flood wall with a pre-cast concrete flood wall.
- Viewing platform and planting to enhance existing open space.
- Street furniture to be as per Preston City Council's (PCC) standard palette.
- Preston Guild Wheel route and signage to be maintained.
- Tree and shrub planting, species-rich grassland.

L2

BROADGATE:
- Replacement of existng flood wall with a pre-cast concrete flood wall.
- Tree planting to grass verges where possible.
- Preston Guild Wheel route and signage to be maintained.
- Proposed street furniture to complement existing, as agreed with PCC.
- Tussock seed mix to Redi-Rock river bank works on wet-side of proposed flood wall at Old Penwortham Bridge.
- Tree planting where possible

L3

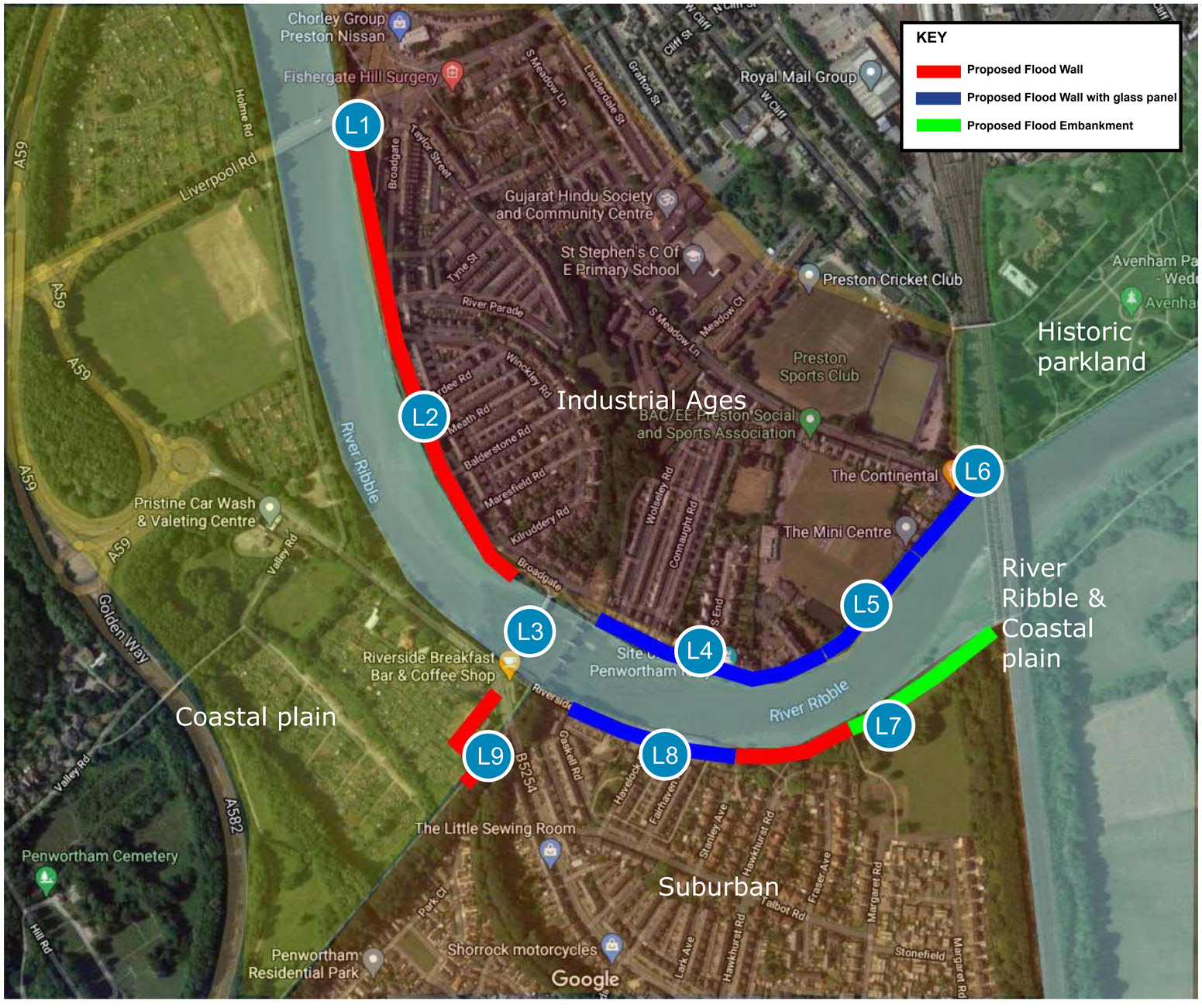
OLD PENWORTHAM BRIDGE:
- Replacement of existing flood wall with a pre-cast concrete flood wall.
- Pipe bridge arch infill to complement existing stonework. Possible location of a future artwork installation (by others).
- Tree planters and seating to enhance streetscene.
- Street furniture to complement existing as agreed with PCC.
- Interpretation board relating to historic Penwortham Ferry Crossing.

L8

RIVERSIDE ROAD:
- Replacement of existing flood wall with a pre-cast concrete flood wall with glass panels from the pipe bridge to Stanley Avenue.
- Replacement street furniture to complement existing as agreed with South Ribble Borough Council (SRBC)
- Open space at the end of Hawkhurst Road to be reinstated to include tarmac footpath routes, and tree and shrub planting to enhance visual amenity.

L9

PENWORTHAM METHODIST CHURCH:
- Proposed pre-cast concrete flood wall along south and west boundary fence line to church grounds and along existing footpath along railway line. Black steel railings to top of boundary wall where flood defence not required.
- Tarmac road ramp entrance to church to match existing.
- Church grounds and adjacent allotment areas to be reinstated.



L4

RIVERSIDE:
- Replacement of existing flood wall with a pre-cast concrete flood wall with glass panels between Penwortham Old Bridge and Miller Gardens Apartments.
- Tree planters and street furniture to enhance streetscene to be agreed with PCC.
- Redi-Rock sandstone-faced retaining wall and steel toe pile to retain face of new river bank. Tussock plant mix to Redi-Rock wall to soften wall and reinstate vegetation along river bank.
- Tarmac surfacing to footpaths.

L5

MILLER GARDENS APARTMENTS & CRICKET PITCH:
- New pre-cast concrete wall along the boundary of BAE/EE Preston Social and Sports Association cricket pitch between Miller Park Apartments and Ribble Cottage.
- New black flood gate at Ribble Cottage.
- Replacement of existing flood wall with a pre-cast concrete flood wall from cricket pitch to Continental Public House restaurant. Flood wall to have glass panels in front of the restaurant.
- Tarmac surfacing to footpaths to complement existing. Replacement hard landscaping to be agreed with PCC.
- Riparian enhancement of river bank and replacement tree planting where possible.

L6

MILLER PARK:
- Replacement of existing flood wall with a pre-cast concrete flood wall. Replacement railings to top of flood wall to be agreed with PCC.
- Proposed flood gate and footpath layout to be sensitively designed to minimise adverse effect on the historic park, proposals including street furniture to be agreed with PCC.
- Riparian enhancement of river bank and replacement tree planting where possible.
- Species rich grassland to flood embankment.

L7

RIBBLE SIDINGS:
- Proposed pre-cast concrete flood wall from Stanley Avenue to Ribble Sidings.
- Replacement of existing flood embankment with a new 3.5m high flood embankment with a 3m crest.
- Existing riverside public footpath to be retained with a tarmac access ramp over the proposed flood defence.
- Scrub planting for otter habitat adjacent to the river bank.
- Tree and shrub planting to integrate the scheme into the surrounding landscape
- Redi-Rock sandstone-faced retaining wall and steel toe pile to retain face of new river bank. Tussock seed mix to Redi-Rock wall to soften wall and reinstate vegetation along river bank.
- Habitat creation with a network of paths within Ribble Sidings open space to enhance biodiversity and amenity value, working with South Ribble Borough Council.
- Existing play facilities to be retained.

European Union
European Regional Development Fund
Environment Agency
Jacobs
Lancashire County Council
North West Regional Flood & Coastal Committee

Section 3: Design Components

The proposed design and finish of components referred to in this Landscape Vision are described as follows.

Pre-cast concrete flood wall

Finish:

- Sandstone colour with a smooth finish as shown in illustrative photos.
- Fixing detail to be discussed and agreed with Precast supplier to discuss buildability requirements.
- Colour and finish to be discussed and agreed by the Environment Agency.
- Working closely with the supplier during the design process to achieve the desired colour and finish. The supplier would produce a trial panel to demonstrate required finish can be achieved to a high standard and consistency.

Dimensions:

- Wall to vary in height from 500mm to 3000mm.
- Length of panels to be discussed with Contractor to suit safe lifting requirements.
- Thickness of precast concrete wall to be determined by localised ground conditions, but generally 350mm thick.

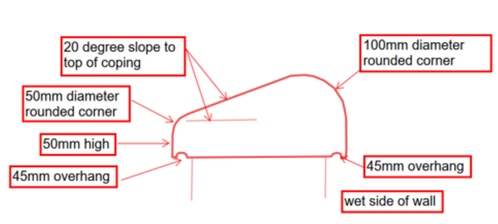
Coping:

- Flood defence level to be set at top of coping stones. At points of high ground and tie-in points the coping will be raised above flood defence.
- There will be no coping where there are glass panels fixed to the top of the flood defence.
- Copings have a flush interface with side of pillars.

The shape of the coping for the flood walls is as shown on figure 1.

Wall pillars:

- Wall pillars to be located at each change in wall height, change in direction, and at the start and end of the flood defence sections where appropriate.
- Wall pillars to be 550mm wide x 550mm deep for a 350mm thick wall.



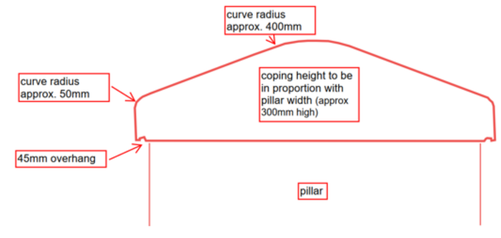


Figure 1.0 Pre-cast concrete flood wall finishes, coping and wall pillars

Section 3: Design Components

The proposed design and finish of components referred to in this Landscape Vision are described as follows.

Glass panelled walls

Location:

- Use of glass panels where existing flood wall raised between 1.4m to 1.6m above existing ground level to retain existing riverside views.
- Approximate locations are as shown on the Indicative Landscape Plans (ILPs) and design guide. The exact locations are to be agreed with landowners and the council.

Finish:

- Extra - clear glass panels fixed within a metal frame and be anchored directly to the reinforced concrete core wall.
- Glass panel posts to be fixed directly to wall with no copings. Minimum flood wall thickness to be 350mm.
- Glass panel post thickness to be 150mm or as per engineering specification depending on height of glass panels.
- Colour and finish of frame and posts to be agreed with the EA.

Potential suppliers:

- Potential suppliers include: IBS Engineering Products Ltd and Flood Control International.

Glass panelled walls at Keswick FRMS

Floodgates

Location:

- Four floodgates are proposed for the Preston and South Ribble FRMS within Area 1. Double floodgates are proposed where vehicle access may be required.

Design:

- The design and installation of these proprietary products will be informed by the appropriate design standards and specifications to ensure that these products perform appropriately during a flood event.
- Steel floodgate attached to a reinforced steel post within the flood wall designed to match the height of the adjoining wall.

Orientation:

- When not in use the gate will be secured pointing in an upstream direction in an ‘open’ position. When a potential flood incident is predicted, Environment Agency will ensure that gates are secured in a ‘closed’ position. Once the flood threat has passed, Environment Agency will ensure that the flood gates revert to their open position.

Potential suppliers:

- The floodgates should be supplied by a single supplier to ensure uniformity in both appearance and standards of operation. Potential suppliers include 1st Defence Fabrications Ltd, IBS Engineered Products Ltd, and Flood Control International.

Black painted floodgate in closed position (Flood Control International)

Section 3: Design Components

Embankments

Profile:
- Embankment slope angles range from 1 in 2.5 to 1 in 3. Shallower gradients on both faces could enable the structure to blend more succesfully into the existing landscape.

Height:
- Embankment heights range between 0.3m – 3.5m and tie into existing ground levels.

Core and soil cover:
- Embankments are to be constructed with a clay (impermeable) core up to flood defence level to comply with Environment Agency requirements. Clay core will be covered with locally sourced 150mm deep topsoil to BS 3882:2015.

Planting:
Embankments will be seeded with a grass mix to reflect the surrounding land uses and include options for:
- Amenity/ low maintenance grassland; or
- Wildflower/ species rich grasses of local provenance and avoiding tap-rooting species.

Crest width:
Embankment will have a crest width depending on the level of access required as follows:
- Public access where required: 2m wide path with 0.5m wide verge either side

Embankments offer the opportunity for continued access to some areas during a flood event. Where paths are constructed along their crest, the embankment will require accessible graded ramps at greater than 1:20 to be incorporated into their construction. Elsewhere, less formal steeper ramps should be incorporated to limit potential erosion to embankment slopes through informal access. All access routes should be surfaced to reduce erosion. Vehicular up and over ramps should not exceed 1:10.

Flood embankment at the Salford Flood Improvement Scheme

Railings and handrails

No single style of railing is dominant along the River Ribble within the areas of Broadgate, Riverside and Riverside Road, except for Miller Park (Grade II* listed) which has its own distinctive style of railings.

A single style of railing is proposed in combination with flood defence walls to provide unity to the scheme. It will comprise steel posts fixed to the flood wall with a horizontal top rail and bottom rail intermittent vertical bars.

- Railings to comprise steel posts fixed to the flood wall coping with a flat horizontal top and bottom rail with intermittent square vertical bars set at 100mm centres between posts. To be fixed to the top of the wall coping;
- Railing height will vary dependent upon the height of the required flood defence wall;
- All fittings will be galvanised and painted black (RAL 9005); and
- Finish to be agreed with the Environment Agency.

Railings are proposed at locations where:

- Walls are low and there is a strong likelihood that people will try to walk along the top of walls;
- A wall replaces a fence or railing that previously prevented access;
- The wall height is greater than 2m height on the none path side or where there is a drop directly into the river;
- The wall height is less than 1150mm above adjacent ground levels on the public access side; and
- The use of railings will be subject to a site specific Public Safety Risk Assessment to ensure scheme proposals result in no greater risk to the public.

Carlisle flood defences (Jacobs). Railings fixed to wall top to ensure appropriate level of protection. Railing height will vary dependent upon the height of the required flood defence wall.

Section 3: Design Components

Surfacing

Reinstatement: where flood defence structures interface with the public realm, any affected surfaces will be reinstated using appropriated matching materials and to a standard of finish matching or exceeding that which existed prior to the works commencing. The choice of materials to be used in steps and ramps will be influenced by the prevailing materials found in the area.

Gradients: no steeper than 1:20 to ensure full disabled access and comply with relevant legislative requirements. Should levels within public realm areas affected by flood defences dictate that surfaces be provided with gradient steeper than 1:20, these will be accommodated through the use of ramps or steps with landings provided at the necessary intervals to comply with relevant legislative requirements.

Texture: surfaces should be firm, obstacle free, durable and slip resistant in wet and dry conditions, particularly where there are slopes. Changes of surface are required at crossing points, changes in level and where there is a hazard, such as flood gate opening or seating.

Steps

Steps are to be designed in accordance with industry best practice and all other relevant design codes to ensure that a safe pitch is provided. Additional specific design requirements for steps on this project are:

- Clear step width to be in accordance with Preston and South Ribble Borough Council standards, a minimum of 1200mm has currently been assumed;
- Minimum landing area to be the same length and width as the width of step leading to it (up and down);
- Maximum number of steps between landings is 12 in accordance with the design requirements for general access;
- Corduroy hazard warning surfaces are to be incorporated into the landings of the steps;
- Where practicable the dimensional ranges shall be between 150mm to 220mm for the rise and between 220mm and 450mm for the going; and
- Handrails to be a minimum height of 1100mm.

Ramps

Any gradient steeper than 1:20 is classified as a ramp and shall be designed in accordance with industry best practice. Specific design requirements for ramps on this project are:

- Minimum clear ramp width of 1500mm for disabled access
- Landings at top and bottom of ramps are to be 1500mm wide and 1500mm long;
- Minimum upstand height of 100mm to be provided on open edges of ramps;
- Ramps material to be slip resistant when wet and to have contrasting edge protection/surfacing to assist blind or partially sighted people. Corduroy hazard warning surfaces are to be incorporated into the landings of the ramp;
- The maximum length of ramp shall be in accordance with Equality Act 2010 industry best practice guidance. Landings will be required at specific intervals, depending upon the gradient of ramp chosen. A ramp at a 1:12 gradient shall have landings for every 750mm of vertical rise;
- Handrails along the full length of ramp and to a minimum height of 1100mm; and
- Surfacing materials to be durable and easy to maintain, slip-resistant when wet. Ramp surface to contrast visually with the landings / edge protection to assist blind or partially sighted. Where different materials are used for the flights and landings of a ramp, care should be taken to ensure that their frictional characteristics are similar to minimize the risk of stumbling.

Footpaths

- Footpath surfaces shall follow the natural topography of the area. Where possible a maximum gradient of 1:20.5 shall be provided to ensure full disabled access and comply with relevant legislative requirements. Should the natural topography be steeper than 1:20 then the design shall accommodate this through the provision of steps or ramps (with landings);
- The minimum clear width of footpath shall be 1200mm. Further discussion and agreement with the planning authority will be undertaken during detailed design;
- The recommended minimum clear width of a cycleway shall be 2000mm. In locations where there is insufficient physical width to accommodate the recommended lane width, an absolute minimum clear width shall be 1500mm. All footpath designs shall consider the requirements for local access which shall include requirements for drop kerbs into residential properties, signage, railings, street lighting etc;
- Surface water run off shall be considered within the design to ensure no surface water ponding occurs and that adequate surface water drainage provisions are made. A minimum cross fall of 1:40 is recommended. Footpaths shall be designed to include tactile paving slabs in accordance with industry best practice guidance ensuring safe access is provided for the disabled; and
- Typical footpath surfacing details shall be in accordance with Preston and South Ribble Borough Council standard details and the requirements of the Highways Authority.

Section 3: Design Components

Street furniture

Seating and litter bins:

- Seating and litter bins to complement Preston City Council and South Ribble District Council's standard palette of street furniture.

Tree Planters

- Where tree planting is not possible due to the location of underground services.
- Supplier Streetlife, Highlife III Planters or similar approved;

Information boards

- To be located at heritage features and other points of interest along the proposed scheme e.g. site of Penwortham ferry point;

Bollards and signage

- To complement Preston City Council and South Ribble District Council's standard palette of street furniture.

Section 3: Design Components

Soft landscape proposals

Tree and shrub planting

The principal aims for the mitigation planting is to:

- Provide amenity value through the provision of attractive, functional spaces for users;
- Increase biodiversity value which will support and enhance national and local biodiversity objectives;
- Provide urban tree planting with species appropriate for the local townscape, particularly where trees are an important feature of townscape character and have a high visual presence;
- Provide planting which will screen or filter views of new structures associated with the development or where visual detractors are visible from the river corridor;
- Assist with integrating new structures into the landscape/townscape and, where appropriate, include measures which respect and respond to the immediate and wider setting of the proposals;
- Contribute to maintaining public safety through appropriate design; and
- Comply with relevant legislation and policy requirements.

The approved scheme will be developed to take account of detailed engineering proposals.
The approach to planting across the scheme will vary subject to setting and character. Proposals can broadly be divided between:

- The suburban and coastal plain character areas where the design style relates more closely to the use of native species and habitat creation; and
- The historic park character area where the design style and species choice will reflect the amenity/ornamental nature of the area and help mitigate the visual effects of the flood defence on public realm.

Construction impact / replacement planting

The EA has its own Landscape and Environmental Design Guide. This states '*where tree felling is unavoidable we will strive to compensate for the loss of valued vegetation to ensure no net loss in environmental quality*'. The guide recommends a ratio of 5:1 on loss of semi-mature and mature trees and 2:1 for smaller existing trees. Planted at a small cell/2 year old transplant size ensures one tree survives to maturity. However a tree of this size in a very public urban environment would be highly vulnerable to vandalism and damage, therefore within the public realm the planting of heavy standard or extra heavy standard trees is preferred.

Walls and embankments

- Tree planting is discouraged within 2m of wall foundations in order to minimise damage to foundation from roots.
- Tree and shrub planting on embankments should be considered in discussion with the EA;
- An inspection / maintenance wayleave may be required along the embankment toe.
- In order for regular visual inspections of flood defence structures walls will need to be kept clear of vegetation.

Tree planting

Avenue and formal tree planting to be spaced between 7.5 to 10m (depending on species), to prevent future canopies of mature trees from touching and to reduce the need for future tree removal and management.
River bank trees to be spaced no closer than 10m to take account of existing retained trees and to ensure that tree canopies do not cast excessive shade on to the river bank to maintain a diverse understory where possible.
Tree planting sizes will be appropriate to the location for which they are proposed.

Design considerations for ornamental planting (located within urban areas to replace existing):

- Use of native species where possible.
- Native tree planting used to frame views and features, announce arrival and emphasise a change in character;
- Larger tree stock to be planted where mature trees are removed for construction, in particularly sensitive and high profile locations and where an instant effect is required;
- Trees planted as clear stemmed extra heavy standard or semi-mature size to prevent need for guards;
- Trees to be pit planted and either staked (single or double with cross bar) or underground guyed in the case of semi-mature sized trees;
- Simple bold, single species blocks with some repetition of species to unify the space/ define a route; and provide year round interest and seasonal highlights;
- Use of evergreen plants to create structure; Exploit contrasts or similarities in form, texture and colour to produce dramatic and attractive visual displays; and
- Hardy and robust species for survival in the urban areas, suitable in their physical attributes for each specific location; shrub and perennial planting species to be used to add colour; and integrate 'safe by design' principles.

Section 3: Design Components

Habitat creation

Further informal planting will be introduced to create areas of native tree and shrub planting and riparian habitats, enhance existing biodiversity and help mitigate the environmental effects of the flood scheme.

There will be opportunity to create a small area of wetland habitat at Ribble Sidings. Once formed the areas will be planted to establish a range of new habitats.

The landscape design considerations for informal planting and habitat creation are as follows:

- increase biodiversity, support and enhance national and local biodiversity objectives;
- mitigate the loss of semi-natural riparian habitats;
- promote functional habitat corridors;
- plant native species, preferably of local provenance;
- reflect and support the natural heritage of the region;
- design for inherent visual amenity, either perpetually or seasonally;
- utilise a mixture of species conducive to matrix planting;
- include fruit bearing species;
- can form a robust boundary feature; and
- self-sustaining matrix planting scheme; and discrete, attractive planting features promoting a mosaic of habitats.

In addition, habitat creation is intended to contribute towards visual and public amenity through the following considerations:

- integrate ‘safe by design’ principles through spacing, sightlines and entry/ egress points;
- provide local amenity value by incorporating and enhancing public rights of way, open spaces and key views;
- contribute to amenity use through distribution of key species with varying canopy heights, showcasing attractive species whilst creating open pathways where vegetation height steps down towards footpaths, cultivating lighter open areas; and
- more open planting along public rights of way or informal footpaths, combined with boundary species such as blackthorn to help prevent anti-social behaviour, where appropriate.