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RESOURCE & WASTE MANAGEMENT PLAN

GREAT CONNELL SHD

NEWBRIDGE

COUNTY KILDARE

Prepared For: -

Aston Ltd
Great Connell
Newbridge
County Kildare

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Client	Aston Ltd			
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1. INTRODUCTION

Aston Ltd appointed O’Callaghan Moran & Associates to prepare a preliminary Resource and Waste Management Plan (RWMP) for the proposed Strategic Housing Development (SHD) at Great Connell, Newbridge, County Kildare.

The purpose is to provide information necessary to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with the current industry standards and waste management regulations.

1.1 Methodology

The approach is based on the Environmental Protection Agency ‘Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects’ (2021) and in line with Aston’s environmental and resource and waste management policies.

1.2 Relevant Legislation & Guidance

- Protection of the Environment Act 2003, as amended
- The Waste Management Act 1996, as amended
- The Waste Management (Collection Permit) Regulations 2007, (S.I 821) as amended
- European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
- Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
- Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014), as amended
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
- European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
- Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
- Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
- Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No .419 of 2007) as amended

- European Communities (Transfrontier Shipment of Waste) Regulations
- Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous (2015)

The RWMP also had regard to the Preliminary Construction Environmental Management Plan, which incorporates an Invasive Species Management Plan prepared for the development.

1.3 Circular Economy

In 2020, the government published its 'Waste Action Plan for a Circular Economy' to inform and direct national and regional waste planning in Ireland over the coming years. It is action focused to embrace the opportunities in becoming a circular economy. While the thrust of the Plan is to prevent waste arising through reuse, its objectives include ensuring that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials).

It is an objective to meet the requirements of the Eastern-Midlands Region Waste Management Plan 2015 – 2021, which in line with the European Union Waste Framework Directive, specifies a mandatory target of 70% of C&D wastes to be prepared for reuse, recycling and material recovery (excluding soil and stones) by 2020.

All of the soil and stone excavated for building foundations and underground services will be retained on-site for reuse. Uncontaminated soil and stone can be notified as a By-Product under the EPA regulated Article 27 Notification System, meaning it is not classed as waste and can be used in other developments where fill is required. Article 27 Notified Soil and Stone may be imported to raise ground to formation levels.

Metal, timber, glass and plasterboard are potentially recyclable. Currently, in the absence of national end of waste criteria for recycled aggregates, opportunities for the recovery and recycling of concrete, bricks and tiles are restricted to use in landfill construction works and at two waste management facilities that have EPA approval to produce End of Waste aggregates; however they have limited capacity.

1.4 Detailed RWMP

This preliminary RWMP will be revised prior to the start of construction to:

- Take consideration of the conditions of the planning permission.
- Identify the members of the Design Team and specify their roles and responsibilities.
- Make provision for the waste prevention and resource recovery measures identified in the detailed design stage.
- Include a post design resource and waste inventory of all residual resources, and
- Identify the roles and responsibilities of the Construction Management Team, including materials procurement.

2. SITE DESCRIPTION

2.1 Site Location

The site is to the east of Newbridge Town Centre. It is accessed from the east off the Great Connell Road, which forms the eastern boundary. It is bounded to the north-east by a residential development (Wellesley Manor) and to the north-west by an open drain that was formerly a meander channel of the River Liffey. A hedgerow forms the southern boundary. The south-western boundary is defined by a buffer zone on the western side of the River Liffey. The western boundary is not defined on the ground.

2.2 Site Layout

The site is 27.64 hectares (ha) and the layout is shown on Drawing PA-0012 in Appendix 1. Most of the site is in agricultural use, currently tillage. An open but overgrown drainage ditch runs along the northern border and in the central area of the site. There are hedgerows along the northern, southern and eastern boundaries and an area of woodland in the southwest, on the eastern bank of the River Liffey.

There is a former residential dwelling (Valencia Lodge) to the east of the agricultural yard. This is a single storey house (136 m²) with a single storey garage (17.8 m²) and garden. There is a second former residence (Great Connell) in the north-east corner of the site. This is a two-storey dwelling (332 m²) with a detached single storey garage and boiler room (48 m²).

There is a former agricultural yard (8,920m²) towards the centre of the site containing two single storey sheds (1,440m² and 595m²), a three-sided shed (54 m²) and a car park to the east.

2.3 Services

There is an Irish Water 300mm watermain running along the Great Connell Road. This supplies the Wellesley Manor via a 100mm uPVC network. There is an existing 1000mm concrete storm water sewer serving Wellesley Manor that flows from northeast to the south-west along the north-eastern boundary and discharges into a small stream that then flows into the Liffey.

A 450mm concrete foul sewer flows north to south through the centre of the site and connects to the foul sewer network serving Wellesley Manor. A 900mm foul sewer, recently installed as part of the upgrade of the Upper Liffey Valley Sewerage Scheme, runs from north-east to south west across the site. There is an overhead 10 kV Medium Voltage electricity line traversing the site which drops underground for a section of its run.

2.4 Environmental Setting

2.4.1 Hydrology

The site is in the catchment of the River Liffey, whose main channel runs through the site close to the south-western boundary. There are two open drainage ditches inside the site boundary that

follow the original alignment of an historic meander on the Liffey.

2.4.2 Geology & Hydrogeology

The subsoils in the western half of the site are Alluvium, with the eastern half underlain Gravels derived from Limestone. The subsoils are between 16.5m and 18m thick and overly limestone bedrock. The sands and gravels are classified as a locally important aquifer. The underlying bedrock is a regionally important karstified (Rkd) aquifer. The water table ranges from 1m to 2,9m below ground level. There is no evidence that previous and current land use has resulted in soil contamination.

2.4.3 Biodiversity

The site is dominated by large fields of arable crops, with two former residences and three former agricultural buildings at the centre of the site towards the eastern boundary. The northern, southern and eastern boundaries include hedgerows with small areas of scrub and treelines. There is an area of mixed broadleaved woodland in the south-west corner of the site and this is the most valuable habitat within the site and will be retained intact. There is an 80m riparian zone either side of the River Liffey. The closest Natura 2000 Site is Pollardstown Fen Special Protection Area, which is 2.6km to the west.

2.4.4 Archaeology

Archaeological field surveys did not identify any significant archaeological features within the site boundary. There are a number of minor features that need to be assessed at the site clearance stage.

2.5 Surrounding Land Use

To the south and south-east are agricultural lands primarily used for tillage. To the east, across the Great Connell Road, are the Murphy Ireland Ltd offices and compound. To the north-east is Wellesley Manor, which has the closest residential dwellings to the development, with the houses in the south of the estate being approximately 10m from the north-eastern development site boundary. A large scale residential development is currently under construction to south west of the site.

2.6 Road Network

The R416 Athgravan Road to the west is a Regional Road linking Newbridge and Athgarvan. It is a single lane two-way carriageway. The Great Connell Road is a Local Primary Road linking the R445 with the L2032 via Buckley's Cross at the northern end. It is a single lane two-way carriageway.

The Great Connell roundabout provides access to the residential development on the western side of the Great Connell Road, the Murphy International offices and compounds and the Dr. Pepper beverage manufacturing plant.

3. DEVELOPMENT DESCRIPTION

The proposed layout is shown on Drawing PR-002 Proposed Master Site Layout in Appendix 1. The development involves the demolition of two unoccupied private residences and three sheds and the phased construction of 569 residential units comprising a mix of house and apartments with associated car parking (1,008) and bicycle (734) spaces; the construction of a neighbourhood centre and a crèche and the provision of a series of parks (2.6 ha) and open amenity area (8.31 ha) along the River Liffey. Access will be off the Great Connell Road and the development will include the delivery of a 350m section of the Newbridge Southern Outer Orbital Relief Road (NSORR).

3.1 Services

The development will connect to the mains water supply via a 200mm diameter connection from the existing watermain on the Great Connell Road. The surface water drainage system will discharge to the existing drainage ditch and the River Liffey via nine below ground flow attenuation tanks.

The existing 450mm foul sewer that runs across the site from south to north will be diverted and connected to the new 900mm diameter sewer. Due to the site topography there will be two separate foul water networks serving the eastern and western areas of the site respectively. The eastern network will have a gravity flow towards the north-east corner of the site, where it will connect to the 900mm sewer. In the western network, there will be a gravity flow to a new pump station in the north of the site from where it will be pumped to a second connection to the 900mm sewer.

The existing overhead electrical power lines running from the north-east to south-west through the site and along the southern site boundary will be diverted underground.

3.2 Roads/Junctions

The development will deliver a 350m section of the NSOoRR and will involve upgrades to the Great Connell Roundabout and Buckley's Cross. The Great Connell Roundabout will be replaced by a signalised junction.

4. DETAILED DESIGN STAGE

4.1 Design Team

The Design Team will include, but not be limited, to:

- Aston Ltd representative
- Architect
- Civil Engineer
- Quantity Surveyor
- Resource Manager

The roles and responsibilities each team member will be documented.

4.2 Approach

The following elements will be incorporated into the Detailed Design:

Reuse and Recycling Initiatives in accordance with Section 4.3.1 of the EPA Guidance (2021);

Green Procurement Initiatives in accordance with Section 4.3.2 of the EPA Guidance (2021);

Off-Site Construction Initiatives in accordance with Section 4.3.3 of the EPA Guidance (2021);

Materials Optimisation Initiatives in accordance with Section 4.3.4 of the EPA Guidance (2021) and

Flexibility and Deconstruction Initiatives in accordance with Section 4.3.5 of the EPA Guidance (2021).

5. PRELIMINARY CONSTRUCTION PROGRAMME

5.1 Development Phases

The proposed phasing of the works are shown on Drawing PA-008 in Appendix 1.

Phase 1: Northern Area of Site

- Construction of 169 residential units and the neighbourhood centre including the crèche
- Construction of the signalised junction and Great Connell Roundabout.
- Demolition of private residences and removal of trees as per the Arborist requirement.
- Diversion of Athgarvan foul sewer to connected to Upper Liffey Valley Sewerage Scheme
- Undergrounding of overhead power lines.
- Construction of relevant infrastructural works including new foul sewer and pumping station, surface water drainage including SuDs measures, water mains connections, roads and footpaths and utilities.
- Completion of flood compensation storage works within the riparian/zoned amenity lands
- Open Spaces landscaping in Zones 9,10,11,13, A & B.

Phase 2: South of Phase 2

- Construction of 103 residential units.
- Construction of relevant infrastructural works including new gravity foul sewer, surface water drainage including SuDs measures, water mains connections, roads and footpaths and utilities.
- Provision of Open Space 2, along with relevant landscape works within the riparian zone.

Phase 3: South of Phase 3

- Construction of 99 residential units.
- Construction of relevant infrastructural works including new gravity foul sewer, surface water drainage including SuDs measures, water mains connections, roads and footpaths and utilities.
- Open space landscaping to Areas 3 & F, including treatment works to this section of the Great Connell Road.

Phase 4: West of Phases 4

- Construction of 198 residential units.
- Construction of relevant infrastructural works including new gravity foul sewer, surface water drainage including SuDs measures, water mains connections, roads and footpaths and utilities.
- Open space landscaping to areas 1, 4, 5, 6, 7, 8, D & E, including treatment works to the section of the Great Connell Road.

6. SITE MANAGEMENT

6.1 Pre-Demolition Surveys

The buildings to be demolished will be subject to a pre demolition survey in accordance with the EU Guidelines for the waste audits before demolition and renovation works of buildings (May 2018). If asbestos containing materials are identified an asbestos removal plan will be prepared.

6.2 Waste Types

Wastes generated will include broken concrete blocks/tiles/ceramics; surplus bitumen paving; timber and hard plastic off-cuts; metal (aluminium and steel); plasterboard, electrical wire, batteries and damaged equipment; packaging (cardboard, plastic, timber); empty paint tins and adhesive containers; insulation materials; canteen waste from the welfare facilities and waste oil and filters from mobile plant.

The waste types listed in Table 6.1 which also includes the List of Waste (LoW) code (formerly referred to as the European Waste Code or EWC). It should be noted that Table 5.1 is not an exhaustive list and may be revised at the detailed design stage.

Table 6.1

Waste Type	LoW Code
Concrete, bricks, tiles, ceramics	17 01 01-17 01 03 03 & 17 01 07
Wood, glass and plastic	17 02 01-03
Soil and Stone	17 05 03
Bituminous mixtures	17 03 02
Metals (including their alloys)	17 04 01-07
Gypsum-based construction material	17 08 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Electrical and electronic components	20 01 35 20 01 36
Batteries and accumulators	20 01 33 20 01 34
Oil	13 01 10, 13 03 05
Chemicals (e.g. solvents, paints, adhesives)	20 01 13 , 20 01 19, 20 01 27
Insulation materials	17 06 04

All clean soil and stone excavated for foundations and services will be retained on site for use in raising ground levels and in landscaping works. Soil and stone impacted by accidental spills of polluting substances e.g. oils will be sent off-site

Pending the completion of the detailed design of the development which will include the selection of materials to 'design out' waste and reuse and recycling initiative and the confirmation of the construction methodologies, it is not possible to estimate with any level of accuracy the quantities of C&D waste that will be generated in each phase of the development. An indication of the likely percentages is shown in Table 6.2

Table 6.2

Waste Types	% By Weight
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	100

6.3 Resource Manager

Given the scale of the development the Main Contractor will nominate an experienced Resource Manager who shall be responsible for the appropriate segregation and storage of all waste arising in the construction stage, including wastes from the staff welfare facilities.

6.3.1 Regulatory Compliance

The Resource Manager shall ensure that all wastes arising in the construction stage are sent to waste facilities that are authorised under the Waste Management Act 1996, as amended and/or the Environmental Protection Act 1992, as amended and hold up to date permits that approve the acceptance of the specific waste types. These authorisations include:

- Industrial Emissions Licences Waste Licences issued by the EPA
- Waste Facility Permits and Certificates of Registration issued by a local authority.

6.3.2 Training

The Waste Manager shall be responsible for instructing construction staff on the appropriate segregation and storage practices for the different waste types. This may be provided as part of general site training needs such as site induction, health and safety awareness and 'tool box talks'.

6.3.3 Records

The Resource Manager shall be responsible for maintaining the following records of all wastes sent of site

- Details of the waste collector, including the waste collection company name, vehicle registration number and date the wastes were collected,
- Details of the waste management facility to which the waste were sent, including weighbridge records that detail the waste collection company and vehicle registration and the quantity of waste accepted.

6.4 On-Site Waste Management

Appropriately sized skips will be provided by a waste collector who holds an up to date Waste Collection Permit from the National Waste Collection Permit Office (NWCPO) that authorises the collection of the waste types that will arise during the construction stage.

Dedicated skips will be provided for:

- Concrete rubble, bricks and tiles
- Plasterboard
- Hard plastic off-cuts
- Timber off-cuts
- Metal off-cuts and rebar
- Glass
- Cardboard and plastic packaging
- Non-recyclable packaging (e.g. polystyrene)
- Waste Electrical and Electronic Equipment (wiring, batteries)
- Empty paint tins, adhesive containers and oil cans

Separate wheelie bins will be provided for food waste, mixed dry recyclables and residual waste for wastes arising at staff welfare facilities.

The skips will be located at strategic locations around the construction site, as decided by the Resource Manager, in areas that are remote from water course. The wheelie bins shall be stored adjacent to the construction workers welfare facilities.

Signage will be provided that informs the site staff of the waste types that can be placed in each skip.

6.4.1 Hazardous Waste Management

The paint tins, adhesive containers and oil cans will be classified as hazardous waste and shall only be placed in a water tight dedicated skip.

Waste oils arising from routine plant maintenance shall be stored in drums or in an enclosed storage unit in the Contactor's Compound.

6.4.2 Inspections/Audits

The Resource Manager will be responsible for regularly inspecting the skips and bins to

- Ensure they are being used appropriately
- Remove non-conforming wastes, and
- That they are removed from the site as required to prevent spillage.