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INTRODUCTION

Chapters 6 to 10 of this ES have set out the findings of the EIA for a range of environmental topics, and in particular, ascertain the potential significance of identified effects. The topics considered as part of the EIA have been determined through a process of scoping (refer to Chapter 4 of this Volume). It is possible for a number of the environmental topics to impact upon nearby receptors; whilst individually, the impacts may be within accepted limits, collectively, the impacts may be more significant. These are referred to as “*inter-relationships between impacts*”. At the same time, potential impacts associated with the proposed development may be acceptable in isolation, but when considered in the context of other developments in the immediate vicinity, may become more significant. These are referred to as “*Cumulative Effects*”.

- 11.1 The previous chapters in this volume set out the cumulative effects that may arise. This Chapter of the ES therefore draws together the potential cumulative impacts arising through the proposed amendment of the restoration scheme. It also summarises the main interactions between the environmental topics that form part of the EIA.

LEGAL BACKGROUND

EIA Regulations

- 11.2 Within Chapter 4 of this Volume, the statutory requirements regarding the content of an ES have been set out. Paragraph 5(e) to Schedule 4 of the EIA Regulations provides that an ES may contain a description of the likely significant effects of the development on the environment resulting from “*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*”.
- 11.3 This is not a mandatory requirement of an ES (being the items listed in Regulation 5(a) to (e)), but one which is required where “*relevant to the specific characteristics of the development and to the environmental features likely to be affected*”.

Planning Practice Guidance

- 11.4 Paragraph 017 (Reference ID: 27-017-20140306) to the web based PPG comments that:

“Some parts of a mineral planning authority area may have been subjected to successive mineral development (such as aggregate extraction or surface coal mining) over a number of years. Mineral planning authorities should include appropriate policies in their minerals local plan, where appropriate, to ensure that the cumulative impact of a proposed mineral

development on the community and the environment will be acceptable. The cumulative impact of mineral development is also capable of being a material consideration when determining individual planning applications."

CUMULATIVE EFFECTS

11.5 There is a broad range of opinion on the definition of cumulative impacts¹. The widely accepted definition is that provided by the United States Council on Environmental Quality in 1978:

'the impacts on the environment which result from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time'.

11.6 IEMA goes on to comment that cumulative impacts may occur:

- Physical-chemical transport A physical or chemical emission is transported away from a proposed project where it then interacts with another pollutant (e.g., air emissions, waste water effluent, sediment). Several entirely separate developments can therefore have a cumulative impact at a location some distance away from the project location
- Nibbling loss Occurring as a result of the gradual disturbance and loss of land and habitat (e.g., clearing of land for new housing and roads.)
- Spatial and temporal crowding Cumulative effects can occur when too much is happening within too small an area and in too brief a period of time. Spatial crowding results in an overlap of effects (e.g., noise from a road adjacent to an industrial site, confluence of stack emission plumes).
Temporal crowding may occur if effects from different actions overlap or occur before the receptor has had time to recover.
- Growth-inducing potential A project can induce further projects to occur. (e.g., bypass for a town creating new development opportunities)
- Combined effects These occur when different types of effects all affect the same receptor. Assessed individually they may be considered to be insignificant, but when combined result in a significant effect on the receptor (e.g. perceived change in the quality of life of a household or community)

¹ Page 11/4. Guidelines for Environmental Impact Assessment. IEMA

- 11.7 Cumulative impacts have also been described² as being those impacts caused by the sum of the projects impacts on the environment component, and/or the projects impacts when added to those of other past, present or future projects. Cumulative impacts can be:
- additive, aggregative or “*nibbling*”, namely the simple sum of all of the impacts;
 - synergistic, where impacts interact to produce an impact greater than the sum of the individual impact; and
 - neutralising or antagonistic impact, where the impacts counteract each other, reducing the overall impact.
- 11.8 Cumulative impacts may therefore result from a number of situations:
- the interaction or proximity of two or more current mineral operations (not necessarily for the same type of mineral) or developments of a similar nature;
 - the continuation of a particular working over a period of time through successive extensions;
 - the interaction or accumulation of different impacts at one site, affecting a range of sensitive receptors; and
 - a combination of the above scenarios.
- 11.9 In considering the potential cumulative impacts, it is important to keep in mind the extant planning permission for Carlton Main.

LAND USE

Other Mineral Sites

- 11.10 Apart from the existing quarry workings to the north of the Southern Extension there are no other active mineral operations within the vicinity of the Quarry. In this respect the nearest quarries are located over 9km to the north (Nostell Brickworks); 9km to the east (Hazel Lane) and 12km to the south east (Cadeby). At these distances there is no likelihood of any significant cumulative effects.
- 11.11 In relation to the potential cumulative effects with the existing operations, these have been addressed in the previous chapters and none have been identified. In this context, based on the mitigation measures that have been put forward (including those designed into the scheme) no significant residual effects have been identified as a result of developing the proposed extension.

Other Developments with Similar Characteristics

- 11.12 Other types of development that would potentially have similar characteristics to the quarrying operations would be the construction phase of large housing developments, retail or industrial parks, especially in the context of noise, air quality (dust), movement of plant and machinery and disturbance of the ground (removal of vegetation and soils for example).

² Methods of Environmental Impact Assessment. P Morris and R Therivel. UCL Press 2000

- 11.13 Given the proximity of the Quarry to the urban fringes of Grimethorpe, along with its location in the Green Belt, few opportunities exist for such development in the vicinity of the proposed extension. Referring to the Policies Map, there are two areas of land allocated for employment uses, identified as ES8 and ES9 (see Figure 11-1 below). ES9 is small and it is understood to have planning permission (ref. 2022/0045) for an extension to a warehouse. The allocation has also been partially developed. It lies around 200m from the edge of the existing quarry and 700m from the Southern Extension; accordingly there is little likelihood of the application proposals resulting in significant cumulative effects. Regarding allocation ES8, this is much larger, lying around 520m from the edge of the existing quarry and 980m from the Southern Extension. It is understood that part of the site has secured planning permission (ref. 2020/1032) for a B8 warehouse; land to the east is shown as a future development plateau. Again, at these distances there is little likelihood of the application proposals resulting in significant cumulative effects.

Figure 11-1
Extract from Policies Map (Inset map 21)

