

Clifton Scannell Emerson
Associates

EIAR Chapter 4 Population & Human Health

Suir Island Infrastructure Links



Comhairle Contae Thiobraid Árann
Tipperary County Council

Civil
Engineering

Structural
Engineering

Transport
Engineering

Environmental
Engineering

Project
Management

Health
and Safety

CONSULTING ENGINEERS



Document Control Sheet

Project Name: Suir Island Infrastructure Links
Project Number: 20_071
Report Title: EIAR Chapter 4 Population and Human Health
Filename: RPT-20_071-032

Issue No.	Issue Status	Date	Prepared by	Checked by
0	Final	22.09.2023	HB	LP

Table of Contents

Document Control Sheet	2
Table of Contents	3
List of Figures	4
List of Tables	4
4 HUMAN HEALTH AND POPULATION	5
4.1 Introduction	5
4.2 Methodology	5
4.2.1 Relevant Legislation and Guidance	5
4.2.2 Data Sources of Information	6
4.2.3 Population Impact Assessment Categories	6
4.2.4 Study Area	8
4.3 Receiving Environment	9
4.3.1 Census and Demographics	10
4.3.2 Socio-Economics	12
4.3.3 Health	16
4.3.4 Natural Resources	18
4.3.5 Landscape Amenity & Tourism	18
4.3.6 Social Infrastructure	20
4.3.7 Major Accidents/Hazards	21
4.3.8 Summary of Baseline Conditions	21
4.4 Characteristics Of The Proposed Development	21
4.4.1 Construction Phase	22
4.4.2 Operational Phase	22
4.5 Potential Impacts of the Proposed Development	22
4.5.1 Potential Impacts on Businesses and Residences	22
4.5.2 Potential Impacts on Amenity and Tourism	23
4.5.3 Potential Impacts on Natural Resources and Material Assets	24
4.5.4 Potential Impacts on Human Health from Air Quality and Climate	25
4.5.5 Potential Impacts on Human Health from Noise and Vibration	26
4.5.6 Potential Impacts on Human Health from Traffic and Transportation	27
4.5.7 Potential Impacts on Health and Safety	27
4.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)	28
4.6.1 Construction Phase	28

4.6.2	Operational Phase	29
4.7	Residual Impacts of the Proposed Development	30
4.7.1	Construction Phase	30
4.7.2	Operational Phase	32
4.8	Monitoring/ Reinstatement.....	33
4.9	Conclusions	33
4.10	References	35

List of Figures

Figure 4-1: Health Sensitivity: conceptual model (Source: Health Impact Assessment Guidance (IPH, 2021).....	7
Figure 4-2: Location of the Proposed Development within the Study Area	9
Figure 4-3: Site Location Map showing the Red Line Boundary Area of the Proposed Development .	10
Figure 4-4: Basic Model of the Pobal HP Deprivation Index	15
Figure 4-5: Land Use Zoning for the site/ study area.....	20

List of Tables

Table 4-1: Description of Magnitude of Predicted Impacts	7
Table 4-2: Significance of Effects and the Sensitivity of the Receptor.....	8
Table 4-3: Population Change at State, Primary and Secondary Hinterland Level	11
Table 4-4: Age Profile at State and Hinterland Level, 2011	11
Table 4-5: Age Profile at State and Hinterland Level, 2016	11
Table 4-6: Employment Statistics for the State, Tipperary and Clonmel East Urban ED	12
Table 4-7: Population of Tipperary by Socio-Economic Group	13
Table 4-8: Commuting to work, school or college statistics for the State, Tipperary County and Clonmel East Urban ED.....	13
Table 4-9: Pobal HP Index Relevant Index Score labels (Source: Pobal HP Deprivation Index).....	15
Table 4-10: Pobal HP Index Relevant Index (Source: Pobal HP Deprivation Index).....	15
Table 4-11: Period Life Expectancy (Source: CSO Statbank VSA30 & VSA31)	16
Table 4-12: Circulatory Diseases (Source: CSO PxStat DHA16)	16
Table 4-13: Respiratory Diseases (Source: Source: CSO PxStat DHA16)	16
Table 4-14: Percentage of People Who State That Their Health is Either Bad or Very Bad. (Source: CSO).....	17
Table 4-15: Death by Suicide and Intentional Self Harm (Source: CSO Statbank DHA12)	17
Table 4-16: Lifestyle Indicators for persons aged 15 and over (Source: CSO Statbank IH079 2015) .	17
Table 4-17: All persons aged 15 and over by Region, Year and Physical Activity Undertake (Source: CSO Statbank IH072) 2015.....	17

4 HUMAN HEALTH AND POPULATION

4.1 Introduction

This chapter has been prepared to assess the likely impacts associated with Human Health for the proposed development.

The likely significant impacts on with Human Health and Population in regard to issues such as soils, geology and hydrogeology, water, air quality, noise and vibration, traffic and landscape are addressed in detail within the following EIA chapters:

- Chapter 6 – Land, Soils, Geology and Hydrogeology;
- Chapter 7 - Hydrology;
- Chapter 8 - Air Quality;
- Chapter 9 – Climate;
- Chapter 10 - Noise and Vibration;
- Chapter 12 – Material Assets: Traffic and Transportation; and
- Chapter 15 – The Landscape

Further discussion of these issues follows below.

The impacts of other environmental aspects associated with the proposed development which may be human related such as noise and vibration, traffic, visual impact and air quality are discussed in the relevant chapters of this EIAR. Potential impacts on the proposed development are outlined in section 4.5 of this report.

4.2 Methodology

Having regard to the *EPA Guidelines Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report* (EU, 2017), this chapter has considered that:

“in an EIAR the assessment of impacts on population and human health should refer to the assessment of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under environmental factors of air, water soil etc.”

This chapter will have regard to EC guidelines and will examine the health effects relevant to the proposed development as they relate to a relevant, defined study area.

Public bodies including the Central Statistics Office (CSO) have been consulted to gather relevant information in relation to, employment statistics, demographic statistics and community aspects.

4.2.1 Relevant Legislation and Guidance

This chapter has been prepared having regard to :

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Environment Protection Agency (EPA, 2022).
- Health Impact Assessment Guidance. Institute of Public Health (IPH), (IPH, 2021).
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report European Commission (EU, 2017).
- Advice Notes for Preparing Environmental Impact Statements Draft Environment Protection Agency (EPA, 2015).

The description of the sensitivity, magnitude and significance, outlined within this assessment are based on the Health Impact Assessment Guidance (IPH, 2021) criteria, while the probability and duration of effects are based on the definitions set out within Section 3.7 of the 'Guidelines on information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

4.2.2 Data Sources of Information

The following sources of information have been used in this assessment:

- 2011 Census carried out by the Central Statistics Office (CSO) 10 April 2011. Made available from <https://www.cso.ie/en/>
- 2016 Census carried out by the Central Statistics Office (CSO) 24 April 2016. Made available from <https://www.cso.ie/en/>
- Pobal HP Deprivation Index based on 2011 Census Data (CSO) Made available from <https://www.pobal.ie/>
- Pobal HP Deprivation Index based on 2016 Census Data (CSO) Made available from <https://www.pobal.ie/>
- Google maps available from <https://www.google.com/maps>
- OpenStreetMap and contributors available from <https://www.openstreetmap.org>
- GeoHive contributors and available from <https://www.geohive.ie/>

4.2.3 Population Impact Assessment Categories

4.2.3.1 Assessment Sensitivity of Population

The assessment of significance of an impact is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary. The Health Impact Assessment Guidance (IPH, 2021) sets out conceptual model of the different components of sensitivity (Figure 4-1). It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of sensitivity. The conclusion may be summarised as a high, medium, low or negligible sensitivity to change.

The existing sensitivity of the receiving environment (in terms of population and human health) has been appraised for the study area with a desk-based assessment of routine demographic and health indicators, rather than the use of surveys or collection of primary data. This includes analysis of existing data (based on the availability of information) from the Central Statistics Office (CSO) and Pobal to build up a profile of the baseline population information within the study area. Topographical maps and Google maps have also been used to inform the baseline description of the area to inform the proximity of the Site to areas of economic activity, employment, community infrastructure, emergency services, tourism and recreation amenities.

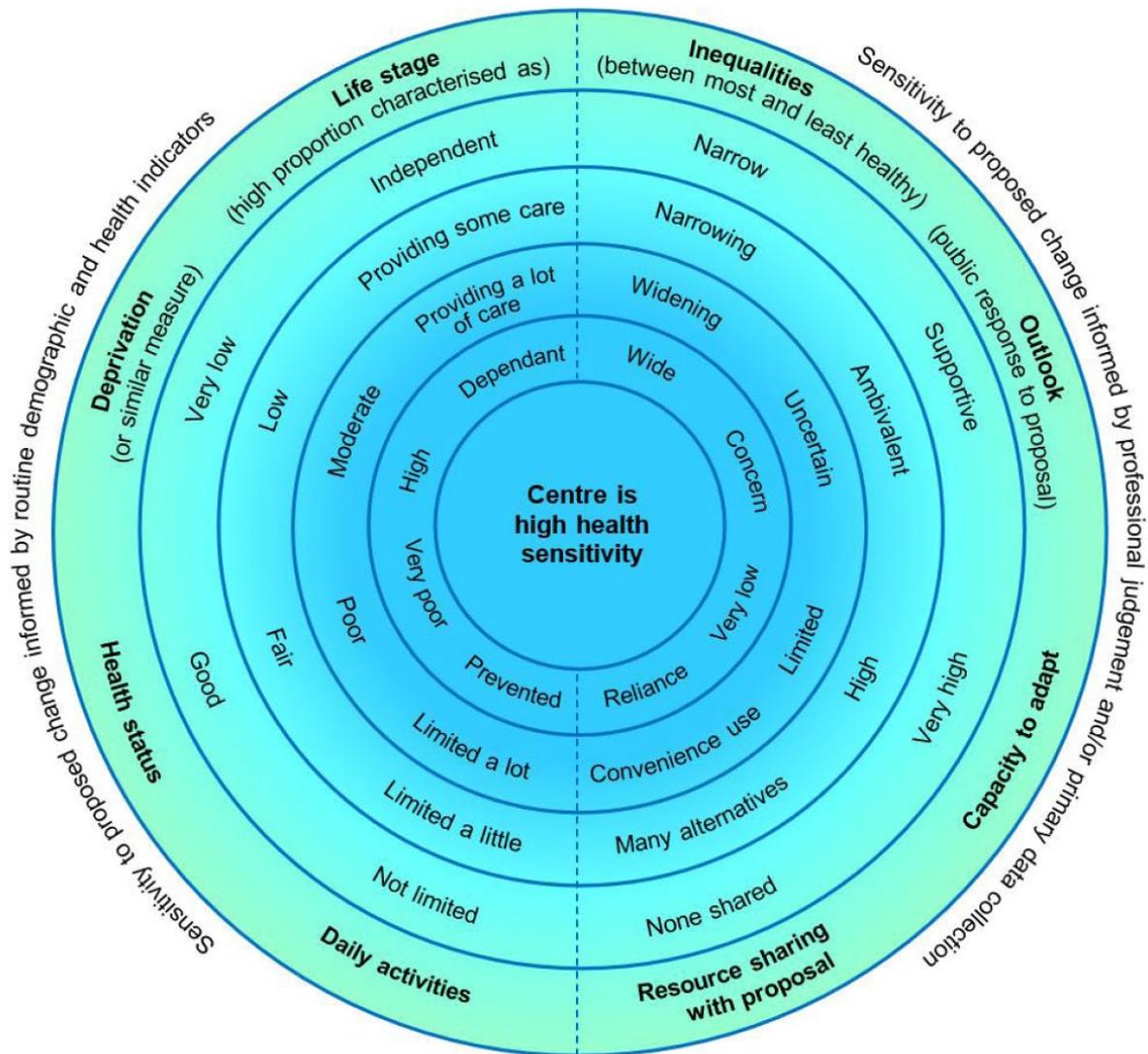


Figure 4-1: Health Sensitivity: conceptual model (Source: Health Impact Assessment Guidance (IPH, 2021))

4.2.3.2 Magnitude of Impact

Magnitude considers the characteristics of the change which would affect the receptor as a result of the proposal. The magnitude of predicted impacts has been quantified in this assessment using the terms outlined in Table 4-1 below.

Table 4-1: Description of Magnitude of Predicted Impacts

Magnitude	Description of Magnitude
High	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a major change to existing baseline conditions (adverse or beneficial)
Medium	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a moderate change to existing baseline conditions (adverse or beneficial)

Low	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would result in a minor change to existing baseline conditions (adverse or beneficial)
Negligible	Change in an environmental and/or socio-economic factor(s) as a result of the proposed development which would not result in change to existing baseline conditions at a population level, but may still result in an individual impact (adverse or beneficial)
No change	No change would occur as a result of the proposed development which would alter the exiting baseline conditions (adverse or beneficial)

4.2.3.3 Significance of Effects

Significance relies on informed, expert judgement about what is important, desirable or acceptable with regards to changes triggered by the proposal in question. The assessment of the significance of effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of the effects (Section 4.2.3.2) and the sensitivity of the receptor (Section 4.2.3.2). Table 4-2 below provides a matrix on the measure of the significance of effects as determined by the relationship between the magnitude of impact and the sensitivity of receptors.

Table 4-2: Significance of Effects and the Sensitivity of the Receptor

		Magnitude of Impact			
		Negligible	Low	Medium	High
Sensitivity of Receptor	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
	Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
	Medium	Negligible or minor	Minor	Moderate	Moderate or major
	High	Minor	Minor or moderate	Moderate or major	Major

4.2.4 Study Area

The Proposed Development site is located in County Tipperary, and in the electoral district of Clonmel East Urban as shown in Figure 4-2. The administrative local authority is Tipperary County Council. The area selected for the assessment of the impact on human health has been defined as the electoral division (ED) of Clonmel East Urban, and Clonmel Administrative District.

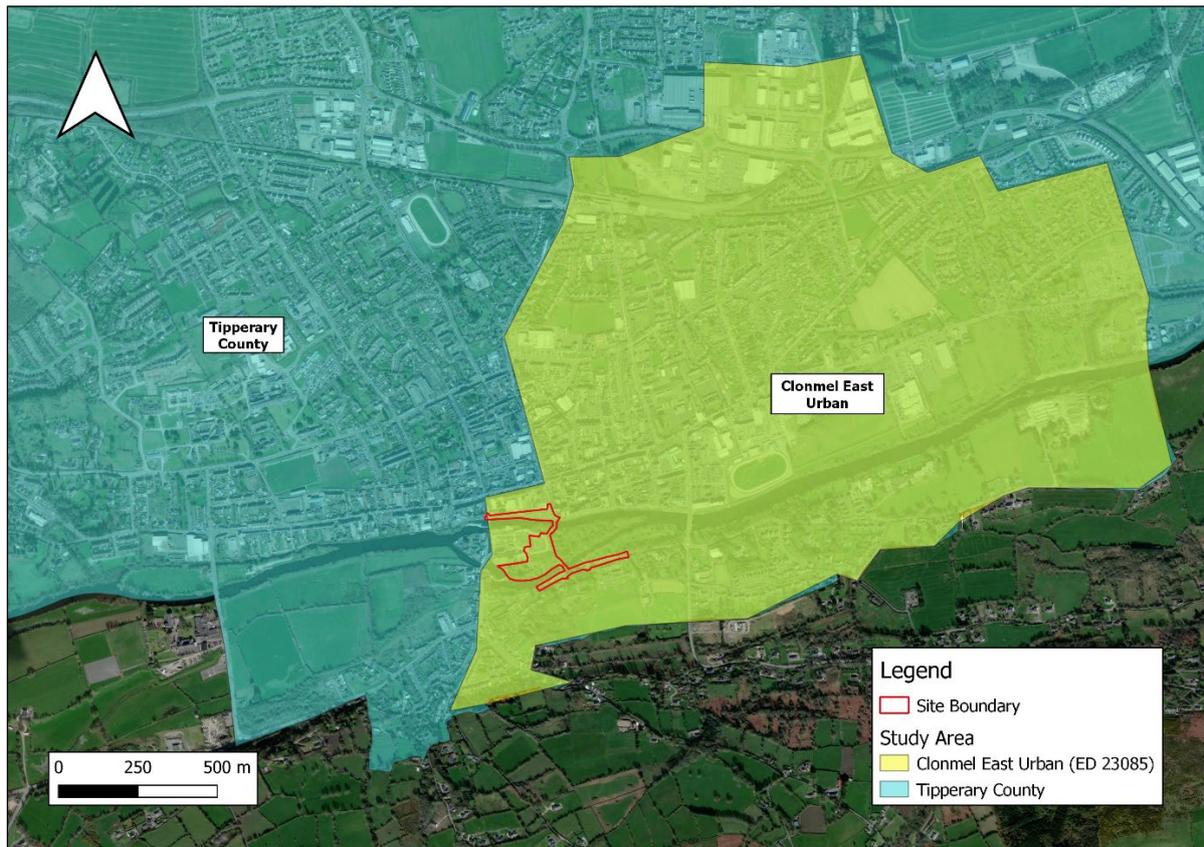


Figure 4-2: Location of the Proposed Development within the Study Area

The site is located within the Mid-West, as defined by the Nomenclature of Territorial Units for Statistics developed by Eurostat. The Mid-West region is comprised of the counties Clare, Tipperary, Limerick and Limerick city.

4.3 Receiving Environment

The Suir Island Infrastructure Links proposed site is located in the centre of Clonmel town, with the development encompassing areas located on The Quays, Suir Island and Raheen Road.

Clonmel is a large town with a population of circa seventeen thousand people, situated on the River Suir at the foot of the Comeragh Mountains. The topography of Suir Island is low lying, consisting of four islands: Little Island, Suir Island, Willow Island and Stretches Island. It has been an important crossing point since medieval times, linking the Anglo-Norman walled town of Clonmel to County Waterford on the southern side of the river.

The island is surrounded by the River Suir on all sides and is accessible from the town centre via Old Bridge Road located to the west of the island. The island, from its mid-section to eastern end is largely undeveloped and overgrown. The proposed development will encompass areas zoned as “Town Centre” located on The Quays and Suir Island car park and areas zoned for Amenity located to the east of the Suir Island car park and including a small section of Denis Burke Park as shown on Figure 1-1 in Chapter 1 of this EIAR. The northern bank of the island is fully bordered by the River Suir and Clonmel town. To the south of the site, the area consists mainly of residential areas and agricultural lands as well as Raheen College. Please refer to Chapter 1 of this EIAR for further details.

The island, is a designated Special Area of Conservation (SAC), serving as protected area for habitats and species of ecological interest. More details on the SAC can be found in Chapter 5 Biodiversity of

this EIAR.. To the north the proposed development is almost fully bordered by the River Suir and Clonmel town. To the south of the proposed development is mainly residential areas with agricultural lands. Details of traffic and transport system in the receiving environment are set out in Chapter 12 of this EIAR. It is anticipated that the demand for the car parking spaces lost due to the implementation of the proposed development will be accommodated within the Suir Island Car Park.

Please refer to Figure 4-3 below which shows the red line boundary area of the proposed development.

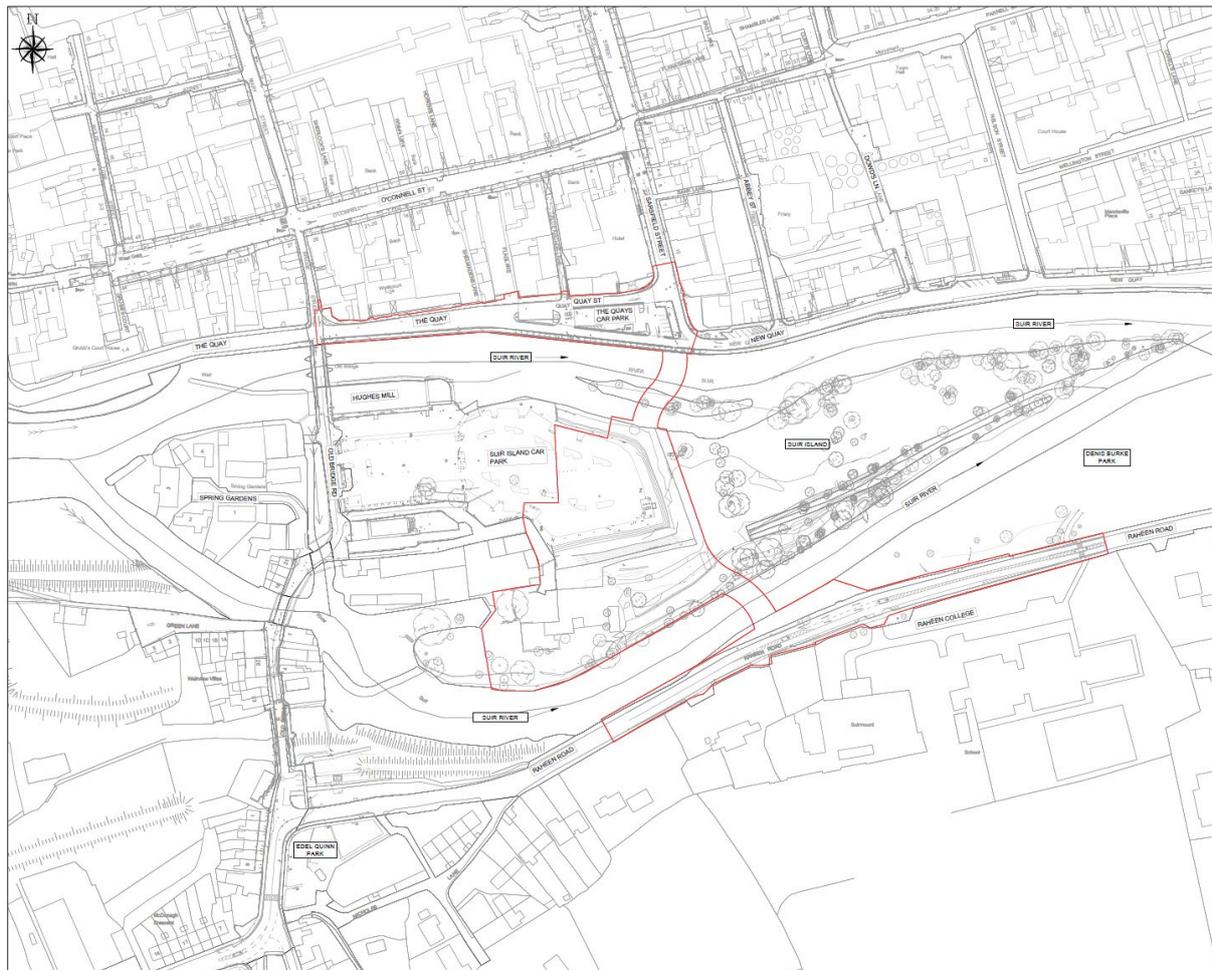


Figure 4-3: Site Location Map showing the Red Line Boundary Area of the Proposed Development

4.3.1 Census and Demographics

The most recent and available census of population was carried out by the CSO on the 24th of April 2016 (the full report on the 2022 census is not yet available). The previous census was completed on the 10th of April 2011. The census compiles data for the whole state as well as smaller individual areas including counties, cities, towns and electoral divisions. Taking into consideration the location of the proposed development the census information on population, age profile, employment and social class, has been analysed in relation to County Tipperary.

Population

Table 4-3 below shows that Tipperary is a moderate growth population region. Significant population growth has occurred between the census years of 2011 and 2016 nationwide however Tipperary and Clonmel population projections indicate that trend of a more moderate population growth is to continue into the short-term future, regardless of population patterns elsewhere in the state.

Table 4-3: Population Change at State, Primary and Secondary Hinterland Level

Area	2016	2011	% Change 2016-2011
State	4,761,865	4,588,252	+3.8%
Tipperary County	159,553	158,754	0.5%
Clonmel (ED Clonmel East Urban 23085)	3963	3922	+1.0%

Over the five-year period from 2011 to 2016 the population of the state and Tipperary County region grew by approximately 3.8% and 0.5% respectively, while the population of the Clonmel East Urban ED showed an increase of 1.0% in population from 2011 to 2016.

Age Profile

The age profile of the population in the affected area is an important parameter as it provides a good insight into the potential labour force, the demand for schools, amenities and other facilities and the future housing demand.

Tables 4-4 and 4-5 below show the age profiles for the state, Tipperary County and Clonmel East Urban ED for 2011 and 2016, respectively. This allows comparison of the changes in the population profile between the years.

Table 4-4: Age Profile at State and Hinterland Level, 2011

	0-14	15-24	25-44	45-64	65+	Total Persons
State	21%	13%	31%	23%	12%	4,588,252
Tipperary County	21.66%	11.76%	28.79%	24.44%	13.35%	158,754,
Clonmel (ED Clonmel East Urban 23085)	17.41%	11.83%	30.14%	24.96%	15.66%	3,922

Table 4-5: Age Profile at State and Hinterland Level, 2016

	0-14	15-24	25-44	45-64	65+	Total Persons
State	21.1%	12.4%	29.5%	23.8%	13.4%	4,761,865
Tipperary	21.33%	11.47%	26.32%	25.58%	15.29%	159,553
Clonmel (ED Clonmel East Urban 23085)	16.78%	9.82%	29.45%	26.19%	17.76%	3,963

Tables 4-4 and 4-5 above show that the age profile of the population of the State and Tipperary Region in 2016 was largely unchanged from 2011. In general these population statistics indicate that there is a youthful working age population in the area.

From Tables 4-4 and 4-5 it can be seen that the percentage of people in the Tipperary area within working age groups (15-64) amounted to 63.38% in 2016 compared to the national average of 65.7% at that time. In 2011 this cohort measured 65.0%, which indicates only a very slight change in the pool of labour force available in the Tipperary area.

While the volatility of recent migration patterns makes it difficult to make accurate estimations on future population changes, current indications are that population in the primary and secondary hinterlands of the proposed development site will continue to rise.

4.3.2 Socio-Economics

Employment

Table 4-6 describes the employment statistics for the State, Tipperary and Clonmel East Urban ED Region. It can be seen that employment has increased significantly in the Clonmel East Urban, Tipperary Region and in the State as a whole between 2011 and 2016.

Table 4-6: Employment Statistics for the State, Tipperary and Clonmel East Urban ED Region

2011 – Labour Force					
	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in Labour Force	% Unemployment
State	1,807,360	34,166	390,677	2,232,203	19.0%
Tipperary	60,332	1,131	13,865	75,328	19.0%
Clonmel (ED Clonmel East Urban 23085)	1,566	26	347	1,939	19.24%
2016 - Labour Force					
	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in Labour Force	% Unemployment
State	2,006,641	31,434	297,396	2,304,037	7.9%
Tipperary	63,472	1,056	9,811	74,339	14.62%
Clonmel (ED Clonmel East Urban 23085)	1,591	30	301	1,922	17.22%

Table 4-7 below shows the division of the population of Tipperary into different socio-economic classes in 2011 and 2016. This categorisation indicates the type of employment that the work force in that area

is employed in. The data suggests that in terms of labour force, the Tipperary area has a significant requirement for and is capable of supporting industries with a need for lower professional, managerial, non-manual and skilled employees.

Table 4-7: Population of Tipperary by Socio-Economic Group

Socio-economic group of reference person	2011	2016
Employers and managers	19,681	18,965
Higher professional	6,773	7,415
Lower professional	14,082	15,666
Non-manual	24,122	25,828
Manual skilled	1,7824	16,687
Semi-skilled	16,148	16,466
Unskilled	6,766	6,117
Own account workers	8,913	8,276
Farmers	16,486	15,429
Agricultural workers	2,289	2,474
All others gainfully occupied and unknown	25,005	25,610
Total	158,089	158,933

Commuting

Table 4-8 below shows the various ways in which the population of Clonmel East Urban ED, Tipperary County and the State commute to work, school or college. Driving a car is the most popular mode of transport in Clonmel East Urban, as well as Tipperary County and the State and has remained popular between 2011 and 2016. Unlike in the State as a whole and Tipperary County, the next most popular mode of commuting in Clonmel East Urban is on foot, rather than a car passenger, a pattern which is seen in both 2011 and 2016.

Table 4-8: Commuting to work, school or college statistics for the State, Tipperary County and Clonmel East Urban ED

2011 – Commuting			
	State	Tipperary County	Clonmel East Urban
On Foot	414,938	11,209	497
Bicycle	61,177	683	23
Bus, Minibus or Coach	288,562	6,932	55
Train, DART or LUAS	70,976	408	1
Motorcycle or Scooter	9,312	161	8
Car Driver	1,127,396	40,926	976

Car Passenger	508,338	20,847	481
Van	118,991	4,686	61
Other (incl. Lorry)	104,853	5,605	51
Work Mainly at or from Home	-	-	-
Not Stated	89,590	2,840	62
2016 – Commuting			
	State	Tipperary County	Clonmel East Urban
On Foot	426,221	10,967	484
Bicycle	82,123	746	34
Bus, Minibus or Coach	313,097	6,766	51
Train, DART or LUAS	82,627	504	7
Motorcycle or Scooter	8,565	156	5
Car Driver	1,202,441	42,867	976
Car Passenger	570,254	22,566	482
Van	128,310	4,866	60
Other (incl. Lorry)	11,917	597	2
Work Mainly at or from Home	96,057	5,055	48
Not Stated	136,995	3,638	81

Deprivation

Deprivation in small areas is mapped using the Pobal HP Deprivation Index. This Index draws on data from censuses and combines three dimensions of relative affluence and deprivation: Demographic Profile, Social Class Composition and Labour Market Situation. Figure 4-4 below shows graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population. In this EIA Report, the Relative Index Score is considered as the measure for deprivation, as these Relative Index Scores are rescaled such that the mean is 0 and standard deviation is 10 at each census wave. This allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in Table 4-9 below.

Graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population.

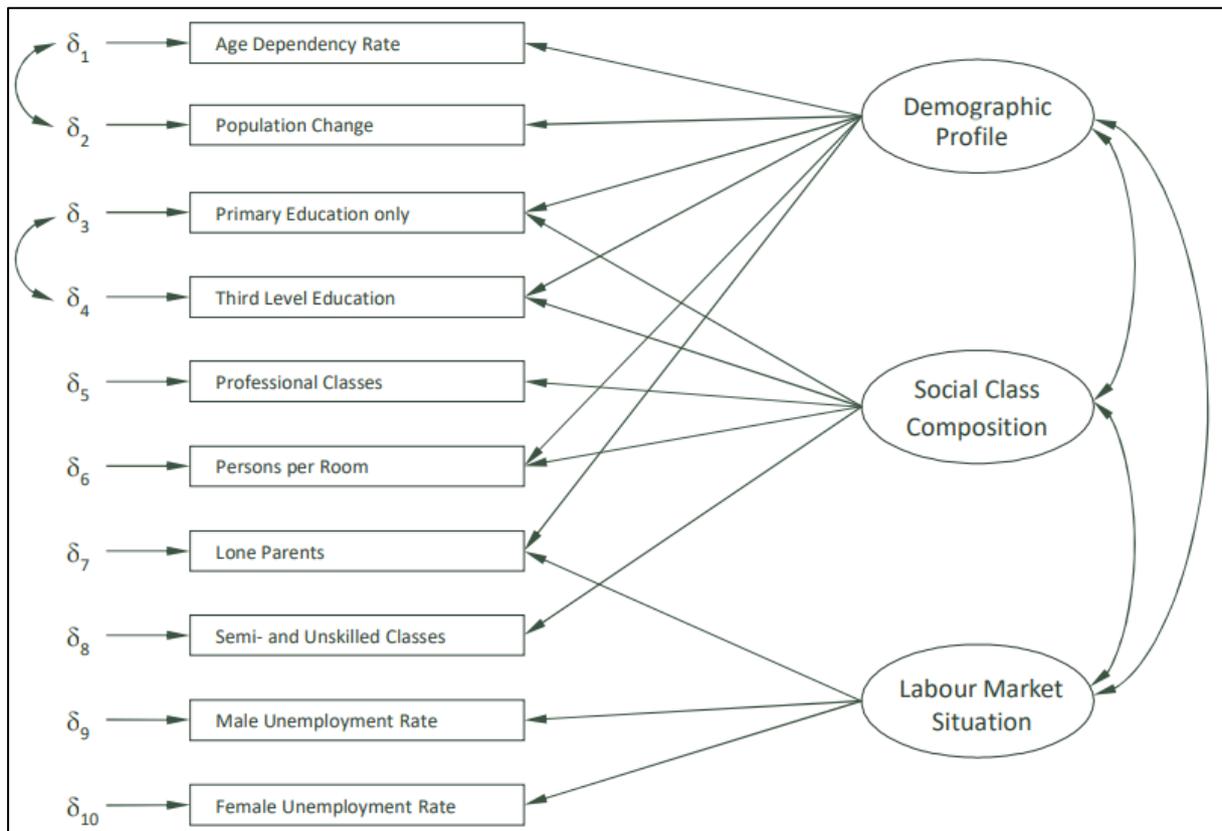


Figure 4-4: Basic Model of the Pobal HP Deprivation Index

Table 4-9: Pobal HP Index Relevant Index Score labels (Source: Pobal HP Deprivation Index)

Relative Index Score	Standard Deviation	Label
> 30	> 3	Extremely affluent
20 – 30	2 – 3	Very affluent
10 – 20	1 – 2	Affluent
0 – 10	0 – 1	Marginally above average
0 – -10	0 – -1	Marginally below average
-10 – -20	-1 – -2	Disadvantaged
-20 – -30	-2 – -3	Very disadvantaged
< -30	< -3	Extremely disadvantaged

The data in Table 4-10 shows the Pobal HP Index Relevant Index Score Figures at a local and County level (Source: Pobal HP Deprivation Index). The subject area and the county of Tipperary can be generally classified as ‘marginally below average’ for the year 2016.

Table 4-10: Pobal HP Index Relevant Index (Source: Pobal HP Deprivation Index)

Area	Relative Index Score	Pobal HP Description 2016
Tipperary	-2.79	Marginally below average
Clonmel East Urban	-3.07	Marginally below average

4.3.3 Health

Physical Health

Life expectancy in Ireland by gender is a key metric for assessing population health; data for the study area and the Mid-West region is shown in Table 4-11. Data shows that life expectancy for both males and females has increased consistently, with female life expectancy consistently higher than male.

Table 4-11: Period Life Expectancy (Source: CSO Statbank VSA30 & VSA31)

Period Life Expectancy in Ireland by gender				
Area	Gender	2006	2011	2016
Mid-West	Male	76.3	77.6	79.0
	Female	80.4	81.9	82.5
State	Male	76.8	78.4	79.6
	Female	81.6	82.8	83.4

Table 4-12 shows potential years of life lost per 100,000 population due to circulatory diseases at a national and regional level (Source: CSO). The potential number of years lost due to circulatory disease in South Tipperary are significantly lower than that of the State in 2016 and 2018 but are higher in the study years 2015 and 2017.

Table 4-12: Circulatory Diseases (Source: CSO PxStat DHA16)

Potential Years of Life Lost per 100,000 Population				
Area	2015	2016	2017	2018
State	431.3	411.6	386.1	383.4
South Tipperary	439.2	389.1	441.5	333.3

Potential loss of years due to respiratory diseases per 100,000 population at a national and regional level are shown in Table 4-13. Similar to circulatory disease (above) the potential loss of years to respiratory disease is generally lower in the South Tipperary region than within the State, with the exception of 2015 and 2018 when South Tipperary had slightly more years lost due to respiratory disease than the state.

Table 4-13: Respiratory Diseases (Source: Source: CSO PxStat DHA16)

Potential Years of Life Lost per 100,000 Population				
Area	2015	2016	2017	2018
State	125.7	125.6	103.0	120.1
South Tipperary	127.8	108.2	96.3	159.5

Figures are available from the CSO for individuals who stated in each census (2011 and 2016) that their health is either bad or very bad. Table 4-14 below provides a summary for the Clonmel East Urban electoral division. As can be seen the Clonmel East Urban ED reports higher levels of bad or very bad health compared to Tipperary County and the State.

Table 4-14: Percentage of People Who State That Their Health is Either Bad or Very Bad. (Source: CSO)

Area	2011	2016
State	1.52%	1.61%
Tipperary	1.67%	1.77%
Clonmel East Urban ED	1.76%	2.25%

Mental Health

The rates of death by suicide and intentional self-harm rate per 100,000 population is shown in Table 4-15 below. The rate in South Tipperary is much higher from 2014 to in 2017 compared with those in the State. The rate of death by suicide and intentional self-harm are generally decreasing year-on-year in the state, this is not the case with the pattern seen in South Tipperary.

Table 4-15: Death by Suicide and Intentional Self Harm (Source: CSO Statbank DHA12)

Death by Suicide and Intentional Self Harm Rate per 100,000 Population				
Area	2014	2015	2016	2017
State	10.46	9.07	9.22	8.18
South Tipperary	13.38	14.43	11.27	12.27

Lifestyle

In terms of lifestyle, the population in the Mid-West region is broadly similar to those in the State, with regards to rates of smoking, consumption of alcohol and prevalence of eating 5 portions or more fruit or vegetables daily for persons aged 15 and over (Table 4-16).

Table 4-16: Lifestyle Indicators for persons aged 15 and over (Source: CSO Statbank IH079 2015)

Area	Smoking daily	Smoking occasionally	Prevalence of drinking alcohol	Prevalence of eating 5 portions or more fruit or vegetables daily
State	15%	7%	81%	42%
Mid-West	16%	7%	79%	41%

Activity levels in the Mid-West region are similar to those seen in the State. The prevalence of individuals walking and cycling as a form of transport and levels of participation in sports, fitness or recreational physical activities are shown in Table 4-17.

Table 4-17: All persons aged 15 and over by Region, Year and Physical Activity Undertake (Source: CSO Statbank IH072) 2015

Area	Walk to get to and from places	Cycle to get to and from places	Sports, fitness or recreational physical activities	Muscle strengthening activities
State	86	14	49	34
Mid-West	84	14	49	36

4.3.4 Natural Resources

Natural resources and land use in the hinterland of the proposed development site have also been considered as they may have implications for the development of the lands.

The proposed development site location as shown in Figure 4-3 is within the central portion of Clonmel town, which is divided by the River Suir, and within its confluence the river wraps around another major natural feature; Suir Island.

The River Suir is one of the main natural features of the landscape. The proposed development crosses the River Suir and Suir island.

At present the landscape character of this site and study area reflect this historical evolution of land use patterns in this floodplain valley. Still bordered by fields the well-developed urban fabric of the town of Clonmel consists of a mixture of retail, commercial and residential development.

A flood berm surrounds the car park on the island to the east, south and north. East of the flood berm the island is dominated by woodland habitats in the form of scrub and broad-leaved woodland.

The Lower River Suir which surrounds the subject lands is a designated Special Area of Conservation (SAC). There are no SPAs occurring in the wider area surrounding the project site, with the nearest being the Dungarvan Harbour SPA, located approximately 30km to the south of the project site. The land use of the proposed development site and within study area is primarily urban, but the wider context is agricultural in terms of the geographical area in which Clonmel is located.

The closest neighbouring noise sensitive properties to the proposed development as shown in Chapter 10 Figure 10-1 are dwellings approximately 30m to the south of the proposed development site on Raheen Road. Other noise sensitive locations include Raheen College a school approximately 30m to the south of the proposed development site on Raheen Road. Other residential receptors include apartments at The Mill, some 60m to the west and residential properties north of the proposed Plaza, between Old Bridge Road and Sarsfield Street; and on the corner of Sarsfield Street and New Quay Road.

In terms of extractive industries, the closest active quarry to the site is located circa 8 km to the north east of the site.

4.3.5 Landscape Amenity & Tourism

Clonmel town has been identified in *Tipperary Transforming: Tourism Product Development Plan 2020 – 2030* as an area of significance for tourism in the county, featuring buildings of architectural interest, such as the West Gate and museums, such as the Tipperary Museum of Hidden History. Additionally, the original and historic Bulmer's Cider brewing facility is located in Clonmel at Dowd's Lane and it is intended to develop this site into a new visitor experience. The area is also of interest in terms of landscape and amenity.

As stated above the site location is in the central portion of Clonmel town which is divided by the River Suir one of the main natural features of the landscape. The proposed development crosses the River Suir and Suir island. Suir Island is the location of Ireland's longest purpose-built canoe slalom course, a course which hosts training courses and competitions of national importance. Along the River Suir banks south of Suir Island there are two registered National Trails, the East Munster Way walking trail and the Sean Kelly Cycle Route – The Kelly Comeragh Challenge cycle trail.

Tipperary Council intend to develop the full potential of the river Suir as an amenity and recreational asset as discussed in Chapter 15 The Landscape.

The *Clonmel and Environs Development Plan 2013-2019* refers to the landscape planning context for this area pertaining to Suir Island. Extracts below illustrate the Council's objectives in this regard:

Section 7.3.1 Riverside Amenity from “Clonmel and Environs Development Plan 2013-2019” and the “Environmental Statement” referring to the River Suir environmental and recreational value.

“The River Suir the full potential of the river as an amenity and recreational asset for the town has not been fully realised to date. The Council will actively pursue the further sustainable and appropriate development and improvement of existing green spaces within the Plan area prioritising Suir Island and the creation of links from Mulcahy Park, Suir Island, and Denis Burke Park.”

Section 7.3.4 Suir Island from “Clonmel and Environs Development Plan 2013-2019” and the “Environmental Statement” referring to the Suir Island environmental and recreational value within its context of adjacent amenity areas.”

Suir Island..... “The location of the island within Flood Zone A, within the Lower River Suir cSAC and its central location in Clonmel make it an ideal location as an amenity hub with both formal and informal amenity and recreational facilities to be developed here including the development of non-engine-based water sports between Suir Island and Denis Burke Park.”

(c) Section 7.3.8 Amenity Spaces as part of New Development from “Clonmel and Environs Development Plan 2013-2019” and the “Environmental Statement” referring to the importance of “green spaces”, creating and extending amenity areas, and linking open spaces with pedestrian and cycling routes.

Amenity spaces..... “as part of new development will be required to the standards set out in Chapter 9. The focus on new amenity space will be on accessibility, quality, location, and manageability. The green spaces in Clonmel provide a relief from the hardness of the roads, footpaths and buildings and so is an important aspect of urban/suburban life.”

Linking of amenity spaces..... “Opportunities should be taken to link existing amenity/green spaces with new so as to open up walking and cycling opportunities within and from the town and proposals for new development should address amenity provision as a principle of development,.....This could be achieved by a range of measures including improved signage and pedestrian linkages from other locations, the use of boardwalks/plazas at appropriate heights and locations (in particular having regard to the need to maintain the 1:100 yr. flood level and remove flow restriction.....”

Green Corridor concept.....”The promotion and provision of a green corridor within the plan area adjacent to the River Suir and at a minimum extending to the location of the flood defences and/or the natural floodplain is required by this Plan and supported by the accompanying SFRA.”

Figure 4-5 below shows the land use zoning for the proposed development (shown as a red circle) zoned as Opportunity Site.

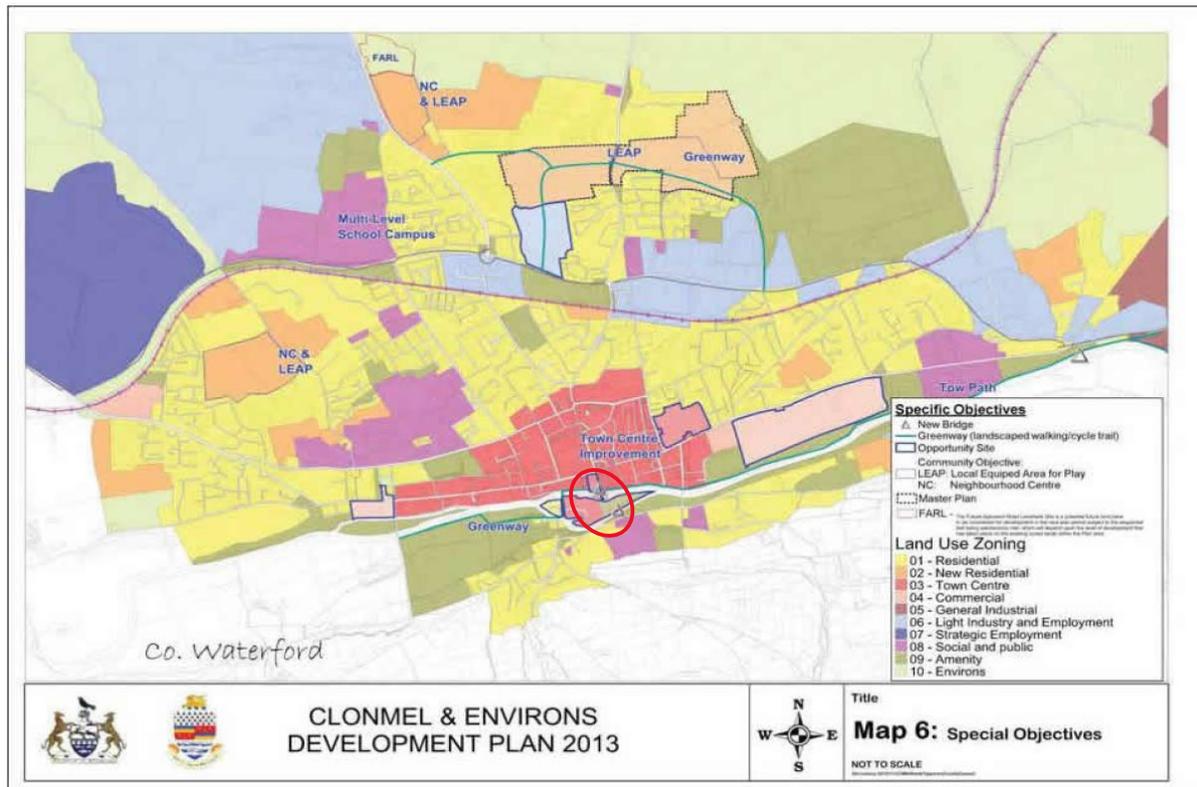


Figure 4-5: Land Use Zoning for the site/ study area

Further discussion of impact on Landscape amenity is presented in Chapter 15 of this EIAR.

4.3.6 Social Infrastructure

Residential Dwellings

The proposed development is located in Clonmel, a notable population centre. The 2016 Census results show that the town of Clonmel and Environs has a population figure of 17,140 at the time of the census.

As previously stated in section 4.3.4 the closest residential noise sensitive receptor to the subject lands is located 30m to the south of the proposed development site on Raheen Road.

Employment and Commerce

Clonmel town centre lies north of the Proposed Development, with numerous shops, restaurants and professional services concentrated in this area, as is typical of its urban setting. The Carrigeen Business Park is located c. 1.3 km north of the Proposed Development. Notable facilities within this business park include; Unitec IT Solutions (computer support and services); Masterlink Logistics (transportation infrastructure); M&L Industrial & Agri Supplies Ltd (hydraulic repair service); Blanco Nino (food manufacture); and ALS Life Sciences – Clonmel (microbiological and chemical testing laboratory). Additionally the Showgrounds Shopping Centre is located c. 530 m east of the site and is another concentration of commerce in the area.

Education

There are a number of schools located in Clonmel close to the proposed development

- Loreto College Secondary School (670m)
- St Peter and Pauls National School (600m)

-
- St. Marys CBS (590m)
 - St. Marys Parochial NS (780m)
 - Raheen College (30m)

Health

Tipperary University Hospital is located 0.9km from the site.

Security

The Clonmel Garda station is located 600m from the proposed development site, and a fire station is located 1km from the proposed development.

Places of Worship

The closest places of worship include:

- Kingdom Hall of Jehovah (200m)
- St Marys Roman Catholic Church (650m)
- St Marys Church of Ireland (600m)
- Clonmel Baptist Church (560m)
- Church of Ireland (420m).

4.3.7 Major Accidents/Hazards

The closest Notified Seveso Establishments to the proposed development is the Upper Tier site MSD plant in Ballydine, Kilsheelan, Clonmel, Co. Tipperary some 14km away.

The proposed development site does not fall under the remit of the Seveso III Directive (2012/18/EU).

4.3.8 Summary of Baseline Conditions

The sensitivity of the surrounding area has been considered based on the details of the published data. The local area has seen a population growth between the 2011 and 2016 census, there is a large proportion of the population within working age (24 – 44 years old) reflective of the national level. The area surrounding the site is in the Clonmel East Urban electoral divisions with relatively high unemployment (17.22%).

The Pobal HP Deprivation Index shows County Tipperary and Clonmel East Urban ranking “marginally below average”. The general health of the population is on trend with the state averages with the Mid West region showing that the prevalence of individuals walking and cycling as a form of transport and levels of participation in sports, fitness or recreational physical activities is similar in the mid-west region to that of the state. While the rate of death by suicide and intentional self-harm are generally decreasing year-on-year in the state, this is not the case with the pattern seen in south Tipperary where the rate has increased in 2017.

The initial analysis indicates the site has good access to social infrastructure and emergency services within 5 km of the site. There are few residential receptors within close proximity to the site.

4.4 Characteristics Of The Proposed Development

The proposed development will comprise the construction of foot bridges, plazas, access ramps and steps, upgrade of roads and footpaths, car parking, and a foul pumping station. A full development description is contained in Chapter 2 of this EIAR.

4.4.1 Construction Phase

The proposed development will consist of the following, with a full description of the development to be found in Chapter 2 – Project Description & Planning Policy Context:

The key civil engineering works will involve use of ready-mix concrete in the construction of piles, piers ramps and staircases, assemblage and landing of prefabricated bridge sections, filling and surfacing of ramps and berms, and installation and connection of foul sewer pipelines. Other construction activities will include site storage of fuels for construction vehicles. Mishandling of concrete, fuels and other construction materials can lead to pollution of soil and water resources, pollution which can adversely affect human health (see Chapter 6 (Land, Soil, Geology and Hydrogeology) and Chapter 7 (Hydrology) for further information).

There will be soil, stones, clay and made ground excavated to facilitate construction of the development. It is estimated that c. 2,000 m³ of material will be excavated to facilitate the proposed development. The excavations can result in impacts on human beings in terms of nuisances relating to the air quality of the environs due to dust and other particulate matter generated (see Chapter 8 Air Quality and Chapter 9 Climate) for further information).

Over the construction duration (c. 12 months) there will be noise and vibration from equipment and due to construction plant (see Chapter 10 (Noise and Vibration) for further information); and effects on the road network due to construction workers and other staff attending site (see Chapter 12 (Traffic and Transportation) for further information).

4.4.2 Operational Phase

The day-to-day operation of the project will comprise members of the public availing of increased sustainable accessibility for walking and cycling from Denis Burke Park to Clonmel Town Centre. The proposal will complement the permitted uses on the site, currently being delivered, and other emerging development proposals in the area. Other aspects of the operational phase will include private vehicles moving to and from the car park areas, operation of the foul pumping station and public use of the plazas and community areas.

4.5 Potential Impacts of the Proposed Development

The main potential impacts on population and human health from the proposed development are likely to comprise the potential for spills/leaks from construction activities, air emissions, noise, visual, and traffic impacts.

These aspects have been assessed in terms of the appropriate relevant standards within the corresponding specialist chapters;

- Chapter 6 (Land, Soils, Geology and Hydrogeology);
- Chapter 7 (Hydrology);
- Chapter 8 (Air Quality),
- Chapter 9 (Climate),
- Chapter 10 (Noise and Vibration);
- Chapter 12 (Traffic and Transportation); and
- Chapter 15 (The Landscape).

A summary of the potential impacts of construction and operation of the proposed development are considered below.

4.5.1 Potential Impacts on Businesses and Residences

Construction Phase

There will be a temporary, imperceptible, positive effect on local business with the limited presence of a very small number of construction workers using local facilities during the construction phase.

The main potential negative impacts on local businesses and residences associated with the proposed development will be in relation to air quality and noise, visual impact and traffic. The potential impacts are assessed within the corresponding chapters of this EIA Report and are summarised below in Sections 4.5.4 to Section 4.5.6. These are temporary potential impacts.

Disruptions to the traffic movements should be expected for the areas along the Quays, Quay Street, Old Bridge, and Raheen Road, with road closures in some instances. The Quay Westbound Lane and Quay Street will be closed for the duration of the works to facilitate the construction of the proposed Plaza Area. Due to vehicle rerouting, higher traffic volumes should be anticipated in the surrounding road network, particularly Sarsfield Streets, O'Connell Street, and Joyce's Lane. Temporary Lane closure and traffic management are anticipated for Raheen Road. There may be a **short-term slight negative** impact on the local residential population during the construction phase from these disruptions and diversions and from increased traffic flow in the area as construction workers and other site personal travel to and from the site on a daily basis.

The potential increase in the temporary population of the area during construction as a result of the employment of workers from outside the wider Clonmel area that may choose to reside in the immediate and wider local area is likely to amount to only a small percentage of the workforce employed during the construction phase but will result in some additional trade for local accommodation and services. It is expected that the majority of the work force will travel from existing places of residence to the construction site rather than reside in the immediate environs of the site. However, some local employment from within the wider local area is expected.

Construction will have an indirect positive effect on support industries such as builder suppliers, construction material manufacture, maintenance contracts, equipment supply, landscaping and other local services. There will also be a need to bring in specialist workers on a regular basis that may increase the above estimated working population at times. Specialists are only likely to stay for shorter periods depending on the nature of the work. The construction phase, therefore, is considered to have the potential to have a **moderate, short term and positive** impact on the economy and employment of the local and wider area.

Operational Phase

With the location of the proposed development within lands zoned as amenity and opportunity the proposed development will not consist of any landtake from areas zoned for residential or commercial uses.

When operational the proposed development will be of benefit to local residents. It will provide increased access between the north and south of Clonmel by providing another link across the River Suir, access to the natural landscape of Suir Island, and the construction of the North Plaza will be an asset to the community as an outdoor public space. It will also promote the use of active modes of transport i.e. walking and cycling when travelling in Clonmel. As such the proposed development will have a **moderate, long term, positive** impact on local residences and businesses when operational.

4.5.2 Potential Impacts on Amenity and Tourism

Construction Phase

There will be a temporary limit of access to the current amenity assets of the island during the construction phase but this will be short term in duration.

During the construction phase the potential impacts on this landscape are viewed as having a negative potential impact., as the construction equipment and activity will dominate the overall site surroundings, affecting the skyline. The visual impacts are perceived as potentially being **moderate** and will have **short-term negative** effects on all receptors.

Operational Phase

The proposed development once operational will have a positive impact on local tourism and amenities.

With the location of the proposed development within lands zoned as “Town Centre” and “Amenity” the proposed development has the potential to have a moderate impact on the local landscape amenity.

The addition of the promenade link within Suir Island and two new bridges connecting the north and south riverbank, and the development of North Bridge and North Plaza with access ramps are considered to be **moderate long-term positive** impacts as the plaza will create a public space of multi-use and will still maintain visual access to the riverbank.

The landscape impact on the river and the island are perceived as significant as it will alter the overall character of the landscape as the proposed link proposed development with its new structures results with a new landscape character. The impact will be moderate in that the development is a human-made structure or urban feature within an urban context, therefore compatible with the existing environment.

The proposed development will not create any wastewater discharge which could have a potential impact on local amenities or the local population.

4.5.3 Potential Impacts on Natural Resources and Material Assets

Construction Phase

Natural resources and land use in the hinterland of the proposed development have also been considered as they may have implications for the development of the lands.

Chapter 6 (Land, Soils, Geology and Hydrogeology) discusses the potential impact on quarries in the vicinity of the site. There will be no impact to mineral resources in the area as a result of the proposed development.

There are no groundwater source protection zones in the immediate vicinity of the site, and the GSI Well Card Index does not show any wells drilled or springs at the site. Regardless, in order to reduce impacts on the soils and geology environment a number of mitigation measures will be adopted to prevent the contamination of groundwater during the construction phase; as described in Chapter 6 (Land, Soils, Geology & Hydrogeology). The implementation of mitigation measures will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the construction phase and that the residual impact will be **short-term-imperceptible-neutral**.

Chapter 7 (Hydrology) discusses the potential impact on hydrology in the vicinity of the site. There will be a slight residual impact arising from the construction works. The recommended mitigation measures will negate potential risk of flooding during construction..

Excavations within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure there is no impact on existing users.

The proposed development will generate a range of non-hazardous and hazardous waste materials during site clearance, General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, significant and negative**.

Operational Phase

The potential impact associated with foul and surface water drainage and water supply for the operational phase is **long-term, neutral** and **imperceptible**.

Chapter 7 (Hydrology) discusses the potential impact on hydrology in the vicinity of the site. The design makes provision to minimise the restriction of flow area and available storage around the support piers and abutments. The recommended mitigation measures will minimise potential risk to residual changes to river morphology.

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**

No significant impact to Natural Resources or Material Assets is predicted.

Once operational, the proposed development will have minimal requirements on material assets apart.

4.5.4 Potential Impacts on Human Health from Air Quality and Climate

Construction Phase

Chapter 8 Air Quality and Chapter 9 Climate discusses the potential for a number of emissions to be released to the atmosphere during the construction phase of the proposed development. In particular, the traffic-related air emissions may generate quantities of air pollutants such as NO₂, PM₁₀ and PM_{2.5}. However, impacts from these emissions have been screened out using the UK DMRB guidance (UK Highways Agency 2007) and it was determined that, the likely overall magnitude of the changes on air quality and climate in the construction stage due to traffic related pollutants is neutral, imperceptible and short-term.

There is the potential for a number of greenhouse gas emissions to the atmosphere during the construction of the development. Construction vehicles, generators etc., may give rise to CO₂ and N₂O emissions. The Institute of Air Quality Management document “*Guidance on the Assessment of Dust from Demolition and Construction*” (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate. Therefore, the impact on climate is considered to be **imperceptible, neutral** and **short term**.

Dust emissions from the construction phase of the proposed development have the potential to impact human health through the release of PM₁₀ and PM_{2.5} emissions. As per Chapter 8 the surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health impacts as a result of the construction phase of the proposed development. Therefore, in the absence of mitigation there is the potential for **imperceptible, direct, negative, temporary** impacts to human health as a result of the proposed development.

The proposed development will not increase traffic levels by more than the scoping criteria (as set out in *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022) see Chapter 8 – Section 8.2.2 for full detail) therefore, an assessment of the impact of traffic emissions during the operational phase on ambient air quality is not necessary as no significant impacts are likely. It can be concluded that construction phase traffic emissions will have a **short-term, localised, neutral** and **non-significant** impact on air quality.

Operational Phase

There is the potential for a number of greenhouse gas emissions to atmosphere during the operational phase of the development as a result of traffic emissions. The proposed development will not cause a

>1% change in emissions from the baseline and therefore, the climate impact of the proposed development is considered **negative, long-term** and **imperceptible**

Traffic related air emissions have the potential to impact air quality which can affect human health. Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health (see Chapter 8, Table 8-14). Therefore, impacts to human health are **long-term, direct, neutral, imperceptible** and **non-significant**.

4.5.5 Potential Impacts on Human Health from Noise and Vibration

Construction Phase

Exposure to excessive noise is becoming recognised as a large environmental health concern. According to the 2015 European Commission report 'Noise Impacts on Health', (European Commission, 2015), the most common effects of noise on the vulnerable include:

- Annoyance
- Sleep Disturbance
- Heart and circulation problems
- Quality of Life
- Cognitive Process
- Hearing

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Noise and vibration impacts associated with the development have been fully considered within Chapter 10 of the EIA Report. Commentary on the impact assessment and related noise levels are summarised below with respect to potential environmental health impacts.

As detailed in Chapter 10 (Noise and Vibration), in the absence of mitigation measures, there is potential for a significant impact from construction noise at nearby noise-sensitive properties. In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise*.

In terms of the additional construction traffic on local roads that will be generated as a result of this development the following comment is presented. In order to increase traffic noise levels by 1 dB traffic volumes would need to increase by the order of 25% along the local road network. As outlined in the relevant sections of Chapter 12 relating to traffic, additional traffic introduced onto the local road network due to the construction phase of the proposed development will **not** result in a **significant** noise impact.

Operational Phase

The proposed North Plaza will provide an open space for public use. A noise survey carried out confirmed that the existing noise environment was dictated by traffic noise on adjacent roads, pedestrian activity, and mechanical plant noise from nearby businesses. Given the proposed use is predominately a seating and resting area for those along the Blueway, people conversing is the main noise source expected which will vary depending on the numbers congregated at any one time. Given the existing noise environment is dominated by road traffic noise and experiences a high baseline noise level at present, the proposed uses of this area will not contribute to any significant noise levels over and above those currently experienced from the car parking and urban environment.

During the operational phase of the proposed development, there will be an increase in vehicular traffic associated with the site on some surrounding roads. With reference to Chapter 10 Noise & Vibration –

Table 10-7, for the Opening Year 2024 the predicted change in noise level associated with additional traffic on the surrounding existing road network has a negligible effect. For some road links, less traffic will be experienced and a decrease in noise level is predicted. The effect therefore varies from **negative, imperceptible** and **long-term** to **positive, imperceptible** and **long-term**.

Maintenance work will take place on an occasional basis in order to maintain the proposed development, such as removal of vegetation and maintenance to bridges. This will be carried out using maintenance vehicles. Noise levels associated with this activity are not expected to be significant and will typically be transient in nature.

4.5.6 Potential Impacts on Human Health from Traffic and Transportation

Construction Phase

An assessment of the additional traffic movements and temporary diversions associated with the proposed development during the construction phase is presented in Chapter 12 Traffic and Transportation.

The predicted impact of the development on human beings and in particular road users will be temporary, negative and not significant for the construction phase.

Operational Phase

Layout changes will be implemented at the Quay Street/ R678 Sarsfield Street/ R678 New Quay junction as part of a bigger scheme which intend to improve the pedestrian/cyclist infrastructure provision in the vicinity of Suir Island. It is anticipated that with the elimination of the two-way system currently in place along Quay Street all eastbound passing through junction No. 1 (see Chapter 12,) will re-route towards O'Connell Street via Joyce's Lane. The traffic modelling undertaken for the proposed development, which is discussed in Chapter 12 Section 12.11, demonstrated that the road network in the vicinity of the site can accommodate the additional traffic resulting from the road changes proposed with the proposed development. The predicted impact of the development on road users will be long-term, neutral and imperceptible for the operational phase.

The proposed development will also promote the use of active modes of transport i.e. walking and cycling when travelling in Clonmel through the improvements to pedestrian and cyclist infrastructure in the town. Active modes of transport benefit human health of the individual by incorporating exercise into daily activities such as commuting, and also the general population by reducing the amount of traffic related air and noise pollution in the vicinity. As such, the proposed development will have a **long term, slight, positive** impact on human health.

4.5.7 Potential Impacts on Health and Safety

Construction Phase

The proposed development has the potential for an impact on the health and safety of workers employed on the site, particularly during the construction phase. The activities of contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) as amended to minimise the likelihood of any impacts on worker's health and safety. The health and safety planning for the construction phase of the proposed development will take into account any measure specifically in regard to Covid-19.

There is limited potential for effects on the receiving environment as a result of minor accidents/leaks of fuel/oils during the construction phase as no bulk fuel storage required. However, the implementation of mitigation measures for management of localised construction equipment leaks set out in Chapters 6 and 7 of this EIA Report will ensure the risk of an accident is low and that the residual effect on the environment is **imperceptible**.

Operational Phase

The site has been assessed in relation to the following external natural disasters; landslides, seismic activity, volcanic activity and sea level rise/flooding as outlined below. The potential for major accidents to occur at the development has also been considered with reference to Seveso/Control of Major Accident Hazards (COMAH) Regulations.

Due to the local topography and the underlying strata, there is a negligible risk of a landslide event occurring at the site. There is no history of seismic activity in the vicinity of the routes. There are no active volcanoes in Ireland so there is no risk of volcanic activity.

The potential risk of flooding on the site was also assessed in Chapter 7 (Hydrology). The site lies within Flood Zone A (floods with a 1% annual exceedance probability). The Clonmel Flood Relief Scheme defence structures provide protection against Flood Zone A risks and can be further raised to provide protection against a 20% climate change scenario. As the proposed development lies in a flood defended area and deemed a water-compatible development, it is considered that this type of development is suitable for this flood zonation.

4.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

The impacts on the local population in terms of residents and businesses are considered to be mainly positive in the sense of creating direct employment opportunities and indirect additional business, during the demolition and construction phase. Once operational there will be a positive, long-term impact upon the surrounding area through the proposed developments promotion of active transport modes and increased access between areas of Clonmel.

Mitigation measures proposed to minimise the potential impacts on human health in terms of air quality and climate, noise and vibration, and traffic and transportation are discussed in the relevant sections of Chapters 8, 9, 10 and 12 of this EIAR, respectively.

Similarly, mitigation measures set out in Chapter 6 (Land, Soils, Geology and Hydrogeology) and Chapter 7 (Hydrology) of the EIA Report will ensure the risk of impacts to human health is low and that the residual effect on the environment is imperceptible.

4.6.1 Construction Phase

An Outline Construction Environmental Management Plan (OCEMP) has been prepared by CSEA. The OCEMP sets out the overarching vision of how the construction of the proposed development will be managed in a safe and organised manner by the Contractor in accordance with best international practice. The OCEMP is a live document and it will go through a number of iterations before works commence and during the works. It sets out requirements and standards which must be met during the construction stage and includes the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development and any Approval.

Businesses and Residences

There are no potential likely significant impacts on Businesses and Residences therefore additional measures are not required. Any impact will be further mitigated by the use of binding hours of construction as well as the measures set out in Chapter 5 (Land, Soils, Geology and Hydrogeology); Chapter 6 (Hydrology); Chapter 8 (Air Quality); Chapter 9 (Climate); Chapter 10 (Noise and Vibration); Chapter 12 (Traffic and Transportation); and Chapter 15 (Landscape and Visual).

Landscape, Amenity and Tourism

With reference to Chapter 15 (Landscape and Visual), a number of remedial and mitigation measures have been proposed. The contractor will erect hoarding of a minimum 2.0 m in height around the site

compound and all work areas on Suir Island. The hoarding shall be a high gloss printed finish with information and graphics about the project or as otherwise agreed with Tipperary County Council. Tree fencing shall be erected to protect the root system (RPA) of existing trees considered feasible for retention.

Natural Resources and Material Assets

As detailed in Chapter 6 Soil & Land, Geology and Hydrogeology of this EIAR, there is no evidence of a significant soil hazard on site. Chapter 7 Hydrology of this EIAR states that the proposed development lies in a flood defended area according to the updated CFRAM maps. The Construction & Environmental Management Plan (CEMP) sets out requirements and standards which must be met during the construction stage and includes the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development in any Approval.

Air Quality and Climate

In order to mitigate the potential dust-related health impacts during the construction phase, a draft dust minimisation plan has been prepared. This plan draws upon best practice mitigation measures from Ireland, the UK and the USA to ensure the highest level of mitigation possible. Further detail is provided in Chapter 8 and 9 of this EIAR.

Noise and Vibration

With the mitigation measures detailed in Chapter 10 in place, such as limiting the number of high-noise activities at the closest boundary to the properties, and best practice noise and vibration control measures will be employed by the contractor during the construction phase, the likelihood of a significant impact will be reduced sufficiently.

Traffic and Transportation

A Traffic Management Plan will be prepared by the contractor and agreed with Tipperary County Council's Transportation Department and An Garda Siochana, to mitigate any impact of construction on the surrounding road network.

Health and Safety

The potential effect is imperceptible, and unlikely, in respect of Major Accident Hazards or Natural Disasters on Population and Human Health during the Construction Phase of the Proposed Development. Therefore, no specific mitigation measures are required.

4.6.2 Operational Phase

In light of the fact that any of the impacts associated with the operation of the proposed development on Human Health and Population are either insignificant or positive, no further mitigation measures are required.

The mitigation measures to address the potential impacts on population and human health from the proposed development have been assessed within the corresponding specialist chapters; Chapter 6 (Land and Soils); Chapter 7 (Water); Chapter 8 (Air Quality); Chapter 9 (Climate); Chapter 10 (Noise and Vibration); Chapter 12 (Material Assets Traffic and Transportation) and Chapter 15 (The Landscape).

Businesses and Residences

There are no potential likely significant impacts on Businesses and Residences therefore additional measures are not required.

Landscape, Amenity and Tourism

With reference to Chapter 15 (The Landscape), the main mitigation by avoidance in this instance is the siting of the proposed development in a landscape zoning that can facilitate such a development type and is in accordance with the strategy for the area set out by Tipperary County Council's *Clonmel and Environs Development Plan 2013-2019*.

Natural Resources and Material Assets

With reference to Chapter 6 Land, Soils, Geology and Hydrogeology, during operation measures there is no requirement for any bulk fuels or chemical storage, no requirement for discharge to ground and no requirement for abstraction of groundwater. The existing surface and sub-surface drainage systems on the North Plaza and Southern Arrival Point will be maintained as part of the development. Storm runoff discharge into the existing drainage system will not contribute to flooding in the Suir River. As such, no mitigation measures are proposed for the operational phase of the proposed development.

With reference to Chapter 7 Hydrology, all potential impacts on the hydrological environment have been identified as **Imperceptible** to **Slight** in the operational phase and as such no **Long-term** mitigations measures are proposed.

Air Quality and Climate

The impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no site-specific mitigation measures are required.

Noise and Vibration

There are no activities that would generate significant levels of noise associated with the operational phase of the proposed development, therefore no mitigation measures are required.

Traffic and Transportation

With reference to Chapter 12 (Material Assets Traffic and Transportation) Section 12.12, found that even though the overall performance of the network will reduce with the implementation of the proposed development, all junctions will continue to operate successfully in both AM and PM peak. The capacity available on O'Connell Street and surrounding roads can accommodate the additional traffic without negatively affecting the efficacy of the network at a large scale. As such, no mitigation measures are required for the operational phase of the proposed development

Health and Safety

The potential effect is imperceptible, and unlikely, in respect of major accident hazards or natural disasters on population and human health during the operational phase of the proposed development. Therefore, no specific mitigation measures are required.

As detailed in Chapter 7, the Clonmel Flood Defence Scheme already provides various elements of defence against 1-in-100-year (1% AEP) flood events. Flood defence techniques can be raised above the modelled flood level at low additional costs and in a short timeframe to provide protection for the 1% AEP + Mid-Range Future Climate Change Scenario.

4.7 Residual Impacts of the Proposed Development

4.7.1 Construction Phase

Impacts on Businesses and Residences

There will be a **moderate, short term and positive** effect on local business with the limited presence of a very small number of construction workers using local facilities during the construction phase. The

construction phase, therefore, is considered to have the potential to have a positive impact on the economy and employment of the local and wider area.

Impacts on Amenity and Tourism

Mitigation measures during construction phase we have little effect on preserving the landscape character of the site development area, except for tree fencing to protect the root system (RPA) of existing trees considered feasible for retention. The residual impact regarding the construction phase is considered to be temporary, and therefore **slight negative** impact to the environment.

Further discussion is presented in Chapter 15.

Impacts on Natural Resources and Material Assets

The implementation of mitigation measures outlined in Chapter 6 will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the construction phase and that the residual impact will be **short-term-imperceptible-neutral**. Following the TII criteria (refer to Appendix 6.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

Measures to mitigate any adverse effects associated with the proposed construction works are outlined in the Outline Construction Environmental Management Plan (OCEMP) included in Appendix 7.1 of the EIAR. There will be **slight** residual impact arising from the construction works.

Residual impacts on flood risk are not expected from the proposed design. The design makes provision to minimise the restriction of flow area and available storage around the support piers and abutments. The recommended mitigation measures will negate potential risk of flooding during construction.

The effect of the proposed bridge on river morphology and erosion will be minimal and concentrated in a localised area. The effective change to the scour patterns and sediment transport will be insignificant in comparison to the existing bridges and weirs located in the vicinity of the proposed pedestrian bridge. The mitigation measures will minimise potential risk to residual changes to river morphology.

Impacts on Human Health from Air Quality and Climate

The measures outlined in Chapter 8 Air Quality and Chapter 9 Climate are best practice mitigation measures. They are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Chapter 8 - Table 8-1). Therefore, the predicted residual impact of construction of the proposed development is **direct, negative, short-term, localised and imperceptible** with respect to human health.

Impacts on Human Health from Noise and Vibration

Noise and Vibration impacts associated with the development have been fully considered within Chapter 10 of the EIAR. Commentary on the impact assessment and related noise levels are summarised below with respect to potential environmental health impacts.

The application of binding noise limits, hours of operation. Along with implementation of appropriate noise and vibration control measures, will ensure that noise effect will have **a negative, moderate to very significant and temporary to short-term** effect.

Taking into account the low levels of vibration generated at close distances to piling rigs and excavations the vibration effects are **negative, not significant and short-term**.

Impacts on Human Health from Traffic and Transportation

An assessment of the additional traffic movements and temporary diversions associated with the proposed development during the construction phase is presented in Chapter 12 Traffic and Transportation. The predicted impact of the development on human beings and in particular road users will be temporary, negative and not significant for the construction phase.

Impacts on Health and Safety

There are no significant potential impacts on Human Health from Major Accident Hazards and/or Natural Disasters; therefore, there are no residual impacts.

4.7.2 Operational Phase

Impacts on Businesses and Residences

When operational the proposed development will be of benefit to local residents. It will provide increased access between the north and south of Clonmel by providing another link across the River Suir, access to the natural landscape of Suir Island, and the construction of the North Plaza will be an asset to the community as an outdoor public space. It will also promote the use of active modes of transport i.e. walking and cycling when travelling in Clonmel. As such the proposed development will have a **moderate, long term, positive** impact on local residences and businesses when operational.

Impacts on Amenity and Tourism

The proposed development landscape impact will be slight, permanent, and positive overall. The proposed infrastructure will provide and improve accessibility for both pedestrians and cyclists and serve as a link to the town centre of Clonmel, thus fulfilling one of the main objectives set out by Tipperary County Council. In addition, the link will create new public spaces that will connect to further relevant development such as the Suir Island Gardens area, and in the future the woodland eastern portion of Suir Island. As the proposed development will provide a potential link for the existing two cycleways, to the west and east of Clonmel, there will be a positive impact in that the attractiveness of the cycleways will be increased and tourists will be diverted to the town centre, thereby providing an economic benefit to the town of Clonmel also.

Following the implementation and establishment of the proposed landscape measures, the residual visual impacts are considered to be a significant positive impact and will further integrate the new structure within its surroundings. The residual impact is generally considered to be **permanent**, and **moderately positive** from the various locations assessed.

The predicted impact on local amenities and tourism with respect to human health will be **positive, significant, and long-term**.

Impacts on Natural Resources and Material Assets

The implementation of mitigation measures highlighted in Chapter 6 will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the operational phase and that the residual impact will be **long-term-imperceptible-neutral**. Following the TII criteria (refer to Appendix 6.1) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

With reference to Chapter 7 Hydrology, all potential impacts have been identified as **Imperceptible to Slight** in the operational phase.

Impacts on Human Health from Air Quality and Climate

As the operational phase air dispersion modelling has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are long-term, direct, neutral and imperceptible.

Impacts on Human Health from Noise and Vibration

Once operational, potential effects associated with the proposed development are expected to be low in noise, such as people walking and talking, limited to vehicular activity near car parking areas, occasional maintenance works along the route and members of the public using the public plaza.

Based on the traffic flows associated with the operation of the proposed development the effects are predicted to vary from negative, imperceptible and long-term to positive, imperceptible and long-term.

The effect associated with routine maintenance works is considered to be **negative, not significant** and **long-term**.

Impacts on Human Health from Traffic and Transportation

An assessment of the additional traffic movements and temporary diversions associated with the proposed development during the construction phase is presented in Chapter 12 Traffic and Transportation. Even though the overall performance of the network will reduce with the implementation of the proposed development, all junctions will continue to operate successfully in both AM and PM peak. The capacity available on O'Connell Street and surrounding roads can accommodate the additional traffic without negatively affecting the efficacy of the network at a large scale.

On that basis, the traffic impact of the proposed development can be described as **long-term, neutral, and imperceptible**. The assessment has demonstrated that the proposal will have a no material impact on the operation of the local road network.

Impacts on Health and Safety

There are no significant potential impacts on Human Health from Major Accident Hazards and/or Natural Disasters; therefore, there are no residual impacts.

4.8 Monitoring/ Reinstatement

No monitoring for human health, or reinstatement measures are proposed or required during the construction and operational phase of development.

4.9 Conclusions

There will be no significant adverse impact on the human environment from the proposed development. It will have a positive impact in terms of providing increased amenity access and direct and indirect employment opportunities for both people already living in the area and people living in a wider geographical area.

There will be no significant adverse impacts with respect to socio-economic factors, land-use, or the amenity value and tourism potential of the area. All necessary mitigation measures will be put in place to ensure the health and safety of all site personnel.

All other environmental aspects relating to the human environment which could have an adverse impact on the local population such as noise, air & water and visual impacts both operationally and during construction are addressed in the following relevant chapters of this EIAR.

- Chapter 6 Land, Soils, Geology and Hydrogeology
- Chapter 7 Hydrology

-
- Chapter 8 Air Quality
 - Chapter 9 Climate
 - Chapter 10 Noise & Vibration
 - Chapter 12 Material Assets: Traffic & Transportation
 - Chapter 13 Material Assets: Resources & Waste Management
 - Chapter 15 The Landscape

4.10 References

Central Statistics Office. Statbank Databases (Accessed January 2022, <https://www.cso.ie/en/databases/>)

Central Statistics Office. Census of Population, 2011 and 2016. (Accessed January 2022, <https://www.cso.ie/en/census/>)

Central Statistics Office. Labour Force Survey, 2020 (January 2022, www.cso.ie/en/statistics/labourmarket/labourforcesurvey/dfs)

Environmental Protection Agency (2021) Licenced Sites Accessed January 2022, <http://www.epa.ie/licensing/>)

Environmental Protection Agency (EPA). Draft Advice Notes for Preparing Environmental Impact Statements (EPA, 2015)

Environmental Protection Agency (EPA). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022),

European Commission (EC). Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EU, 2017)

Tipperary County Council. South Tipperary County Council Development Plan 2009

Tipperary County Council. Clonmel and Environs Development Plan 2013-2019

Pobal HP Deprivation Index (Accessed March 2021, <https://data.gov.ie/dataset/pobal-hp-deprivation-index>)

Seveso Directive (Directive 82/501/EEC, Directive 96/82/EC, Direct Heading 1

Clifton Scannell Emerson Associates Limited, Civil & Structural Consulting Engineers

3rd Floor, The Highline, Bakers Point, Pottery Road, Dun Laoghaire, Co. Dublin, A96 KW29

T. +353 1 288 5006 F. +353 1 283 3466 E. info@csea.ie W. www.csea.ie

