

## 8 Population and Human Health

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### 8.1 Introduction

This chapter addresses impacts of the proposed scheme on population and human beings.

The proposed scheme has the potential to affect the local population in several ways. The potential impacts on human beings from construction activities, landscape and visual impacts, built and natural heritage, and air, noise and vibration are dealt with in the specific chapters in this EIS dedicated to those topics. In this chapter, topics such as amenities, tourism, population trends, household sizes and employment and economic activity are examined.

The receiving environment and the characteristics of the proposed scheme in terms of construction and operation are described. The potential impacts of the scheme during the construction and operational phases are evaluated, and the mitigation measures for these potential impacts are presented. The chapter concludes with the predicted residual impacts of the proposed scheme.

This chapter refers to the scheme ‘works areas’ as the areas of Togher and Douglas where flood relief works are proposed. Refer to **Chapter 3 Description of the Proposed Development** and Drawings in **Appendix 3.1** of this EIS.

### 8.2 Methodology

The current socio-economic status in the areas close to the proposed scheme was reviewed. Baseline information with respect to the demographic and employment characteristics of the resident population within the catchment area was sourced from the 2006, 2011 and 2016 Censuses, and Quarterly Household Surveys (where available). The data included information on population, number of persons at work and unemployment profile. A site walkover was carried out. Information was also sourced from the following documents/websites.

- Censuses of Ireland 2006, 2011 and 2016
- Central Statistics Office *Quarterly National Household Survey Quarter 4 2016* ([www.cso.ie](http://www.cso.ie))
- Cork City and County Councils *Cork Area Strategic Plan 2001-2020*
- Cork County Council *Carrigaline Electoral Area Local Area Plan 2015, Second Edition*
- Cork County Council *Ballincollig Carrigaline Municipal District – Draft Municipal District Local Area Plan (2016)*
- Cork County Council, *Cork County Development Plan 2014-2022*
- Fáilte Ireland Annual Report 2015
- Local Electoral Area Boundary Committee, *Committee Report 2013*
- South West Regional Authority *Regional Planning Guidelines 2010-2022*

## 8.3 Receiving Environment

Douglas and Togher have both frequently been affected by flooding in the past. A summary of the significant past flood events to have affected Douglas and Togher is presented in **Table 8.1**.

**Table 8.1: History of Flooding Events in the Douglas and Togher areas**

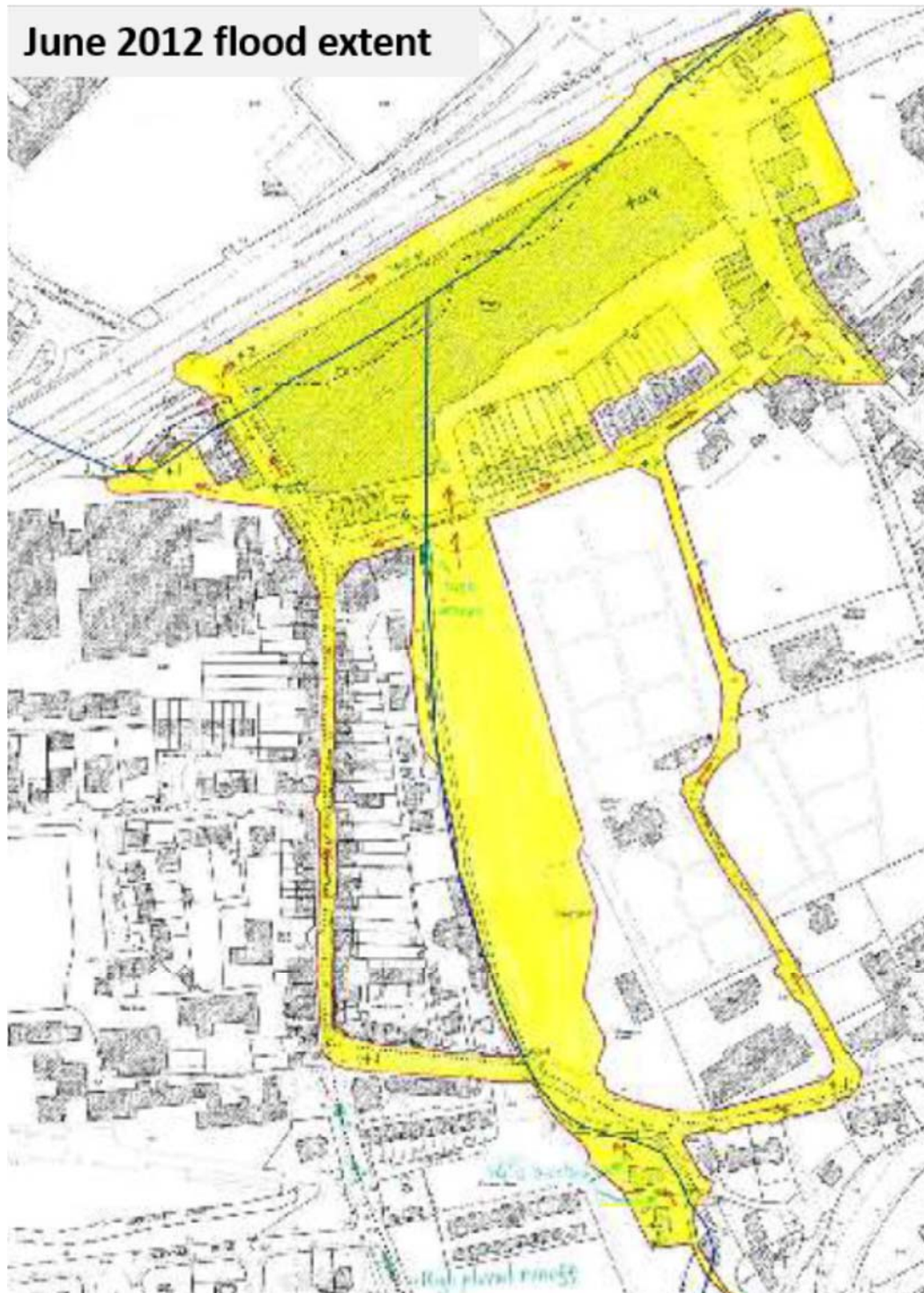
Date of Flood Event	Mechanism	Areas Affected
December 2015	Fluvial	Togher
28 June 2012	Fluvial	Togher, Douglas village
27 November 2002	Fluvial	Togher
21 November 2002	Fluvial	Togher, Douglas village
3 December 2001	Fluvial	Togher
30 November 2000	Fluvial	Togher
5 November 2000	Fluvial	Togher, Douglas
1998	Fluvial	Togher
17 March 1947	Fluvial	Douglas
24 December 1895	Fluvial	Douglas
19 November 1892	Fluvial	Douglas
Historic recurring	Fluvial/Tidal	Tramore River downstream of current Cork landfill site, Douglas

- Area 1 Ballybrack Stream through Douglas (**Figures 3.1 to 3.4**)
- Area 2 Tramore River through St Patrick's Mills, Douglas (**Figures 3.5 to 3.7**)
- Area 3 Grange Stream (tributary of Ballybrack Stream) through Donnybrook Commercial Centre (**Figures 3.8 to 3.10**)
- Area 4 Tramore River through Togher (**Figures 3.11 to 3.13**)

Areas 1 to 4 are described in terms of the topics listed in Section 8.1 (heritage, local amenities, tourism, population, household size and employment and economic activity). Please note that the left and right banks are described as one looks downstream.

### 8.3.1 Area 1: Ballybrack Stream through Douglas

The most recent significant flood event in Area 1 was in 2012, as recorded by the National Flood Hazard Mapping (OPW). The maximum flood extent for the 2012 flood event is presented in **Figure 8.1**, while a comparison of the maximum flood extent for this flood event with the maximum modelled flood event is presented in **Figure 8.2**.



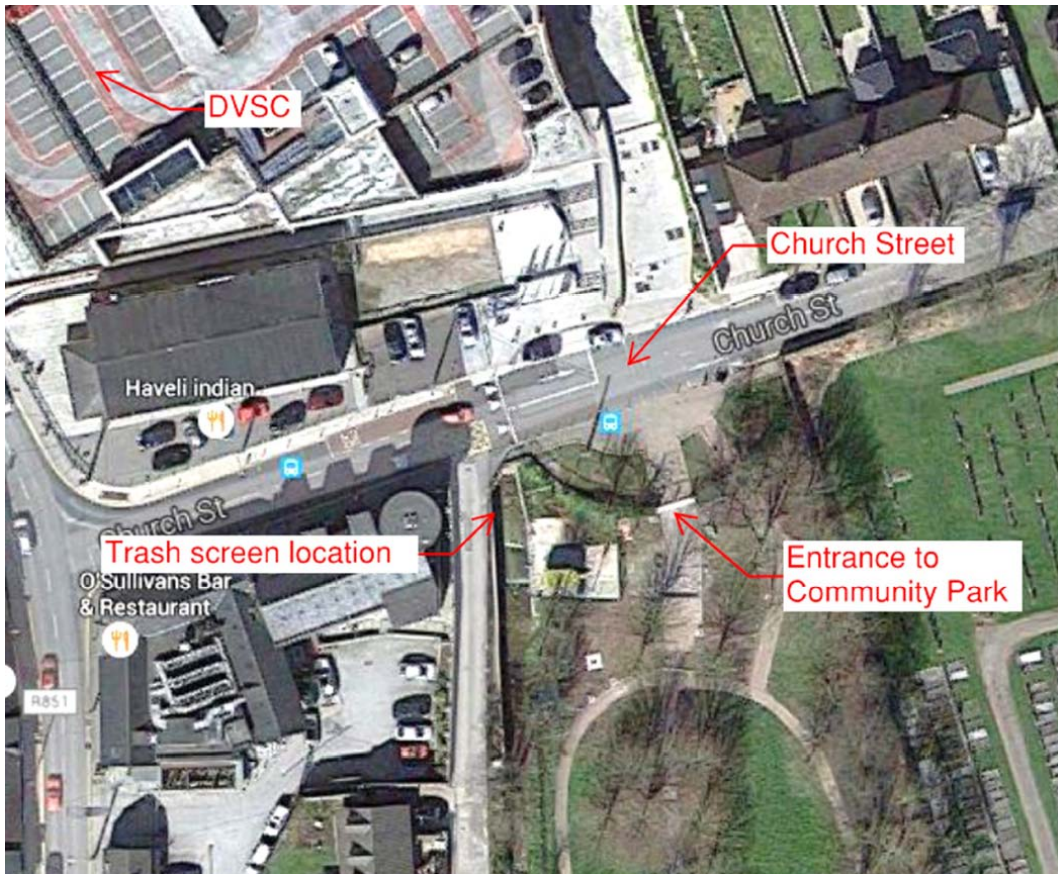
**Figure 8.1: Maximum flood extent for the June 2012 flood event. Area 2 (Tramore River through St Patrick's Mills, Douglas) and Area 1 (Ballybrack Stream through Douglas) are located to the north west and the south of this figure, respectively. The N40 (South Ring Road) runs along the northern boundary of the figure. Source: South Western CFRAM consultants.**



**Figure 8.2: June 2012 flood extent calibration plot (maximum flood extent vs maximum modelled flood event). Area 2 (Tramore River through St Patrick’s Mills, Douglas) and Area 1 (Ballybrack Stream through Douglas) are located to the north west and the south of this figure, respectively. The N40 (South Ring Road) runs along the northern boundary of the figure. Source: Cork County Council.**

The flooding extended throughout Douglas village. The location of the culvert trash screen at Church Road and photographs of this trash screen under normal conditions prior to the 2012 flood event and following this flood event are presented in **Figures 8.3, 8.4** and **8.5**, respectively. Post flood photographs outside the ICA Hall and at a commercial premises in Douglas East are also presented in **Figures 8.6** and **8.7**. **Figure 8.7** illustrates the high water mark from the 2012 flood event.

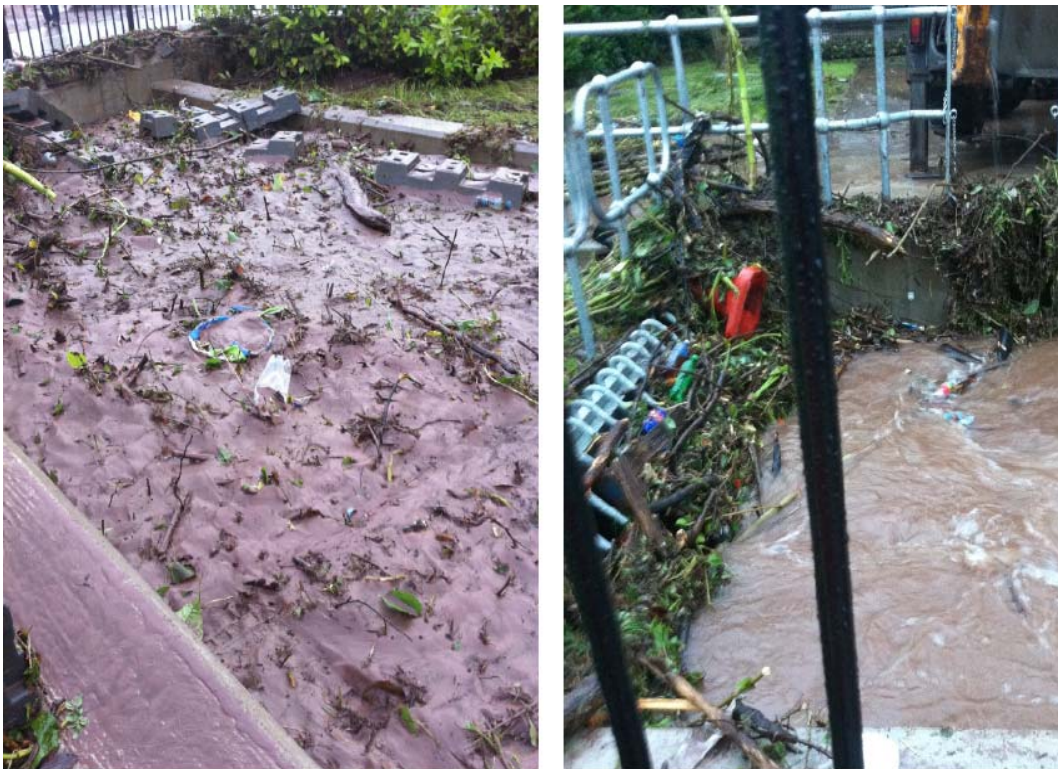
The residents of Ravensdale were heavily impacted by the 2012 flood event, with a number of properties in this area severely flooded. **Figure 8.8** presents the likely flood routes of the Ballybrack Stream in the vicinity of Ravensdale during this event.



**Figure 8.3: Location of culvert trash screen at Church Road**



**Figure 8.4: Church Road culvert trash screen – normal conditions. Source: OPW**



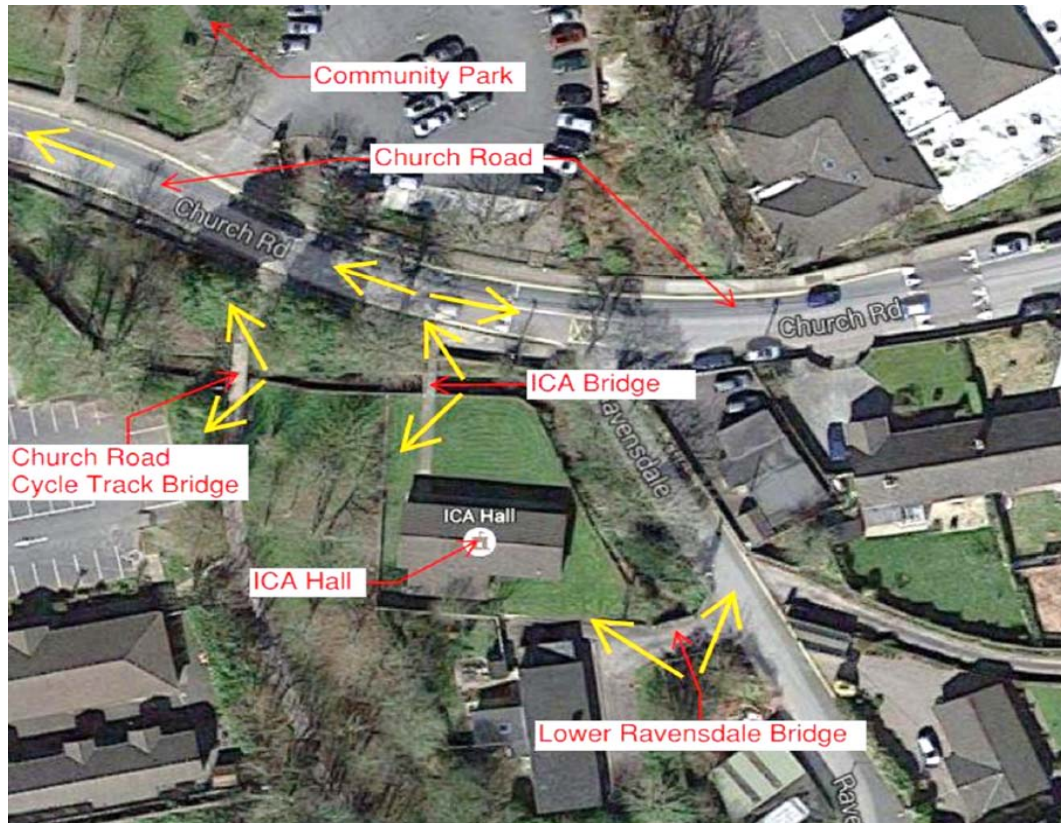
**Figure 8.5: Church Road culvert trash screen – post 2012 flood event. Source: OPW**



**Figure 8.6: Post 2012 flood event – wall knocked down outside ICA Hall**



**Figure 8.7: Post 2012 flood event high water mark from outside commercial property in Douglas East. Source: OPW**



**Figure 8.8: 2012 flood event – likely flood routes of the Ballybrack Stream in the vicinity of Ravensdale. The yellow arrows indicate the likely flood routes.**

Area 1 is described as the section of Ballybrack stream from Ballybrack Woods, downstream through the residential area of Ravensdale, and northwards as far as the culvert beneath Church Street in Douglas village. Refer to **Figure 3.1**.

Ballybrack woods is a quiet amenity area that can be accessed via a designated cycle track/walkway from Donnybrook Cottages to the south and Church Road to the north. The cycle track/walkway provides a pedestrian and cycle path from Scairt Hill road (opposite Donnybrook Commercial Centre and south of Ballybrack woods) through Ravensdale to Douglas Community Park and Church Street. The cycle track/walkway runs relatively parallel to the stream in certain sections.

From the Ballybrack woods, the Ballybrack stream flows northwards through Ravensdale beneath a number of small bridges (Upper, Middle and Lower Ravensdale bridges (from north to south)). The bridges provide access to residences along the left bank of the stream. There is a small cul-de-sac road which runs parallel to the right bank of the stream in Ravensdale and provides access to residential properties in this area. At the junction of this cul-de-sac road and Church Road, there is a Medical Centre provided by the Health Service Executive. There is a joinery business on the right bank of the stream in Ravensdale.

The stream then flows around the Irish Countrywomen’s Association (ICA) hall, beneath the hall’s access bridge. West of the ICA building is Westbrook Retirement Home. Downstream of the ICA Bridge is the bridge for the cycle track/walkway bridge that links the path to Church Road, refer to **Figure 3.3**.



Saint Luke's National School is east and adjacent to Douglas Community Park along Church Road. Douglas Community Centre is within the grounds of the park. There is a small car park for those who use the park and community hall. There are also recycling facilities in the corner of the car park. Also adjacent to the park is Saint Luke's Church and cemetery which border the length of the eastern boundary of the park. East of the national school is Saint Columba's Catholic Church and a community hall known as John Slye Scout Hall.

The stream then continues flowing downstream underneath Church Road, through Douglas Community Park to Church Street where it is culverted until it emerges near Saint Patrick's Mills (also known as Douglas Woollen Mills) (Area 2) and converges with the Tramore River.

The stream passes through the western side of Douglas Community Park between Church Road and Church Street. This is an area of local amenity, which contains a multi-use games area, a set of adult exercise equipment, a Community Centre, recycling facilities, a children's playground and grassed areas. The designated cycle track/walkway runs parallel to the stream through the Park.

In the Park area, the left bank of the Ballybrack stream is lined with properties, and a local access road (cul de sac), referred to as The Pond Bank. Further west and parallel to the stream is the West Douglas Road (R851) which is also lined with houses. St Luke's Church and graveyard lie to the east of the Park. An ESB substation of c. 4m<sup>2</sup> is located to the northern extent of the Park.

While less than 400 metres from Douglas Village, Ballybrack/Ravensdale has a quieter and less densely built-up character, while still having a typical suburban form. The land use of the area is more residential, with an identifiable centre along Church Road including a mix of commercial units, schools, community halls, churches and cemeteries, a nursing home, and large areas of open space including Ballybrack Woods and Douglas Community Park.

### 8.3.2 Area 2: Tramore River through St Patricks Mills

During the 2012 flood event this general area was severely affected by flooding as well as the village centre and Douglas Village Shopping Centre. Refer to **Figures 8.9, 8.10 and 8.11**. These areas were not accessible during the height of the flood.



**Figure 8.9: Post 2012 flood event outside Douglas Village Shopping Centre. Source: Cork County Council**



**Figure 8.10: Post 2012 flood event inside Douglas Village Shopping Centre. Source: Cork County Council**



**Figure 8.11: Post 2012 flood event in Douglas Village Centre. Source: Cork County Council**

Area 2 comprises an open channel of the Tramore River running alongside a car park boundary of the former St Patrick's Mills building (also referred to as Douglas Woollen Mills). At this section, the Tramore River has just emerged from a culvert under the N40 South Ring Road and N40 slip road. The mills and car park are set within a tight complex of small former light industrial type units (reminiscent of the area's textile industries), with entrance to St Patrick's Mills on West Douglas Road (R851) opposite the Douglas Village Shopping Centre in the centre of Douglas Village. St Patrick's Terrace is located off the West Douglas Road (R851). The back of St Patrick's Terrace adjoins the St Patrick's Mills area. St Patrick's Terrace is lined with a number of residential and commercial units, including a dental surgery, solicitor's office, hair and beauty salons, and a fast food restaurant.

In addition to the former St Patrick's Mills stone structure, a large number of smaller modern buildings have developed in a relatively unstructured way. The units are occupied by a wide variety of uses, predominantly mixed retail, service and light industry. The complex is bordered by the N40 to the north-east and the West Douglas Road (R851) to the west, and lies adjacent to a busy junction between the two roads. The site lies at the edge of the thriving central commercial business district within Douglas Village; a large and heavily urbanised suburb approximately 3 km south of Cork City. Refer to **Figures 3.5 to 3.7**.

### 8.3.3 Area 3: Grange Stream through Donnybrook Commercial Centre

The most recent flood event in the area surrounding the Donnybrook Commercial Centre was in 2012. Constrictions within the Grange Stream culvert in the Commercial Centre and blockages due to debris resulted in the culvert becoming surcharged, causing large volumes of water to discharge through a manhole in the centre.. Photographs of the aftermath of the 2012 flood event in this area are presented in **Figures 8.12, 8.13 and 8.14.**



**Figure 8.12: Post 2012 flood event adjacent to Donnybrook Commercial Centre showing manhole blockages (Source: Donnybrook Commercial Centre)**



**Figure 8.13: Post 2012 flood event adjacent to Donnybrook Commercial Centre. (Source: Donnybrook Commercial Centre)**



**Figure 8.14: Post 2012 flood event adjacent to Donnybrook Commercial Centre (Source: Donnybrook Commercial Centre)**

The Donnybrook Commercial Centre is located upstream of Areas 1 and 2. It can be accessed from the regional road R851 at Donnybrook Hill.

The Grange Stream (tributary of Ballybrack Stream) runs through the Donnybrook Commercial Centre. This area consists of an open linear channel of the Grange Stream located to the north of units within Donnybrook Commercial Centre. Further downstream, the Grange stream is culverted under hardstanding areas within the Commercial Centre. The site is very contained and largely hidden from view apart from the imposing mill structure that can be seen from the main road. A mix of commercial units, day care centre and religious facilities are located within the complex and along the length of the Grange Stream in this area. Refer to **Figures 3.8 and 3.10**.

A Maxol service station and Breen's Suzuki car dealership are located opposite the Commercial Centre. South and adjacent to the service station is the cycle track/walkway that goes through Ballybrack woods and Ravensdale (Area 1). Further south there are a small number of commercial units and continuing south the road is lined with residential properties on either side. The Donnybrook Cottages housing estate is located to the southeast of the Commercial Centre. Going north towards Ballybrack, there are a number of houses on either side of the R851 and some wooded areas.

### **8.3.4 Area 4: Tramore River through Togher**

The most recent significant flood event in the Togher area was in 2012. A minor flood event occurred in Togher in 2015, but this was not significant. The 2012 flood event corresponded with the 2012 flood events described above for Areas 1, 2 and 3. It occurred following a period of extremely heavy rainfall.

Greenwood Estate was one of the locations in Togher that was worst affected by this event, with significant flooding occurring in this area. Photographs of the aftermath of the 2012 flood event in Area 4 are presented in **Figures 8.15, 8.16** and **8.17**.



**Figure 8.15: Post 2012 flood event in Togher Area. Source: Cork County Council**



**Figure 8.16: Post 2012 flood event in Togher Area – outside Togher Community Centre. Source: Cork County Council**



**Figure 8.17: Post 2012 flood event in Togher Area – inside Spar Express shop. Source: Cork County Council**

This area comprises the Tramore River between Lehenaghmore Industrial Estate and Greenwood Estate in Togher, refer to **Figure 3.11**. The surrounding area is mixed residential and industrial use. The residential area of Brook Avenue is located adjacent to Lehenaghmore Industrial Estate whilst Greenwood Estate is located off the Togher Road south of the N40 South Link road. There are a number of residential, educational, commercial and religious facilities adjacent to or in the vicinity of the Togher road. The Old Doughcloyne Hotel, the Way of the Cross Church and Togher Girls and Boys National Schools are all located in the vicinity of the proposed scheme works areas. The area has a typical suburban form; open and with low-density settlement patterns.

The majority of the Tramore River is culverted in this area. There are some short open channel sections in between the culverts.

The Lehenaghmore Industrial Estate is located south of Togher Cross, and is accessible from Togher Road. The industrial estate houses the Southern Fruits distribution warehouse and shop, as well as a number of other commercial units. A car park is provided within the complex. The left bank of the river is lined with properties and the rear gardens of Brook Avenue. The southern boundary of the industrial estate is lined with hedges. Opposite the industrial estate entrance there is a temperature controlled storage and logistics facility.

Greenwood Estate is located in the southern area of the proposed scheme. The Tramore River is located to the south of this residential estate. There are also some commercial units located close to the Tramore River.



The Togher Community Park (Greenwood Football Club) playing fields and Togher Sports Pavilion lie to the north of the Greenwood Estate, on the left bank of the river, along which runs a pedestrian walkway.

### 8.3.5 Heritage

Archaeological, architectural and cultural heritage are discussed in **Chapter 13 Archaeological, Architectural and Cultural Heritage**. Nature conservation areas are discussed **Chapter 6 Biodiversity**. Designated views and prospects, scenic routes and protected views designated in the *Cork County Development Plan 2014-2022* are discussed in **Chapter 7 Landscape and Visual**.

### 8.3.6 Local Amenity

In Douglas (Areas 1 to 3), there are a number of local amenities that benefit a large cross-section of the community. As previously described, Area 1 has Ballybrack woods and cycle track/walkway, the ICA hall, Douglas Community Park and Centre, recycling facilities, St Luke's National School, John Slye Scout Hall, and both Saint Luke's and Saint Columba's churches near the proposed works areas. At Area 2, St Patrick's Mills, there are a number of small businesses and a shopping centre that among other units contain a public library and a post office.

In Togher the proposed flood relief scheme works are near to a number of shops and businesses, the Church of the Way of the Cross, a girls and boys national school, Togher Community Services Centre and playing fields.

### 8.3.7 Tourism

Although Douglas and Togher are not currently popular tourist destinations, the area includes a number of attractions for tourists, including recreation and amenity areas, accommodation, restaurants, public houses and retail outlets. The *Cork County Development Plan 2014* states that the main aims of the plan include “*Develop, enhance, and protect new and existing tourism assets, products, attractions and tourism infrastructure*” (CDP 2014).

Tourism is a major contributor to the national economy and is a significant source of full-time and seasonal employment. The area for the proposed scheme is located in the South West Region. The *South West Regional Planning Guidelines 2010-2022* state that Cork is a prime location for regional tourism in Ireland, and that the South West Region, on an annual basis, generates €1.3 billion in tourism revenues and has in excess of 3.6 million visitors.

*Fáilte Ireland's Annual Report 2014* states that in 2014, the tourism and hospitality industry employed almost 205,000 people in the State, and generated an estimated €6.4bn in revenue. This represents an increase in both employment and revenue from 2013.

### 8.3.8 Population

The smallest geographical units distinguished by the Central Statistics Office (CSO) are Electoral Divisions (ED).

Local electoral areas were reconfigured in 2014 following recommendations made by the Local Electoral Area Boundary Committee. Under the revised Electoral Area boundaries, the areas to be impacted by the proposed scheme are located within the Inishkenny, Lehenagh (both Togher area) and Douglas Electoral Divisions within the Ballincollig-Carrigaline Electoral Area. The Ballincollig-Carrigaline Electoral Area is comprised of eight EDs in total. The proposed FRS works cross into both the Inishkenny and Lehenagh ED; the proposed FRS works in Douglas are contained wholly within the Douglas ED.

**Table 8.2** outlines the population change between 2006 and 2011 and between 2011 and 2016, as well as the associated population growth rates.

**Table 8.2: Population change between 2006 and 2016 and the growth rate of these population figures**

District	2006	2011	Change from 2006-2011	2016 <sup>1</sup>	Change from 2011-2016 <sup>1</sup>
State	4,239,848	4,588,252	+8.2 %	4,757,976	+3.6 %
Cork (County and City)	481,295	519,032	+7.8 %	542,868	+4.5 %
Cork County	361,877	399,802	+10.5 %	417,211	+4.1 %
Cork City	119,418	119,230	-0.2 %	125,657	+5.1 %
Lehenagh (Electoral Division No 18096)	9,534	9,898	+0.04 %	10,267	+3.5 %
Douglas (Electoral Division 18086)	18,182	20,387	+12.13 %	20,913	+2.4 %
Inishkenny (Electoral Division 18092)	5,314	5,522	+0.04 %	5,637	+2.0 %

The trend in population change for the three electoral divisions largely follows the regional and national trend, of slight population increase. Douglas has seen much larger growth in this period than the ED's of Lehenagh and Inishkenny which include Togher.

### 8.3.9 Household Size

**Table 8.3** below outlines the average household size in each of the geographical areas assessed. The statistics illustrate a general decrease in household size from 2006 to 2011, in line with the national trend. However, the 2011 household size in the areas of the proposed flood relief scheme development is still higher than the State and County averages in both 2011 and 2016. The 2016 Census data for the Electoral Divisions listed in **Table 8.3** is currently unavailable.

<sup>1</sup> The 2016 National Census was taken on the 24th April 2016. The relevant 2016 Census data listed above in Table 8.2 for the State, Cork County and Cork City have been officially published, whereas the 2016 Census data for the Electoral Divisions listed are preliminary results only.

**Table 8.3: Average household size change between 2006 and 2016**

District	2006	2011	2016
State	2.81	2.73	2.70
Cork County	2.88	2.80	2.80
Lehenagh (Electoral Division No 18096)	3.14	2.99	-
Douglas (Electoral Division 18086)	2.94	2.83	-
Inishkenny (Electoral Division 18092)	2.96	2.94	-

### 8.3.10 Trends in Employment and Economic Activity

The CSO Quarterly National Household Survey, Quarter 4 of 2016 states that 2,048,100 persons were in employment in the State in the fourth quarter of 2016, an annual increase in employment of 65,100 in the year to the fourth quarter of 2016, or 3.3 %. This compares with an annual increase in employment of 2.9% in the previous quarter (Q3) and an increase of 2.3 % in the year to Q4 2015.

The survey states that unemployment decreased by 40,000 (-21.4%) in the year to Q4 2016 bringing the total number of persons unemployed to 147,400. This is the eighteenth quarter in succession where unemployment has declined on an annual basis.

The *Carrigaline Local Area Plan 2011 (LAP)* (2<sup>nd</sup> Ed., 2015) states in Section 2.2.9 that there were 13,234 people employed in the South Environs, more than any other main settlement or urban area in the County. Cork City South Environs is a group of suburbs including Rochestown, Douglas, Grange, Maryborough, Togher and Doughcloyne. The *Draft Ballincollig Carrigaline Municipal District LAP* (2016) notes in Section 3.5.15 that the South Environs employs 12,576. This is a decrease of 758 (5%) people employed in the South Environs since the LAP figures from 2011. However Cork South Environs remains the area with the largest number of people employed in the County (LAP 2016).

The current local area plans for Cork, including Carrigaline LAP, were first adopted in 2011 are due to be replaced by August 2017. The current Carrigaline LAP was revised in 2015 as a second edition. Cork County Council (CCC) has prepared Draft Municipal District Local Area Plans for the next six year LAP cycle (2017-2023). The proposed scheme area is included in the *Draft Ballincollig Carrigaline Municipal District Local Area Plan* (2016). It is available on the CCC website for review ([www.corklocalareaplans.com](http://www.corklocalareaplans.com)).

*The Cork Area Strategic Plan – Strategy for Additional Economic and Population Growth – An Update* (Indecon, RPS and Savills HOK July 2008) is a strategy document for the development of the Cork City region up to 2020. The CASP projections show employment for the South Environs in 2020 is 14,734 people in Cork South Environs, an increase of 2,158 or 17.1% on the employment figures from the Draft LAP (2016).

The 2011 CSO census data includes detail of the industries in which people are employed. Looking at this data can provide insight into the economic activity in the three EDs (Inishkenny, Lehenagh and Douglas) in the area of the proposed scheme. The 2016 Census data for the number of people employed by economic sector in these EDs is currently unavailable.

**Table 8.4: Persons employed by economic sector (Census 2011)**

Industry	Inishkenny	Lehenagh	Douglas
Agriculture, forestry and fishing	34	37	46
Building and construction	107	188	373
Manufacturing industries	349	710	1,596
Commerce and trade	646	1,189	2,817
Transport and communications	173	366	793
Public administration	133	235	487
Professional services	877	1,135	2,364
Other	369	560	1,029
<b>Total</b>	<b>2,688</b>	<b>4,420</b>	<b>9,507</b>

The 2011 Census data indicate that the two largest industries in the area of the proposed scheme are Commerce and trade, and Professional Services. Douglas is an area of significant commercial activity, due to the presence of numerous small businesses, referred to in Section 8.3.7 Tourism.

### 8.3.10.1 Licensed Industrial Facilities

Large scale industrial and agricultural activities are licensed by the Environmental Protection Agency (EPA) under the Industrial Emissions Directive (2010) and Environmental Agency Act 1992 as amended.

The EPA online mapping indicates that the nearest licensed industrial facility is Brooks Haughton Limited (P0343-01), 820 m northeast of Togher Cross roundabout. The nearest licensed Industrial Emissions facility is Irish Pioneer Works (Fabricators) (P0407-01), approximately 2 km west of the Douglas Church Road culvert.

## 8.4 Characteristics of the Proposed Scheme

The proposed flood relief scheme will consist of the implementation of flood defences, in various forms, along the Ballybrack Stream and Tramore River in Douglas and in Togher. The proposed scheme will include the construction of flood defence walls along the river banks; construction and replacement of culverts; removal and replacement of bridges; construction of embankments; installation of trash screens; conveyance improvements (river channel widening and deepening), and localised regrading of ground levels. The proposed scheme is described in detail in **Chapter 3 Description of the Proposed Scheme**. Refer to **Chapter 4 Construction Activities** for details on construction phasing.

The following works are of particular relevance in relation to human beings:

- Construction activity in the vicinity of residential properties,

- Construction activity in the vicinity of commercial, industrial, retail, educational, health and religious properties, sports facilities and community facilities,
- Construction activity in the vicinity of the amenity areas of Ballybrack Woods, Douglas Community Park, the amenity area near the ICA building, cycle track and Togher Community Park,
- Permanent removal of ICA bridge and Church Road cycle track/walkway bridge,
- Replacement of Lower Ravensdale bridge,
- Replacement of Church Road culvert.

## 8.5 Evaluation of Impacts

Impacts on human beings as a result of the proposed development have been considered in detail in other chapters of this EIS, as follows:

**Chapter 4 Construction Activities,**

**Chapter 7 Landscape and Visual,**

**Chapter 9 Noise and Vibration,**

**Chapter 10 Air Quality and Climate,**

**Chapter 11 Soils, Geology and Hydrogeology**

**Chapter 13 Archaeological, Architectural and Cultural Heritage,**

**Chapter 14 Roads and Traffic,**

**Chapter 15 Material Assets,**

**Chapter 16 Cumulative Impacts.**

The impacts of the proposed development on human beings in relation to residential and recreational amenity, economic and employment activity and public health are evaluated in the following sections.

### 8.5.1 Construction Impacts

#### 8.5.1.1 Area 1: Ballybrack Stream through Douglas

Refer to **Drawings C-000-011, C-000-012** and the cross-sections in **Drawings C-000-015 to C-000-017** in **Appendix 3.1**. Also refer to **Figures 3.1 to 3.4**.

During the construction phase, potential impacts on local amenities will relate primarily to accessibility and general nuisance (dust, noise etc.) generated by construction activity. Temporary diversions through local amenities and/or temporary alternative access to local amenities may be required to facilitate the construction works. This includes Ballybrack Woods, Douglas Community Park, the cycle track/walkway and the amenity area near the ICA Hall.

There may be a reduction in space availability within the local amenities (e.g. within Douglas Community Park) as the construction works will require some areas to be cordoned off from the general public for construction machinery access and public safety. However, these restrictions will be in place for a short duration only and access will be reinstated upon completion of the works. Within Douglas Community Park, the adult exercise equipment located close to the Ballybrack stream will potentially be unavailable for use during the construction period. The ESB substation that is located to the northern extent of the Douglas Community Park will be also removed and relocated to within 10m of its current position.

It is expected that the small amenity area near the ICA Hall (between the stream and Church Road) will not be available during the construction works for public safety reasons.

Vehicular access via Lower Ravensdale Bridge to the residential properties on the left bank of the Ballybrack stream will not be available for a number of weeks whilst the bridge is being replaced. As there are no feasible temporary diversion routes available, alternative secure parking for cars will be arranged in agreement with the residents affected. It is expected that vehicular access will be restricted for approximately three weeks. This will result in a temporary negative impact on those affected residents. Pedestrian access will be facilitated at all times during the construction phase via a temporary pedestrian bridge or similar. Every effort will be made to carry out the works as quickly as possible in order to minimise impacts on the residents of Ravensdale.

The ICA bridge to Church Road and the Church Road cycle track/walkway bridge will be permanently removed. However, alternative access will be constructed as part of the scheme. Refer to **Drawing C-000-012**. During construction the ICA hall will be accessible via the car park next to the Westbrook Retirement Home. Cyclists and pedestrians can cross the Ballybrack Stream via Church Road culvert. These restrictions will have a negative but temporary impact on users of the area.

The cycle track/walkway, that links Church Road to Ballybrack woods, will be temporarily restricted while the trash screen is being installed at the small bridge in Ballybrack woods.

It is noted that many of the linear defences will require the temporary removal of boundary walls and fences to facilitate construction access (generally parallel with watercourses). These boundary walls/fences will be reinstated on completion in agreement with the Council and landowners.

Temporary traffic restrictions will be required during the replacement of the Church Road culvert. However, these will be managed via the construction traffic management plan which will be prepared by the Contractor.

It is envisaged that traffic measures such as a stop-go system, temporary one-way traffic systems or similar will be implemented to allow the construction works and utility diversions to be constructed and at the same time to manage traffic. It is not anticipated at this stage that full road closures will be required. However, if they are required, they will be for a very short duration only and will take place at night or other suitable times to minimise the impact on traffic in the area.

It is expected that some trees, shrubs and vegetation will require removal to facilitate the construction works. These areas will be reinstated in general. However, the landscape character of Douglas Park may change due to the works proposed within the park which will necessitate the removal of some trees close to the Ballybrack stream. The path through the park will be realigned. These impacts are dealt with in **Chapter 7 Landscape and Visual**. Construction impacts on air (e.g. dust) and noise are dealt with in the relevant chapters.

### 8.5.1.2 Area 2: Tramore River through St Patrick's Mills

Refer to **Drawing C-000-010** and the cross-section in **Drawing C-000-015** in **Appendix 3.1**. Also refer to **Figures 3.5** to **3.7**.

The construction works will necessitate temporary restrictions on car parking and access within the Mills in the vicinity of the Tramore River. It is envisaged that one row of car parking spaces (c. 33 spaces) directly next to the river will be removed from public use for the duration of the works, constituting a potential temporary negative impact on the commercial units trading in this area.

### 8.5.1.3 Area 3: Grange Stream through Donnybrook Commercial Centre

Refer to **Drawings C-000-013, C-000-014** and the cross section in **Drawing C-000-017** in **Appendix 3.1**. Also refer to **Figures 3.8** to **3.10**.

The construction works will necessitate temporary restrictions on car parking and access within the Commercial Centre in the vicinity of the Grange Stream. Access and parking will be restricted during river regrading and culvert replacement in the Commercial centre, constituting a potential temporary negative impact on the commercial units trading in this area.

Where the culvert will be installed by the former mill complex near the entrance to the commercial centre, access and parking to these units will be restricted as the culvert is constructed with a potential temporary negative impact on the commercial units in this part of the commercial centre.

### 8.5.1.4 Area 4: Tramore River through Togher

Refer to **Drawings C-000-007** to **C-000-009** and the cross sections in **Drawings C-000-015** and **C-000-019** in **Appendix 3.1**. Also refer to **Figures 3.11** to **3.13**.

During the construction phase, potential impacts on residential and other properties will relate primarily to accessibility and general nuisance (dust, noise etc.) generated by construction activity. Accessibility will be maintained for all properties throughout. However, temporary vehicular diversions and temporary alternative access points may be required. Temporary traffic restrictions will be required along Togher Road during the works however these will be managed via the construction traffic management plan which will be prepared by the Contractor.

It is expected that some trees, shrubs and vegetation will require removal to facilitate the construction works. These areas will be reinstated in general.

However, the landscape character of some areas may change due to the permanent removal of some trees. These impacts are dealt with in **Chapter 7 Landscape and Visual**. Construction Impacts on air (e.g. dust) and noise are dealt with in the relevant chapters.

At Lehenaghmore Industrial Estate and Brook Avenue estate vehicular and pedestrian access will be maintained for all properties while the trash screen is being constructed.

At the Togher Community Park (sports ground) north of the Greenwood Estate, there is a pedestrian walkway from the Togher Road, along the left bank of the Tramore River. It is likely that this walkway will be impacted during the construction of the defence wall along the left bank. Any disruption to the access to this amenity walkway will be temporary in nature. It is envisaged that the walkway will remain open throughout.

The car park in the Togher Community Park (sports ground) will be required for use as an access route for construction vehicles. There may be a temporary removal of parking during the construction phase when vehicles need to access the site.

#### 8.5.1.5 Tourism

The proposed development will have limited impact on the tourism activities in Douglas and Togher. Local amenities at the disposal of tourists in the area are predominantly commercial outlets, accommodation, public houses and restaurants. There is potential for localised and temporary disturbance due to the impacts of construction works.

#### 8.5.1.6 Economic Activity

The construction phase of the proposed scheme will last approximately 18 months. There is the potential for short-term negative impacts on economic activity during this phase due to traffic restrictions and general nuisance and accessibility.

There is a potential short term positive economic impact during construction due to the short-term increase in employment. Local businesses may also benefit from an increase in demand for their goods and services due to spending from construction workers in the area.

The proposed scheme will have no impact on licensed industrial facilities during the construction phase.

#### 8.5.1.7 Employment

The proposed scheme has the potential to positively impact on employment in the areas on a short term basis during the construction phase. The duration of the construction phase will be approximately 18 months. Where possible, a local labour force will be employed, and the required materials will be sourced locally.



## 8.5.2 Operational Impacts

During the operational phase, the impacts on population and human health will be positive. The areas directly affected by the proposed works during the construction phase will also benefit directly from a reduced risk of flooding. Refer to **Drawings C-000-004 to C-000-006** in **Appendix 3.1** which illustrate the benefitting lands from the proposed scheme.

As discussed previously, there is a history of flooding in the area. Previous flooding events have resulted in considerable damage to residential and commercial properties throughout the area. Such flood events destroy the internal contents of houses including the electrics, plumbing and interiors and may also cause structural damage. Cars and other vehicles often have their engines flooded and are subsequently not deemed road worthy. Many people do not have the financial means after a flood to replace personal belongings or repair the damage for some time or at all. There may be difficulties in obtaining or retaining house insurance in relation to flood damage.

The provision of the flood relief scheme will minimise the risk of flooding in the Togher and Douglas areas, particularly in the commercial areas where there is employment currently and also in residential areas. The flood relief scheme will allow people to continue to work and live in the area with a much lower flood risk into the future. This will result in a long-term significant positive impact.

There will be a positive impact on health and safety for those living and working in the area. As stated in the OPW document *'The Planning System and Flood Risk Management: Guidelines for Planning Authorities'* (OPW, 2009), flooding has the potential to cause physical injury, illness and loss of life. Such events also cause severe stress and trauma on those affected and especially on those most vulnerable due to age, illness or limited mobility.

The operational phase of the proposed scheme will not impact on tourism in the area. The flood protection measures will reduce the risk of flood damage to tourism amenities in the area such as shops, cafes, restaurants, hotels and guesthouses. The scheme will therefore have a long-term positive impact on the tourism and local amenities of the area.

The increase in flood protection as a result of this proposed scheme will contribute to securing new and current businesses and jobs in the area. Existing properties will benefit from the greater flood protection and this will also contribute towards attracting additional investment and jobs to the area as properties become more attractive to rent or buy.

The proposed flood relief scheme will benefit the businesses of Togher and Douglas by rebuilding customer confidence in the area during wet weather.

Wet weather can deter people from shopping in areas with a well-known flooding history due to concerns over personal safety, accessibility, parking and business closure. This is of particular concern to business owners when wet weather coincides with important retail periods such as Christmas.

There will be no significant air or noise emissions from the scheme once it is operational. There will be no impacts on traffic during the operational phase unless maintenance works are required. Significant maintenance works are not envisaged. Therefore, the corresponding traffic impacts during maintenance will be minimal.

In the design of any flood relief scheme, it is important that the flood mitigation measures are considered in the context of a long term strategy which is flexible and adaptive to changes in the climate and its potential impact on flood risk. The proposed scheme has been designed to ensure it is readily adaptable to climate change.

The proposed scheme for Douglas (Areas 1 to 3) is designed to provide protection to properties in the study area from the 1 in 100 year fluvial/1 in 200 year tidal flood events. An allowance for freeboard has also been incorporated into the design. This standard is in line with the OPW's national standard for constructing flood defence schemes in Ireland.

The scheme incorporates the construction of direct defences through Ravensdale and direct defences/channel regrading through the community park for the current scenario. It would be feasible for the heights of the defence walls to be further increased as part of a climate change adaptation strategy in the future without involving a significant impact on environmental and landscape features. This measure would increase the capacity of the channel and allow it convey a greater flow through the reach.

Conveyance improvements could also be implemented as part of the climate change adaptation strategy as the channel could be deepened in the future without involving a significant impact on the environment. The channel could also be widened where space is available to facilitate widening.

The proposed scheme for Togher (Area 4) consists of a replacement culvert which has been designed to meet with OPW Section 50 requirements. It is therefore designed to accommodate the 1 in 100 year fluvial flood plus an allowance for climate change and freeboard.

## 8.6 Mitigation Measures

### 8.6.1 Construction Mitigation Measures

#### 8.6.1.1 Local Amenity

Works will be designed to minimise impacts on local amenity during the construction period. A construction environmental management plan (CEMP) will be implemented to reduce the impact of construction works. Refer to **Chapter 4 Construction Activities** for further information.

In order to ensure the greatest possible access to the Douglas Community Park during works, the entrances at Church Road and Church Street will remain open. The footprint of the works will be kept to the minimum.

This will minimise impacts on the amenities in the Community Park, ensuring that the cycle track/walkway that runs through the Park, as well as the multi-use games area, Community Centre and playground will remain accessible to the public for the duration of the works. Part of the adult exercise equipment will need to be dismantled during the construction works period. The pedestrian/cyclist routes will be temporarily diverted but access will be maintained at all times.

The duration of works at the Lower Ravensdale Bridge will be limited to a number of weeks to minimise the impact on residents of the area who will have no vehicular access to their properties during the works. Alternative secure parking for cars will be arranged in agreement with the residents affected, while pedestrian access will be maintained throughout the construction period via a temporary pedestrian bridge or similar

The boundary walls/fences, vegetation and trees in the areas of the proposed works (particularly in Area 1 and generally parallel with watercourses) that will be temporarily removed to facilitate construction access will be reinstated on completion of the works in agreement with the Council and landowners. Landscaping and replanting will also be carried out on completion in agreement with the Council and landowners.

A traffic management plan will be implemented to minimise disruptions to traffic. Refer to **Chapter 14 Roads and Traffic** for further details.

Noise disturbance and emissions to air will also be minimised. Best practice measures for noise control will be adhered to during construction. Refer to **Chapter 9 Noise and Vibration** of the EIS for further detail of noise mitigation measures. A dust minimisation plan will be prepared and implemented by the contractor during construction. Refer to **Chapter 10 Air Quality and Climate** of the EIS for further detail of the mitigation measures to be implemented as part of the dust minimisation plan.

### 8.6.1.2 Tourism

The period of construction works will be approximately 18 months. The works programme will be designed to minimise impacts on the value of local amenities to the tourism industry.

In particular, they will include provisions for protecting the river from silt, and limiting working hours to avoid disruption. Access to tourist amenities such as shops, restaurants and public houses will be maintained throughout the construction stage to ensure minimal impact on tourism. Dust and noise emissions will be controlled through dust management, and works will not take place outside standard working hours to ensure minimal environmental disturbance. Refer to **Chapter 9 Noise and Vibration**.

### 8.6.1.3 Population

Noise disturbance will be minimised. Best practice measures for noise control will be adhered to during construction. Refer to **Chapter 9 Noise and Vibration** of the EIS for further detail of noise mitigation measures.

A traffic management plan will be implemented to minimise disruptions to traffic. Refer to **Chapter 14 Roads and Traffic** for further details.

Dust emissions will be controlled throughout the construction phase. Refer to **Chapter 10 Air Quality and Climate** for details of dust mitigation measures.

#### 8.6.1.4 Economic Activity

The impact on local economic activity can be reduced through ensuring access to local businesses is maintained. A traffic management plan will be prepared and implemented to ensure that any impacts are minimised. Traffic restrictions will be limited in time and to ensure that impacts are only felt for the shortest possible period of time. The period of works will also account for “high season” and busy periods, e.g. Christmas. Refer to **Chapter 14 Roads and Traffic** for further information on traffic management.

Noise and dust disturbance will be minimised. Best practice measures for noise control will be adhered to during construction. Refer to **Chapter 9 Noise and Vibration** of the EIS for further detail of noise mitigation measures. Dust emissions will be controlled throughout the construction phase. Refer to **Chapter 10 Air Quality and Climate** for details of dust mitigation measures.

#### 8.6.2 Operational Mitigation Measures

The overall impacts of the proposed drainage scheme will be permanent and positive, and therefore mitigation is only proposed for the operational phase when maintenance works are required.

Maintenance works may be undertaken at various intervals post-construction in order to ensure that blockages (e.g. fallen trees) within the watercourses are not impacting on conveyance or to repair structural elements of the drainage scheme such as flood walls, culverts etc.

Mitigation measures during the operational phase will relate primarily to these maintenance works, and will broadly reflect those employed for the construction phase but on a much smaller scale.

### 8.7 Residual Impacts

The proposed flood relief scheme will significantly reduce the risk of flooding in the area and as a result, the scheme will have a long-term significant positive impact both for residents, local amenity, tourism and economic activities.

The overall impact of the scheme on the local amenities will be positive and permanent with flood defence measures designed to protect local amenities such as shops and restaurants.

Likewise, the flood protection measures will reduce the risk of flood damage to tourism amenities in the area such as shops, cafes, restaurants, hotels and guesthouses. The scheme will have a long-term positive impact on the tourism and local amenities of the area.

The proposed scheme will have a long-term positive impact on the local population.

The increased flood protection as a result of this proposed scheme will contribute to securing businesses and jobs in the area. Existing properties will benefit from the greater flood protection and this will also contribute towards attracting additional investment and jobs to the area as properties become more attractive to rent or buy.

The residual impacts of the scheme are also described in the following chapters:

**Chapter 4 Construction Activities,**

**Chapter 7 Landscape and Visual,**

**Chapter 9 Noise and Vibration,**

**Chapter 10 Air Quality and Climate,**

**Chapter 11 Soils, Geology and Hydrogeology**

**Chapter 12 Material Assets,**

**Chapter 13 Archaeological, Architectural and Cultural Heritage,**

**Chapter 14 Roads and Traffic,**

**Chapter 15 Material Assets,**

**Chapter 16 Cumulative Impacts.**

## 8.8 References

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