High Level Framework Brief for the National Paediatric Hospital

Final Report

October 2007

Contents

Appendices

Glossary of Terms

A&E	-	Accident and Emergency Department
A/UCC	-	Ambulatory and Urgent Care Centre
ACU	-	Aseptic Compounding Unit
AHP	-	Allied Health Professionals
ALoS	-	Average Length of Stay
AMNCH	-	Adelaide and Meath National Children's Hospital
CAMHS	-	Child and Adolescent Mental Health Services
CE	-	Consult/Exam
CHOP	-	Children's Hospital of Philadelphia
CMHTS	-	Child and Adolescent Community Mental Health Services
CRC	-	Children's Research Centre
CSO	-	Central Statistics Office
CSSD	-	Central Sterile Services Department
CUH	-	Children's University Hospital, Temple Street
DATHs	-	Dublin Area Teaching Hospitals
DC	-	Day Case
DCU	-	Dublin City University
DIT	-	Dublin Institute of Technology
DNA	-	Did Not Attend
DOH&C	-	Department of Health & Children
DOSA	-	Day of Surgery Admission
DRG	-	Diagnosis Related Group
ECMO	-	Extracorporeal membrane oxygenation
ED	-	Emergency Department
EPR	-	Electronic Patient Record
FDA	-	Framework Development Area
FM	-	Facilities Management
GDA	-	Gross Departmental Area
GIA	-	Gross Internal Area
GPSI	-	GP with Special Interest
HBN	-	Health Building Note (UK)
HDU	-	High Dependency Unit
HIPE	-	Hospital Inpatient Enquiry Scheme
HR	-	Human Resources

HRB	-	Health Research Board
HSE	-	Health Service Executive
IAEM	-	Irish Association of Emergency Medicine
ICU	-	Intensive Care Unit
IGT	-	Image Guided Therapy
IP	-	Inpatient
IPDC	-	Inpatients and Day Cases
IR	-	Industrial Relations
IT	-	Information Technology
ITU	-	Intensive Therapy Unit
LTV	-	Long Term Ventilation
M1F2	-	Demographic growth scenario of high migration (M1) with moderate fertility / growth rate (F2)
MCHD	-	Mater and Children's Hospital Development Limited
METR		Medical Education Training Research Council
MMUH	-	Mater Misericordiae University Hospital
NCH	-	National Children's Hospital
NCMG		National Centre Medical Genetics
NICE	-	National Institute for Clinical Excellence (UK)
NICU	-	Neonatal Intensive Care Unit
NPH	-	National Paediatric Hospital
NSF	-	National Service Framework (UK)
OBDs	-	Occupied bed days
ODCP	-	Outline Development Control Plan
OLCHC	-	Our Lady's Children's Hospital, Crumlin
PICU	-	Paediatric Intensive Care Unit
RMCC	-	Ronald Mc Donald Charity
RPA	-	Railway Procurement Agency
TCD	-	Trinity College Dublin
TCU	-	Transitional Care Unit
UCD	-	University College Dublin
WHO	-	World Health Organisation

Membership of the Joint HSE/DoHC Transition Group

Health Service Executive

Mr John O'Brien, Director of the National Hospitals Office (Temporary) - Joint Chair

Mr Tommie Martin, National Director, Office of the CEO

Dr Fenton Howell, Population Health Directorate

Mr Brian Gilroy, National Director of Estates

Ms Fionnuala Duffy, Assistant National Director, National Hospitals Office

Ms Ruth Langan, Office of the CEO

Ms. Angela Fitzgerald, Network Manager, Dublin North East Hospitals Group

Mr John Bulfin, Network Manager, Dublin Mid Leinster Hospitals Group

Department of Health and Children

Mr Paul Barron, Assistant Secretary - Joint Chair

Mr Denis O'Sullivan, Principal Officer, Acute Hospitals Division

Dr Philip Crowley, Deputy Chief Medical Officer

Mr Paul deFreine, Deputy Chief Architectural Adviser

Ms Mary Hogan, Assistant Principal Officer, Acute Hospitals Division

Executive Summary

"Even a minor event in the life of a child is an event of that child's world and thus a world event."

Gaston Bachelard (1884-1962) French philosopher and poet

Introduction

This report describes work carried out by RKW to develop a Framework Brief for a new National Paediatric Hospital (NPH) for Ireland which will combine the national tertiary and Greater Dublin secondary services of the three existing children's hospitals –

- Adelaide and Meath and National Children's Hospital – Tallaght (AMNCH)
- Children's University Hospital – Temple St (CUH)
- Our Lady's Children's Hospital Crumlin (OLCHC)

The work was carried out under a commission from the Health Service Executive (HSE), between January and June2007. Ken Schwartz from NBBJ provided technical consultancy support to RKW.

Terms of Reference

The terms of reference for our work included examination of –

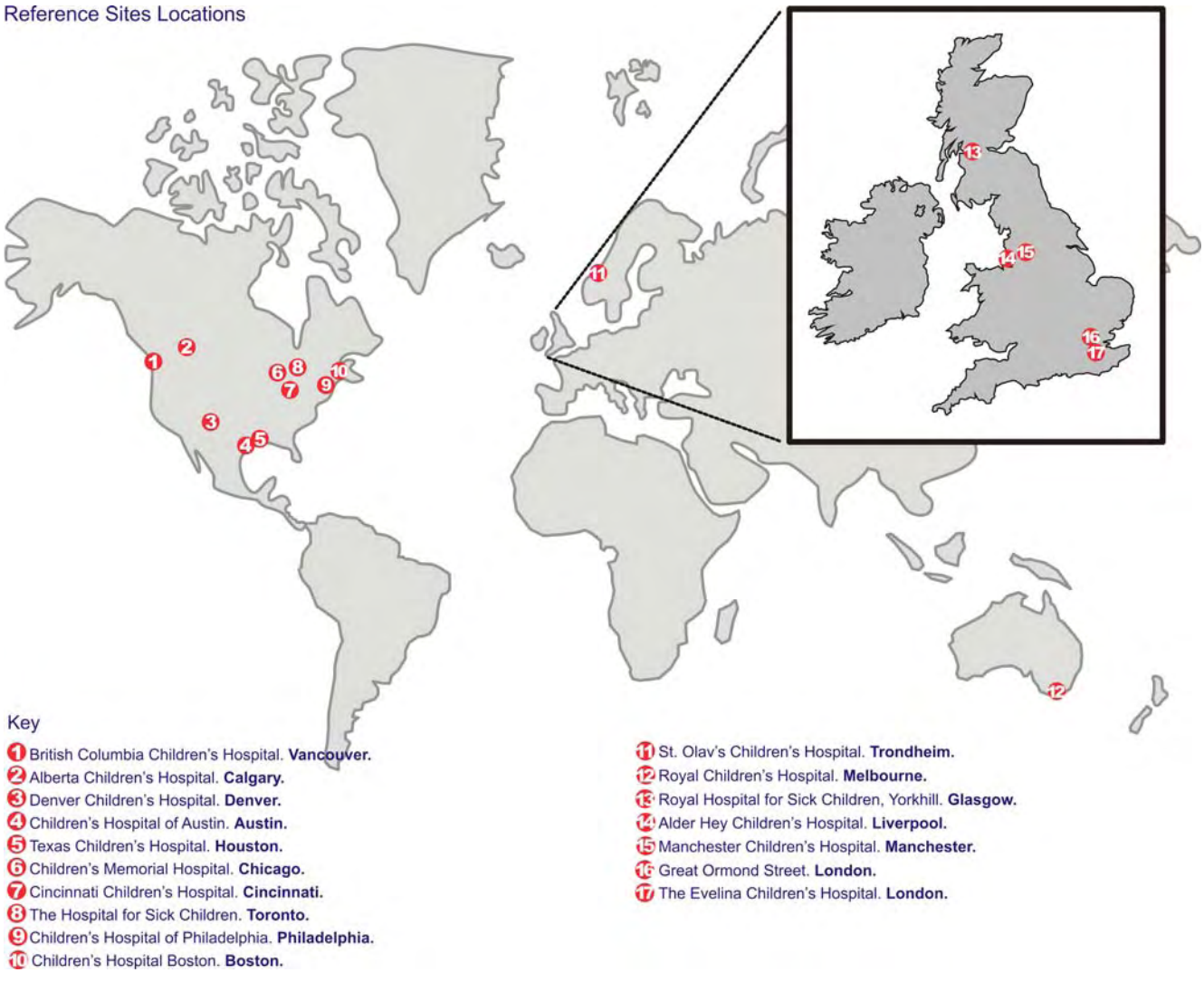
- The hospital in the context of a National paediatric services network
- Potential for Ambulatory and Urgent Care Centres in Greater Dublin
- The NPH Model of Care
- Demand and capacity requirements
- Appropriate space standards for a world class tertiary hospital
- NPH size including Education and Research
- The preferred physical configuration of services on the Mater Hospital site.

The Framework Brief has been developed within the context set by **Children's Health First** (the McKinsey Report), which found "the evidence for one national tertiary paediatric centre in Dublin is compelling" (Ref: 1), and the subsequent selection,

by a joint Department of Health/HSE taskforce, of the Mater Hospital site for its location.

International Experience

The Framework Brief has been informed by international experience via clinical advisers from children's hospitals in Toronto, Philadelphia and Manchester who have completed questionnaires and taken part in a series of telephone interviews and have been consulted in preparation of this report. The advisers also took part in workshops with the children's hospitals and other stakeholders. In addition we have assembled a database on the characteristics of a further fourteen tertiary paediatric centres throughout the world. Caution has been taken to interpret models of care, views and experience in the context of the local health care system so that applicability to Ireland can be assessed. The concept of legitimate variation and the possibility that there may be more than one way to achieve international best practice should be recognised in local discussions as the project moves forward.



Stakeholder Engagement

The work has included extensive engagement with stakeholders including –

- Staff and management of the three children's hospitals
- Professional organisations and academic partners
- Interest groups

In addition to over 250 one-to-one and group meetings, a number of written submissions have been received. While we have not had the opportunity to speak directly with children or parents we have met with organisations which speak on their behalf, such as Children in Hospital in Ireland and the New Crumlin Hospital Group. We recommend that direct consultation with children and parents should occur at the next stage of the project. The Office of the Minister for Children and the Children's Ombudsman have well developed models for engagement with children and young people and may wish to be involved in , or advise regarding how these may be applied to ensure that children's voices are heard and listened to.

The key recommendations of the framework brief were presented and discussed with representatives of the three children's hospitals and other stakeholders at workshops on June 28th and 29th 2007.

Since the three children's hospitals entered the engagement process at different times the opportunity for **cross-hospital** or **inter-specialty** discussion has been limited and it is recommended that forums should be developed to enable these dialogues to occur at the next stage of the project. Much of the debate so far has been about the physical characteristics of a world class hospital, now is the time to refocus on clinical models, benefits and outcomes.

Report Structure

This report is structured as follows **–**

- Part 1 Executive Summary
- Part 2 Main Report
    - Section A – Model of Care
    - Section B – Capacity Modelling
    - Section C – High Level Operational Policies and Hospital Sizing
- Part 3 Recommendations and Next Steps

- Appendices
    - 1 Reference Sites
    - 2 Adviser Questionnaires
    - 3 Individuals and organisations consulted
    - 4 List of written submissions received
    - 5 Specialty and Service Issues
    - 6 Departmental Schedule of Accommodation

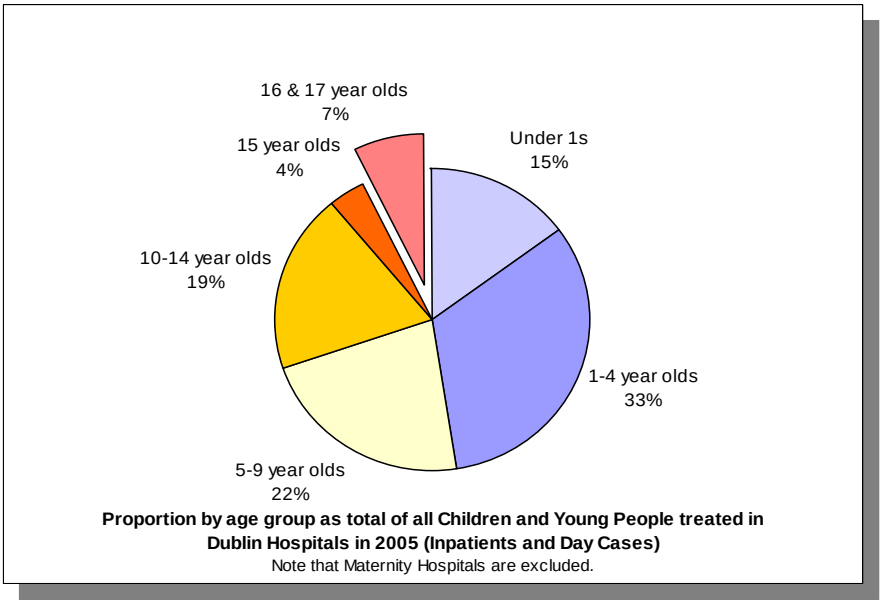
Part 2

Section A Model of Care

In Section A2 we provide an example of Principles for Caring for Children upon which the model of care for the National Paediatric Hospital, and the national network of paediatric services of which it is a part, can be developed.

Age definition of childhood

There are differences, internationally, in the children's hospital's current practice and amongst stakeholder views about the age definition of childhood. In practice services are provided flexibly and sensitively and this approach should be maintained regardless of what formal definition is adopted. It will be important that the views of young people and their families on age cut-off are canvassed in moving the project forward.



Proportion by age group as total of all Children and Young People treated in Dublin Hospitals in 2005 (Inpatients and Day Cases)
Note that Maternity Hospitals are excluded.

A1 The National Network

A sustainable national network of paediatric services will be one which provides an appropriate balance between services provided within the National Paediatric Hospital and those delivered in local hospitals and other settings, supported from the centre via outreach, telemedicine, joint appointments and staff rotation and continuous professional development.

> *"Great health professionals do not make great healthcare. Great healthcare professionals interacting well with all the other elements of the healthcare system make great Healthcare."*
>
> (Donald Berwick, quoted in the Royal College of Paediatrics and Child Health 'Guide to Understanding Pathways and Centralising Networks')

A wide range of outreach arrangements already exists between the Dublin Children's hospitals and other hospitals and health care facilities throughout Ireland but there is a need for a comprehensive mapping and appraisal of these to inform the development of the model for the future.

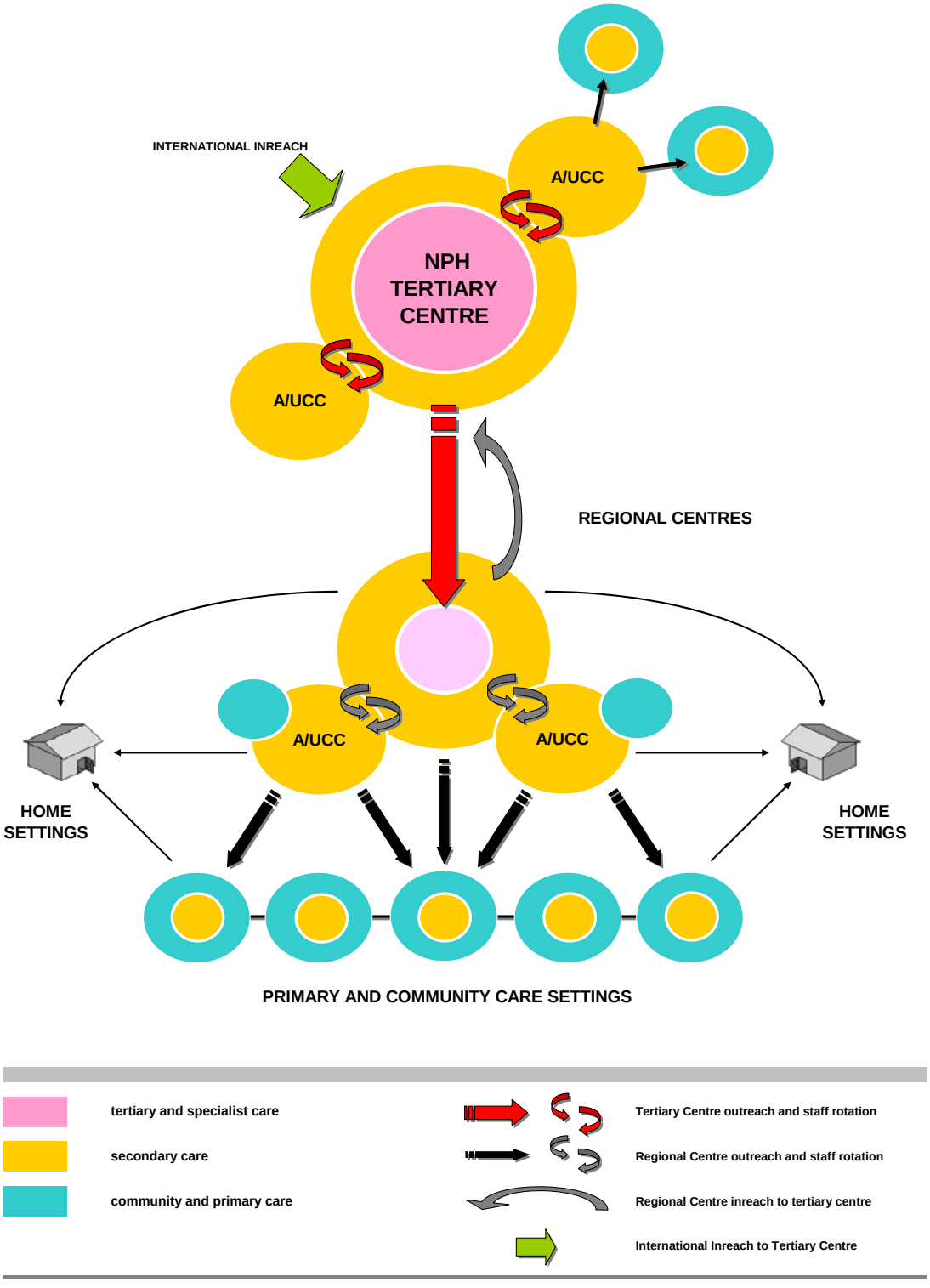
There is broad support for the principle that **safe services should be provided as locally as possible** but a range of views about how far this can be achieved and different perspectives on how far it will be possible to strengthen primary, community and local hospital services within current and perceived future, constraints.

Initiatives within the HSE's **Transformation Programme** which are directly relevant to the National Paediatric Hospital in its all Ireland context include the development of integrated services across all stages of the care journey, reconfiguration of Primary, Community and Continuing Care services, improvements in the prevention and management of chronic illness and the development of a unified national ICT infrastructure.

We refer to international experience of models which have developed to achieve a balanced distribution of expertise and activity between the tertiary centre and local facilities and recognise that examples of these are already taking place in Ireland. However, these need to be co-ordinated and managed across the three children's hospitals to ensure that the best of current good practice is adopted.

We recommend that the new Model of Care, as illustrated below, should be implemented in advance of the National Paediatric Hospital. Information technology, care protocols, joint appointments and staff rotation will be key enablers of the national network.

National Network Model



Note: A/UCC is an abbreviation of Ambulatory and Urgent Care Centre

A2 Ambulatory and Urgent Care Centres

The Framework Brief has explored the potential for urgent and ambulatory activity to be provided in Greater Dublin in Ambulatory and Urgent Care Centres (A/UCCs) which would be operate and staffed by the National Paediatric Hospital, sharing its brand and providing services and environments of the same quality as those at the Tertiary Centre. This work is detailed in a separate report..

The potential scope and scale of A/UCCs has been identified under a range of scenarios which have been evaluated in terms of access, critical mass, staffing implications and available infrastructure.

Tertiary paediatric centres worldwide have successfully devolved ambulatory and urgent care to both free-standing and adult hospital sites. This, it is felt, strengthens, rather than dilutes the centre by, establishing an infrastructure to deliver safe care more locally. Nevertheless the extent of stakeholder concerns regarding the introduction on an unfamiliar model at a time of radical change in the Irish health system is recognised. Accordingly, implementation should follow the establishment of a cross-hospital planning forum tasked to develop the concept .

It is recommended that a comprehensive Ambulatory and Urgent Care Centre be developed at the adult hospital site in Tallaght in advance of the Tertiary Centre. This could be followed by another consultant-led centre at Blanchardstown as a later phase subject to evaluation of the Tallaght model and in line with capacity requirements over time. The potential for a consultant-led outpatient services in Loughlinstown and, possibly, a nurse led minor injuries service has also been identified which could follow as a subsequent phase.

A3 The model of care at the National Paediatric Hospital Tertiary Centre

We refer to how clinical services should be arranged –

- To support the best clinical practice which minimises risk to patients
- To achieve the objective of child and family centred care
- To promote multidisciplinary and cross-specialty working
- To make efficient use of resources – staff, equipment and facilities
- To ensure future flexibility to respond to changes in service range and volume.

From international experience, the earlier submissions by the children's hospitals and the latest discussions with stakeholders, a range models for the organisation of hospital services have been identified and reviewed. Specialty specific preferences have also been considered to determine the recommended model for the NPH which combines elements of **centralised, institute and neighbourhood approaches** to the grouping of services. The model of care emphasises the importance of quality **environments for children and their families** and summarises the key considerations in achieving these. Development of the model of care should be the focus of early attention at the next stage of the project.

A 4 Education Training and Research

The National Paediatric Hospital will be the lead centre for paediatric education and training and research. Through these activities it will have a key role in generating the workforce which it, and other paediatric services require, thus creating the intellectual environment which will help to attract retain and develop high quality staff across all disciplines.

International experience, national policy and local stakeholder opinion converge in supporting the integration of education and research activity within the National Paediatric Hospital which should include both a multi-disciplinary education centre and learning and resource facilities localised within clinical areas.

> *"most important is the recognition that innovation is the primary pillar of a world class paediatric academic health centre. Innovation stems not only from research into the mechanisms for preservation of health and prevention of disease, their fundamental mechanism and effective clinical therapy, but also into other areas of the institution including administrative and scholarly activities. An embedded integration of clinical care, teaching and research is extremely important."*
>
> Hugh O'Brodovich, SickKids, Toronto

The A/UCCs, which, it is recommended, are developed as part of the National Paediatric Hospital service should also include appropriate facilities of comparable quality. Work is in progress both within the HSE and by its academic partners to develop models and capacity requirements for research and education.

Section B Capacity Modelling

To determine the capacity required for the National Paediatric Hospital we have -

- Reviewed and updated the McKinsey bed projections
- Forecast other key functional content
- Verified the data provided against local estimates
- Projected the impact of demographic change to 2021
- Modelled system reform, productivity and specialty specific effects
- Reviewed current inpatient performance against best practice
- Identified scope for day case rate and length of stay improvements
- Applied occupancy and throughput targets detailed in the report

B2 Inpatient Beds and Day Places

McKinsey estimated 380 beds of which 339 were inpatient beds and 41 were day case beds. Our directly comparable estimate, based on the McKinsey methodology, of bed demand in 2021 is 428 beds of which 368 are inpatient beds and 60 are day case beds. With additional service developments, not included by McKinsey, the total projected bed requirement for 2021 is **474** beds of which **65** are day and **409** are inpatient[1]. Day beds will be distributed with 37 beds provided at the Tertiary Centre and the remainder in the A/UCCs as illustrated below.

	Total Requirement	NPH Tertiary Centre	A/UCC 1 *Tallaght*	A/UCC 2 *Blanchardstown*	A/UCC 3 *Loughlinstown*
Inpatient beds	409	409			
Day beds / places	65	37	19	9	
Consulting rooms	76	53	12	7	4
Theatres + Procedures : IP*	11	11			
Theatres + Procedures : DP	9	4	3	2	
A+E /Urgent Care attendances	110,300	44,700	34,000	20,600	11,000
A+E /Urgent Care assessment places	21	8	7	4	2

* Includes 2 shell suites for future expansion

[1] Projected observation places in the Tertiary Centre and A/UCCs total 21 places which together with Inpatient and Day Case beds give a total of 495 beds / places.

The McKinsey methodology assumed moderate “performance enhancements”, which would result in 15% reduction of inpatient encounters. Sensitivity testing suggests the potential for further reduction which indicates a range from 474 (moderate assumptions) to 372 (highly challenging performance assumptions), excluding the observation places shown in the table below. A midpoint range of 423 inpatient and day case beds is considered the most plausible assumption which could be achieved through sustained performance management and system redesign.

		Moderate	High 1	High 2
NPH	Inpatient	409	359	304
	Day Case	37	37	40
	Observation	8	8	8
	Subtotal	**454**	**404**	**352**
Tallaght	Day Case	19	19	19
	Observation	7	7	7
	Subtotal	**26**	**26**	**26**
Blanchardstown	Day Case	9	9	9
	Observation	4	4	4
	Subtotal	**13**	**13**	**13**
Loughlinstown	Observation	2	2	2
	Subtotal	**2**	**2**	**2**
	Grand Total	**495**	**445**	**393**

B3 Outpatients

Projected outpatient attendances**,** on the basis of demographic, other growth and enhanced performance to 2021, **before** outreach to local hospitals, outside Dublin and the Greater Dublin A/UCCs are 196,700. Future capacity requirements in numbers of consult exam rooms have been estimated on the basis of throughput and availability assumptions detailed below.

B4 Operating theatre and procedure rooms

Requirements for 2021 have been projected from inpatient and day case activity. When specialist hospitals, under 5 surgery and a proportion of 16-18 year olds are included, the total projected number of procedures in 2021 is 13,150 inpatient cases and 17,050 day cases. This generates a requirement, on the basis of the utilisation

and performance assumptions detailed below, of 20 theatres and procedure rooms which includes expansion capability for new technologies.

B5 Imaging

Projected future imaging requirement of 26 rooms is based upon by an assumption of growth in excess of demographic change to current capacity. The distribution by modality across the NPH Tertiary Centre and A/UCCs is identified.

As the imaging department is a core function, highly sensitive to technological change and throughput we recommend that a specific workstream is established to determine future requirements.

B6 Future Flexibility and Expansion

Capacity projected to 2021 allows for significant growth beyond current activity levels and beyond the opening of the NPH. Phased implementation of A/UCCs would add additional capacity into the system over the timescale. Generic acute beds should be designed to facilitate easy conversion and use as ICU or HDU beds beyond 2021. Theatres and outpatient capacity are sized on moderate throughput assumptions in terms of operational hours and consultation / procedure times. Additional theatre and outpatient capacity could be realised through extended day working. Projected capacity requirements are summarised in the table under section B2. Sensitivity testing suggests the potential for a reduction of approximately 50-100 inpatient beds if higher performance improvements are achieved. This sensitivity testing may have a knock on impact on other capacity requirements including support services.

A key priority for the Development Board will be early clarification of capacity assumptions.

Section C High Level Operational Policies and Hospital Sizing

C1 Operational Policies

The NPH will provide the full range of tertiary services nationally and secondary services for the Greater Dublin area together with appropriate support facilities and services. These are detailed in Section C1.1.1.

Shared Services

The Framework Brief considers the potential for services to be shared between the NPH, the Mater Hospital and, potentially a tri-located maternity hospital. As a principle the initial focus should be on the successful integration of the three children's hospital services with exploration of the potential for merging with adult and/or maternity services in a next stage. Our considerations on a service by service basis are detailed in section C1. We were also asked to consider what potential there is for services to be provided off–site from the main hospital.

Operating Requirements and Adjacencies

Key operating requirements and adjacencies are considered for –

- Services and facilities for Parents and Families
- Inpatient Services
- Ambulatory Services
- Diagnostics and Treatment
- Clinical Support Services
- Administration and Staff Facilities
- Education and Training
- Back of House

Inpatient Wards

For the purposes of hospital sizing we have assumed **28 bed inpatient units**, sub-divided into 8-10 bed clusters to facilitate designation by specialty, age or dependency as featured in many international examples. The working assumption for this high level Framework Brief is **100% single rooms** subject to further debate informed particularly by the views of children and their parents at the next stage.

A range of **room sizes** have been considered and **exemplar layouts** used to demonstrate functionality within a room of 24.5- 28m^2 including ensuite. It will be

highly desirable that acute beds are capable of conversion to critical care beds over time. Our recommendation is therefore that the single room plus ensuite should be planned at 26.5m^2 which is in line with current UK Guidance for critical care single rooms and represents the mid-point from the exemplars (as illustrated below). Critical dimensions, the shape of the room, and location and type of ensuite, are as important as the overall area. An upper limit of 30m^2 is therefore suggested in the event that a lobbied arrangement is dictated and high levels of assistance and /or baths are required in some ensuite bathrooms.

Critical Care

The critical care unit will comprise the paediatric intensive care, high dependency care, neonatal care and cardiac intensive care. These services should be grouped together in a common environment. Given the size of the unit, a cluster arrangement of 6 – 7 clusters will best meet functional requirements. Evidence from reference sites suggests that the requirements for critical care beds will continue to increase as casemix becomes more complex such that acute beds should be easily convertible to critical care standards in the future.

Outpatients

The projected level of outpatient activity within the NPH Tertiary Centre in 2021 is 117,000 attendances, spread across more than 40 specialties and sub-specialties. In addition, therapists will hold clinics within outpatients in a multidisciplinary setting.

Facilities for children, parents and families

In addition to the play facilities on wards and departments, a central play centre is recommended for patients and their siblings in the NPH Tertiary Centre. Hospital play is an important part of the child's care and recovery as well as being something that is normal and familiar which helps children adjust to what is a potentially stressful experience. A family resource centre will provide a range of support services and facilities.

Emergency and Urgent Care

The model of care envisages that children requiring urgent, not emergency - care could attend the A/UCCs. The workload remaining at the NPH Tertiary Centre would therefore be approximately 45,000 attendances, but with a higher mix of complexity compared to the current situation at the three children's hospitals. Models such as admissions, assessment, observation or clinical decision units will have a vital role in

admission avoidance and early discharge and also facilitate efficient staffing models for Hospital at Night arrangements.

Information and Communications Technology will underpin operational processes and clinical practice in the future. The design should optimise current and new technologies including electronic patient records, digital imaging and telemedicine.

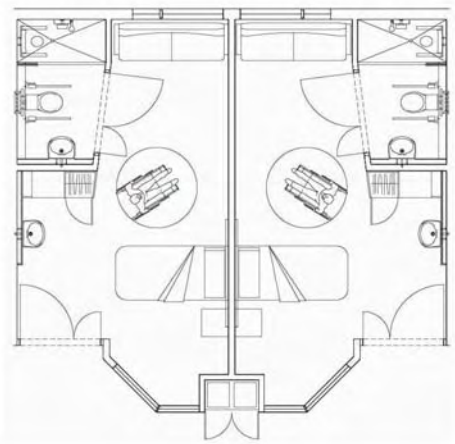
Single Bedrooms

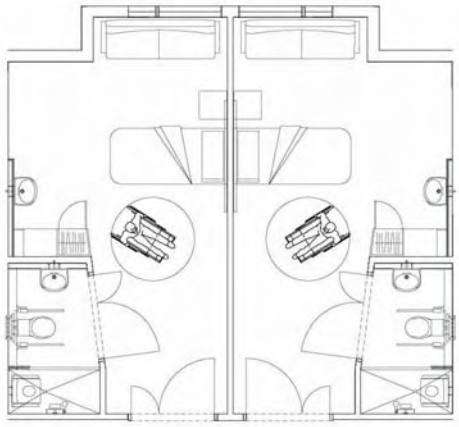
EXAMPLE 1

PLAN : INBOARD TOILET/SHOWER, DAY-BED, SLIDING DOORS

IMAGES : PATIENT ROOM WITH SLIDING DOOR

Single Bedrooms





EXAMPLE 2

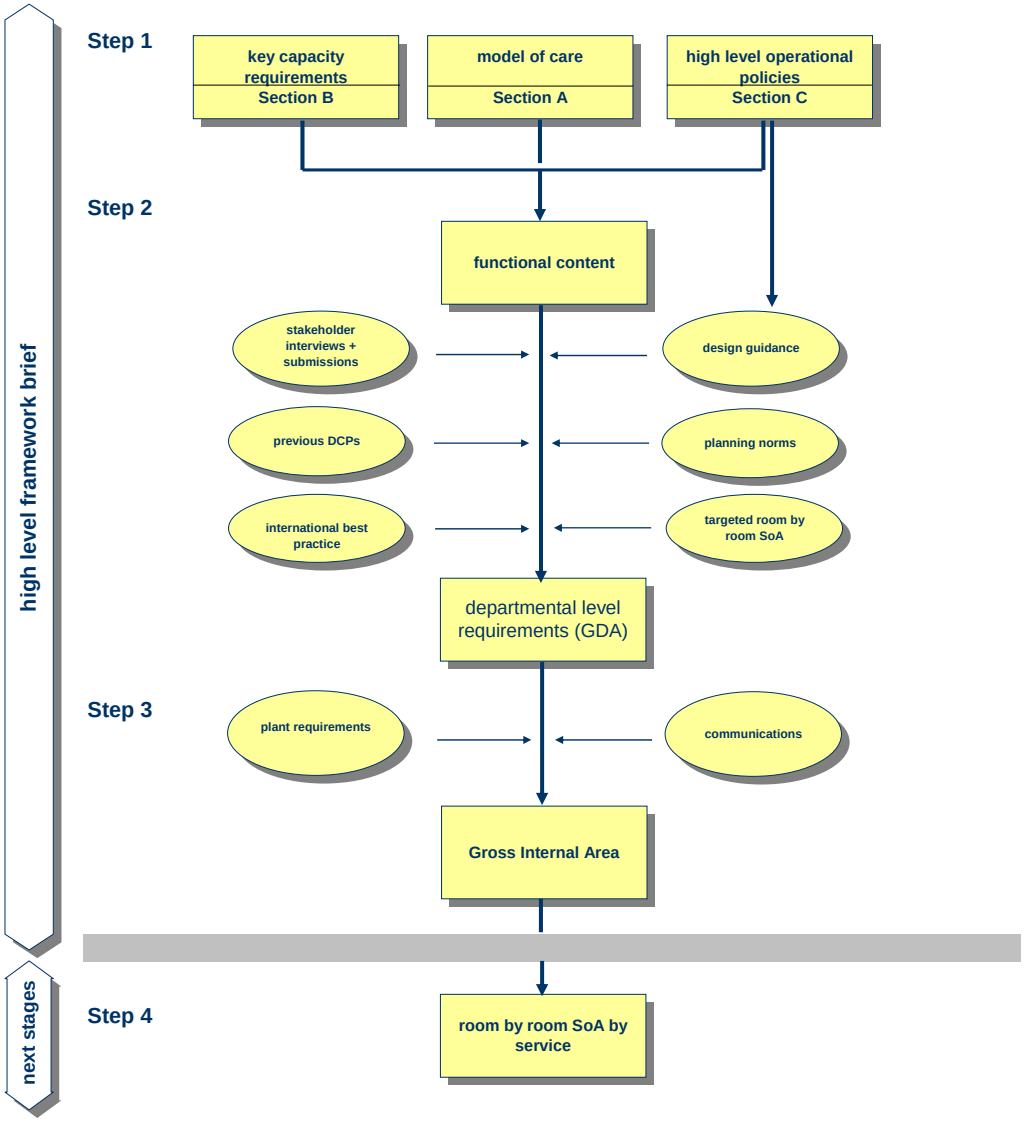
PLAN : OUTBOARD TOILET/SHOWER, DAY-BED, OBSERVATION WINDOW

EXAMPLE 3

PLAN : INBOARD TOILET/SHOWER, DAY-BED

C2 Hospital Sizing

The methodology adopted in determining the appropriate size for the NPH Tertiary Centre at the Mater Hospital site and the projected high level space requirements for capacity projections to 2021 is shown in the diagram below.



Space standards underpinning the overall hospital sizing represent optimum facilities based on International Best Practice and emerging trends and at this stage have not been subject to affordability constraints. Value for money considerations are likely to require cost-benefit analysis to determine project priorities in subsequent stages. In this context it is important to recognise the different financial drivers behind international space standards.

Space Requirements[2]

Based on the capacity estimates and the high level operational policies, the overall space requirement for core hospital services at NPH Tertiary Centre is **90,200m^2.** When services including education and training and research, the National Centre for Medical Genetics NCMG and Parents Accommodation are added the total requirement is **103,600m^2**. The A/UCCs are **additional** to this and total **12,400m^2**.

C3 Preferred Configuration on the Mater Hospital Site

Site Capacity

We have explored the capacity of the Mater Site to accommodate the space requirements of the NPH Tertiary Centre and a maternity hospital under three scenarios, based upon advice from the HSE that the area to be ceded has a development capacity of at least 140,000 m^2.

The analysis indicates that the requirements can be accommodated on the site with different implications for the amount of unallocated space available for future developments in a tri-located model depending on the extent of off-site provision and the extent of outreach to A/UCCs. Sites which could augment the main site's capacity over time include Temple Street, the Rotunda Hospital, and Eccles Street.

Functional Relationships

For the children's hospital, the key **functional relationships** are between critical care (NICU and PICU), operating theatres and **some** imaging modalities - **'the hot floor'.** Evidence from international reference sites and responses from international advisers points also to the desirability of co-locating day case and inpatient theatres.

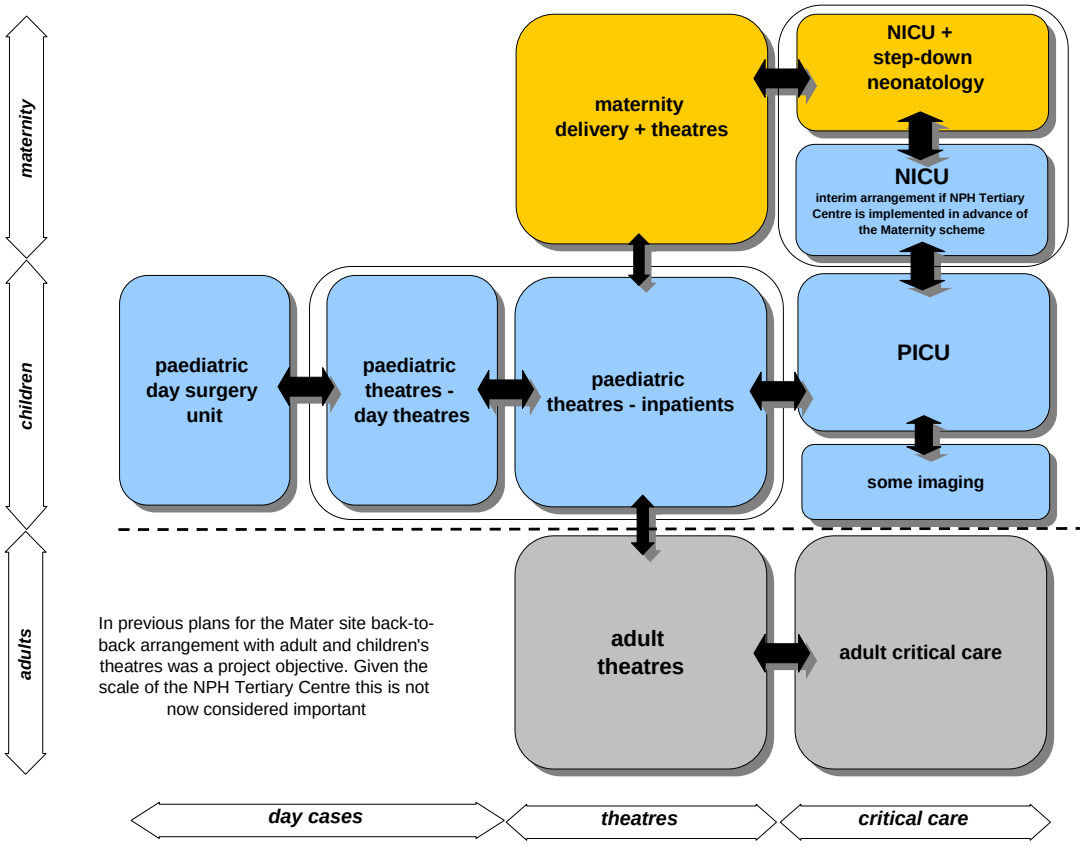
While the review of maternity services has yet to be concluded, the future model is likely to include a high proportion of high risk births and the physical proximity of delivery suites and obstetric theatres to neonatal intensive care will be important.

This leads us to conclude that an **"ideal"** arrangement would be for maternity delivery, NICU, PICU and children's operating theatres and day case to be co-located on a single level, as illustrated in the diagram below. However, this ideal has been delivered in very few of our international reference sites and **workable**

[2] These figures have been rounded to the nearest 100m^2.

alternatives have been identified elsewhere. The preferred solution in a co-located model is that critical care, theatres and day cases for children are located at one level, with maternity and delivery on an alternative level with direct vertical connections.

Functional Relationships : Ideal arrangement



The analysis indicates that from a functional relationships perspective the preferred solution for the Hot Floor including day cases is achievable in an integrated approach with Maternity since a single build as an integrated approach provides more flexibility to accommodate the needs of both children and maternity.

Site analysis summary

Our analyses demonstrate that a building of the requisite scale can be accommodated on the site in line with urban developments elsewhere on the assumption that a cleared site will be available and within an overall site development capacity of 140,000m^2. There are many examples of children's hospitals in buildings of comparable density and height to that which is likely to result

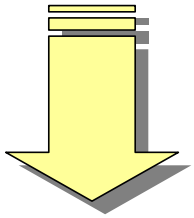
from a development on the Mater site. We suggest that early actions will help to ensure fulfilment of the vision of a world class children's hospital via –

- Consideration of options for integration with the maternity hospital development
- Addressing site issues related to workforce planning
- Demonstrating how environmental quality will be delivered
- Articulating plans for future flexibility
- Preparing an overall site configuration and tri-located service model
- Developing access and car parking plans
- Proceeding with town planning processes.

Part 3 Recommendations and Next Steps

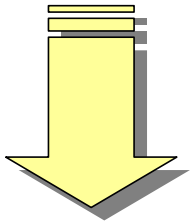
Our recommendations and suggestions for actions in the next stages of the project are detailed in Part 3 of the main report which summarises those contained in the individual sections.

Building on the Framework Brief : Next Steps



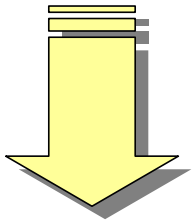
Develop Forum for Cross-Hospital and Cross Specialty-Engagement

- Develop Philosophy, Principles and Model of Care
- Engage with providers on Education,Training and Research
- Engage with Children and Young People and Volutary Organisations



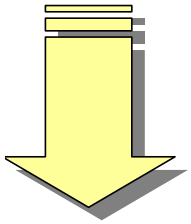
Develop Care Pathways and Processes

- Develop care protocols for National roll out
- Integrate role of primary care and community paediatrics
- Outreach to home, A/UCCs and outside Dublin



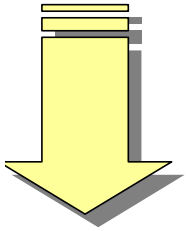
Integrate Workforce Planning

- Consider impact of capacity and requirements across disciplines
- Develop roles of CNSs and ANPs
- Integrate shared services proposals



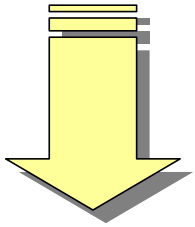
Advance Infrastructure before Tertiary Centre : National and Local

- Implement A/UCC at Tallaght and evaluate
- Integrate IT across hospitals and develop national infrastructure
- Develop framework for Education and Training



Undertake Economic and Financial Appraisal

- Cost Benefit Analysis
- Financial and affordability analyses
- Capital costs



Develop Operational Policies and Schedules of Accommodation

- Monitor and confirm capacity requirements
- Develop processes for clinical and non-clinical functions
- Develop room by room schedules of accommodation

Children's Health - First Class

The NPH project has the potential to transform paediatric services, education and research in Ireland by providing -

- An **integrated paediatric network** providing safe care as locally as possible with clearly defined roles for its tertiary, regional and local components.

- **Ambulatory and urgent care centres** operated as part of the national paediatric hospital service providing local access to care for wide areas across Dublin with the potential to develop similar models linked to other regional centres.

- **Integration of the three children's hospitals** to create a service greater than the sum of its parts through the pooling of expertise, skills and experience and the diffusion of best practice.

- A **tertiary centre** organised around optimal clinical adjacencies and service synergies promoting the effective use of staff, inter-disciplinary working and seamless services to patients. This will include a high-tech core which will co-locate key elements including operating theatres critical care and imaging.

- Space provision comparable to the latest international developments including **100% single rooms with ensuite facilities** within ward layouts allowing regrouping for specialty, dependency and age-related needs.

- Future–proofing and flexibility for expansion and change in service models including the capability of all inpatient bed rooms for progressive conversion to **critical care** standards.

- Support facilities for children, parents and families including **local and central play areas, rooming-in provision in all bedrooms, Ronald McDonald-style overnight accommodation and a parents' resource centre.**

- A **major academic centre** in association with university and commercial partners incorporating a central, multi-disciplinary education training and research centre tele-linked to learning resource zones within clinical areas and other hospitals.

Introduction and Background

Context

This High Level Framework Brief for the new NPH Tertiary Centre in Dublin establishes an outline framework for the development of a single National Tertiary Paediatric Hospital for Ireland. It builds upon the recommendations in the McKinsey Report *'Children's Health First International Best Practice in Tertiary Paediatric Services: Implications for the Strategic Organisation of Tertiary Paediatric Services in Ireland'* February 2006. (Ref: 1)

There has been significant progress, within a relatively short timescale towards the establishment of a NPH Tertiary Centre for Ireland as outlined in Table 1 below.

Table 1

	The Road to the NPH Tertiary Centre
2004	**Quality and Fairness – A Health System for You** *Review of paediatric services announced*
2006	
February	**Children's Health First (McKinsey Report)** *"the evidence for one national tertiary paediatric centre in Dublin is compelling"*
March	**The Mater Hospital's Response** **Children's Health Excellence of Care – AMNCH** *"the primary objective of the new hospital must be to deliver world class quality"*
May	**Report of the Joint HSE / DOH&C Task Group** *"the new national paediatric hospital should be built (at) the Mater Misericordiae"*
June	**Government backs HSE recommendations**
September	**A World Class Tertiary Children's Hospital for Ireland – OLCHC** *"an excellent opportunity to support the development of world-class paediatric care"* **Neurosurgical Services Report – HSE Addendum** *"paediatric neurosurgical services should be in the National Paediatric Hospital"*
2007	
January	**RKW commissioned to prepare the High Level Framework Brief**
May	**Establishment of the Development Board**

The HSE commissioned RKW to prepare a report documenting a High Level Framework Brief for the NPH Tertiary Centre. The work began on 8th January 2007 and a first draft report was completed in May 2007. This report presents our findings and recommendations, incorporating feedback from the HSE and stakeholder workshops.

McKinsey Report

The McKinsey report was produced by McKinsey & Company on behalf of the HSE and adopted by the Health Service Executive Board (HSE) in February 2006. The report's central recommendation was the establishment of a single tertiary paediatric hospital for Ireland, to be combined with secondary acute services for the Greater Dublin area. The centre would be based in Dublin, ideally co-located with an existing Adult Teaching Hospital. The Hospital would be supported by a number of Urgent Care Centres and linked on a national basis to other paediatric facilities countrywide.

McKinsey Recommendations (page 58)

McKinsey concluded that –

- Population and projected demands of Ireland can support only one World Class Tertiary Centre
- The Centre would be based in Dublin
- It would ideally be co-located with a leading Adult Academic Hospital to capture the sub-specialist and academic linkages
- It would have space for future expansion (including Education and Research facilities)
- It would be easily accessible through public transport and the road network

- subject to the suitability and flexibility of available sites.

The centre would be the nexus of an integrated paediatric service, also comprising –

- Important outreach capabilities at key non-Dublin Hospitals
- Adequate geographical spread of A&E facilities or Urgent Care Centres (including 2-3 in Dublin with no inpatient children's beds).

This centre would also provide care for all the secondary needs of Greater Dublin (subject to translating this into a workable plan)

Following publication of the report, a joint HSE/DOH&C (Department of Health and Children) Task Group was established and charged with proposing –

- A location for the new Paediatric Centre; and
- Governance arrangements to apply for both the development and operational phases of the initiative.

The Joint Task Group also identified a need to progress a review of Maternity Services within Dublin which led the Group to recommend that the site selected for the new NPH Tertiary Centre should also accommodate a Maternity Hospital.

The report of the Task Group *entitled 'Joint Health Service Executive / Department of Health Task Group to advise on the optimum location of the New Paediatric Hospital'* (ref: 2) was produced in June 2006 and proposed –

- Location of the single Paediatric Centre on a co-located basis with the Mater Misericordiae Hospital on a site to be ceded to the State
- That the new facility is governed independently during both the development and operational phases of its evolution with provision made during the operational phases for a co-ordinating arrangement to ensure defined co-location values.

The proposals of the Task Group were adopted by the HSE Board and by Government in June 2006.

The HSE has now formed a Joint HSE / Department of Health and Children Transition Group to progress the National Paediatric Hospital project. One of the workstreams to be progressed by this group is this High Level Framework Brief. This takes as given –

- The McKinsey recommendation that all Dublin secondary inpatient beds should be co-located with the tertiary services
- The decision of the Task Group endorsed by the HSE that the hospital should be located at the Mater Hospital site.

There is broad support for the clinical model recommended by McKinsey but the site option selected has been challenged. Both the Tallaght Hospital (AMNCH) and Our Lady's Children's Hospital (OLCHC) have questioned the Mater proposal in terms of accessibility, site capacity and availability of complementary adult specialties and clinical and non-clinical support services. Alternative models have subsequently been proposed which include other locations and alternative service models. Most recently

the Irish Association of Emergency Medicine has recommended that some secondary inpatient services should be provided on another Greater Dublin site to support its preferred model for emergency care.

Submissions were prepared by two of the children's hospitals in Dublin –

- 'A World Class Children's Hospital', Our Lady's Children's Hospital, Crumlin (OLCHC) (ref:3) which challenged the decision on siting at the Mater Hospital site
- 'Developing Ireland's National Paediatric Hospital', Children's University Hospital, Temple Street, (CUH) (ref: 4) which supported the proposal.

The Development Board responsible for managing the design and construction of the NPH was established in May 2007.

Background to configuration of Children's Hospitals in Dublin

Throughout this document we make reference to children's hospitals in Dublin. These are –

- Our Lady's Children's Hospital, Crumlin
- Children's University Hospital Temple Street
- National Children's Hospital which is part of the Adelaide and Meath and National Children's Hospital at Tallaght

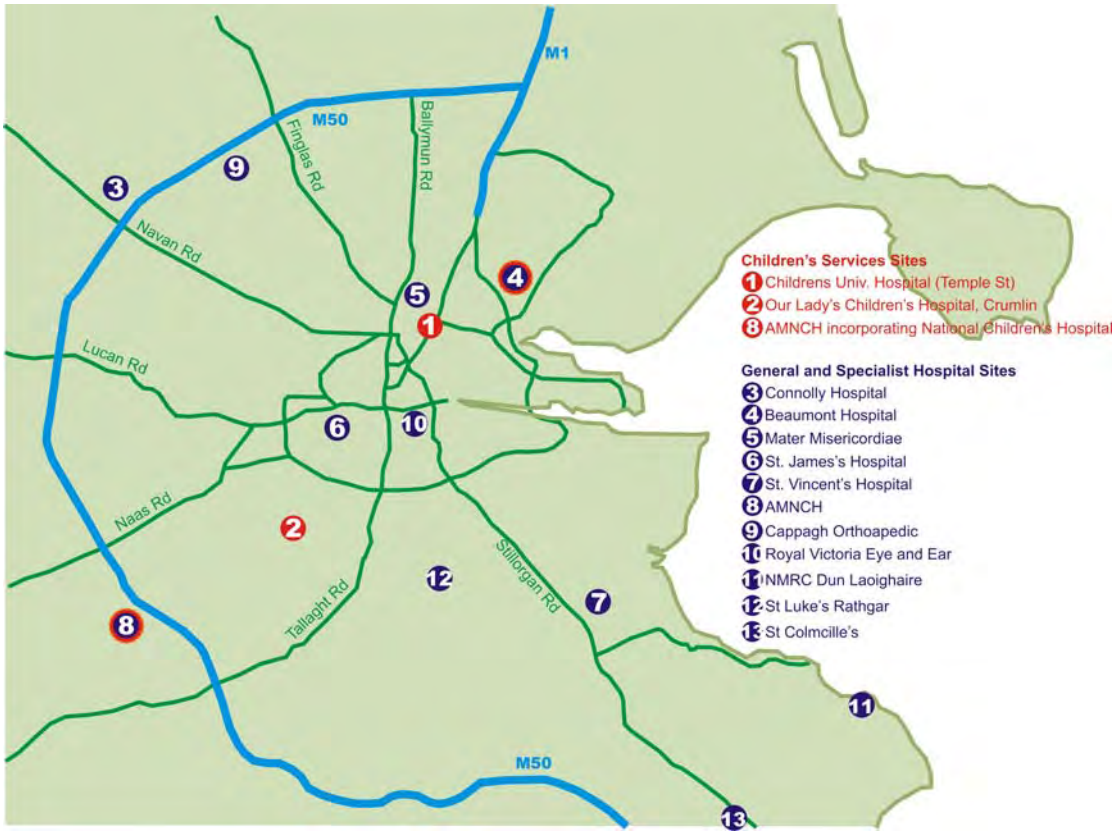
and are located as shown in Figure 1.

In addition, dedicated paediatric beds are provided at Beaumont Hospital and outpatient services are provided from a number of other centres including the cleft lip and palate service at St. James' Hospital.

It is widely acknowledged that, services at Crumlin and Temple Street are provided from poor quality accommodation. Plans to relocate Temple Street have been in place for more than 26 years and the hospital struggles to continue to provide high quality clinical services in very poor accommodation. This site, in the centre of Dublin, is highly developed, and characterised by incremental piecemeal developments built over the last few years.

Crumlin Hospital is on a larger site, and much of the service is provided in original buildings dating from the 1950's although there have been some substantial new build developments on this site in recent years and an outline development control plan was prepared in 2004.

Figure 1 Locations of children's services, Under 16 2005 in Dublin



Parallel and Future Workstreams

This Framework brief represents just one component of the overall NPH Tertiary Centre Programme. Other components to be addressed, consistent with other capital projects of this scale and complexity, following the establishment of the Development Board include future governance arrangements and attention to a number of factors which will influence the final configuration of children's services nationally. These include –

- Review of the investment requirements and affordability of proposals for Children's services nationally
- The availability of capital to fund the proposals in this report
- Technical or design proposals for the Mater Hospital site from an architectural and engineering perspective and Town Planning context

- Transportation planning proposals and evaluation of the traffic impact and car parking capacity requirements for the Mater Hospital site
- A separate Maternity Review, (underway and shortly to report)
- Organisational Development for the NPH Tertiary Centre and the future Workforce Strategy for Children's services nationally.

Terms of Reference

Against this background, key questions set to be answered by this High Level Framework Brief are –

How does the NPH Tertiary Centre sit in the context of a National network for paediatric services?

What is the model and number for Ambulatory and Urgent Care Centres (A/UCCs) in the Greater Dublin area? (Detailed in a separate report,)

What is the Model of Care for the NPH Tertiary Centre at the Mater Hospital site? What services will be dedicated to Children?

What services can be shared with Adult and Maternity services and can any services be located off site?

What size should the NPH Tertiary Centre at the Mater Hospital be including requirements for Education and Research and future flexibility?

What is the preferred physical configuration of services at the Mater Hospital site?

Approach

RKW's approach has been designed to take account of the need for an evidence based Framework Brief within the timescale based on three workstreams as illustrated in Figure 2 –

Workstream 1 **Paediatric Model of Care**

Workstream 2 **Activity and Capacity Modelling**

Workstream 3 **High Level Operational Policies and Hospital Sizing** *(including functional relationships and preferred configuration).*

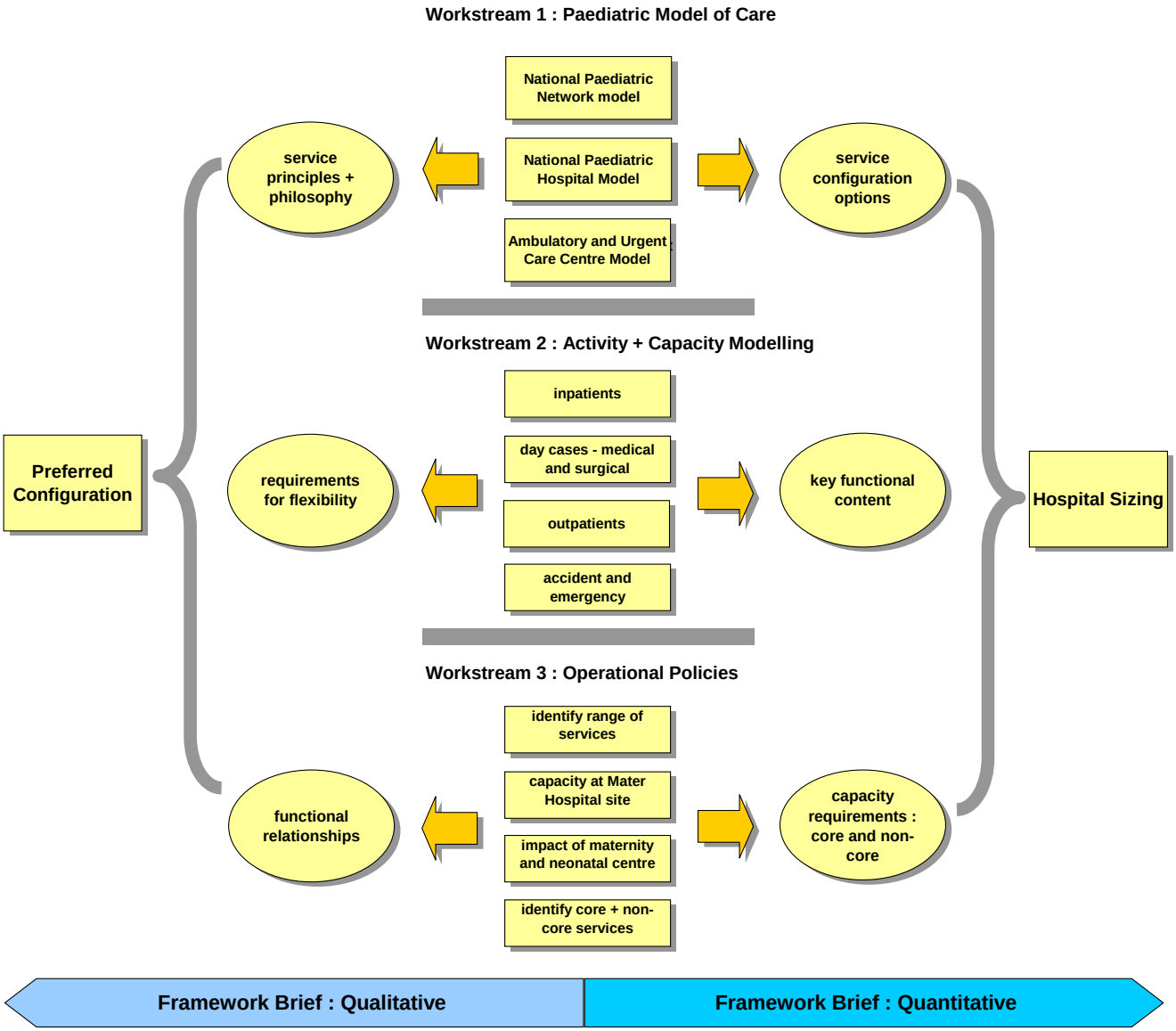
The approach and methodology adopted in this study are detailed for each workstream in the HSE document 'Outline of the development of the High Level Framework Brief for the New National Paediatric Hospital', 23rd January 2007, which has been made widely available to stakeholders by the HSE Transition Group.

Key components of each workstream are tabulated below.

Scope

- Workstream 1 : Model of Care
  - National Network
  - Ambulatory + Urgent Care Centres (A/UCCs)
  - National Paediatric Hospital
- Workstream 2 : Capacity requirements
  - Inpatient and Day beds
  - Outpatient capacity
  - Theatres + Procedures
  - NPH and A/UCC split
- Workstream 3 : High level operational policies
  - High Level Operational Policies
  - Tri-location and shared services
  - Hospital sizing: NPH and A/UCCs
  - Preferred configuration on the Mater site

Figure 2 Methodology



International Advisers and Reference Sites

The Framework Brief for the National Paediatric Hospital has been informed by international expertise via –

- Clinical Advisers from three leading children's hospitals (see Table 2)
- Technical consultancy services to RKW provided by Ken Schwarz of NBBJ
- A Reference Site database including 14 further example hospitals

(See Figure 3 and Appendix 1 for descriptions of reference site hospitals)

Table 2 Clinical Advisers

The Hospital for Sick Children, Toronto	Dr Hugh O' Brodovich, Senior Medical Adviser Cathy Sequin, Vice President International Affairs John Wedge, Orthopaedic Surgeon
The Children's Hospital of Philadelphia	Madeline Bell Senior Vice President
Manchester Children's Hospital	Dr Richard Newton Consultant Paediatric Neurologist

Input from clinical advisers was captured via two questionnaires and a number of telephone conferences (typically up to an hour's duration). The advisers also took part in discussions with the children's hospitals and other stakeholders Copies of the questionnaires, indicating the areas covered in discussion with the advisers are included in Appendix 2.

The views of advisers and the evidence drawn from the reference sites are repeated in the relevant sections in this report. The following general points apply to how this information has been used in developing the Framework Brief.

Care has been taken to contextualise information provided to ensure that the applicability, or otherwise of any models or practices to Ireland may be assessed. Thus for example, the fact that terminations of pregnancy are rare in Ireland has implications for morbidity patterns and the prevalence of chronic conditions. Ireland's birth rate is the highest in Europe and continues to grow. (Ref: 5)

The purpose of the adviser and reference site input has been to inform, not determine, how the NPH Tertiary Centre may be organised. In reviewing international experience of how children's services are delivered, differences may be as important as similarities. Thus while there is strong convergence around some model of care features, others reflect legitimate variations. This should be seen as empowering those responsible for the development of the NPH Tertiary Centre to make conscious choices about what is appropriate for Ireland. The concept of legitimate variation and the possibility that there may be more than one way to achieve international best practice should be recognised in local discussions as the project moves forward.

> "*Ireland is the first Ameropean Society …… a hybrid nation…… we can deliver the tax system of Texas and the Social Welfare system of Sweden"*
>
> **(David McWilliams, The Pope's Children. 2005)**

Reference Sites

In addition to our international advisers we have contacted children's hospitals worldwide to establish the evidence base for the recommendations in this report. The 14 sites, located in Figure 3, include most of the sites already identified in McKinsey. They also include a number of recent new hospitals or planned developments, not necessarily considered by McKinsey. The term 'world class' has been used in many submissions and discussions and has been used interchangeably to describe service models and clinical practice and hospital facilities and environments. Whilst the vision for the NPH Tertiary Centre should be to encompass both, it is important to recognise that the reference sites will individually vary in how they meet 'world class' standards.

Figure 3

Reference Sites Locations

Stakeholder Engagement

Extensive stakeholder engagement has taken place in the development of the Framework Brief, via one to one interviews, group meetings, telephone conversations and written and email submissions. This has encompassed a wide range of organisations and individuals, including all three Dublin children's hospitals.

Stakeholder Engagement Meetings 26-27 June 2007-07-24

Meetings with representatives of each of the children's hospitals and a wider stakeholder group took place on June 26 and 27. International clinical and technical advisers to the project were also in attendance. A summary of the recommendations within the framework brief was presented and further feedback and subsequent written submissions were received. These are noted in the appropriate sections.

Appendix 3 lists the individuals and organisations and the views received are reported in relevant sections below. The following general points should be noted –

- Given the large number and wide range of stakeholders involved it has not been possible to detail fully the discussions which have taken place. However, every attempt has been made to report the issues and concerns raised

- The principle of stakeholder engagement has been welcomed and enthusiastically supported by all those whom we have met. There is a widespread view that this process should continue and develop in the forthcoming stages of the project

- It was not possible to meet staff from AMNCH or OLCHC until late within the project

- Because of the different points at which the three children's hospitals entered the engagement process cross-hospital engagement has been limited to a small number of specialty level meetings with multi-hospital representation. While a number of specialties have co-ordinated written submissions across hospitals, the cross-fertilising dialogue between institutions has yet to take place. It is strongly recommended that this is given priority attention in the next stage of the project and that an appropriate structure is established to take this work forward

- Submissions from specialties within the children's hospitals have included proposals for service developments, additional staff, functional content and space requirements which may have yet to be formally approved or assessed against national policy guidelines or tested for capital or revenue affordability. Some of these developments will be encompassed in the capacity modelling growth assumptions (see Section B) but others will be additional. A formal process for prioritising bids for resources will be required as part of the business planning process for the NPH Tertiary Centre. In the meantime we have attempted to identify the potential impact of the principal service development proposals upon capacity and sizing.

Structure of this Report

This report is structured in 3 parts as described in the diagram in Figure 4.

PART 1 Executive Summary
PART 2 Main Report
PART 3 Recommendations and Next Steps

PART 2 The Main Report is further sub-divided into 3 sections.

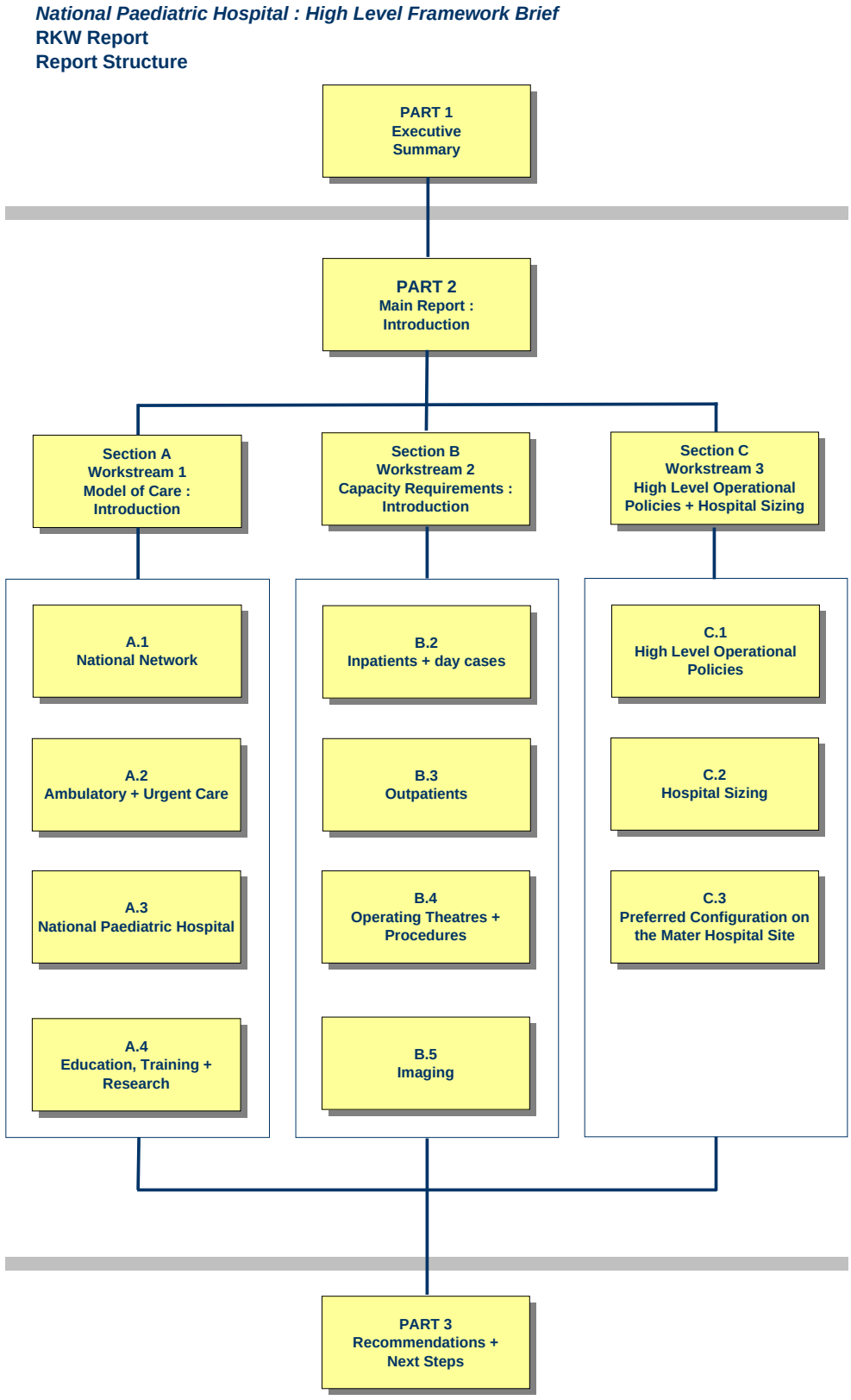
Section A Relates to **Workstream 1** Model of Care and has a number of sub-sections
Section A1 Outlines proposals for the Model of Care across the National Network
Section A2 Describes the approach and methodology adopted in making recommendations for the A/UCCs
Section A3 Outlines recommendations and issues for the Model of Care at the NPH Tertiary Centre main site
Section A4 Describes the Models for Education, Training and Research

Section B Relates to **Workstream 2** Capacity Modelling. This section includes three key sub-sections
Section B1 Projected inpatient and day case bed requirements for 2021
Section B2 Projected outpatient capacity requirements for 2021
Section B3 Projected demand for operating theatre and procedure rooms for 2021

Section C relates to **Workstream C** and is in two sub-sections
Section C1 Reviews High Level Operational Policies across key services and examines scope for shared services
Section C2 Links the key functional content requirements identified in Section B and High Level Operational Policies in C1 to identify the overall space requirements for the core hospital and related services
Section C3 Preferred Configuration on the Mater Hospital Site

PART 3 summarises Key recommendations from the Main Report and suggests how the project should be progressed to the next stage.

Figure 4 Diagram of Report Structure



Terminology and Abbreviations

A list of abbreviations and glossary is included at the front of this report. Throughout the document we use the following abbreviations when referring to the individual organisations.

Mater Misericordiae University Hospital	MMUH or The Mater
Our Lady's Children's Hospital, Crumlin	OLCHC
Adelaide and Meath Hospital, incorporating National Children's Hospital, Tallaght	AMNCH or NCH
Children's University Hospital, Temple Street	CUH

The working title for the new national tertiary centre as coined in the McKinsey Report is the National Paediatric Hospital. This terminology relates to both the organisation, including the national network, and the proposed hospital building on the Mater Hospital site. The abbreviation NPH Tertiary Centre is used in this report to cover both meanings.

Acknowledgements

This report takes into account data, views and advice from a number of sources – including stakeholder interviews, written submissions and reference documents. It has not been possible to attribute the source in all instances, but thanks are due to all who have contributed.