

17.0 Interactions and Potential Cumulative Impacts

17.1 Introduction

This Chapter considers the likely interactions between the various effects predicted as a result of the proposed development of the new National Maternity Hospital at St. Vincent's University Hospital Campus. This Chapter also considers the potential cumulative effects arising between the proposed development and other plans and projects in the vicinity. The interactions between the relevant EIS topic headings at the subject site are addressed below.

The proposed development comprises the development of The National Maternity Hospital at St. Vincent's University Hospital Campus, Elm Park, Dublin 4. The proposed new National Maternity Hospital building will be located at the eastern side of the Hospital Campus and comprises the construction of a building that rises to 5 and 6 storeys above ground level, with one partial basement level, plus additional ancillary plant areas at the roof level. The proposed development also includes an extension to the existing multi-storey car park at the north of the Campus. The proposed development will be constructed in a sequential manner that allows for the continual operation of the Hospital Campus and, as such, includes the phased demolition of existing buildings at St. Vincent's University Hospital Campus to facilitate clearing the site for the proposed development and the construction of temporary accommodation to facilitate construction sequencing (including a single storey temporary canteen, catering staff changing facilities, household services store and carpenters workshop). The full detail of the nature and extent of the proposed development is set out in Chapter 2 of this EIS and the Draft Construction Management Plan is appended to same.

17.2 Matrix of Environmental Interactions

This Section provides a simple matrix of environmental interactions for the subject site. Table 17.1 addresses interactions between environmental factors arising from the proposed development. A summary description of the interactions is provided after the Table in Section 17.3. A more detailed analysis of each environmental subject area is provided in the relevant Chapters of this EIS.

Table 17.1: Matrix for St. Vincent's University Hospital showing Potential Environmental Interactions and Relevant Sub-headings relating to same

	Human Beings	Traffic and Transportation	Soils, Geology and Hydrogeology	Hydrology	Flora and Fauna	Waste Management	Noise and Vibration	Air Quality and Climate	Micro Climate	Visual Impact Assessment	Archaeological, Architecture and Cultural Heritage	Material Assets – Utilities
Human Beings		✓ (17.3.1)	-	-	-	✓ (17.3.2)	✓ (17.3.3)	✓ (17.3.4)	✓ (17.3.5)	✓ (17.3.6)	✓ (17.3.7)	-
Traffic and Transportation			✓ (17.3.8)	-	-	✓ (17.3.9)	✓ (17.3.10)	✓ (17.3.11)	-	-	-	-
Soils, Geology and Hydrogeology				✓ (17.3.2)	-	✓ (17.3.15)	✓ (17.3.13)	✓ (17.3.14)	-	-	-	-
Hydrology					✓ (17.3.16)	-	-	✓ (17.3.19)	-	-	-	-
Flora and Fauna						-	-	✓ (17.3.19)	✓ (17.3.17)	-	-	-
Waste Management							-	✓ (17.3.18)	-	-	-	-
Noise and Vibration								-	-	-	-	-
Air Quality and Climate									✓ (17.3.20)	-	-	-
Micro Climate										-	-	-
Visual Impact Assessment											✓ 17.3.21)	-
Archaeological, Architecture and Cultural Heritage												-
Material Assets-Site Services												

17.3 Interactions

The environmental interactions arising from the development of the new National Maternity Hospital at St. Vincent's University Hospital Campus are highlighted in Table 17.1 above and these interactions are discussed hereunder.

17.3.1 Human Beings with Traffic and Transportation

In terms of general traffic generation and impact on the surrounding road network, the critical period will be post construction, as traffic flows generated by the construction works will be less than those when the new National Maternity Hospital is open.

The peak period in terms of construction vehicle movements will occur during the most intensive part of the main construction works. This will result in a temporary increase in the number of Heavy Goods Vehicles (HGVs) on the surrounding road network during the construction phase of the project. The impact of construction traffic on Human Beings will be mitigated through measures contained in the Outline Construction Management Plan as well as through the Construction Traffic Management Plan.

Following the construction of the new National Maternity Hospital, it is acknowledged that the surrounding road network will continue to experience traffic queuing and delays at peak periods on some junction approaches on a typical week day. The mitigation measures included as part of the Transport Strategy for the St. Vincent's University Hospital and the new National Maternity Hospital will ensure that the increase in traffic levels and associated impact during these peak periods are kept to a minimum. Further detail on impacts arising from traffic and transportation are addressed in Chapter 6 of this EIS "*Traffic and Transportation*".

17.3.2 Human Beings with Waste Management

The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that incorrect management of waste could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific Construction and Demolition and Operational Waste Management Plans as well as the Outline Construction Management Plan will ensure appropriate management of waste. The impacts and mitigation measures proposed are addressed in Chapter 10 of this EIS "*Waste Management*" and have been considered from a human beings perspective.

17.3.3 Human Beings with Noise and Vibration

During the construction phase it is expected that there will be some temporary impact on the nearest noise sensitive locations due to noise emissions from the site. However, given that the construction phase of the development is temporary in nature, it is expected that the various noise sources will not be excessively intrusive. Furthermore, the application of binding hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that the noise and vibration impact is controlled to be within acceptable standards.

During the operational phase, potential causes of disturbance will include: building services noise; additional vehicular traffic on public roads; car parking on site, and; waste and service yard areas. However, it has been predicted that, subject to the implementation of appropriate noise and vibration control measures, none of these will increase the existing noise climate sufficiently or with such frequency so as to be likely to cause disturbance. Further detail on the impacts arising from noise and vibration emissions are assessed in Chapter 11 of this EIS *"Noise and Vibration"*.

17.3.4 Human Beings with Air Quality and Climate

During the construction phase there is the potential for loss of amenity due to dust that might occur which could impact upon human beings. There would also be potential for the spread of aspergillus spores and the removal of asbestos containing materials which will also need to be controlled. A Dust Minimisation Plan has been formulated in order to reduce potential dust emissions. When the dust minimisation as set out in the Plan is implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors. In relation to asbestos, prior to commencement of the demolition works, all asbestos containing materials identified will be removed by a suitably trained and competent person. Additional mitigation measures in the form of an aspergillus Prevention Plan will ensure the prevention of aspergillus spores spreading.

The mitigation measures that will be put in place will ensure that the impact of the development complies with all ambient air quality legislative limits and therefore the predicted impact is long term and neutral with respect to human beings. Further detail on the potential impacts and their mitigation are addressed in Chapter 12 of this EIS *"Air Quality and Climate"*.

17.3.5 Human Beings with Microclimate

Following construction of the new National Maternity Hospital loss of daylight to dwellings on Herbert Avenue, Merrion Road and Nutley Lane would be small and within the BRE guidelines. The impact is classed as negligible. Loss of sunlight to dwellings on Merrion Road and Nutley Lane would also be small and within the BRE guidelines, and classed as negligible. Loss of sunlight to the windows facing the new development at the rear of dwellings on Herbert Avenue is not an issue because they face north-west.

Loss of sunlight to gardens would be classed as a negligible impact. The proposed building's shadow would not encroach onto the gardens at Herbert Avenue until the late afternoon, and these gardens would receive ample sunlight at other times. Rear gardens of dwellings on Nutley Lane and Merrion Road would be unaffected by the proposed development. Sunlight to the Elm Park golf course would not be affected because the proposed development would lie to the north of it.

17.3.6 Human Beings with Visual Impact

During the construction phase, the resident community is likely to experience visual impact attributable to a change in visual amenities. Such impacts arise due to changes in the site to facilitate the proposed development. The visual impact of the proposed development during the construction phase will be influenced by the extent to which construction activity will be visible. From those locations within the St. Vincent's University Hospital where construction activity is visible, the visual impact of construction activity and of the emerging development is likely to be negative at first but becoming more positive as the development proceeds. From outside the Campus, the visibility of construction activity will be quite limited, and from many locations where construction activity is visible, it is likely to be limited to views of cranes and the construction compound.

Once operational, the proposed development is intended to provide attractive new national medical facilities. It is intended to have a positive visual character and result in positive visual impacts. The impacts during both the construction and operational phases are described in detail and comprehensively assessed in Chapter 14 of this EIS "*Visual Impact Assessment*".

17.3.7 Human Beings with Archaeological, Architectural and Cultural Heritage

There are no recorded architectural heritage sites located within the proposed development area or its immediate environs. The closest buildings are located c. 100m to the southeast, where 18 semi-detached cottages are located fronting onto Estate Avenue. No potential or predicted adverse negative impacts on the architectural resource are anticipated as a result of the proposed development going ahead. This is due to the nature and scale of the existing large scale hospital buildings adjacent to the proposed development area, including the St. Vincent's University Hospital Clinical Services building and the St. Vincent's Private Hospital. The nature of the receiving environment will not be subject to significant change.

17.3.8 Traffic and Transportation with Soils, Geology and Hydrogeology

The excavation and removal of soils from the site during the construction phase of the project will have an impact on the traffic levels around the site. During the construction phase, vehicles to and from the site will contribute to an additional traffic impact, in particular additional truck movements. This impact is addressed in Chapter 6 of this EIS "*Traffic and Transportation*".

17.3.9 Traffic and Transportation with Waste Management

Traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development. However, the increase in vehicle movements as a result of waste removal during the construction phase will be temporary in duration. There will be an imperceptible increase in waste collections from the site during the operational phase. The potential and predicted impacts and mitigation measures with regard to traffic are addressed in Chapter 6 of this EIS "*Traffic and Transportation*".

17.3.10 Traffic and Transportation with Noise and Vibration

The noise impact of additional traffic on the local road network due to the construction activity is addressed in Chapter 11 of this EIS "*Noise and Vibration*". The predicted impact of noise generated by construction traffic is not expected to change the character of the existing noise environment significantly.

17.3.11 Traffic and Transportation with Air Quality and Climate

The air quality and climate impact of additional traffic on the local road network due to the construction activity and operational phase of the Project is addressed in Chapter 12 of this EIS "*Air Quality and Climate*". The impact of the proposed development on air quality is assessed by reviewing the change in annual average daily traffic on roads close to the St. Vincent's University Hospital Campus. In this assessment the impact of the interactions between traffic and air quality are not significant.

17.3.12 Soils, Geology and Hydrogeology with Hydrology

The introduction of a basement and foundations may create a barrier to groundwater flow in the made ground which may lead to localised increases in groundwater levels which in turn could impact on groundwater flooding. This potential impact and proposed mitigation measures are addressed in Chapter 7 "*Soils, Geology and Hydrogeology*" and Chapter 8, "*Hydrology*".

17.3.13 Soils, Geology and Hydrogeology with Noise and Vibration

During construction, there will be a number of earthworks related activities which will lead to noise and vibration. Similarly there will be noise and vibrations associated with the truck movements involved in the removal of the excavated soils off site. Details of the noise and vibration mitigation measures are given in Chapter 11 of this EIS "*Noise and Vibration*". However, given that the construction phase of the development is temporary in nature, it is expected that the various noise sources will not be excessively intrusive. Furthermore, the application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum.

17.3.14 Soils, Geology and Hydrogeology with Air Quality

The excavation of soils across the site may lead to the generation of dust and odours should excavated soils be found to contain contamination. Details of the air quality mitigation measures including a Dust Minimisation Plan are contained in Chapter 12 of this EIS "*Air Quality and Climate*". Similarly, aspergillus prevention measures will be put in place in conjunction with prudent dust management on the site.

17.3.15 Soils, Geology and Hydrogeology with Waste Management

A potential impact on the soils, geological and hydrogeological environment includes the excavation and removal of made ground and overburden and reuse/recovery/disposal of this material off site. Proposed mitigation includes the controlled excavation of made ground and overburden in accordance with the relevant waste legislation and best practice standards. This is addressed in Chapter 7 of this EIS *"Soil, Geology and Hydrogeology"*.

In addition, incorrect storage and management of waste or the use of unauthorised waste hauliers and/or receiving facilities could give rise to inappropriate management of waste and result in negative environmental impacts on the soil and hydrogeological environments. Implementation of the project specific Construction and Demolition and Operational Waste Management Plans as well the Outline Construction Management Plan will ensure appropriate management of waste and the use of permitted hauliers and authorised receiving facilities. Details of the waste management are contained in Chapter 10 of this EIS *"Waste Management"*.

17.3.16 Flora and Fauna with Hydrology

There are interactions between flora and fauna and hydrology with respect to the potential impact of water pollution on designated sites. Prior to implementation of mitigation measures, the proposed development could result in a range of significant impacts, which include: impacts on European sites as a consequence of contaminated surface water runoff entering the local drainage network and ultimately discharging to Dublin Bay. Following implementation of mitigation measures, no significant residual impacts are anticipated either during the construction phase or the operational phase of the proposed development. Details of mitigation measures are set out in Chapter 9 of this EIS *"Flora and Fauna"*.

17.3.17 Flora and Fauna with Microclimate

There are interactions between flora and fauna and microclimate in respect of the potential impact of light pollution on bats during the construction and operation phases without the implementation of mitigation measures. However, following implementation of mitigation measures, no significant residual impacts are anticipated either during the construction phase or the operational phase of the proposed development. Details of mitigation measures are set out in Chapter 9 of this EIS *"Flora and Fauna"*.

17.3.18 Waste Management with Air Quality and Climate

Construction and Demolition and Operational Waste Management Plans have been prepared to outline procedures for management of waste arising during the construction and operational phases. Furthermore, a Dust Minimisation Plan has been formulated in order to reduce potential dust emissions, please refer to Chapter 12 of this EIS *"Air Quality and Climate"*.

17.3.19 Air Quality and Climate with Flora and Fauna and Hydrology

The construction and operation of the proposed development will lead to emissions to the atmosphere which have the potential to impact on sensitive flora, fauna and water. However, the effect of these emissions is predicted to be neutral for both the construction and operational phase. Construction phase mitigation measures are proposed to minimise dust emissions which have the potential to impact on flora, fauna and water. In the operational phase, impacts meet the criteria set down for ecological sensitive sites as discussed in Section 12.2.4 of the EIS and therefore the interactions between air quality and flora, fauna and water are neutral for both the construction and operational phase.

17.3.20 Air Quality and Climate with Microclimate

The change in the microclimate during the construction phase has the potential to impact air flows, and therefore dust dispersion in the area surrounding the building. However, the impact is predicted to be neutral once mitigation measures as discussed in Appendix 12.3 of the EIS are put in place.

17.3.21 Visual Impact with Archaeological, Architectural and Cultural Heritage

The character of the area around the St. Vincent's University Hospital Campus is that of a mature inner suburb, with many houses and other buildings considered to be of significant architectural heritage value. The existence of the new National Maternity Hospital, the enlarged car park and the proposed landscape works, will have a visual impact on the character of the surrounding area. Where the proposed development is visible, it is likely to give rise to some degree of impact on the setting of buildings of architectural heritage value. Given the extent of development already located on the St. Vincent's University Hospital Campus, the change in the setting of any building of heritage value in the surrounding area is likely to be very minor in extent and neutral in character.

There are no recorded architectural heritage sites located within the proposed development area or its immediate environs. The closest buildings are located c. 100m to the southeast, where 18 semi-detached cottages are located fronting onto Estate Avenue. No potential or predicted adverse negative impacts on the architectural resource are anticipated as a result of the proposed development going ahead. This is due to the nature and scale of the existing large scale hospital buildings adjacent to the proposed development area, including the St. Vincent's University Hospital Clinical Services building and the St. Vincent's Private Hospital. The nature of the receiving environment will not be subject to significant change. The potential impacts have been assessed in Chapter 14 *"Visual Impact Assessment"* and Chapter 15 *"Archaeological, Architectural and Cultural Heritage"*.

17.4 Potential Cumulative Impacts

Cumulative effects can be defined as the effects on the environment that result from incremental changes caused by the combination of the proposed development together with other past, present and reasonably foreseeable future developments. Potential cumulative effects encompass effects that can result from individually minor but collectively significant actions, which may occur simultaneously, sequentially, or in an interactive manner, and can be predicted to take place over a period of time. The previous Chapters of this EIS have identified the potential cumulative effects most likely to be relevant to the proposed development. Cumulative and in combination effects on specific resources or receptors are described, where relevant, in each of the specialist Chapters of this EIS.

17.4.1 Extraneous Plans and Projects

17.4.1.1 The Existing Holles Street Buildings

As a consequence of the development of the new National Maternity Hospital at St. Vincent's University Hospital Campus, clinical activities will be transferred from the existing National Maternity Hospital at Holles Street. This will potentially release the buildings at Holles Street for alternative healthcare or other uses.

17.4.1.2 St. Vincent's University Hospital Developments

With regard to significant developments at the St. Vincent's University Hospital Campus there is an extensive planning history, with a large number of planning applications made in respect of various hospital facilities. There are recent permissions that are relevant and warrant consideration in terms of the nature of the development sought, the scale of the

facility, the approach taken to their design and the precedent set in terms of what are acceptable development parameters. These include permission for the St. Vincent's Private Hospital (Dublin City Council Reg. Ref. 5120/06, An Bord Pleanála Ref. 223111), the recently constructed Nutley Wing (Dublin City Council Reg. Ref. 3117/07) and permission for the development of a new pharmacy in the form of a 2/3 storey structure on the roof level of the Main Ward Block (Dublin City Council Reg. Ref. 3876/15).

17.4.1.3 Permitted Projects in the Vicinity of the Site

In the vicinity of the site there are a number of significant private developments that have been granted planning permission in recent years that are at varying stages of development or that have not been developed to date. A significant development has been granted permission to the south east of the Hospital Campus at the Elm Park complex and which has been subject to subsequent modification permissions. In the main, permissions at the Elm Park complex have been for significant residential and office accommodation. Another significant permission that has been granted in the vicinity of the St. Vincent's University Hospital is for the provision of a new broadcasting facility at the RTE Campus (Dublin City Council Reg. Ref. 4057/09, An Bord Pleanála Ref. 236717), comprising c. 103,553sq.m of gross floor space and more recently RTE have been granted permission for a new access/egress to the lands from the R138 Stillorgan Road (Dublin City Council Reg. Ref. 3094/16). Neither the 10 year permission for the new broadcasting facility nor the permission for a new access/egress to the lands has commenced to date. More recently, permission has been granted for the erection of office buildings with sub-basement gym and two new café/retail units at the former AIB complex on the corner of Merrion Road and Serpentine Avenue (Dublin City Council Reg. Ref. 2221/16, An Bord Pleanála Ref. 246717). While not of the same scale, other significant permitted developments in the vicinity of the Hospital Campus include: an 11,305 gross floor space office development on the RDS lands (Dublin City Council Reg. Ref. 2876/15); an extension to St. John's House nursing home (Dublin City Council Reg. Ref. 3704/14); and, the construction of a sheltered housing facility in Sandymount (Dublin City Council Reg. Ref. 3034/13).

17.4.1.4 Other Plans of Significance

The NTA has proposed alterations to the Merrion Road – Strand Road route along with improvements in the provision of public transport links in terms of increased frequency of DART services, improved bus lane and cycle facilities. This Plan has not yet been approved, however, regard has been had to the contents of same in this assessment.

17.4.2 Potential Cumulative Impacts

17.4.2.1 Traffic and Transportation

In respect of these developments, the primary cumulative impact is in respect of traffic and transportation, a matter that has been taken into account as set out below. In respect of traffic and transportation it is considered that the most significant proposed development in the vicinity of St. Vincent's University Hospital Campus is the permission to provide new broadcasting facilities at the RTE Campus. The development proposals allow for a reduction in the number of car parking spaces on-site and closure of the entrance off Nutley Lane, with a new entrance off the R138 Stillorgan Road. It is considered that this will have a positive impact on traffic, with a reduced number of vehicles movements on Nutley Lane. The proposed office developments at the RDS on Simmonscourt Road and the AIB complex are considered to have a negligible traffic impact due to the distance to the site and the limited number of car parking spaces permitted. The Elm Park complex is largely completed but a proportion has not been occupied. While additional traffic movements associated with the unoccupied elements of the development (mainly office) are expected in the future, they are unlikely to be significant.

In terms of the proposed NTA alterations to the Merrion Road – Strand Road, the potential cumulative traffic impacts during operation are expected to be negligible, although there may be some temporary disruption during construction.

17.4.2.2 Flora and Fauna

With regard to potential cumulative impacts in respect of Flora and Fauna, one such relevant potential impact is the combined loss of suitable bat foraging and commuting habitats in the locality as a consequence of increased levels of light at night-time. In the absence of mitigation measures, this may result in significant cumulative impacts. Adherence to the proposed mitigation measures during both the construction and operational phase of the proposed development will ensure no potential for cumulative impacts to arise. The risk of any cumulative impacts arising in relation to water quality are considered in the context of impacts on designated sites downstream of the proposed development. However, impacts to designated sites are considered to be unlikely due to the legal requirement for all future plans and projects to undergo screening for Appropriate Assessment.

17.4.2.3 Microclimate

In respect of sunlight, daylight and overshadowing the assessment undertaken in Chapter 13 of this EIS “Microclimate” included the effect of the existing St. Vincent’s Private Hospital. It was found that the St. Vincent’s Private Hospital was too far away from dwellings on Nutley Lane and Merrion Road to have a significant cumulative effect on them. In addition, the rear windows of the dwellings on Herbert Avenue (and their gardens) face away from St. Vincent’s Private Hospital and would not be affected by it. The re-development of the nursing home at St. John’s House (Dublin City Council Reg. Ref. 3704/14) would not result in a significant change. Loss of light to the redeveloped nursing home would be similar to that for the current building, and hence negligible. Other proposed developments are too far away to have any cumulative impact. In relation to light pollution, spill light to the redeveloped nursing home would be similar to that for the current building, and hence negligible. For potential cumulative impacts on the wind microclimate, schemes within a 360m radius of the site were considered, as beyond this distance buildings are unlikely to have any impact on the wind micro climate around the site. The extension to St. John’s House was assessed and it was found that there would be no additional cumulative effects.

17.4.2.4 Hydrogeology

A potential cumulative impact on the hydrogeology would be a barrier to groundwater flow; however, none of the proposed developments with basements are close enough, with the RTE development being a minimum of 700m to the west of the Hospital Campus. Thus, there are no potential cumulative impacts associated with the proposed development. Furthermore, it is not considered that there will be any flood risk cumulative impacts associated with the proposed development as the site is located outside of the 1 in 1000 year fluvial and tidal floodplain.

17.4.2.5 Air Quality and Climate

Should the construction phases of the development of the new National Maternity Hospital and the permitted projects identified above and in Chapter 12 coincide, it is predicted that, once appropriate mitigations are put in place during the construction for the above schemes, impacts will not be significant. The cumulative impact of the permitted developments and the development of the new National Maternity Hospital are also predicted to cause insignificant impacts during the operational phase with respect to local air quality for the long and short term.

In addition to the permitted developments both on the St. Vincent’s University Hospital

Campus and in the vicinity of the site, other projects will arise where there is the potential for the impacts discussed in this EIS to interact and result in a cumulative impact. The greatest potential for cumulative effects arises from the possibility of overlap in construction phases from adjacent developments.

17.4.3 “Do Nothing” Scenario

No cumulative impacts will arise if the proposed development does not proceed.

17.5 Conclusion

The interactions between the various aspects of the EIS have been covered in the individual chapters and in this Chapter. Whilst these interactions have been noted, the appropriate mitigation measures have been identified in order to ensure that any impacts associated with them are ameliorated.

In terms of the potential for cumulative impacts, the EIS has had regard to permitted developments both on the St. Vincent’s University Hospital Campus and the surrounding area. The potential for cumulative effects arising from construction and operational traffic have been identified but are not considered to be outside of emerging trends and, with respect to construction, will be temporary in nature. Impacts with respect to microclimate are considered to be imperceptible and, similarly, no cumulative effects will arise with respect hydrology. The potential for cumulative effects arising from concurrent construction periods with respect to air quality is something that can be mitigated appropriately and, again, will be temporary in nature.