PHM Consulting
Civil - Structural - Environmental

Firhouse Inn
Strategic Housing Development (SHD)

Firhouse Road, Dublin 24

CONSTRUCTION WASTE MANAGEMENT PLAN

May 2022

Strategic Housing Development

at

Firhouse Road, Dublin 24

Construction Waste Management Plan

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CLIENT:
Bluemont Developments (Firhouse) Limited

CONSULTANT:
PHM Consulting
11 Mallow Street
Limerick

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1.0 INTRODUCTION

1.1 Brief

PHM Consulting have been engaged by Bluemont Developments (Firhouse) Limited (applicant) to prepare a Construction Waste Management Plan (CWMP) for a proposed Apartment Development on lands under their ownership with a portion owned by South Dublin County Council located on the Firhouse Road, Dublin 24 for the purpose of a planning application to An Bord Pleanala under the SHD Process.

This outline Construction Waste Management Plan (CWMP) defines the project specific measures that are to be put in place and procedures to be followed for the scope of construction works, both permanent and temporary, for the envisaged project. Please note this outline CWMP is produced as part of the planning application. It is intended that this will be updated to include more site specific information once the Construction Management Team (CMT) is appointed.

The planning application site comprises of circa 0.46 hectare site with a single vehicular access point off the Firhouse Road.

The site is located at E311297, N227542 ING. Existing ground levels range from 71.2m to 73.5m above ordnance datum (AOD) Malin.

1.2 Proposed Development

The proposed development is to consist of:

Bluemont Developments (Firhouse) Limited intend to apply to An Bord Pleanála (the Board) for a Strategic Housing Development with a total site area of c.0.46 ha, on lands located at No. 2 Firhouse Road and the former 'Morton's The Firhouse Inn', Firhouse Road, Dublin 24.

The development will consist of the demolition of all existing structures on site (c. 1,326 sq m), including:

- Two storey building formally used as public house, ancillary off-licence and associated structures (c. 972 sq m);
- Two storey building comprising an existing barber shop and betting office (c. 260 sq m);
- Single storey cottage building and associated structures (c. 94 sq m); and
- Eastern boundary wall and gated entrance from Mount Carmel Park.

The development with a total gross floor area of c. 11,638 sq m, will also consist of 100 no. residential units arranged in 2 blocks (Blocks 01 and 02) ranging between 3 and 5 storeys in height, over lower ground floor and basement levels, comprising:

- 96 no. apartments (consisting of 2 no. studio units; 45 no. one bedroom units; 10 no. two bedroom (3 person) units; 34 no. two bedroom (4 person) units; and 5 no. three bedroom units), together with private (balconies and private terraces) and communal amenity open space provision at podium and roof levels; and
- 4 no. duplex apartments (consisting of 2 no. one bedroom units and 2 no. two bedroom units (4 person) located within Block B01, together with private balconies and terraces.

The development will also consist of non-residential uses (c. 355 sq m), including:

- 1 no. café (c. 58 sq m) and 1 no. office (c. 30 sq m) located at ground floor level of Block B01;
- 1 no. medical unit (c. 59 sq m) and 1 no. betting office (c. 66 sq m) located at ground floor level of Block B02;
- 1 no barber shop (c. 28 sq m) located at ground floor level between Blocks 01 and 02; and
- 1 no. crèche (c. 114 sq m) located at lower ground floor level of Block B01 and associated outdoor play area to the rear.

Vehicular access to the site will be from the existing access off Firhouse Road. The proposal includes minor alterations to the existing access, including the provision of new and enhanced pedestrian infrastructure.

The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, pathways and boundary treatments, street furniture, basement car parking (80 no. spaces in total, including accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections to existing public services, (including relocation of existing surface water sewer and water main from within the application site onto the public roads area along Firhouse Road and Mount Carmel Park); ducting; plant; waste management provision; SuDS measures; stormwater management and attenuation; sustainability measures; signage; changes in levels; public lighting; and all ancillary site development and excavation works above and below ground.

1.3 Scope of the Waste Management Plan

The purpose of the CWMP is to provide information to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with current legal and industry standards including the Waste Management Act 1996-2011 and associated Regulations:

EPA Act 1992

Protection of the Environment Act 2003

Waste Management Act 1996

Litter Pollution Act 1997 and

The relevant Waste Management Plans.

This CWMP defines the approach to Waste management at the site during the construction phase. Compliance with the CWMP, the procedures, work practices and controls will be mandatory and must be adhered to by all personnel and contractors employed on the construction phase of the project.

The primary applicable legislations governing waste management include:

- Waste Management Act 1996 (No. 10 of 1996) Revised Aug 2020, as amended
- Waste Management (Collection Permit) Regulations (SI No. 820 of 2007), as amended
- Waste Management (Facility Permit & Regulation) Regulations 2007 (SI No. 821 of 2007), as amended

- Waste Management (Licensing) Regulations 2004 (SI No. 395 of 2004), as amended
- Waste Management (Packaging) Regulations 2014 (SI No. 282 of 2014), as amended
- Waste Management (Planning) Regulations 1997 (SI No. 137 of 1997), as amended
- Waste Management (Landfill Levy) Regulations 2015 (SI No. 189 of 2015)
- Waste Management (Hazardous Waste) Regulations 1998 (SI No. 147 of 1998)
- Environmental Protection Act 1992 (No. 7 of 1992), as amended
- Litter Pollution Act 1997 (No. 12 of 1997), as amended
- Planning and Development Act 2000 (No. 30 of 2000), as amended.

The principal aims and objectives of the CWMP is to:

- Assess the planned activities associated with demolition and construction of the project;
- Determine the type, nature and estimated volumes of generated waste;
- Identify any potential environmental impacts from the generated waste;
- Recommend appropriate waste handling and disposal measures;
- Categorise waste material where practicable;
- Promote recycling, reuse and recovery of waste and diversion from landfill;
- Ensure appropriate methods of transportation of waste;

1.4 Project Roles & Responsibilities

The assigned environmental roles and responsibilities for the relevant project personnel are detailed below. Note: Not all roles may be relevant to this particular project and will be engaged as and when necessary:

1.4.1 Construction Director

The Construction Director will have an overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The principal duties and responsibilities of this position will include:

- Overall responsibility for the development and implementation of the CWMP;
- Allocating resources to ensure the implementation of the CWMP;
- Participates in the management review of the CWMP for suitability, adequateness and effectiveness; and
- Sets the focus of environmental policy, objectives and targets for the Contractor.

1.4.2 Construction Manager

The Construction Manager is directly responsible to the Construction Director for the successful execution of the project. The principal duties and responsibilities of this position will include:

- To report to the Construction Director on the on-going performance of the CWMP;
- To discharge his/her responsibilities as outlined in the CWMP; and
- To support and augment the CMT and the Environmental Officer through the provision of adequate resources and facilities in the implementation of the CWWP.

1.4.3 Environmental Officer

The CMT Environmental Officer will be responsible for, but not limited to, the following activities:

- Ensuring that the requirements of the CWMP are developed and environmental system elements (including procedures, method statements and work instructions) are implemented and adhered to with respect to environmental requirements;
- Reviewing the Environmental responsibilities of other managed Contractors in scoping their work and during Contract execution;
- To ensure that advice, guidance and instruction on all CWMP matters are provided to all their managers, employees, construction contractors and visitors on site;
- Report to the Construction Manager on the environmental performance of Line Management, Supervisory Staff, Employees and Contractors; and
- Advise site management (including, but not limited to, the site Construction/Commissioning Manager) on environmental matters.

1.4.4 Project Communications Officer

The Project Communications Officer is responsible for conducting all public liaison associated with the construction phase of the project. The responsibilities and duties of the Project Communications Officer include the following;

- Responding to any concerns or complaints raised by the public in relation to the construction phase of the project;
- To liaise with the Environmental Officer on community concerns relating to the environment;
- Ensure the Environmental Officer is informed of any complaints relating to the environment; and
- Keep the public informed of project progress and any construction activities that may cause inconvenience to the local community.

1.4.5 Site Supervisors

CMT Site Supervisors are required to:

- Read, understand and implement the CWMP;
- Know the broad requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance. Where necessary seek the advice of the CMT Environmental Officer;
- Ensure that environmental matters are taken into account when considering Contractors' construction methods and materials at all stages;
- Be aware of any potential environmental risks relating to the site, plant or materials to be used on the premises and bring these to the notice of the appropriate management;
- Where appropriate, ensure Contractors method statements include correct waste disposal methods;
- Ensure materials/waste register is completed.

1.4.6 Site Personnel

All Contractors, and other site personnel, on the project will adhere to the following principal duties and responsibilities:

- To co-operate fully with the CMT and the Environmental Officer in the implementation and development of the CWMP at the site;
- To conduct all their activities in a manner consistent with regulatory and best environmental practice;
- To participate fully in the environmental training programme and provide management with any necessary feedback to ensure effective environmental management at the site;
- Adhere fully to the requirements of the site environmental rules.

1.5 Project Environmental Policy

The Applicant recognises and seeks to minimise the impacts of its business on the environment. The appointed Main Contractor will be committed to:

- Carrying out the Project in full compliance with all applicable environmental regulations and to other requirements to which we subscribe.

- Implementing good environmental practice as part of designs, e.g. carry out design reviews, risk assessments, etc. on the relevant project.

- Preventing pollution from activities through a system of operational controls that include written instructions and staff training appropriate to the environmental requirements of their work.

- Continually improving Project environmental performance by setting objectives and targets and implementing them through an environmental programme.

- Informing all project employees about Environmental Policy and explaining what they should do to protect the environment.

- Implementing this Policy through the successful operation of the CEWMP.

This policy will be reviewed periodically, taking into account current and potential future business issues.

2.0 WASTE MANAGEMENT PROCEDURES

2.1 Waste Management Goals

This project will aim to recycle or salvage for reuse to its maximum potential all waste generated on-site. Waste reduction will be achieved through building design, and reuse and recycling efforts will be maintained throughout the construction process.

Waste Prevention Planning: The main contractor will implement procedures that will endeavour to segregate and recycle construction materials which include:

- Paper / corrugated cardboard
- Plastic and glass
- Timber – natural and engineered
- Metals

Project Construction Documents – Requirements for waste management which will be included in all work. The Main Contractor will be contractually required along with all subcontractors to comply with the principals of this CWMP. A copy of this Plan will accompany all Subcontractor Agreements and require subcontractor participation.

A Construction Waste Reduction Plan shall be developed by the Main contractor, implemented and executed as follows and as per Table 1:

- Salvageable materials will be diverted from disposal where feasible.
- There will be a designated area on the construction site reserved for a row of dumpsters each specifically labelled for respective materials to be received.
- Before proceeding with any removal of construction materials from the construction site, the Site Supervisor will inspect containers for compliance with this plan.
- Wood cutting will occur in centralised locations to maximise reuse and make collection easier.
- All hazardous waste will be handled by a licensed hazardous waste haulier.

2.2 Waste Management Communication & Education Plan:

The Main Contractor will conduct on-site pre-commencement meetings with all subcontractors. Attendance will be required for the subcontractor's key field personnel. The purpose of the meeting will be to reinforce to subcontractor's key field employees the commitments made by their companies with regard to the project goals and requirements.

As each new subcontractor comes on site, the recycling coordinators will present him/her with a copy of the Construction Waste Management Plan and provide a tour of the recycling areas.

The subcontractor will be expected to make sure all their crews comply with the CWMP.

All recycling containers will be clearly labelled. Containers shall be located in close proximity to the construction site in which recyclables/salvageable materials will be placed. The selected location will be such that skip collection vehicles will not traverse the construction site. The skips will be located on a hardcore base with a temporary access road. This will eliminate the risk of soil material being removed from the site and deposited on the public road on the wheels of the vehicles.

Lists of acceptable/unacceptable materials will be posted throughout the site.

All subcontractors will be informed in writing of the importance of non-contamination with other materials.

The Site Supervisor shall inspect the containers on a weekly basis to insure that no contamination is occurring and precautions shall also be taken to deter any contamination by the public.

2.3 Keeping of Records

The Construction Manager will ensure that fully detailed records are maintained of any 'incident / event' likely to cause non-compliance and / or harm to the environment. Environmental Incidents/Near Miss Reports are reported and recorded.

Complaints and Follow up Actions on the construction site will be managed by the CMT and contractors will ensure that all complaints are recorded according to CMT requirements.

Each contractor will be responsible for ensuring that a full record and copy of all Safety Data Sheets (SDS) pertaining to their works is kept on file and up to date in their site offices. Contractors will also retain a duplicate copy of all SDSs held by the contractors.

The CMT will be responsible for monitoring the movement and treatment of all waste during the construction phase of the project. Monitoring will be carried out by the CMT who will record the nature, quantities and off-site destination of wastes.

2.4 Monitoring, Audits and Inspections

Periodic inspections by the CMT will address environmental issues including dust, litter, noise, traffic, surface water, waste management and general housekeeping.

An EHS Inspection Audit of the construction site will be carried out by an appointed contractor. Environmental aspects of this audit will be documented. The frequency of these audits (weekly / monthly / other) will be based on the nature of contractor activity.

2.5 Non Conformance and Corrective and Preventative Action

Corrective Action Requests (CARs) will be issued to ensure that prompt action is agreed and committed to, with a view to the effective resolution of any deviations from the CWMP requirements or any environmental issues.

CARs may be raised as a result of:

- An internal or external communication;
- An internal audit;
- A regulatory audit or inspection;
- A suggestion for improvement;
- An incident or potential incident.

All corrective action requests will be numbered and logged.

Fig 1.1 – Site Location Map

3.0 OUTLINE CONSTRUCTION WASTE MANAGEMENT PLAN

3.1 Construction Activities

This section describes the main activities involved in the construction of the proposed development. As the proposed development is located on a brownfield site with existing building structures, there are demolition works associated with the project, primarily the demolition of the former Firhouse Inn, and the adjacent Bookmakers building.

3.2 Construction Schedule

The construction period for the development is expected to last 2 years. The development not proposed to be phased. The proposed development will involve the following activities:

- Installation of site offices, welfare facilities, Covid-19 sanitisation stations and one-way pedestrian routing.
- Site clearance in stages.
- Importation of granular capping material.
- Construction of construction access, cabin bases and crane foundations. Erection of site hoarding and advances signage in accordance with the traffic management plan.
- Retention and protection of existing boundaries on site.

It is expected that the construction of the proposed development will commence in 2023, subject to planning and other approvals. It is envisaged that the construction activities will be completed in 2024.

3.3 Method Statement for Construction

A Construction Stage Waste Management Plan will be developed by the appointed Main Contractor to include all aspects of the project.

It is anticipated that there will be a single contract to cover all the elements of the proposed development and that the contractor will be required to prepare more detailed CWMP for submission to South Dublin County Council for approval prior to commencement.

The contractor will be required to comply with all of the performance requirements set out in tender documentation including the statutory consent approvals which may be granted by An Bord Pleanala and other statutory consent authorities.

It is the responsibility of the contractor to ensure compliance and to avoid and/or reduce significant adverse effects that have been identified where practicable. Where the contractor diverts from the methodologies and working areas outlined herein and/or defined in the granted planning consent ad associated conditions that may be granted, it would be the responsibility of the contractor to obtain the relevant licences, permits and consents for such changes.

3.4 Housekeeping

The contractor will employ a "good housekeeping" policy at all times. This will include, but not necessarily limited to the following requirement:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc.;
- Maintain all plant, material and equipment required to complete the construction work in good order, clean and tidy;
- Keep construction compounds, access routes and designated parking areas free and clean of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding at each working area;
- Effective prevention of oil, grease or other objectionable matter being discharged from any working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged;
- Excavated material generated during construction will be reused on site, if deemed acceptable.
- Effective prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests will be implemented, if infestation occurs the contractor will take appropriate action to eliminate and prevent further occurrence;
- Maintenance of wheel washing facilities and other contaminant measures as required in each working area;
- No discharge of site run-off or water discharge without agreement of the relevant authorities.
- No discharge of site run-off or water discharge will be acceptable onto public roads or into third party lands.
- Open fires will be prohibited at all times;

- The use of less intrusive noise alarms which meet the safety requirements such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms;
- Maintenance of public right of way, diversions and entry/exit area around working areas for pedestrians and cyclists where practicable and to achieve inclusive access;
- All loading and unloading of vehicles will take place off the public highway;
- Material handling and/or stockpiling will be appropriately located to minimise exposure to wind;
- Water misting or sprays will be used as required to minimise dust generation during dry or windy periods.

3.5 Waste Management

The CMT will be responsible for the development of a final Construction Management Plan, and to develop final quantities of materials, and construction methodologies and approaches. Quantities of construction waste materials may vary depending on such methodologies. Therefore, the difficulty of estimating waste quantities is noted which depends on the approach of the appointed Main Contractor.

This CWMP will form the basis of the appointed Main Contractor's operational CWMP. Their operational plan will incorporate the elements identified in this plan to promote sustainable waste management in line with the waste hierarchy, and also focus on integrating good site management practices to ensure efficiency and reduce potential for any other negative environmental effects.

3.6 Demolition Waste

The proposed development includes the demolition of all existing structures on site which includes the Firhouse Inn building and outbuildings which is an old building constructed with solid stone masonry walls with timber floors and a slate over timber structure roof. The second building which is the barber/betting office is a newer building constructed of concrete masonry walls and concrete floors with slate roof over timber structure.

The open area of the site is of a tarmacadam finished carpark over granular sub-base material.

Reuse of materials on site will be encouraged where it meets the required regulatory and engineering requirements. The quantities for reuse, re-cycling and disposal are to be confirmed by the relevant waste receiver once the Main Contractor has completed the site assessment.

An estimation of the expected tonnage of various waste streams are identified in Tables 3.2, 3.3 & 3.4. A detailed demolition management plan including construction volumes will be recorded by the demolition contractor.

3.7 Construction Waste

It is anticipated that the majority of wastes generated will be suitable for reuse, recovery or recycling and will therefore be segregated to facilitate the reuse, recovery and/or recycling, wherever possible.

A non-exhaustive list of construction waste categories which may be generated during the construction phase of the Proposed Development have been identified below and the appropriate European Waste Catalogue Code for these wastes has been identified in Table 3.1.

Non-Hazardous Waste Streams:

- Topsoil, sub soil, stones, made ground fill from excavations;
- Excess new concrete, brick, tiles and ceramics;
- Excess asphalt and tar products;
- Excess plasterboard;
- Scrap metal;
- Cardboard and other packaging;
- Plastic including wrapping and packaging;
- Waste wood;
- Paper;
- Glass;
- Waste from portable site toilets;
- Canteen and food waste; and
- Damaged materials.

Hazardous Waste Streams:

- Contaminated soils;
- Asbestos;
- Batteries;
- Oils, fuels and lubricants from machinery and equipment; and
- Excess paints.

C&D Waste expected from the construction phase of the Proposed Development:

Waste Material	LoW / EWC Code
Concrete, Bricks, Tiles and Ceramics	17 01
Bricks	17 01 01
Tiles	17 01 02
Ceramics	17 01 03
Mixture of concrete, bricks tiles & ceramics	17 01 07
Wood, Glass and Plastic	17 02
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and products	17 03 01*
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02
Metals (including their alloys)	17 04
Copper, Bronze, Brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and Steel	17 04 05
Tin	17 04 06
Mixed Metals	17 04 07
Soil and stones containing hazardous substances	17 05 03*
Soil and stones, other than those mentioned in 17 05 03*	17 05 04
Insulation and Construction Materials	17 06 04
Construction materials containing Asbestos	17 06 05*
Gypsum based construction material	17 08 02
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04
Paper and Cardboard	20 01 01
Wood other than that mentioned in 20 01 37	20 01 38
Soil and Stones	20 02 02
Mixed Municipal Waste	20 03 01
Hydraulic oils	13 01 01*
Fuel oils and diesel	13 07 01*
Aqueous liquid waste other than those mentioned in 16 10 01 (to be considered for portable toilet wastes)	16 10 02

3.8 Bulk Excavation

Volumes of soils to be removed are detailed below in Tables 3.2, 3.3 & 3.4 as these are located in a defined basement dig area and there will be limited opportunity to re-use these materials on Site and must be removed offsite for onward recovery or disposal.

Bulk excavation particular to the basement and services for the proposed development is expected to total 11,700m^3.

All soils arising will need to be tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' using the HazWasteOnline application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in

accordance with the EC Council Decision 2003/33/EC, which establishes the criteria for the acceptance of waste at landfills.

Further to classification of the excavated materials all options will be exhausted to effect reuse possibilities before sending to recovery or disposal facilities.

3.9 Expected Project Waste, Disposal, and Handling

The Main Contractor and C&D waste Manager will ensure that all waste which arise from the construction of the proposed development will be removed from site by an approved waste contractors. These contractors will be required to hold a valid waste collection permit. Furthermore, all waste materials which are required to be disposed off-site will be reused, recycled, recovered or disposed of at an appropriate facility which holds appropriate registration, permit or licence. The C&D Waste Manager will retain on file up-to-date copies of the relevant collection permits, and facility registrations, permits and licences.

The following Table 3.1a indicated an estimation of the expected waste generation from the proposed development based on the available information to date with the targets for management of the waste streams. The predicted waste amounts are based on an average large scale development waste generation rate per m^2, using the EPA National Waste Report guidance.

Table 3.1a: The following table identifies Construction waste materials expected on this project, their disposal method, and handling procedures:

Construction of Proposed Buildings							
Waste Type	**Weight**	**Reuse/Recover**		**Recycle**		**Disposal**	
	Tonne	%	Tonne	%	Tonne	%	Tonne
Mixed C&D	360	10	36	80	288	10	36
Wood	30	40	12	55	16.5	5	1.5
Cementitious Board	110	30	33	60	66	10	11
Metals	85	5	4.25	90	76.5	5	4.25
Concrete	65	30	19.5	65	42.25	5	3.25
Other	160	20	32	60	96	20	32
Totals	**810**		**136.75**		**585.25**		**88**

Given the expected waste streams to be generated from the construction phase of this development it will be necessary to establish disposal and handling procedures on site. The following table proposes methodology for the ReUse/Disposal and Handling of various expected waste streams.

Table 3.1b

Material	ReUse/Disposal Method	Handling Procedure
Clean dimensional wood and palette wood	Keep separate for reuse by on-site construction or by site employees for either heating stoves or reuse in home projects. Recycle at:	Keep separated in designated areas on site. Place in "Clean Wood" skip.
Plywood, OSB, particle board	Reuse, landfill	Keep separated in designated area on site. Place in skip container.

Material	ReUse/Disposal Method	Handling Procedure
Painted or treated wood	Reuse, landfill	Keep separated in designated area on site. Place in skip container.
Concrete	Recycle to:	Keep separated in designated area on site.
Concrete Masonry Blocks	Keep separate for re-use by on-site construction or by site employees	Keep separated in designated area on site
Metals	Recycle to: Ferrous and non-ferrous metals (banding, stud trim, ductwork, piping, rebar, roofing, steel, iron, galvanized sheet steel, stainless steel, aluminium, copper, zinc & lead)	Keep separated in designated area on site. Place in "Metals" container.
Gypsum Plasterslab	Recycle with supplier:	Keep scraps separate for recycling – stack on pallets provided on site.
Paint	Reuse or recycle at:	Keep separated in designated area on site – Lockable container
Insulation	Reuse, landfill	
Flooring	Reuse, landfill	
Glass	Glass: Recycle at:	Keep separated in designated area on site. Place in container: 'Glass'
Plastics	Plastic Bottles: Recycle at:	Keep separated in designated area on site. Place in container: 'Plastic'
Paper / Cardboard	Recycle at:	Keep separated in designated area on site. Place in container: 'Mixed Paper / Cardboard' container
ACM's	Construction materials containing Asbestos – Specialist handling and disposal.	To be handled by specialist sub-contractor for isolation and disposal.

Based on information available and the current design proposal the following waste material is expected to be generated and to be removed from site in accordance with the measures outlined in this plan.

Table 3.2: Expected Waste Volumes of existing material on site to be removed:

Demolition of Existing Buildings							
Waste Type	**Weight**	**Reuse/Recover**		**Recycle**		**Disposal**	
	Tonne	%	Tonne	%	Tonne	%	Tonne
Single Storey Bldg							
Rubble	90	40	36	0	0	60	54
Natural Slate	5	60	3	0	0	40	2
Timber	5	0	0	0	0	100	5
Two Storey Old Bldg							
Rubble	700	40	280	0	0	60	420

Masonry	500	0	0	0	0	100	500
Timber	25	0	0	0	0	100	25
Natural Slate	15	60	9	0	0	40	6
Fiber Cement Slate	4	0	0	0	0	100	4
Steel	5	0	0	100	5	0	0
Two Storey New Bldg							
Masonry	320	0	0	0	0	100	320
Concrete	40	0	0	0	0	100	40
Timber	5	0	0	0	0	100	5
Fibre Cement Slate	10	0	0	0	0	100	10
Steel	10	0	0	100	10	0	0
	Tonne	%	Tonne	%	Tonne	%	Tonne
Totals	**1734**	**19**	**328**	**0.9**	**15**	**80**	**1391**

Table 3.3: In respect to reducing levels of the existing site to formation level for the building construction:

Excavation Volume Calculation particular to proposed structure.				**Basement FFL (68.05) to Formation Lvl (m) =**		0.75
	Area	**Chainage**	**Existing Lvl**	**Prop. Lvl**	**Excav Depth**	**Volume**
	m2	m	m	m	m	m^3
Site Strip						
	2080	0	72.6	72.1	0.5	1040
Basement						
Reduce Dig	2080	0	72.1	68.05	4.3	8944
Comm Unit Fnds	49	0	72.6	70.5	2.35	115
Building 02						
Foundation Dig	98	0	73.6	70.5	3.35	328.3
Total Volume of material to be removed from site =					m^3	**10427**

Table 3.4: Volumes of existing material on site to be removed particular to Services:

Services Excavation Volume Calculation					
Run	**Width**	**Avg Grd Lvl**	**Avg Inv Lvl**	**Length**	**Volume**

Foul Sewer	m	m	m	m	m3
F1-F2	0.53	73.4	71.14	14.7	15
F2-F3	0.53	73	71	18.8	17
F3-F4	0.53	72.9	70.84	23.8	22
F4-F5	0.53	71.5	70.68	36	10
F5-F6	0.53	71.2	70.55	3	1
Storm Sewer					
S13-S14 - Trench 1	1	73.4	71.02	20.5	43
S14-S15	0.53	73	70.93	12.7	15
S15-S16 -TRENCH 2	1	72.9	70.83	20.9	47
S16-S17 - TRENCH 3	1	71.5	70.72	29.1	29
S17-S18	0.53	71.5	70.6	24	14
S18-S19	0.53	71.2	70.49	17	8
S19-S20	0.53	71.2	70.35	23	13
TREE PITS	3	73	71	77	508
ATTEN TANK	4	71.2	70.24	17	79
Watermain					
100mm Connection	0.45	73.5	72.2	40	26
100mm Diversion	0.45	73.5	72.2	140	95
Stormwater Diversion					
300mm Divert	0.6	73.3	70.6	177	308
450mm Divert	0.75	73	71	42	69
Total Volume of material to be removed from site =					**1319**

3.10 Waste Collection, Handling and Disposal

The CMT will ensure through the establishment of a Waste Contractor Register that all companies engaged by the Main Contractor are legally compliant with respect to waste transport and disposal/recovery/recycling. This includes the requirement that a contractor handles, transports and disposes of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of the planned construction activities.

The Waste Contractor Register will include specific information including Collection Permit numbers as issued by the National Waste Collection Permit Office, Category of materials permitted, vehicle registration numbers and delivery receipts of the waste receiver.

Where waste is to be transported out of the state it must be done in accordance with the Transfrontier Shipment of Waste (TFS) Regulations and must meet the approval of the National TFS office operated by Dublin City Council.

S.I. No. 419/2007 - Waste Management (Shipments of Waste) Regulations 2007

4.0 WASTE MANAGEMENT OPERATIONS AND BMPs

4.1 Best Management Practices

Table 2 identifies individual BMPs that are applicable to specific construction operations. The BMPs listed in the table are for general consideration during each phase of construction. The indicated BMPs may not be applicable to every construction operation, nor is every possible BMP listed for each construction operation. The Resident Engineer shall determine the appropriateness of an individual BMP to the construction site.

Table 4.1 - BMPs for various Construction Operations

Construction Operation	**BMPs**
Mobilisation	WM-1 Material Delivery and Storage WM-2 Material Use WM-4 Spill Prevention and Control WM-5 Solid Waste Management WM-6 Hazardous Waste Management WM-9 Sanitary/Septic Waste Management
Clearing/Grubbing	WM-3 Stockpile Management WM-5 Solid Waste Management WM-7 Contaminated Soil Management
Earthwork	WM-7 Contaminated Soil Management
PCC and AC Operations	WM-1 Material Delivery and Storage WM-2 Material Use WM-3 Stockpile Management WM-5 Solid Waste Management WM-8 Concrete Waste Management
Roadway Construction	WM-1 Material Delivery and Storage WM-2 Material Use WM-3 Stockpile Management WM-5 Solid Waste Management WM-6 Hazardous Waste Management WM-8 Concrete Waste Management WM-10 Liquid Waste Management
Mobile Operations	WM-1 Material Delivery and Storage WM-2 Material Use WM-3 Stockpile Management WM-5 Solid Waste Management WM-6 Hazardous Waste Management WM-8 Concrete Waste Management
Trenching Operations	WM-3 Stockpile Management

4.2 Best Management Practice Implementation

WM-1 MATERIAL DELIVERY AND STORAGE

Materials associated with construction activities must be delivered and stored using practices that prevent these materials from polluting receiving waters. Typical materials include PCC components, petroleum products, pesticides, herbicides, fertilisers, detergents, plasters, acids, lime, glues, adhesives, paints, and solvents.

Applications

- All construction sites with applicable material storage

Key Point

Storage Areas: Store materials indoors in existing structures when available. Temporary storage sheds must meet building and fire code requirements and should be located away from vehicle traffic. Storage instructions should be posted, and employees should be trained in proper storage and delivery procedures.

Hazardous Materials: Do not store hazardous materials directly on the ground. Store liquid chemicals in drums and bags on pallets under cover and in secondary containment. Store materials in original containers with their original product labels.

MSDS: The contractor must provide the Resident Engineer with the Material Safety Data Sheets (MSDS) for all materials stored on the site.

Liquid Materials and Petroleum Products: Do not store incompatible materials in the same temporary storage facility. Allow sufficient space between stored containers to allow for spill cleanup and emergency response access.

Containment: Temporary containment facilities for storage must be of sufficient volume to contain precipitation from a 24-hour, 25-year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater. Accumulated rainwater or spills should be removed from containment areas promptly.

Bagged/Boxed Materials: Store materials delivered in bags and boxes on pallets. Cover bagged/boxed materials on non-working days and prior to rain events to protect materials from wind and precipitation.

Spill Cleanup: Contain and clean up spills immediately in accordance with BMPs detailed in Spill Prevention and Control (WM-4).

WM-2 MATERIAL USE

Materials associated with construction activities must be used in accordance with practices that prevent them from polluting receiving waters. Typical materials include AC, PCC, PCC compounds, petroleum products, pesticides, herbicides, fertilisers, detergents, plasters, acids, lime, glues, adhesives, paints, solvents, and curing compounds.

Applications

- All construction sites with applicable material uses

Key Points

MSDS: The contractor must provide the Resident Engineer with the Material Safety Data Sheets (MSDS) for all materials used on the site.

Paint Materials: Mix paint indoors or in a containment area. Allow time for drying before rain events. Never clean brushes or rinse equipment so waste water enters street, gutter, storm drain, or receiving water. Items used with water-based paint can be cleaned, discharging rinse water to a sanitary sewer. When dry, empty latex paint cans, brushes, etc. can be disposed of with other construction debris. Filter used paint thinner/solvents and reuse. Paint thinners and solvents that cannot be recycled must be disposed of as hazardous waste.

Landscaping-Related Products: The contractor must complete a "Report of Chemical Spray Form" when spraying herbicides and pesticides. Products must be applied by a licensed applicator. Do not over-apply fertilisers or pesticides and follow product usage recommendations. Apply in small amounts, allowing time for product to work in or dry before rain events.

Spill Cleanup: Maintain spill clean-up materials near areas that products will be used.

WM-3 STOCKPILE MANAGEMENT

Construction stockpiles of materials such as soil, PCC, AC, PCC/AC rubble, aggregate base, aggregate sub-base, and asphalt based cold-mix have the potential to pollute receiving waters if not protected from contact with storm water.

Applications

- All construction sites with applicable stockpiles

Key Points

General Guidelines: Stockpile protection is a year-round requirement. Install temporary barriers around stockpile perimeters to prevent contact with storm water when required. Temporary barriers can be berms, dikes, silt fences, straw bales, or sandbag barriers. All active stockpiles are to be protected by linear sediment barriers prior to rain events.

Soil Stockpiles: During the rainy season, cover inactive soil stockpile or protect them with soil stabilisation at all times. During the non-rainy season, cover inactive soil stockpiles or protect them with linear barriers prior to rain events.

Paving Material Stockpiles: During the rainy season, cover inactive stockpiles of PCC, AC, AC/PCC rubble, and aggregate base and sub-base, and protect with a temporary perimeter barrier at all times. During the non-rainy season, cover inactive stockpiles or protect with a linear barrier prior to rain events.

Asphalt Based Cold-Mix Stockpiles: Place active and inactive cold-mix stockpiles on plastic and cover with plastic prior to rain events. The key is to prevent contact between rainfall and run-on with the stockpiles.

WM-4 SPILL PREVENTION AND CONTROL

Spill prevention and prompt appropriate spill response reduces the potential for polluting receiving waters with spilled contaminants. Spills of concern include chemicals and hazardous wastes such as soil stabilisers/binders, dust palliatives, herbicides, growth inhibitors, fertilisers, de-icing products, fuels, lubricants, paints, and solvents.

Applications

- All construction sites where chemicals or hazardous materials are stored or used

Key Points

Spill Types: Be prepared for spills. Locate and clearly label spill kits and used absorbent containers. Respond to all spills immediately upon discovery. The appropriate spill response is determined by the quantity and/or composition of spilled substance, as follows:

〉 A “minor spill” involves a small quantity of oil, gas, paint, etc. that can be controlled by the first responder upon discovery of the spill.

〉 A “semi-significant spill” can be controlled by the first responder with the aid of other personnel and may require cessation of all other activity.

〉 A “significant/hazardous spill” is a spill that cannot be controlled by personnel in the immediate vicinity.

Minor Spill Response

〉 Contain the spill.

〉 Recover the spilled material.

〉 Clean the spill area. Use absorbent materials. Do not hose down the area.

〉 Dispose of clean-up materials appropriately.

Semi-Significant Spill Response:

〉 On impermeable surfaces, surround the spill with absorbent material to contain it. Clean spill using absorbent material.

〉 On dirt areas, construct an earthen dike to contain the spill. Dig up contaminated soil and dispose of properly.

〉 If spill occurs during rain, cover spill area to prevent contaminating storm runoff.

Key Point

Significant/Hazardous Spill Response:

〉 Contractor notifies the RE immediately.

〉 Contractor calls 999 and appropriate emergency response services.

〉 Contractor notifies the Local Authority.

- All verbal notification must be followed up by written reports.

- Contractor obtains services of spill contractor or a HazMat team immediately. Contractor staff is not to attempt cleanup until qualified assistance has arrived onsite.

Education: Train employees regarding the appropriate response for spills for the materials they use. Incorporate spill response procedures into regular safety meetings.

WM-5 SOLID WASTE MANAGEMENT

Solid construction wastes must be collected, stored, and disposed of using practices that minimise contact with storm water. Solid wastes include such items as used brick, mortar, timber, steel, vegetation/landscaping waste, empty material containers, and litter.

Applications

- All construction sites

Key Points

Waste Storage Areas: Solid waste storage areas should be located in an area with little potential for flooding and at least 15m from drainage facilities and receiving waters. Use berms, dykes, or temporary diversion structures to protect stockpiled waste materials from contacting storm water. During foul weather, waste should be stored in watertight skips or securely covered. Salvage or recycle waste as appropriate.

Litter Control: Provide adequate trash receptacles in the yard, field trailer areas, and where workers gather for breaks and meals. Do not place litter receptacles near drainage inlets or receiving waters. All litter within the construction site is to be collected weekly, regardless of the litter's origin. Litter is to be removed from the site by waste hauling contractors.

Skips: Provide an adequate number of watertight skips to collect the anticipated volume of construction waste. Plan for additional skips and skip pickups during demolition phases. Do not place skips near drainage inlets or receiving waters. Full skips are to be removed from the site and disposed of appropriately. Washing out skips on the project site is prohibited.

Litter and Debris: Do not let litter interfere with the functioning of the storm drain system. Ensure that litter and debris are removed regularly from drainage grates and ditch lines.

Hazardous Wastes: Separate potentially hazardous waste from non-hazardous waste. Do not dispose of toxic liquid wastes in skips designated for construction wastes. Dispose of hazardous wastes in accordance with WM-6.

WM-6 HAZARDOUS WASTE MANAGEMENT

Hazardous wastes should be collected, stored, and disposed of using practices that prevent contact with storm water. The following types of wastes are considered hazardous: petroleum products, concrete curing compounds, palliatives, septic wastes, paints, stains, wood preservatives, asphalt products, pesticides, acids, solvents, and roofing tar. There may be additional wastes on the project that are considered hazardous. It is also possible that non-hazardous waste could come into contact with these hazardous wastes, such that they become contaminated and are therefore considered hazardous waste.

Applications

- All construction projects

Key Points

Hazardous Material Use: Use containment berms in fuelling areas. Provide secondary containment in paint mixing areas and paint clean-up areas. Place hazardous waste collection containers at convenient locations.

Hazardous Waste Storage Areas: Ensure that adequate waste storage volume is provided and is located away from storm drains and receiving waters. Provide temporary containment sufficient to contain precipitation from a 24-hour, 25- year storm event, plus 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater. Temporary containment should be impervious to spilled wastes for a minimum of 72 hours. Equip storage areas with appropriate spill clean-up materials. Allow sufficient space between storage containers to allow for spill cleanup and emergency response access.

Hazardous Waste Containers: Store hazardous wastes in appropriate sealed containers that are clearly labelled with contents and starting date of accumulation. Do not mix different types of waste together in one container. Do not store incompatible wastes in the same temporary containment facility. If dry waste containers are not watertight, store containers on pallets. Prior to predicted rain events, cover the containment area.

Disposal: Hazardous waste is to be transported from the site by a licensed hazardous waste transporter and disposed of at an authorised, licensed disposal or recycling facility within 90 days of being accumulated. Properly dispose of rain water removed from temporary containment that may have mixed with hazardous waste.

Education: Contractor and subcontractor employees should be educated regarding identification, storage, and disposal of hazardous wastes. Ongoing hazardous waste training should be incorporated into regular safety meetings.

Inspection and Maintenance: Ensure that hazardous waste storage areas are inspected in conformance with contract provisions. Repair or replace perimeter controls, containment structures, covers, and liners as needed.

WM-7 CONTAMINATED SOIL MANAGEMENT

Contaminated soil on construction sites should be managed to prevent any pollutants from entering storm drain systems or receiving waters. Typical soil contamination is due to spills, illicit discharges, underground storage tank leaks, or aerially deposited lead (ADL). Contaminated soils tend to occur on projects in urban or industrial areas. Soil contaminants and locations are often identified in the project plans and specifications.

Applications

- Areas of contamination as identified on project plans and specifications
- Suspected areas of contamination due to site history, spills, leaks, soil discoloration/odour, abandoned tanks, pipes, or buried debris
- Highway widening project where adjoining soils may contain ADL

Key Points

Aerially Deposited Lead (ADL): Soil from areas with ADL may be used as indicated in the contract special provisions providing that operations result in no visible dust. When excavating soils containing ADL, monitor air quality. Soils containing ADL may also be transported to a licensed landfill or other disposal site. At all times, prevent storm water, groundwater, etc. from mixing with and transporting contamination.

Identification and Coordination: If needed, an approved certified lab shall test suspected soil. Upon confirmation of contamination, contractor shall work with appropriate local agencies to implement appropriate excavation, transportation, and disposal practices.

Stockpiling: Avoid stockpiling contaminated soils. If stockpiling is necessary, cover stockpile with plastic sheeting or tarps, install a berm around stockpile to prevent run-on, and locate the stockpile away from storm drains and receiving waters.

Underground Storage Tank Removal: Obtain required approvals and permits from Local Authority prior to removal. If tank contains liquid or sludge, ensure that it is tested for hazardous substances prior to removal. Test underlying soils to determine if there is contamination. Prevent storm water, groundwater, etc. from mixing with and transporting contaminated substances from the storage tank. Ensure that tank and any liquid, sludge, or contaminated soils are transported and disposed of properly.

WM-8 CONCRETE WASTE MANAGEMENT

Concrete waste materials must be properly managed to minimise or eliminate contact with storm water.

Applications

- On construction sites where new concrete is placed or demolition of concrete structures occurs
- Where concrete slurries are generated such as sawing, coring, grinding, and grooving
- At mortar mixing stations

Key Points

Concrete Slurry Waste: Place temporary berms or sandbags around coring and saw-cutting locations to contain slurry. Vacuum slurry waste or collect it in a temporary lined pit and allow it to dry. Dispose of concrete waste in compliance with Solid Waste Management (WM-5).

Temporary Concrete Washout: Wash out concrete trucks in designated areas only. Locate washout facilities a minimum of 15m from storm drains or receiving waters. Keep the washout areas away from areas of construction traffic. A sign shall be installed at each location in accordance with Chapter 8 - Roadworks Signage. The facility shall have a pit or berm to provide sufficient volume to contain all concrete waste resulting from washout. Allow concrete waste to dry and then dispose of on a regular basis

Above Grade Washout Facilities: Above grade facilities shall be constructed as shown in the details. A minimum length and width of 3m is recommended, but the area should have sufficient volume to contain the anticipated waste. The lining material shall be a minimum of 1000 Guage polyethylene sheeting, free of holes or other defects.

Below Grade Washout Facilities: Below grade facilities shall be constructed as shown in the details. A minimum length and width of 3m is recommended, but the area should have sufficient volume to contain the anticipated waste from operation. The lining material shall be a minimum of 1000 Gauge polyethylene sheeting, free of holes or other defects. Commercial type lath and flagging shall be used.

Inspection and Maintenance: Washouts should be maintained to provide a minimum 100mm freeboard for above ground facilities and 300mm freeboard for below grade facilities. Maintenance includes removal and disposal of hardened concrete as previously described. Existing facilities must be cleaned or additional facilities constructed when the washout is 75% full.

Washout Removal: Materials used to construct the facility become the property of the contractor and shall be removed and disposed from site, all depressions shall be backfilled and repaired.

WM-9 SANITARY/SEPTIC WASTE MANAGEMENT

This BMP includes procedures to prevent the introduction of wastes from construction site toilet facilities to storm drains or receiving waters.

Applications

- All construction sites that use temporary or portable sanitary/septic waste systems

Key Points

Installation: Temporary sanitary facilities should not be located near drainage facilities or receiving waters, nor should they be located in areas that will collect water. If the site is deemed to be a high wind area by the RE, the facilities shall be secured to prevent overturning.

Sanitary Sewer Discharge: Discharges direct to the sanitary sewer should be in compliance with Local Authority requirements. Ensure that the temporary facility is properly connected to the sanitary sewer to prevent illicit discharges.

On-Site Disposal: Waste water shall not be discharged or buried within the site. Ensure that any on-site disposal systems comply with local authority requirements.

Inspection and Maintenance: The contractor's Water Pollution Control Manager shall monitor sanitary/septic waste storage and disposal procedures weekly. Ensure that the sanitary/septic facilities are maintained in good working order and wastes are transported offsite by a licensed service.

WM-10 LIQUID WASTE MANAGEMENT

This BMP includes procedures to prevent pollutants related to non-hazardous liquid wastes from entering storm drains or receiving waters. Liquid wastes include drilling slurries, drilling fluids, wastewater that is free from grease and oil, dredgings, and other non-storm water liquid discharges not covered by separate permits. This BMP does not apply to the following:

- Dewatering operations (See NS-2)
- Solid wastes (See WM-5)
- Hazardous wastes (See WM-6)
- Concrete slurries (See WM-8)
- Liquid wastes covered by specific laws or permits

Applications

- All construction sites where liquid wastes are generated

Key Points

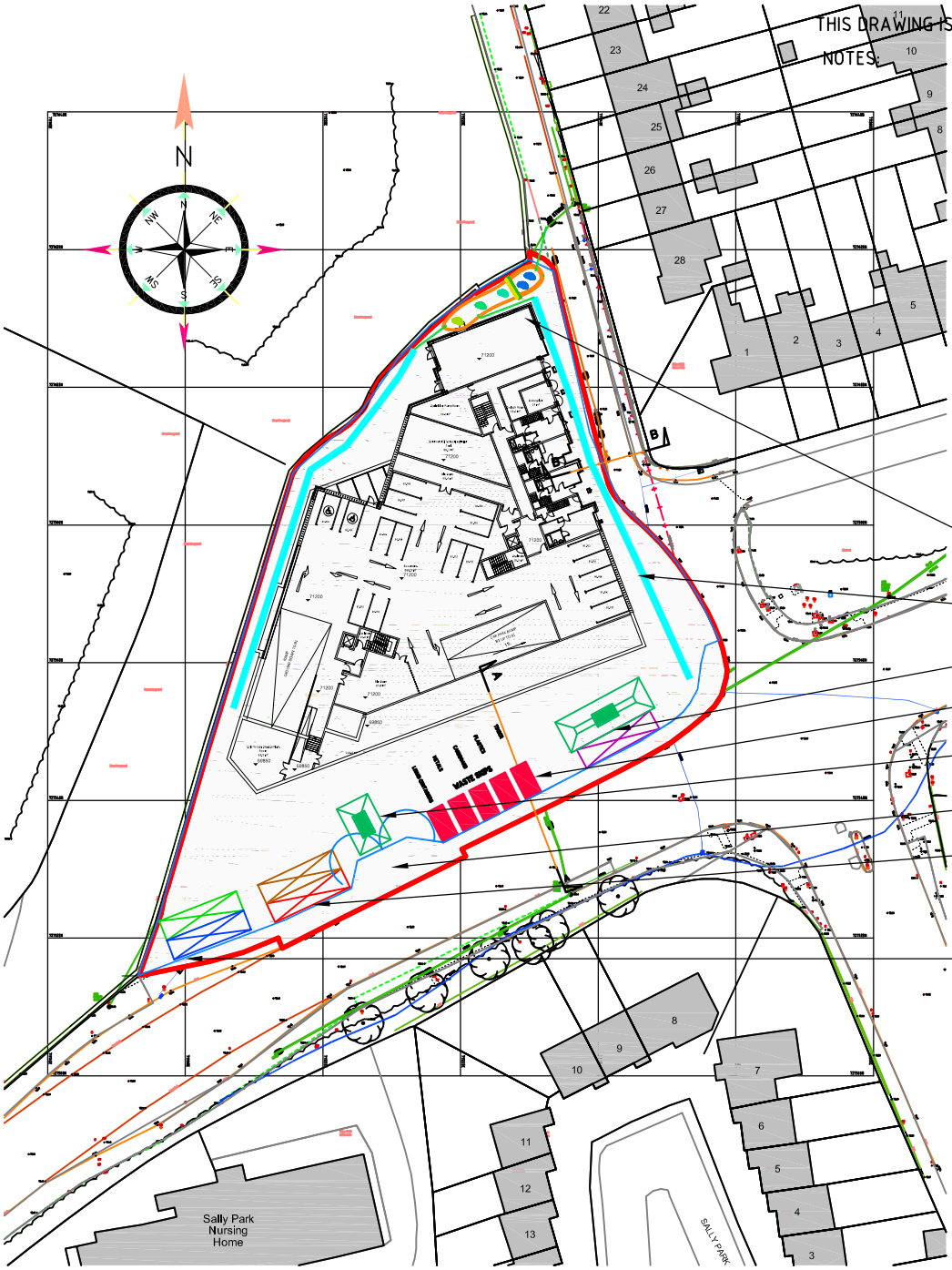
Capture: Capture all liquid wastes that have the potential to impact water entering the storm drain system. Use temporary dykes or berms to direct surface flow of liquid wastes to a containment structure or device. If liquid waste contains sediment, capture and treat the flow to remove sediment or capture in a containment structure to allow sediment to settle.

Containment: Contain liquid wastes in a controlled area that is structurally sound, leak-free, and provides sufficient storage for the anticipated volume. Appropriate structures include holding pits, sediment basins, roll-off bins, and portable tanks. Locate the containment structure such that accidental releases do not discharge to storm drains or receiving waters or threaten health or safety.

Disposal: Some liquid wastes may require testing and certification that they are non-hazardous before an appropriate disposal method is selected. Liquid waste may need to be treated to remove sediment or other pollutants prior to disposal. Typical liquid waste disposal requires Dewatering (NS-2) with disposal of resulting solids per Solid Waste Management (WM-5).

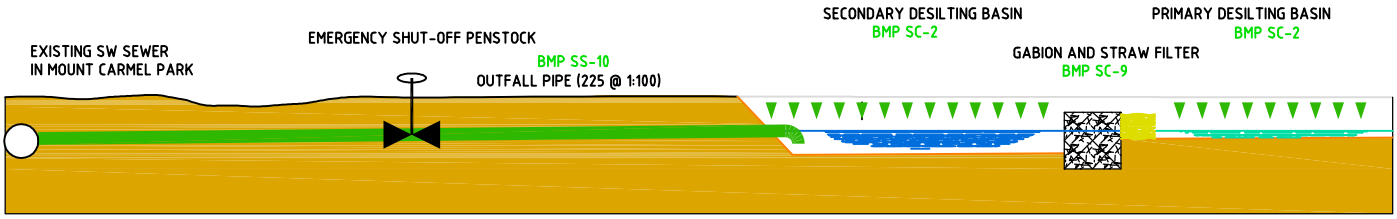
Inspection and Maintenance: Frequently inspect liquid waste containment areas and capturing devices for damage. Repair as needed.

NOTES:



- RECEPTION OFFICE (PREFAB)
- MEETING ROOM / OFFICES (PREFAB)
- WELFARE FACILITIES (PREFAB)
- SMALL PLANT STORE (STEEL)
- S&H EQUIPMENT STORE (STEEL)
- HAZARDOUS MATERIAL (STEEL)
- BUNDED FUEL STORAGE (STEEL)

- SURFACE WATER TREATMENT AREA PRIOR TO DISCHARGE TO PUBLIC SURFACE WATER SEWER
- SURFACE WATER CONVEYANCE FILTER CHANNEL
- VEHICLE REFUELLING POINT
- WASTE SEGREGATION AREA
- WHEELWASH SUMP
- MAIN ENTRY/EXIT
- SITE OFFICES/STORES DOUBLE STACKED
- 2.4m HIGH SITE HOARDING



TEMPORARY SURFACE WATER TREATMENT

Bluemont Developments (Firhouse) Limited

REV	DATE	DESCRIPTION	

PHM Consulting
Civil - Structural - Environmental
11 Mallow Street, Limerick, Ireland V94 WRN4
Tel.: +353 (0)61 576020 E-mail: info@phm.ie Web.: www.phm.ie

Mixed Use Development at Firhouse Road, Dublin 24
CEMP - Site Set-up

Drawn: POR	Scale: 1:1000	Project Number: 110-36	Rev.: ~
Chkd.: POR	Date: 04/2022	Drawing Number: 801	A4
Apprd.: EOD	Status: PLANNING D2		