

Chapter 18 - Interactions and Potential Cumulative Impacts

18.0 Introduction

This chapter considers the likely interactions between the various effects predicted as a result of the proposed developments at the subject sites. In addition to the requirements to describe the likely significant effects of the proposed developments, it is also required to consider the interaction of those effects. This section also considers the cumulative effects of other significant projects.

The project, which is fully described in Chapter 2 of the EIS, comprises a number of developments:

- within – or associated with – the main project site on the campus of St. James’s Hospital, Dublin 8 are:
 - a new children’s hospital and associated Family Accommodation Unit, sited in the west of the campus;
 - a new Children’s Research and Innovation Centre, sited along James’s Street; and
 - associated works to boundaries, roads, entrances, parking areas, hard and soft landscaping *etc.* within the application site boundary;
- a construction compound at Davitt Road, Dublin 12, which is directly associated with the development at St. James’s Hospital Campus.
- a new children’s hospital satellite centre at Tallaght Hospital, Dublin 24; and
- a new children’s hospital satellite centre at Connolly Hospital, Blanchardstown, Dublin 15

The interactions between the different development sites are set out in the matrix provided in Table 18.1. The interactions between the relevant EIS topic headings at each of the subject sites are addressed below in Section 18.2.

18.1 Interactions Between the Proposed Development Sites

In this section, the interactions between the principal development sites as outlined above are examined. As indicated, the National Paediatric Hospital Project is an integrated development that comprises development on four sites, namely St. James’s Hospital campus, a site at the former Unilever site at Davitt Road, the Tallaght and Connolly hospital campuses. This section considers the interactions between the various sites in terms of potential significant environmental effects.

18.1.1 St. James’s Hospital Campus and Davitt Road

A construction compound will be provided at Davitt Road for the storage of materials, but will also facilitate the staging of construction traffic and allow for their orderly arrival to the St. James’s Hospital campus site. This will ensure that construction vehicles do not need to wait on the public street network to access the construction site. Chapter 6 includes details on the construction access routes i.e. one via South Circular Road / Brookfield Road and the second via the South Circular Road / Suir Road, as well as the proposed construction access provisions on site. Construction traffic and routes of same are addressed in Chapter 6 of this EIS and an outline Construction Management Plan is attached to Chapter 2.

18.1.2 St. James’s Hospital Campus and the Children’s Hospital Satellite Centre at Tallaght Hospital

The interactions between the new children’s hospital at the St. James’s Hospital Campus and the children’s hospital satellite centre at Tallaght Hospital primarily arise from the integrated Model of Care being provided and, consequently, impact on human beings and traffic.

With respect to human beings, the presence of the proposed children’s hospital satellite centre proximate to the population that it is intended to serve, will mean an improvement in ambulatory and urgent care being delivered to the local community. These benefits have been set out in Chapters 4 and 5 of this EIS.

With regard to traffic and transportation, there will be transfers between the proposed children’s hospital satellite centres and the new children’s hospital. The traffic and transportation assessment in this EIS (Chapter 6) accounts for all traffic that is generated by the children’s hospital satellite centres in this regard.



18.1.3 St. James's Hospital Campus and the Children's Hospital Satellite Centre at Connolly Hospital

The interactions between the new children's hospital at the St. James's Hospital campus and the children's hospital satellite centre at Connolly Hospital primarily arise from the Model of Care being provided and, consequently, impact on human beings and traffic.

With respect to human beings, the presence of the proposed children's hospital satellite centre proximate to the population that it is intended to serve, will mean an improvement in ambulatory and urgent care being delivered to the local community. These benefits have been set out in Chapters 4 and 5 of this EIS.

With regard to traffic and transportation, there will be transfers between the proposed children's hospital satellite centres and the new children's hospital. The traffic and transportation assessment in this EIS (Chapter 6) accounts for all traffic that is generated by the children's hospital satellite centres in this regard.

18.2 Matrices of Environmental Interactions

This section provides simple matrices for each of the subject sites. Tables 18.2, 18.3, 18.4 and 18.5 address interactions between environmental factors arising from the proposed development at each of the sites that are at a scale that may be considered significant. A summary description of the significant interactions is provided after each table. A more detailed analysis of each environmental subject area is provided in the relevant chapter of the EIS.

18.2.1 St. James's Hospital Campus

A matrix of the significant environmental interactions arising from the proposed development at St. James's Hospital campus is provided in Table 18.2. These interactions are discussed below.

18.2.1.1 Human Beings with Traffic and Transportation

The National Paediatric Hospital Project has been particularly careful to ensure that transport impacts during construction of the new children's hospital, Family Accommodation Unit and Children's Research and Innovation Centre are minimised for both the existing operation of the St James's adult hospital and the local community. A key reason for the early establishment of the St James's Hospital Campus Smarter Travel programme is to ensure that travel demand and continued safe access for emergency vehicles is managed effectively during the construction phase of the project. This will ensure that there are no adverse impacts on the provision of healthcare within the campus for the duration of construction. As the new children's hospital will be constructed over some of the existing hospital car parks, approximately 580 no. existing staff car parking spaces will be removed and not replaced, with a corresponding reduction in traffic entering and exiting the hospital for the duration of construction.

The biggest impact during construction will be as a result of the export of material from site during basement excavations, over an approximate 18 month period, and the importation of materials (including concrete deliveries) for the construction process. In terms of the former, at peak excavation, approximately 150 daily heavy goods vehicle (HGV) loads are likely to be generated. In terms of material import, approximately 100 HGV's are likely to be generated at peak and will give rise to temporary amenity impacts.

In addition, to general controls on construction traffic movement being imposed, the project will avail of the Health Service Executive's site on Davitt Road to store construction materials and is subject to specific construction traffic management measures set out in the outline Construction Management Plan appended to Chapter 2. This will have the benefit of facilitating management of movements of construction materials to the site at times which would minimise traffic impact on the local road network and, therefore, losses of amenities to local residents.

Following the construction of the new children's hospital, it is acknowledged that the surrounding street network will continue to experience traffic queuing and delays during some periods through a typical week day. The mitigation proposals included as part of the Transport Strategy for the St James's Hospital campus and the new children's hospital specifically, will ensure that the increase in traffic levels and associated impact during these periods are kept to a minimum and as such the impacts will not be significant. Further detail on impacts arising from traffic and transportation are addressed in Chapter 6 of this EIS (Traffic and Transportation).

18.2.1.2 Human Beings with Soil and Geology

The sites at St. James's Hospital were found to be generally free from contaminated soil, save for some localised 'hotspots' (please refer to Chapter 7). There is a potential for accidental spills or leaks of construction related material which could impact upon human beings). Proposed mitigation measures to ensure potential impacts are minimised include: good housekeeping on the project to mitigate the risk of any spills and reduce impacts associated with dust and nuisance dirt; and, as per Chapter 2, these mitigation measures must be incorporated into any future detailed outline Construction Management Plan. Further details on the potential impacts and mitigation measures are set out in Chapter 7 of this EIS (Soils and Geology). It is not expected that there will be any amenity impacts experienced as a result of the mitigation proposed.

18.2.1.3 Human Beings with Waste

The potential impacts of the proposed development in relation to the generation of waste during the main construction and operational phases are that the existing hospital campus may impact the public where the correct procedures for segregation, storage, handling and transportation of waste are not adopted. The failure to adopt the appropriate controls could result in the attraction of vermin and the use of non-permitted or un-licensed waste hauliers and receiving facilities could give rise to inappropriate management of waste and result in negative environmental impacts and pollution causing harm to a range of environmental receptors. Similarly, where the procedures outlined in the site specific waste management plans are not implemented, it is unlikely that targets for reuse, recovery and recycling will be achieved.

With these concerns in mind, a carefully planned approach to waste management and adherence to the construction and demolition waste management plans during the construction phase will ensure that the impact on the environment will be neutral, short-term and imperceptible from the

project as a whole. During the operational phase, a structured approach to waste management will promote resource efficiency and waste minimisation. Provided the operational waste management plans are implemented and a high rate of reuse, recycling and recovery is achieved, again, the predicted impact of the operational phase on the environment will be neutral, long-term and imperceptible and will in some respects be positive in comparison with existing less efficient procedures. 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.

18.2.1.4 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 sites. 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 construction operations, along with implementation of appropriate noise and vibration control measures, will ensure that the noise and vibration impact is controlled such that it will be within acceptable standards.

During the operational phase potential causes of disturbance will include: noise from building services plant; additional vehicles on the existing road system; car parking activity; helicopter movements; traffic on internal road network; and waste and service yard area. 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 significant disturbance. Further detail on the impacts arising from noise and vibration emissions are assessed in Chapter 11 of this EIS (Noise and Vibration). The impacts on adjoining properties will be monitored throughout the construction process (please refer to Chapters 2 and 11).

18.2.1.5 Human Beings with Air Quality and Climate

During the construction phase there is the potential for loss of amenity due to dust to occur which could impact upon human beings. There would also be potential for the spread of *Aspergillus* spores which will also need to be controlled. A dust minimisation plan has been formulated in order to reduce potential dust emissions. Further detail on the impacts arising from construction traffic emissions, dirt and dust emissions and possible spread of *Aspergillus* arising from demolition and excavation works during the construction phase and their mitigation are addressed in Chapter 12 of this EIS (Air Quality).

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18.2.1.6 Human Beings with Micro Climate

In relation to the operation of the new children's hospital and Family Accommodation Unit, the impact on daylight is relatively limited, with moderate losses of daylight to a small number of dwellings, and no significant losses of sunlight. Construction impacts are not considered significant. These findings validate the benefit and effectiveness of the early stage design development referred to in Chapter 13 of this EIS (Micro-climate).

18.2.1.7 Human Beings with Landscape and Visual Impact

During the construction phase, the resident community is likely to experience visual impact attributable to a change in landscape and visual amenities. Such impacts arise due to changes in the site to facilitate the proposed development, the new build within the site, and alterations to boundary treatments, specifically, along South Circular Road, to the linear park and to the boundaries with Cameron Square and O'Reilly Avenue.

Once operational, the new children's hospital and associated buildings (including the family accommodation) on the St. James's Hospital campus will be distinctly visible from the adjoining street network and residential properties. With regard to the main building, it is assessed that the initial temporary and short-term visual impact from such areas and properties will be viewed as being negative. Significant improvements to boundary treatment early in the construction programme will assist in reducing visual impacts on adjoining properties. In the long term, the exemplar design of the building will change alter the perception of the site for both the local and transient communities and the building will become an important local landmark. The Children's Research and Innovation Centre will improve the amenities of James's Street, providing a more active frontage than the existing. It will have an impact on the adjoining properties at McDowell Avenue, although this is will not be significant or negative.

These impacts are described in detail and comprehensively assessed in Chapter 12 of this EIS (Landscape and Visual Impact Assessment).



18.2.1.8 Human Beings with Architectural and Cultural Heritage

There are no protected structures in the immediate vicinity of the site of the proposed new children's hospital and Family Accommodation Unit. The only protected structure that could potentially be affected adversely is the Irish Museum of Modern Art (IMMA), which is located in the Royal Hospital, Kilmainham. This is a building of international significance and while it is at some distance from the proposed hospital, there will be views to, and from, the new hospital building, although these will not have significant adverse impacts.

It is intended that a new Children's Research and Innovation Centre would be erected on the southern side of James's Street, at its western end, adjacent to the Trinity College buildings associated with St James's Hospital. This building would be adjacent to a protected structure known as the Haughton Institute (RPS ref. 4011(a)) and the below-ground element would be close to the protected structure. The above-ground part of the proposed building would be at a sufficient distance that it would not affect the essential character of the protected structure. The construction of the below-ground element would have the potential to damage the protected structure, although measures will be put in place to ensure that this does not occur. The impacts and mitigation measures proposed are addressed in Chapter 16 of this EIS (Architecture and Cultural Heritage).

18.2.1.9 Traffic and Transportation and Soils and Geology

The Traffic and Transportation environment will be impacted by the excavation of made ground, subsoil and rock and its disposal off site. This impact is addressed in Chapter 6 of this EIS (Traffic & Transportation). The predicted impact on the prevailing traffic conditions are not expected to be significant. These movements have been assessed and accounted for in Chapters 2 (Construction Methodology), 6, 7 and 10 of this EIS.

18.2.1.10 Traffic and Transportation and Waste Management

The traffic and transportation environment will be impacted by the Waste Management Plan and the additional trips generated by the waste management strategy is addressed in Chapter 6 of this EIS (Traffic & Transportation).

18.2.1.11 Traffic and Transportation and 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. The operational impacts of the development are not considered significant in terms of vibration or noise, save for emergency vehicles.

18.2.1.12 Traffic and Transportation and 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 predicted impact of air quality generated by the proposed development is not expected to change the air quality in the vicinity of St James's Hospital campus significantly.

18.2.1.13 Soils and Geology and Hydrogeology and Hydrology

During construction some water entry into the excavation is unavoidable due to rainfall and possible minor seepages through the retaining wall. This water may become muddy as it will be falling in a building site and could become contaminated with sediment, fuels or other construction related materials. In accordance with common practice on construction sites, this water will be collected, treated and discharged to the local foul water drainage network under licence from the regulating authority.

When basement excavations are deep and within a few meters of bedrock the water level in the underlying bedrock aquifer will be locally lowered to allow safe working conditions and reduce the amount of potentially soiled water which needs to be managed and discharged to the foul sewer network. This water will be clean and can be discharged to the local storm sewer network under licence from the regulating authority. Discharges to both storm and sewer networks will be subject to continuous qualitative and quantitative monitoring. A comprehensive assessment of Soils and Geology and Hydrogeology and Hydrology is contained in Chapters 7 and 8 of this EIS.

18.2.1.14 Soils and Geology and Waste

A potential impact on the soils and geological environment, include the excavation of made ground, subsoil and a minimal amount of rock and re-use / recover / disposal off site. Proposed mitigation includes the controlled excavation of made ground, soil and rock management under the Waste Management Act. This is addressed in Chapter 10 of this EIS (Waste Management).

18.2.1.15 Soils and Geology and Noise and Vibration

It is envisaged that there will be a high level of soil stripping in order to achieve a suitable founding strata for ground slabs, roadways/pavements and foundations. In addition, there will be a number of deep excavations to allow for underground service diversions. 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 sites. 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 construction operations, 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. The adjoining buildings will be surveyed before, during and after construction to ensure vibration damage does not occur. A comprehensive assessment of Soils and Geology and Noise and Vibration is contained in Chapters 7 and 11 of this EIS.

18.2.1.16 Soils and Geology and Air Quality and Climate

It is envisaged that there will be a high level of soil stripping in order to achieve a suitable founding strata for ground slabs, roadways/pavements and foundations. In addition there will be a number of deep excavations to allow for underground service diversions. A dust minimisation plan has been formulated in order to reduce potential dust emissions that arise from these works and this is set out in Chapter 12. Similarly, *Aspergillus* prevention measures will be put in place with prudent dust management on the site.

18.2.1.17 Soils and Geology and Landscape and Visual Impact

It is envisaged that there will be a high level of soil stripping in order to achieve a suitable founding strata for ground slabs, roadways/pavements and foundations. In addition, there will be a number of deep excavations to allow for underground service diversions. The landscape and visual impact arising from these works will vary depending on the stage of construction, but will be temporary in nature. Landscape and Visual impacts are addressed in Chapter 14 (Landscape and Visual Impact) and Chapter 7 (Soils and Geology).

18.2.1.18 Soils and Geology and Archaeological Heritage

Given that demolition and large scale building clearance will take place across the new children's hospital and associated Family Accommodation Unit site and the site proposed for the Children's Research and Innovation Centre as well as deep excavation work, there is the potential to affect in-situ archaeological layers. A programme of archaeological monitoring will have to be agreed with the authorities and an adequate timeframe provided for archaeological work post the demolition of existing buildings on site and prior to the construction phase. All archaeological issues will be resolved to the satisfaction of, and in consultation with, the relevant authorities who will advise on any remedial action they consider appropriate.

Further detail on the mitigation measures are set out in Chapter 15 of this EIS (Archaeological Heritage).

18.2.1.19 Soils and Geology and Architecture and Cultural Heritage

The Children's Research and Innovation Centre will be erected on the southern side of James's Street, at its western end, adjacent to the Trinity College buildings associated with St James's Hospital. This building will be adjacent to a protected structure known as the Haughton Institute (RPS ref. 4011(a)) and the below-ground element would be close to the protected structure. A report has been prepared on the implications of the provision of below-ground development in close proximity to the Haughton Building and this is addressed in Chapter 16 Architectural Heritage (specifically Appendix 16.5).

18.2.1.20 Soils and Geology and Material Assets – Site Services

The basement construction will require the diversion of existing services including a public sewer (the Drimnagh Sewer) as well as services for St. James's Hospital. The earthworks require the excavation and removal of significant volumes of superficial deposits. This is addressed in Chapters 7 (Soils and Geology) and 17(Material Assets – Site Services) of this EIS.

18.2.1.21 Hydrogeology and Hydrology and Material Assets – Site Services

The proposal involves the diversion of the Drimnagh sewer. The proposed development and diversion of the Drimnagh Sewer was subjected to a Development Impact Assessment (DIA) conducted on behalf of Irish Water. In summary, the DIA report for Irish Water concludes that the development of the proposed development of the St. James's Hospital campus in a reduction of storm run-off to the combined sewer network, with attenuation provided on site to limit run-off to the River Camac. This results in negligible changes to environmental spills, some localised

surcharging, but an overall reduction in flood volume in the vicinity of the St. James's Hospital campus. For details of water services including items such as the Drimnagh sewer see Chapters 8 (Hydrogeology and Hydrology) and 17 (Material Assets – Site Services) of this EIS.

18.2.1.22 Hydrogeology and Hydrology and Flora and Fauna

During the construction phase, a range of activities will take place that have the potential to result in polluted or silt-laden water being discharged to local watercourses and the surface water drainage network and from there to Dublin Bay itself. These activities include significant earthworks; alterations to the water table; discharge to surface water; discharge to groundwater; and the storage of potentially polluting materials. The discharge of any such contaminated surface water could, if left un-mitigated and un-controlled, lead to ecological effects on the receiving water bodies, including, in particular, the European designated sites of Dublin Bay.

All construction works and activities will be carried out with due regard to current legislation and in accordance with "best practice" techniques and appropriate guidelines. An outline Construction Management Plan has been prepared that outlines the programming, controls and management measures proposed for the construction phase. In this regard, water will be discharged under appropriate licence and will be subject to continuous monitoring. As a consequence there will be no significant impacts upon Natura 2000 sites.

These and other mitigation measures as set out in Chapter 8 (Hydrogeology and Hydrology) and Chapter 9 (Flora and Fauna) will ensure that there will be no impacts on water quality and therefore no impacts on the qualifying interests of any of the designated sites of Dublin Bay.

18.2.1.23 Flora and Fauna and Landscape and Visual Impact

The removal of mature trees, in particular along the southern and western boundary of the site, as well as internally within the site and to the west of the energy centre will take place during the construction phase. Mitigation measures are set out in detail in the Architectural Design Report that accompanies the application and Chapter 14 of this EIS and includes extensive public and semi-public landscape areas as part of the proposed development.

18.2.1.24 Waste Management and 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 11 for this plan).

18.2.1.25 Noise and Vibration and Architectural and Cultural Heritage

It is intended that the new Children's Research and Innovation Centre would be erected on the southern side of James's Street, at its western end, adjacent to the Trinity College buildings associated with St James's Hospital. This building will be adjacent to a protected structure known as the Haughton Institute (RPS ref. 4011(a)) and the below-ground element would be close to the protected structure. Monitoring will need to be carried out to ensure that the excavation of the site adjacent to the Haughton Institute does not cause movement or excessive vibrations to the Institute building during construction. Please refer to Chapter 16 and Appendix 16.5 for details in this regard.

18.2.1.26 Landscape and Visual Impact and Architectural and Cultural Heritage

The site of the proposed Children's Research and Innovation Centre has particular landscape and visual significance and sensitivities including the presence of mature trees on the adjoining lawn and on James's Street. The particular protection measures as set out in the Tree Survey Report shall be implemented in order to retain 3 no. plane trees on James's Street. This is addressed in Chapter 14 of this EIS (Landscape and Visual Assessment).

The impacts on the Royal Hospital in Kilmainham have been assessed both in Chapter 14 and 15 of this document. The proposed new children's hospital building will be visible from this site, particularly from the first and second floors of the southern wing of the Royal Hospital but this impact will not be significantly negative.

18.2.1.27 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.

As a consequence of the National Paediatric Hospital Project existing children's clinical activities at the three current children's facilities will be transferred to the new children's hospital and two children's satellite centres. This will potentially release sites and buildings at the current hospitals at Temple Street and Crumlin for alternative hospital or other uses. With respect to Tallaght Hospital, the proposed satellite centre will utilise existing facilities such as parking spaces etc. (as set out in Chapter 6).

There are a number of implementable planning permissions both on the hospital campus and in the vicinity of the campus. These permitted developments have been considered in this EIS in terms of their potential cumulative impact and the potential for a resulting significant impact on the environment.

The St. James's Hospital decanting programme involves the movement of existing operations to other locations within the campus. Certain building upgrades and modular buildings are being constructed to accommodate these changes (DCC Reg. Ref. nos. 2787/15, 2761/15, 2625 and 3069/15 refer). The permitted buildings are not likely to give rise to significant external environmental impacts in combination or singularly. The decant programme comprises uses that are accounted for in the various topic assessments in this EIS. The demolition of the buildings that are being vacated has been applied for in this application and the impacts of these have accounted for in this document.

With regard to more significant developments on the St. James's Hospital campus there are three 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 demolition of existing structures on site, including the chapel building and the construction of an eight storey Private Hospital Building, totalling 29,644sq.m. over two levels of basement car parking (18,010sq.m.) (Reg. Ref. 2751/09, Board Ref. 236070); the construction of a part two, part four and part seven storey hospital building (28 metres high to roof level; 30.85 metres to top of roof of access lobby on part of roof) totalling 15,018sq.m. (Reg. Ref 3607/12, known as the MISA building currently under construction), and; the construction of a new seven storey Clinical Directorates Building (27.87 metres high to top of roof plant level) totalling 4,953 sq.m. (Reg. Ref 3325/13).

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The Private Hospital building referred to above is not being constructed as it is being replaced by the new children's hospital building and could not, therefore, have a cumulative impact in conjunction with the current proposals. The impacts of the demolition of the chapel and other such buildings have been re-examined as part of the preparation of this EIS and the same conclusion has been reached.

In the vicinity of the site there are a number of significant private developments that have been granted in recent years that are at varying stages of construction or that have not been developed as a result of the recent economic downturn. Significant permissions have been granted in the area of the Heuston South Quarter and these have been subject to subsequent modification permissions. In the main these permissions have been for significant mixed use developments incorporating residential and commercial elements.

To the north west of the hospital campus on a site at 6 Kilmainham Lane, 5 Auburn Terrace, Former Irish Cone & Wafer Premises, & Rear Of 1-4 Auburn Terrace an extension of duration permission was granted in April 2014 for a residential development including a six / part seven apartment block(DCC Reg. Ref. no. 6705/07/x1). Further west at 40 Old Kilmainham Road there is an extension of duration permission granted for a 5,250sq.m mixed use development of six to seven storeys (DCC Reg. Ref. no. 5796/07/x1) and at 30 Old Kilmainham Road there is permission for the construction of a mixed use building (DCC Reg. Ref. no. 3241/09) that is currently subject to an extension of duration permission that has yet to be decided upon. On a site at the junction of Irwin Street and Irwin Court permission has been granted for an 80 bed nursing home and was recently granted an extension of duration permission (Reg. Ref. no. 2811/09; ABP Ref. no. 234586). 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 addition to the permitted developments both on the St. James's 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. However, as there is limited information available on the timescales for these other projects, there is insufficient information to provide a thorough assessment. However, it is anticipated that with appropriate mitigation implemented, cumulative effects from Heuston South Quarter and other nearby developments will be low and, in some aspects, have the potential to provide a beneficial effect in the area. In combination, the hospital project, and adjoining schemes, could result in a significant boost to the long term economic and investment potential of the area. For example, the increased availability of housing for hospital employees and an increase in the quality of healthcare provision in the locality will benefit both the new children's hospital development and the Heuston South Quarter developments respectively. The regeneration benefits that would accrue from the proposed development will occur as a result and, in combination with, the significant permitted developments in the area and this has been accounted for in Chapter 5. However, it is unlikely, as a result of the various mitigation measures proposed in this EIS that any of the interactions will result in significant negative environmental effects. With regard to the continued development of the surrounding area, any additional travel demand is likely to be accommodated in the main via the continued investment in sustainable travel modes (public transport, cycling, walking) resulting in little or no growth in peak hour traffic flows on the surrounding street network.

The cumulative impacts have been assessed in light of known existing and permitted development in the relevant area. It has not involved the deliberation of possible future development which may be at the concept, design or the early planning stages and which may not yet have been authorised.

With specific reference to the decision to relocate the Coombe Maternity Hospital to the St. James's Hospital Campus, it is not possible to accurately assess the impacts of any project in detail where that scheme does not exist or has not been granted planning approval, but it is possible to gauge where potential cumulative impacts may occur in a broad sense. Changes to the brief, the design, the location or the function of any new building either in advance of or, as a result of the granting of planning permission, means that any identified impacts could change (indeed the Mater decision indicates that permission may not be granted for any particular proposed scheme). It is also noted that no timeframe has been announced for the Maternity Hospital.

Emerging Plans for Proposed Maternity Hospital

As indicated there is very limited information available on the emerging Maternity Hospital proposals. On the basis of 'high level' studies, there are several options for its location, one of which is considered in the draft site capacity study. This is to the east of the new children's hospital and there could be a link between the two hospital buildings to facilitate access, see NPHDB Report '*The Clinical Case for the New Children's Hospital*', included as an Appendix to Chapter 2 of this EIS.

A site to the east of the new children's hospital may result in loss of amenity to adjoining residential properties by reason of overlooking, overshadowing and/or loss of light. In relation to cumulative impact of the new children's hospital and planned maternity hospital, there is potential for additional loss of amenity to properties on O'Reilly and Donnellan Avenues as a consequence of loss of light, overshadowing and adverse visual impacts. Increased noise and disturbance may also be factors to be taken into account at these locations.

In relation to the cumulative impacts with respect to traffic and parking, initial work indicates that the proposal could require in the region of 120 no. additional patient/visitor parking spaces. The campus parking strategy assumes that the number of parking spaces across the site will not increase. This will be achieved by reducing the number of staff spaces across the St. James's Hospital campus and by incorporating additional modal shift (i.e. by reducing car journeys to and from the site). On this basis, the increase in parking to accommodate the emerging Maternity Hospital proposal can be minimised, which in turn, will ensure that its potential delivery at St. James's Hospital campus, will not impact significantly on prevailing traffic condition on the surrounding highway network.

At this early stage with no design of building form to consider it is not possible to take any cumulative impact assessment of the Maternity Hospital any further. Future investigations of the potential site options will inevitably involve consideration of appropriate design and mitigation measures to minimise any loss of amenity and/or other environmental impacts upon adjoining residential areas. The provision of a clinical link between the three hospitals may give rise to impacts relating to soils and geology in terms of excavations required.

Clearly, the potential of the campus to accommodate tri-location of the children's, adult and maternity hospitals will require substantial additional detailed work (well beyond the Draft Site Capacity Study) once the emerging Maternity Hospital proposals are confirmed and available.

18.2.1.28 'Do Nothing' Scenario

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

18.2.2 Davitt Road

A matrix of the significant interactions arising from the proposed development at Davitt Road is shown in Table 18.3. These interactions are discussed below.

Table 18.3: Matrix for Davitt Road Showing Potentially Significant Environmental Interactions

	Human Beings	Traffic and Transportation	Soil & Geology	Hydrogeology and Hydrology	Flora and Fauna	Waste Management	Noise & Vibration	Air Quality and Climate	Micro Climate	Landscape and Visual Impact Assessment	Archaeological Heritage	Architecture and Cultural Heritage	Material Assets – Site Services
Human Beings		✓	-	-	-	-	-	-	-	✓	-	-	-
Traffic and Transportation			-	-	-	-	-	-	-	-	-	-	-
Soil & Geology				-	-	-	-	-	-	-	-	-	-
Hydrogeology and Hydrology					-	-	-	-	-	-	-	-	-
Flora and Fauna						-	-	-	-	-	-	-	-
Waste Management							-	-	-	-	-	-	-
Noise & Vibration								-	-	-	-	-	-
Air Quality and Climate									-	-	-	-	-
Micro Climate										-	-	-	-
Landscape and Visual Impact Assessment											-	-	-
Archaeological Heritage												-	-
Architecture and Cultural Heritage													-
Material Assets- Site Services													

18.2.2.1 Human Beings with Traffic and Transportation

The National Paediatric Hospital Project has been particularly sensitive to ensure that transport impacts during construction of the new hospital are minimised for both the existing operation of the St James's adult hospital and the local community.

The proposed development includes the development of a construction compound on Davitt Road to support the construction of the development at St. James's Hospital campus. The construction compound will support the storage of materials to allow for the orderly deliver of materials to the St James's Hospital campus and to stage construction vehicles before proceeding to the St James's Hospital campus. The compound will not support construction staff parking or welfare facilities. The proposed Davitt Road construction compound will have little impact on prevailing traffic conditions along Davitt Road. Further detail on the impacts arising from Traffic and Transportation at Davitt Road are set out in Chapter 6 of this EIS (Traffic and Transportation).

The use of Davitt Road as a construction compound and staging area will have a positive impact on the management of traffic relating to the construction of the new children's hospital building and, as such, will assist in ameliorating impacts on human beings in the locality.

18.2.2.2 Human Beings with Landscape and Visual Impact Assessment

The proposed construction compound hoarding on the site will be recessed from Davitt Road but may be visible from the residential properties to the south. The purpose of this hoarding, however, is to screen the compound from these properties and, as such, will ameliorate any potential impacts. The hoarding will be removed upon cessation of the use of the compound. The impacts will be temporary and, having regard to the existing site use and makeup, are not considered to be significant.

18.2.2.3 Cumulative Impacts

With respect to cumulative impacts at Davitt Road, the permitted ambulance base is a self-contained development that will impact on the proposed construction compound. The additional levels of traffic generated by the proposed use of the site will not give rise to a significant impact in combination with the proposed development.

18.2.3 Children's Hospital Satellite Centre - Tallaght Hospital

A matrix of the significant interactions arising from the proposed development at the Tallaght Hospital campus is shown in Table 18.4. These interactions are discussed below.

Table 18.4: Matrix for Tallaght Hospital Showing Potentially Significant Environmental Interactions

	Human Beings	Traffic and Transportation	Soil & Geology	Hydrogeology and Hydrology	Flora and Fauna	Waste Management	Noise & Vibration	Air Quality and Climate	Micro Climate	Landscape and Visual Impact Assessment	Archaeological Heritage	Architecture and Cultural Heritage	Material Assets – Site Services
Human Beings		✓	-	-	-	✓	✓	✓	-	-	-	-	-
Traffic and Transportation			-	-	-	-	-	-	-	-	-	-	-
Soil & Geology				-	-	-	-	-	-	-	-	-	-
Hydrogeology and Hydrology					-	-	-	-	-	-	-	-	-
Flora and Fauna						-	-	-	-	-	-	-	-
Waste Management							-	-	-	-	-	-	-
Noise & Vibration								-	-	-	-	-	-
Air Quality and Climate									-	-	-	-	-
Micro Climate										-	-	-	-
Landscape and Visual Impact Assessment											-	-	-
Archaeological Heritage												-	-
Architecture and Cultural Heritage													-
Material Assets- Site Services													

18.2.3.1 Human Beings with Traffic and Transportation

The transportation impacts of the Tallaght children's hospital satellite centre are considered to be insignificant, due to the reduction in activity as a result of the relocation of the majority of the national children's hospital facilities to the St. James's Hospital campus site. The modifications to the internal access layout will be carried out in a manner that will generally improve the internal circulation and provide, where possible, additional drop-off/pick-up capacity in the vicinity of the new building.

A Mobility Management Plan will be put in place that will seek to ensure that the travel patterns of staff will be as sustainable as possible, utilising existing walking, cycling and public transport modes of transport. A more detailed analysis of the interaction of traffic and transportation is contained in Chapter 6 of this EIS.

18.2.3.2 Human Beings with Waste Management

There is the potential from construction waste to impact upon the amenities of the resident population in the vicinity to any construction site. In this regard, a Construction and Demolition Waste Management plan has been prepared and is submitted with Chapter 10 of this EIS.

18.2.3.3 Human Beings with Noise and Vibration

There is the potential for disturbance to arise as a result of construction noise and vibration with resultant minor amenity impacts on hospital patients. This will likely be limited to the construction phase and amenity impacts are not expected to occur from noise and vibration during operation.

18.2.3.3 Human Beings with Air Quality and Climate

During the construction phase there is the potential for loss of amenity due to dust to occur which could impact upon human beings. There would also be potential for the spread of *Aspergillus* spores which will also need to be controlled. A dust minimisation plan has been formulated in order to reduce potential dust emissions. Further detail on the impacts arising from construction traffic emissions, dirt and dust emissions and possible spread of *Aspergillus* arising from demolition and excavation works during the construction phase and their mitigation are addressed in Chapter 12 of this EIS (Air Quality).

18.2.3.4 Cumulative Impacts

Given the scale of the proposed children's hospital satellite centre at Tallaght hospital, and the capacity of the surrounding environment to accommodate a development of this nature, it is not likely to give rise to any significant effects cumulatively or, in combination with, other developments in the area.

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18.2.4 Children's Hospital Satellite Centre - Connolly Hospital

A matrix of the significant interactions arising from the proposed development at the Connolly Hospital campus is shown in Table 18.5. These interactions are discussed below.



Table 18.5: Matrix for Connolly Hospital Showing Potentially Significant Environmental Interactions

	Human Beings	Traffic and Transportation	Soil & Geology	Hydrogeology and Hydrology	Flora and Fauna	Waste Management	Noise & Vibration	Air Quality and Climate	Micro Climate	Landscape and Visual Impact Assessment	Archaeological Heritage	Architecture and Cultural Heritage	Material Assets – Site Services
Human Beings		✓	-	-	-	✓	✓	✓	-	-	-	-	-
Traffic and Transportation			-	-	-	-	-	-	-	-	-	-	-
Soil & Geology				-	-	-	-	-	-	-	-	-	-
Hydrogeology and Hydrology					-	-	-	-	-	-	-	-	-
Flora and Fauna						-	-	-	-	-	-	-	-
Waste Management							-	-	-	-	-	-	-
Noise & Vibration								-	-	-	-	-	-
Air Quality and Climate									-	-	-	-	-
Micro Climate										-	-	-	-
Landscape and Visual Impact Assessment											-	-	-
Archaeological Heritage												-	-
Architecture and Cultural Heritage													-
Material Assets- Site Services													

18.2.4.1 Human Beings with Traffic and Transportation

The transportation impacts of the children's hospital satellite centre at Connolly Hospital are considered to be insignificant. A Mobility Management Plan will be put in place that will seek to ensure that the travel patterns of staff will be as sustainable as possible, utilising existing walking, cycling and public transport modes of transport. A more detailed analysis of the interaction of traffic and transportation is contained in Chapter 6 of this EIS.

18.2.4.2 Human Beings with Waste Management

There is the potential from construction waste to impact upon the amenities of the resident population in the vicinity to any construction site. In this regard, a Construction and Demolition Waste Management plan has been prepared and is submitted with Chapter 10 of this EIS.

18.2.4.3 Human Beings with Noise and Vibration

There is the potential for disturbance to arise as a result of construction noise and vibration with resultant minor amenity impacts on hospital patients. This will likely be limited to the construction phase and amenity impacts are not expected to occur from noise and vibration during operation.

18.2.4.3 Human Beings with Air Quality and Climate

During the construction phase there is the potential for loss of amenity due to dust to occur which could impact upon human beings. There would also be potential for the spread of *Aspergillus* spores which will also need to be controlled. A dust minimisation plan has been formulated in order to reduce potential dust emissions. Further detail on the impacts arising from construction traffic emissions, dirt and dust emissions and possible spread of *Aspergillus* arising from demolition and excavation works during the construction phase and their mitigation are addressed in Chapter 12 of this EIS (Air Quality).

18.2.4.3 Cumulative Impacts

Given the scale of the proposed children's hospital satellite centre at Connolly hospital, and the capacity of the surrounding environment to accommodate a development of this nature, it is not likely to give rise to any significant effects cumulatively or, in combination with, other developments in the area.