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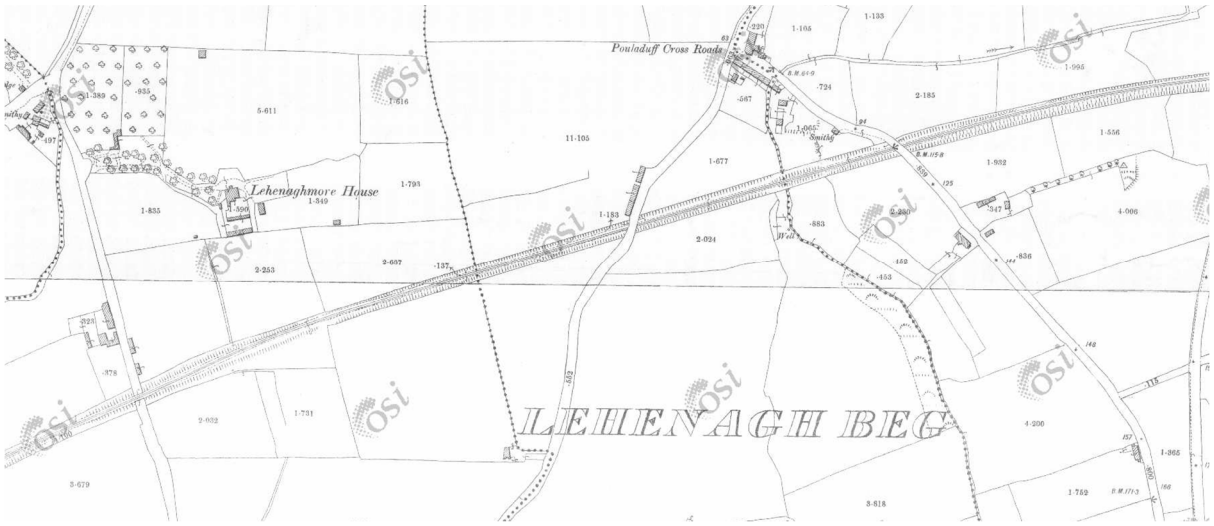

Conservation Report

Cork City to Viaduct Greenway – Tramore Road to Eagle Valley Phase 1

In conjunction with RPS Consulting Engineers for Cork City Council

A: Courthouse Chambers, 27-29 Washington Street, Cork T12 WN8F

T: 353 021 4393800
F: 353 021 4854145
E: architects@jca.ie
W: www.jca.ie

March 2023

RIAI Practice Member 2022 Conservation Practice G1

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1.0 Introduction

The following report has been prepared by JCA Architects, RIAI Conservation Grade 1 Architects, at the request of RPS Consulting Engineers, to accompany their Part 8 application for the design of the Cork City to Viaduct Greenway, Tramore Road to Eagle Valley (Phase I).
This report was prepared by Katherine McClatchie BA, MUBC, and Gareth O'Callaghan, BArch, MRIAI, RIAI Grade 1 Conservation Architect, both of JCA Architects. The site was visited in February 2022, and the existing structures on the site were examined.

The proposed development involves the creation of a Greenway which will commence within the road network of Eagle Valley and run along the eastern side of the open recreational space. From here the Greenway travels south to enter the Chetwynd Reservoir site. The Greenway will cross over the existing 4m wide concrete access road within the Chetwynd Reservoir site. There will be gated access provided on either side of the crossing of the concrete access road to prevent people from accessing the reservoir site. The Greenway will run alongside an existing access road travelling east towards Spur Hill. While The entrance to the Chetwynd Reservoir will remain in its present location, the location of the gate will move further west along the concrete access road. 2.0m high fences are proposed along both sides of the Greenway throughout the Chetwynd Reservoir site.

The proposed 4m wide Greenway will go under the existing railway bridge at Spur Hill. This bridge will not be altered but the stonework will be cleaned and repaired. A large mound of earth is located underneath Spur Hill Bridge, with vegetation also growing at the eastern entrance to the bridge. The removal of this earth mound will be accommodated as part of the Proposed Development.

The proposed Greenway will continue west from Spur Hill to Togher Road with a width of 4m. Between Spur Hill and L-2454 Togher Road there is heavy/thick vegetation consisting mostly of briars and gorse on both sides of an existing track. The proposed Greenway here will be a widening of an existing substandard paved walkway that runs between the L-2454 Togher Road and L-2455 Lehenaghmore Road and the horizontally alignment will be predominately straight.

The proposed 4m wide Greenway will go under the existing railway bridge at the L-2455 Lehenaghmore Road. This bridge will not be altered but the stonework will be cleaned and repaired.

From L-2455 Lehenaghmore Road to Forge Hill the horizontal alignment will be predominately straight except for two slight curves in the alignment to the west of the Forge Hill railway bridge. The proposed 4m wide Greenway will go under the existing railway bridge at Forge Hill. This bridge will not be altered but the stonework will be cleaned and repaired.

1.1 Location and Heritage Protection Status

The proposed Cork City to Viaduct Greenway is located to the south-west of Cork city centre, along the former Cork, Bandon and South Coast railway line. The proposed Greenway route, and the extent of the Tramore Road to Eagle Valley Phase I is indicated on the map below.

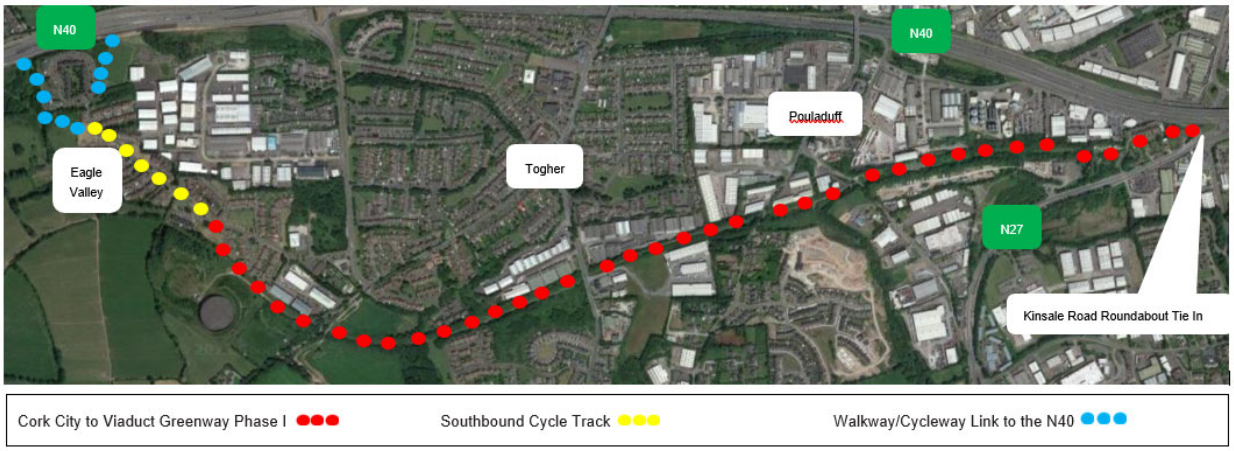


Figure 1: Location of Proposed Development (RPS)

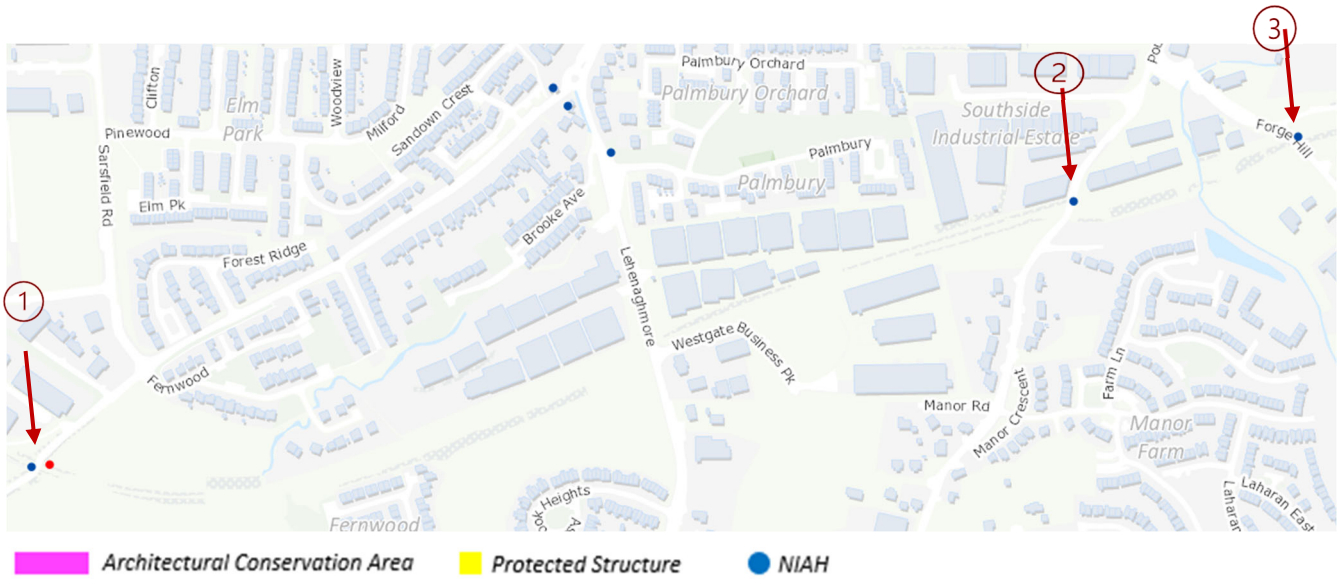


Figure 2: Architectural Heritage Map indicating NIAH structures on site

The proposed development includes the refurbishment of the existing former railway bridges spanning the greenway at Lehenaghmore, Togher Road and Spur Hill.

Each of the bridges is included in the National Inventory of Architectural Heritage:

Spur Hill Bridge: Registration number 20908608

Lehanaghmore Bridge: Registration Number 20908609.

Forge Hill Bridge: Registration Number 20908610
There are no Protected Structures on the site or in the vicinity of the site. The site is not located in an Architectural Conservation Area.

There is a holy well next to Spur Hill bridge recorded on the Record of Monuments & Places (CO086-006) which, although no longer visible, may require a separate Archaeological impact assessment.

All structures included on the NIAH are the subject of a Ministerial Recommendation for the relevant Local Authority to consider them for designation as Protected Structures. The following Objective within the new Cork City Draft Development Plan 2022-2028 is therefore of relevance to the proposed scheme:

Objective 8.22

National Inventory of Architectural Heritage (NIAH)

Cork City Council will have regard to Ministerial recommendations to the City Council to consider the designation of the buildings and gardens listed in the National Inventory of Architectural Heritage as Protected Structures. Cork City Council will consider the structures listed in the NIAH for protection, by designation of Protected Structures; by the adoption of Architectural Conservation Areas to protect groups of buildings; or by whatever other means the Council considers will most effectively protect the architectural heritage of the City. These Ministerial Recommendations will be taken into account when the Cork City Council is considering proposals for development that would affect the historic or architectural interest of these structures.

2.0 Historical Background

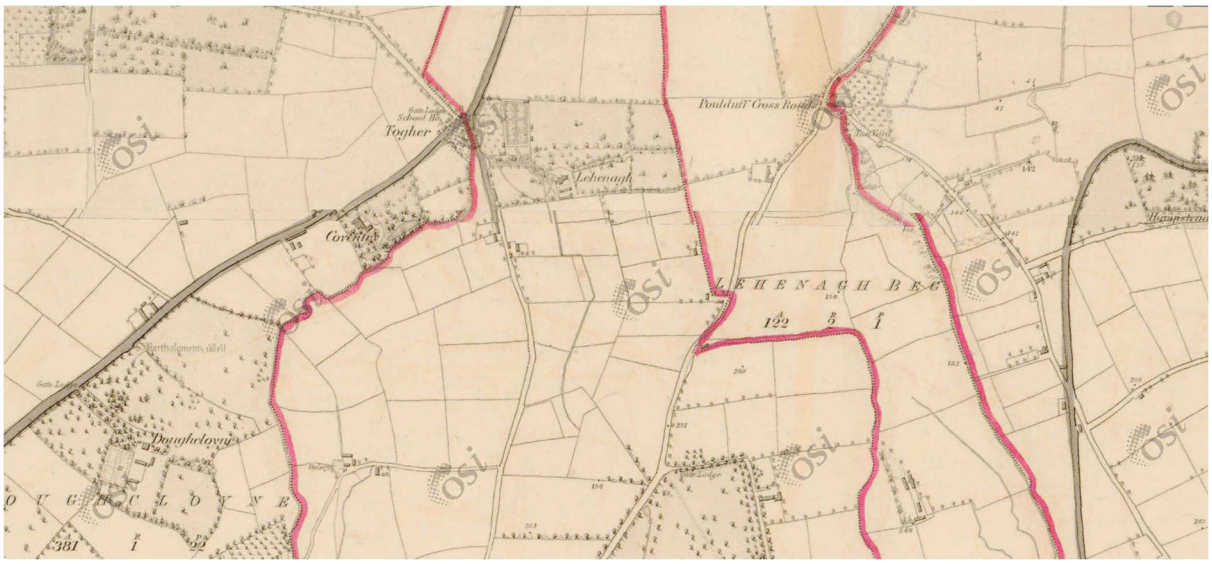


Figure 3: First edition OS map, 1841-2, showing site before rail line introduced

The route of the proposed Cork City to Viaduct Greenway utilises the presently disused site of the former Cork, Bandon & South Coast rail line.

The CB&SC Railway was one of five county-based rail networks, along with one national link, which were established in Cork in the 19th century. It was promoted initially in the early 1840s as a rail link between Cork and Bandon, with a committee set up in 1844 who appointed Charles Vignoles, an Irish railway engineer who worked on a great number of rail lines, both in Ireland and abroad, to survey and assess the suitability of the proposed route[1]. The route was initially suggested by acting engineers Edmund Leahy (County Surveyor for the West Riding) and his father Patrick.

Legislation enabling the construction of the line was passed through Parliament in 1845, and construction was begun on the Bandon-Ballinhassig section of the line by the end of that year. In about 1848, on the strong recommendation of Isambard Kingdom Brunel and James Walker, Charles Nixon was appointed engineer-in-chief to the Cork & Bandon Railway Company, for which he constructed the first railway tunnel in Ireland and large-span skew bridges using ordinary rubble masonry. These works were executed by local craftsmen and labourers, largely trained by himself with the help of his principal assistant, Joseph Philip Ronayne[2]. Nixon had worked under I.K. Brunel, while Joseph Philip Ronayne was at that point a young Cork engineer, later becoming MP for Cork in 1872.

The line's original twenty-mile route was divided into six lengths, each of which was let out to a number of different contractors, but apparent financial difficulties meant that the Bandon-Ballinhassig section of the line was opened as soon as it was completed, with the first trains running on this section in June 1849.

A tender of £87,000 was accepted from London contractors Sir Charles Fox and John Henderson in September 1849 to construct the Ballinhassig-Cork section of the line. This section included what would be, for a short period of time, the longest railway tunnel in Ireland at Gogginshill, near Ballinhassig, as

[1] The details of the construction of the Cork-Bandon railway are documented in Colin Rynne's *The Industrial Heritage of Cork City & its Environs*, Dublin 1999, pp. 209-10

[2] Irish Architectural Archive, Dictionary of Irish Architects, entry for Charles Nixon. Nixon was also engineer-in-chief for the Waterford & Kilkenny Railway and engineer to the Kilkenny & Great Southern & Western Railway.

well as the magnificent cast-iron Chetwynd viaduct. In all, in addition to a short road bridge beneath the Old Blackrock Road, there were some 21 cuttings, 19 embankments, and 15 road bridges on the route. As the line approached the city terminus, it would cut across three south-eastern approaches into the city, with those timber and later stone bridges now demolished during the construction of the present South City Link Road. The line terminated at Albert Quay, and the entire Cork-Bandon line was opened to the public on 6th December 1851.

It appears likely, then, that the three masonry bridges on the proposed Greenway route were designed, or at least supervised, by Charles Nixon, and built by local stonemasons.

Between 1851 and 1893, the mileage of the West Cork Line extended from 20 to 94 miles. Many West Cork Towns attained their own railway stations; Kinsale (1863), Clonakilty (1866), Dunmanway (1866), Skibbereen (1877), Bantry (1881), Timoleague and Courtmacsherry (1890), Bantry Bay (1892), and Baltimore (1893).

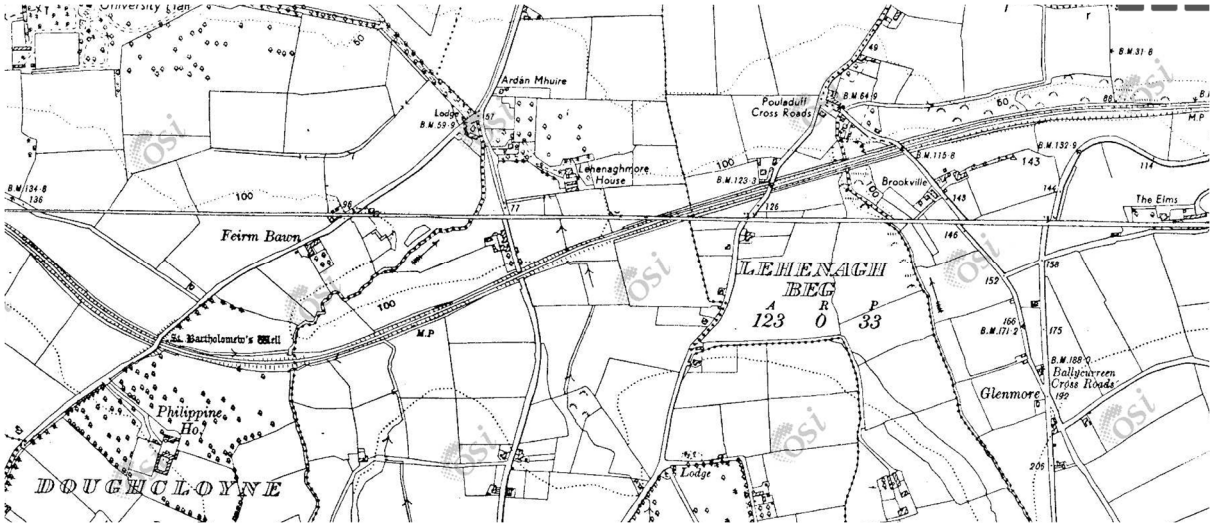


Figure 4: OS map, 1949, showing Cork & Bandon rail route through site

In 1898, the Cork and Bandon Railway, the Cork and Kinsale Junction Railway and the West Cork Railway amalgamated together to form the Cork, Bandon and South Coast Railway. This company further amalgamated with the Great Southern and Western Railway in 1925. The last passenger service to West Cork ceased in 1961. In 1979, the track bed approaching the city was widened for construction of the South Link Road as far as the former Macroom Junction in Ballyphehane.

3.0 Current Description, Conservation Assessment & Recommendations for Repairs to Heritage Structures on site

3.1 FORGE HILL BRIDGE

Description:

Forge Hill is an intact single span masonry stone arch bridge. The arch is relatively shallow rising from pier abutments recessed slightly from the plane of the main elevation. All detailing: arch voussoirs, abutment piers, string course and parapet capping are constructed in ashlar Cork limestone with a hammered finish with finely tooled and drafted arises. The general facing stone is a mix of limestone and sandstone laid in a snecked pattern with a squared off facing edge. The abutment at the spring point is buttressed and constructed in limestone ashlar block.

Condition:

The bridge is generally in good condition.

Loss of mortar pointing from stonework joints is the main issue.

A secondary issue would be later pointing repairs that appear to be hard cement-based mixes which encroach over the stone surface in many places. This is confined to the rubble panels rather than the cut stonework (ashlar). It is not breathable and is trapping water within the masonry fabric and lifting in many places where it is buttered over the stone face. The stone is heavily soiled with carbon and other deposits caused by years of vehicular fumes and general atmospheric pollution.

As areas of masonry fabric are heavily obscured by vegetation visible it is not established if the ivy overburden has destabilised stonework through establishing roots and tendrils

Recommended Schedule of Conservation Works (Rehabilitation fabric repair works)

1. Removal of Vegetation: Allow for removal of ivy overburden and all vegetation growth
    - Allow for treatment with approved biocides
    - Cut ivy tendrils and allow to die back. Avoid pulling tendrils and roots as this will dislodge stonework

2. Cleaning of Stonework:
    - Allow low pressure steam washes (eg. Doff system) and approved chemicals to remove ingrained carbon staining and graffiti

3. Repointing of all stonework: Removal of damaged and inappropriate cement based mortars and replacement with lime based mortars;
    - Remove all cement based pointing
    - Repoint with lime based mortars making an allowance for stone pinning repairs as per specification below

4. Miscellaneous repairs:
    - Reposition parapet stones that are out of alignment (impacted by vehicular traffic)

PHOTOGRAPHIC CONDITION SURVEY: FORGE HILL BRIDGE

Northern approach with view of bridge parapets that increase in height across the bridge span

Parapet elevation

Loose and friable pointing mortars. Later replacement mortars are cement based

Parapet stone has shifted out of alignment on Northern end

Loose and unconsolidated parapet capping stones

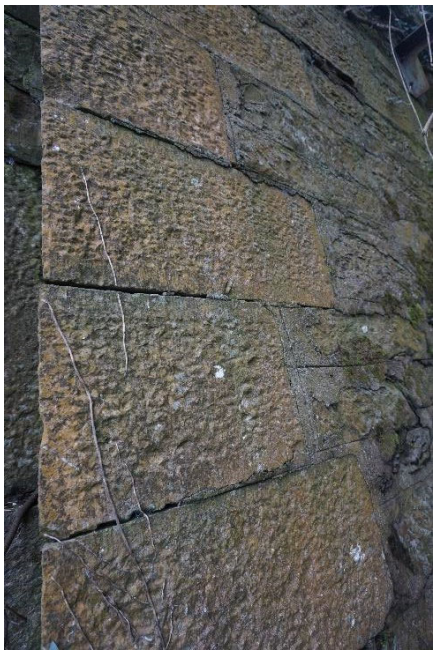
Loss of mortar pointing to ashlar stone capping and general parapet walling is evident

West elevation: Considerable vegetation overburden

Section of West elevation visible

Detail of arch spring point: Considerable leaching of joints presumably caused by unsealed road surface and open stonework joints that have lost their mortar fill. Note the use of non-breathable cementitious mortars at the top of the photograph where the mortar is inappropriately brought over the stone face. Much of the ashlar stonework has lost its mortar fill.

Loss of smaller stone pinnings above arch voussoirs



Much of the ashlar work has open mortar joints

hard cement later mortar repairs with lining to define stone edge

East elevation is inaccessible due to the placing of an earth mound against the barrel vault

Detail of arch barrel rising from ashlar pier. Arch vault stonework is laid in a diagonal pattern and appears in good condition with mortar joinwork generally intact.

Some leaching of salts through arch barrel possibly from unsealed road surface

3.2 LEHANAGHMORE BRIDGE

Description:

Lehanaghmore is an intact single span masonry stone arch bridge. It is almost a sister bridge, in design, to Forge hill but differs slightly in that the facing stone of the bridge elevations is ashlar block rather than limestone/sandstone rubble infill. Some of these stones are rusticated as indicated in the photographs below. The arch is relatively shallow rising from pier abutments recessed slightly from the plane of the main elevation. All detailing: arch voussoirs, abutment piers, string course and parapet capping are constructed in ashlar Cork limestone with a hammered finish with finely tooled and drafted arises.

Condition:

The bridge is generally in good condition.

Invasive ivy growth and loss of mortar pointing from stonework joints is the main issue.

Loss of surface stone to the east arch voussoirs appears to be surface damage and has not interfered with the structural integrity of the arch.

Other issues would be later pointing repairs that appear to be hard cement-based mixes which encroach over the stone surface in many places. This is confined to the rubble panels rather than the cut stonework (ashlar). It is not breathable and is trapping water within the masonry fabric and lifting in many places where it is buttered over the stone face.

The stone is heavily soiled with carbon and other deposits caused by years of vehicular fumes and general atmospheric pollution.

As areas of masonry fabric are heavily obscured by vegetation visible it is not established if the ivy overburden has destabilised stonework through establishing roots and tendrils

Recommended Schedule of Conservation Works (Rehabilitation fabric repair works)

1. Removal of Vegetation: Allow for removal of ivy overburden and all vegetation growth
    - Allow for treatment with approved biocides
    - Cut ivy tendrils and allow to die back. Avoid pulling tendrils and roots as this will dislodge stonework

2. Cleaning of Stonework:
    - Allow low pressure steam washes (eg. Doff system) and approved chemicals to remove ingrained carbon staining and graffiti

3. Repointing of all stonework: Removal of damaged and inappropriate cement based mortars and replacement with lime based mortars;
    - Remove all cement based pointing

- Repoint with lime based mortars to all open and defective joints and joints with cement based pointing

4. Miscellaneous repairs:
    - Reposition parapet stones that are out of alignment (impacted by vehicular traffic)
    - Loss of stone to areas of parapet on East roadside elevation to be addressed by indenting new similar stone
    - Allow for repairs to arch stones by indenting with similar tooled limestone ashlar blocks to repair surface damage

PHOTOGRAPH CONDITION SURVEY: LEGHENAMORE BRIDGE

Roadway and bridge parapets looking North

Considerable ivy overburden to bridge parapets

movement in parapet stones

Shifting of parapet stones and open jointwork

Loss of block limestone to East parapet on roadside

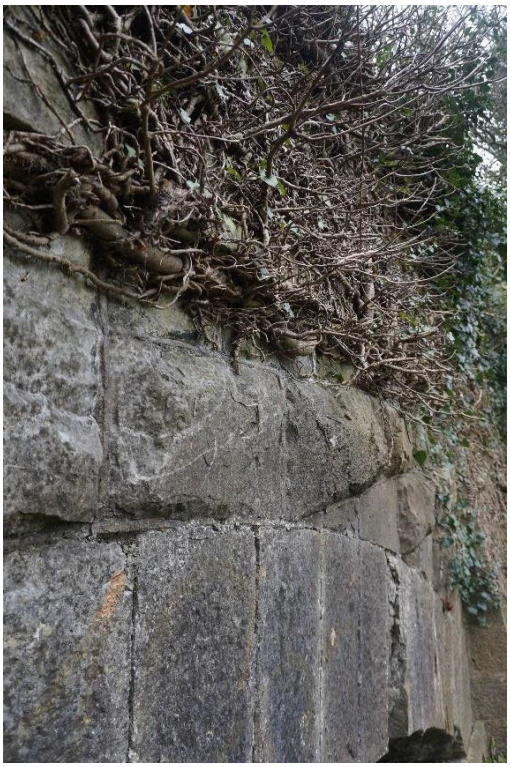
General roadside parapet elevation with loss of pointing to many stonework joints

Bridge East elevation

Considerable ivy tendrils present on abutment and wing walls

Surface damage to arch stones where earth mound built up to underside

Detail of rusticated spandril stones. Note hard cement based pointing



Severe invasive ivy growth beneath east parapet above arch

Close up view of ivy tendrils

Arch barrel stone is laid in a diagonal pattern and is largely intact with some leeching of salts from mortar joints. Note heavy graffiti and loss of mortar from pier joints

Heavy carbon soiling of stonework

West elevation. Note invasive vegetation and ivy overburden

detail of invasive ivy growth on West elevation abutments

3.3 SPUR HILL BRIDGE

Description:

Spur Hill is an intact single span masonry stone arch bridge. The abutment at the spring point is buttressed and constructed in limestone ashlar block with smooth faced snecked sandstone and limestone spandrils and wing walls. The arch is relatively shallow rising from pier abutments recessed slightly from the plane of the main elevation. All detailing: arch voussoirs, abutment piers, string course and parapet capping are constructed in ashlar Cork limestone with a hammered finish with finely tooled and drafted arises.

Condition:

The bridge is generally in good condition.

Loss of parapet coping stones and missing mortar pointing from the majority of stonework joints are the main issues. Invasive ivy growth where large tendrils have taken root is also an issue.

The stone is heavily soiled with carbon and other deposits caused by years of vehicular fumes and general atmospheric pollution.

As areas of masonry fabric are heavily obscured by vegetation visible it is not established if the ivy overburden has destabilised stonework through establishing roots and tendrils

Recommended Schedule of Conservation Works (Rehabilitation fabric repair works)

1. Removal of Vegetation: Allow for removal of ivy overburden and all vegetation growth
    - Allow for treatment with approved biocides
    - Cut ivy tendrils and allow to die back. Avoid pulling tendrils and roots as this will dislodge stonework

2. Cleaning of Stonework:
    - Allow low pressure steam washes (eg. Doff system) and approved chemicals to remove ingrained carbon staining and graffiti

3. Repointing of all stonework: Removal of damaged and inappropriate cement based mortars and replacement with lime based mortars;
    - Remove any cement based pointing
    - Repoint in lime based mortars to specification below
    - Allow for stone pinning repairs in conjunction with repointing as per specification below.

4. Miscellaneous repairs:
    - Repair West parapet wall: The coping has been lost along this wall and will require new ashlar block to be fabricated and placed insitu on repaired parapet wall tops. Much of the wall top rubble stone has been lost and new stone will be required.

- Rebuild South West ashlar pier at end of parapet wall. New ashlar stone to be indented.

PHOTOGRAPH CONDITION SURVEY: SPUR HILL BRIDGE

Approach road. Note intact parapet coping to East side and severe loss of stone to West

Loss of ashlar coping along flank of parapet and ashlar pier

West Elevation of bridge parapet with coping and top rubble stone missing

Local loss of stone beneath copings

Surviving coping. Note that coping is inclined outwards to shed water with rounded road edge

Loss of mortar pointing to mostly all parapet stonework and carbon soiling of stone surfaces

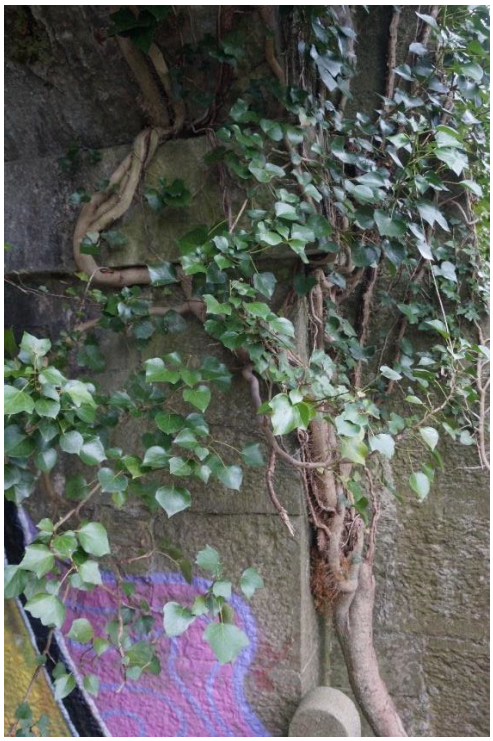
Abutment pier with severe loss of ashlar stone and parapet coping

Detail of abutment and wing wall with severe loss of mortar pointing to stone joints

Missing and dislodged parapet copings. Note buckling of spandrel wall stones and loss of pointing

Missing, loose unconsolidated parapet stone with open jointwork

Extensive ivy overburden and tree growth on wing walls



detail of substantial and destructive ivy tendrils

large root in stonework

Stonework mortar joints are generally intact to the piers and vault barrel

detail of tapering abutment

Loss of smaller stone pinnings and mortar pointing to spandrels above archline

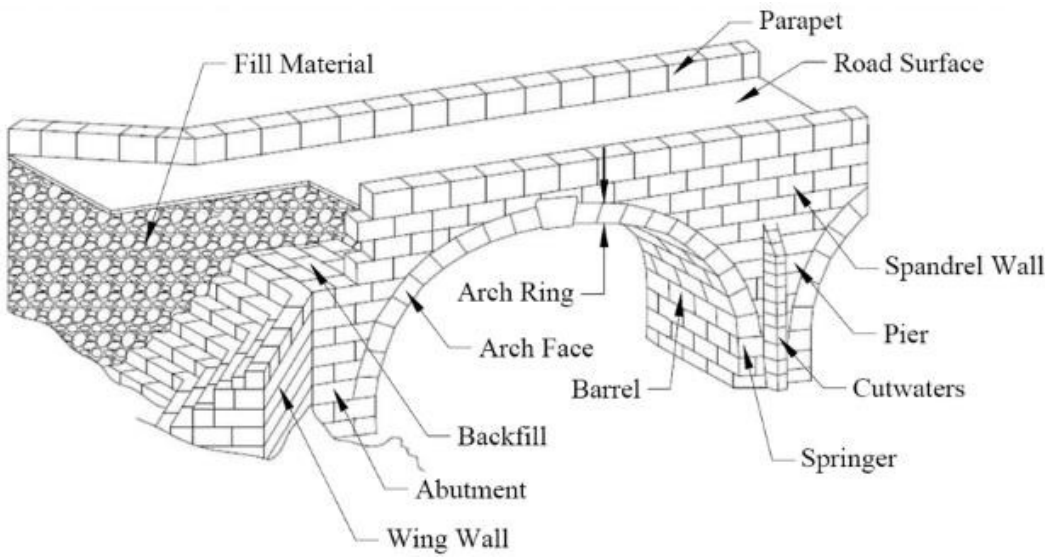
Arch in West elevation with earth mound blocking access

Underside of barrel vault in generally good condition

Earth mound concealing East elevation and access through arch

Detail of arch

3.4 General Conservation Principles and Outline Specifications



Typical terminology for masonry arch bridges

Conservation Principles

Any works to the bridge masonry or within its curtilage will be carried out in accordance with best conservation practice, as defined by the International Council on Monuments and Sites (ICOMOS) in the Venice Charter of 1964, and in subsequent charters. All qualifying conservation repair works will be in accordance with the standards of best practice as outlined in the Department's Architectural Heritage Protection Guidelines for Planning Authorities (2011) and relevant volumes of the Department's Advice Series. A suitably accredited conservation architect should oversee works.

The following principles will be adhered to at all times:

• Conservation work should be based on an understanding of the bridge and its historical development and the primary aim should be to retain and recover the significance of the structure.

• Any alterations should be carried out in accordance with the principle of 'minimal intervention'.

• Repairs to original fabric should always be favoured over replacement.

• Where replacement of an original element is unavoidable, this should be historically accurate in form and materials.

• Where lost elements must be reconstructed, these should aim for historic authenticity and avoid conjecture in as far as possible.

• Modern interventions should be reversible and if appropriate visually identifiable.

• New work should be recorded.

• Works should be carried out by suitably skilled craftspeople with proven expertise in their trade working with historic buildings.

• All works to be agreed with the conservation architect.

- **The principle of minimum intervention will apply when dealing with elements of historic building fabric**

Supervision of all works will be carried out by an accredited Conservation Architect. All stages of works are to be monitored and recorded during regular site inspections, with a view to later compiling this information for dissemination as an educational resource for practitioners in the relevant fields. The contractor is to provide a detailed programme of works in advance to facilitate well-timed visits at critical stages of work.

Outline stone cleaning specification

- The intention is to apply a Doff or similar approved cleaning system to all stonework prior to repointing
- It is important that vegetation growth is removed prior to cleaning and that stonework is treated with approved biocides
- Low-pressure superheated water (150º) cleaning 'DOFF' to all stonework and low level brickwork to all external elevations. Used in conjunction with a biological soap solution and hand held nylon brushes
- A suitably skilled operative shall be in attendance upon the areas being treated at all times to commence scrubbing as soon as the dirt becomes responsive to brushing. Numerous applications may be required until clean. Carefully executed so as not to damage surfaces, brushing shall take place as early as possible to reduce the saturation period with nylon brushes. Bristle phosphor bronze, soft brass wire or similar [Steel wire brushes are not to be used] on Conservation Architect approval.
- Agreement of a test area with the Conservation Architect prior to widespread cleaning to determine the level of surface cleansing deemed acceptable
- Heavily ingrained carbon deposits (e.g. present on the undersides of arches and stone offsets) can be removed with approved chemical cleaning;
  -Following steam cleaning, 3no. passes of SC100 chemical cleaner can be applied, allowing the stone to dry after each wash. Further chemical cleaning to be carried out to heavily soiled and stained areas, as appropriate, until carbon and other deposits have been removed.

Outline specification for pointing repairs

Repointing of Stonework

Carefully rake out existing defective and cement pointing by hand to a depth of 20mm and repointing in in NHL 3.5 hydraulic lime match existing profile and colour as directed by Conservation Architect once scaffolding is erected. Avoid damaging stone arises when raking out and any damage caused will be solely the responsibility of the contractor.

Method Statement:

Raking and Re-Pointing Specification for Stonework Areas for Raking and repointing

- The locations for raking and repointing will include all stonework

- Rake out defective mortar joints and repoint to a depth as specified below with lime based mortar as per Jack Coughlan Associates, Architects and Conservation Consultants' specification

- A trial panel to be made on site for architects approval.

Materials and Products:

Chisels

- Raking will be carried out using small, pointed masonry chisels (such as a quirk). The diameter of the part of the chisel which enters the joint is to be less than the width of the joint. The chisels may be pneumatic or manual.

- No wedge shaped or broad headed chisels are to be used; grinders are not to be used to rake the mortar.

- Particularly narrow joints will be raked out with a narrow instrument such as a hacksaw blade.

Repointing Mortar

- The pointing mortar shall be prepared using using hydraulic lime NHL 2 or 3.5.

  1 part lime to 2 ½ parts aggregate. The aggregate should be a mixture of clean sharp sand and 6mm grit (graded 5mm downwards).

- Alternative specification using non hydraulic lime (lime putty)- 2.5 sand to 1 part mature lime putty with 10% Metastar pozzolanic additive

Storage

- Materials are to be stored in a clean, dry environment where these is no risk of contamination or damage.

Raking and Repointing Procedure:

Raking

- Raking out will commence mid-joint and work outward toward the arrises.

General limestone/sandstone walling

All stonework joints where indicated on drawings to be raked out to a depth of 20mm allowing for a tolerance 10mm average up or down of this figure, prior to repointing.

Pinning stones: allow for 3 no. per sqm. across all areas to be repointed. This is preferable to packing out / building out a wide joint with mortar.

Fine Ashlar work (Tooled limestone parapet copings, arch vouissoirs pier quoins and string courses)

All stonework joints where indicated on drawings to be raked out to a depth of between 10-15mm, prior to repointing.

Mortar repointing specification to include fine sieved sand instead of grit

- All debris and dust is to be removed from the raked joints with stiff bristle brushes. A small engraving tool is to be used to remove any remaining mortar not removed by the pneumatic tools. All joints must be squared to ensure a good contact between the repointing mortar and surrounding stone.

Repointing

- All raked joints shall be wetted prior to repointing. The repointing mortar is to be well compacted into the joints using a suitable pointing iron.

- The joint is to be finished to a flush finish where arrises are sharp and in good condition. The exact finish is to be agreed on site with the architect.

- No traces of mortar should be left anywhere on the exterior of the stone and the mortar should not exhibit any signs of shrinkage or cracking. The arrises of the stone shall be left clean and free from any mortar or cement stains.

Safety

- Eye protection should be used at all times during raking. Other protective clothing such as dust masks should be worn if necessary.

Mixing of mortars / Hydraulic Lime (NHL)

- The specification is to follow manufacturers instructions for hydraulic lime NHL 3.5 if this is to be preferred to mature putty lime.

- A conventional cement mixer can be used although a rollpan or paddle mixer may be preferred. The mix should be 1 lime to 2.5 sand. Measuring of material must always be with a gauging box or bucket. A shovel is not acceptable since quantities are too inconsistent. Lime mortars mixed in drum mixers can be prone to balling, use of particular mixing techniques can reduce this. We recommend the following procedure:

- Start with an empty mixer

  Add one part sand, followed by 1 part lime, followed by 1.5 parts sand

  Mix dry for at least 5 minutes

  After 5 minutes slowly add water until the desired consistency is reached. It is very important not to drown the mix by adding too much water.

  Once the desired consistency is reached mix for a further 20 minutes

  The mix, to begin with, should appear rather dry but as mixing time increases the mortar will become much 'fattier'. If too much water is added the risk of shrinkage will increase and the final strength reduced. Do not use any Plasticisers.

4.0 Assessment Methodology

The site was visited in February 2022, and the existing structures on the site were examined. Once information resulting from the historical analysis and physical inspection of the structures and site were compiled, the character of the historic structures and potential risks to their character were determined.

This impact assessment entails four stages:

1. A desk-top review of relevant documents relating to the site's history.
2. A field survey of the structures now surviving within the proposed development area.
3. An evaluation of the architectural heritage significance of these structures.
4. An assessment of the impact of the proposed development on the special heritage significance of the site.

Desktop Study

The historical aspects of the site's development were ascertained using historic Ordnance Survey maps and published sources on the transport history of Cork and in particular the Cork, Bandon & South Coast Railway. Colin Rynne's *The Industrial Heritage of Cork City & its Environs*, Dublin 1999 provides a concise but very informative account of the history of the rail line.

Field Survey

A full survey of the site was carried out by JCA in February 2022. This entailed the examination, description and photographing of all relevant structures within the development site for three reasons: (1) to verify what was already known about its built heritage, (2) to update this information to take account of any physical alterations to the site's structures, and (3) to fill in any gaps in our knowledge of the site, such as previously unrecorded features.

4.1 Assessment of Impact Methodology

An evaluation was made of the likely impacts of the proposed development upon the heritage characteristics of the historic building within the site. Changes to the building's physical attributes could potentially arise from:

- Indirect disturbance to upstanding buildings, e.g. vibrations from construction traffic, stockpiling of earth, and overshadowing by new buildings.
- Direct physical interventions to upstanding buildings, e.g. piecemeal demolitions, new extensions, and the replacement of existing fabric, fixtures and fittings

The magnitude of these impacts can range from 'major' in the case of drastic alterations or demolitions, to 'negligible' or 'none' where little or no change will ensue as a result of the impact. Such impacts can either be 'beneficial' or 'adverse' depending on whether the heritage character of the feature being impacted upon is enhanced or degraded as a result. A 'neutral' impact will be neither beneficial nor adverse.

- Major: *Beneficial* - Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality. *Adverse* - Loss of resource and/or quality and integrity of resource; severe damage to key attributes.
- Moderate: *Beneficial* - Benefit to, or addition of, key attributes; improvement of attribute quality. *Adverse* - Loss of resource, but not adversely affecting integrity; partial loss of/damage to key attributes.
- Minor: *Beneficial* - Minor benefit to, or addition of, one or several key attributes; some beneficial impact on attribute or a reduced risk of negative impact occurring. *Adverse* - Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one or several key attributes.
- Negligible: *Beneficial* -Very minor benefit to or positive addition of one or more attributes. *Adverse* -Very minor loss or detrimental alteration to one or more attributes.
- None: No loss or alteration of attributes; no observable impact, ie neither beneficial nor adverse.

The *significance* of an impact will depend on its magnitude and the heritage value of the feature being impacted upon. It can range from 'neutral', through 'moderate' to 'very large'. Thus, a major negative impact on a feature of very high heritage value will have a significantly large adverse effect, whereas the same impact on a feature of negligible value will be releatively insignificant. For the purposes of this analysis, the levels of impact significance are defined as follows:

- Very large: Only very adverse effects are normally assigned this level of significance. They are generally, but not exclusively, associated with sites of international, national or regional importance that are likely to suffer a most damaging impact and loss of integrity. However, a major change in a site or feature of local importance is not precluded from this cattegory.
- Large: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the planning process.
- Moderate: These beneficial or adverse effects may be important, but are not likely to be key factors in the planning process. Their cumulative effects may, however, be relevant if they lead to an increase in the overall adverse effect on a particular feature.
- Slight: These beneficial or adverse effects may be raised as local factors but are unlikely to be a critical issue in the planning process.
- Neutral: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

The various permutations of 'magnitude of impact' and 'heritage value' will result in the following impact significances:

Heritage Value	Magnitude of Impact				
	None	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate/ Large	Large/Very Large	Very Large
High	Neutral	Slight	Slight/Moderate	Moderate/Large	Large/Very Large
Medium	Neutral	Neutral/ Slight	Slight	Moderate	Moderate/Large
Low	Neutral	Neutral/Slight	Neutral/ Slight	Slight	Slight/Moderate
Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight

The duration of the impact is also of relevance. Short-term impacts upon a site's built heritage may arise during the construction phase of a development. There is likely to be long-term residual impacts as well once the development is completed and the site operational.

5.0 Assessment of Significance of Existing Site

The Cork, Bandon & South Coast Railway was one of five county-based rail networks, along with one national link, which were established in Cork in the 19th century. It was promoted initially in the early 1840s as a rail link between Cork and Bandon.

After closure, much of the infrastructure associated with the rail line was removed and parts of the route redeveloped for other purposes.

The former Cork, Bandon & South Coast Railway line and its surviving bridges are of significant **historical** and **technical** interest as surviving railway structures and have a **social** significance due to their role in Cork's extensive 19th and early 20th century rail system. The bridges are likely to have been designed by Charles Nixon, a British engineer who played an important role in the design of a number of Irish railways.

6.0 The Proposed Development

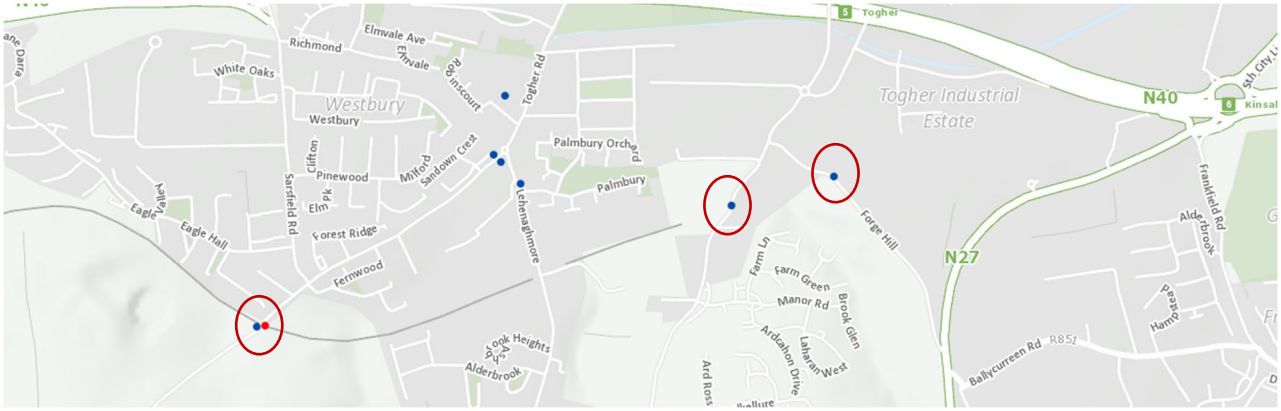


Figure 5: Site location map with NIAH bridges indicated

Eagle Valley to Spur Hill

The proposed Greenway commences within an open space area of Eagle Valley, adjacent to the main spine road of this residential estate. From here the proposed Greenway travels south through part of the current open space area to enter the adjoining Irish Water Chetwynd reservoir site. There are associated site development and landscaping works proposed within the open space immediately adjoining the Greenway so that it can be both physically accommodated at an appropriate gradient as well as visually absorbed into this area.

Within the reservoir site the Greenway will cross over an existing 4m wide concrete access road serving the Chetwynd reservoir. The Greenway will run eastwards parallel with, and on the southern side of, this access road towards Spur Hill. Before Spur Hill the Greenway will deviate from the reservoir access road and will continue eastwards to cross under the Spur Hill railway bridge. The reservoir access road junction with Spur Hill will remain at its current location. No structural works are required at the bridge, but the stonework will be cleaned and repaired.

To accommodate this section of Greenway and retain a suitable access road, it is necessary to move the access road approximately 1.7m northwards for circa 300m within the site.
There will be a need to clear circa 600m^2 of shrubbery and gorse within the Chetwynd Reservoir site to facilitate the proposed development. New landscaping in this location will be limited due to space limitations.

The proposed Greenway will go under the existing railway bridge at Spur Hill. This bridge will not be altered but the stonework will be cleaned and repaired. A large mound of earth is located underneath Spur Hill Bridge, with vegetation also growing at the eastern entrance to the bridge. The removal of this earth mound will also be necessary.

Spur Hill to L-2454 Togher Road

After crossing under Spur Hill bridge, the proposed Greenway will continue eastwards along the route of the former railway line to Togher Road (L-2454) which it will meet at grade. This part of the route is currently largely overgrown with an existing dirt track. There is dense vegetation consisting mostly of briars and gorse on both sides of an existing track as shown **Image 3-3**. There will therefore be a need to clear this scrub.

A viewing and picnic area will be provided north of the Greenway, just east of Spur Hill. This landscaped area will also include bicycle parking.
The horizontal alignment initially from Spur Hill heading east will have a prolonged curve until it meets Fernwood Crescent to the south; the remainder of the section up to Togher Road (L-2454) being straight.

Generally, 0.75 to 1.0m landscaped verges are to be provided which will tie into the existing shrubbery/vegetation and open space areas to the northwest of Fernwood Crescent. The Greenway will run to the north of Fernwood Crescent but at a lower level, with a tree lined boundary. Views northwards from properties backing onto the Greenway should be retained. The Greenway will pass immediately adjacent to a public open space area of Fernwood Crescent from which access will be possible.

The terrain from Spur Hill to Togher Road (L-2454) is uneven and undulating, with localized slopes. Reprofiling will be needed along a significant proportion of this section to achieve suitable levels.

L-2454 Togher Road to L-2455 Lehenaghmore Road

The Greenway will cross Togher Road (L-2454) via a new toucan crossing, which will have all necessary associated warning signage, lining and traffic lights.
From Togher Road (L-2454) to Lehenaghmore Road (L-2455) the proposed works will comprise the replacement and widening of an existing substandard paved walkway. The horizontal alignment of this section of the greenway will be predominantly straight.
The route will then cross beneath Lehenaghmore Road (L-2455) via an existing bridge. This bridge will not be altered but the stonework will be cleaned and repaired. A 3m pedestrian and cyclists' access path will be provided to the western side of Lehenaghmore Road (L-2455) on the southern side of the Greenway.

Generally, there will be 0.75m to 1.0m landscaped verges provided to integrate with existing shrubbery/vegetation on the edges of the former railway corridor. Planting will be limited within the

section of the route just east of Togher Road (L-2454) due to the presence of steep embankments to the north of the site and a boundary wall and fencing to the Westgate Business Park on the southern side of the proposed Greenway.

A large mound of earth is located underneath the Lehenaghmore Road (L-2455) Bridge with 0.7m clearance between the top of the mound and the bottom of the bridge, which will require removal. On the eastern side of the bridge there is a 1.5m T.M. post outlining that the watermain is travelling under the bridge.

L-2455 Lehenaghmore Road to Forge Hill

From Lehenaghmore Road (L-2455), the Greenway will run eastwards to Forge Hill where it will pass under the railway bridge and road. A 3m pedestrian and cyclists' access path will be provided to the eastern side of Lehenaghmore Road (L-2455) on the southern side of the greenway. As with the access path on the western side of Lehenaghmore Road (L-2455), this is already approved and will be provided as part of the approved L-2455 Lehenaghmore Road Improvement Scheme by Cork City Council.

At the western half of this section of the route, the Greenway will replace a dirt track. At the eastern part from its location adjacent to Farm Lawn housing estate, the Greenway will be accommodated along the route of an existing paved service access road. The existing service access road provides gated / fenced access to Farm Lane. This access will remain gated.

The Forge Hill bridge will not be altered but the stonework will be cleaned and repaired. No pedestrian or cycle access to the Greenway is proposed to be provided directly from Forge Hill but access will be available via the new car park.

The horizontal alignment will be predominantly straight except for two slight curves in the alignment to the west of the Forge Hill railway bridge.

Generally, there will be 0.75 to 1.0m landscaped verges which will tie in with the existing trees and shrubbery on the periphery of the former West Cork Railway corridor.

Thick vegetation, consisting mainly of briars and gorse, currently restricts access to the Forge Hill Bridge and disconnects the existing corridor. The western side of the bridge is accessible through the vegetation. However, the vegetation on the eastern side**)** is much thicker and impenetrable. The vegetation will be removed to accommodate the greenway.

Forge Hill to Kinsale Road Roundabout

The section of the Greenway from Forge Hill to Kinsale Road roundabout will traverse a variety of landscapes. Travelling east from Forge Hill its passes firstly through the site of a former Traveller accommodation scheme, onward through an overgrown stretch of the former railway alignment, to the south of an existing Traveller accommodation and yard site, crossing the access road into Hazelwood Grove before running to the south of Hazelwood Grove residential properties and eventually meeting with the Kinsale Road roundabout.

A new 50-space car park and cycle hub is proposed on the northern side of the greenway. Vehicular access will be provided by upgrading an existing access to Forge Hill. Bicycle parking and storage facilities will be provided at this car park. Public realm improvements including hard and soft

landscaping will also be provided at this location. Multiple accesses to the Greenway will be provided from paved areas through and adjacent to the bicycle parking and storage facilities. From the car park, the Greenway will continue east in a predominantly straight horizontal alignment along the former railway corridor firstly through an overgrown area and then diverting to the south of the former corridor to accommodate an existing Traveller accommodation and yard site. To ensure the privacy and security of the residents of this site, post and panel fencing and associated landscaping are proposed. From here the Greenway will cross the access road to Hazelwood Grove and then the open space area to the south of No. 1 to No. 8 Hazelwood Grove. The horizontal alignment of the Greenway will be curved over the last circa 75m on approach to Kinsale Road Roundabout.

The proposed development terminates at the existing signalised pedestrian/cyclist crossing, which crosses the N40 westbound on-slip at the junction with the N27/R851 Frankfield Road. Generally, there will be 0.75 to 1.0m landscaped verges and hedging along the Greenway between Forge Hill and Kinsale Road roundabout.

Link from the N40 to Eagle Valley via Undeveloped Land

It is proposed to provide a 4m wide combined walkway/cycleway between the N40 (an existing walkway/cycleway at the edge of the carriageway) and the spine road in Eagle Valley,-via undeveloped lands including along a former residential access road to the abandoned Garrane Dearg house. The first 170m of this walkway/cycleway from the N40 walkway /cycleway goes along this former access road, which comprises elements of disused pavement surfacing and unbound stone material. There are a number of existing mature trees running alongside this access road and there is heavy/thick vegetation consisting mostly of briars and gorse that overhangs sections of this existing access road. The horizontal alignment of the walkway/cycleway will be curved over the first 50m but then remains straight ~~up~~ for the next 120m. Generally, there will be 0.75 to 1.0m landscaped verges with wildflowers and ornamental planting and it will tie into the existing tree lined environment.

The proposed walkway/cycleway then turns sharply to the east of the former residential access and crosses over an open drainage channel (associated with the adjacent field) and crosses an open field towards Eagle Valley. There are associated landscaping works proposed within this open field immediately adjoining the walkway/cycleway so that it can be both physically accommodated at an appropriate gradient as well as visually absorbed into this area. Once within Eagle Valley it will cross an open space area, to the south of No. 271A Eagle Valley and connect to a proposed new cycle track on the opposite side of the spine road, via a raised table crossing. Appropriate levels of landscape screening will be provided adjacent to the properties.

Link from the N40 to Eagle Valley Via Garrane Darra

It is proposed to provide a 4m wide combined walkway /cycleway between the N40 (the existing walkway/cycleway at the edge of the carriageway) and the Garrane Darra Residential complex, via an existing gravel walkway along the edge of a disused football field. There is a number of mature trees along the eastern side of the walkway and there will be a requirement to remove a section of the existing fence in order to complete the link to the N40. There will be a requirement to reprofile the ground levels in the vicinity of the tie in with the N40 walkway/cycleway to accommodate the new walkway/cycleway. Generally, there will be 0.75 to 1.0m landscaped verges with wildflowers and ornamental planting and it will tie into the existing tree lined environment.

Works along the Eagle Valley Spine Road

It is proposed to resurface a circa 451m length of the spine road within Eagle Valley and provide new traffic lane markings and signage to accommodate a new cycle track on the northern side of the road. The new road markings will indicate two traffic lanes of minimum 3.0m wide and a min 1.5m wide southbound segregated on-road cycle track. A raised table crossing will be provided at the southern extent of the cycle track to safely connect the on-road cycle track to the main Greenway from Eagle Valley to Kinsale Road Roundabout which commences at the existing green open space area on the opposite side of the road.

7.0 Physical and Visual Impacts of the Proposed Development on the NIAH Structures on the Site

The re-use of the former Cork, Bandon & South Coast railway line as a Greenway retains the historic route and its associated bridges. This has a major beneficial impact on the historic route of the rail line, which will continue to be legible and its character as a rail route recognisable.

The proposals to retain the bridges, which are currently in poor repair and vulnerable to continuing loss of fabric, and not to alter them but to repair them using best practice methods will also have a major beneficial impact on these structures, whose regional significance is recognised by the NIAH. The decision to route the proposed Greenway under the existing historic bridges means that their historic function and character will remain fully legible.

The introduction of a 4m wide Greenway to the route and the retention of embankments will mean that a rail line could be reintroduced to the route at a future time, which may also be considered a positive impact.