Strategic Housing Development at Stocking Lane, Dublin 16

Outline Construction Management and Waste Management Plan

October 2021

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1 Introduction

This report provides a preliminary or outline Construction Management Plan (CMP) ans Waste Management Plan subject to planning permission being granted for the development as per the drawings and information submitted. The CMP is subject to change based on the following:

- final planning permission granted, and conditions attached
- compliance requirements with South Dublin County Council
- requirements by other state bodies
- concerns raised by residents affected by the works
- final Traffic Management Plans prepared on grant of planning permission
- a licenced contractor being employed and a detailed method statement being prepared for the project

A Waste Management Plan (WMP) for the development will be subject to periodic review as part of the management of the construction process.

The principles of waste minimisation and sustainable construction may be summarised as follows.

- Minimise raw materials used
- Reduce waste
- Reuse materials (site manager to monitor)
- Recycle where possible
- Send minimum amounts to landfill

The key to minimising waste is to ensure the site manager, contracts manager, and procurement personnel accurately assess the quantity of materials required and consider the potential for their re-use and recycling both on and off site. In addition, site waste can be reduced by the proper location and protection of materials.

The *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*, June 2006 published by the Department of the Environment, Heritage and Local Government (DoEHLG) have been reviewed. In particular, Project Construction & Demolition Waste Management Plans should be prepared for projects in excess of any of the following thresholds - (1) New residential development of 10 houses or more. In this application, there is no demolition works proposed and the application is for development on a greenfield site. The Guidelines state that where the threshold is met that applicant submitting a planning application, should include outline proposals for a construction management plan and waste management plan.

2 The Proposed Development

2.1 Detailed Description

This is an application for a strategic housing development of Stocking Lane, Ballyboden, Dublin 16.

The proposed development at this site c.2.47ha on lands at Stocking Lane, Dublin 16, consists of:

- 131 residential units including:
  - 21 houses (1 no. 3-bed; 11 no. 4-bed; 9 no. 5-bed) of up to two-storey plus roof storey.
  - 2 duplex apartment units (2 no. 2-bed) in a three-storey high block.
  - 108 apartment units (29 no. 1-bed; 59 no. 2-bed; 20 no. 3-bed) in ten apartment blocks up to four-storeys.
- A creche of c. 128 sqm at the ground floor of Block L.
- A shop of c. 65 sqm at the ground floor of Block G, with associated storage.
- A total of 167 car parking spaces, of which:
- 88 are at surface level and 79 in the basement under apartment Blocks F and G.
- 5 are dedicated visitor parking spaces.
- A total of 288 cycle parking spaces and 5 no. motorcycle spaces.
- A new vehicular access onto Stocking Lane.
- A new pedestrian and cycle access to the Springvale estate to the east.
- New roads, footpaths and cycle paths and connections within the site
- A new pedestrian crossing on Stocking Lane to the north west.
- The expansion and upgrade of the existing pedestrian crossing on Stocking Lane to the south west.

The development also includes landscaped private and public open space, boundary treatment, lighting, play area, an ESB substation, site drainage works and all ancillary site development works above and below ground.

2.1 Details of Non-Hazardous Wastes to be Produced

There will be topsoil and subsoil excavated to facilitate construction of the new buildings' foundations, basement, road construction, installation of services and site levelling. It has been estimated that c.7671 m3 of cut of which 80%-90% of this will need to be taken off site. This quantum is to be confirmed. Surplus material that requires removal from site and it is deemed to be a waste, removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration (COR), permit or license is required by the receiving facility. During construction there will be construction waste generated and there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and oversupply of materials will also be generated. Waste will also be generated from construction

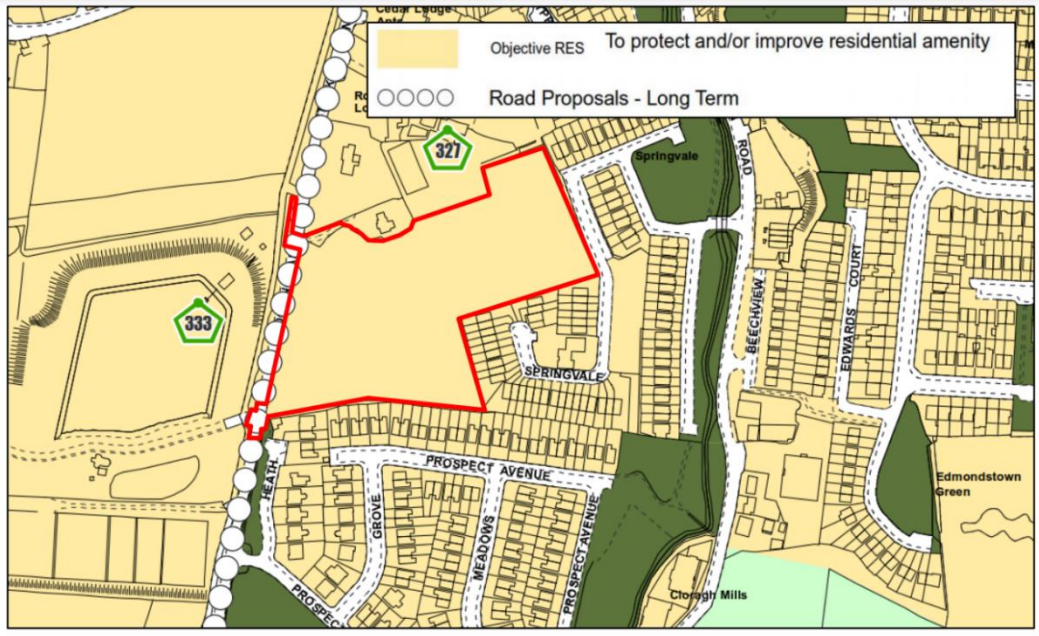
workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

3 Site Context

The application site is located c 3km south of Rathfarnham, on the eastern side of Stocking Lane, the regional road, R115. The site is located within the M50. The eastern side of Stocking Lane in the vicinity of the application site is characterised by suburban housing. To the south and east of the of the application site are housing estates (Prospect and Springdale) and to the north are a number of detached houses. To the west of the site is Stocking Lane and opposite the site is the Ballyboden Water Works. Mature planting fronts the Stocking Lane boundary and a footpath and cyclepath are located on the western side of Stocking Lane.

The current access to the site is via a detached house to the north. The last use of the application site was for grazing.

Figure 1 –Site location



4 Outline Construction Management Plan

4.1 Working Hours

It is envisaged that working hours during the course of the construction process will be primarily standard working hours for the construction industry:

- 8.00 – 19.00 Monday to Friday
- 8.00 – 14.00 Saturdays

No works are envisaged to be carried out on Sundays, should the need to work Sundays and or Bank Holidays be required a written submission will be made to South Dublin County Council for permission to do so.

4.2 Noise and Dust Control

A Construction Noise Management Plan will be put in place for the construction process. Appropriate personnel will be engaged to prepare this report and monitor activity and noise levels generated. The Noise Management Plan will address the following areas:

4.2.1 Noise Sensitive Locations

The development lands are located adjacent to residential areas.

4.2.2 Baseline Noise Survey

A baseline noise monitoring programme will be completed prior to construction works commencing. Attended noise monitoring will be carried out at a number of locations yet to be determined. Survey details, procedures and results of this aspect of the baseline noise monitoring programme will be in general in accordance with ISO 1996: Part 2: 2007 2.

4.2.3 Assessment of Noise Effects

In addition to the limits in the Guidelines for the Treatment of Noise and Vibration in National Road Schemes consideration will also be given to advice in relation to establishing significant construction noise effects as set out in BS5228. During the construction phases, the development shall comply with British Standard 5228 '*Noise Control on Construction and open sites Part 1. Code of practice for basic information and procedures for noise control*.'

4.2.4 Best Practice Guidelines for the control of Construction Noise

BS 5228 include guidance on the various aspects of construction site noise mitigation, including, but not limited to:

- Liaison with neighbours;
- Noise monitoring;
- Hours of works;
- Selection of quiet plant;
- Control of noise sources and screening.

4.2.5 The Introduction of New Noise Sources onto the Development Lands

The potential of any item of plant to generate noise will be assessed prior to the item being brought onto the site. Regard shall be had to:

- Consideration of Alternatives;
- Information to be submitted by the contractor;
- In-situ Noise Measurement.

4.2.6 Noise Control Audits

Noise control audits will be conducted at regular intervals through the construction phase of the development. In the first instance, it is envisaged that such audits will take place on a monthly basis. This subject to review and the frequency of audits may be increased if deemed necessary.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed;
- Opportunities for noise control 'at source';
- Optimum siting of plant items;
- Plant items being left to run unnecessarily;
- Correct use of proprietary noise control measures;
- Materials handling;
- Poor maintenance;
- Correct use of screening provided and opportunities for provision of additional screening.

4.2.7 Dust Management Plan Overview

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK and the USA.

Effective site management regarding dust emissions will be ensured by the formulation of a dust management plan (DMP) for the site. The key features of the DMP are:

- the specification of a site policy on dust;
- the identification of the site management responsibilities for dust;
- the development of documented systems for managing site practices and implementing management controls;
- The development of means by which the performance of the dust management plan can be assessed.

4.2.8 Site Management - dust

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the planning stage, the siting of construction activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to

respond to adverse weather conditions by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs:

- During working hours, technical staff shall be on site and available to monitor dust control methods when required to do so;
- Complaint registers will be kept on site detailing all telephone calls and letters of complaint received in connection with construction activities, together with details of any remedial actions carried out;
- It is the responsibility of all contractors at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practise and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are highlighted below.

4.2.9 Dust Control – Site Roads

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. However, effective control measures can easily be enforced. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles;
- Bowsers will be available during periods of dry weather throughout the construction period. Research has found that the effect of watering is to reduce dust emissions by 50%. The bowser will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

4.2.10Dust Control - Land Clearing / Earth Moving

Land clearing / earth-moving during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

4.2.11Dust Control – Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.
- The regular watering of stockpiles has been found to have an 80% control efficiency.

4.2.12Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures.

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.

4.2.13Dust Management Summary

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the achievement of no dust nuisance occurring during the construction phase. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be monitored and assessed;
- The specification of the measures to be taken to control dust emissions before it occurs and effective measures to deal with any complaints received.

4.3 Emissions, Fuel and Oil Spill Management

The following are techniques and methods which are widely used currently throughout the construction industry to control other emissions from the site, and which may be used in this development.

- Vehicles and equipment will not emit black smoke from exhaust system, except during ignition at start up.
- Engines and exhaust systems should be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
- Servicing of vehicles and plant should be carried out regularly, rather than just following breakdowns.
- Internal combustion plant should not be left running unnecessarily.
- Where possible fixed plant such as generators should be located away from residential areas.

- All hydrocarbons, chemicals, oils, etc. shall be stored in a dedicated bounded area at least 30m from watercourses and capable of storing 110% of the container/tank capacity.
- All refuelling shall take place in a designated refuelling area.
- The contractor shall ensure adequate supply of spill kits and hydrocarbon absorbent pads are stocked on site.
- Storage facilities are to be checked on a regular basis to ensure any leaks or drips are fixed to prevent loss and pollution.
- Ensure appropriate spill response equipment is located near to the material in case of containment failure or material spills, and ensure site staff know how to use it.

4.4 Surface and Groundwater

Water pollution will be minimised by the implementation of good construction practices. Such practices will include adequate bunding for oil containers, wheel washers and dust suppression on site roads, and regular plant maintenance. The Construction Industry Research and Information Association provides guidance on the control and management of water pollution from construction sites in their publication Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors – C532 CIRIA Report (Masters-Williams et al, 2001), which provides information on these issues.

Pollutants can commonly include suspended solids, oil, chemicals, cement, cleaning materials and paints. These can enter controlled waters in various ways:

- Directly into a watercourse
- Via drains or public sewers
- Via otherwise dry ditches
- In old field drains
- By seepage into groundwater systems
- Through excavations into underlying aquifers
- By disturbance of an already contaminated sites.

The proximity of the site to streams, aquifers and water abstractions; potential sources, pathways and impacts of pollution; and the historical uses of the site and nearby areas should be examined early in project planning and design, to ensure that suitable redesign and mitigation measures are undertaken as necessary. During construction, careful management and planning will help minimise water pollution. This may include adequate bunding of all oil tanks, wheel washers and dust suppression on haul roads, particular care to be taken near watercourses, and regular plant maintenance. A contingency plan for pollution emergencies should also be developed and regularly updated, which would identify the actions to be taken in the event of a pollution incident.

The CIRIA document (2001), recommends that a contingency plan for pollution emergencies should address the following:

- containment measures
- emergency discharge routes
- list of appropriate equipment and clean-up materials
- maintenance schedule for equipment
- details of trained staff, location, and provision for 24-hour cover

- details of staff responsibilities
- notification procedures to inform the relevant environmental protection authority
- audit and review schedule
- telephone numbers of statutory water undertakers and local water company
- list of specialist pollution clean-up companies and their telephone numbers

4.5 Roads

The planning application requires the construction of two entrances to the proposed development: one on Stocking Lane and one on Springvale All construction access will be from Stocking Lane.

Parking for Contractors, suppliers and visitors to the development will be accommodated on site. Details will also be included in the site Safety & Health Plan to be completed, prior to construction commencing, when appointments have been made under Safety and Health legislation. The Safety and Health Plan will be reviewed and updated as is necessary during the course of the construction phase of the development.

4.6 Site Set-up – Construction Start / Completion

Subject to a grant of planning permission for the proposed development, based on the drawings submitted at the planning stage, it is envisaged that the development will take approximately 24 months to complete. The development lands have existing boundaries that prevent access and egress. The Contractor will be responsible for the security of the site. The development lands are will be monitored by offsite CCTV during the construction phase. A site compound and car parking facility will also be set up on the lands for the construction phase.

South Dublin County Council's (SDCC) relevant departments will be contacted and liaised with prior to the commencement. Where necessary Road Opening Licence applications will be submitted for approval.

Hoarding/fencing if required will be erected, particularly around trees to be protected. The site area will be enclosed with hoarding details of which are to be agreed with SDCC. Hoarding/fencing panels will be maintained and kept clean for the duration of the project. This will involve erecting the hoarding/fencing around the proposed site perimeter in line with the finished development description.

4.6.1 Obligations on Contractor

The Contractor will be required to;

- Operate a Site Induction Process for all site staff;
- Ensure all site staff shall have current 'Safe Pass' cards;
- Install adequate site hoarding/fencing to the site boundary;
- Maintain Site Security staff at all times;
- Install access security for staff;
- Separate public pedestrian access from construction vehicular access;
- Ensure restricted access is maintained to the works.

4.6.2 *Delivery Co-Ordination*

Material deliveries and all construction vehicle movements to site will require strict control by the logistics team and the traffic marshals. These movements will be closely monitored by site supervisors and management. A scheduling system will provide an efficient and effective means of controlling all deliveries. The implementation of pre-agreed delivery schedules and programmes ensures that all deliveries arrive at the right time with materials being efficiently despatched to the correct offloading and storage area.

To reduce the impact of construction traffic during peak hours we will implement measures such as consolidation of deliveries e.g. by selecting materials / goods from the same source, thus combining materials into one single delivery, as opposed to a number of vehicles delivering goods from different sources. The contractor will actively seek and investigate ways of consolidating deliveries to reduce the total number of vehicle deliveries at the site.

Prefabricated materials are construction parts which have been assembled in a factory or other manufacturing site, prior to being transported to the development site. Therefore, the required parts will arrive as a complete structure form or sub-structure form. This process reduces the number of transport trips to the site as less deliveries of construction parts will be required. Lorries will also be fully loaded to reduce the need of construction deliveries

4.6.3 *Sequence*

The construction works will involve an indicative sequence of works, with a brief description outlined below. The Contractor will clearly outline any works which impact public spaces within the Construction Management Plan that shall be submitted and agreed with the Council.

It is anticipated the sequence of the development will be in the following order.

1. Roads – the roads within the site will be developed
2. Housing on eastern side of site to be developed
3. Duplexes in the centre of the site
4. Duplexes and apartments on the western part of the site
5. Landscaping, play areas, lighting and finishes to estate.

4.6.4 *Demolition*

There are no demolition works proposed.

5 Construction Traffic Management

5.1 Introduction

A Traffic Management Plan (TMP) for the existing entrance and new entrance will be fully completed when planning permission has been granted. All traffic management plans for the entrance and any proposed works, temporary or permanent, will be carried out on liaising with the relevant county council departments.

It is estimated that the construction of the proposed development would be 24 months. The peak HGV movements to and from the site will be during the construction. It is anticipated that

the construction traffic during the AM and PM peaks will be minimal and shall be organised on the following basis.

As the site is a large greenfield site, there is ample room for construction traffic to drive forward into the site and park and drive out of the site.

5.2 Haulage Route and Details

The increase in traffic as a result of construction shall be minor and can be readily accommodated within the existing road network. The size of the site can accommodate onsite parking and turning. Haulage vehicle movements should be fully coordinated to comply with the requirements of the Layout and requirements herein.

Materials may initially be stacked in designated areas, prior to distribution to their relevant destination. This strategy is adopted to reduce vehicle unloading times, allowing vehicles to depart from site quickly, and leaving the unloading zone vacant and ready to receive the next delivery. Distribution of delivered materials to each work area is then undertaken progressively throughout the day, avoiding peak commute times.

Deliveries will arrive at the stipulated times as agreed with the site contact and any vehicles arriving outside of these times will be turned away or held if it is deemed they will cause more of a nuisance by drinking in the turning area.

All lorries and skips leaving site will be checked to make sure they are covered, and the wheels are free of dirt with the aid of wheel wash facilities to prevent lorries tracking debris onto the road network surrounding the site. In the event debris happens to be dropped or tracked onto the road a street sweeper will be deployed to ensure the roads are kept clean at all times.

In summary-

- At no time should construction associated vehicles be stopped or parked along the route;
- Haulage vehicles should not travel in convoys of greater than two vehicles at any time;
- Strictly at no time should haulage vehicles be parked or stopped at the entrance to the site.
- All loading of excess material will occur within the site boundary.
- All off-loading of deliveries will take place within the site, away from the public road and will access via the construction site access.
- Verbal and written briefings can be provided to all suppliers, contractors and visitors, noting restrictions or terms that are applicable to them. Highlighting the route on a plan can be very useful.
- Vehicles will be able to turn within the site to exit in a forward direction.
- The main contractor to ensure that mud/detritus originating from the site is not deposited on the public highway.
- Responsibility for supervising, controlling and monitoring vehicle movements to/from the site will lie with the Site Manager of Foreman.

5.2.1 Protection of pedestrians from the construction works, particularly vulnerable users

All efforts will be made to protect pedestrians from the construction works, particularly vulnerable users. Vulnerable footway users include wheelchair users, the elderly, people with walking difficulties, young children, people with prams, blind and partially sighted people, etc. The footpath on Stocking Lane is located on the opposite side to the application site and pedestrians do not have access to a footpath at the application site.

6 Waste Management Plans

6.1 Construction Waste Management

The proposed project consists of the development of 131 residential units, creche and retail unit. Subject to planning permission, construction methods will be reviewed, final Bills of Quantities completed and material management assessed prior to commencement of the development. Licenced contractors will be employed and both risk assessments and method statements will be prepared prior to works commencing. Options for the re use of materials generated from the construction phase will be explored including the reuse of crushed materials. All materials will be separated, where feasible to do so, and sent to re cycling facilities.

In the course of the project, it is estimated that the following quantities of C&D wastes / material surpluses will arise:

C&D Waste Material	Quantity
Clay and Stones	Haulage off site is expected, quantities to be determined
Concrete waste	Haulage off site is expected, quantities to be determined
Masonry waste	Haulage off site is expected, quantities to be determined
Wood waste	Haulage off site is expected, quantities to be determined
Packaging	Haulage off site is expected, quantities to be determined
Steel waste	Haulage off site is expected, quantities to be determined
Total materials generated	tbc

6.1.1 Wastes arising/proposals for minimisation/reuse/recycling:

Wastes arising from the project are as above for the Construction Phase.

C&D waste will arise on the project on the construction and excavation and unavoidable construction waste / material surpluses /damaged materials. The Procurement Manager shall ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.

Proposals for minimisation include:

Using the development Bill of Quantities (BOQ) the Procurement Manager, along with the site manager, can predetermine exact amounts of materials required for the development and order from the quantities measured in the BOQ. The Procurement Manager will then issue a Purchase Order for the total material amount to the selected supplier.

- Ensuring materials are ordered on an “as needed” basis to prevent over supply to the site
- Purchasing coverings, panelling or other materials in shape, dimensions and form that minimises the creation of excessive scrap waste on site.
- Ensuring the correct storage and handling of construction materials to minimise generation of damaged materials /waste e.g. keeping deliveries packaged until they are ready to be used
- Ensuring the correct sequencing of operations
- Assigning individual responsibility (through appropriate contractual arrangements) to sub-contractors for the purchase of materials and for the management of waste arising from their activities, thereby ensuring that available resources are not expended in an extravagant manner at the expense of the main contractor.
- Proposals for reuse include:
- Excavated top soil can be carefully set aside and reused as landscaping material in the completed development
- Excavated material will be used where possible for landscaping and making up levels to open spaces and green areas on the development

Proposals for Recycling of waste include:

- Waste timber can be recycled where the waste is suitable for shredding
- Timber can also be sent for reprocessing as medium density fireboard
- Waste Concrete can be utilised as fill material where the required specifications can be met
- Excavated clay and C&D waste-derived aggregates are considered suitable for certain on-site construction applications. It is proposed that the following quantities, corresponding to all C&D waste arising from the project, will be used within the works. (The totals will be confirmed prior to commencement of construction):

C&D Waste Type	Clay & Stones	Concrete	Masonry	Totals
Proposed Used				
General Fill / Hardcore	Where approved by engineers for use for making up levels	Where approved by engineers for use for making up levels on roads, under footpaths		
Pipe bedding				
Selected trench backfill				
Fill to structures				
Beneath paths structure		Where approved by engineers	Where approved by engineers	

It is anticipated that the waste materials will have to be moved off site. It is our intention to engage a specialist waste service contractor who will process the requisite authorisations, for the collection and movement of the waste off site, and to bring the material to a facility which currently holds a waste licence/permit. Accordingly it will be necessary to arrange the following waste authorisations specifically for the project:

Authorisation Type	Specific Need for Project	
	Yes	No
Waste licence		x
Waste permit		x
Waste collection permit	x	
Transfrontier shipment notification		x
Movement of hazardous waste form		x

6.1.2 Assignment of Responsibilities:

The project manager/contracts manager/Procurement Manager/site manager will form the C&D waste management team and will have overall responsibility for the implementation of the project C&D waste management plan. The C&D waste management team will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan. At the

operational level the site manager/site foreman and the appropriate personnel from each subcontractor on site shall be assigned the direct responsibility to ensure that the operations stated in the project C&D waste management plan are performed on an on-going basis.

Copies of the Project C&D Waste management plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the project C&D waste management plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective material reuse techniques apply, each member of the development management team will be given instructions on how to comply with the Project C&D waste management plan.

6.1.3 Waste Auditing:

The C&D Waste Manager shall arrange for full details of all arisings, movements and treatment of construction waste discards to be recorded during the construction stage of the project. Each consignment of C&D waste taken from the site will be subject to documentation, which will conform to the table below and ensure full traceability of the material to its final destination.

Detail	Particular
Name of project origin	
Materials being transposed	
Quantity of material	
Date of material movement	
Name of carrier	
Destination of material	
Proposed use	

Details of the inputs of materials to the construction site and the outputs of wastage arising from the project will be investigated and recorded in a waste audit, this will identify the amount, nature and composition of the waste generated on the site. The waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices inherently contribute to the production of construction and demolition waste. The measured waste quantities will be used to quantify the costs of management and disposal in a Waste Audit report. The total cost of C&D waste management will be measured and will take account of the purchase cost of material (including imported soil), handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be calculated for the management of a range of C&D waste materials, using the format shown in the table below:

Materials	Estimated quantities and cost
E.G soils	TBC
Quantity of waste soils (tonnes)	TBC
Purchase / import cost	TBC
Material storage cost	TBC
Material transport cost	TBC
Revenue from material sales	TBC
Material disposal costs	TBC
Material treatment costs	TBC
Total waste soil management costs	TBC
Unit waste soil management costs	TBC

A Bill of Quantity will be prepared based on a final grant of planning and subsequent compliance drawings to determine measures and costings.

Final Details of the quantities and types of C&D Waste arising from the project will be reviewed for future projects waste management.

6.2 Outline Operational Waste Management Plan

An outline operational waste management plan has been devised for the scheme on order to manage the waste produced by the various elements of the scheme during its operational phase. The plan has been devised in accordance with best practice, current legal and industry standards.

6.2.1 Characteristics of the Development

Dedicated waste storage for apartment blocks E, F, G, H, J, K L, the retail unit and the creche is located in the basement located under Blocks F and G. As the retail and creche waste storage areas are also located in the basement, these have their own dedicated space with each of the waste room. These will have their bins locked by a key. Block M has its own waste storage space located to its north. The houses will have their own separate bin collection areas identified with a local bin collector company. The mid-terraced units which have not access to a side entrance, are provided with a dedicated screened waste storage to the front. The duplex units 10-11 which are located further east of the site have their own dedicated screened waste storage.

Municipal waste means household waste as well as commercial waste that because of its nature or composition is similar to household waste. In relation to the proposed development it consists of two elements:

- Households
- Commercial.

Typical municipal waste stream are expected to be produced during the operational phase of the proposed development, as follows:

- Food wastes;
- Nappies (general waste)
- Cardboard and paper;
- Plastics (including bottles and other containers);
- Glass (including green, brown and clear);
- Metals (including aluminium cans and tin cans).

6.2.2 Management of Waste from Residential Units

The houses will have there own bin collection point and storage area within their boundary.

A Management Company would oversee the apartment, retail and creche elements of the development and would be in charge of the waste resulting from the apartment units.

Segregated bins for each type of waste will be provided as follows:

- Organic waste;
- General household waste;
- Mixed recyclable waste (paper, plastic)

Bins will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above and/or on the bins to show exactly what can be put in each.

A waste control strategy will be prepared and reviewed annually by the Building Management Company.

6.2.3 Management of Waste from Retail Unit

Segregated bins for each type of waste will be provided as follows:

- Organic waste;
- General household waste;
- Mixed recyclable waste (paper, plastic)
- Glass

Bins will be clearly labelled, and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above and/or on the bins to show exactly what can be put in each.

A waste control strategy will be prepared and reviewed annually by the Building Management Company.

6.2.4 Management of Waste from Creche Unit

Segregated bins for each type of waste will be provided as follows:

- Organic waste;
- General household waste;
- Mixed recyclable waste (paper, plastic)
- Glass

Bins will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above and/or on the bins to show exactly what can be put in each.

A waste control strategy will be prepared and reviewed annually by the Building Management Company.

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