

## 16 INTERACTIONS

### 16.1 Introduction

Each of the various environmental aspects has been separately discussed in the previous Chapters. However, all aspects of the environment are interrelated to some extent and this Chapter deals with significant interactions and interdependencies between these environmental aspects.

### 16.2 Interactions Matrix

The possible interactions for the proposed River Poddle Flood Alleviation Scheme are shown in the interactions summary table at the end of this chapter (see **Table 16-1**). The interactions summary table and the preceding chapters show how causing one element of the environment to change can interact with or have knock-on effects on other environmental aspects. Although a number of potential interactions have been identified, many of these are insignificant either because the scale is small or because the proposed mitigation measures as identified in this EIAR will prevent significant interactions from occurring.

### 16.3 Population & Human Health Interactions

Human Beings interact to a greater or lesser extent with most aspects of the environment discussed in the previous chapters of the EIAR. In particular Traffic & Transport, Noise & Vibration, and Air Quality & Climate, Material Assets, Cultural Heritage, Landscape and Visual can all have an impact on Human Beings. Impacts on these aspects have been considered in **Chapter 6** in relation to the resultant impacts on the overall amenity of the area for people living, visiting and working in the environs of the proposed development.

There will be long-term positive impacts arising from the operational scheme which relates to its primary purpose as flood protection. Properties will benefit from flood protection, and the health and wellbeing of the local population will be enhanced through the public realm improvements that are proposed to mitigate the negative effects of the scheme.

In terms of construction **Noise and Vibration**, during periods where several items of plant are in operation simultaneously and when there is piling, there is the potential for noise and vibration impacts on individual properties. This will result in potential short-term negative impacts between human beings and noise and vibration which is not significant. There will be no significant noise or vibration impact on the local environment during the operational phase of the development. This will result in an overall neutral interaction between human beings and noise and vibration during this phase of the development.

In terms of **Air Quality**, with the effective implementation of a Dust Minimisation Plan, the proposed development is expected to have a negligible impact on Air Quality. Appropriate mitigation measures, as outlined in **Chapter 13 Air Quality & Climate** will ensure no significant construction dust or exhaust emissions impacts will occur at nearby receptors. This will result in a neutral interaction between Human Beings and Air Quality.

In terms of Construction **Traffic**, long delays to traffic are unlikely to occur as a result of the construction traffic and lane closures predicted from the proposed development (see **Chapter 14 Traffic and Transport**). Given the predicted low levels of construction trip generation from the development, road users or pedestrians are unlikely to be impacted during the construction or operational phases. As a result of the location of the

development in an urban environment, it is not predicted to result in a significant negative interaction between Human Beings and Traffic.

Landscape and Visual effects range from Not Significant to Moderate/Significant, adverse effects, thereby giving a negative interaction between the landscape environment and visual amenity and human beings. The construction stage of the development has the potential to lead to negative interactions between human beings, landscape and visual though the temporary presence of construction plant and material during the construction phase. In some of the works areas, the proposed Scheme will introduce significant landscape changes which effects will be reduced by the landscape mitigation plans proposed as part of the Scheme including replacement tree planting. Mitigation measures have been proposed in **Chapter 10 Landscape and Visual** with landscape mitigation to minimise the predicted impacts and interactions with the above environmental aspects.

There is potential for a temporary disruption to service utilities and public access to parks and urban green spaces during the construction phase, with expected interaction between Material Assets and Human Beings. Appropriate mitigation measures as outlined in **Chapter 15 Material Assets** will ensure the risk of the above is minimised and insignificant.

Overall, the proposed development will lead to a positive interaction with Human Beings. During its operational life, the proposed development will ensure a significantly reduced flood risk for residential and commercial properties, community facilities and amenities in SDCC and DCC council areas.

#### **16.4 Biodiversity Interactions**

In general, changes in the environment related to Water, Soil, Landscape, Noise and Vibration, and Air can interact negatively on the Biodiversity of an area and these impacts have been considered in the foregoing chapters and specific mitigation measures to minimise the above interactions are outlined.

In terms of Biodiversity, the potential impacts from the proposed development are minimal, being of negligible or local impact on habitats and species (see **Chapter 7 Biodiversity**). There will be some loss of habitat for locally important flowering rush in Tymon Park, and for bats which are a protected species, due to removal of trees. There is potential for inundation of nesting sites for breeding waterfowl during infrequent flood events. However, it is considered that this would be offset through the provision of biodiversity enhancements within the landscape mitigation plans for the works sites and replacement tree planting as required.

**Chapter 7** of the EIAR outlines mitigation measures to be implemented to negate or minimise the risks of the above negative interactions identified. It has been concluded that if these mitigation measures are fully implemented, the above interactions will be negated or significantly minimised.

Apart from its physical presence and once the mitigation measures as detailed in the EIAR are implemented, no on-going negative impacts on Biodiversity are anticipated from the operation of the flood alleviation scheme.

### **16.5 Hydrology & Hydromorphology Interactions**

The interactions involving surface water with biodiversity are described above. The implementation of mitigation measures as detailed **Chapter 8 Hydrology & Hydromorphology** will ensure that there are minimal impacts from the construction or operational phases of the development on surface waters in the area and therefore minimal or negligible interactions will occur with biodiversity.

### **16.6 Soils, Geology and Hydrogeology Interactions**

With regard to dust or contaminated run-off during excavations, there is the potential for adverse effects on air and water quality leading to negative interactions between Geology and Air and Water.

For this development, the excavation at works areas will expose areas to the air environment. Landscape restoration will introduce new soils, plants and public realm elements to the works areas. The effect is considered to be a positive direct minor impact on the soils and geology aspect of the environment, with positive interactions with Landscape.

For all of the above interactions, mitigation measures have been detailed in the preceding chapters which will negate or significantly reduce the Geology and Hydrogeology interactions associated with the development.

### **16.7 Landscape and Visual Interactions**

The interactions between Landscape and Visual, Human Beings and Biodiversity are described above. As with any infrastructure development, the permanent presence of infrastructure can alter the landscape environment of an area, thereby giving the potential for locally negative landscape changes and visual amenity effects to the local population during the construction phase. Avoidance and mitigation measures have been employed in **Chapter 10** to alleviate the predicted impacts and interactions with the above environmental aspects.

### **16.8 Archaeology, Cultural and Built Heritage Interactions**

The potential exists for previously unrecorded findings of Cultural Heritage and Archaeological value to be discovered during the construction phase of the development. Therefore, there is potential for negative impacts between Cultural Heritage and Archaeology, Landscape and Visual (archaeological landscape) in the Construction Phase. If the mitigation and monitoring measures as detailed in **Chapter 11** are adhered to, the above interactions will be mitigated and/or negated.

### **16.9 Noise and Vibration Interactions**

The interactions involving Noise and Vibration with Human Beings during the construction phase are described above.

### **16.10 Air Quality Interactions**

A Dust Minimisation Plan will be formulated for the construction phase of this development, as construction activities in general have the potential to generate dust emissions leading to potential negative Air Quality interaction with Ecology, and Human Beings.

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors, including levels of rainfall, wind speeds and wind direction. Whilst construction activities are likely to produce some level of dust during earth moving and excavation in the construction phase of the project, these activities will mainly be confined to particles of dust less than 10 µm. Particles of dust greater than 10 µm are considered a nuisance but do not have the potential to cause significant health impacts. The potential for impacts from dust also depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced will be deposited close to the source and any impacts from dust deposition will typically be within several hundred metres of the construction area. Mitigation measures to be contained in the Dust Minimisation Plan are outlined in **Chapter 13 Air Quality and Climate** of the EIAR. Once the mitigation measures as outlined are implemented, no significant interactions between Air Quality and other environmental aspects are anticipated.

**16.11 Traffic & Transport Interactions**

The interactions involving Traffic with Human Beings, Air, and Noise and Vibration have been described above. The material assets of the local road infrastructure will be affected by construction of the proposed Scheme. Mitigation measures are recommended to minimise the impacts on material assets, as outlined in **Chapter 14 Traffic and Transport**.

**16.12 Material Assets Interactions**

The interactions involving Material Assets with Human Beings, Traffic, Soils, Geology and Hydrology, Landscape and Visual have already been described above.

*Table 16-1: Summary of Impact Interactions*

Interaction With	Population & Human Health	Biodiversity	Hydrology & Hydromorphology	Soils, Geology & Hydrogeology	Landscape & Visual	Archaeology, Architecture & Cultural Heritage	Noise & Vibration	Air Quality & Climate	Traffic & Transport	Material Assets
Population & Human Health					X		X	X	X	X
Biodiversity			X	X	X					
Hydrology & Hydromorphology		X								

<b>Interaction With</b>	<b>Population &amp; Human Health</b>	<b>Biodiversity</b>	<b>Hydrology &amp; Hydromorphology</b>	<b>Soils, Geology &amp; Hydrogeology</b>	<b>Landscape &amp; Visual</b>	<b>Archaeology, Architecture &amp; Cultural Heritage</b>	<b>Noise &amp; Vibration</b>	<b>Air Quality &amp; Climate</b>	<b>Traffic &amp; Transport</b>	<b>Material Assets</b>
<b>Soils, Geology &amp; Hydrogeology</b>			X		X			X		
<b>Landscape &amp; Visual</b>	X	X								
<b>Archaeology, Architecture &amp; Cultural Heritage</b>					X					
<b>Noise &amp; Vibration</b>	X									
<b>Air Quality &amp; Climate</b>	X	X		X						
<b>Traffic &amp; Transport</b>	X						X	X		X
<b>Material Assets</b>	X			X					X	