



**METRO NORTH
ORAL HEARING**

Mater Stop Revised Design

Summary of Environmental Assessment

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1.0 BACKGROUND

The Mater Stop Original Design submitted to An Bord Pleanála as part of the Metro North Railway Order application shows the details of the Stop which has a single entrance served from the North Circular Road, and is very close at its south eastern corner to the Mater Private Hospital, being at its closest point only a few metres away from the façade of the west wing of the hospital.

RPA had, during the concept design stage, considered a second entrance to the south of the stop from Eccles Street. The lands required to construct this second entrance were earmarked for the National Paediatric Hospital, and prior to the establishment of the National Paediatric Hospital Development Board (NPHDB), RPA were unable to meaningfully progress this option for fear of compromising a site of national importance.

However, in response to stakeholders and the local residents concerns regarding the single entrance for the Mater Stop and in the absence of the NPHDB being established, RPA future proofed the Original Design by including a 'knock-out' panel at southern end of the stop that could, at some point in the future be removed to accommodate the construction of a second entrance.

The proximity of the stop box to the Mater Private Hospital (MPH) resulted in a number of concerns being raised by MPH in its submission to An Bord Pleanála. The key construction concerns included noise; vibration caused by the construction of the stop box and by tunnel boring and its effect on sensitive items of clinical equipment located within the hospital; and the effect of settlement induced by excavation. The effect of electromagnetic interference from the operational Metro was also of concern.

In October 2008 RPA, as part of open and continued dialogue, established a dedicated working group called the 'physical agents working group' (PAWG) as well as other working groups. RPA appointed a number of experts to the PAWG, and other working groups, who specialise in the fields of noise and vibration, settlement and electromagnetic interference to work with MPH to find acceptable mitigants.

MPH had stated that the mitigant it favoured was to move the source of the concern, namely the stop box construction, far enough away from the receptor (MPH) so as to remove the various impacts arising. This was not an option initially available to RPA since the only location available at that time for the location of the stop southern ventilation structure and adjacent emergency escape core was in the area in which 24 to 26 Leo Street currently are to be found (and which were thus required to be demolished to accommodate these structures).

However, the appointment by the NPHDB of an interface team in July 2009 enabled RPA to progress a revised design which addressed the issue of a second entrance onto Eccles Street and at the same time move the stop box construction further away from MPH. It was at this point that RPA looked at amending the Original Design and have subsequently produced the Revised Design.

The Revised Design requires a small amount of additional land, not referenced in the original Railway Order application. This land is in the ownership of the Health Services Executive (HSE) and the Mater Misericordiae University Hospital (MMUH). HSE and MMUH have both agreed to make the lands required for a second entrance available to RPA in recognition of the benefits that it would bring to the Mater Hospital Campus and have written to RPA

confirming that they have no objection to the lands being referenced for compulsory acquisition.

The second entrance will be located within the proposed National Paediatric Hospital and accessed from Eccles Street. The inclusion of a second entrance enables RPA to move the southern emergency ventilation fans and structure and emergency escape core a further 20m away from MPH. This significantly reduces the majority of the construction impacts.

2.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

For ease of local identification, the Metro North EIS was divided into seven areas. These areas are numbered Area MN101 to Area MN107 inclusive going from Belinstown in north County Dublin to St. Stephen's Green in the city centre. Mater Stop is located in Area MN106 Albert College Park to Mater Stop, the details of which are described as follows.

The scheme within Area MN106 initially runs in a cut and cover tunnel across Albert College Park, entering twin bored tunnels near the southern boundary of the park. The route remains underground in the bored tunnels until its termination at St. Stephen's Green.

Continuing south in a bored tunnel from Albert College Park, the next stop is Griffith Avenue. This stop is located in the southwest corner of the agricultural lands on the north side of Griffith Avenue. Proceeding in a south-easterly direction, the route continues in tunnel under St. Patrick's College playing fields. An emergency access and ventilation shaft is located in the southwest corner of the college playing fields. The route continues in tunnel under the Tolka River to Drumcondra Stop. This stop is located to the west of Lower Drumcondra Road and adjacent to St. Joseph's Avenue. An interchange with Iarnród Éireann's suburban rail services to Maynooth is provided at this stop. The route turns in a south-westerly direction passing under a second main line railway and the Royal Canal, to the Mater Stop, located within the Mater Hospital campus. Area MN106 ends 100m further south where the tunnels pass under St. Joseph's Parade.

The Mater Stop is located on a very confined site. It is bounded to the north by the North Circular Road, to the east by the houses fronting onto Leo Street, to the west by the new Adult Hospital and to the south by the site earmarked for the development of the new National Paediatric Hospital.

Mater Stop serves the Mater Campus hospitals, as detailed below, and it also serves local communities in the Dorset Street area and in Phibsborough. The stop also provides convenient access to Mountjoy, where a major redevelopment is planned. The stop will link with the Quality Bus Corridor on Dorset Street.

The Mater Campus Hospitals

The Mater Campus is / will be made up of the following hospitals:

- Mater Misericordiae University Hospital (MMUH)
- The proposed Mater Adult Hospital (MCHD are the body responsible for the construction of the Mater Adult Hospital)
- Mater Private Hospital (MPH)
- The proposed National Paediatric Hospital (NPH)
- The proposed Maternity Hospital

MMUH

MMUH is an acute, public, voluntary, teaching hospital and a tertiary referral centre. The MMUH provides a 24 hour "on-call" accident and emergency service to the north Dublin inner city and county area. Currently, over 60,000 people attend its A&E annually, and 123,500 people attend the hospital as outpatients. The hospital currently has 570 beds (which will be reduced to 450 beds when the Mater Adult Hospital opens) including day beds, and it employs approximately 2,000 people. By virtue of its regional and national status, MMUH treats patients, not only from its immediate catchment area, but also from all parts of Ireland.

The Mater Adult Hospital

The Mater Adult Hospital is currently under construction and will be an eight storey building at its highest and is bounded by land available for the construction of the proposed National Paediatric Hospital adjacent to Eccles Street to the south, Leo Street to the east, North Circular Road to the north and the campus of the existing MMUH to the west. It has a total floor layout of some 55,000m². When complete, it will contain a new accident and emergency department, an outpatients department, 12 theatres and ICU/HDU departments, a radiology department, 120 replacement beds, all of which will be single rooms, and new Central Sterilisation Service Department, catering and waste management departments.

The hospital structure will incorporate one of the two stop entrances within its north eastern corner, offering direct access into the Mater Stop from North Circular Road.

The new Mater Adult Hospital and MMUH will combine to form the Mater Hospital. The Mater Hospital will have two national specialities, cardiothoracic surgery (including transplantation) and spinal injuries, and regional specialities which include ophthalmology, dermatology, breast cancer screening and oncology. The Mater Hospital will also provide services under a range of medical and surgical specialities, including cardiology, renal services, general and vascular surgery, urology and orthopaedics.

The Mater Hospital will have a combined total of 570 beds including day beds and approximately 3,000 employees.

The Mater Hospital will also comprise of the following teaching facilities:

- A Medical School affiliated to University College Dublin and the Royal College of Surgeons in Dublin
- A Centre for Nurse Education in partnership with the School of Nursing, University College Dublin (UCD)
- A School of Physiotherapy affiliated to UCD
- An Institute of Radiological Science offering MSc and PhD programmes
- An Institute of Ophthalmology (UCD)
- A Mater College for Postgraduate Education & Research
- A Department of Child and Family Psychiatry offering MSc in Child and Family Psychotherapy (UCD)
- Professions Allied to Medicine who provide clinical practice for students attending various third level institutions

Mater Private Hospital

MPH is a private acute tertiary 218 bed referral hospital which specialises in high technology medicine. MPH opened in 1986, with an extension (the west wing) completed and opened in 2001. It is the west wing which lies in closest proximity to the Metro alignment.

MPH is a five storey building occupying a city block bounded by Eccles Street to the south, Dorset Street Lower to the east, Eccles Place to the north and the campus of MCHD and the NPH to the west. It has a total floor layout of some 31,000m².

National Paediatric Hospital

The proposed NPH will bring together the expertise of the three current children's hospitals in Dublin (Children's University Hospital in Temple Street, Our Lady's Children's Hospital Crumlin and The Adelaide and Meath Incorporating the National Children's Hospital) into one organisation ensuring a critical mass of specialist knowledge and skills. It will also drive standardisation of care processes across paediatric services in Ireland.

Subject to planning permission, building will commence in 2010 and it is expected that construction will be finished by the end of 2013. It has a proposed total floor layout of some 123,000m² and will incorporate the second stop entrance within the south-eastern corner of its structure, offering direct access into the Mater Stop from Eccles Street.

Following fit out and commissioning, the new NPH hospital is expected to be up and running by the end of 2014.

Maternity Hospital

The HSE has advised that the Rotunda would over time move onto the Mater Campus in recognition of the findings of a report that recommended that clinical maternity services should be located along with acute adult services. The report quotes:

"The move will allow mothers to access a full range of medical and support services should the need arise for specialist care such as cardiology, haematology or intensive care. In addition, for neonatology and foetal medicine, locating maternity with adult and paediatric services is advised."

The site currently reserved for the Maternity Hospital would accommodate a total floor layout of some 25,000 m².

RPA has been advised that the master plan programme shows that this would follow on after the proposed NPH.

3.0 DESCRIPTION OF THE REVISED DESIGN

The box for the Mater Stop Revised Design will be located in the north east corner of the existing Mater Campus generally within the footprint of the Original Design, (albeit reduced in size to the south) and will be constructed almost entirely below ground.

The footprint of the box structure commences at the interface with the North Circular Road where one of the two principal entrances will be located. The northern emergency ventilation fans and escape core will continue to be sited in the footprint of residences 398 and 400 North Circular Road, with the northern entrance remaining over the footprint of the former Mater Hospital Energy Centre.

From the North Circular Road entrance, the box will run parallel with the rear gardens of the properties along Leo Street for a distance of approximately 147m over what is currently the construction haul route for the construction of the Mater Adult Hospital. The box structure will end at a location adjacent to the rear of number 23 Leo Street.

The southern entrance at the Stop will be located some 20m to the west of MPH and will be accessed from Eccles Street through the NPH. Should the entrance be constructed in advance of NPH then access would be directly from Eccles Street.

With the Revised Design there is no longer a requirement for the Leo Street properties to be demolished, and hence the street will remain intact. The stop itself will be bright, open and spacious. The stop will be carefully integrated into its surroundings. Entrances will be restrained in scale and will blend in discreetly with their urban context reading architecturally.

4.0 METHODOLOGY

The environmental assessment of the Revised Design has been prepared by drawing on the work carried out as part of the Metro North EIA process. All aspects of the construction works, including enabling and utility diversion works proposed to be undertaken at Mater, including the stop's operation, have been assessed in terms of their predicted impacts.

The methodology adopted to complete the environmental assessments, consultations undertaken, the statutory and planning context and alternatives considered are detailed in Volume 1 of the EIS and are not repeated in this report.

5.0 CONSTRUCTION METHODOLOGIES AND TIMESCALES

The works associated with Mater Stop comprise the construction of the stop and the boring of the tunnels from out of the stop box excavation southwards into the city centre. The environmental report describes in detail the work to be carried out in each of these phases, construction methodologies and construction timescales.

6.0 ENVIRONMENTAL ASSESSMENT

6.1 Health

A health assessment was completed as part of the environmental impact assessment for the Original Design. This assessment, reported in detail in the environmental impact statement submitted with the railway order application, concluded that there were no significant impacts on human health from the construction and operation of the proposed scheme. No changes are expected as a result of the Revised Design. Any potential health effects associated with specific environmental topics are referred to in the section dealing with the relevant topic.

6.2 Human Beings: Landuse

At the location of the Mater Stop there will be temporary land-take of about 0.87ha (some of which is also acquired permanently) for the main infrastructure works. This temporary land-take will be for a period of about four years. As the temporary land-take will be within the lands associated with the Mater Campus and will be for a period of approximately 4 years the significance of the impact post mitigation is low.

During the operational phase there will be permanent land-take on lands within the Mater Campus for permanent features associated with the Stop (Two Entrances, Emergency Vent and Escape Core, a Vent Building, Fireman's Lift and Light wells). For the permanent land-take the significance of the impact is Low.

There will be an area of substratum permanent land-take. This land-take will have no impact on the existing surrounding landuse. The design of the tunnels and stop will allow for any likely future development on the land directly above. The significance of the substratum landtake at Mater Stop is determined to be Low.

There will be no permanent severance in Area MN107 as a result of the operation of the scheme.

6.3 Human Beings: Socio Economics

During the construction phase, the report concludes that certain clinical services may have to be temporarily relocated to other facilities outside of the Mater Private Hospital. The revised proposal significantly reduces the impacts on these services. Discussion on the necessity to relocate clinical services, or otherwise, remains ongoing with the Mater Private Hospital with a view that it may be possible that the majority of services, if not all, may be maintained on site. This will be dealt with in more detail within the hospital module.

The proposed scheme will have a positive impact on the future development patterns of the area during the operational phase.

6.4 Human Beings: Noise

RPA has determined that airborne construction noise may be reduced to satisfactory levels and has demonstrated that the mitigation measures that could be utilised to achieve the necessary reduction in noise levels are effective. The predictions show that noise levels caused by construction activities that will be realised following mitigation will be lower than the existing noise levels currently being experienced by the Mater Private Hospital. For other receptors affected by the Mater Stop box construction there is no material change in the residual airborne noise impact with the Revised Design relative to the Original Design.

There are no residual impacts in relation to airborne noise predicted for the Mater Private Hospital during the operational phase.

6.5 Human Beings: Vibration

In the case of excavation of the stop box the revised layout of the stop has realised a reduction in predicted vibration levels at the Mater Private Hospital from those reported in the Further Information submission and this will be dealt with in more detail during the hospital module.

In the case of excavation by the tunnel boring machines the impacts (vibration and groundborne noise) remain as detailed in the Further Information submission. The Mater Private Hospital has confirmed that the effect on theatre operations which rely on the use of microscopy is such that a vibration limit of 20µm/s must be imposed. This limit, whilst not validated, has been accepted by RPA. The Further Information submission indicated that mitigation could include the relocation or the temporary suspension or rescheduling of services. Discussions are continuing between RPA and the Mater Private Hospital with a

view to agreeing alternative mitigation measures and again this will be dealt with in more detail during the hospital module. One further mitigant which is under discussion with MPH is to operate the tunnel boring machines at night and throughout the weekends in the very limited extent of MPH. The effect would be that groundborne noise levels would be exceeded at night within certain of the wards within MPH and they are considering the impact of this. Since the tunnel boring machines would then not operate during theatre operating hours the effects of daytime vibration would be mitigated. The introduction of this mitigant would however have an impact on Leo Street residents for a short duration whilst the tunnel boring machines excavated away from the stop box southwards. The actual duration would depend on the tunnel boring machine working pattern finally determined and discussions are continuing with MPH in this regard prior to consultation with the residents; by way of example should continual working throughout the weekends be proposed the effect may last for as little as two weekends. The temporary re-location of residents during night-time working periods would be an appropriate mitigation and will be offered to residents in the event that working at night outside of the specified limits became necessary.

There are no residual impacts in relation to vibration or groundborne noise predicted for the Mater Private Hospital during the operational phase.

6.6 Human Beings: Radiation and Stray Current

There are no predicted impacts during the construction phase.

Since the submission of the Further Information and following additional testing there has been substantial progress made with the Mater Private Hospital regarding the effects of electromagnetic interference during the operational phase. In particular, testing has been carried out to examine the effects of electromagnetic interference on the linear accelerators and this will be discussed later both through the response to the Mater Private Hospital submission on the Further Information and as part of the hospital module.

6.7 Human Beings: Traffic

There are no residual impacts arising from construction traffic volumes entering and leaving the site area. The effect on junction capacity, car movements and parking, pedestrian and cyclist movements and bus and taxi services in the area are not significant.

There are no significant traffic impacts during the operational phase. The hospital will benefit significantly from its close proximity to the Mater Metro Stop and from the greatly improved access to areas served by the proposed scheme for its staff, patients and visitors.

6.8 Soil and Geology: Waste, spoil contamination and radon

There will be a temporary impact in terms of the excavation and disposal of soil required for the temporary land-take at Mater to facilitate the construction of the Mater Stop box. The area that will be affected is considered to be of Very Low functional value; therefore, the impacts will have Very Low significance.

A waste management plan is to be developed in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, (DoEHLG, 2006), as part of the construction environmental management plan, to

ensure that all construction waste is stored, managed, moved, reused or disposed of in an appropriate manner and in accordance with all relevant waste legislation.

Monitoring that construction waste is stored, managed, moved, reused or disposed of in an appropriate manner and in accordance with all relevant waste legislation will be undertaken.

There are no residual impacts associated with waste, spoil contamination and radon at Mater Stop during the operation of the proposed scheme

6.9 Soil and Geology - Settlement

In the case of excavation of the stop box the revised layout of the stop has realised a reduction in the predicted effect on clinical equipment to the extent that it is currently considered that ground movements arising from the stop box excavations will not affect any equipment. This will be dealt with in more detail during the hospital module.

In the case of excavation by the tunnel boring machines the impact from ground movements remain as detailed in the Further Information submission. Discussions are continuing between RPA and the Mater Private Hospital with a view to agreeing mitigation measures including the use of an adjustable floor for the linear accelerators as reported within the Further Information submission and again this will be dealt with in more detail during the hospital module.

All buildings have been assessed as falling within a predicted damage category of 0 (negligible) in accordance with Table 9.2 of the EIS.

There are no residual impacts in relation to settlement predicted.

6.10 Air and Climatic Factors: Air Quality

Construction dust can be substantially mitigated through the implementation of good on-site practice and the adoption of commonly used techniques to prevent dust being generated and emitted. All contractors will be required to comply with the mitigation measures set out in the EIS. With regard to mitigating the effects associated with *Aspergillus*, the *"Mitigation measures proposed in the National Guidelines for the Prevention of Nonocomial Invasive Aspergillosis during Construction / Renovation Activities"* will be implemented and will minimise the potential for any detrimental effect.

With regard to vehicle emissions heavy traffic is not routed past the main hospital buildings other than along the west wing. The number of vehicles passing is relatively minimal and will not affect air quality.

There are no residual impacts associated with air quality during the operation of the proposed scheme.

6.11 Landscape and Visual

The residual impact arising from the construction compound and the construction of the stop will be low on landscape receptors and medium on visual receptors.

During the operational phase, the visual impact is very local and mainly affects existing properties which align the surrounding roads. This mainly concerns Leo Street and North Circular Road where the removal of the existing buildings and the replacement by new

structures will be visible. Due to the high sensitivity of these receptors and the medium magnitude of change, the significance of this visual impact is medium.

6.12 Material Assets: Archaeology, and Cultural Heritage

The Revised Design of the Mater Stop box will directly impact on a site of archaeological potential identified at the site of the Mater Hospital between Leo Street / Eccles Street / North Circular Road. The construction of the Stop will directly impact on any surviving archaeological deposits at the site resulting in their permanent removal. This site is deemed to have a High function value.

There will be no construction impacts of features of cultural heritage.

Mitigation will require archaeological monitoring of all ground disturbance works, following by archaeological assessment after site clearance followed by excavation should any deposits be shown to be present.

The proposed mitigation measures for archaeological impacts have been further developed and detailed in the Metro North Archaeological Strategy document. This provides a base from which to plan the execution of the works. The overall approach to archaeological mitigation has been agreed with the DoEHLG and Dublin City Council (DCC).

The residual impact on the area of archaeological importance has the potential to reduce to very low after mitigation has been implemented.

No operation impacts to archaeological heritage are identified from the Revised Design.

6.13 Material Assets: Architectural Heritage

As for the Original Design, the Revised Design of the Stop box will directly impact on two house of architectural heritage merit (HC# 405 - 406) on North Circular Road (Nos.398 and 400) resulting in the total loss of the structures with an impact deemed to be of High significance.

In the EIS, Area 106, Volume 2, Book 6 of 7 Section 15, Table 15.3, it was deemed that the impact associated with ground disturbance during construction would also directly impact on three houses of architectural heritage merit (HC#402-404) on Leo Street (Nos. 24-26) resulting in the total loss of the structures. The Revised Design does not require the demolition of these three buildings of architectural heritage merit on Leo Street.

No mitigation is required for the houses on Leo Street.

The houses of North Circular Road (Nos. 398 & 400) will require a drawn measured architectural and photographic survey of the structures to take place prior to demolition. The survey report will be lodged with the Irish Architectural Archive.

The residual impact on the houses on North Circular Road retains a High significance of impact after mitigation.

The residual impact on the houses on Leo Street reduces from High for the Original Design as there will be no impact from the Revised Design.

No operation impacts to architectural heritage are identified from the Revised Design.

6.14 Material Assets: Non Agricultural Property

There will be an area of permanent substratum land take associated with Mater Stop which has no impact.

All impacts during the operational phase are positive.

7.0 CONCLUSION – SUMMARY OF IMPACTS OF THE REVISED DESIGN WHEN COMPARED TO THE ORIGINAL DESIGN

As part of the ongoing EIA process, and in response to the various submissions lodged with An Bord Pleanála (ABP) by the Mater Campus stakeholders, namely the National Paediatric Hospital Development Board (NPHDB), Mater Campus Hospital Development (MCHD), Health Service Executive (HSE), Dublin City Council (DCC), Blessington Street, Eccles Street, Nelson Street, Dorset Street Residents association (BLEND) and the Mater Private Hospital (MPH) RPA has augmented its Original Design for the Mater Stop by a Revised Design.

The changes to the Original Design are as a direct response to the various requests made by Stakeholders and are summarised as follows:

- the inclusion of a second entrance to the Stop within the proposed National Paediatric Hospital (NPH) and off from Eccles Street and incorporation within NPH of the southern emergency escape core.
- the relocation of the southern emergency ventilation fans ventilation structure (and substructure) about 20m away from MPH
- the shortening of the overall box length by moving the southern (and part of the eastern) diaphragm wall that housed the southern emergency ventilation fans and emergency escape core about 20m further away from MPH

The overall impacts associated with Mater Stop when comparing the Revised Design with the Original Design is that there is a net positive effect (that is the negative impacts from the Original Design are substantially mitigated further).

Environmental Topic	Net change compared to the Original Design
Human Beings: Landuse	Positive as it introduces a second entrance and enables Leo Street terrace to remain intact.
Human Beings: Socio-economics	Positive as the revised design minimises disruption to MPH
Human Beings: Noise - Airborne Noise	Positive as it moves the construction 20m away from the MPH and in particular from sensitive receptors.
Human Beings: Vibration	Positive as it moves the construction 20m away from the MPH and in particular the sensitive equipment.

Environmental Topic	Net change compared to the Original Design
Human Beings: Radiation and Stray Current: Radiation	No change
Human Beings: Traffic	No change
Soil and Geology: Waste, spoil contamination and radon	No change
Soil and Geology: Settlement	Positive as it moves the construction 20m away from the MPH.
Air and Climatic Factors - Air Quality,	Positive as the main muck extraction area has been moved away from sensitive receptors
Landscape and Visual	Positive as revised design improves upon the overall impact of that predicted for the Original Design in that it enables the Leo Street terrace to be retained.
Material Assets: Archaeology, and Cultural Heritage	No change
Material Assets: Architectural Heritage	Positive as the Revised Design no longer requires the demolition of three houses of architectural heritage merit (HC#402-404) on Leo Street (Nos. 24 to 26).
Material Assets: Non Agricultural Property	Positive as the revised design enables the Leo Street terrace to be retained.

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