

Chapter 4 Examination of Alternatives

4.0 Introduction

This Chapter provides an overview of alternative sites, designs and concepts that have been considered for the National Paediatric Hospital Project and outlines the development of the proposal on the St. James Hospital Campus. It also presents the alternatives considered for the 2 no. children's hospital satellite centres at Tallaght Hospital Campus and Connolly Hospital Campus, which are an integral part of the overall project, as will be clearly set out below.

This Chapter outlines how the decision to locate the new children's hospital on St. James Hospital Campus was informed by a forensic and robust examination of the alternatives options having regard to all relevant perspectives i.e. paediatric model of care, spatial planning, environmental considerations and site design.

The following sets out a process that that has culminated in the application being put before An Bord Pleanála. At a high level, this section addresses the following:

- The background to the site selection process, having regard to the previous decision on the Mater site.
- The legislative provisions surrounding the examination of alternatives.
- The policy framework that has set the context for the application.
- The review and site selection processes that have resulted in St. James's Hospital Campus being selected as the appropriate site for the development.
- The corresponding review process that related to the selection of the children's hospital satellite centre sites.
- The design process that resulted in the application as set before the Board.

As the proposed development is healthcare infrastructure it is subject to Government legislation relating to this area. It is necessary to understand the hierarchy of policies and decisions relating to the National Paediatric Hospital Project as these set the framework for the design team in preparing this planning application. The EPA's *Guidelines on Information to be contained in Environmental Impact Statements* acknowledge such situations, stating:

"Many projects, especially in the area of public infrastructure, arise on account of plans, strategies and policies which have previously been decided upon. It is important to acknowledge that in some instances neither the applicant nor the competent authority can be realistically expected to examine options which have already been previously determined by a higher authority (such as a national plan or regional programme for infrastructure or a spatial plan)"¹.

In this regard, St. James Hospital Campus has been chosen at Government level as the location for the new children's hospital, with the Government also determining that the children's hospital satellite centres are to be located at Tallaght Hospital Campus and Connolly Hospital Campus. This decision has been made in the context of and in accordance with national healthcare policy and the Model of Care (as set out in Section 2.2 and Appendix 2.1). In relation to Government level decisions, the EPA Guidelines acknowledge the role of the relevant higher authorities and the role of the Environmental Impact Statement (EIS) in the context of same.²

While it will be outlined below that environmental considerations informed the Government decision, they were not the primary consideration in choosing St. James's Hospital Campus as the location of the new children's hospital. Other matters that influenced this decision were healthcare policy and strategic need, clinical requirements and planning policy, all of which were as important as the environmental considerations in the context of delivering a world class paediatric facility to serve the island of Ireland.

This Chapter demonstrates that the assessments that informed the Government decisions were, in the first instance, informed and robust and consequently, it is evident that alternatives have been systematically considered at each successive stage. It further demonstrates that the consideration of these alternatives was rational, authoritative and gave equal regard to the key drivers in locating the new children's hospital i.e. clinical requirements, planning, land-use, and environmental effects.

The option of "Do Nothing" has also been considered. This option would mean that there would be no new children's hospital and in turn no upgrading of the national tertiary and quaternary paediatric services. These services would continue to be provided across the three existing facilities at Our Lady's Children's Hospital Crumlin, Temple Street Children's University Hospital and the National Children's Hospital at Tallaght which are inadequate and in poor structural condition with little flexibility for upgrading and expansion to meet the immediate need for paediatric expansion. In addition, the failure to deliver the new children's hospital and children's hospital satellite centres would negatively impact on the implementation of the Health Service Executive Clinical Programme for Paediatrics and Neonatology as set out in the documents attached to this application entitled *The Clinical Case for the new Children's Hospital, its*

¹ EPA - Guidelines on Information to be contained in Environmental Impact Statements, 2002, pg. 12

² EPA - Guidelines on Information to be contained in Environmental Impact Statements, 2002, pg. 12

Satellites and Tri-location". In turn the aim to provide an improved healthcare system for all children and young people across Ireland would not be achieved in the short term.

This section commences by establishing the legislative context, both European and Irish, guiding the examination of alternatives in this EIS. Following this, an outline of the decision making process, which included the consideration of alternatives, that led to the current proposal is provided. This outline describes the stages at which environmental effects were taken into account, providing the main alternatives studied and the reasons for this choice, having regard to environmental effects, where relevant.

The extent of the Alternatives Section of this EIS has also been discussed with An Bord Pleanála as part of the statutory pre-application consultations and these discussions have directly informed the format and content of this chapter. Given the nature of the proposed development, the examination of alternatives has been central to the preparation of the EIS.

4.1 Legislative Context

4.1.1 EU Legislation

Directive 2011/92/EU of the European Parliament and of the Council of 13th December 2011 on the assessment of the effects of certain public and private projects on the environment contains the following text in relation to the assessment of alternatives:

- Article 5 (3)(d) states – *"The information to be provided by the developer in accordance with paragraph 1 shall include at least: an outline of the **main alternatives studied** by the developer and an indication of the **main reasons for his choice**, taking into account the environmental effects."* (Emphasis added)

A newly amended Environmental Impact Assessment Directive (2014/52/EU) entered into force on 15th May 2014, however, Member States have until 16th May 2017 to apply its provisions.

4.1.2 Irish Legislation and Guidance

Schedule 6 of the Planning and Development Regulations, 2001 (as amended) sets out the information which is to be contained in an EIS and Part 1(d) of Schedule 6 states that the following shall be included:

"An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment."

The EPA Guidelines address the issue of alternatives, stating that *"the consideration of alternative routes, sites, alignments, layouts, processes, designs or strategies, is the single most effective means of avoiding environmental impacts"*³. While the EPA Guidelines note that the extent to which the issue of alternatives is addressed can affect the acceptability and credibility of Environmental Impact Assessment findings the document also acknowledges the existence of difficulties and limitations when considering alternatives stating that *"...for major infrastructure projects the intrinsic suitability of the site is the principal amelioration strategy"*⁴. In relation to such difficulties and limitations the EPA Guidelines state that these include:

- *"Hierarchy - Many projects, especially in the area of **public infrastructure**, arise on account of plans, strategies and policies which have previously been decided upon...in some instances neither the applicant nor the competent authority can be realistically expected to examine options which have already been previously determined by a higher authority (such as a national plan or regional programme for infrastructure or a spatial plan). (emphasis added)*
- *Non Environmental Factors - EIA is confined to the environmental effects which influence the consideration of alternatives. It is important to acknowledge that other non-environmental factors may have equal or overriding importance to the developer, e.g. project economics, land availability, engineering feasibility, planning considerations.*
- *Site Specific Issues - The consideration of alternatives also needs to be set within the parameters of the availability of land...or the need for the project to accommodate demands or opportunities which are site specific. Such considerations should be on the basis of alternatives within a site e.g. design, layout"*⁵.

The EPA Guidelines go on to state that the presentation and consideration of the various alternatives investigated by the applicant is an important requirement of the Environmental Impact Assessment process and require that an outline of the **main alternatives examined throughout the design and consultation**

³ EPA Guidelines on the Information to be contained in Environmental Impact Statements, 2002, pg.12.

⁴ EPA Guidelines on the Information to be contained in Environmental Impact Statements, 2002, pg.12.

⁵ EPA Guidelines on the Information to be contained in Environmental Impact Statements, 2002, pgs.12 & 13.

processes is described⁶ (emphasis added). The purpose of this is to indicate the main reasons for choosing the development proposed, taking into account the environmental effects. The EPA Guidelines state that for the purposes of the Regulations, alternatives may be described at three levels:

1. Alternative Locations
2. Alternative Designs
3. Alternative Processes

Each of these levels will be discussed in turn below. In advance of this, it is necessary to contextualise the policy decision to locate the new children's hospital development at the St. James's Hospital Campus.

4.2 Paediatric Healthcare Policy

In Section 2.2 of the chapter setting out the "Description of Development", the strategic need for the development is explained, having regard to the strategic healthcare policy context and delivery of the proposed Model of Care. The main points are as follows:

- The National Paediatric Hospital Project 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.
- These elements comprise one indivisible integrated project and that this critical requirement has inevitably shaped the analysis of the alternative sites for the project.
- The National Model of Care for Paediatric and Neonatology provides the foundation for the integrated nature of the project. Based on national and international best practice, this Model is the framework for how and where healthcare services will be delivered managed and organised nationally and is the means by which the Irish healthcare service can respond to changing healthcare needs; address imminent needs and improve the existing model of service delivery.
- The Model requires that the new children's hospital and children's hospital satellite centres will operate on a 'hub and spoke' basis and are part of a wider integrated programme of service delivery changes designed to improve the future health and well-being of children and young people in Ireland (further details of the Model of Care are provided in Appendix 2.1 of this EIS).
- As section 2.2 references the existing children's hospital facilities contain old and outdated facilities and poor clinical adjacencies that do not meet contemporary service delivery requirements and do have a sufficient scale and critical mass of clinical activity to improve clinical outcomes for the sickest children and young people.
- The new children's hospital on the St. James's Hospital Campus will be at the centre of a network of healthcare as an exemplary facility dealing with patients in need of specialist and complex care. The critical mass of clinical activity achieved by amalgamating the extant three children's hospitals, combined with the sub-specialisation achieved by tri-location with the adult St. James's and potential future maternity hospital are universally accepted as the key means by which clinical results for the young patients will be secured.
- The children's hospital satellite centres at Tallaght and Connolly hospital campuses will be at the heart of the 'hub and spoke' Model of Care and will have a critical role in dealing with the projected patient numbers contained in the model, in particular urgent care and out-patient activity.
- The new children's hospital will also be supported by the proposed Children's Research and Innovation Centre, which is integral to the National Paediatric Hospital Project and will be co-located with existing academic facilities as part of a focus on research, education and innovation.

⁶ EPA Guidelines on the Information to be contained in Environmental Impact Statements, 2002, pg.17.

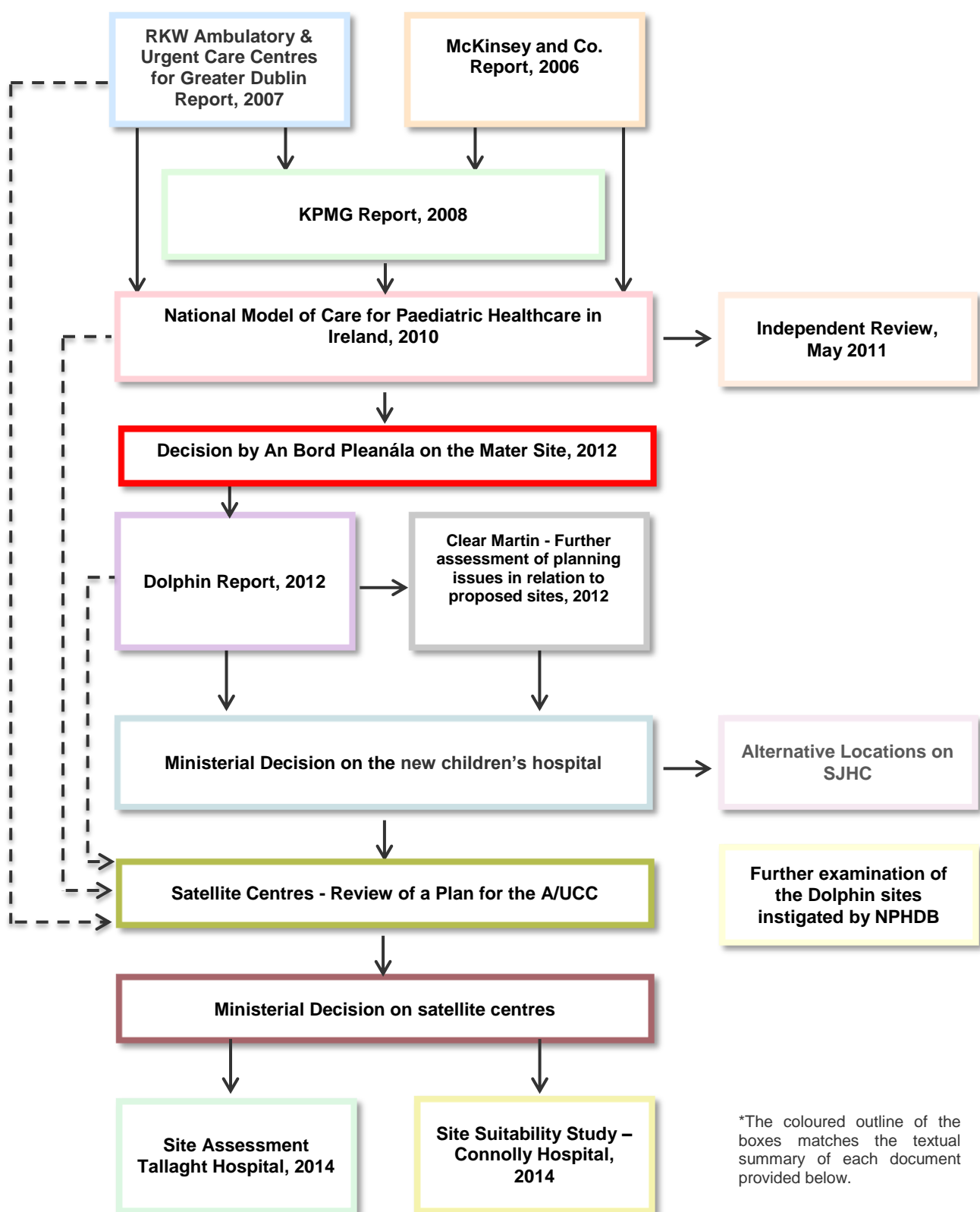
- The final key part of the project will be the new Family Accommodation Unit that will enable parents and siblings of sick children with extended hospital stays to be together and help reduce the emotional impact on all parties.

It is plainly evident that effective delivery of the proposed Model of Care outlined above has been a primary deciding factor in the outcome of the appraisal of potential alternative locations. In the next section, a summary of the examination process that led to the identification of the application site is provided.

4.3 *Alternative Locations*

As outlined above, the decision on where to locate the new children's hospital and the two children's hospital satellite centres, has been determined by the Government following extensive research, assessment and analysis. In the case of the new children's hospital this included the identification of the key principles of the Model of Care, i.e. co-location with an adult hospital, potential tri-location and a thorough assessment of the sites which had the potential to deliver on these principles. Figure 4.1 helps to articulate the chronology and relationship between the various Reports which have directly informed the location of the new children's hospital and the children's hospital satellite centres. Through this body of work a robust examination of alternative locations for the new children's hospital and the children's hospital satellite centres has been undertaken.

Figure 4.1: The relationship between and chronology of the Reports which examined the alternative locations



*The coloured outline of the boxes matches the textual summary of each document provided below.

4.3.1 *McKinsey and Co. Report, 2006*

A strategic examination of the provision of tertiary paediatric care.

Options and considerations for improved healthcare for children began with a systematic evaluation by the National Health Strategy 'Quality and Fairness: A Health System for You', 2002 – 2011 and this document included a commitment by the Dept. of Health and Children to undertake a review of paediatric services. Subsequently, McKinsey and Co. were appointed to prepare the Report 'Children's Health First', 2006 and it recommended that the population of Ireland and projected demand could support only **one world-class tertiary centre**. The Report envisaged that this centre would have the following attributes:

- It would be in Dublin.
- It would ideally be co-located with a **leading adult academic hospital**, to capture relevant sub specialist and academic linkages. (emphasis added)
- It would have space for future expansion, including education and research facilities.
- It would be easily accessible through **public transport** and the road network. (emphasis added)
- The centre would be at the nexus of an integrated national paediatric service, and would also provide care for all the secondary needs of the Dublin area.

The Report also recommended that there should be adequate geographic spread of accident and emergency facilities (including 2-3 in Dublin) with treatment at the then termed "urgent care centres" (UCC) being an option. These UCC would be staffed by general paediatricians and when children needed to be admitted, they would directly attend, or be transferred to the main (tertiary care) centre. The need for transfer was considered manageable as 85-90% of paediatric visits to a paediatric emergency department return home. Ambulances carrying critically ill or injured children would be instructed to bypass the UCC and take all acute volume directly to the main (tertiary care) centre.

The above recommendations were endorsed by the Health Service Executive (February 2006), with a joint Health Service Executive /Department of Health and Children Task Group established to advise on the optimum location in Dublin of the National Paediatric Hospital. Although at that stage the outcome of the KPMG review was not known, the Task Group decided that potential sites would need to demonstrate the following:

- **The capacity to accommodate a maternity hospital on site**
- **Co-location with an adult teaching hospital.**

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Consultation was undertaken with six Dublin Academic Teaching Hospitals (DATH) and patient groups, following which the Task Group advised that the new children's hospital should be built on the Mater Hospital campus. This recommendation was endorsed by the Board of the Health Service Executive and by Government and the National Paediatric Hospital Development Board (NPHDB) was established in 2007 to deliver the project.

4.3.2 *RKW Ambulatory and Urgent Care Centres for Greater Dublin Report, 2007*

Makes recommendations with regard to the number and locations of Ambulatory and Urgent Care Centres (A/UCCs) in the Greater Dublin area.

The detail of this report has been set out in Chapter 2 above. At the time of the Report, the above recommended the new children's hospital was to be located at the Mater. It was agreed that an A/UCC would be developed on the Tallaght Hospital Campus.

4.3.3 *KPMG Report, 2008*

Reviewed the maternity and gynaecology services in the GDA, recommending two co-located facilities and one tri-located facility

KPMG were commissioned by the Health Service Executive to review maternity and gynaecology services in the Greater Dublin Area. Their Report recommended that:

- **Maternity services should be co-located with both adult acute services and paediatric services** i.e. **tri-location** of maternity, paediatric and adult services.
- **Three new facilities should be developed in Dublin**, two should be co-located with an adult hospital (Tallaght and St. Vincent's Hospitals) and one tri-located with the proposed national paediatric hospital on the Mater campus.

The subsequent planning application for the new children's hospital on the Mater Campus did not include the proposed new maternity hospital, however, provision was made for same on an adjoining site.

4.3.4 National Model of Care for Paediatric Healthcare in Ireland, 2010

Outlines the National Model of Care for paediatric healthcare in Ireland, explains the background and describes how the model was developed

In 2010, the NPHDB published the National Model of Care for Paediatric Healthcare in Ireland. Informed by the extensive research into international best practice, trends in paediatric healthcare and contemporary changes in healthcare the decision was made to develop the 'hub and spoke' model of a main National Tertiary Hospital with children's hospital satellite centres, then called Urgent Care Centres (please see Chapter 2). The children's hospital satellite centres were identified as having a crucial role as projected patient numbers to the three Dublin Hospitals by 2021 of 120,000 would have been well in excess of the internationally accepted manageable figure for a single department of 80,000 patients. At the time, the model of care envisaged ambulatory care being provided at the children's hospital on the Mater site, at the AUCC in Tallaght and at regional and local hospitals throughout Ireland.

4.3.5 Independent Review, May 2011

Reviewed the decision to locate the National Paediatric Hospital on the Mater Site

An independent Review was announced by then Minister for Health, Dr. James Reilly and was undertaken to interrogate issues relating to the location of the national paediatric hospital on the Mater Campus. The Review Team, having examined the tri-location with children's, adult and maternity services, recommended that the new hospital should proceed on the Mater Campus. The Minister confirmed the Government's acceptance of this recommendation and requested the new children's hospital to proceed with a planning application which was made to An Bord Pleanála as a Strategic Infrastructure Development application in July 2011.

4.3.6 Dolphin Report, 2012

Review of the options for the new children's hospital, following the refusal or permission on the Mater site.

Following the refusal of permission for the new children's hospital on the Mater Campus in February 2012, a Review Group was appointed by the Minister of Health in March 2012 which included professionals from both a clinical and planning and development perspective. The Group considered the implications of the decision of An Bord Pleanála and the different options for progressing the construction of a new children's hospital. In doing so regard was had to the following:

- Government policy on the delivery of health services, including accessibility and paediatric services in particular and best clinical practice considerations.
- The cost and value for money considerations of the different options.
- The likely timelines associated with the different options.
- The implementation risks associated with the different options.

Having regard to these considerations the Review Group were to advise on the appropriate next steps with a view to ensuring that a new children's hospital could be constructed with minimal delay. The Group's Report identified the following as important considerations:

- The scale and size of this building.
- The impact such a building has on its environment.
- The capacity of the site to accommodate the building.
- Future potential developments.
- Traffic and transportation.

The Report, published in June 2012, considered a wide range of potential sites and reached the same conclusion as the McKinsey Report that the hospital should be located in Dublin. The Report devised certain criteria/principles for assessing the suitability of suggested sites i.e. best clinical practice, research and education, access, planning and design, cost, and programme delivery. Also included was the requirement of offering co-location with an adult hospital and at least potential tri-location. In addition, the Report stated that sites which benefit from good public transport should be prioritised over ones which are largely car-dependent.

As the Report identified excellence in training as crucial to any new children's hospital, the assessment of potential sites was confined to those that offered / were supported by a teaching hospital i.e. the Mater, Beaumont, St. James's Hospital, Tallaght, the Coombe, and Connolly. Having assessed the submissions for co-location at these hospitals the implementation risks associated with the different categories of site locations were identified and appropriate risk mitigation measures proposed.

While the Group's terms of reference precluded it from recommending a preferred site option, the Report concluded by stating that there is no perfect solution but some locations are more advantageous than others. The Report advised that the decision must be based on key parameters including optimal clinical and research synergies, site suitability and planning risk, together with cost and time benefits. In this regard, the findings of the assessment of each co-located site can be summarised as follows:

- **Mater** - The proposal had been reworked, especially in terms of its height and also included the 1861 building (a Protected Structure). This would have added space but not significantly impacted on site capacity. Whether the site was sufficiently large to accommodate a maternity hospital and a children's hospital remained a concern.
- **St. James's Hospital** - From a clinical and academic perspective, it was identified as the Dublin Academic Teaching Hospital that best meets the criteria to be the adult partner in co-location because it had the broadest range of national specialties and excellent research and education infrastructure. However, St. James's Hospital initially offered the smallest site for the new children's hospital, albeit with greater site capacity overall, had some drawbacks in terms of site suitability and was not without planning risk.
- **Coombe** - The adjacent site was large enough to accommodate the new children's hospital and allow design flexibility. Corridor-linked co-location of the new children's hospital to the existing Coombe maternity hospital (or a new maternity hospital at St. James's Hospital) could establish the maternity co-location conditions for a level 4 Neonatal Intensive Care Unit as defined and recommended by the 2008 KPMG Report. From a design and planning perspective, the sites adjoining the Coombe and Connolly offered the best potential for future expansion and a landscaped setting.
- **Connolly** - The 36ha site on the National Sports Campus (NSC) lands offered an attractive parkland setting and practically limitless scope for future expansion. Access by car was excellent, and the existing bus services could have been upgraded. However, Connolly Hospital would have needed very substantial investment of human and capital resources to develop into an adult tertiary hospital with critical mass supported by leading-edge research facilities. Even if such resources could have been made available it could have taken several decades to achieve such high standards of clinical and research excellence. The proposed integration with Beaumont and RCSI, and the Universities, would have to be accelerated.
- **Beaumont** - The site was in a low-rise housing area, and may have faced difficulty in gaining approval for a large building up to ten storeys. Construction of the new children's hospital could not have started until the multi-storey public car park and other buildings were rebuilt elsewhere.
- **Tallaght** - The design and layout of the new children's hospital would have been significantly constrained by the proximity of an existing apartment complex.

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The Report recommended that once the decision about the location of the new children's hospital was made, the plan for the A/UCCs must be revisited. The Report states that the number as well as the location of same can only be determined once the site for the hospital is selected.

4.3.7 New Children's Hospital: Further assessment of planning issues in relation to proposed sites, October 2012

Detailed planning assessment of the proposed new children's hospital sites at Connolly, the Coombe, the Mater, St. James's and Tallaght Hospitals.

The Minister asked Simon Clear and John Martin, both professional planners and experts in their field, and members of the Dolphin Report to carry out a supplementary planning assessment of proposed new children's hospital sites at Connolly, the Coombe, the Mater, St. James's and Tallaght Hospitals. This was undertaken in view of the critical importance of minimising the risk of another planning refusal, and to support Government in making its decision on a location. The Report, entitled '*New Children's Hospital: Further assessment of planning issues in relation to proposed sites*' (Clear Martin Report), was also to examine the planning implications of developing the new children's hospital on St. James Hospital Campus if the Player-Wills/Bailey-Gibson/DCC (PW/BG/DCC) adjacent to the Coombe site was made available as expansion space and to allow for decanting and future hospital development, as appropriate⁷.

Based on the information provided by the hospitals, the detailed planning assessments were to assess the likelihood of securing planning permission for a paediatric hospital and, where proposed, a maternity hospital, take account of all relevant planning considerations, draw attention to planning risks, challenges and opportunities and, where appropriate, mitigation measures, have regard to relevant An Bord Pleanála concerns from the Mater decision and make recommendations.

⁷ Clear Martin Report, 2012, pg. 3.

For each site the Report identified a range of planning issues likely to be considered in a planning assessment and considered how each site performed in relation to each issue. In some instances, where the performance was less than satisfactory, the Report suggested possible mitigation measures. The range of planning issues were as follows:

- Degree of compliance with Development Plan objectives.
- Potential adverse impacts on the area, i.e. residential amenity, built/natural heritage.
- Ease of access for vehicular traffic and public transport.
- Availability of essential infrastructural services.
- Amenity considerations.

This analysis further expanded on the examination of alternative locations contained in the Dolphin Report, with the scope of this assessment covering the items that would normally be included in an EIS of the alternative locations in urban areas i.e. planning, residential amenity, built and natural heritage, traffic and amenity considerations. The assessment undertaken informed the Government decision to locate the new children's hospital on St. James Hospital Campus.

4.3.8 Further Assessment of the Clear Martin and Dolphin Sites

Each of the 5 no. sites subject of the Dolphin and Clear Martin Reports are further assessed below from a planning/environmental perspective. The assessment was informed by the Board's assessment of the previous application on the Mater site and had regard to the recommendations of the Clear Martin Report. The process of choosing the locations for the children's hospital satellite centres is also outlined, which included clinical, planning and environmental considerations.

Table 4.1: Site Proposed by Tallaght Hospital

Dolphin & Clear Martin Reports
<p>The Dolphin Report found that the design and layout of the new children's hospital would be significantly constrained by the proximity of an existing apartment complex.</p> <p>The Dolphin Report also stated that sites which benefit from good public transport should be prioritised over ones which are largely car-dependent.</p> <p>The Clear Martin Report deemed the site to be low risk with mitigation recommended in relation to an alternative access to the Hospital in advance of any works required to re-align the existing entrance⁸.</p>
Additional Planning/Environmental Considerations
<p>Since the 2007 KPMG Report, Tallaght Hospital has been recognised as a suitable location for an A/UCC / satellite centres. This was solidified in January 2014 when the Minister for Health announced that one of the two satellite centres, which have an important role in the Model of Care, would be built at Tallaght Hospital⁹.</p> <p>In terms of environmental impact the new children's hospital site on Tallaght Hospital is proximate to an apartment complex raising issues in relation to impact on human beings and residential amenity.</p> <p>While the site is well served by public transportation, access and parking, a development of the scale of the new children's hospital may be problematic. The site is currently served by only one public access with the second access restricted. In this regard, the LUAS line inhibits access from the west, while the development of the hospital itself would necessitate an alternative public access route during construction. The provision of an appropriate level of car parking on site could also be a challenge, especially in the context of the planning history of the site.</p>

Table 4.2: Site Proposed by the Mater Hospital

Dolphin & Clear Martin Reports
<p>The Dolphin Report found that the reworked proposal would add space but not significantly impact on site capacity. Whether the site is sufficiently large to accommodate a maternity and children's hospital was stated as a concern.</p> <p>The Clear Martin Report noted the importance of "future proofing" stating that it would be preferable to find a site on a campus that has room to accommodate expansion of the building laterally and new buildings over time within the confines of the planning unit. Filling the space available from the outset was not recommended for strategic planning reasons.</p> <p>The Clear Martin Report found the Mater site to be a significant risk¹⁰ as the likelihood of securing permission for a paediatric and a maternity hospital on the net area allocated was not high. There would be significant over-development of a compact site to its full capacity in the first wave of development, leaving no room for amenity, urban infrastructure improvement, or capacity for future strategic development. Engagement with An Bord Pleanála on the revised proposals indicated concerns relating to: design, massing, & functionality; visual impact; intensification of use of the site; overall levels of activity on the campus; the functionality and architectural heritage of the old Mater buildings.</p>

⁸ Categorisation of risk contained in Clear Martin Report, 2012.

⁹ Dept. of Health press release, 28 January 2014

¹⁰ Categorisation of risk contained in Clear Martin Report, 2012.

Additional Planning/Environmental Considerations

In addition to the analysis undertaken in the Dolphin and Clear Martin Reports, a detailed assessment of environmental & planning considerations was undertaken as part of the previous application on site. An Bord Pleanála's reason for refusal included both planning and environmental concerns such as design, height, visual impact, impact on built heritage & overdevelopment. Any further application on site would have to overcome these issues.

The original application site was expanded in the revised proposal through the inclusion of the 1861 courtyard buildings, protected structures. While the inclusion of these buildings will not significantly increase site capacity, there may be an impact in terms of built heritage. The incorporation of these structures may also have an impact on the design which was one of the main items highlighted in the previous refusal.

The visual impact on historic buildings and vistas, specifically the impact of any tall building element and the massing and scale of the building on this restricted site are impacts which are difficult to mitigate due to their nature and the characteristics of the site.

The development of the site to its full capacity would also mean that there would be limited opportunity for amenity or structural urban improvement. This is again indicative of the over-development of the site in order to achieve tri-location.

Table 4.3: Site Proposed by the Coombe Hospital

Dolphin & Clear Martin Reports

The Dolphin Report found that the site was large enough to accommodate the new children's hospital and that corridor-linked co-location of the new children's hospital to the existing maternity hospital (or a new maternity hospital at St. James's Hospital) can establish co-location.

The Dolphin Report stated that from a design and planning perspective, the sites adjoining the Coombe and Connolly offer the best potential for expansion and a landscaped setting.

The Dolphin Report also stated that sites which benefit from good public transport should be prioritised over ones which are largely car-dependent.

The Clear Martin Report found that overall the site was deemed to be **low risk** having regard to the scale of development previously permitted by An Bord Pleanála on a smaller portion of the site. Although the Z14 zoning does not explicitly support hospital development, the report concluded that it would not be a material contravention.

Additional Planning/Environmental Considerations

Since the Clear Martin Report the Development Plan context has not changed and the site remains zoned Z14 which seeks a mix of uses, predominantly Z6 and residential. The site also continues to be designated as a Strategic Planning and Regeneration Area (SPRA).

The provision of a site for the new children's hospital requires site assembly of lands in multiple ownership with consequent uncertainty in relation to acquisition. In addition, An Bord Pleanála previously specified that the front section of the old John Player building be retained. This may present design challenges and/or limit development options for the site. The built heritage of this building would require further investigation.

While the site offers the opportunity for co-location immediately, tri-location requires the inclusion of St. James's Hospital which is approximately 600m away. This site would present unique challenges in terms of transportation and mobility management. In addition, as the two sites are removed from each other a wider area of the city centre could potentially be impacted in terms of traffic.

The Coombe hospital is located in an area of generally low density residential development. Impact on human beings in terms of *inter alia* daylight and sunlight, overshadowing, noise etc. would thus be a key consideration when undertaking an Environmental Impact Assessment. In addition, the visual impact on historic buildings and vistas, specifically the visual impact of any tall building element, needs to be carefully assessed.

Table 4.4: Site Proposed by Connolly Hospital

Dolphin & Clear Martin Reports	
<p>The Dolphin Report found that while Connolly offered an attractive parkland setting and scope for future expansion with good access by car, it <i>“would need very substantial investment of human and capital resources to develop over time into an adult tertiary hospital with critical mass supported by leading-edge research facilities, and even if such resources could be made available it could take several decades to achieve such high standards of clinical and research excellence. The proposed integration with Beaumont and RCSI, and the Universities, would have to be accelerated.”</i></p> <p>The Dolphin Report stated that from a design and planning perspective, the sites adjoining the Coombe and Connolly offer the best potential for expansion and a landscaped setting.</p> <p>The Dolphin Report also stated that sites which benefit from good public transport should be prioritised over ones which are largely car-dependent.</p> <p>The Clear Martin Report found that overall the site was deemed to be low risk¹¹. Action was recommended with respect to ensuring that the Development Plan supported the proposed land use by the time of the date of decision by An Bord Pleanála by way of a Variation to the Plan.</p>	
Additional Planning/Environmental Considerations	
<p>Since the Clear Martin Report the Development Plan context has not changed and the site proposed for the new children’s hospital remains zoned Open Space. However, the National Healthcare Policy context has altered with Minister for Health announcing in January 2014 that one of the children’s hospital satellite centres, which have an important role in the Model of Care, would be built at Connolly Hospital¹² on lands zone for development within the confines of the core hospital grounds.</p> <p>In terms of environmental impact, regard should be had to the adjacent high amenity zoned lands which the Development Plan seeks to protect and enhance and the zoning status of the proposed site. This has not changed since the publication of the above reports. In short, the lands are not zoned for development. The potential for development and expansion on the site is limited having regard to traffic and transportation policy and would require significant investment in public transport initiatives. The Flora and Fauna assessment, see Chapter 9, identifies the grounds surrounding the hospital as offering very good foraging and roosting potential for bats with mature broadleaved woodland and the Tolka River. The Bat Survey which informed Chapter 9 identified the Common Pipistrelle and Leisler’s Bat in the hospital grounds and recorded four additional species within 1km, recommending that no lighting is focused onto areas of ecological sensitivity such as the surrounding woodlands.</p> <p>In relation to traffic and transportation while access to the site via private transportation remains good, access via public transportation would require further upgrading. In this regard, bus remains the only form of public transportation directly serving the site. Given the limited public transportation provision and the location of Connolly removed from the City Centre and the City’s wider public transportation network other sites were found to offer more sustainable mobility management options in line with strategic planning policy.</p>	

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¹¹ Reasonable expectation of obtaining permission.

¹² Dept. of Health press release, 28 January 2014

Table 4.5: Site Proposed by St. James's Hospital

Dolphin & Clear Martin Reports
<p>The Dolphin Report stated that from a clinical and academic perspective, St. James's Hospital campus was identified as the Dublin Area Teaching Hospital that best meets the criteria to be the adult partner in co-location because it has the broadest range of specialties and excellent research and education infrastructure. Concerns related to the small size of the site (as initially proposed), albeit with greater site capacity overall, and drawbacks in terms of site suitability.</p> <p>The Report also stated that sites which benefit from good public transport should be prioritised over ones which are largely car-dependent.</p> <p>The Clear Martin Report concluded that there would be a significant risk if the site of the new children's hospital was confined to the initial 2.44ha. The 2.44ha site would result in buildings which are likely to be of excessive height. It stated that if the site could be enlarged to 3.5ha minimum, the planning risk can be reduced to a moderate level¹³, having regard to the favourable zoning objective for the St. James Hospital Campus and mitigation measures.</p> <p>The Report also examined the planning implications of developing the new children's hospital on the existing St. James Hospital Campus if the Player-Wills/Bailey-Gibson/Dublin City Council site (adjacent to the Coombe Hospital) was made available as additional expansion space to allow for decanting of current non-core facilities from St. James Hospital Campus and future hospital-related development).</p> <p>Proposed mitigation measures related to the building height in terms of Dublin City Council's guideline maximum of 28m and visual impact and/or overshadowing to adjacent buildings. The Report recommended that the height be 6/7 storeys by increasing the site area.</p> <p>The Report found that in terms of access by public transport that the campus was exceptionally well served and that to reduce the traffic impact on the local road network, the extent of parking on St. James Hospital Campus would have to be limited to c.2,000 spaces recommending that the relatively high level of existing staff parking must be reduced through travel management plans. In addition, a detailed construction access programme was identified as needed to avoid undue disruption and that a temporary construction access may be needed.</p>
Additional Planning/Environmental Considerations
<p>Firstly, the site allocated to the new children's hospital on St. James Hospital Campus has been increased from the initial 2.44ha proposal for the new children's hospital site made to the Clear Martin review to 4.85ha as included in this application. This increase provides greater scope in terms of site layout and design and addresses the concerns expressed in the above Reports in terms of potential impact.</p> <p>Similar to the other city centre sites, the location of St. James's Hospital Campus means that the site of the new children's hospital is proximate to existing residential areas, thus the issue of impact on human beings in terms of residential amenity, day light and sunlight, visual impact, noise etc. requires careful consideration. In this regard, the extended site allows for greater scope in designing the buildings and focusing the mass away from sensitive receptors. In addition, the larger site area would allow for the delivery of the required floorspace within buildings lower than the 9 storeys envisaged in the St. James's Hospital submission to the Dolphin Group.</p> <p>The site's city location also poses challenges in relation to transportation and access, challenges common to the other sites located in the city. However, given the extent of the overall campus there is scope to provide additional access points, such as a new vehicular entrance at Mount Brown as suggested in the Clear Martin Report. Of all 5 sites examined St. James Hospital Campus is the best served in terms of public transportation in that the Luas runs through the campus and connects it directly to the national bus and rail network. It is also directly served by Dublin Bus, which runs through the campus and it is walking distance to Heuston Station. While the parking requirement associated with the new children's hospital will have an unavoidable impact on the surrounding road network, the level of public transport serving the hospital offer the best options for the implementation of travel management plans of all of the sites examined. It complies with the strategic planning policy to consolidate the metropolitan area through the intensification of under-utilised sites proximate to high quality public transport infrastructure. While the new</p>

¹³ Acceptable in principle but identified planning issues would need to be mitigated during the planning and design process.

children's hospital will have an impact on the surrounding road network, this is not considered to be significant (please refer to Chapter 6 of this EIS). It thus offers the best option from a planning policy perspective.

The development of the site would also provide the opportunity for visual improvements and better visual integration of the hospital with the surrounding area. In this regard, there is scope to create legibility along South Circular Road/Brookfield Rd. and to open up views southwards and encourage interaction between the campus and linear park.

As shown above, when the scope of the assessment of the 5 no. sites is expanded in relation to planning/environmental considerations no one site is free from environmental impacts. In this regard, some sites have clear limitations which make them less suitable than others. For example the restricted size of the Mater site and its surrounding context within the historic core of Dublin's North Inner City limits its development potential. The Connolly site on the other hand has extensive development potential but its peripheral nature, reliance on private vehicular access and potential impact on surrounding high amenity areas makes it a less sustainable, less accessible development option. Also from a clinical perspective, even if resources were available, it would take Connolly Hospital several decades to achieve the high standards of clinical and research excellence required¹⁴.

The remaining three sites, all being located in city/town centre locations would have to address transportation and access issues as well as having to take account of the surrounding residential areas. However, in relation to the St. James Hospital Campus there was scope to address such issues through increasing the size of the new children's hospital site from that initially proposed. In addition, of the sites at Tallaght, the Coombe and St. James Hospital Campus, the site at St. James Hospital Campus is by far the best site served by public transport.

This direct access to public transportation is important from a planning and environmental perspective not only in terms of patient access, but having regard to the c 3,000 no. staff that which will be employed in the hospital¹⁵. The proximity of the LUAS (linking to Heuston and Connolly stations) and the numerous buses serving the campus and surrounding area means that there is access to the hospital via public transportation from a wide catchment area, providing staff with options with regard to travel to work. The utilisation of public transport is promoted in the Mobility Management Plan for St. James's Hospital Campus, submitted with the application, and will help mitigate potential impacts of staff movements and the associated air, noise and traffic impacts. The mitigation measures recommended by the Clear Martin report were taken on board by the NPHDB and the site at St. James's Hospital Campus was expanded to 4.85ha. Feasibility work was carried out by SJH with respect to the capacity of the site to accommodate the new children's hospital and further studies were commissioned by the NPHDB to ensure that the site was indeed capable of accommodating the proposal.

In this regard, it is submitted that the St. James Hospital Campus site is the most sustainable of the sites examined from an environmental and planning perspective.

While a review of the Government decision to locate the new children's hospital on St. James Hospital Campus is beyond the scope of this assessment, the above ensures that full regard has been given to planning / environmental considerations and that the main reasons for the decision to select the site have been clearly set out.

In doing so the suitability of St. James Hospital Campus from a planning and environmental perspective has been demonstrated. However, as the core purpose of the new children's hospital will be the delivery of the best clinical outcomes for children and young people the Government decision to choose St. James Hospital Campus as the location for the new children's hospital, while having regard to the supporting planning and environmental conclusions of the Report of the Dolphin Group, was "...led by clinical considerations¹⁶". Following numerous assessments and analysis St. James Hospital Campus has been established as the best site for the location of the new children's hospital not only from a planning and environmental perspective but also in terms of the implementation of the Model of Care. The requirements in relation to the examination of alternative locations highlighted in Section 4.2 above, have been met.

¹⁴ Dolphin Report, 2012, pg. 79.

¹⁵ EIS Chapter 6, Traffic and Transportation

¹⁶ Dept. of Health press release, 6 November 2012

4.3.9 Ministerial Decision on the New Children's Hospital

In November 2012, the Government announced that the National Paediatric Hospital was to be located on the St. James's Hospital campus:

"The decision to choose the St James's site from among the range of options presented in the Dolphin report ensures that the planned co-location with an adult hospital and, ultimately, tri-location with a maternity hospital, will be delivered.

In identifying the new site, the Government has carefully considered the report of the Dolphin Group which was established last March to consider the issues along with detailed supplementary information on cost, time and planning which was subsequently sought from members of the Group with the relevant technical expertise.

The decision has been led by clinical considerations. It is essential that the new children's hospital can deliver best clinical outcomes for our children. Co-location with St James's and, ultimately, tri-location with a maternity hospital on the St James's campus, will the Government believes provide the excellence in clinical care that our children deserve.

*The Government also considered the very significant issues of planning, cost, time and access. Based on the detailed information available from the Dolphin process, it is confident that the hospital can be and will be built as quickly as possible on the St James's site."*¹⁷

4.3.10 Satellite Centres - Review of a Plan for the Ambulatory and Urgent Care Centre (AUCC)

*A review of the existing AUCC plans in lights of the decision to locate the new children's hospital on St. James Hospital Campus*¹⁸

Following the announcement at the end of 2012 that the new children's hospital was to be located on St. James Hospital Campus, a review of the existing plan for an AUCC at Tallaght was undertaken (as also recommended by the Dolphin Group). This review stated that it was required to ensure that the AUCC plan reflected national and international experience and would be consistent with the model of care for paediatrics. The following is a summary of this report.

The decision to develop the 'hub and spoke' model of a main hospital with satellite centres is based on the need to provide high quality, safe, accessible acute and secondary general care to the children of the Greater Dublin Area. The volume of Emergency Department attendances was a key driver in the decision to develop satellite centres within the Greater Dublin Area.

The review recommended that there should be two satellite centres, each providing urgent care, to be established in advance of the main hospital opening. The second key driver was the provision of appropriate care as close to the home as possible and each centre would also provide secondary outpatient services including rapid access general paediatric clinics and GP access to diagnostics for children. Daycare, including medical and surgical day services, would not be provided at the satellite centres, in a change from the previous model. It was considered that surgical and anaesthesia expertise from the new children's hospital should focus on outreach to regional and local centres in the first instance, rather than a Dublin satellite centre, in order to support such surgical centres in providing services for children close to home.

The satellite centres will be an integral part of, and come under the governance of, the new children's hospital. It was determined that both satellite centre be located on the site of a Model 3 or 4 acute hospital (models of hospitals defined in the RKW report).

The RKW Report identified the Dublin Area Teaching Hospitals, and Loughlinstown, as sites which could provide the required infrastructure. However, services at Loughlinstown have recently been reconfigured to those of a Model 2 hospital and thus it was excluded from further consideration. The five Model 3 or Model 4 hospitals in the Greater Dublin Area which were possible locations for the satellite centres were Tallaght, St. Vincent's, Beaumont, Connolly and the Mater, with the Mater excluded from consideration on the basis of its proximity to St. James's Hospital. Given the central location of the main hospital within the Greater Dublin Area, it was determined that a satellite centre should be located on the northside and on the southside of the city to provide ease of access for the population of the Greater Dublin Area.

The priorities for the satellite centres are providing the right care, at the right time, in the right place, for children both in Dublin and nationally and reducing footfall to the main new children's hospital. In this regard, the centres need to:

¹⁷ Source: Dept. of Health press release, 6 November 2012

¹⁸ Information provided by the NPHDB, June 2105

- Be located close to significant current and projected paediatric populations
- Minimise travel time and maximise ease of access for families and children
- Be established in advance of the main hospital opening, to ensure they are recognised and accepted by the population for paediatric acute care

A geographical analysis was carried out which addressed population density, deprivation levels and travel times and consultation was undertaken with the Children's Hospital Group clinicians and paediatric clinical programme.

A high level analysis was carried out of planning and design matters to be considered in the assessment of alternative locations for the satellite centres. Feasibility studies were also undertaken by external architects on two potential sites on the northside of Dublin in the context of the Development Control Plans for those sites.

4.3.10.1 Southside Locations

The geographical analysis demonstrated that locating the satellite centre at Tallaght rather than St Vincent's would be significantly more successful in improving access for children, including children experiencing deprivation, in the south of the city and in reducing footfall on the main new children's hospital. For the Dublin South zone, the location of a satellite centre at either Tallaght Hospital or St. Vincent's University Hospital would alter the catchment zone for the main new children's hospital as follows:

- A southside satellite centre based at Tallaght Hospital would have a catchment zone of 99,481 children of whom 38.5% are classified as experiencing deprivation and 19.4% as moderate to high deprivation. The corresponding main hospital catchment zone would take in a paediatric population of 75,157.
- A southside satellite centre based at St. Vincent's University Hospital would have a catchment zone of 55,604 children of whom 22.6% are classified as experiencing deprivation and 9% moderate to high deprivation. The corresponding main hospital catchment zone would now include the greater Tallaght area, and would take in a paediatric population of 118,878. In other words, the population around Tallaght would tend to choose the main new children's hospital at St. James Hospital Campus over a satellite centre at St Vincent's, resulting in an increased risk of overloading the main centre Emergency Department.

In addition Tallaght Hospital had already been identified as a suitable location for the previously planned AUCC. Public and private transport access to Tallaght Hospital was also reviewed with no significant issues identified other than a risk of traffic congestion near Tallaght town centre at peak shopping times.

4.3.10.2 Northside Locations

The geographical analysis showed little difference between the two possible locations at Beaumont and Connolly Hospitals. In terms of access, Connolly was marginally preferable although in effect locating a satellite centre at either Beaumont Hospital or Connolly Hospital would provide good access for the paediatric population in the Dublin North zone, and be effective at reducing footfall on the main hospital site.

- The location of a satellite centre at either Beaumont Hospital or Connolly Hospital was not shown to affect the catchment zone of the main new children's hospital i.e. the paediatric population in the Dublin North catchment zone would tend to choose the northside satellite centre at either Beaumont or Connolly, in preference to the main new children's hospital.
- Locating at Beaumont would result in a paediatric population of 87,194 within a 30 minute travel zone, with 44% classified as experiencing deprivation and 22.8% experiencing moderate to high deprivation. Locating at Connolly would result in a paediatric population of 99,401 within a 30 minute travel time zone, with 43.6% classified as experiencing deprivation and 22.1% experiencing moderate to high deprivation. The closeness of Connolly to the motorway network indicated a slight advantage for Connolly in terms of travel time access.

It was clear that Connolly Hospital Blanchardstown offered advantages over Beaumont Hospital in relation to the development of the satellite centre including less need for enabling work; shorter programme; lower capital cost; lower risk; and less impact on future development potential.

4.3.11 Ministerial Decision on satellite centres

The Minister for Health decided that two satellite centres at Tallaght Hospital and Connolly Hospital should be developed.

On the basis of the review and analysis set out above, which covered not only clinical requirements but also included an assessment of planning and environmental factors, the Minister for Health decided that two satellite centres should be developed, and to proceed with the construction of the two centres at Tallaght Hospital on the southside and Connolly Hospital on the northside. The Minister brought a Memorandum to Government in this regard on 28th January 2014.

4.3.12 Conclusion

The above review highlights the extensive research, assessment and analysis undertaken to inform the Ministerial decisions on where to locate the new children's hospital and the two satellite centres. Through this body of work a robust examination of the reasonable and suitable alternative locations has been undertaken. This examination formed the basis for the decision to locate the new children's hospital at St. James Hospital Campus and the satellite centres at Tallaght Hospital Campus and Connolly Hospital Campus.

4.4 Alternative Locations – Individual Campuses

4.4.1 Locations on the St. James's Campus

A number of studies were carried out by St. James's Hospital in advance of the appointment of the design team that examined the capacity of the site to accommodate the new children's hospital development. These studies examine a number of site constraints including; the existing campus through road, the existing chapel on the campus, the previous Outline Development Control Plan for St. James's Hospital campus, and the Drimnagh Sewer.

Having regard to the existence of the protected structures on the campus, the presence of the LUAS line, the new Mercer Institute for Successful Ageing building commission, the extant permission for the private hospital development (An Bord Pleanála Reg. Ref. No. PL29S.236070; in which the alternative locations for the private hospital were examined) and the existing hospital operations, it was evident that the western end of the campus was the optimal location for the new children's hospital building. Providing the required site at the eastern end of the campus would result in the demolition of a number of protected structures and, the development of the middle of the campus would not be possible in the short term without alternative arrangements for existing hospital functions. Notwithstanding this, the impacts of the development of the western end of the campus had previously been examined by An Bord Pleanála in the private hospital decision (referred to above) and, as such, the appropriateness of the site has been established.

The reappointment of the NPHDB in August 2013 with a range of specialist expertise in the fields of construction, engineering, architecture, planning and clinical specialisms provided an opportunity to examine the selected site and the potential location and forms of development at a high level.

The floorplate requirements for any new children's hospital indicated that that it would be necessary to demolish the existing chapel on the campus and further studies by St. James's Hospital confirmed this. The impact of this aspect of the site selection was confirmed as acceptable by An Bord Pleanála in its determination on the Private Hospital application (An Bord Pleanála Reg. Ref. No. PL29S.236070) and, as such, is considered acceptable in this instance having regard to the provision of a new national paediatric hospital.

Further studies carried out on behalf of St. James's Hospital (by Maloney O'Beirne Architects) and the NPHDB (by O'Connell Mahon Architects) indicated that it would be operationally redundant to "split" the hospital floorplate and, as outlined above, in order to successfully construct the new children's hospital, the design team would have to examine a) the relocation of the Drimnagh Sewer and, b) the relocation of the existing campus road. These studies also included a review of the overall campus to support the new children's hospital and the possible future maternity hospital and their expansion, in conjunction with the expansion of the existing adult hospital.

These studies also considered normal planning parameters, including policy requirements and amenity impacts and the conclusion was reached that the location as proposed on the campus was the most appropriate in this instance.

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4.4.2 Site Suitability Study – Connolly Hospital, 2014

Assessment of the alternative locations within Connolly Hospital Campus where a satellite centre could be accommodated with direct connection to the Hospital Street

As above, the assessment of the northside locations included the undertaking of feasibility studies for both Connolly and Beaumont Hospitals. Having regard to the Ministerial Decision to locate the children's hospital satellite centre at Connolly Hospital, the feasibility study for Connolly Hospital was re-examined in 2014 by A&D Weichert & Partner Architects, specifically the assessment of the alternative locations within the campus where a unit of c. 3,000m² could be accommodated with direct connection to the Hospital Street. The two potential locations identified were described as follows:

- **Option 1** - This is a grassed area off the hospital street at the north end of the main hospital. The proposal if located here would occupy this space and extend into the car park to the west. At the time the Outline Development Control Plan for Connolly allocated these spaces to other uses. The proposed unit at this location would have direct access to the Hospital street and hence to all other departments. A bat survey noted the presence of a known bat roost in one of the older hospital buildings approximately 50m to the south of Option 1 (please refer to Chapter 9).
- **Option 2** – This is a grassed area south of the main entrance, in a prominent position in front of the original hospital ward block. The original U shaped accommodation indicated on the Outline Development Control Plan for the area south of the original surgical block is a 1 storey Day Hospital which is now located elsewhere. Care would be needed in detailing the link to the unit from the existing internal hospital circulation and the route for services connection. The area has a direct connection to the main hospital circulation and therefore, the potential of future multi-storey development must be considered. Access to all hospital departments is possible via the link and the route to radiology would be a little shorter than Option 1.

Although outline design options were drafted for both sites, see Section 4.5.5 below, the impacts arising as a result of environmental and operational considerations made Option 2 the preferred option.

4.4.3 Site Assessment Tallaght Hospital, 2014

Assessment of the alternative locations within Connolly Hospital Campus where a satellite centre could be accommodated

Having regard to the Ministerial Decision to locate the children's hospital satellite centre at Tallaght Hospital, a site assessment was carried out by MCA Architects to identify and assess options that exist on the hospital campus for the development of the children's hospital satellite centre. The requirements for the site suitability of the children's hospital satellite centre included *inter alia*: a space requirement of 3,000sq.m; car parking and ambulance space requirements; a separate and clearly identifiable entrance; a proximate location to the main hospital entrance; and, an undercover or enclosed physical linkage. The site suitability study looked at seven sites that had been identified previously in the Development Control Plan 2010 - 2020 and reviewed their suitability for the satellite centre. The seven potential sites identified were described as follows:

- **Option 1** – Maternity Hospital site to the south west of the campus facing Cookstown Way: The development of this site requires the demolition of the Psychiatric department and the relocation of the helipad. Furthermore, the development facing Cookstown Way would be required to be 5 to 6 storeys in height. With no plans to relocate the psychiatric unit and the scale of the satellite being less than required the site was deemed to be unsuitable.
- **Option 2** – Site identified for the Major AUCC Development: The development of this site requires the removal of the unit for the elderly, the relocation of the helipad and the development of a building of 5 to 6 storeys in height. With no plans to relocate the unit for the elderly and the scale of the satellite being less than required the site was deemed to be unsuitable.
- **Option 3** – Proposed GP Out of Hours Unit: It was deemed unlikely that development of a satellite centre could be developed at this site without the re-alignment of the road or campus entrance. Furthermore, the site was deemed unsuitable due to its distance from the main building and the inability to create a physical link with same.
- **Option 4** – Proposed new build Adolescent Department: The site was deemed unsuitable due to the requirement to re-align the road and the distance of the site from the main building on the other side of the road.
- **Option 5** – Proposed relocation of the Psychiatric Department: The site was deemed unsuitable due to the requirement to re-align the road and the distance of the site from the main building on the other side of the road.

- **Option 6** – The development of a building above the existing car park to the north of the energy centre to accommodate staff changing: The site was deemed to be suitable for development of a multi-storey building but unsuitable for development of the satellite centre as it is at the rear non-patient area of the site.
- **Option 7** – Proposed Trinity College Department: The site was deemed to be potentially available for development, however, it was considered to be unsuitable for development of the satellite centre as it is at the rear non-patient area of the site.

The conclusion of the review of the seven potential sites contained in the Development Control Plan 2010 - 2020 found that there did not appear to be an undeveloped area of the campus that was suitable for the children's hospital satellite centre taking into account the requirements and the future capacity of Tallaght Hospital. In the absence of a suitable site, areas within the buildings were considered.

The site assessment identified the hospital staff changing and administration facilities located at ground floor level south of the main entrance and adjacent land to the east of same as suitable for development of the children's hospital satellite centre. The current facilities were viewed as having no over-riding adjacencies that required them to be in that location. The study proposed that the redevelopment and extension of the ground floor could provide the required floor space of 3,000sq.m and would not require the undertaking of any major infrastructural works on the campus. The study found that the children's hospital satellite centre at this location would be readily identifiable; it would have its own separate entrance close to the main entrance; it could be provided with separate ambulance access and set down; and it would provide access to the hospital facilities.

4.5 *Alternative Designs*

4.5.1 *Introduction*

Upon appointment, the design team was required to carry out an in depth review of the site having regard to all site constraints, brief requirements, environmental and planning issues and the operational requirements of St. James's, Tallaght and Connolly Hospitals.

4.5.2 *Brief Requirements*

It clear from the above that implementation of the Health Service Executive's Clinical Programme for Paediatrics and Neonatology will transform paediatric healthcare services in Ireland, providing an improved healthcare system for all children and young people. The new National Model of Care for Paediatric Healthcare in Ireland has been informed by international best practice, trends in paediatric healthcare, contemporary changes in healthcare delivery systems, consultation with clinical and management leaders in the field, patient preferences, advances in medical technology and developments in ICT that enable new methods of treating and caring for children and young people.

The design brief was, therefore, set out with clear clinical and operational objectives which set the framework within alternative designs were examined.

4.5.3 *Design Rationale – St. James's Hospital Campus*

The NPHDB brief was to create "one of the finest children's hospitals in the world". First and foremost, this means that the new children's hospital must represent state-of-the-art clinical functionality, providing the highest quality spaces for patients, families and staff and optimising the adjacencies and flows between departments to create an efficient, safe and therapeutic environment.

All hospital projects present a complex array of issues but paediatric facilities pose a number of unique challenges because of the nature and age-range of the patients and the close participation of their extended families. Children are particularly sensitive to the quality of their surroundings, so design considerations to do with colour, light, scale, views, which are important in all buildings, are doubly so in a children's hospital. All of these design dimensions were explored over the progression of the design and extensive consultations with patient, family and staff groups to harness their imagination and insight were critical. The project architect's design concepts have been shaped by a number of considerations, drawn from the design brief and from their analysis of the context:

- A child and family-centred identity
- Key departmental adjacencies;
- Attractive ward design



- Integration of nature and open space
- A human scale environment
- The existing campus context
- The surrounding urban context
- An inviting new main entrance
- LUAS access
- Mount Brown access
- An attractive public concourse
- Pedestrian friendly roads and walkways
- Key levels and floor-to-floor heights
- Sustainability and energy efficiency

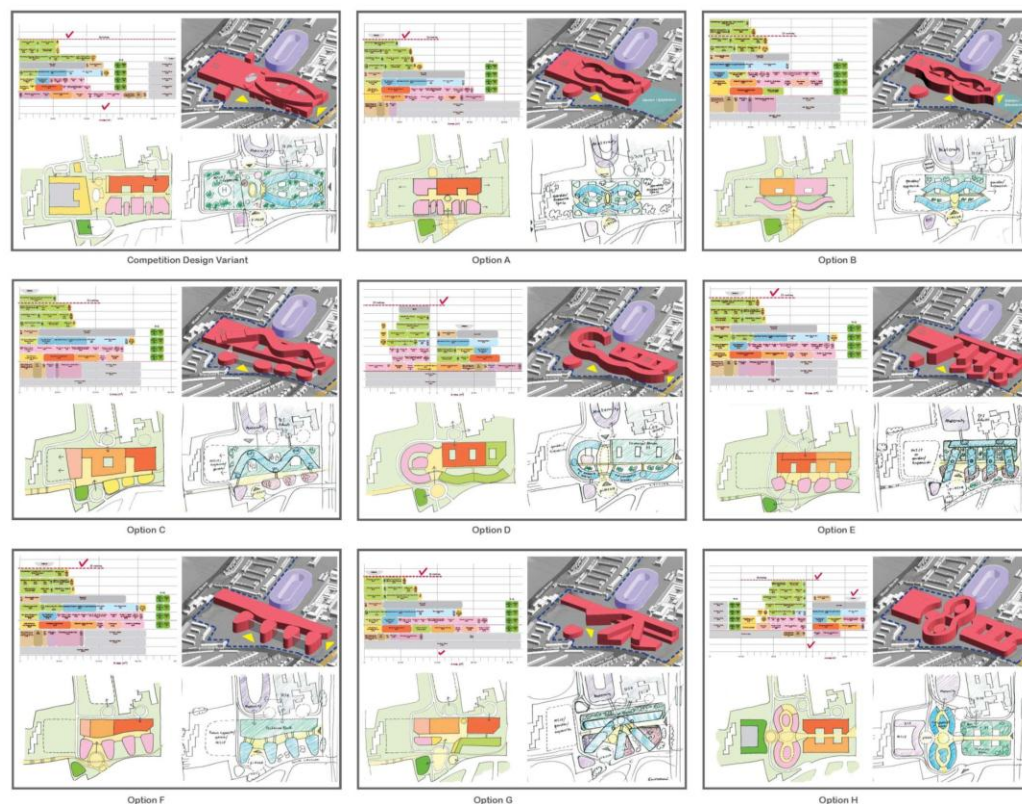
4.5.4 Design Progression – St. James’s Hospital Campus

As with the examination of alternative locations, the examination of alternative design options entailed a robust process which amalgamated design, spatial planning and clinical requirements. This was further informed by on-going consultation with the three Planning Authorities (Dublin City Council, South Dublin County Council and Fingal County Council) and feedback from the numerous public consultation events. This multi-stage process fed into the design progression at every stage, from the initial long list options through to the preferred option. The design development considered a wide range of issues throughout the process, including those aspects of the environment that are set out below. The final design represents, in our view, the most appropriate balance of the requirements of all stakeholders and adjoining properties.

4.5.4.1 Long List Design Options

The very initial stage of the exploration of alternatives yielded 9 no. sketch design concepts. The main focus of these concepts was the delivery of the briefed clinical requirements on site and the different building forms through which this could be achieved.

Figure 4.2 Initial Design Concepts



These initial designs were refined to 5 no. 'long list' design options which were progressed to concept development, see Appendix 4.1.

These long list options were then assessed by the project team having regard to the principal planning considerations and each option was measured against a set of key policy and physical environment assessment criteria. This assessment fed into an overall planning evaluation matrix informed the decision on the short list options.

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Having regard to the site location and description including *inter alia* surrounding land uses, prevailing building heights and sensitive locations and the scale of the development, a number of planning issues that were likely to arise were identified. Areas that may give rise to a negative assessment in an application were highlighted by undertaking an assessment of each of the development options against a "planning sense check" matrix. The assessment criteria utilised in the matrix included:

- Planning Policy Compliance,
- Development Standards,
- Visual Impact/Massing,
- Traffic Impacts,
- Overshadowing, Noise and Disturbance,
- Light spill and,
- Historic Buildings.

This matrix was based on a priority rating for each of the specific areas (red being critical, amber being issues that may become critical in a cumulative sense and green being matters that can be managed through mitigation and/or of minimal concern). As well as providing the basis for identifying the preferred options for shortlisting, i.e. 2, 4 and 5, the assessment highlighted a number of key planning themes as follows:

- To some degree, all blocks would have impacted on short and long views into the site.
- Traffic was a potential issue in the five options.
- The massing of the multi-storey car park and its impact needed to be tested further.
- Further thought needed to be given to the transitional zones and the amenity impacts on same.
- The location of the helipad also needed consideration from a planning perspective.

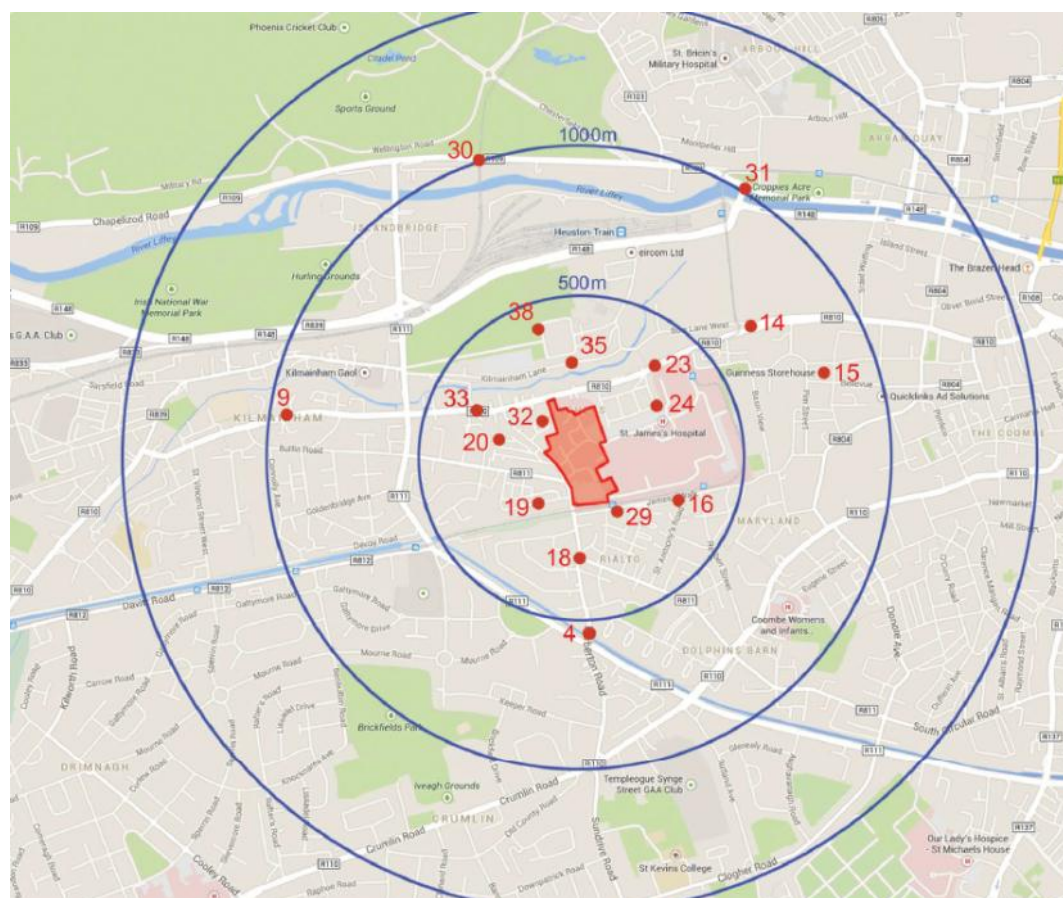
- While the long list of design options were being explored, the options surround the relocation of the Drimnagh Sewer were also examined. This study is set out in section 4.5.4.5 below.

Informed by the above assessment of the long list design options, a short list of design options was brought forward comprising:

- Option 5
- Option 2
- Option 4

These options were then assessed and scored against a detailed list of planning and Environmental Impact Assessment relevant matters including zoning, visual impact, overlooking, light spill and overshadowing. In addition, having regard to the potential visual impacts identified in the long list study, a preliminary visual impact assessment was carried out by Brady Shipman Martin for each of the three options, see Figure 4.3 below.

Figure 4.3: Viewpoints used in the preliminary visual impact assessment



From this robust assessment of the 3 short list options the conclusion was a clear preference for Option 5 when taken in totality. Option 5 was thus developed as the preferred option.

Through a review of the relevant planning history and based on initial feedback from Dublin City Council and An Bord Pleanála as part of pre-application consultations, a number of issues which need further consideration in planning terms were identified including building height, scale/massing, visual impact, impacts on residential amenity, the overall design of the building and public consultation. The detailed design of the preferred option was developed having regard to this input. Thus the design, at an early stage, responded to the identified planning and environmental issues.

4.5.4.3 Preferred Option

The preferred option was again assessed in the context of not only the key issues but having regard to a range of planning matters, both site specific and wider site issues and the planning context of the site. Again the RAG (Red – Amber – Green) system of assessment was utilised to provide a clear indication of the level of risk associated with each item in the context of the preferred option. This review identified items that required further consideration such as visual impact on near views, massing and overlooking. As the assessment was based on the initial design concept the items identified and the associated risk were addressed and/or changed as the project progressed. This formed the basis for developing the design of the new children's hospital as set out in this application.

Figure 4.4: Preferred Option - December 2014



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Further to the selection of the preferred option and through each subsequent design phase, environmental considerations, including local amenity impact such as overlooking, massing, overshadowing as well as operational requirements and the potential for expansion, were considered and incorporated into the final design.

Figure 4.5: Final Preferred Option – May 2014



The final preferred option incorporated a number of minor changes that result in a better design including;

- The relocation of the “research and education” facility to the current Children’s Research and Innovation Centre location adjacent to the Trinity College buildings on the campus and the integration of educational elements into the main building. This provides for better opportunities for exploiting the synergies available on the campus. It also moves the built space away from the adjoining properties on Cameron Square.
- The reorganisation of the north western end of the new children’s hospital building to provide for “fingers” at this end. This allows for an additional internal courtyard and the opportunity to present gable ends to the adjoining properties on Cameron Square, avoiding overlooking.
- The relocation of the new campus access road to the extreme northern end of the campus. This provides the opportunity to use the road and the associated landscaping as a buffer between the new buildings and the existing properties on O’Reilly Avenue and Cameron Square. Previously, the road also severed the garden to the north of the block from the new building and this has been addressed in the preferred option, providing for a much better campus environment. The movement of the road to this location also allows for a discreet access to the underground car park, avoiding the potential for noise impacts, and the opportunity to place the Drimnagh Sewer under the road, avoiding conflict with the properties on St. John’s Terrace. The relocation of the road has resulted in the reorganisation of the basement and lower ground floor levels and, as such, it is now fixed and cannot be moved without a significant redesign.

4.5.4.4 Helipad Location

The location of the helipad was subject to a number of studies during the design process both from an operational and amenity impact point of view. The inclusion of a helipad in the first instance is considered important to the functioning of the hospital at St. James’s Hospital campus and, in this regard, it is worth noting the conclusion of the Inspector in the Mater case, where they stated:

“Whatever option is proposed, I would consider that a helipad is a critical element of a national tertiary proposal and I would recommend in that regard that if the Board are minded to permit the proposed development that a condition is attached to any permission requiring that a helipad is operational within the campus prior to the opening of the subject proposal.”¹⁹

As a result, it was integral to the brief that a helipad was included in the application. The location of the helipad in an urban area warranted specific consideration and the project team considered a number of locations as follows:

¹⁹ (Inspector’s Report, PL29N.PA0024; page 104)

Figure 4.6: Helipad location options



Table 4.6: Helipad location options

Helipad Location	Comment
1. South East corner at roof level 4	Height of proposed clinical services building impacting on flight path.
2. South Centre at roof level 4	Feasible location in relation to flight path and proximity to A&E.
3. South West corner at roof level 4	Closer to local housing than options 1 and 2.
4. North centre at ground level	Difficult flight path, closer proximity to houses and greatest distance from A&E. This location is also a future expansion area for the NPH.
5. Centre plan roof level 7	Good flight path but route to A&E is through patient wards. More distant from A&E than options 1, 2 and 3.

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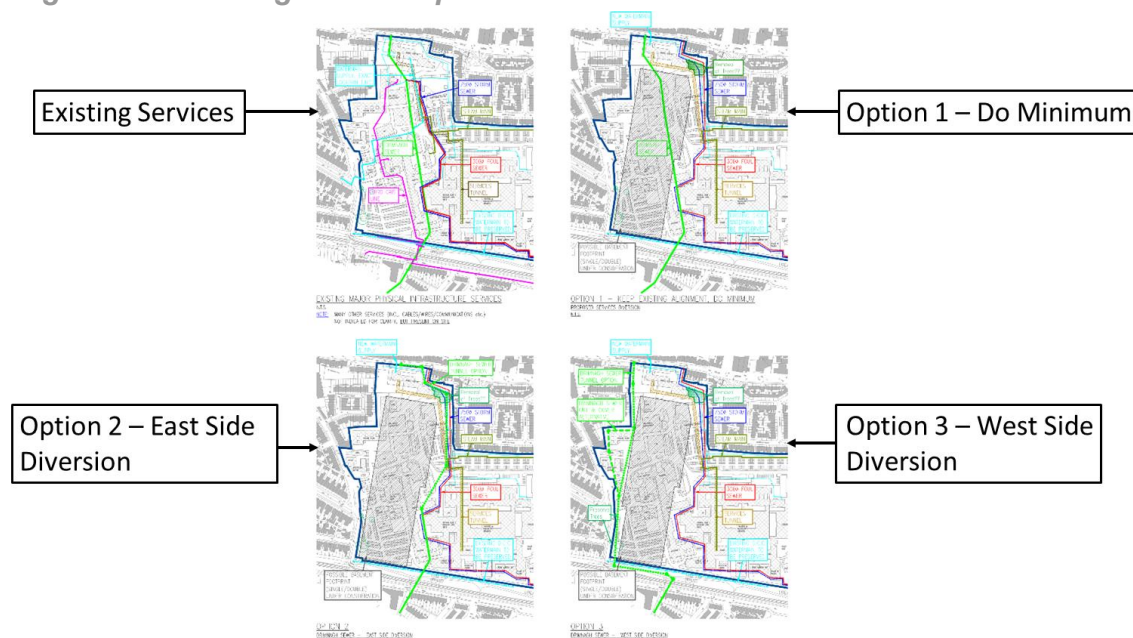
In terms of the assessment of these locations the amenities of the adjoining residents was a key consideration. The ground level option resulted in a flight path that was extremely low over the properties at O'Reilly Avenue and Cameron Square and was likely to give rise to issues relation to downdraft in the private open spaces attached to these dwellings. The location on the top of the ward block would have resulted in similar issues with the oval shaped rooftop garden. From a design perspective it would also result in a visually obtrusive structure that would disrupt the architectural flow of the building.

The preferred option was at the southern end of the site where the flight path was high enough not to interfere with the adjoining properties but also provide options in terms of an alternative flight path (along the LUAS track).

4.5.4.5 Drimnagh Sewer

The presence of the Drimnagh Sewer on the campus presented difficulties in terms of the required wayleaves for servicing of same and its relocation was considered from an early stage in the project and parallel to the long and short list design selection process.

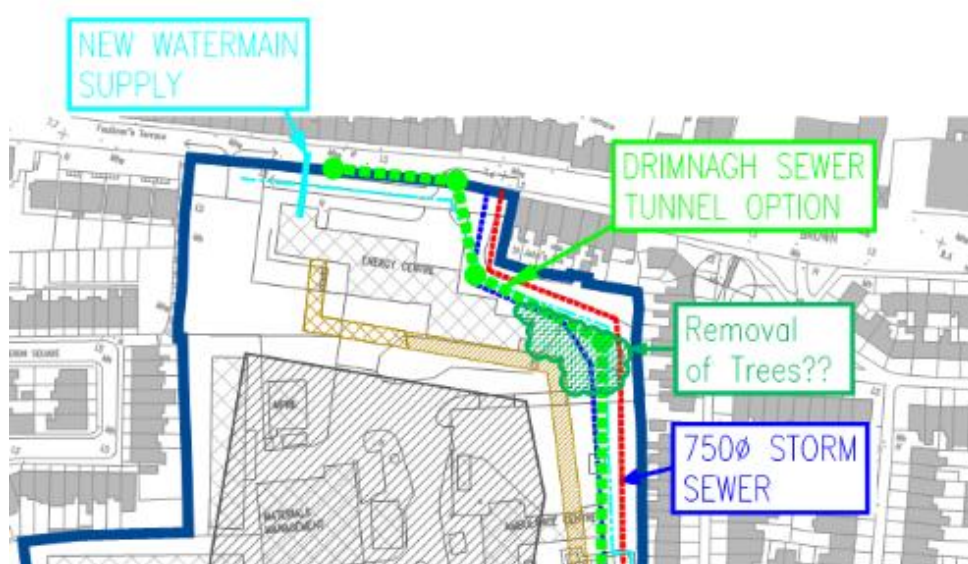
Figure 4.7: Drimnagh Sewer Options



As set out above, the primary options were: Option 1 – do minimum; Option 2 – East side diversion; and, Option 3 – West side diversion. The “do minimum” option was not considered viable having regard to the requirement for an efficiently operating hospital floorplate so was discounted. Option 3 would require works to the public road and diversions extremely close to the properties on Cameron Square, so was also discounted. Option 2 was considered the preferred option as it ensured that the diversion works were primarily contained within the St. James’s Hospital campus, thereby mitigating any external disruptions.

The preferred option, on close examination, required a connection to the existing public sewer on Mount Brown and, if taken to the east and north of the energy centre, would require works proximate to the adjoining residential properties on St. John’s Terrace and would result in the removal of a significant number of trees at this location.

Figure 4.8: Drimnagh Sewer – St. John’s Terrace



It was considered, therefore, preferable to route the new Drimnagh Sewer along the revised hospital access road, which provided the opportunity to mitigate the potential environmental impacts outlined above.

Figure 4.9: Drimnagh Sewer – Selected Route at Energy Centre



The proposed solution was considered to be the best option from an environmental and operational point of view.

4.5.4.6 Family Accommodation Unit

The Family Accommodation Unit provides accommodation for family members of sick children receiving long term care at the new children's hospital. It is a key facility that is integral to the overall project. The design team considered the best location for this particular element of the proposal throughout the long and short list optioneering process. The proposed location was chosen as it would provide a visual screen between the rear of the properties on Cameron Square and Brookfield Road in addition to providing the opportunity to frame the new entrance piazza and link directly to the new children's hospital building through the basement level, providing safe and secure passage for parents and siblings.

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Once the site was selected a number of design iterations were concluded. One of the key considerations during this process was the impact on the adjoining neighbours in terms of residential amenities. At each design iteration the proximity of the building to the dwellings to the north was considered and the final built space was in excess of 22m separation distance from these properties. The placement of windows in order to protect privacy was also considered and no directly opposing windows at first floor or above are located within this zone.

4.5.4.7 Children's Research and Innovation Centre

The provision of research facilities was central to the design brief and the location of the Children's Research and Innovation Centre was considered from the outset. The options included either incorporating it into the new children's hospital building or locating it on a site to the north eastern side of the hospital campus. In order to fully exploit the potential for academic synergies, the location adjacent to the existing Trinity College Dublin buildings, on a vacant site, was considered appropriate.

In terms of the aspects of the environment considered, it was concluded that a new building at this location would greatly improve the integration of the campus with the wider city at James's Street. Upon selecting the site, a study was carried out into the conservation value of the structures on site and this is set out in Chapter 16 of this EIS. The study concluded that the buildings were of little conservation value. A construction method statement was prepared in order to ensure there were no impacts on an adjacent protected structure.

The amenities of the adjoining residents at this location were also considered during the design process and the preferred design option stepped the building back from the adjoining properties at McDowell Avenue. Plant rooms and external plant areas were also moved away from this boundary.

4.5.4.8 Davitt Road Construction Compound

In terms of the provision of a construction compound at Davitt Road, three options were considered:

1. Utilise an on-site compound.
2. Allow the contractor to determine the compound.
3. Make use of Health Service Executive owned lands at Davitt Road for a storage and staging area.

The option to restrict all construction related activities had associated risks in terms of impacts on the surrounding road network of mistimed deliveries and overspill onto the existing hospital operations. In this regard, an additional off-site compound would have benefits.

The provision of an off-site compound that was at the choosing of the contractor would mean that any impacts could not be measured and / or controlled through mitigation or condition.

The selecting of a publically owned site that is proximate to the St. James's site, that is currently vacant and ready (i.e. would require little works to make available) would allow all perceived or expected impacts to be examined in full in this EIS and mitigation to be deployed where required.

4.5.5 Satellite Centres

As addressed above, the children's hospital satellite centres are to be located at Tallaght Hospital and Connolly Hospital and will be connected to the existing hospitals. This connection is an important requirement in terms of the operation of the children's hospital satellite centres and the sharing of services and was a key consideration in locating the children's hospital satellite centres within Tallaght Hospital and Connolly Hospital campuses. The architect's Design Report in respect of the children's hospital satellite centres sets out the detail of the design process for these buildings and should be referred to in this regard.

Working within the brief and in line with clinical requirements, three design options were developed in detail, two for Connolly Hospital Campus and one for Tallaght Hospital Campus. The children's hospital satellite centres have undergone a full design progression, with each of the design options measured against a set of key policy and physical environment assessment criteria including *inter alia* surrounding land uses, prevailing building heights, sensitive locations and the relatively limited scale of the children's hospital satellite centres, a number of main issues were identified. This assessment fed into an evaluation matrix which gave a priority rating for each of the specific criteria.

Tallaght Site

The site location options for the Tallaght site had already been examined under the Site Assessment Report, see Section 4.4.3 above. In this regard, given the urban nature of the site, the self-contained nature of the campus, the scale of development and the surrounding land uses there were no appreciable differences in the environmental impacts identified with any of the options. The site identified for progression was thus the site which offered the best connectivity with the existing hospital and the least impact on the operational activities of the hospital. With respect to design, the overall mass and form of the building was largely determined by the site selected, the brief for the building and the existing hospital building and functions. Options were explored around materials, access points and forms at building corners etc. although these have no appreciable differences in terms of their environmental impact.

Figure 4.10: Tallaght Site



Connolly Site

As discussed in Section 4.4.2, the Site Suitability Study identified two potential sites at Connolly Hospital campus for the children's hospital satellite centre. While Option 1 at the north end was deemed to be the least preferable option based on potential environmental impact, initial designs were drafted for each option which were assessed against the "planning sense check".

Figure 4.11: Connolly Centre Site (Option 1)

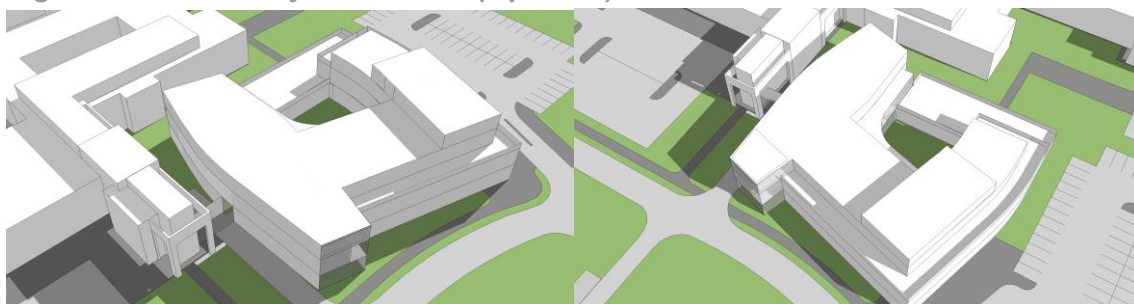


Figure 4.12: Connolly Front Site (Option 2)



While the assessment showed both options to be comparable in terms of priority rating, initial site investigations identified a known bat roost in an older hospital buildings c.50m to the south of Option 1. The identification of a potential environmental impact associated with Option 1 and the impacts on existing and future hospital operations, in conjunction with advice from on-going consultation with the Planning Authority, meant that Option 2, the Front Site, is the more appropriate location from a planning and environmental perspective, while also meeting the clinical requirements for the children's hospital satellite centre.

In terms of building design, the principal consideration that influenced the form of the building was the impacts on the amenities of the existing hospital patrons. For this reason, and through a process that involved the examination of the sun's path, the proposed building was stepped down where it adjoins the existing hospital and an amenity space was provided at this location. The existing façade of architectural interest to the east was also respected and the built form proposed frames this elevation. In terms of materials, there was deemed to be no appreciable differences in terms of environmental impacts.

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4.6 Alternative Processes

In relation to alternative process, this primarily relates to the phasing of the development and building construction processes and / or alternative uses on the site.

With regard to the phasing of the overall project, it was considered that at the outset that, in order to best provide the accommodation required by the Model of Care and to best ensure that the strategy was successful in terms of public understanding, the decision was taken to construct and complete the children's hospital satellite centres in advance of the construction of the new children's hospital at St. James's hospital campus.

The construction of the new children's hospital will take approximately 4 years to complete and given the scale of the development will be carried out on a phased basis. The phases will have different levels of intensity and will facilitate the demolition of existing buildings on site, site clearance and the construction of initial infrastructure works. The phasing of development is set out in the outline Construction Management Plan submitted with the application. The consideration of the alternative construction methodologies had regard to the following:

- **Location** - The project is to be located within the existing St. James's Hospital campus site boundaries;
- **Adjoining Owners** – The site is in a busy city centre location and contains a number of adjoining residential properties. The proximity of adjacent property owners presents a physical and consideration constraint, which will require attention and management at all times;
- **Site Specific Constraints** – The existing site has specific constraints relating to existing services, ground conditions, construction methods, materials, etc. Two key constraints specifically highlighted are the location of the existing Drimnagh Sewer and the existing utility services tunnel;
- **St. James's Hospital** – The existing St. James's Hospital will remain fully operational during the construction period and maintaining safe pedestrian, vehicular and blue-light access to hospital campus is an absolute priority.

The division of the construction process into phases is considered to be standard for a project of this scale, however, within these phases a number of alternative processes were assessed. Key to the progression of all Phases was traffic management which was discussed at length with the Local Authority and relevant stakeholders, with the Strategy as proposed directly informing the assessment of alternative processes in each Phase.

Figure 4.13: Construction Phasing



The first alternative process assessed was the location of the construction compound. In assessing the options with regard to an on-site or off-site compound planning and environmental criteria were considered including *inter alia* site constraints, the phasing of the development, impact on residential amenity, access and the impact on the surrounding road network. Taking these into account the decision was made to locate the compound off-site at Davitt Road as it allows for better management of deliveries to the main site which will be key in ensuring potential impact are minimised.

Options with regard to the re-routing of services, the facilities management tunnel, construction work with respect to the Drimnagh Sewer, the demolition of existing buildings and the construction of new roadways. The main decision with regard to processes related to how to best progress the works to be completed in the allotted time and the continued operation of St. James Hospital Campus. The outcome of this assessment was the decision to create 4 separate construction sites within the main site which would allow for individual enabling work packages to commence and which would reduce the impact between general traffic and construction traffic. As detailed in Chapter 17 and above, alternative process were examined in relation to the diversion of the Drimnagh sewer with the preparation works for same included in this Phase. Excluding such works, the works undertaken in the initial phases.

In relation to alternative land uses, the site's intrinsic suitability for medical and related uses has been established since c. 1730 and it is clear that it is the most appropriate use for this site. A range of medical uses has been proposed on this site including most recently a private hospital, although in this instance Government healthcare policy requires the new children's hospital on this site. Locating the new children's hospital on this site is also more environmentally beneficial having regard to local, regional and national community impacts.

4.7 Conclusion

It has been established above that the proposed development in its entirety has been the subject of a systematic, authoritative and comprehensive consideration of alternatives. This well-considered assessment had regard to the hierarchy referred to in the EPA Guidelines in its consideration of national and strategic health policy and legislation and to the recommendation of the Clear Martin Report in terms of planning and environmental considerations. The consideration of alternative building design was also undertaken, from the initial stages, in the context of planning and environmental considerations. In all such assessments while environmental considerations have played an important role, they cannot be considered in isolation, as other factors including clinical requirements, planning policy and land-use are also important and were given due consideration in the assessment of alternatives.

At each level alternatives were systematically and sequentially considered as appropriate. At strategic, national policy level it was determined that Dublin was the appropriate location. Following Cabinet approval of this decision, and the subsequent refusal on the Mater site the Dolphin Report considered the different options for progressing the construction of the new children's hospital and alternative locations for same. The subsequent Clear Martin Report carried out a planning assessment of the alternative at Connolly Hospital, the Coombe, the Mater, St. James's Hospital and Tallaght Hospital. Informed by this comprehensive assessment of alternative sites the Government made the decision in November 2012 to locate the new children's hospital on St. James Hospital Campus.

In relation to design, from the very outset, and at each stage in the process, a robust consideration of alternatives was undertaken and assessed against matrices focused on planning and environmental considerations. Building massing, height, scale, overlooking and a range of other environmental impacts were considered in detail with regard to the alternative designs. Finally, the potential for environmental effects and associated mitigation measures have been evaluated and integrated into the detailed design.

A significant range of alternatives has been systematically and forensically considered at each successive stage - policy, strategy, site selection, brief development, site plan and building design. It can further be demonstrated that the consideration of these alternatives was informed, authoritative, rational and robust. The assessment took account of land-use, planning and environmental effects at appropriate stages. In our view, the resultant examination of alternatives presented above not only meets but exceeds the requirements of the Regulations to provide an “**outline of the main alternatives**” and an “**indication of the main reasons**” for the choice.