

## CHAPTER 14 INTERACTIONS

### 14.1 INTRODUCTION

SLR Consulting Ireland Ltd was commissioned by Boliden Tara Mines DAC (BTM) to undertake the Interactions Chapter of this EIAR.

### 14.2 PURPOSE OF ASSESSMENT

Article 3 of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending ('EIA Directive') stipulates that:

*'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape; (e) the interaction between the factors referred to in points (a) to (d).'*

The preceding Chapters 4 to 13 of this EIAR identify the potential significant environmental effects that may occur in terms of Landscape and Visual, Material Assets (Roads and Traffic), Biodiversity (Flora and Fauna), Water (Hydrology and Hydrogeology), Air Quality, Noise, Population and Human Health, Climate, Land and Soils and Cultural Heritage as a result of the proposed development as described in Chapter 3 of this EIAR. However, for any development with the potential for significant environmental effects there is also the potential for interaction between these effects. The result of interactive effects may exacerbate the magnitude of the effects or improve them or have a neutral effect.

In accordance with the requirements of the EIA Directive, this EIAR sets out assessments of the likely significant environmental effects and impacts of the entire project under a range of environmental topic areas. Where relevant, the interaction between various environmental topic areas, are already addressed within each of the individual assessment or chapters of this EIAR. For example, there are clear overlaps between the land and soils assessment and

the hydrological conditions at the site. The purpose of this chapter is to draw attention to significant interactions and interdependencies between one topic and another where they may otherwise be missed.

### 14.3 INTERACTION OF ENVIRONMENTAL FACTORS

Table 14-1 provides a matrix to present the main interactions and interdependencies between specific environmental factors given the findings of the preceding chapters of the EIAR. A supporting commentary is provided below, which explains the main interactions of note between the environmental topic areas in the context of the application site / Proposed Development.

The matrix contains each of the environmental topics, which were considered as part of this EIAR, on both axes. These interactions have been identified for both the construction [C] and operational [O] phases, of the Proposed Development.

Full details of the significance of the effects and the relevant interactions of the environmental aspects along with any proposed mitigation are discussed within each of the individual preceding Chapters which included:

- Chapter 4: Landscape and Visual Impact Assessment
- Chapter 5: Material Assets: Roads and Traffic
- Chapter 6: Biodiversity
- Chapter 7: Water: Hydrology and Hydrogeology
- Chapter 8: Air Quality
- Chapter 9: Noise
- Chapter 10: Population and Human Health
- Chapter 11: Climate
- Chapter 12: Land and Soils
- Chapter 13: Cultural Heritage

The most dynamic interaction and interdependencies relate to the connection between human beings and biodiversity receptors, and their potential exposure to receptor pathways such as soils, water / hydrology, air and noise. Changes in site run-off from changes and removal of soil cover can result in effects or changes on hydrology, both in terms of water quality and hydraulic regime, which may result in secondary ecological effects on vegetation patterns and

habitats and species. The relationship and effects of these aspects have been fully considered with the individual EIAR assessments and are summarised in this chapter.

### **14.3.1 Landscape and Visual Assessment**

#### *Interaction with Population and Human Health*

The proposed development has the potential for visual impact on sensitive receptors due to the construction works. However, the impacts on the nine selected viewpoints were assessed as imperceptible.

#### *Interaction with Cultural Heritage*

Views can be valuable based on the presence of cultural heritage features (such as the Greenway and St Anne's Church/Holywell). The potential to enhance these has been highlighted in this EIAR.

### **14.3.2 Material Assets (Roads and Traffic)**

#### *Interaction with Air Quality and Climate*

As indicated in Chapter 8 (Air) of this EIAR, the proposed development, construction and operation phases will generate traffic movements over the existing public local road network. The quantity of traffic predicted to be generated as a result of the proposed development is not considered to be significant and the changes modelled for the air quality assessment did not indicate any significant deterioration of air quality indicators.

#### *Interaction with Noise*

Construction traffic and works are a source of noise that may have an impact on sensitive receptors, which in this case relate to residential properties near to the local roads. Chapter 9 of the EIAR concludes that the short-term increase in noise levels from construction works and HGV road traffic arising from the importation of construction materials will be within acceptable limits and imperceptible, hence it is not anticipated that they will give rise to adverse impacts to local residents. The scale of predicted impact to noise, air and climate does not indicate a potential negative interaction with biodiversity.

*Interaction with Water*

Details regarding sequencing of construction works to ensure continued drainage and water quality management at the extant TSF is explained in Chapter 3 and Chapter 7 of the EIAR. A detailed assessment of surface water and groundwater risks and measures to mitigate potential impacts are outlined in Chapter 7. There is no requirement for any new utility connection, and it is not considered that the proposed works will give rise to any impact on utilities and infrastructure.

*Interaction with Population and Human Health*

Populations are reliant on infrastructure and utilities. Any degradation of quality to these can cause disruption or ill health to communities. No significant potential has been identified through this EIAR.

**14.3.3 Biodiversity***Interaction with Water*

Potential impacts on water quality were assessed further in Chapter 7 of the EIAR, however it was determined that there would be no likely significant effects, including inter-related effects, on water quality and surrounding ecological receptors as a result of the proposed development.

*Interaction with Noise, Visual, Air Quality and Climate*

It is acknowledged that noise, visual, air quality and climate effects could overlap at an ecologically sensitive location such as a designated area. The predicted impacts are of such a low scale that they are not considered to have any potential for interactions with biodiversity resources in and around the application site. Opportunities will be sought to enhance resources for biodiversity through the employment of an Ecological Clerk of Works (ECoW) to oversee the implementation of the buttressing works.

*Interaction with Land and Soils*

Biodiversity can be adversely impacted by changes such as land loss, soil erosion, etc. Short-term potential impacts have been identified in this EIAR.

#### **14.3.4 Water (Hydrology and Hydrogeology)**

##### *Interaction with Biodiversity*

There is the potential for an indirect effect on the ecological status of designated areas as a result of emissions to surface water and / or groundwater during this stage. This has been considered in Chapter 7 of the EIAR.

##### *Interaction with Land and Soils*

As identified in Chapter 7 of this EIAR, the movement and removal spoil during the construction phase has the potential to have a significant, negative effect on water quality through potentially silt-laden runoff from the proposed works areas. Mitigation measures to ensure there are no significant, negative effects on water quality are presented in Chapter 7.

##### *Interaction with Climate*

Climate change effects such as increased intense rainfall events have been considered in terms of surface water management.

##### *Interaction with Material Assets*

The EIAR has considered the potential impact on utilities and infrastructure.

##### *Interaction with Population and Human Health*

The potential for reduction in water quality has potential to impact on human health if there is a pathway to drinking water supply. Mitigation measures to ensure there are no significant, negative effects on water quality and human health are presented in Chapter 7.

#### **14.3.5 Air**

##### *Interaction with Biodiversity*

It is acknowledged that air quality effects could impact an ecologically sensitive location such as a designated area. Potential impacts on air quality were assessed further in Chapter 8 of the EIAR, including any potential inter-related effects, and it was determined that there would be no likely significant effects on air quality as a result of the Proposed Development.

*Interaction with Population and Human Health*

Plant and machinery used during the construction phase have the potential to cause a short-term nuisance through dust emissions. However, Chapter 8 of the EIAR presents the findings of a modelling exercise, which predicts minimal impacts on air quality.

*Interactions with Material Assets (Roads and Traffic)*

Construction traffic and works are a source of air emissions that may have an impact on sensitive receptors, and these have been considered in the air quality assessment.

*Interaction with Climate*

Increased air emissions such as CO<sub>2</sub> contribute to climate change. Mitigation measures to ensure there are no significant, negative effects of air emissions are presented in Chapter 10.

**14.3.6 Noise***Interaction with Traffic*

The main interaction for noise is the potential for traffic as a source of noise due to the impact construction may have on sensitive receptors, which in this case relate to residential properties near to the road. However, the traffic assessment projections which have informed the noise modelling exercise have predicted negligible effects.

*Interactions with Cultural Heritage*

Local features of cultural heritage will be considered in terms of protecting their setting during construction works.

*Interaction with Population and Human Health*

The noise assessment undertaken relates predicted impacts to standards and limits that have been set based on human tolerances.

*Interaction with Biodiversity*

Chapter 6 of the EIAR provides an assessment of the biological resource at the application site and the potential for disturbance from human activities.

### **14.3.7 Population and Human Health**

#### *Interaction with Water*

Potential accidental leakages or spillages of contaminants during the construction and operation phases could impact on ground and surface water receptors that could provide a potential pathway to cause impacts- such as illness and disease- to the human population via surface water bodies and/or private water supply wells down hydraulic gradient of the application site. Chapter 7 of Volume II of this EIAR has assessed the likely significant effects and describes mitigation measures that will be implemented to ensure that potential risks are minimised and there are no predicted likely significant effects, including inter-related effects, from water pollution.

#### *Interaction with Air Quality*

Plant and machinery used during the construction phase have the potential to cause a short-term nuisance through dust emissions. The quantity of traffic predicted to be generated as a result of the proposed development is not considered to be significant and the changes modelled for the air quality assessment did not indicate any significant deterioration of air quality indicators.

#### *Interaction with Climate*

The Proposed Development will facilitate an increased level of safety in relation to the stability of the TSF which is particularly important in relation to increased intense rainfall events being observed in Ireland, this is considered to be a very positive interaction between population/human health and climate.

#### *Interaction with Noise*

Plant, machinery and vehicles used during the construction phase have the potential to cause a short-term nuisance through noise emissions. Once operational however, noise levels will return to pre-construction levels. The assessment reported in Chapter 9 of the EIAR concluded that construction noise due to the Proposed Development will be temporary and not be a significant effect at any noise sensitive receptors, so no unexpected interaction has been identified.

#### *Interaction with Traffic and Material Assets*

Chapter 5 of the EIAR presents how the construction phase of the works will give rise to slight increased traffic on the local road network but it is projected to be a very slight proportion of overall traffic. A CEMP will be implemented to manage the works and minimise disturbance to local residents and keep any negative interactions to a minimum.

There is no new proposed connection to utilities or water resources and the existing infrastructure will be protected through standard construction best practice management.

In terms of waste generation, existing waste management systems will be used to handle waste streams, to avoid waste generation where possible and to maximise re-use or re-cycling opportunities.

#### *Interaction with Cultural Heritage and Landscape and Views*

The Boyne Valley to Lakelands Greenway running along the eastern end of the TSF utilises the historic rail line (CH62) and the construction works will result in short-term impacts to its setting. Any opportunity to enhance accessibility of St Anne's Church and St Anne's holy well should be considered in the proposed works. Similarly, the aesthetic values of landscape and views are perceived by human receptors.

### **14.3.8 Climate**

#### *Interaction with Population and Human Health*

As set out above, the enhanced safety of the TSF that will be facilitated through the proposed buttressing works will provide a positive interaction with local population and human health in that it will reduce climate change vulnerability of the lands.

#### *Interaction with Material Assets (Roads and Traffic)*

As with any construction works, opportunities can be sought to reduce waste and to ensure the waste hierarchy of reduce, reuse, recycle is followed.

#### *Interaction with Water*



The proposed development entails adaptation to changes associated with climate change, decreasing the vulnerability of the existing Tailings Storage Facility to those events associated with climate change.

#### *Interaction with Air Quality*

Increased air emissions such as CO<sub>2</sub> contribute to climate change, these are predicted to be very low from the proposed development.

#### *Interaction with Biodiversity*

The effects of climate change can change habitat availability and conditions for biodiversity.

### **14.3.9 Land and Soils**

#### *Interaction with Water*

There is the potential for direct impacts on surface and groundwater quality arising from the development works at the site. The construction stage activities at the site will have the potential to increase the loading of suspended sediment and other potentially contaminating substances in surface water runoff /groundwater and therefore the adjacent River Blackwater SAC/SPA.

Appropriate mitigation measures have been identified to avoid and reduce the potential for these interactive effects.

#### *Interaction with Biodiversity*

Changes to land and soils results in habitat changes. In the case of the proposed development these are anticipated to be short-term.

### **14.3.10 Cultural Heritage**

#### *Interaction with Population and Human Health*

Local features such as the new Greenway which utilises the old rail line and St Anne's Church and holy well will be considered in terms of their setting and accessibility to ensure their continued contribution to the cultural landscape.

#### *Interaction with Landscape and Visual*

Features of cultural heritage can be valuable landscape features/ sources of important viewpoints.

#### *Interaction with Noise*

Disturbance to features of cultural heritage can occur through noise, which can effect the serenity or setting of some assets.

### **14.4 INTERACTIONS WITH OTHER POTENTIAL DEVELOPMENTS**

Each individual assessment in the EIAR examined the potential for cumulative effects of the proposed development in combination with other potential development surrounding the application site.

Cumulative effects are defined as the addition of many non-significant or significant effects, including the effects of other projects, to create larger, more significant effects. Singular activities may have a non-significant effect in isolation, however when combined with other effects these can be collectively significant and therefore must be included in the EIA process.

In order to identify potential in-combination effects, a GIS search was undertaken of available online planning search facilities provided by Meath County Council, An Bord Pleanála and the EIA Portal. The GIS search covered a radius of 5km from the application site, within which planning applications from the previous 5 years were identified.

A number of large-scale residential planning permissions and an associated water upgrade project (MCC P. Ref. 221031) have been noted to the southeast of the application site, and this is considered to be in line with general policy direction of Meath County Council as set out earlier.

There are two planning permissions in relation to the Tara Mines complex that are of relevance (ABP Ref. PL17.247707, ongoing development) and (MCC P. Ref. NA171232, currently under appeal with An Bord Pleanála). These have been included as part of the consideration when referring to the relationship of the application site to the mine complex in general. BTM intend to lodge an application in the immediate future for a solar farm to generate renewable electricity for use within the BTM Knockumber site providing for an electrical capacity of approximately 18-megawatts (MW) (advertised in Meath Chronicle date Saturday February 3rd). The development will consist of a ten-year planning permission for a solar energy development with an approximate development area of 34 ha.

Planning permission has been recently granted for a new distributor road (ABP Ref. 307434-20) and for a new pedestrian/cycle bridge crossing the River Blackwater (MCC P. Ref. 22653). It is hoped that these developments can assist long-term in addressing current traffic congestion issues as inferred in Chapter 5 of this EIAR.

The most pertinent project identified in the context of the proposed development is the proposed construction of an underground potable water mains between Liscarton Water Treatment Plant and Proudstown Reservoir (MCC P. Ref. 2360198), which is 500 m south of the application site at its closest point. It is suggested that the CEMP that is proposed to manage construction traffic and general construction activities during delivery of the project considers this nearby project, and consultation with the contractor for that development is undertaken to synchronise truck movements and avoid clashes of peak activities.

With the adoption of standard best practice construction management, no significant cumulative effects were noted in the preceding chapters of the EIAR which have considered the projects listed above.

Table 14-1 Interactions of the Foregoing

	Landscape and Visual	Material Assets (Roads & Traffic)	Biodiversity	Water (Hydrology and Hydrogeology)	Air	Noise	Population and Human Health	Climate	Land and Soils	Cultural Heritage
Landscape and Visual										
Material assets (Roads & Traffic)										
Biodiversity										
Water (hydrology & Hydrogeology)										
Air										
Noise										
Population & Human Health										
Climate										
Land and Soils										
Cultural Heritage										