

Photo Location 46

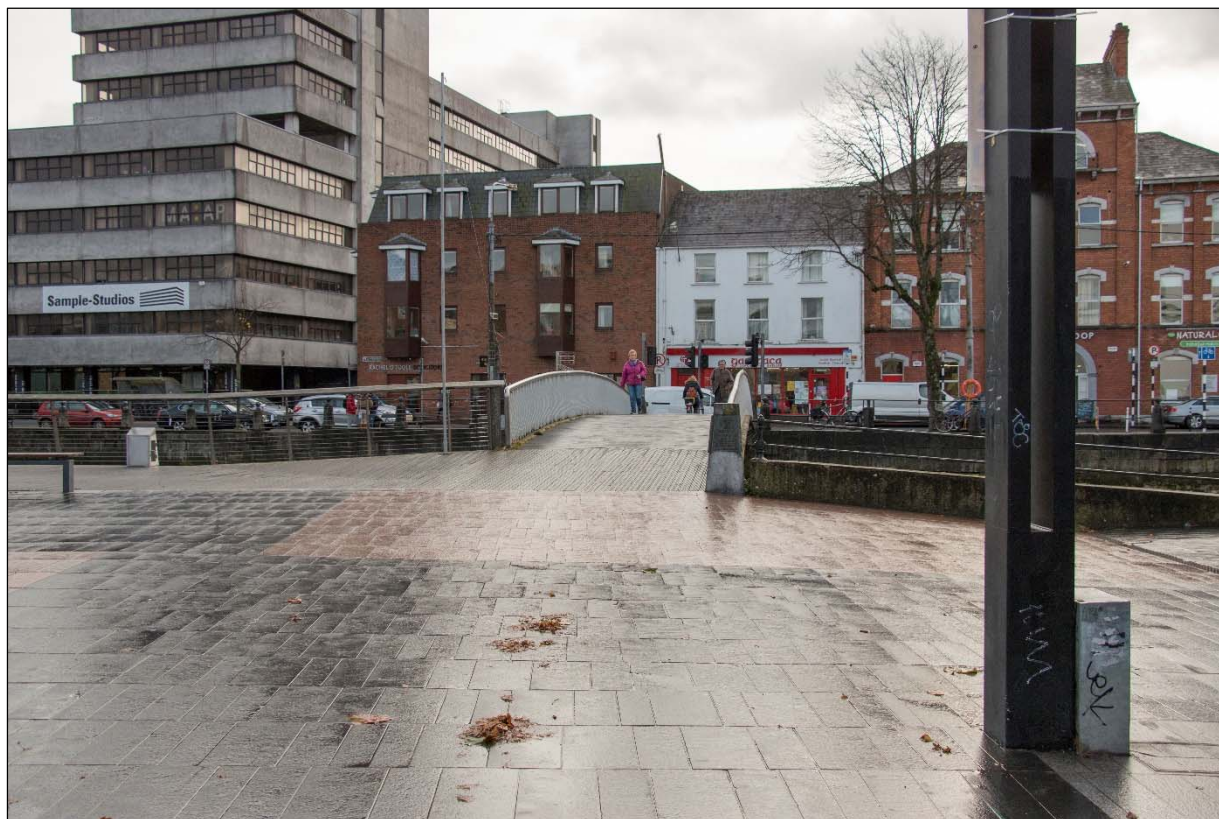


Plate 9.105 Photo Location 46 –Existing View

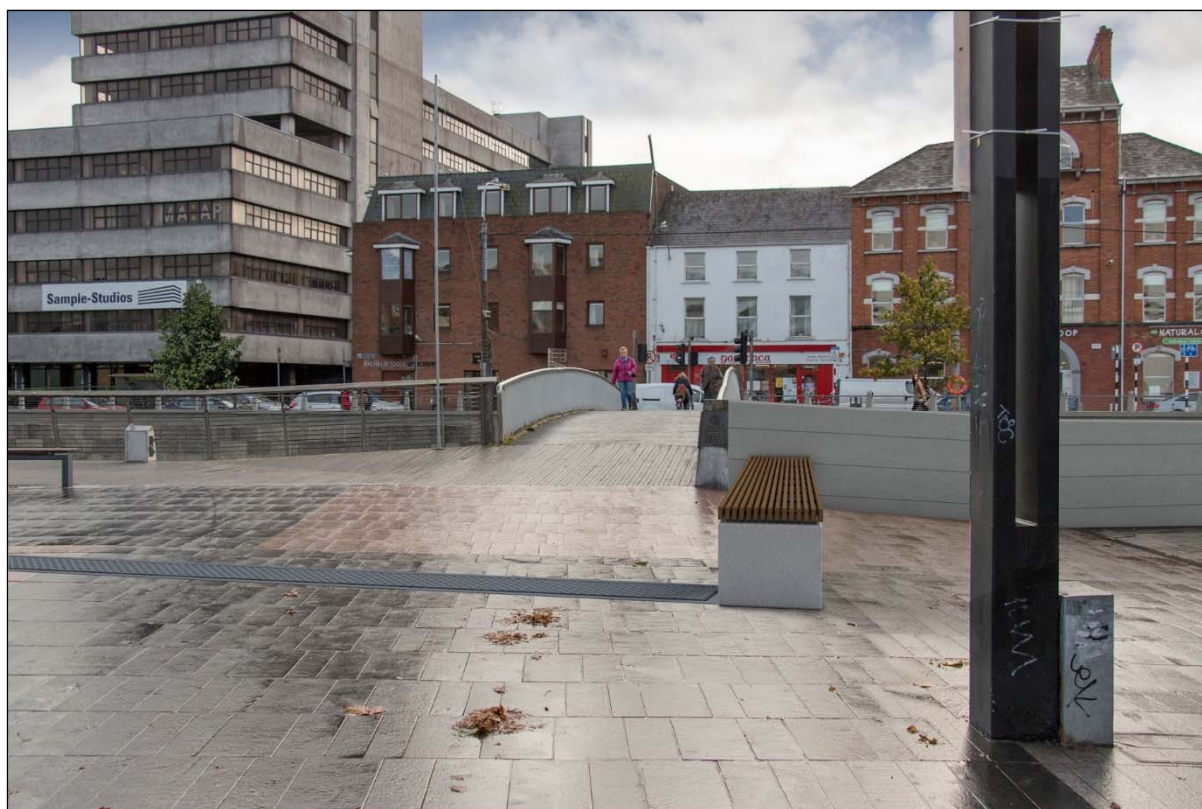


Plate 9.106 Photo Location 46 –Existing View

Photo Location 46- Existing View

The existing view is taken looking towards Nano Nagle bridge from Grand Parade.

Photo Location 46 – Proposed View

The proposed view shows the wall and railings replaced with a concrete wall. Trees are also removed along the quays. Seating is added in.

It is considered that the visual receptors in this location are of high sensitivity and combining groups of people who are walking and in close proximity to the river, and may be engaged in travel, work, recreation, or enjoyment of the surrounds. The magnitude of change is considered to be Slight. The visual impact is considered to be Slight negative visual impact.

Photo Location 47



Plate 9.106 Photo Location 47 –Existing View



Plate 9.107 Photo Location 47 –Proposed View

Photo Location 47- Existing View

The existing view is taken looking towards Sullivans Quay.

Photo Location 47 – Proposed View

The proposed view shows the wall and railings replaced with a low concrete wall and railings.

It is considered that the visual receptors in this location are of medium sensitivity and combining groups of people who are walking or driving and in close proximity to the river, and may be engaged in travel, work, recreation, or enjoyment of the surrounds. The magnitude of change is considered to be Low. Slight. The visual impact is considered to be Imperceptible negative visual impact.

Photo Location 48



Plate 9.108 Photo Location 48 –Existing View



Plate 9.109 Photo Location 48 –Proposed View

Photo Location 48- Existing View

The existing view is taken looking towards Wandesford Quay and Hanover Quay.

Photo Location 48 – Proposed View

The proposed view shows the railings at Hanover Quay replaced with a low concrete wall and railings, and the existing quay wall is stone clad. The wall at Wandesford Quay increased in height, and some mature trees are removed and replaced.

It is considered that the visual receptors in this location are of medium sensitivity and combining groups of people who are walking or driving and in close proximity to the river, and may be engaged in travel, work, recreation, or enjoyment of the surrounds. The magnitude of change is considered to be Slight. The visual impact is considered to be Slight negative visual impact.

Photo Location 49

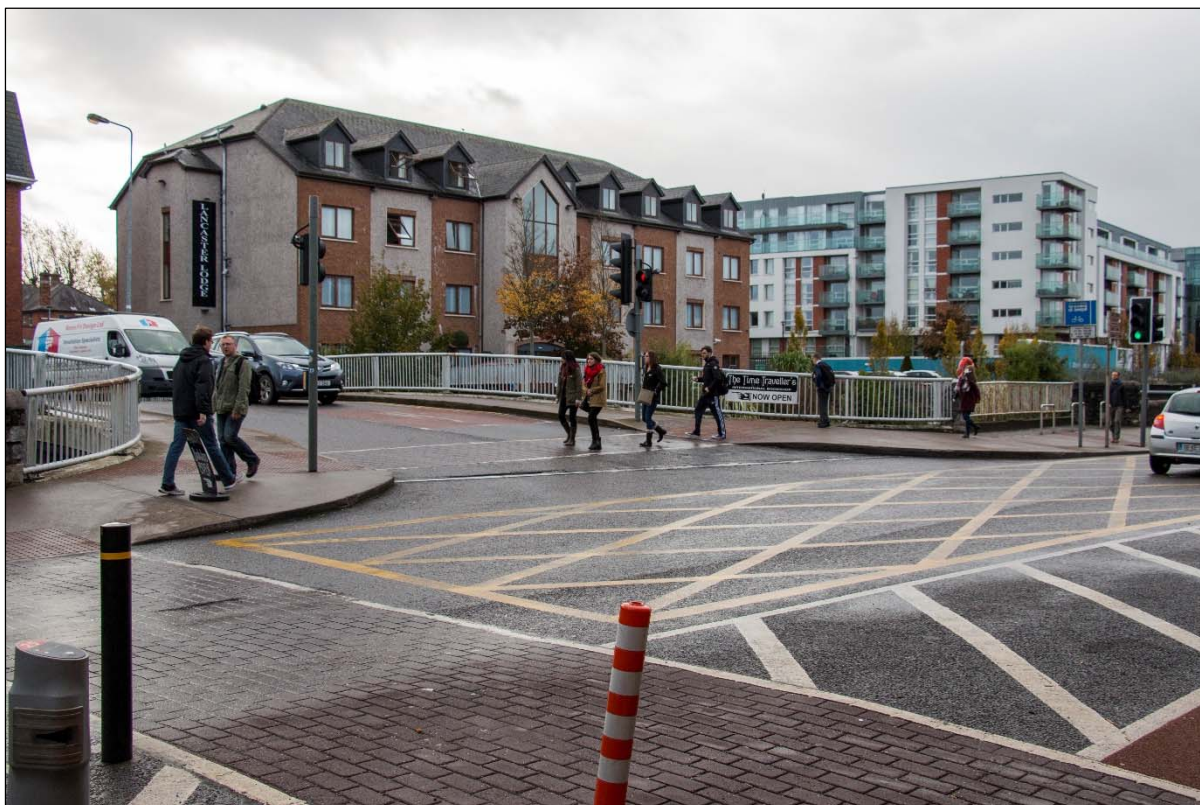


Plate 9.110 Photo Location 49 –Existing View



Plate 9.111 Photo Location 49 –Proposed View

Photo Location 49- Existing View

The existing view is taken looking towards Lancaster Quay.

Photo Location 49 – Proposed View

The proposed view shows the railings at Hanover Quay replaced with a low concrete wall and railings, and the existing quay wall is stone clad. The wall at Wandesford Quay increased in height, and some mature trees are removed and replaced.

It is considered that the visual receptors in this location are of medium sensitivity and combining groups of people who are walking or driving and in close proximity to the river, and may be engaged in travel, work, recreation, or enjoyment of the surrounds. The magnitude of change is considered to be Slight. The visual impact is considered to be Slight negative visual impact.

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Photo Location 50



Plate 9.112 Photo Location 50 –Existing View



Plate 9.113 Photo Location 50 –Existing View

Photo Location 50- Existing View

The existing view is taken looking towards the UCC gates on Western Road. .

Photo Location 50 – Proposed View

The proposed view shows the existing railings are to be retained and the low wall is to be replaced at a slightly higher level.

It is considered that the visual receptors in this location are of medium to high sensitivity and combining groups of people who are walking or driving and in close proximity to the area, and may be engaged in travel, work, recreation, or enjoyment of the surrounds. The magnitude of change is considered to be Slight. The visual impact is considered to be imperceptible negative visual impact.

9.8 LIKELY AND SIGNIFICANT IMPACTS AND ASSOCIATED MITIGATION MEASURES

9.8.1 'Do-Nothing' Scenario

If the proposed development were not to proceed, the existing river channel would remain as it is, resulting in many of the same potential impacts on human beings as have occurred previously.

There would also be potential for impact on:

- Residential and commercial properties
- Educational facilities
- Pedestrian walkways
- Open spaces and recreation facilities

In the event that the proposed drainage scheme were not to proceed, the landscape of the Study Area would evolve based on current trends and views to and from the Study Area would remain unaltered. In the event of further major flood events, the visual amenity of the area would be temporarily affected as flood levels increase and flood damage affects the study area. Potential landscape impacts caused by flooding include flood damage to structures and vegetation as well as erosion.

9.8.2 Impacts During the Construction Phase

The removal of bankside trees vegetation and habitats is dealt with in the relevant sections of the Operational Phase Impacts below.

Site Investigation and Construction works -Construction Traffic, Materials and Temporary Site Buildings

Potential Impact

Site investigations may be required in advance of the construction works. Trial pits, slit trenches, boreholes, rotary core boreholes and dynamic probes will be carried out in addition to utility identification.

The construction phase of the proposed scheme will involve the movement of construction vehicles into and out of the working area, and a temporary construction works facilities for storage of materials on a brownfield location in the immediate vicinity of the works. This may have to be moved during the construction period. Construction is expected to last up to 7 years, and will be carried out in phases.

The construction phase of the proposed scheme will have a slight negative impact on the landscape character of the Study Area, as construction noise and activity will all impinge on the landscape amenity of certain parts of the Study Area. The slight negative impact on landscape character will, however, be a localised, temporary impact and will decrease with distance from the site. These activities will have a **Temporary to Short Term Slight Negative Impact** on the surrounding area in terms of landscape and visual impact.

Mitigation Measures

Any negative impact associated with the proposed works on the visual amenity and landscape within the study area, will be minimised through the implementation of an Environmental Management Plan (EMP) and a Traffic Management Plan. A construction compound will be used to house materials, plant and machinery, welfare facilities and site offices as part of the EMP and traffic movements will be subject to regulation through the traffic management plan. Best practice measures for noise control will be adhered to onsite during the construction phase of the proposed development, as described in Chapter 8 of this EIS on Air Quality and Climate/Noise and Vibration. These measures will mitigate the slight temporary to short-term negative impact associated with construction phase noise.

Residual Impact

The residual impact will be a **short-term to medium term slight negative impact**.

9.8.3 Impacts During the Operational Phase –

The works described in Chapter 3 and outlined at the beginning of this chapter, which have potential landscape and visual impacts are grouped into a number of categories below.

9.8.3.1 Designation of floodplains (wash lands) upstream of Cork City

The areas designated as “Washlands” are those areas adjacent to the river (and part of the Lee floodplain) which under the Scheme, will be deliberately flooded in advance of a forecasted extreme event, to facilitate pre-emptive lowering of water levels in Carrigadrohid and Innishcarra reservoirs, to create additional storage/attenuation capacity, and subsequently reduce the peak flow during the event. These are areas that are already at risk of flooding.

Residual Visual and landscape Impacts:

The residual visual impacts will be imperceptible and residual landscape impacts slight.

9.8.3.2 Removal of railings and bollards

Residual Visual Impacts:

The removal and relocation of the railings along the North Mall is proposed. This is likely to have a **Permanent, Slight negative impact**.

Residual Landscape Impacts:

This is likely to have a **Permanent, Slight negative landscape impact**.

Note: This will be carried out in conjunction with the construction of flood defence walls in these locations.

9.8.3.3 Removal of Vegetation and bankside features

There will be the loss of some vegetation and screening in certain areas. In particular, vegetation is to be removed in the following key areas:

- Lee Fields
- Fitzgerald's Park
- Near Mardyke Bridge
- North Mall
- Distillery Fields walkway

Mitigation

Mitigation was considered at the design stage, to minimise tree and vegetation loss. Areas where there are Tree Preservation Orders were avoided. Embankments and walls were moved back from treelines in several locations, including at Curraghbeg, the Lee Fields, Fitzgerald's Park and at Distillery Fields, in order to minimise adverse impacts, and paths were designed taking into consideration existing vegetation. Where mature trees are to be removed, these are to be replaced with similar semi mature trees. Less mature trees are to be replaced with light to medium standards.

Residual Visual Impact

The residual visual impact of the tree removal is **Permanent, Slight to Moderate negative impact, with tree removal in some areas contributing to Significant impacts.** This will diminish over time to Medium Term Moderate negative impact as the replacement trees grow.

Residual Landscape Impact

The residual landscape impact of the tree removal is **Permanent, Slight to Moderate negative impact.** This will diminish over time to Medium Term Moderate negative impact as the replacement trees grow.

9.8.3.4 Construction of flood defence embankments

The proposed drainage works are set out in detail as described in Chapter 3, include the construction of flood defence walls and embankments along several sections of the Study Area. The height of the proposed grass embankments, as outlined in Chapter 3, and illustrated by the photomontages, varies throughout the Study Area.

In general, grass embankments are proposed to the west of the study area, where the landscape is more rural in nature, and embankments are chosen to minimise visual impacts as these will be grassed over. The embankment crests will be reinforced to accept vehicular and pedestrian loading and some will be used as public amenity walks.

Embankments are generally between 1m and 2m in height, proposed downstream of Inniscarra dam, along the riverbank, and avoid tree lines where possible, and near Inniscarra bridge. Embankments are also proposed along the Lee Fields, where they run close to the Carrigrohane Road, and avoid tree lines where possible. While these embankments will change the visibility (as shown in Photomontages 4, 5) this is set at a distance from the river where possible, so that users walking along the riverbank will still have the experience of walking close to the river.

Mitigation Measures

Mitigation was considered at the design stage and embankments were sited to as to retain as many trees as possible. The earth embankments are to be grassed and these will blend in with the vegetation in the surroundings and lessen any potential visual impact. At certain locations, such as Fitzgerald's Park, a glass wall is proposed on the embankment top, to minimise visual impact and allow some views of the river.

Residual Visual Impacts:

- The visual impacts of the embankments range from Permanent, Imperceptible, neutral impact, in locations where they will not be clearly visible, and where there are fewer viewers of Low sensitivity, and where the magnitude of change is considered Low, to Moderate. These areas include the yard at the western extents of the Study Area at Curraghbeg. Areas where the impacts are considered Moderate negative impact, include the Lee Fields and Fitzgerald's Park, where the proposed

embankments will restrict views of the river from certain areas, and where viewers are considered highly sensitive. Residual impact ranges from **Permanent, Imperceptible Neutral impact to Moderate negative impact**.

Residual Landscape Impacts

- The landscape impacts of the proposed embankments are likely to be confined to the works locations and will have a localised **Permanent, Imperceptible to Slight impact**.

9.8.3.5 Construction of flood defence walls:

Flood defence walls are proposed in a number of locations, primarily in the city centre area, and these will vary depending on the location:

- Reinforced concrete walls are proposed, including in areas where railings are to be moved or removed – for example, the Mardyke Walkway, North Mall, Distillery Fields, Patrick's Quay, Merchant's Quay, Sullivan's Quay, Anderson's Quay, Horgan's Quay, Albert Quay east. In some areas, low concrete walls are proposed which are topped with railings and bollards, such as at Patrick's Quay, and along the South Channel, through to Albert Quay East with the exception of Lapp's Quay East.
- Sheet pile walls (clad where relevant) are proposed with heights ranging up to 2 metres at various locations. These are proposed in areas including the rear of the Presentation School on the Mardyke, and at Grenville Place, and in the river to the north of Thomas Davis Bridge.
- New parapet flood defence walls are proposed to be built upon refurbished existing quay walls. All such defences on the lines of existing quay/river walls within the city centre are of heights at or less than guarding height of 1.2m so as to maintain the social connection with the river. This was a key constraint of the design. These occur at locations where existing parapet limestone walls are located, including at Pope's Quay, Bachelor's Quay, Keryl's Quay, and Camden Place.
- Circa 555m of glass flood defence walls are proposed in particularly sensitive amenity areas such as north of the Kingsley Hotel, the approach to Daly's Bridge, Fitzgerald's Park, Sundays Well Boating & Tennis Club, Lapp's Quay and shorter discrete sections along Union Quay, Georges Quay and Wandersford Quay.

Mitigation Measures

Mitigation measures included at the design stage include refurbishment of existing quay walls where possible, proposals to include glass walls at sensitive locations as noted above, and cladding in appropriate material.

Residual Visual Impacts:

- The residual visual impacts of the flood defence walls will range depending on the location. In the majority of the locations within the city, viewer sensitivity is Medium to High. The magnitude of the change as a result of the walls varies from Slight neutral, in the case of refurbished quay walls, or glass walls, to Moderate, negative. Moderate impacts are likely where, for example, and existing open view of the river is obstructed or reduced, as in the North Mall (see Photomontage 20-22), and in the Lee Fields, to the east of the proposed car park, where a c.1.8 metres high wall is proposed.

- In certain areas, the proposed flood defence walls are topped with railings, such as Anderson's Quay, Horgan's Quay, thus retaining some of the openness along the river bank and allowing views through. In these areas, the walls range from Slight Negative to Slight Neutral visual impact.

- **Residual Landscape Impacts**

It is likely that the residual landscape impacts will be Permanent, Slight to moderate Negative impact.

9.8.3.6 Flow Control chamber at the upstream end of the South Channel and bridge replacement between Carrigrohane Road Car Park and lands to the rear of the Sacred Heart convent.

Photomontage 7 shows the ground level raised considerably, tree and vegetation removal, and the bridge replaced by a concrete bridge, and also a flow control structure in the river.

Residual Visual Impacts:

The visual impact is considered to be Moderate to Significant negative visual impact.

Residual Landscape Impacts:

The visual impact is considered to be Slight negative landscape impact.

9.8.3.7 Demountable flood gates (tidal) at a limited number of key bridges and critical locations within the eastern part of Cork City.

Residual Visual Impacts:

The residual visual impact is considered imperceptible visual impact.

9.8.3.8 Reclamation of lands at Grenville Place and north at the rear of Presentation School

A section of river is to be reclaimed at Grenville Place, adjacent to the Tyndall Institute, and upstream to the rear of Presentation School. This is to be paved to allow public use of the space, while a river wall will integrate with the existing quay wall at Grenville Place.

Mitigation

Mitigation included creating a new public space on the proposed reclaimed area.

- **Residual Visual Impacts:** The residual visual impacts are likely to be Permanent, Slight neutral visual impacts. While the viewers here are likely to be of Moderate sensitivity, and the magnitude of change is considered Moderate. The extended public space will be viewed by some as a positive change, and allowing a public space to be created in proximity to the river. However viewers towards the Tyndall institute from the Distillery fields will have partial screening from the vegetation, while open views will be available from St Vincent Bridge.
- **Residual Landscape Impacts:**
 - It is estimated a Permanent, Slight to Moderate/negative landscape impact as the land reclaims part of the river

9.8.3.9 Re-grading of ground and road ramping at a number of locations.

At a number of locations, it is proposed to regrade roads, footpaths of other areas of ground either to raise ground level above flood defence level (and so provide a direct flood defence) or in other instances reduce

the effective height of a flood defence wall relative to the dry side ground level to retain the social amenity relationship with the river. Regrading is generally limited to changes in elevation of less than 1 m.

Mitigation

Residual Visual Impacts:

It is likely that the residual visual impacts will be Permanent, Imperceptible to Slight neutral impact.

Residual Landscape Impacts

It is likely that the residual visual impacts will be Permanent, Imperceptible to Slight neutral impact

9.8.3.10 Other Works

There are a number of other works which have been considered, including associated drainage infrastructure (including non-return valves on drainage outlets) and pumping stations to manage surface water/groundwater at back of defences.

Other works with potential landscape and visual impacts include the construction of pumping stations in several locations, which may include an above ground element likely to resemble a kiosk. This is subject to confirmation, but in these locations the pumping stations are considered to have a **Permanent Imperceptible to Slight Negative Impact**.

Certain other works described in Chapter 3 such as below surface works and minor works were assessed and these in general have potential **Permanent Imperceptible to Slight Neutral to negative impacts**.

9.8.3.11 Summary of Visual Impacts

In conclusion, there are a number of proposed types of flood defence works and these types of works and locations vary throughout the Study Area. Likewise, the visual impacts of these works vary and range from imperceptible impacts where there is little change, to Moderate/Significant impacts in some areas where works are more apparent and result in greater changes to the visual environment.

Impacts are both positive and negative, and impacts of the various elements, while described separately, also need to be considered where a high concentration of these works are carried out in a specific location and therefore represent a high magnitude of change.

Negative impacts include tree removal, construction of flood walls of increased height which prevent views of the river, and removal of other important elements (e.g. extinguishing access points to the river). While the wall height is designed to allow views where possible, reduction in visibility and change in views of the river are likely to result in certain areas. Neutral and positive impacts include areas where quay walls are to be refurbished, or public space is increased.

Most of the areas of proposed works are in where they will be noticed by a large amount of people, as these occur within the city centre. Certain works are located where viewers will be using the areas for recreation where they are aware and focussed on the views around them, for example in the Lee Fields, or Fitzgerald's Park. Visual receptors in the locations are considered highly sensitive. The sensitivity of the visual receptor (groups of people) combined with the magnitude of the change combine to give the likely impact. The visual impacts are broadly described using the Landscape Character Areas as defined in Section 9.4 above. These areas are:

- Downstream of Innishcarra dam(Curraghbeg) to the Lee Fields

- Lee Fields to Distillery Fields/North Mall (Urban Sylvan/Riverside open space) and UCC Western Road
- North Mall to City Centre – Custom House Point
- Western Road/Wandesford Quay to Custom House Point

Downstream of Innishcarra dam (Curraghbeg) to the Lee Fields

From Curraghbeg to Inchigaggin, works are proposed at several locations, including Curraghbeg, at Innishcarra bridge, and on sections of the river opposite Ballincollig Regional Park, at the bridge near Leemount, and at Inchigaggin, comprise primarily sections of grass embankment with some sections of flood defence walls. Some small scale tree and vegetation removal is proposed to the rear of houses opposite Ballincollig Regional Park, opening up views to and from these houses. However in most other areas vegetation, and particularly trees, are to be retained. In these areas, visual receptor sensitivity ranges from Low to Medium, and the magnitude of change is considered Low, and therefore the visual impacts are range from Imperceptible to Slight impact. Impacts range from neutral where the grass embankments are behind the treeline or hedgerows, to negative where walls (e.g. opposite Ballincollig Regional Park) are visible. Along the Carrigrohane Road, approaching the city boundary, the proposed grass embankment is located so as to retain the existing tree line, though the proposed embankment height ranges from approximately 1.6 to 1.8 metres, thereby restricting views. This is regarded as a Slight negative visual impact. In summary, visual impacts range **from Permanent Imperceptible to Slight** in this areas, and impact quality ranges from **negative to neutral**.

Lee Fields to Distillery Fields/North Mall (Urban Sylvan/Riverside open space) and UCC Western Road

From the city boundary, at the Lee Fields public park, the proposed works include removal of some trees along the edge of the road at the existing entrance, to the western end of the Lee Fields. The majority of trees which are located along the river's edge, and those along the edge of the Carrigrohane road are to be retained, with the exception of those removed to facilitate the new car park and to facilitate the joining of the two walkways near the river's edge. Tree removal will occur in the centre of the park to facilitate the embankment, which will also incorporate a new pedestrian walkway on the embankment top. The proposed embankment height will range from 1.6 to 1.8 metres in height so will restrict views between the road and the park. The proposed car park will be larger than the existing and will increase the hard surface area. Close to the Kingsley Hotel, some tree removal will be necessary as shown in Photomontages 4 and 5. Across the river, the majority of trees are to be retained south of the Environmental Research Institute, but trees along the Lee Road are to be removed and replanted.

These areas include the Lee Road, and the junction with Thomas Davis Bridge, where the removal of a large number of mature trees in an Area of High Landscape Value, along with a proposed 1.5 metre high flood defence wall, is considered to have a localised significant visual impact.

Other locations where viewers are deemed highly sensitive, and where the proposed works are considered of considerable magnitude, are at Fitzgerald's Park. In this location, works include tree and vegetation removal, a proposed grass embankment along the riverside path, at a height of approximately 2.5 metres. While a walkway is proposed along the embankment, this does remove the view of the river from the park for a considerable number of viewers. This is considered to have a significant visual impact from within the park, in areas where it is seen in combination with the tree removal.

Visual receptors at this location are likely to be highly sensitive, as they include a high proportion of pedestrians and cyclists engaged in recreation, and it is also an area which is covered by landscape designations including Areas of High Value Landscape designations.

Overall, the visual impacts of the proposed works is likely to be Permanent, Moderate neutral to Moderate negative visual impact, with a locally Significant impact in parts of the Lee Fields, Fitzgerald's Park and Lee Road areas.

North Mall to City Centre – Custom House Point

Works at the North Mall include moving the existing railings, a proposed reinforced concrete flood defence wall, as well as works to the opposite wall at Bachelor's Quay, . The combination of these changes is of a high magnitude, especially where in locations, such as St. Vincent's Bridge, the area proposed to be reclaimed at Grenville Place will also be visible. These combine to create a significant negative visual impact. Visual impacts range in these areas from Permanent, Moderate to Significant Negative visual impacts.

Downstream from the North Mall, the sensitivity of the visual receptors are considered to range from Low to Moderate, and the visual impacts range from Imperceptible to Moderate. There is some tree removal, along some of the quays, and some river access points are to be retained, while others extinguished. Overall, the visual impacts range from Permanent Imperceptible impact to Permanent Moderate impact. Impact quality ranges from positive to negative. The refurbishment and cleaning of the quay walls is considered in some areas to have a neutral to positive visual impact.

Western Road/Wandesford Quay to Custom House Point

Along the South channel of the river, proposed works include some tree removal, road regrading, and proposed flood defence walls, often combined with railings which will allow views of the river. The visual impacts range from Imperceptible to Moderate. Tree removal is also proposed along some of the quays.

Overall, the visual impacts range from Permanent Imperceptible impact to Permanent Moderate impact. The impact quality varies from negative, where trees are removed, to neutral, where railings are to be replaced and views of the river are retained.

Summary

The overall impact varies from **Permanent, Imperceptible to Significant visual impacts**. The impact quality ranges from negative, where trees are to be removed, where elements such as walls or embankments restrict important views, to neutral/ positive, such as the refurbishment of the existing quay walls.

Mitigation

Mitigation by design was a feature of the design process. Flood embankments were proposed in rural locations and areas of amenity (e.g. public parks) as far as possible. Furthermore, tree removal was minimised as much as possible at the design stage by locating embankments inside existing tree and vegetation lines. Where trees are to be removed they will be replanted where possible. Mature trees to be removed will be replaced with semi-mature trees. Areas where there are Tree Preservation Orders were avoided.

Residual Impacts

In most cases, mitigation by design reduced the potential impacts. Impacts caused by tree removal will diminish over time, as trees grow and lessen the visual impact. Impacts will range from **Permanent**,

Imperceptible to Significant visual impacts, while impacts relating to tree removal, when replanted, will change to **Medium Term Significant impacts**.

9.8.3.12 Summary of Landscape Impacts

Landscape impacts include impacts on the landscape character of the area, as well as changes to the fabric of the landscape, and to landscape as a resource.

Downstream of Innishcarra dam (Curraghbeg) to the Lee Fields

This area is a predominantly rural area, with a high proportion of vegetation and open space along the river bank. The character is tranquil, although close to the city. The area within the City Boundary is designated an Area of High Landscape Value and the landscape considered of a medium to high sensitivity to change. The works in this location are considered to be primarily Low to Medium in terms of magnitude. The tree removal along the Carrigrohane Road and the proposed embankment will entail localised changes to the landscape character. Overall, landscape impacts are regarded as **Permanent, Slight negative** landscape impact.

Lee Fields to Distillery Fields/North Mall

Proposed works which are likely to have landscape impacts include tree and vegetation removal, grass embankments, flood defence walls. These occur in places such as Fitzgerald's Park and the Lee Fields, and the Distillery Fields, where the landscape ranges from medium to high sensitivity to change. The character will be changed at a localised level, and in some locations, this change is considered of high magnitude. Overall, the landscape impact is considered **Permanent Slight to Moderate negative** impact.

North Mall to City Centre – Custom House Point

Downstream from the North Mall, the landscape becomes more built up, and the sensitivity of the landscape receptors are considered to range from Low to Moderate. There is some tree removal, along some of the quays, and some river access points are to be retained, while others extinguished. The removal of these landscape elements, and the addition of flood defence walls in most cases, are of a magnitude considered to range from Low to Medium, and result in a **Permanent, Slight to Moderate negative** landscape impact.

Western Road/Wandesford Quay to Custom House Point

In this area, while there is some open space (along western road) the landscape becomes more built up, and the sensitivity of the landscape receptors are considered to range from Low to Moderate. Removal of landscape element such as trees, and construction of flood defence walls and railings are considered to be Low to Moderate magnitude, and the overall impact ranges from **Permanent, Slight to Moderate** landscape impacts. Impacts vary from negative, where landscape elements are to be removed, to positive, where new areas of public space are created or improved, such as Grand Parade.

The overall impact varies from Permanent, Slight to Moderate landscape impacts.