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**Project Name:** Residential Development at Crokers Hill, Kennyswell Road, Kilkenny  
**Ref. Number:** 18KK003  
**Date:** 23<sup>rd</sup> July 2019

## Re: Outline Construction & Waste Management Plan

### 1.0 Introduction

### 1.1 Objections

The following Outline Construction and Waste Management Plan has been produced as part of the submission to An Bord Pleanala for a residential development by Van Dijk Architects at this site located at Crokers Hill, Kennyswell Road, Co. Kilkenny.

This document presents an outline construction sequence, supported by possible construction methodologies and techniques that may be adopted during the construction of the proposed development. This outline plan seeks to demonstrate how such works can be delivered in a logical, sensible and safe sequence, with the incorporation of specific measures to mitigate the potential impact on people, property and the environment.



Figure 1 - Site Location at Crokers Hill, Kennyswell Road, Co. Kilkenny



Nothing stated in this document shall supersede or be taken to replace the terms of the Contract, the detailed design description issued with the Contract Tender or the Conditions of Planning.

The stated methodology shall be revised or adopted by the Main Contractor prior to commencing works on site.

This document should be viewed as an outline plan only which will be further developed by the Main Contractor in consultation with Statutory Undertakers/Authorities and affected Stakeholders prior to works commencing on site.

## 1.2 Site Description & Key Interfaces

The subject site is a greenfield site. There is an existing water pump building and shed on the site.

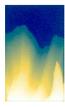
The extent of demolition foreseen on the site will be:-

- the removal of a random rubble wall to form the construction entrance
- removal of a number of trees, hedging and shrubs within the site.
- The demolition of the existing water pump building and shed.

The Development adjoins private residences along the eastern boundary of the site, agricultural lands which contain the Breagh River to the north and west and Kennyswell Road (R695) to the south. There is an existing dwelling that abuts the western boundary of the site. The southern boundary of the site is mainly made up of a random rubble wall.



**Figure 2 - Housing Development at Crokers Hill, Kennyswell Road, Co. Kilkenny**



### 1.3 Proposed Development

The development will consist of 6 No. blocks (3 of which are apartment blocks and 3 are blocks of houses) with a total of 86 dwelling units. These include a group home, houses, duplexes, apartments and a community facility on an area of approximately 2.22Ha. The 86 dwelling units specifically comprises of: 1 no. five bedroomed terraced house; 4 no. four bedroomed terraced houses; 19 no. three bedroomed terraced houses; 9 no. three bedroomed duplex apartments; 2 no. four bedroomed duplex apartments; 14 no. one bedroomed apartments; 28 no. two bedroomed apartments; 8 no. three bedroomed apartments and 1 No. five bedroomed group home.

Ancillary works include site infrastructure to service the development comprising road entrances from Kennyswell Road (R695), access roads within the development site, car parking, water supply, storm and foul sewerage and other services. Overhead services will be made underground during the works.

### 1.4 Proposed Participants

The following is a list of project participants:

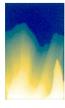
Role	Participant
Client	Kilkenny County Council
Architect	Van Dijk Architects
C&S Engineer	Hayes Higgins Partnership
Traffic Engineer	Roadplan
M&E Engineer	Hayes Higgins Partnership
Quantity Surveyor	McGahon Surveyors
PSDP	Van Dijk Architects
Flooding Consultant	IE Consulting
Contractor	TBA

### 2.0 Construction Sequencing & Programming

The current proposal is that each dwelling unit and the community facility will be constructed in blockwork to form the walls, insitu floor slabs to ground floor with timber to form the first floor stud partition walls and floors, however, precast elements may also be used in the apartment blocks and depending on the Contractor's input during design development. The proposed development is anticipated to be constructed over an 18 months to 2-year period, commencing in 2020.

### 2.1 Site Establishment

The site will be cleared and secured, and a construction compound will be set up on the north western side of the site. The site establishment works, to be carried out by the appointed Contractor, will



include erecting perimeter hoardings around the site, construction of the site compound and storage areas, forming site access and egress points, enacting the temporary traffic management plan, providing site security and erecting a crane if required.

## **2.2 Excavations**

A thorough ground investigation was carried out as part of the design process and the findings will be included in the detailed design process. A preliminary waste classification was carried out on the materials sampled and further analysis will be completed before finalising the disposal methodology.

## **2.3 Superstructure**

To date no detailed design has taken place regarding the superstructure element of the development. In regard to the apartment blocks, stability will be achieved through reinforced concrete cores in each building, extending to foundation level, and diaphragm action of the slabs.

The floor slabs will be supported using temporary staging as necessary to ensure the stability of the structure at all times during construction.

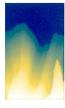
Concrete will be delivered to site using a 'just-in-time' approach. This will help mitigate against traffic congestion as well as reducing the amount of space required for material storage on site.

Once the building structure has been advanced, the completion of the facades can commence as can the installation of mechanical and electrical services and building finishes.

## **2.4 Utility Diversion & Site Infrastructure**

The provision of site infrastructure will commence as the Contractor takes the site in charge. Access to the site will be via Kennyswell Road (R695). There are a number of overhead power lines crossing the site and these will be made underground. The connection to the both the public foul and surface water mains will be made outside the site as detailed on the drawings. The connection for the watermain main will be allowed for at a connection point located on the R695. There will be minimal disruption to traffic movement on the R695.

The internal site access roads and landscaping will be completed on a phased basis to serve the blocks as they are constructed. The site infrastructure works will follow the construction of the buildings and will continue until the development is completed in full.



### **3.0 Site Management**

#### **3.1 Safety & Health**

Ensuring the safety of people involved in and affected by the development such as pedestrians, road users, neighbours, site staff and visitors to site is paramount.

The following are examples of some site-specific issues that will have to be addressed during the construction of the proposed development:

- Identifying, storing and handling of hazardous and contaminated materials.
- Protecting existing roadways against damage.
- Identifying, diverting, maintaining and connecting to existing live services.
- Managing vehicular and pedestrian traffic on the surrounding roadways as required, for the duration of the construction works.
- Managing crane movements to limit lifting over buildings and roadways.

All Contractors must progress their works with reasonable skill, care and diligence and, at all times, proactively manage the works in a manner most likely to ensure the safety, health and welfare of those carrying out construction works, pedestrians, road users and other interacting stakeholders.

Contractors are further required to ensure that, as a minimum, all aspects of their works and project facilities comply with legislation, good industry practice and all necessary consents.

Safety and Health requirements will be further expanded and developed within the Main Contractor's Construction Management Plan and the Construction Stage Health and Safety Plan, prior to the commencement of works on site.

#### **3.2 Hours of Working**

The proposed hours of construction are between 08:00 and 18:00, Monday to Friday, and 08:00 to 14:00 on Saturdays, unless otherwise conditioned under planning permission.

Due to the specific nature of some construction activities, or to mitigate disruption to the local environment, there may be a requirement for working outside these hours. Should this be required, it will be by agreement with Kilkenny County Council.

#### **3.3 Public Relations**

The site is in a residential area with a number of dwellings in reasonably close proximity to the site. The Main Contractor must ensure that all Agents, Sub-Contractors and Suppliers act in a manner to minimise disruption to the locality.



It is intended to keep local residents informed of site operations as required and to work with locals in a co-operative manner. The Contractors Project/Site Manager will be responsible for:

- Liaison with Kilkenny County Council and emergency services as appropriate.
- Liaison with An Garda Síochána, particularly in relation to traffic movements and permits.
- Liaison with local residents representatives as required
- Preparation of reports for the site meetings on neighbourhood issues.

### **3.4 Hoarding**

Following possession of the site, the Main Contractor will erect a suitably robust hoarding around the perimeter of the site. This will provide separation of the construction works from the adjacent roadways and buildings. The plan alignment of the hoarding may not remain constant for the entire works and is likely to change to meet the particular requirements and constraints of construction sequence.

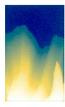
The hoarding will typically take the form of standard plywood hoarding to a height of 2.4m. Controlled access points to the site, in the form of gates or doors, will be kept locked for any time that these areas are not monitored (e.g. outside working hours). The hoarding will be painted, well-maintained and may contain graphics portraying project information.

### **3.5 Site Security**

The Main Contractor will be responsible for the security of the site for the duration of the works. All reasonable precautions will be taken to prevent unauthorised access to the site, the works and adjoining property. Adequate safeguards will be put in place to protect the site, the works, products and materials, plant affected by the construction works from damage, theft and trespass.

The Main Contractor will be required to maintain site security at all times and this may entail the following measures to do so:

- Install and maintain adequate site hoarding to the site boundary with adequate controlled access and egress points.
- Install access security in the form of turnstiles and gates for staff.
- Install CCTV for 24/7 monitoring.
- Ensure restricted access is maintained to the works.
- Monitor and record all deliveries to site, and materials and waste taken off site.



### **3.6 Site Compound & Material Storage**

The extent of compound and storage space required by the Main Contractor will vary for the duration of the works.

For the enabling works, the Main Contractor will likely require a large-scale compound for storage and segregation of excavated material as required. For the main construction works, the Main Contractor will again require a large compound and material storage area. Given the size and open nature of the site, there is adequate space to store such materials on a temporary basis and no provisions for off-site storage should be required. Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone.

The Main Contractor is responsible for obtaining all necessary permissions from relevant statutory bodies, including the Local Authority for the disposal of water off site.

The Main Contractor will ensure that there is no hazardous build-up of water and will provide for temporary disposal of rainwater from the site during the works. Any water that is potentially contaminated is to be treated on site by way of sediment/filtration tanks and comply with a waste disposal licence obtained by the Contractor from the Local Authority. Standing water will be cleared as soon as is practicable or treated with an approved product at least once a week.

### **3.6 Natura Impact Statement**

The contractor will be required to comply with the mitigation measures outlined in the Natura Impact Statement during construction of site infrastructure as follows:-

- A silt curtain or similar agreed barrier will be erected along the northern boundary where required to prevent the ingress of silt to the Breagagh River.
- Water leaving the site will pass through an appropriately-sized silt trap or settlement pond so that only silt-free run-off will leave the site.
- Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.
- The surface water headwall will be installed behind a bunded barrier. Only fast curing concrete is to be used and no concrete should be poured in wet weather.
- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same. It will be a requirement of the contract that the NIS be fully complied with.



- The appointed Contractor will be responsible for the implementation of these measures, this will be monitored by Kilkenny County Council personnel or an appointed specialist.

### **3.7 Craneage**

The construction works will require the use of a possible tower crane on site. It is envisaged that up to 1 No. 35m jib-length tower crane will be required to provide the necessary site coverage. The crane will be required to move building materials around the site such as formwork for concrete, reinforcement, precast concrete, steelwork, façade elements, plant and general building materials. The layout of the crane to achieve maximum coverage of the site will be determined by the Main Contractor. The Main Contractor will develop a crane management plan to limit lifting operations over buildings and roadways.

### **3.8 Dust**

A dust minimisation plan will be formulated for the project. The Main Contractor shall put in place a regime for monitoring dust levels in the vicinity of the site during works using the Bergerhoff Method (German Standard VDI 2119, 1972). Specifically, the Contractor shall erect dust monitors around the boundary of the site. The minimum criteria to be maintained shall be the limit specified by the Environmental Protection Agency (EPA) for licenced facilities in Ireland which is 350mg/m<sup>2</sup>/day as a 30-day average. The Main Contractor shall monitor dust during construction to ensure the limits are not breached throughout the project.

The level of monitoring and adoptions of mitigation measures will vary throughout the construction works depending on the type of activities being undertaken and the prevailing weather conditions at the time. For instance, additional monitoring and mitigation such as damping down of earth mounds on site would be undertaken if the prevailing weather conditions are dry and windy.

### **3.9 Dirt**

Given the volumes of traffic generated by aspects of the construction works, particularly during the bulk excavations, it shall be a requirement that the Main Contractor ensures that the amount of dirt moved from the site onto Kennyswell Road is kept to an absolute minimum.

A sufficiently sized wheel-wash facility shall be provided at the main vehicular egress point from the site. The wheel wash will be a drive through type and all vehicles will be required to pass through the wheel wash facility before exiting the site. The wheel wash must be kept in place and used throughout the critical dirt generating activities of the construction works. Where appropriate, water supplies servicing the wheel wash will be from recycled sources. All waters shall be drained through appropriate filter material prior to discharge.

In addition, the Main Contractor will be required to mitigate the risk of blockage of local gullies and drains due to construction materials and will carry out drain clearing, and road cleaning as required.



### **3.10 Noise**

The Main Contractor is required to monitor the baseline noise levels at the site prior to commencement of the project, with a noise monitoring regime being developed for the duration of the construction works on site as part of a Noise and Vibration Management Plan (NVMP). The Main Contractor shall implement measures to minimise noise levels during construction. Specifically, noise monitors shall be erected around the boundary and ensure levels kept below:

- 70dB during normal working hours.
- 60dB between 6pm and 10pm on weekdays, and between 2pm and 10pm on Saturdays.
- 45dB otherwise.

### **3.11 Vibration**

A Specialist Sub-Contractor shall be engaged by the Main Contractor to monitor, collate and report on vibration results for the duration of critical work activities, as part of the Noise and Vibration Management Plan (NVMP).

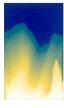
Vibration monitoring stations should continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions in accordance with BS ISO 4866:2010: Mechanical vibration and shock - Vibration of fixed structures - Guidelines for the measurement of vibrations and evaluation of their effects on structures. Vibration monitors, of both aural and visual type, with real time outputs are to be located at agreed points. Traffic light system to be in place consisting of:

- Green - Vibrations below all threshold limits - OK to proceed.
- Amber - Vibrations exceed first threshold limit - Stop and check.
- Red - Vibrations exceed second threshold - Stop and action.

### **3.12 Road & Footpath Maintenance**

In addition to the dirt control measures listed above, the following measures will be taken to ensure that the site and surroundings are kept clear, tidy and well maintained:

- A regular programme of site tidying will be established to ensure a safe and orderly site.
- Food waste will be strictly controlled on all parts of the site.
- Scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed to storage on site, and subsequently disposed of in the appropriate manner.
- If the existing roads or footpaths around the site are damaged as a consequence of the construction, the Contractor will carry out repairs to same.



### **3.13 Adjoining Properties**

Surveys to be carried out of shared boundaries prior to construction commencing and monitors to be installed if required.

### **3.14 Pest Control**

The Contractor shall appoint a Pest Control Contractor at the beginning of construction. Suitable traps will be provided along the boundary of the site, at the Contractor's compound, and any other areas identified as required. The traps will be checked weekly initially, and then monitored as per the specialist Sub-Contractor's guidance throughout the entire construction period.

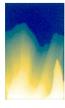
## **4.0 Construction Traffic Management**

### **4.1 Site Access**

The construction traffic will access the site via the Kennyswell Road, Co. Kilkenny.

### **4.2 Construction Traffic Impact**

Construction traffic will not exceed the numbers forecast for the development at full occupancy. A detailed Construction Traffic Management Plan will be issued to the Design Team and Kilkenny County Council City Engineer / Road Department for comments and approval. The Construction Traffic Management Plan is to be strictly enforced for the duration of the project. Any amendments to the Construction Traffic Management Plan as the project progresses must be communicated to both the Design Team and Client.



## 5.0 Construction Waste Management

### 5.1 Waste Management Objectives

The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, materials and resources are maintained in the economy for as long as possible and the generation of waste is minimised.

The waste management objectives of the proposed development are to:

- Prevent and minimise waste generation where possible;
- Reuse wastes and surplus materials where feasible and in as many high value uses as possible;
- Move waste management up the waste hierarchy;
- Where disposal of waste is unavoidable this will be undertaken in accordance with the Waste Management Act, 1996 as amended;
- The objectives of this CDWMP will facilitate material reuse and recycling and divert waste from landfill.

### 5.2 Roles, Responsibilities & Training

An appropriate staff member from the Main Contractor and an appropriate staff member from each Sub-Contractor on the site shall be assigned the direct responsibility to ensure that the discrete(???) operations stated in the Project C&D Waste Management Plan are performed on an on-going basis.

The C&D Waste Management will ensure that copies of the CDWMP will be made available to all relevant personnel on site. All site personnel and Sub-Contractors will be provided with a copy of the CDWMP and will be informed of the objectives of the plan and their responsibilities in relation to compliance with the plan.

The C&D Waste Manager shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required.

The C&D Waste Manager will be responsible for informing Contractor staff and Sub-Contractors of content of the plan and for maintaining and keeping records.

### 5.3 Wastes Arising

Construction and Demolition (C&D) waste is defined as waste which arises from construction, renovation and demolition activities.

The Contractor will ensure that waste generation on site is minimised and that waste removed from site for recovery or disposal is reduced where feasible.



#### **5.4 Demolition Wastes Arisings**

The existing water pump building and shed on site will be demolished as part of the works.

#### **5.5 Excavation Waste Arisings**

The proposed development will require excavation for the construction of foundations and engineering fill under the buildings as well as roads and services within the site.

The re-use of clean, inert/non-hazardous excavation material as landscaping or engineering fill will also be considered following appropriate testing and risk assessment to ensure the material is suitable for its proposed end use.

Where excavation material may not be re-used within the proposed works the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable or disposal to an appropriate licensed landfill in accordance with the Landfill Directive

#### **5.6 Excavation Waste Management**

It will be at the discretion of the Contractor to determine how excavation material from the proposed development will be managed.

Following appointment, the Contractor will be responsible for detailing this CDWMP report and providing it to the Client for approval. The detailed CDWMP will include a description of how excavation material from the proposed development will be managed. A full list of all facilities to which uncontaminated excavation soil and stones will be sent will be provided in the detailed CDWMP.

This is likely to include an appropriate combination of the options set out below.

##### **5.6.1 Reuse on Site**

Topsoil, soil, rock and naturally occurring material excavated in the course of construction activities will be reused within the proposed development where feasible, subject to further testing to determine if materials meet the specific engineering standards for their proposed end-use.

Where naturally occurring material is used for the purpose of construction in its natural state within the proposed development this material is not deemed to be a waste in accordance with Article 2 of the Waste Directive 2008/98/EC, the European Communities (Waste Directive) Regulations, 2011 and Section 3 of the Waste Management Acts, 1996-2011 as amended.

##### **5.6.2 Article 27**

Surplus excavation material may be declared a by-product under Article 27 of the EC Waste Directive Regulations, 2011 for reuse in one or more known construction projects.



By-product notifications to the EPA provide an opportunity for reuse of surplus clean soil and stone material arising from construction activity. This can apply to locations other than authorised recovery facilities e.g. quarries operating under planning permission, parks or other developments requiring earthworks and importation of clean soil and stone. This option can bring significant economic benefits while facilitating beneficial re-use of by-products. This plays a role in Ireland's implementation of Circular Economy principles.

### **5.6.3 Soil Recovery at Sites Holding Waste Facility Permits or EPA Licences**

Where removal of wastes from the proposed development is unavoidable it will be delivered by the Contractor only to facilities which are authorised under the Waste Management Act, 1996 as amended and which hold the appropriate certificate of registration, waste facility permit or EPA licence for the particular waste type. Details of the proposed waste facilities will be provided by the Contractor prior to commencement of the removal of any waste from site. Any change to these proposed facilities during the construction period will be notified.

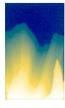
### **5.7 Construction Waste Arisings**

The Contractor will ensure that waste generation on site is minimised and that waste removed from site for recovery or disposal is reduced where feasible.

### **5.8 Construction Waste Management**

The Contractor shall take the following measures to prevent waste, facilitate recycling and minimise waste disposal during the construction phase:

- Source Segregation: Where possible, metal, timber, glass and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling.
- Office and food waste arising on site will be source separated at least into dry mixed recyclables, biodegradable residual wastes.
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain.
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site.
- Material Management: 'Just in time' delivery will be used so far as is reasonably practicable to minimise material wastage.
- Waste Auditing: The Contractor will record the quantity in tonnes and types of waste and materials leaving the site during the works.
- Paints, sealants and hazardous chemicals etc. will be stored in secure, banded locations.
- All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder.
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility.



### **5.9 Waste Collection**

Waste from construction will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended. Copies of valid appropriate waste collection permits will be held on site by the Contractor.

### **5.10 Waste Recovery & Disposal Offsite**

Waste from construction will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996 to 2011 as amended.

An up to date list of all waste facilities to which waste from the site will be delivered will be maintained on site and updated by the Contractor.

Copies of valid appropriate facility Certificates of Registration, Waste Facility Permits and Waste Licences will be held on site by the Contractor.

### **5.11 Costs of Waste Management**

The developed Waste Management Plan is to address the cost of waste management and the alternatives considered.

### **5.12 Record Keeping & Auditing**

The Contractor will record the quantity in tonnes and types of waste and materials leaving the development site during the works.

The name, address and authorisation details of all facilities and locations to which waste and materials from the proposed development are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility and the date of the waste movement. Records will show material which is recovered and disposed of.

The C&D Waste Manager will arrange for a waste audit of the project once construction has fully commenced on site and of any facilities to which construction waste from the project is delivered as required.