

3.3.13 Public Relations/Community Liaison

BAM will develop and implement a project Communications and Engagement Programme, which will protect the reputation of the Employer, its Client and the Children's Hospital Group. This team will be led by the Community Liaison Officer, Garry Keegan, and will include BAM personnel from the BAM Enabling Works team to ensure consistent communication channels are maintained with the various project stakeholders. Garry has extensive experience of infrastructure development matters such as construction methodology, community liaison, property and third party stakeholder engagement. He has worked in the capacity of Communications Liaison Officer on the design, planning, construction and operational phases of many projects for the last twenty years.

Garry's role will include:

- Participation and distribution of a local newsletter;
- Briefing with neighbours on progress and issues;
- Liaison with Dublin City Council and emergency services as appropriate;
- Liaison with An Garda Siochana, particularly in relation to traffic movements and permits;
- Preparation of reports for the site meetings on neighbourhood issues.

There will be National Children's Hospital "Drop-in" Evenings held at intervals to update the local community on the project's progress, the next such evening to be held is on Thursday June 29th from 4pm – 8pm. Garry Keegan will introduce himself and provide residents with numbers for the Resident's Helpline as well as his own mobile number should they need to contact him.

BAM will also be organising another "Meet the Buyer" event where local businesses can meet with BAM to discuss potential supply chain opportunities.

BAM will also operate a "Good Neighbour Policy". Due to the nature of construction works it is essential to implement this wherever possible.

The key aspects of the Project Team's good neighbour policy include: -

- Early implementation;
- Quick response to issues arising
- Good client, Staff and Neighbourhood liaison;
- Reduction of nuisance factors;
- Clear access for neighbouring premises;
- Clear and concise information;
- Designated liaison officer.

3.3.14 Environmental Management

The site of the proposed Children's Hospital is adjacent to the 'live' section of St. James's Hospital and residential property owners of O'Reilly Avenue, Cameron Square, Brookfield Road, Mount Brown and South Circular Road. It also includes the Davitt Road Compound. The properties and hospital are highly sensitive to the potential impact of the Works, particularly airborne noise, vibration and dust and associated traffic movements related to the execution of the works.

A detailed Environmental Management Plan (EMP) including mitigation measures has been compiled for the works to demonstrate how any impacts of the works on the surrounding environment are going to be monitored and protection measures put in place to avoid exceeding the specified tolerance levels. This EMP has been prepared in accordance with the BAM Environmental Management System (EMS), and forms part of the PEP coordinated deliverables. The EMP for the Main Contract Phase A is

included in Appendix B.

To promote Environmental awareness and sensitivity of the site and surround, all personnel at induction stage will be made aware as a minimum of the following Environmental requirements which need to be considered:

- Airborne Noise
- Dust (including the role of dust in the spread of aspergillus)
- Vibration ground-borne
- Air Quality
- Ground water
- Water Quality
- Removal of construction related materials off site.

This will be continually communicated to the relevant sub-contractors and personnel who will be working on the site for the construction period. Throughout the construction period the Environmental impacts in the form of monitoring and adjustment of mitigation measures (as necessary) will be carried out to ensure compliance with the Works Requirements.

During the course of the works particular attention will be given to the following elements which have been deemed under the EIS as being of particular relevance:

- Dust – created during the course of building demolition or excavation/diversion of services.
- Noise – created during the course of the various elements of the works.
- Vibration – ground borne and created, principally, during building demolition.
- Waste Management – to ensure proper and correct disposal of construction related waste.
- Vermin control

3.3.15 DUST CONTROL & MONITORING

BAM have developed a dust minimisation plan for the Main Contract Phase A which will be implemented continuously through the course of the works. As prescribed in the contract, the method for measuring any dust particles generated will be by the Bergerhoff Method (jar collection) with an allowable limit of 350mg/m²/day as a 30-day average (as specified by the Environmental Protection Agency (EPA) for licensed facilities in Ireland) being the established criteria. The proposed 11 locations for the dust jars for the Main Contract Phase A are indicated on a layout plan contained within Appendix D (included with this CMP). Each dust jar will be collected on a monthly basis for dust analysis testing and a report issued. Working methodology and mitigation measures will be constantly reviewed and enhanced if and is required based on the results of this ongoing monitoring process.

BAM believe that the key principle in any minimisation plan is to limit the amount of dust created at source i.e. at bulk excavation, piling and concrete construction phase and associated service diversion works which involve trenches being opened by cutting either bituminous or concrete surfaces. BAM are aware that the construction works have the potential to affect the hospital and that the hospital service in general could be at an increased risk of developing invasive fungal infections, primarily

through aspergillus related syndromes, with dust that is generated from the building work being one of the main promoters of this problem. Stockpiling of excavated material on site will be kept to a minimum. BAM note that Aspergillus prevention and infection control for hospital environments will be adhered to during the works. SJH infection control section will be kept up to date on all works through co-ordination á meetings which will be held on a weekly basis.

There are a number of dust suppression techniques which will be employed by BAM during the works:

- i. **Archaeology:** All excavations arising from the archaeological slit trenching works on site will be managed in a manner which prevents dust. All stockpiles of material from the excavation will be covered or dampened down by watering.
- ii. **General Demolition:** In demolishing any specific building the overriding principle will be, in as far as is practicable, to prevent the stockpiling/accumulation of demolished material on site. It is intended that material will be segregated in a timely fashion and removed off site at the earliest opportunity. Stockpiles of demolition waste act as dust collection points and in dry and windy weather this can lead to spread/blowing of dust. During the actual demolition process there will be two defined methods of watering the works area:
 - a) By installing a lance/hose on the jib of the machine that is demolishing and which will direct water to the precise location of demolition.
 - b) By physically spraying the works area using a hoist where an operative is in the basket of the hoist and sprays water onto the demolition location.
 - c) A sprinkler system will be installed on the hording at various locations to direct water into the general site areas.
- iii. **Climatic Conditions:** The prevailing weather conditions i.e. dryness, rainfall prediction, wind speeds and direction, will be monitored continuously through the works to aid assessment on site before any particular section of demolition commences. Assessment of future weather patterns will enable BAM to allow for the most appropriate type of dust suppression method. For example, if a period of sustained dry weather is expected then road sweepers can be booked in advance.
- iv. **Material Removal:** Materials that is being removed off site will be loaded into HGV and transported off site. The bodies of all trucks will be tightly covered with a tarpaulin to prevent dust from blowing off this material during transport. Vehicle wheel washes located at site egress points, road sweeping and generally housekeeping will ensure that the surrounding environment is free of nuisance dust and dirt. A speed limit of 15km/hr will be enforced for all site traffic within the SJH campus. Signage will be installed to this effect and this information will be issued to all employees/personnel at site induction stage and enforced through a combination of monitoring by the site foreman and corrective action / disciplinary measures where necessary.
- v. **Access Roads:** Roads throughout the SJH campus which form the main access/egress from any specific works area i.e. to Rialto Gate and Mount Brown accesses, will be kept free of extraneous material that are created as a result of the works. Of equal importance are the public roads Brookfield Road, South Circular Road and Mount Brown. In addition to this measure, road sweepers will be deployed on the access roads and adjacent public road network to keep lanes and road drains clear. As part of the works, BAM will aim to maintain

as much of the existing hard surfacing as possible within any works area. Hard surfaces are readily swept of dirt if required. As part of the BAM safety management system roads will be inspected for dirt and general degradation (among other items) on a daily basis. Condition of the roads (internal and external) will be noted and any remedial actions required will be taken immediately.

- vi. **Rock Breaking:** It is anticipated that a very small volume of rock excavation will be required in the southern portion of the site. Such excavations will be through the upper weathered layers of the rock and as such has been technically evaluated as being suitable for "hard ripping" by a 32 tonne excavator or equivalent and should not require the use of hydraulic breaking. To counteract the spread/blowing of any dust during ripping, there will be two defined methods of watering the works area:
- a. By installing a lance/hose on the jib of the machine that is demolishing and which will direct water to the precise location of demolition.
 - b. By physically spraying the works area using a hoist where an operative is in the basket of the hoist and sprays water onto the demolition location.

In either of the above mitigation measures, BAM will ensure that the measure taken is adequate to suppress the dust created. The excavated rock will be kept segregated from other materials and removed off site at the earliest opportunity.

Preventative measures identified above will be included in the BAM Site Safety Induction that all personnel must attend before being allowed onto site. In addition to this the document will be issued to all subcontractors as part of their contract documentation package. It will be the responsibility of all personnel to play their part in minimizing dust creation.

3.3.16 Noise & Vibration Control & Monitoring

BAM have engaged specialist subcontractor, namely, Sandy Brown Associates to prepare and develop the Noise & Vibration Monitoring Plan for the Main Contract Phase A which is included in Appendix E of this CMP - "16301-R03-B - Noise, Vibration and Movement Monitoring Management Plan".

Sandy Brown Associates will act as Surveying, Instrumentation and Monitoring Specialist (SIMS) for the Main Contract Phase A and will attend site as required. Murphy Surveys will continue to carry out all noise and vibration monitoring of the Main Contract Phase A following their involvement in the Enabling Works Contract. All monitoring equipment and associated specifications will be reviewed and approved by the SIMS.

The proposed locations of the noise and vibration monitors are indicated on a layout plan contained within Appendix E (attached). The exact locations of these monitors will be agreed with the ER before installation. To maintain the integrity of measurement and to afford general protection of these monitors throughout the course of the works, the monitors placed along the hoarding line will be fixed on concrete plinths.

In general, this type of monitor requires an 110v power supply. Due to the spatial arrangement of the monitors, being positioned along the boundary of the works and out of reach generally from readily available power sources, it is proposed that each monitor will be self-powered by way of solar panel with back-up battery (for night time measurements). These will be monitored remotely and will further be inspected weekly by the BAM Engineer to ensure continuous monitoring.

A baseline noise and vibration survey was carried out in advance of the commencement of the Enabling Works Contract to demonstrate the existing noise and vibration environment throughout the works area and within the hospital. BAM will use this base line level for the Main Contract also as a historical basis which will be considered when reviewing the monitored data.

The N&V plan issued for the Enabling Works sets out how both noise and vibration will be measured in accordance with the contract requirements. The N&V Plan for the Main Contract Phase A will do likewise. Measurements will be taken at the frequency and parameters required. Threshold levels will be as follows:

Noise: Monday – Friday	Day :	0700-1900	70dB
	Evening :	1900-2200	60dB (only for agreed out of hours works)
Saturday	Day :	0800-1400	65dB

BAM recognise that an internal noise limit threshold of 45dB L_{Aeq} measured over a 1 hour period will apply to noise infiltration as a result of the works in all hospital and clinical buildings.

Vibration: Two categories of building are noted each with their own respective allowable limits:

1. Residential/Sensitive, (O' Reilly Avenue, Cameron Square / Haughton Institute)

<10Hz	: 3mm/s
10 – 50 Hz	: 3-8mm/s
50 – 100 Hz	: 8-10mm/s

2. Clinical (SJH):

Range (depending on acute level of room) : 0.01 m/s^2 – 0.005 m/s^2 (acceleration).

As noted, threshold levels will be set to the above parameters. A trigger point alarm system will form the basis of alerting an agreed list of users of any breach in allowable parameters. Both noise and vibration monitors will measure on a continuous basis at all times. Reporting will be in tabular format and will be issued on a weekly basis.

The monitoring of the system requirements and any corrective actions necessary will be carried out in compliance with the N&V Monitoring Plan and with *OCSC Technical Specification: Condition Surveys, Monitoring & Instrumentation*.

For the duration of significant noise generating construction works, the site perimeter boundary hoarding height will extend to 4m at key interfaces which are directly adjacent to residential and hospital buildings.

3.3.17 Vermin Control

BAM's appointed specialist pest control company Pestguard Environmental Services will develop and implement a comprehensive site wide vermin control plan for the Main Contract following on from that developed for the Enabling Works Contract. This will be included in BAM's "*Vermin Control Management Plan*", to be submitted as part of the Project Execution Plan. The plan submitted for the Enabling Works will remain effective until such time as the plan for Phase A is implemented.

Pest control will be carried out by pre-baiting along the site boundary using bait boxes which will be monitored/checked on a monthly basis. Specific areas of the site will have its own problems and

solutions i.e. areas around waste refuse and these will be specifically targeted in the control process. Areas of particular note will be those where there are open drains, vegetation and sub level building works. Areas previously identified by a specialist vermin control company during a site survey carried out prior to commencement of the Enabling Works Contract established the best locations for baiting points, with the servicing technician monitoring the success of the installed system to ensure best results.

For the Main Contract Phase A, the installed system will be reviewed and amended as required to ensure its effectiveness. Specific areas that will be concentrated on will be boundary protection and specific identified rodent runs or harbourage/refuge locations. The works compound will also be of a high priority, with the installed system to be reviewed as the compound relocates to Linear Park, and expands to accommodate the increasing workforce.

BAM will adopt a pest management program which involves a three pronged attack and defence against possible pest infestations:

1. Preventive Measures
2. Proactive Monitoring & Auditing
3. Reactive Treatments.

This approach will be implemented as follows:

4 Preventative Measures

A vermin control layout plan was devised with bait located at all areas identified by the initial site survey. An ongoing review of baiting locations will continue throughout the duration of the project to ensure the effectiveness of the installed system. The specialist will maintain monitoring stations strategically placed in rodent attractive areas in order to address any infestation which may find its way into the area quickly and efficiently. Housekeeping will play a key role in ensuring conditions are not conducive to harborage. Bins will be emptied frequently. Skip areas will be kept tidy, with skip sizes to be appropriate to their rate of fill and changed frequently. Surface areas with standing water will be regulated where possible.

5 Proactive Monitoring & Auditing:

Monitoring is carried out by 12 routine visits in a yearly cycle that will inspect the monitoring poison blocks that are placed in the bait points. This serves a dual purpose of both controlling the rodents by poisoning and giving tangible evidence of the locations onsite that the rodents have been present. These inspections are designed to fully assess all aspects of pest management both internally and externally under the standards of ISO: 9000:2008 and beyond the requirements set out under BRC and HACCP guidelines. These standard visits are supplemented with any additional call out that will arise from rodent sightings on site. On each visit any potential problems are identified and are logged in the Onsite Report Folder. Each inspection will provide any additional recommendations that are deemed necessary regarding *Proofing* and *Housekeeping* audits identifying possible food sources, areas of entry and harborage/refuge which may attract infestations.

6 Reactive Treatments:

Emergency Call out Service: If required, emergency call out inspections will be carried out by the specialist as a matter of priority with the aim of eradicating any potential pest problems in the quickest possible time.

The following preventative measures will be implemented:

- **First Line of Defence:** The specialist will maintain external monitoring stations acting as a first line of defence, eradicating rodent migration prior to entering the premises of any area within the works.
- **Client Recommendations:** Each inspection will provide any additional recommendations that are deemed necessary regarding *Proofing* and *Housekeeping* audits identifying possible food sources, areas of entry and harborage/refuge which may attract infestations.
- **Strategic Baiting:** The specialist will maintain internal and external monitoring stations strategically placed in rodent attractive areas in order to address any infestation which may find its way into the area quickly and efficiently
- **Routine Site Inspections:** The specialist will provide routine service inspections against rats and mice.

On Site Report Folder

The specialist will provide a reporting System which is custom designed to meet specific audit of the works. This folder will be maintained on site and will be available for inspection.

Information that will be contained in this folder will include:

- Quality, Health & Safety Statement
- Service Specification Information
- Bait Point Maps
- Detailed Inspection Reports

The *Vermin Control Layout Plan* for the Enabling Works Contract is still in place and is attached in Appendix F of this document.

3.3.18 Condition Surveys

A specialist surveying/monitoring company will carry out all surveying and movement monitoring on behalf of BAM.

The monitoring and surveying of buildings will be in accordance with the specification. The residential properties which abut/adjoin the works area and are considered as being sensitive receptors are included in the contract drawings. Included within the scope of the surveys will be a section of the existing St. James's Hospital and the utility tunnel. The following surveys are required:

- (i) Initial pre-condition surveys of all residential properties, services utility tunnel and St. James's Hospital;
- (ii) Post condition surveys of the above on completion of the Main Contract;
- (iii) Structural monitoring of the buildings throughout the course of the Main Contract. Electrolevels and tiltmeters will be installed as appropriate on building and boundary walls at agreed locations adjacent to the works.

3.3.18.1 Pre/Post Condition Surveys

Initial pre condition surveys as per (i) above were carried out in advance of the commencement of the Enabling Works Contract by ABL Surveyors on behalf of BAM.

Upon completion of the Main Contract, BAM will arrange for ABL Surveyors to return and carry out post condition surveys as per (ii) above.

The post condition surveys will involve each property being re-surveyed by a Chartered Building surveyor as per the contract requirements. An existing record of all cracks, blemishes and defects based on a visual inspection will be made. No opening up works or sampling of materials will be undertaken with a photographic record being taken of defects and blemishes to each property, all of which will be included in each report. Boundaries, hard standing areas and outbuildings will be included as required. The report will also include a section comparing the pre and post condition findings. Reports for each property will be issued to the client.

BAM will ensure the surveys are carried out so as to limit the disruption to all occupiers and not to affect their normal day business/work.

Full agreement will be gained from SJH in order to gain access to the hospital for carrying out the condition survey.

3.3.18.2 Structural Monitoring

BAM will monitor all buildings for level and movement (in x,y,z planes) as set out in the contract requirements. On installation of the various targets, level studs, etc. monitoring will occur on a weekly basis for the duration of the Main Contract and Monitoring Reports will be issued in compliance with Works Requirements Document "*Structural Specification: Condition Surveys, Monitoring & Instrumentation*" – NPH-C-OCSC-TD-SP-2028-007. If required, more intensive monitoring will be undertaken i.e. methods of continuous monitoring will be employed to buildings.

3.3.19 Quality Control

BAM's accredited Quality Management System (QMS) in accordance with ISO 9001 will be developed and implemented for the Main Contract Phase A. BAM shall ensure that all sub-contractors, suppliers and specialists work to a clear and definite project specific Quality Management System (QMS) in accordance with BS EN ISO 9001:2008.

3.3.20 Document Control

The Employer has established 4-Projects (4-P) as the Electronic Document Management System (EDMS) to be used on the project through all stages including construction and handover. All contractual correspondence between the Contractor and the ER shall be through 4-Projects. This includes all letters, relevant emails, instructions, closing out RFI's, issue of drawings, commissioning documents etc.

BAM's EDMS Manager (Document Control Manager) will be responsible for the system and its operation for the duration of the contract.

While Works are being executed BAM must keep on the EDMS:

- A full up-to-date set of the Contract documents, the Works Requirements, directions, Change Orders, and Contractor's data
- A log of directions, Change Orders, and Contractor's data, showing dates of issue and of revisions
- All publications mentioned in the Works Requirements and the Contractor's data
- Wage records, including time sheets and copies of all pay slips, applicable to all Contractor's Personnel.

BAM will give the Employer's Representative, and any person authorised by the Employer's Representative, access to the above at all reasonable times.

The entire Health and Safety File, along with all the associated information shall be stored by the Contractor and supply chain on 4-Projects. The Format shall be agreed with the PSDP as set out in the Preliminary Health and Safety Plan.

3.3.21 TECHNICAL SUBMITTALS

3.3.21.1 Method statements

BAM will prepare detailed method statements covering key elements of the works to be carried out for the Main Contract Phase A. Method statements to be submitted for the Main Contract Phase A will cover the following works (including all temporary works) with further method statements to be developed and submitted as required:

- Noise and Vibration Monitoring
- Airborne Dust Monitoring
- Archaeology
- Condition Surveys
- Structural Monitoring of Buildings
- Hoarding
- Mount Brown Access
- Main Excavation Works including the Removal of Material off site
- Materials Testing
- Dewatering
- Construction of the Central Access Road
- Sheet piling
- Traffic Management for Central Access Road tie-ins
- Traffic Management for Other Works
- Establishment of site compound at Linear Park
- Open cut Drimnagh Sewer installation
- Micro tunnelling - Drimnagh Sewer
- Connections to existing Drimnagh Sewer
- Construction of shafts for Drimnagh Sewer
- Permanent Diversion of the Drimnagh Sewer
- Secant Piling
- Contiguous Piling – Temporary Works for Utility Tunnel
- Temporary Propping of Piles
- Auger Piling under Flue Stack
- Utility Tunnel Excavation
- Utility Tunnel Construction
- Waterproofing & Backfilling to Utility Tunnel
- M&E Fit Out to Utility Tunnel
- Utility Tunnel Tie-in – incl. M&E works
- General Concreting Works
- Tower crane installation

- Frame Erection

BAM will submit Method Statements for all works to the Employer's Representative for approval in advance to the commencement of any related works. The Method Statement will contain, but is not limited to the following:

- a. Method of Construction
- b. Sequencing
- c. Inspection and Test Plan (ITP)
- d. Timing and duration

3.3.21.2 Material Approval Requests (MARs)

BAM will submit Material Approval Requests (MARs) for all materials intended to be used in the permanent works. The proposed materials should comply with all requirements within the Specification and any other relevant drawing / specification supplied for the works. Each MAR must be reviewed and approved by the Employer's Representative prior to the commencement of any related works.

Where materials and products are subject to CE marking, MAR submissions will include the associated documentation and Declaration of Performance Certificates.

3.3.21.3 Contractor Submittals

Where required, BAM shall submit calculations, drawings and specifications as requested by the Employer's Representative, for example:

- Temporary Works design & calculations associated with all structural elements, demolitions, excavations, piling etc.;
- Temporary de-watering system for site;
- Concrete mix design;
- Structural steel connection design and anchor design;
- Structural steel design for façade support;
- M & E co-ordinated works drawings;

Shop and specialist drawings, calculations to support details and components chosen and any other relevant information shall be submitted in advance before manufacture begins.

BAM shall check that all shop and installation drawings are complete and co-ordinated and shall confirm in writing to the ER/Engineer that he has done so, prior to submission.

Details of temporary works including method statements shall be submitted to the Employers Representative for review a minimum of 20 working days prior to commencement of work.

The Specialist Piling Sub-Contractor is to submit two hard copies of all calculations, drawings, specifications, product data sheets etc. as a full submission. This submission shall be submitted in sufficient time in advance of the works to allow 20 working days for response from the Design Team.

3.3.22 Notice of Inspections – INF & BC(A)R

An Inspection Notification Framework (INF) shall be developed with the Assigned Certifier and design team based on the Preliminary Inspection Plan (PIP) and accompanying documents and certificates schedule.

BAM shall comply with the *"Code of Practice for Inspection and Certifying Buildings and Works"* (as published by the Minister with reference to Article 20G of the Building Control Regulations).

BAM will submit Inspection Requests to the Engineer for all works related to the Inspection and Test Plan (ITP) contained within the relevant Method Statement. The Inspection Request will note the date, time, location and works to be inspected, and should be submitted to the Engineer a minimum of 48 hours prior to the required inspection. BAM will complete pre-pour inspection sheets before placement of any concrete and prior to Design Team inspections of same, with post pour inspection sheets also being completed.

3.3.23 Design Requirements (Temporary)

For any temporary works, a full design and check (external) where applicable shall be carried out by a competent Chartered Engineer to current Eurocodes and the associated Irish National Annexes. It is envisaged that any temporary design works will be completed as required during the course of the works and shall include the following (non-exhaustive list):

1. Hoarding;
2. Demolition;
3. Construction/alterations to Energy Centre – Falsework/Scaffolding;
4. Traffic Management;
5. Shuttering system for the construction of the utility tunnel;
6. Temporary piles to facilitate construction of the utility tunnel;
7. Support to temporary piles to facilitate excavation works;
8. Shuttering system for construction of the utility tunnel shafts;
9. Fixings for surface mounting the temporary diverted watermain.

Temporary works will be developed as the works progress and any further requirements will be regularly assessed. Where temporary works are identified, BAM's Temporary Work Co-ordinator Jim Dillon will liaise with a Designer to establish the design requirements. Upon completion of a temporary works design, installation of that particular element will be carried out. The installation will be inspected post completion by the Designer and a certificate issued.

The PSDP will be advised of all temporary works requirements and will coordinate between designers. A register of temporary works will be established and updated as necessary. Design risk assessments and temporary works certificates will be forwarded to the PSDP for countersignature prior to the works being installed on site.

All Temporary Works Design and coordination will be carried out in accordance with BAM's Temporary Works Procedure, part of the Safety & Health Plan.

3.3.24 ARCHAEOLOGY

3.3.24.1 Archaeological Requirements

BAM will carry out the works as outlined within the works requirements and any relevant method statements. All site investigations and excavations will be monitored by an Archaeologist in accordance with Planning Condition No.15 of the granted permission. Should any unforeseen event occur such as the discovery of uncharted underground services, BAM will submit a proposal to the Employers representative in advance of commencing associated slit trench or general bulk excavation works. Any such proposal will ensure that all archaeological mitigation requirements are met.

The Archaeological Consultant represented by an Archaeologist used during the Enabling Works Contract will be retained by BAM for the Main Contract and will implement the Archaeological Strategy detailed above and/or any deviation from the works requirements for the proposed works. The Archaeologist will be highly experienced within his/her field, licensed and suitably qualified for the position. The initial site strip will be undertaken under the supervision of BAM's archaeologist, who will monitor both site clearance and excavation works. The presence of BAM's Archaeologist on site will ensure Archaeological findings discovered on site are identified and protected as appropriate, and any applicable testing is carried out.

3.3.24.2 Archaeological Findings

Should any finding of Archaeological importance be found, BAM will follow protocol as outlined below:

- i. Fence off the area to protect the findings from disturbance.
- ii. All mechanical excavations will cease in the area immediately and the excavator will move to a different location.
- iii. Clearance or machine works in the affected area shall stop immediately.
- iv. BAM will inform the Employer's Project Archaeologist who will liaise with the ER.
- v. BAM's Archaeologist will revise the relevant Method Statement, submit to the ER and Employers Project Archaeologist, incorporate relevant comments and submit final Method Statement to the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs. Additionally a copy of the approved Method Statement will be submitted to the Archaeology Office of Dublin City Council (DCC) for comment prior to submission to the National Monuments Service and National Museum of Ireland. The Method statement will have considered all requirements as set out in the works requirements and with the Department of Arts, Heritage, Gaeltacht and the Islands Policy and Guidelines on Archaeological Excavation.
- vi. Findings will be clearly and individually labeled, contained in bags, location identified etc.... as set out in the NMI Advice Notes.
- vii. In the event any human remains are discovered BAM's Archaeologist will inform the client and a specialist osteo-archaeologist will be summoned to site. As a minimum An Garda Síochána, National Museum of Ireland and the County Coroner for Dublin will be contacted. Other specialists such as conservator and palaeoenvironmental consultants will also be notified.
- viii. BAM's Archaeologist will confirm when all Archaeological excavations have been complete to the Employer's Project Archaeologist and ER.

3.3.24.3 Reports

BAM's Archaeologist will submit Archaeological progress reports as set out in the works requirements which will detail, plant details, personnel/staff and details of works under taken. The Archaeologist

will attend and submit reports for fortnightly meetings.

Draft, preliminary and final reports will be submitted to the Project Archaeologist for review. The final reports, which will incorporate comments, will be submitted to the National Monuments Section of the Department of the Environment, Heritage and Local Government, to the National Museum of Ireland and the Archaeology Office of DCC.

3.3.24.4 Archiving

BAM's Archaeologist will ensure, subject to approval from the client, that site archive material from archaeological investigations is archived in accordance with the Dublin City Archaeological Archive Guidelines and the relevant method statements which includes but is not limited to the following:

- i. Description/details of findings
- ii. Digital and hard copies will be provided
- iii. Photographs
- iv. Labeled in accordance with the requirement of DCLA
- v. Maps, plans, drawings etc.
- vi. Placed in appropriate filing boxes.

3.4 WASTE MANAGEMENT

3.4.1 Introduction

As part of the Project Execution Plan (PEP), BAM are also developing a site specific Waste Management Plan which will be adopted for the duration of the works (included in Appendix C of this CMP). BAM will dispose of all materials generated in accordance with all current waste disposal legislation and guidelines. Any contaminated material identified on the site will be tested and disposed of to an appropriately licenced facility, in line with the procedures outlined in the Waste Management Plan.

All waste generated on site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced contain-all disposal facilities. Haulage permits will be made available to the client as proof of compliance and these will be issued to DCC Environmental Department if requested. BAM make particular reference to the disposal of asbestos in this contract. Full documentation will be made available for the transportation and appropriate disposal of this hazardous material.

Any contaminated material identified on the site will be tested and disposed of to an appropriately licenced facility, in line with the procedures outlined in the Waste Management Plan. Areas of the site identified through the initial site investigation/soil classification reports as being noted as potentially containing non-inert/contaminated material will be pre-tested prior to works i.e. bulk cut occurring in any specific area. Specific locations where underground fuel tanks exist will also be targeted on this process.

Disposal/haulage dockets will be kept on site as a record of waste leaving site and segregation of waste into skips will form a key part of the overall strategy of the BAM waste management plan.

The following legislation is to be adhered to in all works:

1. Waste Management Act 1996 (S.I. No. 10 of 1996) as amended by the Waste Management (Amendment) Act 2001. Sub-ordinate legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011);
 - Waste Management (Collection Permit) Regulations S.I No. 820 of 2007 as amended 2008 (S.I. No 87 of 2008);
 - Waste Management (Facility Permit and Registration) Regulations, S.I No. 821 of 2007 as amended 2008 (S.I No. 86 of 2008);
 - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004), 2010 and (S.I. No. 350 of 2010);
 - Waste Management (Packaging) Regulations 2003 (S.I. No. 61 of 2003) as amended 2004 (S.I. No. 871 of 2004), 2006 (S.I. No. 308 of 2006) and 2007 (S.I. No. 798 of 2007);
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997);
 - Waste Management (Landfill Levy) Regulations 2011 (S.I. No. 434 of 2011) as amended 2015 (S.I. No. 189 of 2015);
 - European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (S.I. No. 355 of 2011);
 - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009), as amended 2015 (S.I. 190 of 2015) and European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of 2015).

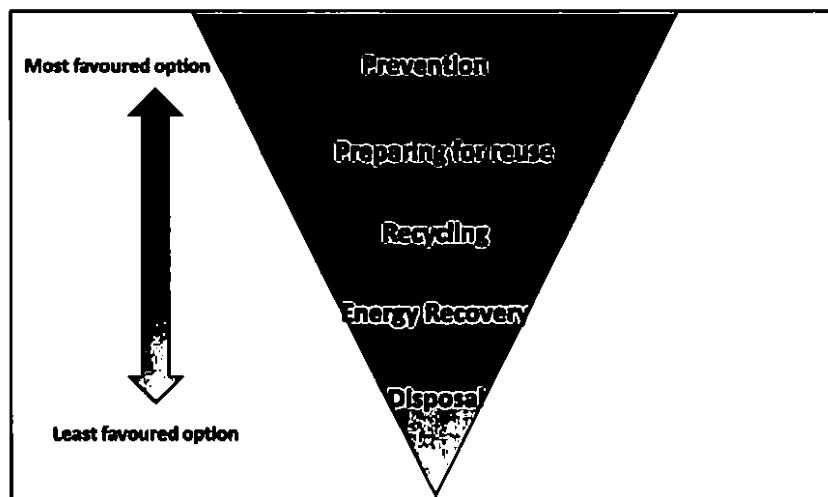
2. Litter Pollution Act 1997 (S.I. No. 12 of 1997);
3. Protection of the Environment Act 2003 (S.I. No. 413 of 2003).

3.4.2 Waste Management of Demolitions

All waste materials arising from the demolitions at St. James Hospital for the Enabling Works Contract and Main Contract Phase A are managed and disposed of in accordance with the:

- Provisions of the Waste Management Acts 1996 – 2013 and associated regulations;
- Project Specific Construction Requirements (Contract Documents);
- The Company Environmental Management System;
- Best Practice Guidelines on the preparation of waste management plans for construction and demolition waste projects.

As stated in BAM's Waste Management Plan for the Main Contract Phase A, BAM's Recycling/Waste Management Goal is to manage all waste in accordance with the relevant statutory provisions and the waste hierarchy:



BAM's Waste Management Hierarchy

BAM's approach to waste arising from demolition works is to:

- Maximise the reuse of soils and rock on site during the construction of the project;
- Segregate construction and demolition wastes into reusable, recyclable and non-recyclable materials;
- Reuse and recycle materials on site during construction where practicable;
- Recycle other recyclable materials through appropriately permitted / licensed contractors and facilities; and
- Dispose of non-recyclable wastes to licensed landfills.

BAM will provide a dedicated fenced off waste handling and segregation area (i.e. a waste compound) on the site. Construction and demolition waste of the non-bulk type will be brought to the waste compound for sorting and segregation into designated skips for off-site recycling or disposal. Skips/bins shall be distributed around the site for the collection of rubbish and non-bulk type waste, for transfer to the waste compound.

The waste compound and other waste areas will be large enough to ensure safe delivery and collection of skips and waste containers. Each waste skip and bin will be clearly labelled as to the type of waste contained.

3.4.3 Waste Management of Excavations

OCSC document "*Soil Classification, Site Investigation & Groundwater Monitoring Report*" (doc. ref. no. NPH-C-OCSC-9010-0001) details areas on the site where hazardous material has been identified, and further areas which have been identified as "potentially contaminated areas". A specialist contractor will be brought in to classify the material in this area by:

- (a) reviewing testing to date, and
- (b) carrying out further testing using an accredited laboratory.

As stated previously, WAC testing will be carried out on an ongoing basis throughout the bulk dig works to ensure excavated material being removed from site is sent to an appropriate location based on its composition.

All excavated material will be disposed of in an approved manner and to an approved licenced location. Records of the source of each load leaving site will be kept for traceability purposes. Copies of all collection, delivery and acceptance at approved licence location documentation will be kept on site.

3.4.4 Main Construction Works

During the construction phase, waste will be produced from surplus materials such as broken concrete blocks or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. However, BAM will be required to ensure that oversupply of materials is kept to a minimum. In a similar fashion to the demolition phase, waste materials will be segregated at source and placed in dedicated skips such as general waste, wood, mixed ferrous and concrete rubble on site to maximise the opportunity for reuse/recycling/recovery of materials.

3.5 CONSTRUCTION TRAFFIC MANAGEMENT

3.5.1 INTRODUCTION

The location of the construction site for the NCH on a live hospital campus in a residential and densely populated area requires meticulous planning to ensure the impacts during the construction stage are minimised for both St. James's Adult Hospital and the surrounding local residential community. First and foremost, uninterrupted blue light passage for emergency vehicles must be afforded at all times. In addition, the services access to St. James's Hospital must also be maintained.

3.5.2 TRAFFIC MANAGEMENT PROPOSALS PHASE A

For each temporary traffic management proposal, BAM will liaise with their traffic management designer – Total Highway Maintenance – resulting in a carefully considered temporary traffic management design in compliance with DCC's *"Directions for the Control and Management of Roadworks in Dublin City"* and designed in accordance with the NRA's *"Traffic Signs Manual: Chapter 8 – Temporary Traffic Measures and Signs for Roadworks"*. The TTM design and associated Temporary Works Certs is signed by Total Highway Maintenance designer and countersigned by the PSDP following successful review. The completed TTM package including certs is then issued to the Employer's Representative and DCC for approval. BAM will liaise directly with DCC's Roads and Traffic Department and Roadworks Control Unit to obtain all the necessary road opening licenses and T2 permits.

BAM shall be responsible for the design, implementation, maintenance and removal of all necessary TM to complete the construction works. All plans developed will accommodate the various stakeholders, in particular uninterrupted blue light passage for emergency vehicles directly to the Accident & Emergency Department.

In addition, various stakeholders such as SJH, Dublin Bus, DCC, and ambulance service will also be fully consulted prior to any TM plan being implemented. Access/egress for construction traffic will be from the Rialto Gate entrance initially, with an access/egress point to be located at Mount Brown also, operational from Month 4.

3.5.2.1 Construction Access to the Site

The construction access strategy to serve the construction works of the new children's hospital will be consistent with the designated HGV routes in the city centre and will form the primary access and egress routes between the construction site and the external road network.

BAM will maintain protected vehicle and pedestrian/staff access routes as well as blue light and service vehicle access into and through the campus from the Rialto Gate, as well as to the Emergency Department, Energy Centre, Delivery Hub, south perimeter road.

Where feasible, TM proposals will be designed to minimise the travel distances of HGVs through the campus to the works areas. BAM will minimize HGV movements insofar as is possible during the hours of 07:00 – 09:00 Monday to Friday. This minimisation of HGV's will be managed by BAM engaging with all suppliers and delivery drivers. Notifications will be issued with all enquiries to subcontractors and suppliers advising them of this restriction. This requirement will be included in the pre-start meeting with all subcontractors. BAM security personnel will monitor this on site, with any infractions of this site rule being reported to BAM management for appropriate action to be taken.

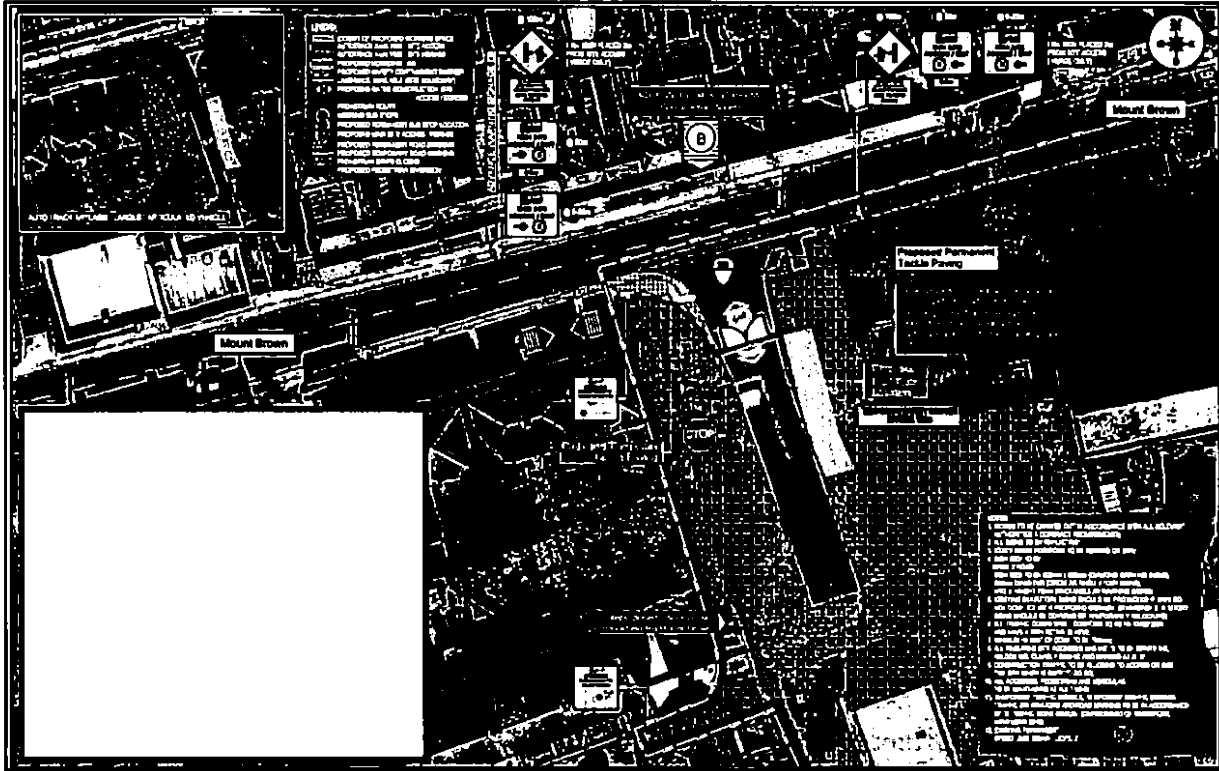
There are 2 designated construction accesses to be used during the Main Contract Phase A works. These are the existing Rialto entrance (Access A) and a new entrance at Mount Brown (Access B):



Extract from drawing 16 EM00x "Temporary Traffic Management Layout for Internal Site Traffic & Pedestrian Management to Facilitate Construction Works: Phase 1a & 1b"

3.5.2.2 New Access at Mount Brown

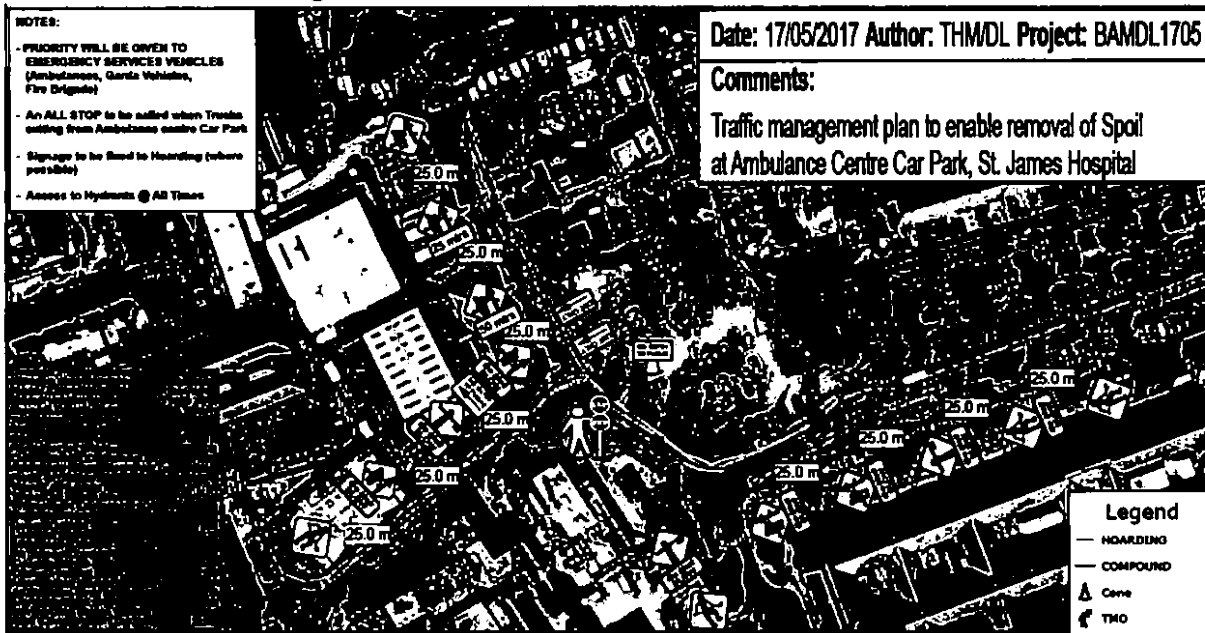
The new Access B at Mount Brown will be constructed and operational by Month 4:



Extract from drawing 16 EM00x "Temporary Traffic Management Layout for the Temporary Mount Brown Access Arrangement to Facilitate Construction Access/Egress", included in Appendix H

3.5.2.3 Traffic Management through the Campus

3.5.2.3.1 Current Arrangement

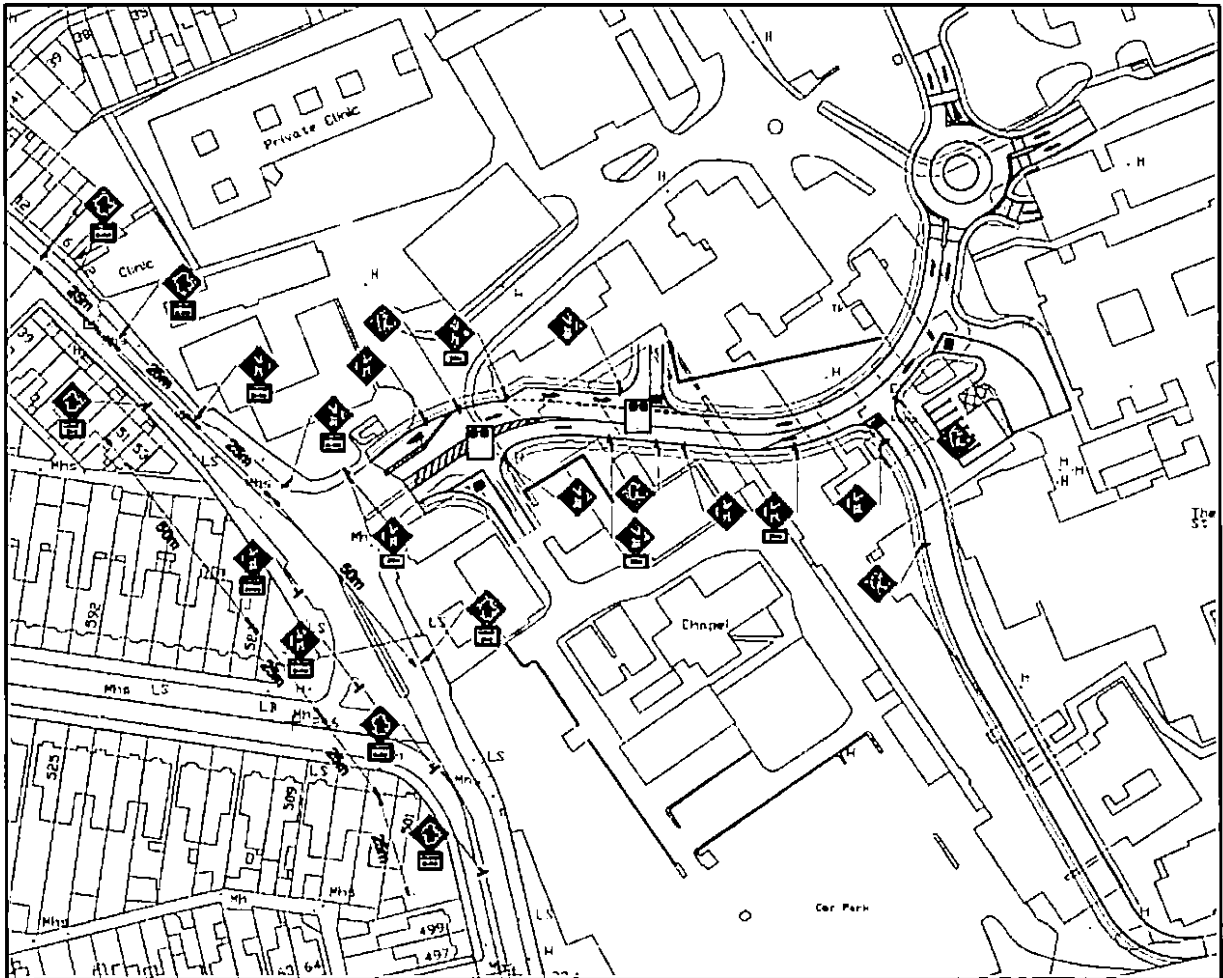


Extract from drawing "Traffic Management Plan to Enable Removal of Spoil at Ambulance Centre Car Park, St. James Hospital", included in Appendix H



Extract from drawing "Worksite Warning Signage – Rialto Gate Access A", included in Appendix H

3.5.2.3.2 From Month 9 (via Temporary Central Access Road)



Extract from drawing 16_132_00_3800 "Proposed Traffic Management Plan", included in Appendix H

3.5.2.3.3 From Month 18 (via Permanent Northern Access Road)

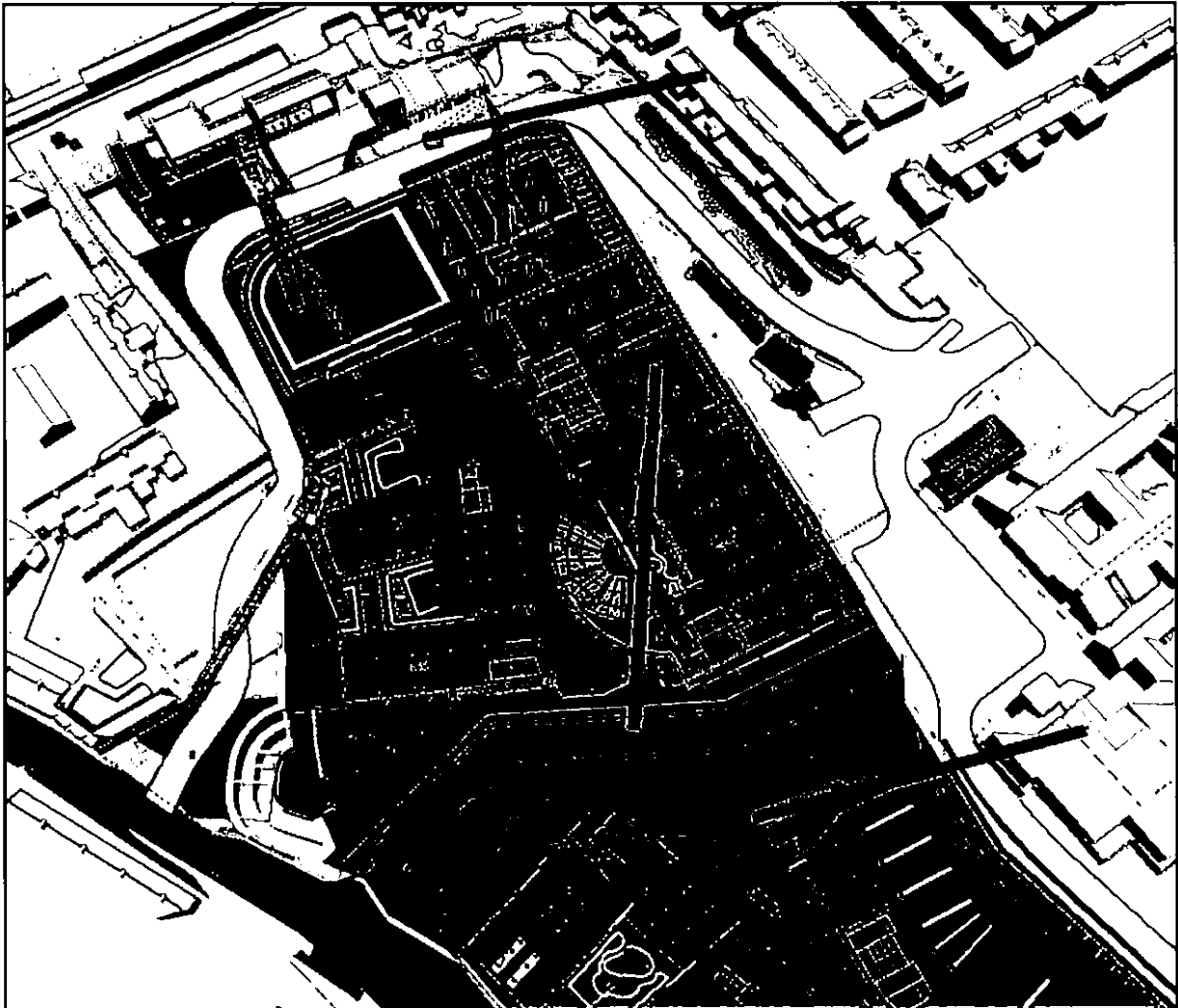
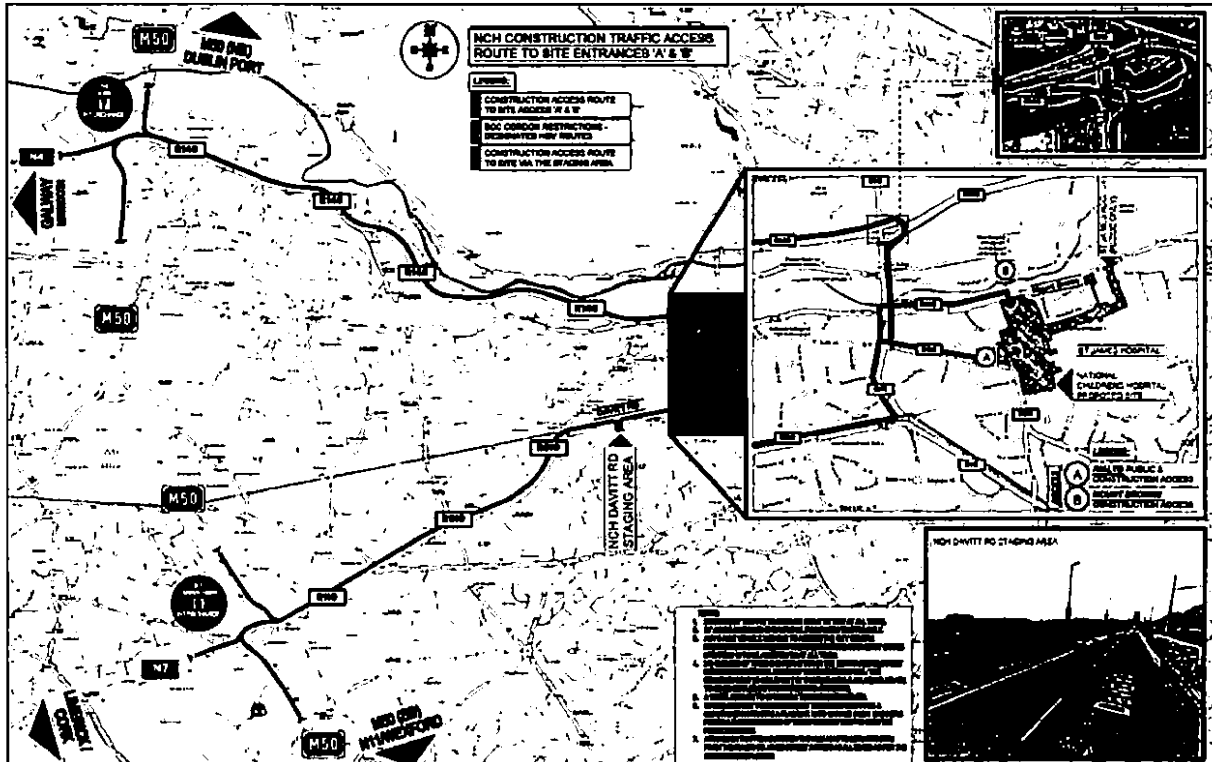


Image above at Month 18 shows the live Permanent Northern Access Road (yellow) with works underway to remove the Temporary Central Access Road (red).

3.5.2.4 Construction Routes from the M50

To ensure efficient HGV movements arising from the works on the local road network, BAM have developed a temporary traffic management layout for transportation routes to the NCH Construction Accesses A & B from the M50:



Extract from drawing 16 EM001a "Temporary Traffic Management Layout for Transportation Routes to the NCH Construction Accesses A & B from the M50"

This layout ensures that HGV's heading to and from the construction site remain on main arterial routes and regional roads. The need for adherence to this traffic management plan will be set out to all subcontractors appointed by BAM, with BAM to monitor same on an ongoing basis to ensure compliance by all parties.

3.5.3 TRAFFIC MANAGEMENT PLAN

3.5.3.1 Introduction

In compliance with the requirements of the Project Execution Plan, BAM will prepare a Construction Traffic Management Plan which will be updated throughout the course of the project to capture all specific TM and pedestrian management proposals developed during the works. Each proposal will be submitted in advance of implementation for approval by the Client and DCC.

BAM's Main Contract Phase A Traffic Management Plans in accordance with the Dublin City Council document "*Directions for the Control & Management of Roadworks in Dublin City*".

Specific TM and pedestrian management plans will be developed for the following programmed works:

- i. Installation of further perimeter hoarding in public areas as required for Main Contract Works.
- ii. Provision of underground pedestrian route for construction personnel beneath the main blue light/emergency vehicle access linking the east and west sections of the construction site
- iii. Re-location of main compound to the south boundary adjacent to Linear Park for the Main Contract Phase A.
- iv. Provision of an off-line loading bay along South Circular Road between the junctions of Mount Brown and Suir Road (subject to agreement with Dublin City Council);
- v. the connection of the traffic signals controlling the existing mid-block pedestrian crossing along South Circular Road to the traffic signals at the junction of South Circular Road/ Mount Brown
- vi. Upgrade Works in Linear Park.
- vii. Works associated with service diversions (including *removal of spoil from ambulance centre car park* and *removal of spoil St James' Hospital*)
- viii. TM plan to facilitate construction of the Central Access Road, incorporating access to Hospital from Brookfield Road, blue light access to A&E, and services access.
- ix. TM plan for Central Access Road
- x. TM plan for access and egress to the Davitt Road compound.

The above is a non-exhaustive list and further plans will be developed as and when required.

Initial traffic management proposals as tabulated below have been developed and are contained within Appendix H:

Drawing No.	Drawing Title:
16 EM00x	Temporary Traffic Management Layout for Internal Site Traffic & Pedestrian Management to Facilitate Construction Works: Phase 1a & 1b
16 EM00x	Temporary Traffic Management Layout for the Temporary Mount Brown Access Arrangement to Facilitate Construction Access/Egress
16 EM001a	Temporary Traffic Management Layout for Transportation Routes to the NCH Construction Accesses A & B from the M50
-	Traffic Management Plan to Enable Removal of Spoil at Ambulance Centre Car Park, St. James Hospital
-	Worksite Warning Signage – Rialto Gate Access A
16_132_00_3800	Proposed Traffic Management Plan – Realigned Central Access Road
16_132_00_2200	Access Road Layout
16_132_00_2001-CM00	Proposed Access Road Phasing Arrangement
16_132_00_2002-CM00	Proposed Access Road Phase 1
16_132_00_2003-CM00	Proposed Access Road Phase 2
16_132_00_2004-CM00	Proposed Access Road Phase 3
16_132_00_2900-CM00	Access Road Profile
16_132_00_2901-CM00	Access Road Cross Sections

Additional traffic management plans will be developed and implemented as the works progress. These plans will take into account pedestrian and vehicular movements in and around the campus.

3.5.3.2 Contents of Traffic Management Plan

The construction TMP will include but not limited to the following headings:

1. Health & Safety
2. Temporary Signage
3. Temporary Road Markings
4. Temporary Road Closure
5. Operation of a Contra Flow
6. Temporary Traffic Signals
7. Proposed changes to Street Infrastructure to Enable Roadworks
8. Arrangements for Local Access, Pedestrian and Cyclist Routes
9. Provision for pedestrian movements including any special provision required to facilitate the mobility impaired and disabled
10. Proposed use of Barriers
11. Proposed Lighting Arrangements
12. Proposed use of Flag Men
13. Arrangements for informing affected parties

This plan will include the following measures:

- The prohibition of construction staff parking within the campus to mitigate the potential traffic impact during the construction phase of the project;
- No queuing of trucks will be permitted on either the surrounding street network or the internal roadway within the hospital campus;
- The provision of a construction compound at the former Unilever Site at Davitt Road to allow for the storage of materials. The Davitt Road construction compound will also facilitate the

staging of construction traffic and allow for their orderly arrival on site. This will ensure that construction vehicles do not need to wait on the public street network near the St James's Hospital campus to access the construction site;

- The provision of a temporary internal access road to facilitate the construction of the new children's hospital maintaining access to St James's Hospital from South Circular Road for the entire duration of the construction project;
- The management and marshalling of construction vehicles on the public road within the hospital campus by flag men;
- Inclusion of the Mobility Management Plan for BAM construction staff and co-ordination with the St James's Hospital Campus Mobility Manager during the course of the construction project.