



Resource & Waste Management Plan

- Construction Phase

Proposed Residential Development

Finlay Park
Naas
Co. Kildare

Westar Homes Ltd.

December 2022

Control Sheet

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Attachment 1 Proposed Layout

1.0 Introduction

Redkite Environmental Ltd. has been commissioned by Westar Homes Ltd to prepare a Resource and Waste Management Plan (RWMP) for the pre-construction and construction phases of a proposed development comprising a Large-Scale Residential Development (LRD) of 134 dwellings, open space and a commercial/health/medical unit floorspace (247.6sqm.) on a 2.9-hectare (ha) site at Finlay Park, Naas, Co. Kildare. The proposed development will hereafter be referred to as “the Project.”

This Plan addresses Item 1 under the heading “Environment” of the Notice of LRD Opinion (Ref. 202202) dated 23rd, August 2022 as follows:

“Report needs to be included outlining the applicant’s compliance with Appendix C of the “EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for C&D Projects (2021)” in terms of Tier 2 type projects. Applicant to demonstrate clearly their proposals regarding the “designing out” of waste in terms of the following:

- Reuse and recycling of existing onsite materials,
- Green procurement,
- Off-site construction, and
- Material optimisation.

It also addresses Item 5 (e) under the heading “Traffic and Transportation” of the LRD Opinion:

“A draft Construction Waste Management Plan. This is to contain final destination of each waste stream generated on-site.”

Response:

At this juncture, Wilton Scrap Metals (Dolly Skip Hire) have been identified as licensed/permited waste operators that are likely to provide waste services to the Project.

2.0 Methodology

This RWMP has been prepared in accordance with the requirements of the *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects* published by the EPA in 2021 (hereafter referred to as the 2021 Guidelines).

The 2021 Guidelines supersede the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* produced by the NCDWC in June 2006 (hereafter referred to as the 2006 Guidelines).

Section 3.1 of the 2021 Guidelines recommends thresholds for the likely scale and complexity of an RWMP. Developments are classed as either Tier 1, smaller scale or Tier 2, larger scale.

Developments below the following thresholds may be classed as Tier1 and developments above are classed as Tier 2:

- New residential development of < 10 dwellings.
- Retro-fit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area < 2,000m², and,
- Demolition projects generating in total <100m³ in volume of C&D waste.

The Project comprises 134 dwellings and therefore falls above the thresholds and is classed as a Tier 2 development. Accordingly, a bespoke RWMP is required and designed in accordance with the requirements for structure and content (pre-construction) set out in Appendix C of the 2021 Guidelines. This document will be updated throughout the life of the construction phase of the proposed development as set out in Appendix C of the 2021 Guidelines.

The RWMP covers the following areas:

- Introduction or Overview – to include commitments and policies of the operator, overview of relevant legislation etc.
- Project Description to include location, history, and proposed demolition (if any), material balance, project programme and description etc.
- Roles and Responsibilities assigned to manage resource efficiency and waste out.
- Design approach – “waste out” initiatives.
- Key Materials, quantities and costs.
- Site Management and Infrastructure.
- Audits & Inspections.
- Communications with the Local Authority.

3.0 RWMP- Overview

As outlined in the 2021 Guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and lifecycle thinking as waste management has evolved over time.

3.1 EU Context

8th Action Programme

The EU 8th Environmental Action Programme (EAP) came into force on 2nd May 2022 as the EU's legally agreed common agenda for environmental policy until 2030. It builds on the *European Green Deal* designed to overcome the challenges of climate change and environmental degradation and to transform the EU into a modern resource efficient and competitive economy.

The action programme reiterates the EU's long-term vision to 2050 of living well, within planetary boundaries. It sets out priority objectives for 2030 and the conditions needed to achieve these. The action programme aims to speed up

the transition to a climate-neutral, resource-efficient economy, recognising that human wellbeing and prosperity depend on healthy ecosystems.

The 8th EAP has 6 inter-linked thematic priority objectives including:

advancing towards a well-being economy that gives back to the planet more than it takes and accelerating the transition to a non-toxic circular economy where growth is regenerative, resources are used efficiently and sustainably, and the waste hierarchy is applied.

European Commission Circular Economy Strategy (2015, 2018, 2020)

In December 2015, the European Commission adopted an ambitious circular economy package including revised legislative proposals on waste to stimulate Europe's transition to a circular economy.

The Circular Economy Package consists of an EU Action Plan for the circular economy that establishes a programme of actions, with measures covering the whole cycle from production and consumption to waste management and the market for secondary raw materials. The proposed actions will contribute to "closing the loop" of product lifecycles through greater recycling and re-use. The circular economy is a fundamental alternative to the take-make-consume-dispose linear economic model that still predominates. Legislative tools are among the measures developed.

Under the 2008/98/EC Waste Framework Directive (now amended), construction and demolition waste is a priority waste stream. It set the following objectives:

- By 2020, the preparing for re-use, recycling and other material recovery of non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the list of waste) shall be increased to a minimum of 70 % by weight
- Promote selective demolition to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials and establishing sorting systems.
- Reduce waste generation.

The 2018/851 amending Directive on Waste notes the following with regards to Construction and Demolition (C&D) waste:

- Encourage the reuse of products and the setting up of systems promoting repair and re-use activities, including in particular for electronic and electrical equipment, textiles and furniture as well as packaging and construction materials and products.
- Reduce waste generation on processes related to industrial production, extraction of minerals, manufacturing, construction and demolition, taking into account best available techniques.
- Member States shall take measures to promote selective demolition in order to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of

materials, and to ensure the establishment of sorting systems for construction and demolition waste at least for wood, mineral fractions, metal, glass, plastic and plaster.

- By 31 December 2024, the Commission shall consider the setting of preparing for reuse and recycling targets for construction and demolition waste and its material specific fractions.

The European Environment Agency¹ notes that EU countries fulfilled the 70% recovery target of 2020 with most exceeding the target by 2016. The high recovery rates are mostly achieved by using recovered waste for practices such as backfilling and low-grade recovery activities, reducing the potential to move towards a truly circular waste management. Increased waste prevention and higher and better-quality recycling can be achieved by over-coming uncompetitive pricing, lack of trust in the quality of secondary materials, lack of information in the composition of materials used in existing buildings and the long delay between implementing actions on new buildings and their effect on waste management several decades later.

3.2 National Context

A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020 -2025 published in September 2020 by the Department of Environment, Climate and Communications recognises that traditional waste policy focussed on how waste produced is treated and how to achieve the right balance between waste recycling, recovery and disposal. However, according to the Plan, the focus must now be broadened to encompass how resources and materials are consumed, how products are designed, how to extend the productive life of products and how we prevent waste generation and resource consumption.

The Waste Action Plan notes that from a broader circular economy perspective, it is important that *“prevention and reuse is hardwired into construction activity.”*

According to the latest EPA figures, 8.8 million tonnes of C&D waste was generated in 2019 up from 6.2m in 2018 due to increased construction activity. The recovery rate of non-hazardous, non-soil and stone material in 2019 was 84% up from 77% in 2018.

Approximately 85% of the C&D waste generated was soil, stones and dredged spoil. Only 2% was collected as single waste streams (wood, glass, plastic or metal). 82% of C&D waste was backfilled, 10% went to disposal and only 7% was recycled. This mirrors the trends noted by the EEA.

3.3 Regional & Local Context

The Project is located in the Local Authority area of Kildare County Council (KCC).

¹ <https://www.eea.europa.eu/publications/construction-and-demolition-waste-challenges/construction-and-demolition-waste-challenges>

The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the overarching regional waste management plan for the KCC area.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of “70% preparing for reuse, recycling and other recovery of construction and demolition waste” (excluding natural soils and stones and hazardous wastes) to be achieved by 2020. This is in line with the target set for Member States under the Waste Framework Directive 2008/98/EC.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2013*.

Section 7.6 of the *Kildare County Development Plan 2017 – 2023* sets out a number of policies for County Kildare in line with, and to reflect, the objectives of the regional waste management plan.

Waste policies and objectives with relevance to the Project construction phase include:

WM1 To implement European Union, National and Regional waste related environmental policy, legislation, guidance and codes of practice to improve management of material resources and wastes.

WM3 To support the implementation of the Eastern Midlands Regional Waste Management Plan 2015 – 2021 by adhering to overarching performance targets, policies and policy action.

WM10 To encourage waste prevention, minimisation, re-use, recycling and recovery as methods of managing waste. Where waste management is not being carried out properly, the Waste Management Act as amended will be used as a means of ensuring specific national policies and regulations are being adhered to.

The draft County Development Plan 2023 – 2029 sets out the following relevant policies and objectives in Section 6.8.1 Chapter 6, Infrastructure and Environmental Services:

Policy 6:

Implement European Union, National and Regional waste related environmental policy, legislation, guidance, and codes of practice, in order to support the transition from a waste management economy towards a circular economy.

Objective 36:

Encourage a just transition from a waste economy to a green circular economy in accordance with 'A Waste Action Plan for a Circular Economy 2020-2025'

Objective 37:

Provide, promote, and facilitate high quality sustainable waste recovery and disposal infrastructure / technology in keeping with the EU waste hierarchy to cater for anticipated population growth and the business sector in the County.

Objective 41:

Encourage waste prevention, minimisation, re-use, recycling, and recovery as methods for managing waste.

The Naas Local Area Plan (LAP) 2021 – 2027 refers to protecting and enhancing the environment through implementation of European, national and regional policy and legislation relating to waste management. Objectives of the Council are to maintain existing recycling facilities, secure the provision of additional recycling facilities as required, support the development of a green waste composting site including in conjunction with new developments and to support local schools, town and community groups through education and awareness programmes.

3.4 RWMP Purpose & Project Specific Targets

The guiding principles for this RWMP mirrors the latest policies to use resources efficiently and to ensure that the waste hierarchy for waste management as indicated below is adhered to during pre-construction design and during all phases of site development and construction.



Source: European Commission

Westar Homes Ltd is committed to fulfilling the requirements of the Guidelines and adhering to the prioritisation of waste prevention and lifecycle thinking.

At a minimum, the preparing for re-use, recycling and other material recovery of non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the list of waste) shall be a minimum of 70 % by weight. This target is subject to review pending the publication of any new targets by the EU in 2024 as noted in EU Directive 2018/851 on waste.

Other project specific targets include:

- Waste benchmarks as set out in BREEAM (Building Research Establishment Environmental Assessment Methodology) will be applied for the Project construction phase. A value of $\leq 13.3 \text{ m}^3$ or 11.1 tonnes/100m² development is applied (excluding soils and stones).
- The amount of natural material (soils and stones) requiring recovery off-site will be minimised.

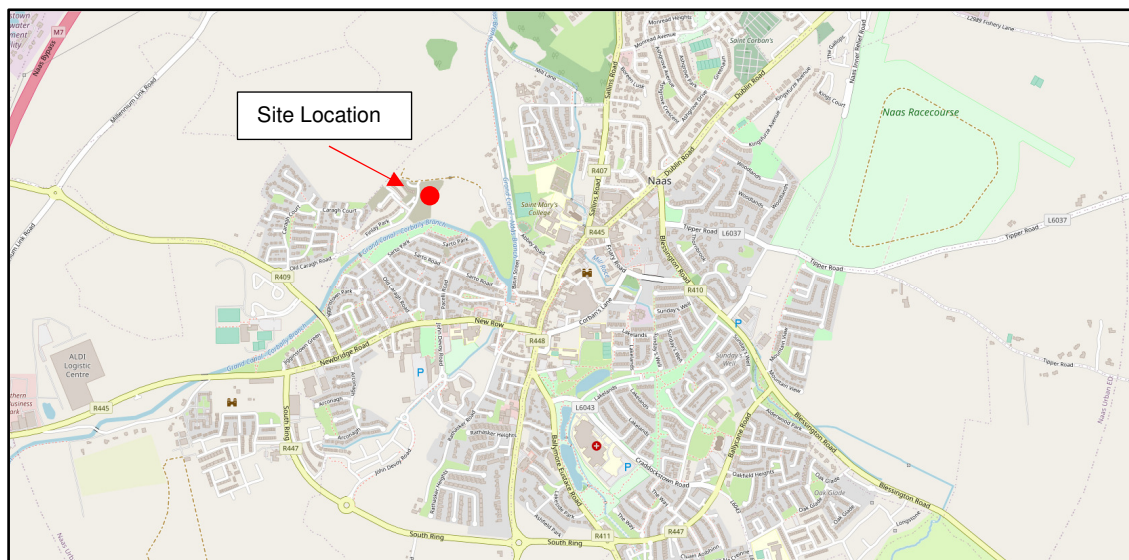
4.0 Project Description

4.1 Site Location

The site is located in the townland of Naas West, west of the town centre. The location is shown on Figures 1 and 2 below.

Grid coordinates: 288773E;219723N

Figure 1 Site Location (Local Context)



Source: EPA Mapping

Figure 2 Existing Site Layout



Source: Google Maps. Red-line boundary indicative.

4.2 Site Description

The Project site, hereafter referred to as “the Site,” has an area of 2.9 ha and is mainly grassed with some mounds of natural material present from ongoing development of Finlay Park. Part of the Site is also in use as a construction compound for the aforementioned existing ongoing development at Finlay Park.

The Site is located in one large parcel of land, approximately 0.6km to the west of the centre of Naas.

The Site falls from south to north. The Oldtown Stream, a watercourse cuts through the northern portion of the site.

The M7 lies approximately 1.7km to the west/northwest.

New developments, Caragh Court and Finlay Park, lie to west of the Site.

The Old Caragh Road bounds the Site to the west and provides access.

The Corbally branch of the Grand Canal lies along the tree-lined southern boundary. Agricultural lands lie to the north and immediate east.

According to the site investigation undertaken on-site, cohesive soils underlying the Site are brown sandy slightly gravelly CLAY overlying granular soils described as grey-brown clayey gravelly sand overlying slightly clayey sandy fine to coarse sub-angular to sub-rounded gravel.

The Site is greenfield with no contaminated soil present.

The Site is underlain by a locally important bedrock aquifer of moderate productivity and moderate vulnerability.

It is noted from the EclA that the main habitats present on the site include dry meadow, improved agricultural grassland and spoil/bareground. 'Higher significance' treelines and 'lower significance' hedgerows associated with drainage ditches are also present. The importance of the habitats and species present vary from high local value (treelines and associated ditches) to negligible value (spoil and bare ground).

There are no plant species listed as alien invasive on the site.

4.3 Development Description

The Project will consist of the construction of 134 no. apartments (comprising a mixture of 70 no. 2 storey apartments and 64 no. apartments - 22 no. 1 bedroom apartments, 77 no. 2 bedroom apartments, and 35 no. 3 bedroom apartments) with private open space provided in the form of balconies/terraces as follows:

- A) Block A (4 storey apartment block) comprising 26 no. apartments (6 no. 1 bed units, 16 no. 2 bed units & 4 no. 3 bed units); Block B (part 4 part 5 storey apartment block) comprising 66 no. apartments (10 no. 1 bed units, 33 no. 2 bed units and 23 no. 3 bed units), with a commercial/ health/medical unit (c. 247.6 sq. m) at ground floor; Block C (part 4 part 5 storey apartment block) comprising 42 no. apartments (6 no. 1 bed, 28 no. 2 bed units and 8 no. 3 bed units);
- B) Vehicular/pedestrian and cyclist access from the Old Caragh Road (in new arrangement) along with the provision of 201 no. undercroft and surface car parking spaces as well as 388 no. undercroft and surface cycle parking spaces; internal road and shared surface networks including pedestrian and cycle paths;
- C) Public Open space including proposed plaza, as well as central communal (courtyard) open space including outdoor playground area at podium level;
- D) 1 no. temporary (for 3 no. years) 3-sided signage structure (c. 4.5m in height) at the entrance to the proposed development.
- E) Provision of foul and surface water drainage, including relocation of existing foul main in northern part of site as well as green roofs; linear greenway path, bin stores; plant rooms; public lighting and all associated landscaping and boundary treatment works, site development and infrastructural works, ESB substations, and all ancillary works necessary to facilitate the development.

The total gross floor area of residential and commercial combined is 11,885.24m².

The proposed layout is indicated on Dwg. A0111 in Attachment 1.

The design and management of surface water will comply with the policies and guidance outlined in the Greater Dublin Strategic Drainage Study (GDSDS), the CIRIA SuDS Manual and the SDCC Sustainable Drainage Explanatory Design and Evaluation Guide.

Groundwater monitoring on site and infiltration tests have indicated that infiltration measures can be used to a depth of 1.2m. The SuDS hierarchy for surface water management will be followed and will include both nature based and infiltration methods.

The SuDS features will include a combination of nature based, infiltration, filtration and detention systems SuDS including, retention pond, bioretention areas, bioswales, blue and green roofs, green wall, treepits, unlined treepit trenches, unlined permeable paving, infiltration trenches, filter drains and lined underground attenuation tank.

There will be no discharges to the Grand Canal. Surface water run-off will discharge at greenfield rates via a hydrobrake and oil/petrol interceptor to the Oldtown Stream which eventually discharges to the River Liffey.

Existing 750 and 1050mm diameter foul sewers traverse the site. These pipes discharge into a large concrete chamber adjacent to the Phase 1 development of Finlay Park prior to discharging to Osberstown WWTP via another existing 750mm diameter pipe. A new foul wastewater drainage network will be installed throughout the site to serve the Project with final discharge to the existing 750mm pipe to Osberstown WWTP. The 1050mm sewer will be relocated as agreed with Irish Water.

An existing 225mm watermain is located along the R409 Caragh Road to the west of the development which reduces to a 100mm watermain to serve the existing dwellings in Caragh Court and Finlay Park Phase 1. An existing 180mm watermain is located along the old Caragh Road to the southwest of the development. A new 200mm is required to link the existing 225mm water main on the R409 and the 180mm water main along the Old Caragh Road in order to serve the Project and also future developments. A 150mm water main network will be installed to serve the Project.

An existing access road with segregated footpaths and cycleways serves the existing Finlay Park development. A section of the Old Caragh Road was recently upgraded by the Applicant creating a continuous 6.5m carriageway and offroad 3m shared pedestrian/cycle pathway on the western/Caragh Court side. Traffic lights have been installed to allow for safe crossing to Ploopluck Bridge.

The Project will be accessed by a priority junction off the existing access road (Old Caragh Road) serving the existing development in Finlay Park. The new roads serving the Project will follow a roads hierarchy in accordance with the Design Manual for Urban Roads and Streets (DMURS) published by the Department of Transport. An internal road will lead off the junction to the undercroft car-parking on the eastern perimeter. The main pedestrian access will be via the civic plaza and will extend along the western perimeter. The main

cycling route will be along the east side of the Old Caragh Road and will past east along the northern site perimeter to link up with future development. The Project will enjoy good walking and cycling links to Naas town centre and will benefit further in this regard as the Northwest Quadrant of Naas is developed.

4.4 Main Construction Elements

The site development and construction phases are expected to comprise 4 phases over 30 - 36 months in total. There will be overlap between phases to complete the development within the envisaged timeframe.

Table 1 Proposed Construction Timetable

No.	Description	Timing (months)
1.	Site Development and foundations for all Blocks (A, B&C) and podium car-park	5
2.	Block B construction	12
3.	Block A construction	9
4.	Block C construction	12
TOTAL		38*

Note: * there will be overlap between phases

The following steps will be completed:

- Site enabling works.
- Foundation.
- Substructure.
- Main structure.
- Fit out.
- Final site development, landscaping.
- Handover.

Construction traffic will access and exit the Site via the Old Caragh Road arriving via the R409/R445 Millennium Park Road/M7 from the west/northwest and via the R409/R445 Newbridge Road/Southern Ring Road from the south.

It is envisaged that 25 – 30 HGVs will access the site per day during peak activities. Based on construction working hours of 08.00 – 18.00 hrs Monday to Friday, this equates to on average 2-3 HGVs/hr accessing the site or 6 trips per hour.

An existing site compound located within the site will be used. Vehicle parking, storage and welfare facilities will be provided in the existing site compound.

Estimates of construction material imports to the Site will be fully estimated as part of updated versions of this RWMP.

4.5 Proposed Site Clearance and/or Demolition

No demolition works will be required.

There is no existing hazardous material on site.

There is no asbestos containing material (ACM) on site.

There will be no disturbance or removal of bedrock.

Existing natural material is present on site and originated from earlier phases of development in Finlay Park. This material will be levelled and re-used within the site.

Very little vegetation will be removed.

Approximately 8,100m³ of soil will be moved during the Project development works. Where possible, this will be retained within the site for future use. However, some material may require removal to an inert recovery facility.

5.0 Roles & Responsibilities

Westar Homes Ltd will act in the role of client and will also be a key member of the overall Design Team which will also comprise, at a minimum, the Project Architect and Design Engineer. Other team members will be appointed as the RWMP progresses to construction stage including the Main Contractor.

The named members of the Design Team are as follows:

- Client – Westar Homes Ltd.
- Project Architect – C&W O' Brien Architects
- Project Engineering – Donnachadh O' Brien & Associates

The Guidelines require that a Resource Manager (RM) be appointed to the Design Team. The RM will be performed by number of different individuals over the life-cycle of the construction phase of the Project, however it is intended to be a reliable person, with the requisite authority, chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The role will include different activities at different stages of the project including conducting waste checks/audits, adopting construction methodology that is designed to facilitate maximum reuse and/or recycling of waste and conducting toolbox talks and awareness training. At pre-construction, the Project Architect is nominated to the role of RM to manage the RWMP through the design process. In later stages, the contractor appointed will nominate the RM.

5.1 Client Role

The Client is responsible for establishing the aims and the performance targets relating to resource and waste management.

- The Client has commissioned the preparation and submission of a preliminary RWMP as part of the design and planning submission.
- The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process.
- The Client will ensure that the RWMP is agreed on and submitted to the local authority prior to commencement of works on site.
- The Client is to request the end-of-project RWMP from the Contractor.

5.2 Design Team Role

The Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project.
- Appointing a RM to track and document the design process, inform the Design Team and update the RWMP.
- Ensuring that the design approach follows the principles of the Circular Economy.
- Preparing estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This should include data on waste types and prevention and re-use mechanisms to illustrate the positive circular economy principles applied by the Design Team.
- Before construction commences an inventory of the amounts of materials required will be planned and calculated to prevent waste arising from surplus material brought to site.
- Ensuring that Green Procurement requirements are included in tender documents.
- Handing over of the RWMP to the selected Contractor upon commencement of construction of the development.
- Working with the Contractor as required to meet the performance targets for green procurement, resource efficiency and waste as set out in the RWMP.

5.3 Future Contractor Role

The future construction Contractors, once selected, will be responsible for:

- Updating, implementing and reviewing the RWMP throughout the site development and construction phases (including the management of all suppliers and sub- contractors) as per the requirements of the guidelines.
- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP during construction phase.

- Supporting the RM to ensure they have the requisite authority to carry out the role successfully.
- Implementing the following typical measures on best practice:
 - A “*just in time*” delivery strategy will be implemented to prevent waste generation by improper storage or weather damage. Deliveries will be arranged to align with project construction stages.
 - Protective packaging on delivered materials will be maintained to prevent damage to materials stored on-site. Storage areas will be maintained as weather-proof.
 - Reject materials damaged during transit will be returned to the supplier.
 - Suppliers will be requested to minimise packaging on goods where it is not required e.g. bricks. Goods, not susceptible to water damage will be sent back to suppliers if excessively packaged. Suppliers will be used who accept returned packaging where possible.
 - Works will be carried out in the correct order to minimise the need for remedial actions which could generate waste.
 - Materials for reuse within the site will be kept clean and dry.
 - Induction training of staff will be completed to improve awareness of the need to prevent waste generation, good waste management practices and the specific measures to be implemented on site.
 - Regular tool-box talks will be given to ensure everyone who comes to site knows how to reduce, reuse and recycle. Site photos of correct and incorrect practices will be used to communicate to staff.
 - Resource re-use and waste management will be prioritised and brought up at every progress, co-ordination and safety meeting to remind construction workers and to provide feedback on how to improve facilities etc.
 - Materials coming onto and off-site will be tracked to constantly review wastage rates. High wastage rates will be highlighted, and preventative action taken.
 - Regular waste audits will be conducted to determine why waste has been generated and how it can be prevented for future stages.
 - Take-back schemes e.g. provided by material producers such as San Gobain/Gyproc for gypsum will be used to prevent waste.
 - A dry mortar silo will be used to prevent concrete waste arising as quality is more assured on site with this method.
 - Off-cuts will be re-used where possible.
 - Hoarding etc that can be dismantled will be fixed so that they can be re-used on other sites.
 - Local registered charities such as *Men’s Shed* will be engaged with to determine if off-cuts can be of use.

In addition, as part of standard procedures the contractor will be required to:

- Identify all waste collectors to be engaged to transport each of the resources / wastes off-site.
- Identify all destinations for resources taken off-site. At this juncture, Wilton Scrap Metals (Dolly Skip Hire) have been identified as licensed/permitted waste operators that are likely to provide waste services to the Project. As above, any

resource that is legally classified as a 'waste' must only be transported to an authorised waste facility by permitted waste collectors.

- Address end-of-waste and by-product notifications with the EPA where required.
- Clarify any other statutory waste management obligations, which could include on-site processing.
- Maintain full records of all resources (both wastes and other resources) for the duration of the project, and
- Prepare a RWMP Implementation Review Report at project handover.

6.0 Design Approach

The design team and the client have integrated best practice principles within the design process to optimise resource usage to prevent waste generation, ensure sustainable resources are used where possible including recycled material in building materials, prevent or reduce construction waste generation on site through re-use and finally responsible recycling and recovery of waste if it occurs.

“Waste out” and waste prevention design initiatives have been integrated into the overall project design through workshops and continuous feedback within the team.

Workshops will be held at key times as the project progresses; - initially with the client and design team and thereafter to include relevant key personnel as the project progresses.

The workshops/meetings will be documented and will cover designing out waste through:

- Primarily Prevention, Reuse & Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

6.1 Design for Prevention, Reuse and Recycling

The site is currently greenfield in nature with a temporary construction compound present. Therefore, there are no existing structures or buildings that could be re-used or material that could be recycled.

Existing natural materials such as soils and subsoils will be re-located within the site and therefore do not constitute “waste”. The landscaping proposals for the Project seek to re-use existing natural resources on site where possible.

Later on in the process, the construction phase will include for waste prevention, re-use and recycling measures as preliminarily detailed earlier under the role of the contractor in Section 5.3.

6.2 Design for Green Procurement

The Design Team will seek to source goods, services or works with a reduced environmental impact throughout their lifecycle.

In this regard, tender requests will set out the policies and targets set in the RWMP which must be achieved. It will be imperative that the appointed Contractor has a comprehensive understanding of the requirements of the RWMP.

Tenders will be assessed and include scoring for proposals demonstrating how compliance will be achieved with the policies and targets of the RWMP e.g. proposals for use of recycled materials rather than virgin materials, identification of resource efficient and less polluting options as well as developing innovative measures to waste prevention and re-use while on site such as collaboration with supply chains to reduce packaging on incoming goods. For example, tenders where materials certified to BES 6001 *Responsible Sourcing of Construction Products* are proposed will be favorably considered. Low-carbon products will be preferred.

Typical materials include:

- Irish Cement CEM 2 Eco-Efficient Cement;
- ECOCEM Next Generation Cement;
- Plasterboard made with % recycled gypsum;
- Responsibly sourced Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC) timber.

Tenderers will be requested to provide details on measures for waste prevention on site including:

- The implementation of "Just in time" deliveries.
- Proposing resources with reduced packaging.
- Correct management of resources on-site to prevent damage etc.
- Green procurement will be reiterated throughout each stage of development including with sub-contractors etc.

6.3 Design for Off-Site Construction

Off-site construction of building components reduces trades on site and in turn reduces the potential for waste generation. Resource usage is more efficient with less waste on-site.

The design team members have and will ensure that that all components of the structures/infrastructures are standardised and constructed off-site as much as possible within the design phase to prevent the generation of waste.

For example:

- Use of pre-cast concrete slabs or panels etc will reduce the generation of waste bricks and mortar.

- The use of prefabricated composite panels for walls and roofing reduce residual volumes of insulation and plasterboards.
- Use of pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring reduce the residual volumes of concrete/formwork and wood/packaging, respectively.
- Use of pre-fabricated pods e.g. bathrooms.

6.4 Design for Materials Optimisation During Construction

Manufacturers and construction companies will be required to adopt lean production models including maximising re-use of materials on site. This will in turn reduce environmental impacts associated with transportation to the site and waste generation. Similar to Item 6.3 above, this involves the use of standardised sizes for certain type of materials.

In addition, the design team has and will consider where possible:

- Careful cut and fill analysis to ensure that all natural materials are used within the site and that there is no requirement for fill.
- Design freezes are regularly implemented for review.
- Building Information Modelling (BIM) is used to carry out 3D design coordination analysis thus preventing dimensional conflicts.
- Reduced weight and lower loadings, allowing for thinner structural members and foundations which require less concrete and less reinforcement.
- Sequence construction phases to ensure smooth and efficient operations.
- Reduced materials specified to simplify construction and facilitate process repeatability, thereby reducing potential for waste generation.
- Where standardized construction components do not work then the design team will ensure that manufacturers are contacted to ensure components are pre-sized and cut to prevent waste.

Westar Homes Ltd. has a number of construction sites in operation. Materials from other sites will be recycled/reclaimed for use on this site and vice versa where available/possible. Materials and component choices have been standardised as much as possible to allow this.

6.5 Design for Flexibility and Deconstruction

The Design Team has and will consider the overall life-cycle of the buildings. In this regard, the team has considered the use of materials and products that can be easily recycled and are designed to be easily disassembled to allow potential re-purposing of the buildings in the future. Adaptability is a key design feature as set out in the Design Statement prepared by the Project Architects. For example, partitions are demountable and can be re-configured or re-used. Pre-cast and steel frames are also suitable for re-use.

7.0 Key Materials, Quantities & Costs

The project specific targets for efficient resource usage, waste prevention, re-use, recycling and recovery are set out earlier in Section 3.4 of this document e.g. at a minimum 70% of waste materials will be diverted from landfill.

Taking account of these targets or KPIs, an estimated resource and waste inventory in line with the template provided in Appendix D of the 2021 Guidelines is provided. The following is included:

- Identification of each waste stream generated;
- The List of Waste (LoW) Code for each stream;
- The predicted quantity of material generated (in tonnes);
- The identified resource management route from prevention, re-use of resources and recycling, energy recovery, back-filling or other recovery and disposal for each waste material;
- The estimated cost of resource management.

7.1 Predicted Waste Generation

The typical breakdown of construction waste collected from Irish sites, taken from the EPA website is based on 2019 (latest) figures as presented in Table 2 below:

Table 2: Breakdown of Construction and Demolition Wastes on Irish Sites

Waste Types	%
Soil, stones and dredging spoil	84.8
Metals	2.2
Concrete, bricks, tiles and gypsum	6.9
Segregated wood, glass and plastic	0.3
Bitumous mixtures	1.3
Mixed C&D waste	4.5
Total	100

Excluding soils, stones and dredging spoil, the breakdown of the remaining waste is presented in Table 3 below.

Table 3: Breakdown (Excluding Soils and Stones)

Waste Types	%
Mixed C&D	29.62
Bitumous mixtures	8.55
Segregated wood, glass and plastic	1.97
Metals	14.47
Concrete, brick tiles and gypsum	45.39
Total	100

The treatment of C&D waste (excluding soils, stones etc.) is set out as follows based on 2019 figures:

Table 4: Waste Treatment (Excluding Soils and Stones)

Method	%
Recycling	38.64
Energy Recovery	2.27
Disposal	59.09
Total	100

It is clear from the table above, that disposal e.g. to landfill or incineration without energy recovery is still the most prevalent method for waste treatment.

The final treatment of C&D waste streams in 2019 is presented in Table 5 below.

Table 5: Final Treatment of Waste Reported in 2019

Category	Recycling (%)	Energy Recovery (%)	Back-filling (%)	Disposal (%)
Soil, stones and dredging spoil	0	0	91	9
Metals	100	0	0	0
Concrete, bricks, tiles and gypsum	45	0	52	2
Segregated wood, glass and plastic	39	54	7	0
Bitumous mixtures	64	0	36	0
Mixed C&D waste	13	1	60	26
Waste Treatment Residues	0	5	10	85

Waste arisings have been calculated based on waste benchmarks set out in BREEAM (Building Research Establishment Environmental Assessment Methodology) for the Project construction phase. A value of $\leq 13.3 \text{ m}^3$ or 11.1 tonnes/100m² (gross internal floor area) development was applied (excluding soils and stones) as a Key Performance Indicator (KPI) for the Project. The total gross internal floor area is 11,885.24m². Therefore, the total construction waste expected to be generated (excluding soils and stones) based on 11.1 tonnes/100m² is 1,319.6 tonnes split out as follows:

Table 6: Predicted Site-Specific Waste Generated

Waste Types	%	Amount predicted (tonnes)
Mixed C&D	29.60	390.77
Bitumous mixtures	8.55	112.80
Segregated wood, glass and plastic	1.97	25.99
Metals	14.47	190.90
Concrete, brick tiles and gypsum	45.39	598.81
Total	100	1,319.26

Each waste stream indicated above in Table 6 is then split out into predicted re-use/recycle/ backfill/disposal rates and quantities using the EPA 2019 % rates as presented in Table 6. The template provided in Appendix D of the 2021 Guidelines is completed in Table 7 overleaf.

This will form the baseline from which improvements will be measured and recorded throughout the project. At a minimum, waste generation shall not exceed these figures.

For example, as shown in Table 5, the EPA data for 2019 indicates that 52% of concrete, bricks, tiles and gypsum, the largest waste sources excluding soils and stones, are recovered by backfilling. Similarly, 60% of mixed C&D waste is backfilled.

Therefore, an objective for this project will be to minimise the volume of waste going off-site to backfilling using the waste prevention mechanisms listed earlier.

In this regard, a minimum target of reducing waste going to backfilling by 10% will be set for this project using the figures presented in Table 7 as the baseline from which reductions will be measured.

The template in Table 7 overleaf will be completed regularly and updated throughout the project by the Resource Manager to ensure target(s) are met and recorded. Where slippage occurs, measures will be implemented

immediately. In addition, any other waste types arising throughout the project will be recorded on the template (Table 7).

Where prevention or re-use of materials has occurred on site, then this will also be measured and recorded on Table 7.

A final version of Table 7 will be fully completed at the end of the project for all materials /wastes. This will serve as a learning tool to inform future practices on other sites.

Table 7 Overall Preliminary Resource & Waste Inventory

LoW Code	Description	Volume Generated (tonnes)	Prevention (tonnes) non-waste	Re-used (tonnes) non-waste	Recycled (tonnes) (waste)	Recovered** (tonnes) (waste)	Disposed (tonnes) (waste)	Unit cost rate (€ per tonne)	Total cost (€)
17 01 01	Concrete	149.70	-	-	67.37	77.85	4.49	40-45	6,736.50
17 01 02	Bricks	149.70	-	-	67.37	77.85	4.49	40-45	6,736.50
17 01 03	Tiles and Ceramics	149.70	-	-	67.37	77.85	4.49	40-45	6,736.50
17 02 01	Wood	8.66	-	-	3.38	5.28	-	90	779.40
17 02 02	Glass	8.66	-	-	3.38	5.28	-	110	952.60
17 02 03	Plastic	8.66	-	-	3.38	5.28	-	125	1082.50
17 03 02	Bitumous Mixtures	112.80	-	-	72.19	40.61	-	125	14,100
17 04 01	Copper, bronze, brass	0	-	-	-	-	-	-	-
17 04 02	Aluminium	0	-	-	-	-	-	-	-
17 04 03	Lead	0	-	-	-	-	-	-	-
17 04 04	Zinc	0	-	-	-	-	-	-	-
17 04 05	Iron and Steel	0	-	-	-	-	-	-	-
17 04 06	Tin	0	-	-	-	-	-	-	-
17 04 07	Mixed Metals	190.90	-	-	190.90	-	-	Fluctuates daily Rebate offered. Est. 45	8,590.50
17 04 11	Cables	0	-	-	-	-	-	-	-
17 05 04	Soils and Stone	12,150	-	1,350***	-	10,800***	-	-	-
17 06 04	Insulation Material	0	-	-	-	-	-	-	-
17 08 02	Gypsum	149.70	-	-	67.37	77.85	4.49	40-45	6,736.50
17 09 04	Mixed C&D waste	390.77	-	-	50.80	238.37	101.60	125	48,846.25
17 01 06*	Mixtures of, or separate fractions of, concrete, bricks,	0	-	-	-	-	-	-	-

LoW Code	Description	Volume Generated (tonnes)	Prevention (tonnes) non-waste	Re-used (tonnes) non-waste	Recycled (tonnes) (waste)	Recovered** (tonnes) (waste)	Disposed (tonnes) (waste)	Unit cost rate (€ per tonne)	Total cost (€)
	tiles or ceramics containing hazardous substances								
17 02 04*	Glass, plastic and wood containing or contaminated with hazardous substances	0	-	-	-	-	-	-	-
17 03 01*	Bituminous mixtures containing coal tar	0	-	-	-	-	-	-	-
17 04 09*	Metal wastes contaminated with hazardous substances	0	-	-	-	-	-	-	-
17 05 03*	Soil and stones containing hazardous substances	0	-	-	-	-	-	-	-
17 06 05*	Construction materials containing asbestos	0	-	-	-	-	-	-	-

* - Hazardous

** - Recovery means energy, recovery, backfilling and other recovery

*** - High level estimate. Additional reuse within the site is envisaged.

8.0 Site Management & Infrastructure

The following are outline requirements that shall be adopted by the Contractor at construction phase:

- As noted under “Roles & Responsibilities” a specified RM shall be appointed by the Contractor during construction stage.
- Resource efficient supply chains shall be implemented. Put simply, the involves “doing more, with less” and is a cost-effective measure that is implemented at all project stages from planning to construction. At construction stage, this can involve swapping out virgin materials for recycled materials, reduced packaging on incoming goods, and using waste segregation for high quality recovery rates.
- The RWMP shall be outlined at the induction training for all employees and sub-contactors.
- The induction training of staff will be completed to improve awareness of:
 - The need for efficient use of resources,
 - Prevention of waste generation,
 - Good waste management practices, and,
 - The specific measures to be implemented on site regarding re-use, segregation and maintaining the correct conditions to facilitate this.
- Regular tool-box talks will be given to ensure everyone who comes to site knows how to reduce, reuse and recycle. Site photos of correct and incorrect practices will be used to communicate to staff.
-
- Resource re-use and waste management will be prioritised and brought up at every progress, co-ordination and safety meeting to remind construction workers and to provide feedback on how to improve facilities etc.
- Adequate waste segregation bins will be installed to prevent mixing of wastes. C&D mixed waste will be avoided. These will be located close to working areas to ensure that workers have the infrastructure to achieve the objectives of reduce, re-use and recycle.
- The preference is to fully implement on-site waste segregation as disposal of mixed waste off-site is the most expensive option. However, Westar will appoint a waste contractor who can provide off-site segregation of mixed wastes for onward recycling/recovery should any inadvertent mixing occur.
- Materials for off-site recycling will be kept clean and dry.

- Regular monitoring of waste receptacles will be completed by 'Recycling Champions' and logged to ensure that the correct materials are going into them.
- Robust signage will be placed on all bins and skips clearly stating what materials can be placed in them. Closed bins will be provided for plasterboard recycling. Separate bins will be provided for all materials such as wood, metal, WEEE, plasterboard, concrete, bricks etc.
- Dedicated bunded receptacles will be provided in the construction compound for hazardous waste arisings such as lubricating oils, paints and other chemicals.
- Awareness signage will also be placed around the site for maximising resource usage and waste prevention.

Where material does leave the site as waste, the following will apply:

- All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 - 2011*, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* as amended.
- Waste will be transported by waste contractor(s) holding current waste collection permits as applicable, and,
- will be sent to facilities holding the appropriate registration, permit or licence only.

All waste will be documented prior to leaving the site.

Waste will be weighed either by weighing mechanism on the truck or at the receiving facility. Smaller quantities may be estimated.

A Waste Register will be used to track waste leaving the site and will contain the following information, as applicable:

- Date
- Time
- Waste Contractor
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- LoW
- Proposed destination and treatment (recycling, recovery, disposal)

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times. Subcontractors who have engaged their own waste contractors, will provide the main contractor with a

copy of the waste collection permits and COR/permit/licence for the receiving waste facilities and maintain a copy on file available for inspection on site as required.

Waste transfer forms (WTF) will be used for the transfer of hazardous waste and kept on-site along with details of the final destination (COR, permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

Any waste transfer dockets, WTFs and the register will be collated and reviewed by the Resource Manager on a regular basis. Table 7 will be updated accordingly.

Documents will be maintained for at least 3 years.

At this juncture, Wilton Scrap Metals (Dolly Skip Hire) have been identified as licensed/permitted waste operators that are likely to provide waste services to the Project although it is not possible to list all waste facilities proposed as final destinations for each waste stream. Locally based authorised operators/facilities will be used.

9.0 Audits & Inspections

The RW shall be responsible for carrying out waste audits and inspections.

At a minimum, daily housekeeping checks of waste infrastructure will be made and recorded. Unusual activities such as high levels of waste generation will be monitored. Where an incident occurs, corrective and preventative action will be taken immediately.

Regular audits will be conducted covering:

- Resource/waste re-use, recycling and recovery records;
- Construction workers awareness and training;
- Review of waste contractors and hauliers permits and licenses etc.
- Initiatives for resource efficiency implemented.

A record of each audit shall be maintained with corresponding details of non-compliances and preventative and corrective actions assigned where necessary.

10.0 Communication with Local Authority

This RWMP shall be updated regularly and submitted to KCC throughout the construction phase. A final report will be prepared at the end of the project detailing at a minimum, the rates of reuse, recycling and recovery of material and associated costs.

Once construction contractors and waste contractors have been formally appointed, and prior to removal of any C&D waste materials

offsite, details of destination of each waste stream will be provided to the KCC Waste Regulation Unit.

KCC will also be consulted, as required, throughout the site development and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

11.0 References

- A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2020 -2025, Department of Environment, Climate and Communications, Sept 2020
- Best Practice Guidelines for the Preparation of Resource & Waste Management Plans, for Construction and Demolition Projects, EPA, November 2021.
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A new Circular Economy Action Plan for a Cleaner and more Competitive Europe COM 2020/98 final.
- Decision (EU) 2022/591 of the European Parliament and of the Council of the 6 April 2022 on a General Union Environmental Action Programme to 2030.
- Design out Waste, A Design Team Guide to Waste Reduction in Construction and Demolition Projects, EPA Research.
- Eastern-Midlands Region Waste Management Plan 2015 – 2021, Dublin City Council.
- Kildare County Development Plan 2017 – 2023, Kildare County Council.
- Naas Local Area Plan (LAP) 2021 – 2027, Kildare County Council.
- National Waste Statistics, Summary Report for 2019, EPA, December 2021.

Attachment 1



Description:
 Digital Cartographic Model (DCM)
 Publisher / Source:
 Ordnance Survey Ireland (OS)
 Data Source / Reference:
 PRIME2
 File Format:
 Autodesk AutoCAD (DWG_R2013)
 File Name:
 v_50119998_1.dwg
 Clip Extent / Area of Interest (AOI):
 LXL.LY= 687832.0,719115.0
 LRX.LY= 689356.0,719115.0
 ULX.LY= 687832.0,720311.0
 URX.LY= 689356.0,720311.0
 Projection / Spatial Reference:
 Projection: IRENET95_Irish_Transverse_Mercator
 Centre Point Coordinates:
 X,Y= 688594.0,719713.0
 Reference Index:
 Map Series / Map Sheets
 1:1,000 | 3559-07
 1:1,000 | 3559-02
 1:2,500 | 3558-B
 1:2,500 | 3559-C
 1:1,000 | 3559-22
 1:1,000 | 3559-06
 1:2,500 | 3558-D
 1:2,500 | 3559-A
 Data Extraction Date:
 Date= 14-May-2020
 Source Data Release:
 DCLMS Release V1.128.109a
 Product Version:
 Version= 1.3
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 FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING. DO NOT SCALE.
 ALL CONTRACTORS MUST VISIT THE SITE AND BE RESPONSIBLE FOR CHECKING ALL SETTING OUT DIMENSIONS AND NOTIFYING THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO ANY MANUFACTURE OR CONSTRUCTION WORK.
 NOTES:
DESIGN INTENT DRAWING
FOR INFORMATION PURPOSES

LEGEND:
 SITE OUTLINED IN RED
 SITE AREA =28,825.07 m² / 2.9 H.A
 LAND OWNERSHIP EXTENDS BEYOND RAWING. FUTURE DEVELOPMENT
 APARTMENT BLOCKS

SCHEDULE OF ACCOMMODATION

1BED	2BED	3BED	TOTAL
22	77	35	134
16%	57%	26%	100%

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 Sárlíonn atáirgeadh neamhdarathae cóipeacht Suirbhéireacht Ordánais Éireann agus Rialtas na hÉireann.
 Gach cead ar cosnadh. Ní ceadmhach aon chuid den fhóclóir seo a chóipeáil, a atáirgeadh nó a tharscrú in aon bhealach ná ar aon bhealach gan cead i scríbhinn roimh ná ó úinéir an chóipeáil.
 Ní hionann bóthar, bealach nó cosán a bhéith ar an léarscáil seo agus fíneáire ar chéad sáil.
 Ní thaispeánann léarscáil de chuid Ordánais Suirbhéireacht na hÉireann leonann phointe (leathúil de mhaoin niamh, ná úinéireacht de ghnáithe thsúicáil).

MASTERPLAN FOR BALANCE OF CLIENT LANDHOLDING EXTENDING SOUTH EAST TO THE HARBOUR LANDS, NORTH AND NORTH EAST. A MASTERPLAN HAS BEEN AGREED FOR THESE AREAS WHICH INCLUDES FOR ALL RELATED OBJECTIVES OF THE NAAS SALLINS TRANSPORT STRATEGY AND FUTURE POTENTIAL LAND USE ZONINGS

Rev	Date	Description	Issued By
P01	06/12/2022	Planning Issue	

Project Stage
PLANNING

Client:
 Westar Homes Limited

Project:
 Residential @ Finlay Park
 Finlay Park, Naas, Co. Kildare

Drawing Title:
 Proposed Site Layout

Drawn	Checked	Paper Size	Scale	@A1	Date
VM	BB	A1	As indicated		06/12/2022
Project No.	Drawing No.	Classification	Revision		
PE17019	0111		P01		

File Name:
 PE17019-CWO-01-ZZ-DR-A-0111
 Status:
S2-Suitable for information



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1 Proposed Site Layout - Zone 1
 1: 500