



MECHANICAL & ELECTRICAL SERVICES DESCRIPTION - STAGE 2

BALLYBURKE NEIGHBOURHOOD CENTRE AND SOCIAL HOUSING SCHEME.

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LINKED PRACTICES

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STAGE 2 REPORT

1. General

The Mechanical and Electrical Services installations will be designed, specified, tested and commissioned with reference to the following regulations, standards and recommendations.

- Department of Housing, Planning, Community & Local Government Building Regulations
- Electro Technical Council of Ireland (ETCI) Rules for Electrical Installations and subsequent amendments
- I.S. 3218:2013 Fire Detection & Alarm Systems
- Relevant IS, BS and EU Standards and Codes of Practice
- Safety, Health and Welfare at Work (Construction) Regulations - SI 291 of 2013
- Utility Service Providers Infrastructure Requirements Guidelines
- Heating and Ventilation and Domestic Water Systems shall be designed to CIBSE Design Guides and Recommendations
- Building Services Research and Information Association (BSRIA)
- Manufacturer's Instructions & Recommendations

2. Utilities / Site Services

Refer to Varming drawings 21832-VCE-XX-XX-DR-ME-1100 in the appendix for outline of existing utility services infrastructure in the vicinity of the proposed development.

2.1. Natural Gas

There is no requirement for natural gas for this development. We did however make contact with Gas Networks Ireland in relation to mains gas availability to the Ballyburke site should gas be required in the future.

The nearest point to the existing GNI Network is directly adjacent to the site in Ballyburke at the south western corner of the site. GNI Network is also close to the site on the Eastern edge as GNI has a service main in the Ballymoneen Road. A connection could be taken from the current GNI network to this proposed development in the future should a gas service be required.

2.2. Electricity Supply

Initial contact has been made with ESB Networks in relation to ESB availability and their requirements for the Ballyburke site.

There are existing above ground MV ESB services traversing the North-eastern corner of the proposed site but having consulted with the ESB they do not believe that there is any requirement to modify or divert this service. We have undertaken initial consultations with the ESB engineers and based on these discussions and our initial estimates we believe that a new unit substation will be required to serve the proposed development.

The ESB infrastructure will also facilitate the installation of broadband to the development through their broadband provider Siro. Siro are a telecommunications company joint venture between Vodafone and the ESB. Refer to section 2.3 for further details.

Refer to Varming drawing 21832-VCE-XX-XX-DR-ME-1000 for outline of preliminary ESB infrastructure to serve the new development. New underground ducting will run via the proposed development road network to a new substation located within the proposed site. It is anticipated that one new plinth mounted ESB unit substation will be sufficient to service the proposed development electricity demands. The substation in turn will serve a network of minipillars and underground vaults strategically located around the development within footpaths where possible. Individual meters which will be housed in cabinets located on end gable walls of dwelling houses where space permits, or on nib walls in terrace dwelling scenarios, will be fed from the minipillars, while the apartments will have centralised metering housed within dedicated electrical cupboards located within the common area of each block.

2.3. Communication Services

Initial contact has been made with Open Eir & Virgin Media in relation to communications availability and diversion requirements to the Ballyburke site.

The existing Virgin Media Network passes along the front of the site on the Ballyburke Road and in the "Drisin" housing estate to the North of site. It will be possible to facilitate connections from the Virgin Media network from these locations and we would anticipate at this stage that a service would be available to this proposed development via the adjacent below ground network by extending new ducting in to the site. This ducting would in turn run to a network of underground chambers strategically located within footpaths where possible. Individual external termination units would be located on end gable walls of dwelling houses where space permits, or on nib walls in terrace dwelling scenarios, which would be fed from the underground chambers, while apartments will have centralised incoming services and equipment as required housed within dedicated communications cupboards located within the common area of each block.

The existing Open Eir Network passes along the front of the site on the Ballyburke Road and in the "Drisin" housing estate to the North of site. It will be possible to facilitate connections from the EIR network from these locations and we would anticipate at this stage that a fibre service would be available to this proposed development via the adjacent below ground network. New underground ducting infrastructure can tie in to extend the current network to service the proposed development. This ducting would in turn run to a network of joint box chambers strategically located around the development within footpaths where possible. Individual external termination units will be located on end gable walls of dwelling houses where space permits, or on nib walls in terrace dwelling scenarios, which will be fed from the joint box chambers, while apartments will have centralised incoming services and equipment as required housed within dedicated communications cupboards located within the common area of each block.

Siro are a telecommunications company joint venture between Vodafone and the ESB that provide broadband through fibre-optic cables which run alongside existing electricity services, all the way to a building to provide a fibre-to-the-home service. From initial consultation with SIRO they have confirmed that a service is currently available in the locality. Should the option of a SIRO service be required, it is delivered for the most part through the ESB networks infrastructure all the way to the ESB minipillars and underground vaults. Individual external termination units would be located on end gable walls of dwelling houses where space permits, or on nib walls in terrace dwelling scenarios, which would be fed via designated service ducts from the ESB minipillars, while apartments will have centralised incoming services and equipment as required housed within dedicated communications cupboards located within the common area of each block.

Refer to Varming drawing 21832-VCE-XX-XX-DR-ME-1001 & 21832-VCE-XX-XX-DR-ME-1002 for outline of preliminary Open Eir & Virgin Media infrastructure to serve the new development.

2.4. Satellite TV Infrastructure

It is proposed that a network of underground ducting and chambers shall be installed in order to facilitate the installation of a central satellite TV service in order to eliminate the need for individual satellite dishes being mounted on each dwelling unit. In addition this ducting network will allow provision for an alternative future TV/Broadband system.

Refer to Varming drawing 21832-VCE-XX-XX-DR-ME-1006 for outline of preliminary satellite television network layout.

2.5. EV Charging Infrastructure

It is proposed that Electric Vehicle charging infrastructure shall be installed in order to facilitate the installation of an electric vehicle charging system at all car parking spaces within the development in line with planning and client requirements.

It is proposed that each of the houses in the development shall be provided with an electric cabling/conduit provision to the exterior of each house to allow for installation of future electric vehicle charging stations by home owners.

In addition to this it is envisaged that communal parking spaces will be provided with the provision of an EV charging underground ducting and chamber network. A number of the points will have EV charging stations installed in compliance with planning requirements. The ducting provision will facilitate future installation of additional charging stations as demand increases.

Refer to Varming drawing 21832-VCE-XX-XX-DR-ME-1005 for outline of preliminary EV charging network layout.

2.6. Public Lighting

A public lighting scheme shall be included for in accordance with the requirement of BS 5489:2013 "Code of practice for the design of road lighting, Lighting of roads and public amenity areas" and BS EN 13201:2015 "Road Lighting. Performance Requirements" to a P3 classification.

Street light fittings shall generally be LED type and shall be mounted on 6 meter high galvanised steel octagonal columns. Lighting controls shall be in the form of photocells integral to the light fitting. Refer to Varming drawing 21832-VCE-XX-XX-DR-ME-1003 for outline of preliminary street lighting layout.

3. Mechanical Services Installation

3.1. Space Heating, Water Heating & Ventilation Strategy

Houses

Individual air to water heat pump systems to serve each of the dwellings and provide space heating via radiators and domestic hot water production via a hot water cylinder. This system consists of an outdoor unit located to the rear external of each dwelling and an indoor unit located in each hot-press / utility room supplying steel panel radiators via a pipework distribution network.

Mechanical ventilation to be provided by means of a centralised demand controlled ventilation system with extract from wet rooms or a whole house mechanical ventilation with heat recovery system.

Apartments

Individual exhaust air to water heat pump systems to serve each of the apartments and provide space heating via radiators and domestic hot water production via a hot water cylinder. This system consists of an indoor unit located in each hot-press / utility room which is ducted to external supplying steel panel radiators via a pipework distribution network. This system eliminates the requirement for an outdoor unit. Exhaust air heat pumps have integrated mechanical ventilation systems and can be either a centralised extract ventilation system from wet rooms or a whole house mechanical ventilation with heat recovery system.

No secondary/supplementary space heating system is proposed for the dwelling houses and apartment units.

Electrical storage heaters to be installed in the landlord communal hallways and staircases as individual systems are being proposed for the apartment units.

A renewable source will be required to be provided for the landlord staircore and hallway areas in the apartment block such as photovoltaic panels.

Heating installations shall be designed and installed in accordance with Technical Guidance Document Part L & Part J.

3.2. Ventilation

Ventilation ductwork in the houses shall generally be run between floor joists to serve lower floor levels and in attic to serve upper floor level

Ventilation ductwork in the apartments shall generally be run in dropped plasterboard ceilings in the apartment units.

Local mechanical extract will be provided in the kitchen area via extract canopies over cooking hobs to extract stale air to external.

Ventilation systems shall be designed and installed in accordance with Technical Guidance Document Part F.

3.3. Mains Water Services

The mains water installation in the houses shall comprise of an incoming metered mains water supply to each dwelling house which shall feed an individual cold water storage tank, kitchen sink & the heating system fill point.

The mains water installation in the apartments shall comprise of an incoming metered mains water supply to each unit but each supply will originate from a central water meter manifold locations at the ground floor of each block. In each block with more than two stories a centralised water booster and break tank will be installed to ensure that there is adequate water pressure to provide cold water to the apartments at each level. The mains water shall run from the water meter manifold location on the ground floor of each block and shall feed an individual cold water multiboost type pumped storage tank, kitchen sink & the heating system fill point in each apartment.

The mains service pipe to each house and apartment shall be provided with a stopcock fitted with a crutch wheel for manual operation near to the point of entry of the pipe.

Water distribution pipework shall generally be run within the screed at ground floor level and between joists in the houses or in dropped plasterboard ceilings within the apartments. The pipework installation shall be a manifold type system to ensure no concealed pipework joints.

Concealed water distribution pipework, such as services within floors & walls, shall be a pre-insulated multilayer pipe system. Exposed water distribution pipework, such as services in the utility/kitchen/hotpress, shall be insulated copper pipework. Isolation valves shall be provided at connections to all equipment.

Mains water installations shall be designed and installed in accordance with Technical Guidance Document Part G and the Guidelines issued by Irish Water.

3.4. Domestic Water Services

Cold water storage in dwelling houses shall generally be supplied from an insulated cold water storage tank located in the attic space where applicable. Tanks to be on raised platforms in the attic space in order to achieve maximum head of water possible. Access shall also be provided for maintenance purposes.

The domestic hot and cold water installations in dwelling houses shall be gravity type systems. In addition to this the hot water installation shall be open vented. Hot water storage for each of the dwellings shall be provided via a floor standing indirect single coil, pre insulated stainless steel hot water cylinder complete with valves and fittings.

Apartments shall have insulated hot & cold water cylinders & tanks located in the hot-press of each unit. Hot and cold water supplies shall be pressurised from a combined mulibost type storage unit with integrated booster pump to all appliances and sanitary ware in the apartments only.

Water distribution pipework shall generally be run in dropped plasterboard ceilings at with local drops as required to serve outlets. The pipework installation shall be a manifold type system to ensure no concealed pipework joints.

Concealed water distribution pipework, such as services within floors & walls, shall be a pre-insulated multilayer pipe system. Exposed water distribution pipework, such as services in the utility/kitchen/hotpress, shall be insulated copper pipework.

Domestic water installations shall be designed and installed in accordance with Technical Guidance Document Part G & Part L.

3.5. Soils and Waste

The soils and waste system shall be generally single vent stacks with branch connections serving all sanitary applications. Overflows shall discharge through warning pipes where they shall cause a nuisance. The soils and waste pipework shall include connection to the following:-

- Condensate from Heat Pump
- Sanitary ware
- Kitchen / Utility appliances

The above ground waste installation shall consist of ground floor services connecting to builders upstands & upper floor services running between joists and within floor screeds to drainage stacks. Stacks to be run externally in dwelling houses where possible. Where unavoidable, internal stacks shall be acoustically insulated. All soil stacks within the apartment blocks should drop vertically to ground level with no horizontal runs of pipework within the ceiling voids of the apartments. All soil stacking shall be fitted with fire collars where they penetrate fire rated floors and walls.

Above ground drainage installations shall be designed and installed in accordance with Technical Guidance Document Part H.

4. Electrical Services Installation

4.1. Electricity Supply and Main Distribution

A 230Volt 50Hz LV electrical supply for each dwelling shall be provided from the local ESB network. An ESB Network's meter will be located in an approved meter cabinet to the front boundary of each individual dwelling and in a meter bank cupboard in the landlord area of the apartment building.

Dedicated galvanised steel cable tray / trunking for LV and ELV services shall be provided in the landlord area of the apartment building.

LV submains shall be provided to each dwelling consumer unit from the ESB Networks meter. LV distribution within each dwelling shall be via final circuits fed from the consumer unit.

Consumer units shall be mounted at an accessible height in hallways or utility rooms where applicable.

The wiring installation shall comprise of twin & earth insulated cables suitably routed through & clipped to the dwelling structure. Wiring shall be ran in PVC oval conduit where cables are chased into block walls.

Wiring shall generally be run between floor joists to serve lower floor levels and within the attic space at top floor level in individual dwellings. The Apartments shall all have a dropped plasterboard ceiling to facilitate routing of services.

4.2. Power Distribution Services

The power installation in each dwelling will provide for electrical power to socket outlets, fixed appliances and heating & ventilation equipment.

In general power outlets shall be allowed in accordance with "Quality Housing for Sustainable Communities" as follows:

Room	Minimum quantity & location of socket outlets
Kitchen	4 twin sockets (5 if combined kitchen/dining), cooker outlet (if required), 3 single sockets*
Dining (if separate)	3 twin sockets
Living	4 twin sockets
Main bedroom	3 twin sockets
Other bedrooms	2 twin sockets
Hall	1 twin sockets
Landing	1 twin sockets

* Twin sockets shall be located adjacent to the worktop. Single sockets to be appropriately located for fridge, washing machine and dryer.

In addition to this dedicated power outlets for appliances/equipment will be provided as necessary.

Electrical wiring accessories to be white plastic type.

Power installations shall be designed and installed in accordance with Technical Guidance Document Part M.

4.3. Lighting Services

Lighting services will be installed throughout each dwelling fed from the local consumer unit.

In general pendant type fittings shall be provided in the kitchen, living room, bedrooms and circulation areas. LED fittings will be provided in the bathrooms & store rooms. Kitchen cabinets will be fitted with pelmet task strip lighting & WHB's will be fitted with shaver light fittings.

All light fittings are to be supplied complete with energy efficient lamps and all necessary mounting brackets/fixings. Lamps to be a combination of A-rated lamps fitted in ceiling rose type fittings, CFL Lamps and LED's.

Emergency lighting system shall be provided to the communal landlord staircore and hallway areas in apartment blocks in accordance with IS 3217:2013.

Landlord/common areas in apartment units shall have PIR/photocell operated lighting powered from local landlord distribution boards.

Lighting installations shall be designed and installed in accordance with Technical Guidance Document Part M.

4.4. Data / Telecom Services

A route will be left for external telecoms cable to enter into each dwelling service provider network termination unit (NTU) via the Telecom service provider external termination unit (ETU) located to the front boundary of each dwelling. Provision shall be made in all house and apartments for the supply of services to the units from all the utility providers including Elr, Virgin Media & Siro.

Data and telecom services in apartments shall be provided on dedicated tray and trunking in landlord areas from a central riser/cupboard to serve each apartment.

Cat 6 cabling shall be installed from each wall mounted data outlet back to the service provider network termination unit (NTU) data point location internally at telecoms entry point in each dwelling.

Telecom/Data outlets shall be allowed in the hallway (NTU), living room & main bedroom.

4.5. Television Services

The TV system in each dwelling shall consist of wall mounted TV outlets which are wired back to a TV service provider external termination unit (ETU) located to the front boundary of each dwelling.

Two coaxial cables shall be installed from each TV outlet for satellite and aerial services.

A site wide centralised satellite and free to air TV aerial installation shall be provided to allow a satellite TV option to all the houses and apartments without the need to fit individual dishes on each dwelling.

TV satellite and aerial outlets shall be allowed in the living room & main bedroom.

4.6. Protective Services (Fire & Carbon Monoxide Detection):

The fire and carbon monoxide alarm system in each dwelling shall be designed and installed in accordance with IS 3218:2013.

The fire alarm system in each dwelling shall be Grade D Category LD2 consisting of interconnected self-contained mains-powered/battery backed Smoke/ Heat alarms.

The landlord staircore and hallway areas in apartment blocks shall be provided with a commercial type fire alarm system in accordance with IS 3218:2013.

All alarms shall be interconnected so that detection of fire or carbon monoxide by any one unit provides an audible alarm from each unit.

Disabled refuge system shall be provided in the landlord area in accordance with BS 5839.

4.7. Security Services

Each dwelling shall be fitted with a hard wired mains powered doorbell. The system will consist of a push button at the main entrance door and a bell chime located in the hallway.

All Apartment units within each of the blocks shall be provided with a door intercom system and door release from the individual apartments to the main entrance at ground floor level.

4.8. Solar Photovoltaic System

A photovoltaic solar panel array shall be installed on the roof of the apartment blocks to provide usable electricity to the block and to satisfy the part L renewable contribution requirement for the landlord areas in the blocks.

Provision shall be made for the isolation of the panel array externally and in accordance with ET101.

Appendix : Existing Site infrastructure drawings