

# Gruggies Burn Flood Alleviation Scheme

## Landscape and Visual Statement

March 2024



**Balfour Beatty**



**FAIRHURST**

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# Background

This Landscape and Visual Statement has been prepared and reviewed by Chartered Landscape Architects within Fairhurst's Landscape and Urban Design team. The report seeks to find an understanding of the baseline landscape and visual conditions of the site and surrounding area in order to assess the likely landscape and visual effects which may arise as a result of the Gruggies Burn Flood Alleviation Scheme and advise mitigation measures which may reduce any potential effects.

The report relates to the proposals set out on the following drawings produced by Fairhurst:

- GBFAS-FRH-ZZ-ZZ-DR-W-102002 - Tidal Embankment Plan Sheet 1 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102003 - Tidal Embankment Plan Sheet 2 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102004 - Tidal Embankment Sections Sheet 1 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102005 - Tidal Embankment Sections Sheet 2 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102006 - Tidal Embankment Long Section Sheet 1 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102007 - Tidal Embankment Long Section Sheet 2 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102151 - Existing Plan / General Arrangement, Culvert and Headwall
- GBFAS-FRH-ZZ-ZZ-DR-W-102152 - Proposed Plan / General Arrangement, Culvert and Headwall
- GBFAS-FRH-ZZ-ZZ-DR-W-102153 - Culvert Sections and Details
- GBFAS-FRH-ZZ-ZZ-DR-W-102201 - Existing Plan / General Arrangement, Flood Walls
- GBFAS-FRH-ZZ-ZZ-DR-W-102202 - Proposed Plan / General Arrangement, Flood Walls
- GBFAS-FRH-ZZ-ZZ-DR-W-102203 - Existing & Proposed Sections - Flood Walls Sheet 1 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102204 - Existing & Proposed Sections - Flood Walls Sheet 2 of 2
- GBFAS-FRH-ZZ-ZZ-DR-W-102205 - Sheet Pile Flood Walls with Cladding Details
- GBFAS-FRH-ZZ-ZZ-DR-W-102301 - Existing Plan / General Arrangement, Flood Gate
- GBFAS-FRH-ZZ-ZZ-DR-W-102302 - Proposed Plan / General Arrangement, Flood Gate
- GBFAS-FRH-ZZ-ZZ-DR-W-102303 - Flood Gate Details

# Development Proposal and Location Context

The site covers four areas within Dumbarton for the introduction of flood alleviation measures around Gruggies Burn and the River Clyde.

The four sites are as follows:

- Site A – Tidal Floodgate at Castle Road
- Site B – Tidal Embankment located on the southern coast of Dumbarton extending approximately 470m east of Gruggies Burn
- Site C – Flood Walls along the length of Gruggies Burn between the River Clyde and Glasgow Road (A814)
- Site D – Flow Diversion Culvert between Stirling Road (A82) and the River Clyde and Culvert Inlet and Outfall

Dumbarton is located to the north west of Glasgow, along the northern banks of the River Clyde. The River Leven flows through the town, from Loch Lomond to the north and into the Clyde. The A82 lies on the northern extents of the town, forming a major transport route between Glasgow and Fort William.

Gruggies Burn flows into Dumbarton from the north east, culverted under Stirling Road (A82) and meanders through residential and commercial areas to the River Clyde, close to Castlegate Lane.

Refer to Figure 1 and Figure 2 overleaf for further detail of the locations of each proposal.



Figure 1: Dumbarton Site Location

- Key
- Site A - Tidal Floodgate
  - Site B - Tidal Embankment
  - Site C - Flood Walls
  - Site D - Flow Diversion Culvert

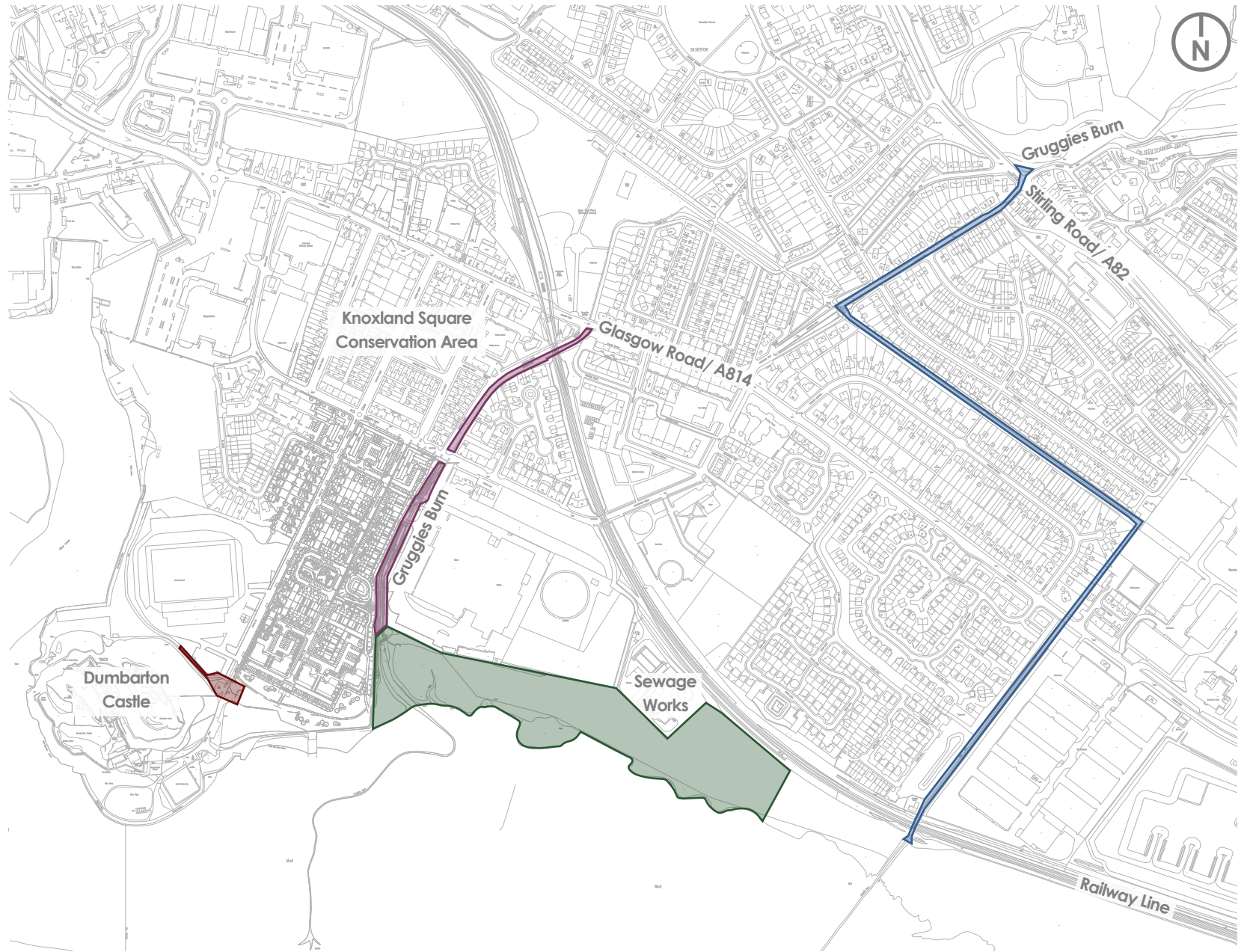


Figure 2: Site Location Plan

# Baseline Conditions

## Access and Circulation

There are a number of Core Paths within Dumbarton, as shown on the West Dunbartonshire Council Core Paths Maps (Core Paths Maps in West Dunbartonshire | West Dunbartonshire Council (west-dunbarton.gov.uk)). Refer to Figure 3 overleaf for locations of Core Paths in relation to the Proposed Sites.

Several Core Paths (CPs) provide access to the coast along the River Clyde, including CP63 and 66, a grassed route between Gruggies Burn and the railway underpass south of Almore Drive. This route is well used, as observed on site. A plastic reinforcement grid has been installed to keep the surface walkable during times of wet weather, further emphasising this as a well used route. CP65 also links to the coast from Castlegreen Street.

CP62 provides a route on the eastern edge of Gruggies Burn between the River Clyde and Castlegreen Street. The path is an informal compacted earth track. A timber footbridge in poor condition links CP62 to CP64 along the coast to Castle Road, adjacent to Dumbarton Castle.

CP61 continues the route along the east of Gruggies Burn, the narrow grass path lies between the burn and adjacent residential dwellings. The path stops at Glasgow Road.

## Designations

Site B occupies an area of designated Open Space (Policy R1 Retention of Open Space), which forms the coastal edge of Dumbarton along the northern bank of the River Clyde. The area includes a Core Path route as well as some areas of seating looking out across the river. There are several other areas of designated Open Space within Dumbarton.

A Local Nature Conservation Site (Policy ENV1) covers an area around Gruggies Burn north of Stirling Road (A82). The inlet to the culvert as proposed for Site B would be located within this area of land.

Garden and Designed Landscape Overtoun House lies to the north east of Dumbarton and is a good example of a mid-late 19th Century parkland landscape. This designed landscape is close to the proposed culvert inlet, which is to be located between Stirling Road and Strowan's Well Road within a wooded area. With the exception of Site B, Overtoun House lies 0.8km from the closest proposals at Glasgow Road.

Dumbarton Castle is a Scheduled Monument located on the southern edge of Dumbarton adjacent to the River Clyde. There are remains of a Dark-Age fort, a Medieval castle and a Georgian garrison atop Dumbarton Rock. Due to its height the castle offers panoramic views of Dumbarton and across the River Clyde. The Castle is managed by Historic Environment Scotland (HES) and open to visitors.

There are three Conservation Areas within Dumbarton, closest to the proposed sites is Knoxland Square which is adjacent to the northern section of Site C. Dumbarton Town Centre and Kirktonhill Conservation Areas lie to the west of the Proposed Sites.

The coastline of the River Clyde is covered by three designations; Inner Clyde RAMSAR, Inner Clyde Special Protection Area (SPA) and Inner Clyde Site of Special Scientific Interest (SSSI). The SSSI extends further to include the site of Dumbarton Castle.

- Key
- Site Location (Sites A-D)
  - Core Path
  - Conservation Area
  - Scheduled Monument
  - Gardens and Designated Landscape
  - Local Nature Conservation Sites (ENV1)
  - Inner Clyde SPA and RAMSAR Site
  - Inner Clyde SSSI
  - Open Space (GI1)

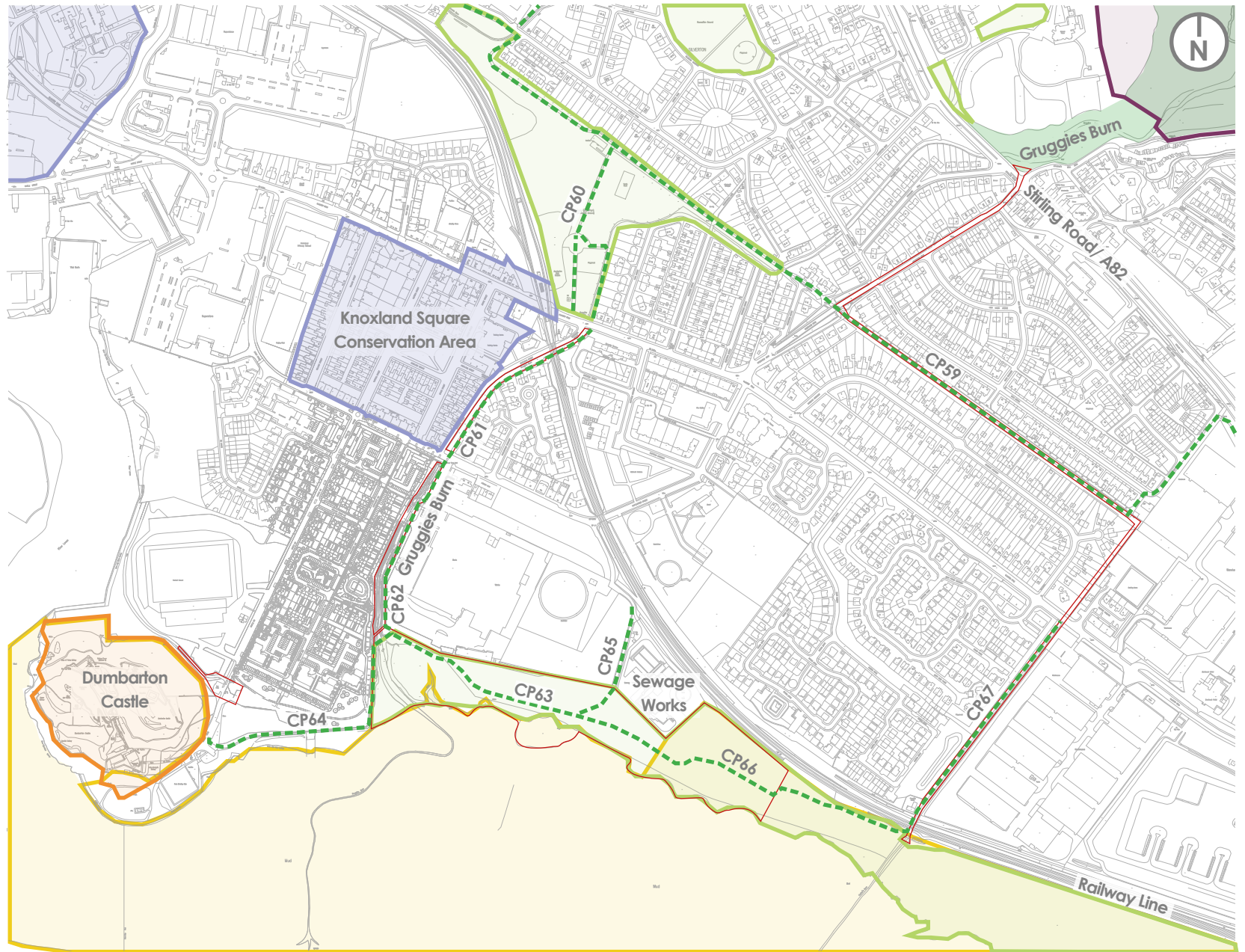


Figure 3: Site Context

# Landscape Character

Dumbarton lies within the **Glasgow and Clyde Valley** Landscape Character Area (LCA) as defined by NatureScot. This LCA covers a large and diverse range of landscapes, from dense urban townscapes to remote countryside. It focuses on the Clyde Valley contained by the Campsie Fells and Kilpatrick Hills to the north, the Firth of Clyde and moorland hills to the west and the Pentland Hills to the east.

At a local scale, Scotland is divided into several Landscape Character Types (LCTs). Due to the site location within the built-up town of Dumbarton the area is defined as Urban and is not included within the LCTs. The adjacent LCT **Raised Beach – Glasgow and Clyde Valley** has been considered due to its close proximity and intervisibility with Site B.

Key characteristics of **Raised Beach – Glasgow and Clyde Valley** are noted below:

- Steep scarp representing the former cliffline, and narrow platform representing the former beach, with estuarine mudflats along the inner part of the Firth of Clyde.
- 'Hanging' broadleaf woodland on many of the steeper slopes.
- Coastal settlements.
- Defensive sites, castles, historic houses and designed landscapes.
- Dominance of horizontal landscape elements.
- Prominent area with extensive views.

The site character varies between each site, a brief summary of the site-specific character is discussed below.

## *Site A*

The southern edge of Castle Road is dominated by the presence of Dumbarton Castle, which rises high above the road on Dumbarton Rock. Land use is mixed encompassing Dumbarton Football Stadium, residential dwellings and new apartment blocks, as well as Dumbarton Castle Scheduled Monument. Further south along the coast lies Dumbarton Castle Park and Dumbarton Rock Bowling Club. Vegetation is concentrated to the peripheries of Dumbarton Rock, to an area of open space on the coast with Core Path

access. Two small informal parking areas appear well used by those accessing the coastal paths.

## *Site B*

The open coastline contains a mix of scrub planting, wetland areas with reeds and sedges, salt marsh, salt meadows with reed beds and sedges as well as a well-trodden amenity grass route (Core Path). Some small sandy beaches are also evident. Dense woodland and scrub partially screen the adjacent industrial site just north of the coast, containing a sewage plant, indoor skate park and several other businesses. The railway line forms a dividing feature between the coastal edge and wider area of residential development to the north.

There are open views south across the river as well as intermittent views west toward the elevated Dumbarton Castle. Some of the new apartment blocks to Castle Road are also evident.

## *Site C*

Site C encompasses a section of Gruggies Burn from the River Clyde to the south to Glasgow Road (A814). The northern and southern half of the watercourse are contrasting in character. To the south the burn is tree lined, bound by dwellings to the west and an industrial estate to the east. The edges of the burn are bound by stone walls, generally in poor condition and embankments, the root growth of the trees has most likely contributed to the collapse of the walls in places. Core Path 62 follows the eastern boundary of the burn, along a narrow compacted earth track, connecting Castlegreen Street to the coast.

North of Castlegreen Street the character changes to an urban residential character. The burn lies immediately east of Buchanan Street, bound by the rear gardens of dwellings at Castlegreen Crescent to the east. Core Path 61, an informal grassed route, lies between the boundary fencing of the gardens and the burn. The burn is bound by a wall to the west, which changes from concrete to stone. Moss growth along the wall and some missing coping is evident. To the east gabion baskets form the edge of the watercourse, which is mostly screened by vegetation.



## Site D

The Culvert is proposed from just north of Stirling Road to the outfall at the River Clyde. The inlet is proposed within an area of existing broadleaf woodland, bound by a stone wall between Strowan's Well Road and Stirling Road. The immediate setting is primarily residential and the area is not accessible by the public. The outfall emerges at the coast just south of the railway line. The character is contrasting between the coastal grassland and scrub along the shore and the fenced railway line, with overhead wire and adjacent residential dwellings. A Core Path in the form of a grassed route is evident between the scrub lining the railway line and the adjacent wetland area closest to the rivers edge. The Core Path passes below the railway line and continues in a north easterly direction to Glasgow Road. An existing masonry headwall outfall is also present just south of the railway.



Site A: Castle Road



Site B: The Coast

Site C: Gruggies Burn

Site D: Culvert

# Visual Context

Due to the built-up nature of Dumbarton there are several potential visual receptors within the area which may experience changes in view as a result of the Scheme proposals at Sites A-D.

Potential visual receptors are noted below in relation to each site and proposed works.

## Site A

- Local road users of Castle Road;
- Local users of CP64 where it meets Castle Road;
- Tourists and visitors of Dumbarton Castle;
- Residents of Castle Road;
- Residents of Victoria Street; and
- Visitors entering Dumbarton Football Stadium.

## Site B

- Local users of CP64, CP63, CP65 and CP66;
- Tourists and visitors of Dumbarton Castle;
- Residents of Castlegate Avenue;
- Road users of the M8 (across the river);
- Residents of apartment blocks to Castle Road; and
- Local rail passengers.

## Site C

- Local users of CP62 and 61;
- Residents of Castlegate Avenue;
- Residents of Castlegreen Street close to the Buchanan Street junction;
- Residents of Buchanan Street;
- Residents of Castlegreen Crescent;
- Residents of Glasgow Road close to the Buchanan Street junction;
- Local road and footpath users of Buchanan Street;
- Local road and footpath users of Glasgow Road; and
- Local rail passengers.

## Site D

- Local users of CP66 and CP67;
- Residents of Greenhead Road;

- Residents of Glasgow Road; and
- Local rail passengers.

A number of representative panorama photographs have been taken depicting the existing baseline view from receptors identified above. These panoramas are shown on pages 10-15 and listed below. Viewpoint locations are shown on Figure 4 overleaf.

- Viewpoint 1: View east from CP64 along the coastline.
- Viewpoint 2: View west along CP63 towards Dumbarton Castle.
- Viewpoint 3: View north east toward the underpass at the end of CP66.
- Viewpoint 4: View west along the coastline from CP66.
- Viewpoint 5: View south from CP65 adjacent to the sewage works.
- Viewpoint 6: View north from the footbridge over Gruggies Burn and CP62.
- Viewpoint 7: View north east from Castlegreen Street along Gruggies Burn.
- Viewpoint 8: View north east from the edge of Knoxland Square Conservation Area toward Gruggies Burn.
- Viewpoint 9: View south west from Glasgow Road along Gruggies Burn.
- Viewpoint 10: View south west from Castle Road at Scots Terrace.
- Viewpoint 11: View north east from Castle Road by the informal parking area near CP64.

- Key
- Site A - Tidal Floodgate
  - Site B - Tidal Embankment
  - Site C - Flood Walls
  - Site D - Flow Diversion Culvert
  - Viewpoint Location

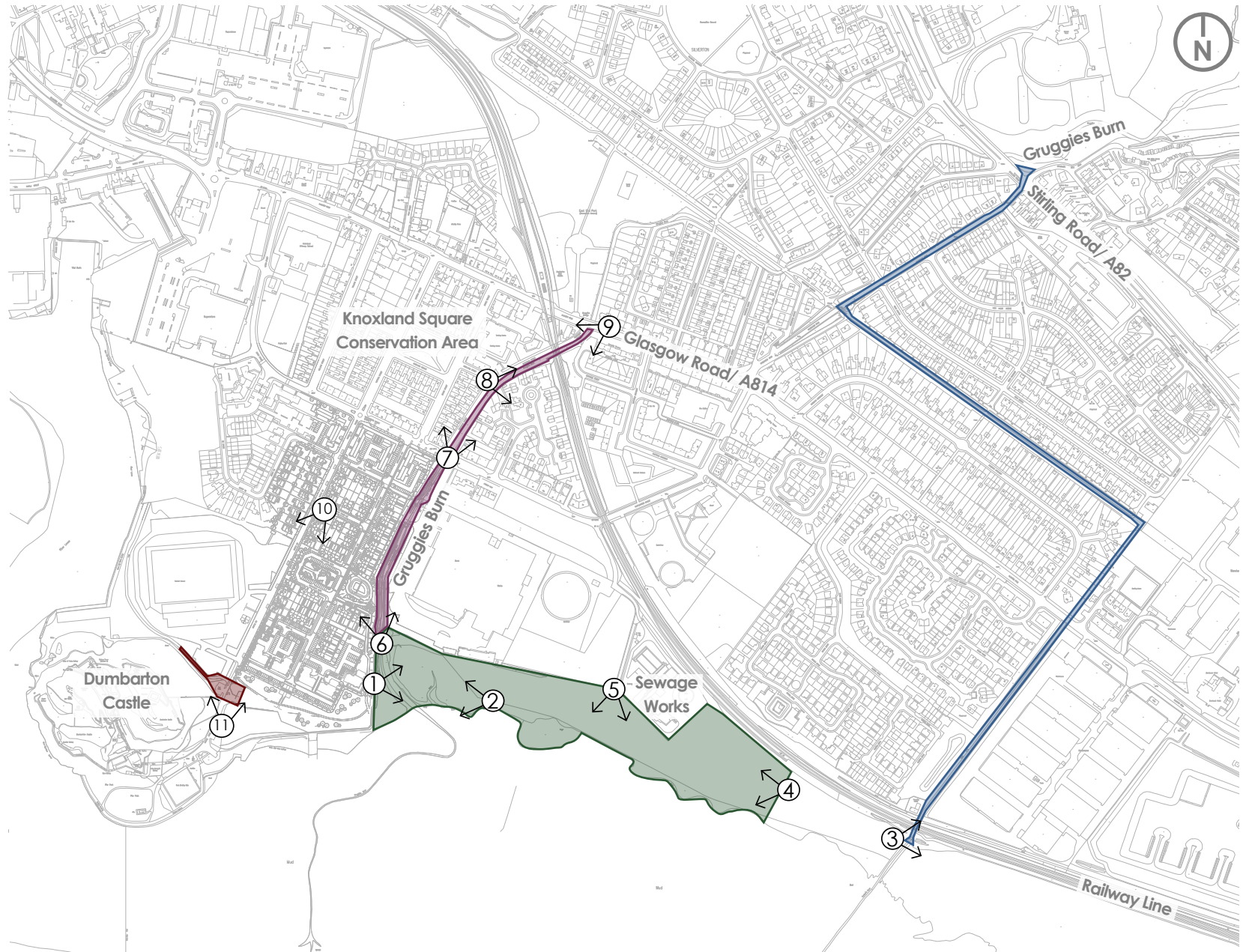


Figure 4: Viewpoint Location Plan

# Visual context



Viewpoint 1: View east from CP64 along the coastline



Viewpoint 2: View west along CP63 towards Dumbarton Castle



Viewpoint 3: View north east toward the underpass at the end of CP66



Viewpoint 4: View west along the coastline from CP66

# Visual context

Indicative extent of Site B in view



Viewpoint 5: View south from CP65 adjacent to the sewage works

Indicative extent of Site C in view



Viewpoint 6: View north from the footbridge over Gruggies Burn and CP62



Viewpoint 7: View north east from Castlegreen Street along Gruggies Burn



Viewpoint 8: View north east from the edge of Knoxland Square Conservation Area toward Gruggies Burn

# Visual context



Viewpoint 9: View south west from Glasgow Road along Gruggies Burn



Viewpoint 10: View south west from Castle Road at Scots Terrace





Viewpoint 11: View north east from Castle Road by the informal parking area near CP64

# Mitigation and Recommendations

The following recommendations are set out to reduce potential effects on landscape and visual receptors as a result of the Scheme. No specific mitigation and recommendation proposals are deemed necessary for Site A due to the scale and nature of this feature.

## *Site B*

- Retain established woodland and scrub along the northern edge of the coastal site where possible, to ensure continued screening directly adjacent to the railway line and sewage works.
- Align the embankment along the route of the existing Core Path where feasible to reduce tree loss along the coast and minimise disruption to wetland habitats.
- Plant native shrub to the base of the embankment in key locations to help soften this feature and blend into surrounding areas of scrub and grassland.
- Ensure slopes are no steeper than 1:3 where possible to ensure seeding and planting is feasible.
- Reinstatement of Core Path to ensure continued pedestrian access along the coastline.

Also refer to Figure 5 overleaf for recommendations.

## *Site C*

- Ensure trees to the edge of the industrial estate are retained and protected where possible. Where trees require removal for construction, replacement planting should be considered to ensure adequate screening.
- Walls to be clad with a material that reflects the stone of the dwellings in the adjacent Knoxland Square Conservation Area.
- Where possible provide additional native tree planting along the west of the burn, within the space between the watercourse and rear fencing of dwellings to provide screening for residents and to re-establish the semi-urban character of this linear route.

## *Site D*

- Retention and protection where possible of existing vegetation between Stirling Road (A82) and Strowan's Well Road. Where trees require removal for construction, replacement planting should be considered to provide adequate screening.

- Key
- Core Path - retained
  - Core Path - realigned along Bund
  - Stepped access to existing Core Path
  - Existing trees/ scrub to be retained (indicative)
  - Existing trees/ scrub to be removed (indicative)
  - Proposed hard wearing grass seed to embankment and adjacent disturbed ground
  - Proposed Native Scrub/ Trees to mitigate embankment
  - Proposed erosion control (indicative - refer to Engineers drawings)
  - Existing coastal habitats to be retained and protected



Note:  
Accurate extent of vegetation to be retained and removed to be confirmed by Tree Survey.

Figure 5: Site B - Illustrative Tidal Embankment Planting Recommendations

# Potential Effects

## Visual Commentary

### *Effects of footpath and Core Path users*

There are several Core Paths in close proximity to sites A-D and are therefore likely to experience changes in view as a result of the Scheme.

During construction users of CP61 will be diverted due to the location along the western bank of Gruggies Burn. As this will be diverted along the adjacent Buchanan Street views of the works would be possible and changes in view evident. Upon completion changes in view will include the new flood walls to both sides of the burn, with existing vegetation from the western edge removed. CP62 will also be diverted along Castlegate Avenue during construction, with glimpsed views possible. Tree loss is likely to be evident from this view during construction. Upon completion tree loss along both banks of the burn would be evident, opening up views of the adjacent dwellings to the west along Castlegate Avenue.

Users of CP64 have views available along Gruggies Burn and to the coastline and would experience changes in view during construction and operation. Tree loss would be evident to both sides of the burn and to some areas of the shoreline, this would be permanent. Temporary changes in view such as machinery, vehicles and temporary fencing may also be evident during this time. Upon completion the tidal embankment would be visible along the shoreline, seen against the surrounding retained woodland, scrub and wetlands and as well as the new grassland. Flood walls to both sides of the burn would also be visible.

CP63, 65 and 66 are located along the shoreline and the route would be diverted to the north during construction. Open operation the routes would be realigned, including being located along the top of the tidal embankment. Changes in view would be evident due to the positioning atop or in close proximity of the embankment and would include views of the erosion control, loss of vegetation would remain evident. Users of CP66 would also experience views of the outfall of the culvert (Site D) just south of the railway underpass.

During construction local footpath users of Greenhead Road and Glasgow Road would experience changes in view as a result of Site D. Changes would include construction vehicles and machinery, temporary stockpiling of material and fencing to the works area. CP59 would be diverted along Gells Avenue during this time, with partial views toward the works on Greenhead Road possible. Upon completion, as the proposals for Site D will be below ground there would be no long-term visual effects on these receptors.

### *Effects on road users*

Local road users are likely to experience changes in view where directly adjacent to proposals. Users of Buchanan Street will experience changes in view resulting from the flood walls to both sides of the burn. Road users of Glasgow Road and Castlegreen Street will also experience changes where these streets intersect Buchanan Street and cross Gruggies Burn. Due to the transient nature of local road users, it is anticipated that long term adverse effects would be limited.

Road users at Castle Gate would experience changes in view as a result of the Tidal Floodgate. A permanent wall is required, this will tie into the existing wall located between Dumbarton Rock and Dumbarton Football Stadium. The tidal floodgate would only be closed during predicted flood events and is therefore a temporary feature, although with some permanent elements. However, on balance given the primary feature across the road is temporary, effects on these receptors are considered to be limited.

### *Effects on Residents*

Due to the urban nature of Dumbarton there are numerous residential receptors which may be effected by the proposals, both during construction and upon operation.

During construction residents of Greenhead Road and Glasgow Road would experience changes in view resulting from the installation of the culvert (Site D). Changes in view are likely to include construction vehicles and machinery required, temporary stockpiling of material and fencing to the works area. Upon completion, as the culvert will be a below ground feature there would be no long-term

visual effect.

Residents to the east and west of Gruggies Burn, including those at Buchanan Street, Castlegreen Crescent and a small number of receptors at Glasgow Road will experience changes in view. During construction, vehicles, machinery, fencing and material stockpiles are all likely to affect views for residents. However, these will be temporary. Upon completion of the works the existing view would include the flood walls to both sides of the burn. These walls will be of similar height to the existing wall at Buchanan Street and therefore the extent of available view would remain as per the baseline scenario. The walls will be clad with a material that reflects the stone dwellings in the adjacent Knoxland Square Conservation Area, visually improving the appearance of the wall on the east of the burn. Due to the new flood walls on the western side of the bank, vegetation removal will be evident, which currently softens the appearance of the existing gabions. On balance it is considered that there would be limited effects on residential receptors.

Residents of Castlegate Avenue will experience changes in view from the rear of the properties, this will primarily affect views from upper story windows. During construction, tree loss along the length of the burn between the River Clyde and Castlegreen Street will be evident, this will be permanent. Glimpsed views of machinery, vehicles and temporary fencing may also be evident during this time. Upon completion glimpsed views of the flood walls may be possible through boundary fencing of rear gardens. Due to the loss of established trees views to the west would become open and the industrial area west of the burn would become more visible, existing vegetation along the edge of the area would continue to provide some screening. If replacement planting to the wets of the burn is undertaken, effects on the residential receptors would reduce.

Residents of Castle Road and Castlegreen Avenue would also experience changes in view from the rear of the properties, this will primarily be from upper story windows. Views of the shoreline are possible and during construction changes in view would be apparent. Loss of trees, shrubs and some grassland habitat would be evident, this will be permanent. Temporary changes in view such

as machinery, vehicles and temporary fencing may also be evident during this time. Upon completion the coastal embankment would be visible along the shoreline, seen against the surrounding retained woodland, scrub and wetlands and as well as the new grassland. Key features such as areas of sandy beeches and dense woodland along the railway would not be affected. Residents of Castle Road would also experience changes in view during predicted flood events when the tidal floodgate to the southern end of Castle Road is closed. Due to the predominantly temporary nature of this feature effects on receptors would be limited.

#### *Other*

Due to the proximity of the railway line, there is potential for rail passengers to experience changes in view during both construction and operation, including views of the flood walls where the railway crosses over Buchanan Street and during the installation of the culvert and associated outfall where the railway passes between the coast and Glasgow Road. Due to the transient nature of these views, these receptors are unlikely to be adversely affected.

Visitors to Dumbarton Castle may experience changes in view. The elevated visitor attraction offers panoramic views from certain vantage points, including partial views of the tidal embankment and flood wall proposals. As changes in view would be limited to a small portion of the available view, there would be minimal effects on visual receptors here.

#### **Landscape Commentary**

Due to the scale of the Scheme, it is considered that there will be no effect on the wider landscape character, Glasgow and Clyde Valley Landscape Character Area. It is anticipated that at a local scale there may be some changes to the site specific townscape and coastal character, this is discussed below.

#### *Site A*

The tidal floodgate, although not in use all the time, would require some degree of permanent installation along Castle Road in the form of a wall to either side of the gate. The area is primarily residential,

# Potential Effects

including some newly built dwellings and apartment blocks adjacent to Dumbarton Rock. The introduction of the tidal floodgate would have limited effects on the site landscape character, given the scale of the proposals and mixed use setting comprising residential and recreational built form.

## *Site B*

The tidal embankment would change the immediate landscape character along the coast, with the landform uncharacteristic of the gently sloping landscape and surrounding areas of wetlands, salt marsh, scrub and sandy beeches. Mitigation such as grassland planting as well as scrub and trees will help to soften this feature and further blend into the surroundings.

## *Site C*

There would be limited effects on the site character to the north of Site C, between Castlegreen Street and Glasgow Road. The flood walls will match the height of the existing wall along the western side of the burn. A slight loss of vegetation will be evident but on balance the new walls would be more in keeping with the immediately adjacent site character.

To the south of Glasgow Road, changes in the site character would be more apparent, with loss of trees and vegetation evident. This would extend the open and urban characteristics of the burn, currently present to the north of this area. Where possible trees should be planted between the new flood walls and rear of dwellings to the west to reduce the effects on the site character here. All trees on periphery of the adjacent commercial units to the east should be retained and protected where possible.

## *Site D*

Due to the concealed nature of the culvert proposals, there would be very limited effects on the site characteristics of Site D, which varies significantly along its route. At the inlet to the north, all trees and surrounding vegetation should be retained and protected as much as possible to retain the wooded nature around the burn. Given the existing masonry headwall at the outfall locations, changes within the landscape associated with the new outfall would be limited.

## **Commentary on Landscape Setting of Heritage Assets**

### *Dumbarton Castle*

Dumbarton Castle is a Scheduled Monument located on the edge of Dumbarton along the River Clyde. It is situated upon Dumbarton Rock and elevated above the surrounding town. Trees and scrub are evident to the base of the rock, and growing from it in some areas, with grass growing on ledges where possible up the rock face. The surrounding character contrasts between the built up urban character of Dumbarton and the River Clyde.

The proposed tidal floodgate (Site A) will be located closest to Dumbarton Castle, located on Castle Road near the base of the rock but outwith the Scheduled Monument boundary. The gate will be a temporary feature, put in place during predicted tidal floods, although some of it will be a permanent fixture to allow its installation. The gates will also be small in size, covering the width of the road. Due to the size and predominantly temporary nature of the proposals at Site A, this is not anticipated to significantly affect the landscape setting of Dumbarton Castle.

The tidal embankment (Site B) is proposed between 0.40 and 0.85km from the Scheduled Monument. The landscape context between Site B and the castle comprises areas of open space, new residential development consisting of both apartments and two storey houses, an industrial estate and sewage works. There is some inter-visibility between the site and Dumbarton Castle from key vantage points. Due to the distance from Dumbarton Castle, and surrounding urban context the tidal embankment is unlikely to affect the landscape setting of Dumbarton Castle.

The mouth of Gruggies Burn lies 0.37km east of Dumbarton Castle, separated by primarily residential development. Loss of vegetation would be evident along the stretch of the burn between the River Clyde and Glasgow Road, marginally increasing the urban nature of the surroundings of the castle. Due to the linear nature of the changes within an urban context and distance from the castle, the flood walls are unlikely to affect the landscape setting of Dumbarton Castle.

## *Knoxland Square Conservation Area*

Knoxland Square Conservation Area is located south east of Dumbarton Town Centre and centres on Knoxland Square, a rectangular area of public open space bound by mature trees and surrounded by Victorian terraces. The Conservation Area includes Wallace Street, Victoria Street and Bruce Street as well as a small area of properties north of Glasgow Road. The area extends east toward Buchanan Street, adjacent to Gruggies Burn.

The flood walls at Site C are located immediately adjacent to the eastern boundary of the Conservation Area along Buchanan Street. The existing river wall provides a barrier between the watercourse and road and is currently in poor condition in some areas. The Scheme will introduce a new flood wall to both sides of the burn, which will extend to the same height as the current wall.

If the mitigation proposals and recommendations are followed through, with the materiality of the wall reflecting the stone of the dwellings within Knoxland Square, it is anticipated that the landscape setting of the Conservation Area would not be adversely affected.

# Summary and Conclusions

The Proposed Sites A-D cover four areas within Dumbarton comprising flood alleviation measures for Gruggies Burn and the River Clyde. The Scheme includes a Tidal Floodgate (Site A), Tidal Embankment (Site B), Flood Walls (Site C) and Flow Diversion Culvert (Site D).

There are several designated areas within Dumbarton and close to the Scheme. The primary heritage designations include Scheduled Monument Dumbarton Castle and the Knoxland Square Conservation Area, which are located adjacent to Sites A and C respectively. The coast is protected by an Open Space Designation as well as being an SSSI, SPA and RAMSAR site.

Several Core Paths provide connected walking routes around Dumbarton and along the route of Gruggies Burn. Further Paths also provide popular routes along the coast, providing links from the nearby residential areas.

This report has concluded that there would be no effects on the wider landscape character of the Glasgow and Clyde Valley, due to the small scale of the Scheme within the vast extent of this landscape and varying landscape types within it. There would be changes to the site specific character, which varies significantly from each location. Site B and C would be primarily affected due to the contrasting nature of the tidal embankment within a coastal site and the loss of vegetation along the burn.

Due to the scale and nature of the Scheme it is also considered that there would not be significant adverse effects on the landscape setting of heritage features Dumbarton Castle and Knoxland Square Conservation Area as a result of the proposals.

Due to the urban nature of Dumbarton there are several visual receptors identified within this report, including residential receptors, Core Path, footpath and road users. Receptors likely to be affected are limited to those immediately adjacent to the proposals, with Sites B and C likely to affect the larger number of potential receptors.

Receptors predicted to experience the most notable changes in view includes users of CP62, adjacent to Gruggies Burn, as well as

users of CPs 63, 64, 65 and 66. These are all located along the coast and will experience views of the proposed embankment.

If the mitigation recommendations are followed through to detailed design this would help to reduce the potential effects on landscape and visual receptors. Recommendations include the appearance of the cladding to the flood walls matching the buildings of Knoxland Square as well as replacement tree and scrub planting west of Gruggies Burn and along the tidal embankment.

It is considered that due to the scale and nature of the Scheme, effects would be limited to those visual receptors within the immediate vicinity of each site as well as the site specific character of the immediate area.



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