D1 Operational Requirements

Development and Operational History

Prior to the acquisition of the site by PANDA in 2005, it had been used for agricultural purposes. In August 2005 PANDA applied for planning permission to develop a Waste management facility on a staged basis. Stage 1 involved the development of C&D and C&I processing building. Stage 2 involved the construction Dry Recyclables processing building, with Stage 3 comprising MSW processing, with a total annual throughput of 250,000 tonnes.

In December 2005 permission was granted for the development of the Stage 1 C&D and C&I building. Approval was not granted for the Dry Recyclables and the MSW processing, as the time the local road network did not have the capacity to handle the associated increase in traffic. The permission restricted the amount of wastes to 50,000 tonnes per annum, again because the condition of the local road network.

PANDA constructed the existing C&D/C&I Building in 2006, obtained a Waste Permit (WP 095) from Fingal County Council and started operations in 2006. The initial site development works included the provision of site services, construction of perimeter security fencing, internal access roads and paved yards in the northern and central parts of the site, foul and surface water drainage system, weighbridge(s), Building A1 (1,760m^2) and an electrical substation. A 3m high acoustic wall was constructed at the south east boundary. Portacabin offices, canteen and staff welfare facilities have been temporarily located adjacent to the weighbridge at site entrance and at the south east side of the building.

The Council subsequently completed the upgrade of the local road network and in 2007, PANDA applied for permission for Stages 2 and 3. In December 2007 permission was granted for Stage 2, but not for Stage 3 MSW processing. The refusal to approve Stage 3 was based on the land zoning status at the time. Stage 2 construction works began in 2013 and, involve the construction of the Buildings B1 (2,800m^2) and B2 (4,680m^2), the completion of the paving of the open areas and the extension of the surface water drainage system. The works are expected to be completed by mid 2014.

In August 2010, the EPA granted PANDA a Waste Licence. The Licence, in keeping with the planning permission, allows that acceptance of 200,000 tonnes of waste annually of C&D and C&I waste, but the site is not authorised to accept mixed MSW. Approved waste processing includes unloading, separation, sorting, crushing, trommelling, shredding, screening, baling and storage pending consignment off-site for re-use or further processing.

In November 2013 PANDA applied for planning permission to construct a new building (A2), accept MSW (food waste and residual waste collected from households and commercial customers) and extend the operational hours. It is proposed to relocate the C&D and C&I processing to the new building and handle the residual household waste and food waste and in Building A1. An odour abatement system will be installed on the building, comprising an air extraction system that will maintain the building under negative pressure and a carbon filter.

Site Infrastructure

The site layout is shown on Drawing No 6418 and details of the site infrastructure are in the table below.

Table – Site Infrastructure

Ref	Infrastructure	Details
1	Electrical Substation	Located at the western boundary.
2	2 No Weighbridges and associated portacabin type office	Located close to the facility entrance (78m^2)
3	Building A1	MSW processing (1,760m^2)
4	Building A2	C&D and C&I processing (^{2030m2})
4	Building B1	Dry Recyclables (2,800m^2)
	Building B2	Paper & Cardboard (4,608m^2)
4	Underground Storm water Attenuation Tank	1,400m^3
5	Paved Yard	16,212m^2
6	External Storage Bays	Temporary, formed by large concrete blocks
7	Oil Storage Tanks	20,000 litres and 5000 litres

Services

Electricity is supplied by Electric Ireland, which has an electrical substation on-site. Water is obtained from an on-site well. Sanitary wastewater is collected and stored in an underground tank pending removal off-site for treatment in a municipal wastewater treatment plant. Rainwater run-off from the building swill be collected and diverted to a rainwater harvesting system for use as 'grey water' in the welfare facilities and the dust suppression system.

Surface water Drainage

Surface water from roofs and paved areas is collected in the surface water drainage system and directed to the attenuation tank as shown on Drawing No.138-01. The tank has a capacity of 1,400m^3 and is connected to a Class 1 Full Retention Klargester Oil Interceptor.

The attenuation tank provides temporary storage of surface water and allows the discharge at a steady rate to the storm water sewer system serving the adjoining Stadium Business Park. The outflow from the tank is regulated by a hydrobrake, which has a maximum discharge rate of 6 litres/second (l/s). This passes through the Oil Interceptor before discharging to the Stadium Business Park storm water sewer.

The size of the attenuation tank is based on the run-off from an impermeable surface area (roof and paved yards) of 25,284 m^2 and the requirement to accommodate 1:100 year 6 hour rainfall event (60mm) that will generate 1,517.04m^3 of run-off. Assuming a continuous discharge rate of 6l/second, which equates to 129.6m^{3}over the 6 hour period, the required storage capacity is 1387.44m^3.

Wastewater

The waste processing does not generate a wastewater. The floor of Building A1 will be regularly cleaned by a road sweeper, which is on site daily. Sanitary and sink wastewater from the site welfare facilities is discharged to the facility's foul drainage system, which is shown on Drawing No. 6418.

The volume of sanitary wastewater generated will be approximately 320m^3 annually. This is collected in a 13.5 m^3 concrete storage tank outside the southern side of Building A1, the

contents of which are removed off-site on a routine basis and disposed of at the municipal wastewater treatment plant at Ringsend operated by Dublin City Council.

Waste Processing

Current operations include the processing of C&D and C&I wastes inside Building A1; the bulking up of the plastic hangers into specially designed transport vehicle near the western site boundary; the storage of the source segregated baled cardboard and baled plastic in an open paved area along the southern site boundary and the storage of recovered (WEEE) and timber on paved areas adjacent to Building A1. The external storage of baled materials is a temporary measure and will stop once all of the buildings have been constructed.

C&D and C&I

When the facility opened in 2006 the C&D waste from development sites comprised the bulk of the incoming waste and the processing included screening using a hopper, conveyor and trommel to produce a large (>150mm) and small (<150mm) fractions, which were then sent off site for further processing. Due to very significant reduction in large scale construction projects, this process has been temporarily suspended and the processing now involves manual and mechanical sorting of the mixed wastes.

In Building A1 ferrous and non-ferrous metals, waste electronic and electrical waste WEEE, wood and bulky wastes are segregated manually and mechanically using a mechanical grab. The WEEE is stored in cages on a paved area at the rear of the processing building. The timber is stored in open bays formed by large concrete blocks on a paved area to the south west of the processing building. The external storage of the wastes is a temporary measure and will stop following the construction of Buildings B1 and B2. The remaining mixed waste is then bulked up and sent to PANDA's Beauparc facility for processing.

Dry Recyclables

In Building B1, the pre-segregated dry recyclables will be baled. The mixed recyclables will be separated manually and mechanically into the different waste streams (paper, cardboard, plastic, glass and metal) using a sorting line incorporating a combination of some or all of the following-loading hopper, conveyor, picking line, ballistic separators and magnets. The paper, cardboard, plastic and metal cans will be baled. The glass will be stored in a bin.

Paper & Cardboard

In Building B2, the higher value, low quantity paper will be sorted using a picking line comprising a conveyor that passes over open top bins. Each of the bins will be dedicated to a particular grade of paper. As the paper passes along the conveyor, the sorting personnel will pick out the particular grade and deposit it into the appropriate bin. Any unsorted paper will fall into an end bin (the lowest value grade). When a bin is full it will be emptied on to a conveyor and sent to a baler.

Lower grades of mixed paper will not be sorted, but will be baled. All the bales will be tied with wire. On average the weight of each bale is 750 kg, but this can vary from 500 kg to 1,000 kg depending on size, density, waste paper type and moisture content. The finished bales will be moved to the designated storage areas inside the building using a clamp truck.

Food Waste & Residual Waste

When Building A2 is constructed the C&D and C& I processing will be moved to this building and Building A1 will be used to handle the source segregated residual and food waste. The food waste will be bulked up into to larger transport vehicles for transfer to an approved biological treatment plants (compost/anaerobic digestion). This will typically occur on the day of arrival and generally not later than 48 hours of arrival, allowing for Sundays and Public Holidays.

The residual waste will be transferred to energy recovery facilities. This will involve first shredding the bin bags that contain the waste to allow the recovery of the recyclable metals (food and drink tins/cans) and food waste that are inadvertently placed in 'black bin' by householders. This may, depending on requirements of the recovery installation to which the wastes are sent, involve a combination of a trommell, conveyors, magnets, ballistic separators and eddy current separator, so as to increase the calorific value.

Details of the processing line layout and the sampling protocols that will be applied to demonstrate the processed materials meet the required customer/regulatory specification will be submitted to the Agency for approval.

The remaining waste will then be compacted into bales that are wrapped in plastic and stored before being sent to waste recovery plants. The layers of plastic prevent liquid seepages and contain odours while the bales are being stored and transported. The average storage time for a bale will be 1 week.

Alternative Building Use

The waste activities proposed for each of the buildings is based on PANDA's assessment of current and likely future market conditions. It is possible that future changes in the types and quantities of wastes collected by PADNA, for example if there is an increase in C&D wastes being generated, may require the reconfiguration of site operations. This will not affect the handling of the food waste and residual wastes which will only be carried out in a building provided with an active odour control system.

SITE EDGED RED

SITE AREA : 25284m²

Cappagh Road

Location of site notice

Exit / Entrance to entire site

Weighbridge / Weighbridge office to be re-located

Existing Boundary

General waste to bailing and transfer facility

Building Granted Permission

Building Height 13.88m

B1
c. 2800 sqm
(Warehouse)
Dry Recycling

A1
(EXISTING)
Reg. Ref. F05A/1156

Existing Boundary

OCU Emission Point

A2
(Warehouse)
C. 2030 sqm
(Proposed)

Proposed new material storage

Existing Boundary

B2
c. 4608 sqm (Warehouse)
Cardboard & Plastic Recycling

Underground Attenuation Tank

Bin Store Yard

ESB Sub-Station

Cappagh Road

Building Granted Permission

North

Site Layout Map Scale: 1:1500
OS No. Dublin 3130B

PROJECT

We, Nurendale Ltd, intend to apply for permission for development at our existing Materials Recovery Facility at Cappagh Road, Cappogue, Finglas, Dublin 11. The development will consist of the construction of a new waste recovery building (2030m2), an increase in the amount of waste accepted annually from 200,000 tonnes to 250,000 tonnes and a change of use to allow the acceptance of municipal solid waste including baling station, relocate weighbridge, porta cabin offices, canteen and toilets. The development will require a revision of the Waste Licence granted by the Environmental Protection Agency. The application will be accompanied by an Environmental Impact Statement (EIS).

TITLE

SITE LAYOUT MAP

FIGURED DIMENSIONS TO BE USED IN ALL CASES

DATE 19-11-2013 SCALE 1:500

DRN N.P. CHECKED

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CAD FILE REF:

DRG. SERIES

NUMBER 6418 (A1) REVISION

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Attachment D.2 Waste Types & Quantities

The maximum annual tonnage of waste that will be accepted are shown on the table below.

Table D2.1 Total Waste Inputs

Waste Type	Tonnes
C&D	40,000
Dry Recyclables	60,000
Paper & Cardboard	100,000
Residual Waste	30,000
Food Waste	20,000
Total	**250,000**

Note: The quantities of the different categories may vary subject to market conditions, but the overall limit of 250,000 tonnes will not be exceeded.

The individual EWC codes of the wastes that may be accepted at the site are shown in Table D.2 (i). Given the mixed nature of the waste accepted at the facility it is not possible to provide accurate predictions of the future quantities of waste broken down into individual EWC codes. Estimates are provided in Table D.2(i) derived from the wastes accepted in 2013 and PANDA's assessment of likely future market conditions.

None of the wastes accepted are classified as animal by-products in accordance with Regulation 1069/2009 and identify the relevant wastes.

EWC Code	Waste description (the actual description of the waste, not the text accompanying the EWC code)	Tonnes per annum (existing)	Tonnes per annum (proposed)
02 03 04			
02 06 01			
15 01 01	Cardboard Packaging	10,000	25,000
15 01 02	Plastic Packaging	2,000	10,000
15 01 03	Wooden Packaging	100	1,000
15 01 04	Metallic Packaging	100	100
15 01 05			
15 01 06	Mixed Packaging	500	3,000
15 01 07	Glass Packaging	0	1,000
15 01 09			
16 01 03	End of life tyres	0	100
16 03 06			
16 05 04			
16 05 05			
17 01 01			
17 01 02			
17 01 03			
17 01 07	C&D waste – concrete, bricks, tiles and ceramics	1,000	5,000
17 01 11			
17 02 01			
17 02 02			
17 02 03			
17 03 02			
17 04 01			
17 04 02			
17 04 03			
17 04 04			
17 04 05			

EWC Code	Waste description (the actual description of the waste, not the text accompanying the EWC code)	Tonnes per annum (existing)	Tonnes per annum (proposed)
17 04 06			
17 04 07			
17 05 03			
17 05 04	Soil and Stones	4,000	10,000
17 06 01			
17 06 03			
17 06 04			
17 08 01			
17 08 02	Gypsum-based construction materials	100	1,000
17 09 01			
17 09 02			
17 09 03			
17 09 04	Mixed C&D Waste	40,400	35,000
18 01 04			
19 08 01			
19 09 02			
19 12 01			
19 12 02			
19 12 03			
19 12 04			
19 12 05			
19 12 07			
19 12 08			
19 12 09			
19 12 10	Combustible waste	0	1,000
19 12 11			
19 12 12	Other wastes (pre-treated)	1,000	4,000
20 01 01	Paper and Cardboard	500	30,000
20 01 02	Glass	100	1,000

EWC Code	Waste description (the actual description of the waste, not the text accompanying the EWC code)	Tonnes per annum (existing)	Tonnes per annum (proposed)
20 01 08	biodegradable kitchen and canteen waste (brown bin)		20,000
20 01 11			
20 01 21			
20 01 23			
20 01 33			
20 01 34			
20 01 35			
20 01 36			
20 01 37			
20 01 38			
20 01 39	Plastic		10,000
20 01 40	Metals	500	1,000
20 02 01			
20 02 02			
20 02 03			
20 03 01	MSW Municipal Waste (Black Bin)	0	30,000
20 03 01	Dry Mixed Recyclables	10,000	60,000
20 03 02			
20 03 03			
20 03 07	Bulky Waste	100	1,000
20 03 99			

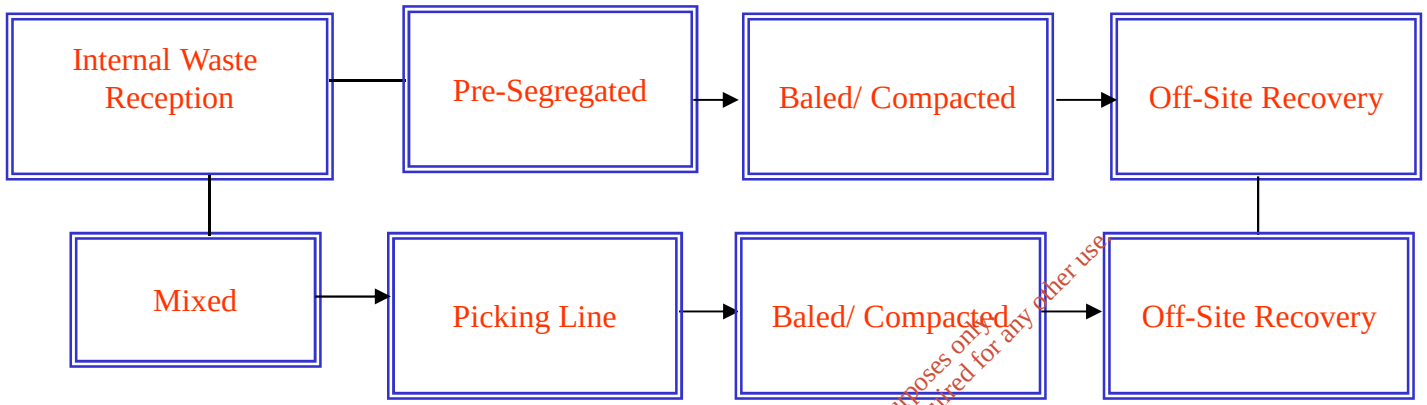

Figure D.2.1 Dry Recyclables Waste

Attachment D2.2 Waste Acceptance Procedures

The wastes accepted at the facility are and will be subject to documented waste acceptance procedures (SOP 8 and 13) to ensure that only suitable wastes are accepted. The waste is delivered by PANDA collection vehicles and third parties, including permitted waste collectors and commercial waste producers. The facility does not accept waste from either members of the general public, or from waste contractors who do not have a contract with PANDA.

The C&D and C&I waste is typically delivered in covered open top trailers and skips. The Dry Recyclables and Paper & Cardboard will be delivered in enclosed rear end loaders, curtain sided trailers, compactors and multi lift bins. The household residual waste and food wastes will typically be delivered in enclosed rear end loaders.

All waste delivery vehicles are obliged to enter onto the weighbridge at the site entrance, where they are weighed and any relevant accompanying documentation checked. The vehicles are then directed to the relevant off-loading areas inside the buildings. Any waste identified as not suitable following off-loading will be immediately removed to the designated quarantine area inside each building where it will be stored pending removal to an appropriately authorised waste. PANDA maintains records of the waste type, quantity and ultimate disposal/treatment facility.

Attachment D 2.3 Waste and Material Outputs from Waste Activities.

All wastes accepted at the installation, with the exception of the household food waste, will be treated so as to maximise their recovery/recycling potential.

The source segregated household and commercial dry recyclables; along with the source segregated paper and cardboard, are baled and sent to off-site recycling facilities, which include paper mills.

The mixed household and commercial dry recyclables will be processed on site to separate the materials into different recyclable and non-recyclable categories. The recyclable fractions will be sent to off-site recycling facilities. The non-recyclables will be suitable for use as refuse derived fuel at installations that are classified as recovery activities.

The food waste will be bulked up and transferred to appropriately authorised biological treatment plants (composting and Anaerobic Digestion) in Ireland.

The facility operations generate small quantities of office type wastes. PANDA operates a source segregation policy to maximise the recovery of potential recyclable materials from these wastes. The mobile plant is subject to on-site maintenance and the waste oils and batteries generated during maintenance are removed off-site for disposal/recovery at licensed treatment/recovery facilities.

The oil interceptor on the surface water drainage system is routinely cleaned and emptied and the contents removed off-site for disposal/treatment at an appropriately licensed site.

D 2.4 Principles of Self-Sufficiency and Proximity

The current Waste Management Plan for the Dublin Region (Fingal, Dublin City, Dun Laoghaire Rathdown & South Dublin) was made on November 11th 2005 and remains in place until a new Regional Plan is made. The Plan recognises that source separation of household, commercial and industrial waste is crucial to the successful development of sustainable markets for recyclable materials and recommends the introduction of source segregation of household waste.

The Plan identifies that there are still significant deficits in the infrastructure to manage wastes generated in Dublin and this is increasing costs and making it more difficult to achieve recycling targets. The Plan maintains the emphasis on maximising recycling and reuse for all waste streams and sets the following recycling targets to be achieved by 2013.

Source	Recycling
Household	60%
Commercial/Industrial	41%
Construction and Demolition	82%
Total	**59%**

The Plan has specific objectives in relation to the introduction and promotion of source separation of the organic waste component of both household and commercial and industrial wastes. The introduction of separate collection of food waste, in conjunction with the separate collection of dry recyclables will result in residual MSW. Such waste is amenable to mechanical treatment to produce materials suitable for recycling and energy recovery. It is an objective that Dublin become self-reliant in terms of waste management infrastructure and that waste generated in Dublin should be managed in Dublin, in so far as this is possible.

When PANDA first applied for planning permission at the site it was intended that the facility would be developed in three stages. Stage 1-C&D and C&I processing with an annual capacity of 50,000 tonnes; Stage 2-Dry Recyclables processing with an annual capacity of 200,000 tonnes, and Stage 3-MSW processing bringing the total capacity to 250,000 tonnes/year.

The staged development was based on the planned progressive expansion of PANDA's business in the Greater Dublin Region, with an initial focus on the C&D market and an overall objective of allowing of rolling out source segregated waste collection services to household and commercial customers.

In December 2005 approval was granted solely for the development of Stage 1 due to the condition of the local road network at the time. Subsequently planning permission was granted for the development of Stage 2. PANDA expanded its source segregated commercial waste service and in 2008 and 2009 began the roll out household waste collection service in Fingal. In 2011 PANDA won the tender awarded by Fingal County Council to collect household waste.

PANDA's household collection service includes a three bin system for dry recyclables, mixed residual waste and food waste to over 70,000 households in Fingal and PANDA continues to operate the waiver system introduced by the Council. The provision of source segregation

collection to households is an integral part of national waste management strategy and its purpose is to maximise recovery and minimise disposal. The breakdown of the household waste collected by PANDA annually in Fingal is:

Dry Recyclables	16,200 tonnes
Food Waste	18,900 tonnes
Residual Waste	28,000 tonnes

As the household residual and food waste cannot be accepted at the Cappagh Road MRF, it must be transported to the nearest PANDA operated waste facility, which is the Ballymount Waste Transfer Station, in the kerbside collection vehicles that then return to their collection routes.

The requirement to drive the collection vehicles directly to the Ballymount Transfer Station generates an annual total travel distance of 427,744 kilometres, comprising the trips from the Cappagh Road MRF to the collection routes and from the collection routes to the Ballymount Transfer Station. This does not include the distance covered during the kerbside collection.

At an estimated fuel consumption rate of 2.55 kilometres per litre, the refuse collection vehicle travel between the Cappagh Road MRF and the Ballymount Transfer Station uses 167,743 litres annually. At 2.68kg of carbon dioxide (CO_2) per litre of diesel consumed, this equates to an annual greenhouse gas (GHG) emission of 449,551kgs of CO_2.

The transport of the household wastes from the kerbside collection areas to the Ballymount Transfer Station is a major operational cost to PANDA, but more importantly results in significant emission of GHG. In the long term this is neither environmentally nor economically sustainable.

The proposed changes are consistent with national and regional waste policy objectives in relation to the provision of a network of facilities for the recovery of household waste that is required to achieve and maintain national and regional recycling targets. There is a clear need for household waste collected in Fingal to be managed in the county, with a consequent contribution to a reduction in GGH emissions from the transport sector.